MORTGAGE FINANCE AND CONSUMER CREDIT: IMPLICATIONS ON FINANCIAL STABILITY IN SEACEN ECONOMIES

MORTGAGE FINANCE AND CONSUMER CREDIT: IMPLICATIONS ON FINANCIAL STABILITY IN SEACEN ECONOMIES

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in SEACEN Economies
By Faith Christian Q. Cacnio

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FOREWORD

There is a growing concern over the rapid increase in mortgage loans and consumer credit of households in SEACEN economies in recent years. Rising household credit has important implications for the economy. Periods of excessive credit growth has often been linked with episodes of financial and macroeconomic instability. The 2009 global financial crisis, which was partly caused by excessive private sector debt, provides a key example of this observation.

SEACEN recognizes the importance of this issue for its member economies. The guiding objective, therefore, of this study is to better understand the factors driving the increase in household demand for mortgage finance and consumer credit in SEACEN economies and to assess the implications of the rising trend on financial stability. The descriptive analysis and empirical exercises are undertaken with an end view of helping policy makers design initiatives and measures that will maximize the economic and welfare benefits of increased household credit while mitigating the potential vulnerabilities it could trigger in the system.

This research volume is a result of collaborative efforts of SEACEN and member central banks. Chapter one is the integrative report which compares and analyses the cross regional experiences of the participating SEACEN economies prepared by the project team leader while the following chapters comprise the team project papers authored by the respective project team members from participating SEACEN member central banks. The team project papers discuss in greater detail the trends and developments in mortgage finance and consumer credit in the individual economies.

Dr. Faith Christian Q. Cacnio, Bank Officer V, Economic and Financial Forecasting Group, Department of Economic Research of the Bangko Sentral ng Pilipinas and concurrently SEACEN Visiting Research Economist for FY 2013, led the project team which comprised of 16 researchers from 13 SEACEN member central banks, namely, Mr. Meng Channarith of the National Bank of Cambodia; Mr. Rakesh Kumar of the Reserve Bank of India; Mr. Wahyu Hidayat Sulistyawan and Ms. Shinta Fitrianti of Bank Indonesia; Dr. Jong-Chil Son of The Bank of Korea; Mr. Chuin Siang Bu of Bank Negara Malaysia; Mr. Tsenddorj Dorjpurev and Ms. Khash-Erdene Badrakh of The Bank of Mongolia; Ms. Myat Thida Min of Central Bank of Myanmar; Mr. Guru Prasad Paudel of Nepal Rastra Bank; Mr. Boniface Aipi of Bank of Papua New Guinea; Dr. Veronica B. Bayangos of Bangko Sentral ng Pilipinas; Mr. H.P.G.S. Ratnasiri

of Central Bank of Sri Lanka; Dr. Pi-Chun Hsu and Mr. Yihming Yu of Central Bank, Chinese Taipei and Dr. Nguyen Duc Trung of the State Bank of Vietnam. SEACEN gratefully acknowledges the active participation and contributions of the team project leader and project members towards the completion of this research project. The valuable insights and suggestions of the external reviewer, Dr. Ramkishen S. Rajan, Professor, School of Policy, Government and International Affairs, George Mason University, are also greatly appreciated. Sincere gratitude likewise goes to the staff members of the Research and Learning Contents Department of SEACEN for their kind assistance.

The views and conclusions stated in this study, however, are those of the authors and do not necessarily reflect those of SEACEN or the SEACEN member central banks.

Hookyu Rhu
Executive Director
The SEACEN Centre

October 2014

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EXECUTIVE SUMMARY

Since the early 2000s, households in SEACEN economies experienced rapid accumulation of mortgage loans and consumer credit (i.e. credit cards, auto finance and personal and retail loans). Household credit, if it remains within manageable levels, can yield economic and welfare benefits. However, if it reaches excessive levels, household credit can cause severe problems for the economy. Higher debt makes households more sensitive to changes in economic factors like income, employment and interest rates. The deterioration of household balance sheets can, in turn, adversely affect the health of financial institutions and lead to insolvency problems and instability.

The objective of this study is to gain a better understanding of the factors and underlying reasons for the increase in mortgage finance and consumer credit in SEACEN economies and to determine its implications on financial stability. The integrative report and the team project papers provide a discussion of recent developments in mortgage finance and consumer credit in the 13 participating SEACEN economies. Moreover, they give an assessment of the potential risks that rising household credit poses for financial stability in these economies. They also present policy measures and initiatives that have been instituted in SEACEN economies to ensure that the level of mortgage loans and consumer credit remain within manageable levels.

The rise in mortgage finance and consumer credit in SEACEN economies is attributed to a number of factors including favourable macroeconomic conditions, financial market developments and liberalisation as well as demographic factors like population growth, expanding middle class and urbanisation. Mortgages, which are often the single largest financial transaction that most households undertake, account for the biggest share of total household credit at 20 – 70%. Varying methodologies and empirical techniques were employed in this study to determine whether mortgage loans and consumer credit in SEACEN economies have reached levels that could cause financial stresses. Results suggest that current levels of household credit in most SEACEN economies remain within manageable levels and do not pose an immediate threat to the stability of their financial systems. Korea and Malaysia, however, have high household debt to GDP ratios that are seen as a potential source of financial risks for these economies. In Korea, analysis show that, on average, the household debt ratio is near the consumption-hampering threshold. Nonetheless, growth in household debt in these economies slowed in recent years on the back of the policy measures and initiatives implemented by their respective governments.

The prudent stance of SEACEN economies in managing household credit, particularly mortgage finance, is borne out of the lessons they learned from two crises - the 1998 Asian financial crisis and 2009 global financial crisis. These crises underscored the importance of striking a balance between the positive and negative effects of household credit. Economies cannot be over cautious in extending credit to households because this can constrain households from achieving higher utility. Moreover, it hampers potential consumption and investments which is important for sustaining economic growth. Conversely, household credit has to be maintained within a reasonable level. Excessive debt makes households vulnerable to macroeconomic shocks and increases the risks to the stability of the financial system. Cognizant of these effects, SEACEN economies closely monitor developments in the housing and property sectors to ensure that price bubbles do not form. Moreover, SEACEN economies have implemented policy measures, including macroprudential regulations (e.g. ceiling on loan-to-value ratios, cap on maximum loanable amount), so that households' exposure to mortgage loans and consumer credit remain within manageable levels. The findings of this study show that policies have thus far helped in mitigating the risks that rising trends in mortgage finance and consumer credit pose to financial stability.

Nonetheless, this study identified two areas that need further improvement in SEACEN economies. First, there is a need to enhance household credit data and information. It is vital to have reliable, timely and comprehensive information on developments in household credit to identify and assess the potential risks and threat to financial stability. The establishment/strengthening of central credit information bureaus and compilation of better household level (micro) data are seen as vital steps towards enhancing credit surveillance in SEACEN economies. Second, it is important to further strengthen macroprudential regulations and supervision. Macroeconomic conditions of SEACEN economies are expected to remain robust in the medium-term conducive to sustained increases in household credit. Moreover, the rising middle class and improving standards of living in these economies can lead to higher demand for mortgage finance and consumer credit. Moving forward, the main challenge facing SEACEN economies is ascertaining that the pace of household credit growth is kept aligned with the underlying macroeconomic fundamentals and the necessary prudential and regulatory frameworks are properly established and functioning efficiently. This is to avoid the costly repercussions of excessive household mortgage loans and consumer credit.

Chapter 1

INTEGRATIVE REPORT ON MORTGAGE FINANCE AND CONSUMER CREDIT: IMPLICATIONS ON FINANCIAL STABILITY IN SEACEN ECONOMIES

By
Faith Christian Q. Cacnio[1]

1. Introduction

Cecchetti, Mohanty and Zampolli (2012) described debt as a two-edged sword. If used prudently and in moderation, debt yields positive effects for the economy. Access to credit allows households to smooth their consumption which, in turn, contributes to improved welfare. For financial institutions, higher demand for credit provides a wider range of profit opportunities and a means to diversify their portfolios. However, when debt reaches excessive levels, it causes severe problems for the economy. Highly indebted households become vulnerable to fluctuations in economic factors like income, employment and interest rates. Consequently, the inability of households to service their debt obligations results in the deterioration of financial institutions' loan portfolios. This eventually leads to insolvency problems and financial instability. A key example of this is the 2009 global financial crisis which was partly caused by excessive private sector debt in the US and many European countries.

Recent years have seen households in Asia accumulate debt. The rapid increase in the indebtedness of Asian households is attributed to a number of factors including favourable macroeconomic conditions, financial market developments and liberalisation as well as demographic factors like population growth, expanding middle class and urbanisation. Concerns over rising household debt have given rise to a growing literature on this topic. Nakornthab (2010) observed that, given the potential impact of household indebtedness on financial stability, much of the research on household debt in the last decades has been conducted by central banks (e.g., Lindquist, 2012; Dynan and Kohn, 2008; Ariyapruchya, 2007; Wuryadani, 2007; Rinaldi and Arellano, 2006; Barnes and

1. Dr. Faith Christian Q. Cacnio is Bank Officer V, Department of Economic Research, Bangko Sentral ng Pilipinas and concurrently Visiting Research Economist, The SEACEN Centre, in FY 2013.

Young, 2003). International organisations like the International Monetary Fund (IMF), European Central Bank (ECB) and Organisation for Economic Cooperation and Development (OECD) have also included discussion on the impact of household debt on member economies in their economic outlooks and occasional research papers. In 2009, the Bank for International Settlements (BIS) came out with a volume of studies on the implications of household debt on monetary policy and financial stability in 9 countries, including 7 Asian economies (i.e., China, Indonesia, Japan, Korea, Malaysia, the Philippines and Thailand). For its part, the SEACEN Centre produced a collection of work on household debt covering 13 of the 16 member countries (Nakornthab, et al., 2010). The team project studies included in the volume discussed the developments in household debt across these economies. The SEACEN Centre also did an earlier study which mainly focused on housing and mortgage loans (Kusmiarso, et al., 2006).

This study intends to provide a deeper analysis of the sources and underlying factors driving the observed increase in household demand for debt by focusing on mortgage finance (e.g., housing loans) and consumer credit (e.g., auto loans, credit cards, personal loans). These two components constitute most of household debt and are closely linked to household consumption.

1.1 Objectives of the Study

The objective of this study is to determine the implications of rising mortgage finance and consumer credit on the financial stability of the SEACEN economies. It discusses recent developments in mortgage finance and consumer credit in these economies and provides an assessment of the potential risks that these pose for financial stability. This study also presents the policy measures and initiatives that have been instituted in the SEACEN economies to ensure that the level of mortgage loans and consumer credit do not become excessive that it may impinge on consumption demand or lead to financial stresses. Based on the assessment of potential risks and given the existing policy measures on mortgage finance and consumer credit, policy gaps are identified and recommendations are made to address these concerns.

1.2 Research Design and Organisation of the Study

This study is a collaborative project of SEACEN and the member central banks/monetary authorities. Under this collaborative arrangement, the researcher(s) of the member central banks or monetary authorities are responsible for preparing team project chapters based on agreed guidelines. Meanwhile, the

project leader from SEACEN prepares an overview and regional analysis based on his/her own literature research and the findings of the team project reports.

The report of the research project comprises of two parts. The first part is the integrative report which covers the overview and regional analysis. The second part contains all the team project chapters which are contributed by the researchers nominated by the member banks or monetary authorities.

This first part of the report proceeds as follows. The next section briefly defines some of the concepts discussed in this chapter, the data used and their sources and the limitations of the study. Section 3 presents the current developments in mortgage finance and consumer credit across the SEACEN economies and the underlying factors driving these observed trends. Section 4 provides an assessment of the implications of rising mortgage finance and consumer credit on financial stability in these economies based on observations and on the findings of the team project papers. Section 5 focuses on some of the policy implications of rising mortgage finance and consumer credit in the SEACEN economies. The last section concludes.

2. Definitions, Data Sources and Limitations of the Study

Debt is generally defined as all liabilities that require payment or payments of interest or principal by the debtor to the creditor at a date or dates in the future. Based on the 1993 System of National Accounts (SNA), debt is obtained as a sum of the following liability categories: currency and deposits, securities other than shares (except financial derivatives), loans, insurance technical reserves, and other accounts payable (OECD Factbook, 2013). For the household sector, debt usually consists of loans for consumption, in particular mortgage loans used for the purchase of houses as well as loans for productive endeavours and entrepreneurial activities. The focus of this study is on loans for consumption or consumer loans (i.e., mortgage loans and consumer credit). These loans account for a significant portion of household debt.

Mortgage loans are usually classified under consumer loans. However, in this study mortgage loans are analysed separately from other forms of consumer loans. Developments in the housing and real estate markets are of particular interest to the SEACEN member economies. This is borne out of the experience that the Asian countries had during the 1997 financial crisis. The bursting of house price bubbles in some economies precipitated the descent of the region towards a severe financial crisis. In the aftermath of the crisis, countries in Asia became very cautious about the rapid expansion in the housing and real

estate sectors. Some of the team project reports in this research project focused on the rising demand of households for mortgage finance over other types of consumer loans. This reflects the abiding concern over the formation of house price bubbles and their negative effects on financial stability and the macroeconomy.

In this section, mortgage finance refers to loans for the purchase of houses and consumer credit pertains to the other forms of consumer loans – secured and unsecured (e.g., auto finance, personal and retail loans, credit cards). The term household loans/credit refers to total mortgage loans and consumer credit.

Most of the data used in this section were provided by the participating SEACEN member central banks. These were supplemented with data from public sources such as CEIC, Bloomberg and Reuters and from international organisations like IMF, World Bank, OECD and Asian Development Bank (ADB). During the first workshop for this research project, the team members discussed the possible sources of data that will be used in preparing the team project reports. As Nakornthab (2010) pointed out, in the developed countries, there are two potential sources of data on household debt – household and consumer finance surveys or financial institutions data. Micro-level data like those generated from household and consumer finance surveys offer a more comprehensive and detailed information about the level of household indebtedness. Meanwhile, data from financial institutions are more structured and less prone to subjective reporting. Some of the participating SEACEN member economies in this research project have no existing household or consumer finance surveys. Hence, in most of the project team papers, the data used is from financial institutions, in particular, from commercial banks.[2] Commercial bank data is more readily accessible and with longer historical series. It is recognised that the use of commercial bank data poses some limitations on the analysis of the study. This can lead to an underestimation of the level of household exposure to mortgage finance and other consumer loans. Other financial and non-financial institutions (e.g., government agencies, developments banks, finance companies, credit associations) also extend these kinds of loans to households. For example, in Sri Lanka, state-owned institutions account for almost two-thirds of the loans granted for housing purposes. In the Philippines, public housing finance institutions and banks account for almost similar shares to total home financing loans. Almost

2. A suggestion made during the first workshop is to use the flow of funds data to facilitate comparisons across economies. However, as in the case of household and consumer finance surveys, some of the participating SEACEN economies in this research project are yet to compile their flow of funds data.

19% of the total household debt in Malaysia is financed by the Development Financial Institutions (DFIs), non-regulated financial institution (e.g., building societies) and government entities. Moreover, while traditional banking continues to dominate the formal financial sector of Asian countries, shadow banking has become prevalent in many economies. Shadow banking refers to institutions that function in a similar manner as traditional banks, including providing products like mortgage loans, consumer credit and capital for investment. These institutions, however, are often without regulatory oversight. Thus, they are more exposed to risks compared to formal banks.[3] Shadow banking is particularly large in the Philippines and Thailand, estimated to be more than one-third of the total financial system assets and its share has been gradually increasing (Ghosh, del Mazo and Otker-Robe, 2012). Given these considerations, the potential underestimation of household loans will therefore depend on the relative share of the non-commercial bank sector in household financing.

Notwithstanding these caveats, the team project researchers note that the formal banking sector accounts for a significant share of household financing. Figures from the commercial banks can therefore reflect the general trends and developments in households' access to mortgage loans and other consumer loans. The next section presents the trends in mortgage finance and consumer credit in the SEACEN economies and the underlying factors driving these developments.

3. Mortgage Finance and Consumer Credit in SEACEN Economies

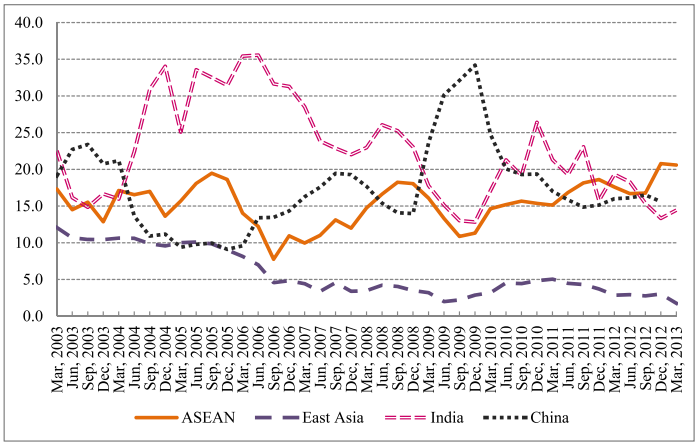
The rapid accumulation of household debt in Asia has often been cited as a source of concern for countries in the region. Excessive household debt poses significant risks to the financial systems of these economies and, in turn, on their growth prospects. This section looks into the recent trends in household loans and examines the factors that have been driving these observed developments.

3.1 Trends and Developments

Nominal loans to households (i.e., mortgage loans and consumer credit) in the Asian countries have been observed to be growing at a robust rate since the early 2000s. Taking simple averages, household credit in the ASEAN countries grew at an average rate of 15.2% while for East Asian economies it is at 5.3%. China and India posted relatively higher average growth rates during this period at 23.4% and 17.0%, respectively (Figure 1).

3. Former Federal Reserve Chairman Ben Bernanke (2012) observed that the increased importance of shadow banking in global finance led to vulnerabilities in the US financial system that exacerbated the 2007 – 2008 subprime mortgage crisis.

Figure 1
Nominal Household Loans*
(Year-on-year percent change)



* ASEAN (i.e., Indonesia, Malaysia, the Philippines and Thailand).
East Asia (i.e. Japan, Korea and Chinese Taipei).
For India, data used is for non-food credit.
For China, data used is for net domestic credit (i.e., claims on non-financial sectors).
Sources: Central Banks, CEIC, World Bank.

Table 1 presents a more disaggregated view of developments in nominal loans to households across the 13 SEACEN economies participating in this research project for the period 2002 - 2012. Also included in Table 1 are the year-on-year growth rates and the compounded annual growth rates (CAGR).[4] Myanmar and Papua New Guinea have the shortest available data in the sample at two years. With their exception, the nominal household loan in the remaining 11 SEACEN economies grew at an average rate of 26.5%. Meanwhile, in terms of CAGR, the average growth rate of household credit in these economies was at 24.4%.

At the economy level, the 13 SEACEN economies exhibited rising trends in household loans but these occurred at varying paces. The CAGR of these economies ranged from 4.0% (Chinese Taipei) to 73.3% (Cambodia). For 2011 – 2012, Myanmar registered a whopping CAGR of 925.3%. Countries with nascent financial markets like Cambodia and Myanmar experienced more rapid growth in household loans compared to economies with more mature markets like Korea and Chinese Taipei. This can be attributed to the fact that these

4. The compounded annual growth rate (CAGR) is technically a hypothetical concept. It is the rate at which an investment, or in this case household credit, would have grown had it grew at a steady rate. The CAGR is basically a means to smooth out the rate of growth.

developing countries are coming from a low credit base. In Myanmar, for example, mortgage credit is yet to be developed. In 2011, under the newly instituted democratic government, the country has taken a series of reforms aimed at relaxing banking restrictions and allowing the introduction of new credit products. These are expected to ease the access of households to credit and expand their financial system's credit base. Papua New Guinea, on the other hand, is the only country that posted a negative CAGR of -2.6% in 2011-2012.

The discussion has thus far focused on the nominal values of household credit across economies. However, in order to have a better sense of the rise in the level of household loans over time, the more relevant values to consider would be the real credit figures. Taking into account the impact of price changes, the nominal loans to households in each economy is deflated by the corresponding headline consumer price index in the same year. With the exception of Myanmar and Papua New Guinea, Chinese Taipei and Cambodia remain as the economies with the lowest and highest real CAGRs at 2.6% and 62.2% , respectively.

The team project researchers estimate that mortgage loans account for 20 – 70% of total credit to households in the SEACEN economies. Mortgages are usually the single largest financial transaction that most households undertake. Thus, mortgage loans constitute the biggest share of household indebtedness. Asian households put great value in owning a house. Having a house does not only meet one of the basic needs of any household (i.e., decent shelter) but it likewise provides some measure of financial security for the future. Moreover, housing and real estate properties are important forms of inter-generational transfers among Asian households. In some economies (e.g., Indonesia, Malaysia, the Philippines), expectations of higher real estate and housing prices have resulted in speculative purchases of properties.

Consumer credit (e.g., credit cards, auto finance and personal and retail loans) have likewise been on the rise in the SEACEN economies. In the developing economies, the rise in consumer credit is buoyed by higher demand for automobiles, motorcycles and other durable goods. Rising household income and the general lack of good public transportation system have been pointed out as the main factors behind the observed increase in ownership of cars and motorcycles, particularly in the ASEAN countries (Prabnasak, Holyoak and Taylor, 2013). In the more advanced economies, consumer credit is bolstered by the heavy reliance of households on credit cards for consumption purchases. The excessive use of credit cards is causing concern in these economies due to the risks that it poses to their financial sector. Korea and Chinese Taipei both experienced credit card crises in the last decade that adversely affected household balance sheets and their financial systems.

Table 1
Nominal Credit to Households in SEACEN Economies
(Figures in parenthesis are the year-on-year growth rates)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	CAGR	
												Nominal	Real
Cambodia	-	-	12.4	33.5	92.3	307.1	525.1	478.2	532.8	737.9	1,005.9	73.3	62.2
				(170.9)	(175.7)	(232.8)	(71.0)	(-8.9)	(11.4)	(38.5)	(36.3)		
India	6.4	7.5	10.0	13.2	17.3	21.1	25.9	29.3	37.0	42.8	48.5		
		(16.7)	(34.0)	(31.4)	(31.3)	(22.0)	(23.0)	(12.8)	(26.4)	(15.8)	(13.3)	22.5	13.9
Indonesia	80.8	111.2	151.1	206.7	226.3	282.6	367.1	437.0	537.1	667.2	799.7		
		(37.6)	(35.8)	(36.8)	(9.5)	(24.8)	(29.9)	(19.0)	(22.9)	(24.2)	(19.9)	25.8	17.3
Korea	222.0	253.8	276.3	305.5	346.2	363.7	388.6	409.5	431.5	455.9	467.3		
		(14.3)	(8.9)	(10.6)	(13.3)	(5.0)	(6.8)	(5.4)	(5.4)	(5.7)	(2.5)	6.8	3.7
Malaysia	227.7	252.4	264.0	303.7	332.3	357.4	391.9	430.1	487.5	550.7	614.1		
		(10.9)	(4.6)	(15.0)	(9.4)	(7.6)	(9.7)	(9.7)	(13.3)	(13.0)	(11.5)	10.4	7.9
Mongolia	-	-	210.9	321.6	507.6	838.8	1,013.7	904.9	1,369.2	2,452.7	3,099.6		
				(52.5)	(57.8)	(65.3)	(20.9)	(-10.7)	(51.3)	(79.1)	(26.4)	39.9	25.5
Myanmar	-	-	-	-	-	-	-	-	-	9.4	96.7		
											(925.3)	925.3	897.1
Nepal	56.3	62.7	73.6	80.0	124.7	159.6	213.4	279.4	306.6	330.8	405.7		
		(11.3)	(17.4)	(8.6)	(55.8)	(28.0)	(33.7)	(30.9)	(9.8)	(7.9)	(22.7)	23.8	14.4
Papua New Guinea	-	-	-	-	-	-	-	-	-	1,060.2	1,032.6		
											(-2.6)	-2.6	-4.7
Philippines	234.1	246.9	258.5	278.9	313.4	335.8	407.3	452.4	498.5	612.0	803.9		
		(5.5)	(4.7)	(7.9)	(12.4)	(7.1)	(21.3)	(11.1)	(10.2)	(22.8)	(31.4)	15.2	9.9
Sri Lanka	-	-	-	-	-	377.9	381.5	358.2	453.8	608.6	748.6		
							(12.9)	(-6.1)	(26.7)	(34.1)	(23.0)	17.2	7.5
Chinese Taipei	5.3	5.8	6.8	7.6	7.7	8.0	8.0	8.2	8.7	9.0	9.3		
		(9.9)	(16.8)	(11.6)	(2.0)	(2.8)	(0.1)	(2.7)	(6.5)	(3.7)	(3.4)	4.0	2.6
Vietnam	239.9	317.8	443.0	597.7	734.4	1,100.1	1,403.8	2,040.0	2,690.0	3,063.9	3,404.9		
		(32.4)	(39.4)	(34.9)	(22.9)	(49.8)	(27.6)	(45.3)	(31.9)	(13.9)	(11.1)	29.0	16.0

Notes: Cambodia (Consumer loans; in million US dollars); India (Non-food credit; in trillion rupees); Indonesia (Consumption loans; in trillion rupiah); Korea (Credit to households; in trillion won); Malaysia (Household sector loans; in billion ringgit); Mongolia (Household debt; in billion tugrik); Myanmar (Consumer loans; in trillion kyat); Nepal (Consumer loans; in billion rupees); Papua New Guinea (Household debt; in million kinas); Philippines (Household consumption loans; in billion pesos); Sri Lanka (Consumer credit; in million rupees); Chinese Taipei (Consumption loans; in New Taiwan dollars); Vietnam (Net domestic credit; in million dongs).

Sources: Team Project Papers, IMF, CEIC, Author's Calculations.

3.2 Factors Driving These Trends

Since the last decade, the SEACEN economies have experienced a period of high economic growth with relatively stable inflation and low interest rates. These developments were partly borne out of structural changes that occurred in these economies following the 1997 Asian financial crisis. The crisis exposed the macroeconomic weaknesses of the SEACEN economies (e.g., Indonesia, Korea, Thailand and the Philippines) and the vulnerabilities of their financial sectors. To address these, the SEACEN economies embarked on the implementation of structural reforms that strengthened their fundamentals and increased the resiliency of their financial systems.

High economic growth, stable inflation, low interest rates and demographic changes (e.g., slower population growth, expanding middle class sector and increased urbanisation) are the commonly cited factors driving increased demand for household credit in the SEACEN economies. Anticipations of higher real estate prices have likewise boosted the demand for mortgage lending for speculative housing purchases. Meanwhile, the financial sector developments and liberalisation provided households with easier access to credit and a wider choice of borrowing schemes. Some economies implemented programmes that helped increase lending to households. The succeeding discussion looks at these factors in more detail.

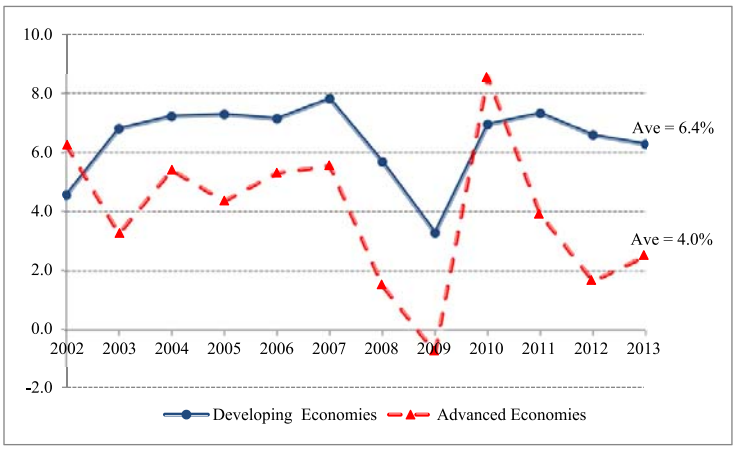
3.2.1 High Economic Growth and Rising per Capita Income

The Asian economies have been growing at an impressive rate since the 1990s. The World Bank (1993) described the strong growth in the region as a "miracle." Several studies that focused on this phenomenon pointed to the role of investment, favourable geography and structural characteristics, demographic dividend and institutional and economic policies as the determinants of growth (Lee and Hong, 2010; Sachs, Radelet and Lee, 2001). The adoption of policies that increased the degree of openness of these economies was also highlighted as an important factor in sustaining growth in the region.

In 1997, however, the Asian financial crisis led to a marked slowdown of economies in the heavily affected East and Southeast Asian regions. With the implementation of system-wide reforms, these countries regained their macroeconomic footing and managed to achieve strong fundamentals and sound financial systems. By the early 2000s, Asia showed signs of an even stronger growth momentum buoyed by robust demand for its exports and the shift in the global supply chain that transformed China and Southeast Asia into major regional

manufacturing hubs. Between 2002 and 2013, the average growth rate in the developing SEACEN economies included in this study (i.e., excluding Korea and Chinese Taipei) was at 6.4%. The advanced economies, Korea and Chinese Taipei, averaged at 4.0% in the same period.

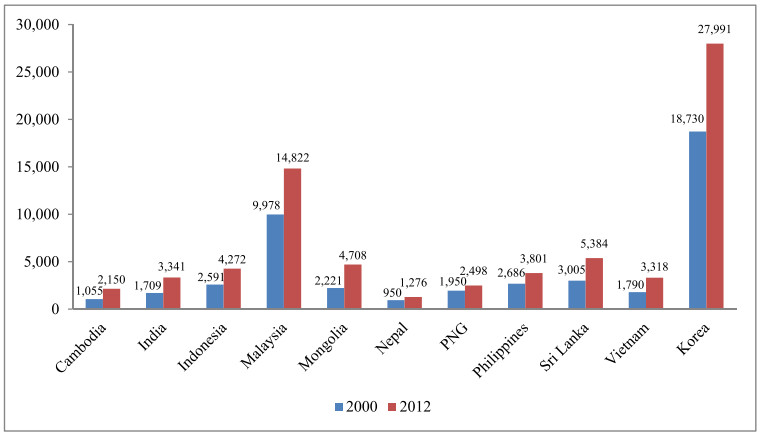
Figure 2
Real GDP Growth
(Year-on-year percent change)



Source: IMF.

With managed population growth, the sustained economic expansion experienced by these economies translated into rising household incomes and to better standards of living. Figure 3 shows the per capita income in the 13 SEACEN economies in 2000 and 2012. Countries like Cambodia, India, Mongolia, Sri Lanka and Vietnam experienced a doubling of their per capita income during this period while the other SEACEN economies saw their per capita income rise by 30 – 60%. Higher standards of living across the SEACEN economies are commonly associated with steady incomes, decent housing, good health care, educational opportunities as well as ownership of properties, cars and other durable goods. Households' higher demand for these consumption goods are often financed through mortgage loans and consumer credit. This contributed to the rapid rise in credit among households in the SEACEN economies.

Figure 3
GDP per capita
(Constant 2005 international dollar)



Source: World Bank.

3.2.2 Low Inflation Rate

The economic growth experienced by the SEACEN economies did not result in higher inflation. Instead, for many years, inflation in the region remained at relatively stable levels. Between 2002 and 2013, the inflation rate in the 11 SEACEN economies included in this research project (i.e., except Korea and Chinese Taipei) averaged at 7.7%. Korea and Chinese Taipei registered a lower average inflation in the same period at 2.1% (Table 2). Stable inflation in the SEACEN economies is attributed to rising productivity, increased globalisation, and better monetary policy. Higher productivity was achieved on the back of the significant advances made in the area of information technology. Meanwhile, globalisation resulted in strong international competition that constrains businesses from increasing prices when demand rises (Iakova, 2007). Cecchetti, Flores-Lagunes and Krause (2004), examining a sample of 23 countries around the world, concluded that the declines in the level and volatility of inflation are largely associated with better monetary policy. Most of the SEACEN economies have price stability as one of their policy objectives. Moreover, a number of the SEACEN member central banks (e.g., Bangko Sentral ng Pilipinas, Bank of Korea, Bank Indonesia) have inflation targeting as their framework for monetary policy. Inflation targeting helps anchor inflation expectations which can lead to lower inflation volatility.

Table 2
Inflation Rate
(in percent)

	2002-2005	2006-2009	2010-2013	Average (2002 – 2013)
Cambodia	2.8	9.5	3.8	5.4
India	4.0	8.6	10.0	7.6
Indonesia	8.8	8.6	5.5	7.6
Korea	3.2	3.1	2.6	3.0
Malaysia	1.8	2.9	2.2	2.3
Mongolia	6.6	11.5	10.7	9.6
Myanmar	24.4	17.7	4.9	15.7
Nepal	4.0	8.4	9.3	7.2
Papua New Guinea	7.6	5.3	5.5	6.1
Philippines	4.1	5.2	3.6	4.3
Sri Lanka	9.7	12.9	7.0	9.8
Chinese Taipei	0.9	1.3	1.4	1.2
Vietnam	5.9	11.4	11.5	9.6

Source: IMF.

3.2.3 Decline in Interest Rates

Since the early 2000s, low interest rates have prevailed in the SEACEN economies. Developments in the global and domestic markets both contributed in keeping interest rates in these economies at relatively low levels. Low interest rates in the SEACEN economies are part of the declining trend in interest rates worldwide. Following the 2009 global financial crisis, the real interest rates in the advanced economies fell within the negative territory. Changes in global patterns in savings and investments have been highlighted as important factors in explaining the prevalence of low interest rates across regions. The IMF (2014) cited three factors as accounting for most of the decline. First, the marked increase in savings rate among the emerging market economies on the back of sustained increase in their incomes. Second, there was higher demand for safe assets due largely to the rapid reserve accumulation in some emerging market economies and increase in the riskiness of equity relative to bonds. Third, investment rates in the advanced economies have significantly and persistently declined since the global financial crisis.

With interest rates in the advanced economies hovering at the zero lower bound, capital inflows surged in the emerging economies. Massive capital inflows are a source of concern for economies given their potential adverse effects on markets (e.g., currency appreciation, excessive liquidity). The SEACEN

economies, therefore, became cautious over the conduct of their interest rate policies since higher interest rates can further attract capital flows. Given the weak inflationary pressures in their economies, the SEACEN central banks kept policy rates at low levels. Elekdag and Wu (2011) observed that the domestic monetary policy rates tend to be low at the start of a credit boom episode while the international rates (i.e., used as proxy for global liquidity) are relatively stable during this period (Gourinchas, Valdes and Landerretche, 2001; Tornell and Westermann, 2002). Low policy rates, in turn, brought down nominal lending rates. Table 3 presents the nominal and real lending rates in the SEACEN economies considered in this study for the period 2002 – 2013. The real lending rates are derived using the Fisher equation. Between 2002 and 2013, the nominal lending rates in most SEACEN economies trended downwards. With relatively stable inflation, the decline in nominal lending rates led to lower real rates - a reduction in the cost of borrowing for households. Debelle (2004), however, pointed out that lower interest rates does not only affect the cost of borrowing for households but also the level of borrowing. According to him, financial institutions generally set a limit on the amount of loan that a household can borrow. This is based on the level of disposable income that the household can use to service its loan. Given a household's income, the decline in nominal interest rates allows financial institutions to increase the maximum amount that it can lend to households (Stevens, 1997; Wadhani, 2002). This directly affects the level of credit extended to the households.

Team project researchers have observed that the low interest rate regime that prevailed in their economies encouraged the accumulation of credit by households. In India, for example, empirical validation showed that the lending rate is the principal driver for the rise in housing loans. The removal of financial repression through the lowering of lending rates released pent-up demand for housing in India. Using data from six SEACEN economies (i.e., Indonesia, Korea, Malaysia, the Philippines, Thailand and Chinese Taipei) for the period 2003 to 2008, Nakornthab (2010) estimated that a 100 basis point reduction in the real and nominal lending rates raise the ratio of household debt to GDP by about 3 percentage points.

Table 3
Nominal and Real Lending Rates
(in percent)

	2002-2005		2006-2009		2010-2013		Average (2002-2013)	
	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real
Cambodia	17.4	13.1	16.1	7.1	14.2	10.6	15.9	10.3
India	11.3	6.6	12.4	2.9	10.3	0.2	11.3	3.2
Indonesia	16.0	6.9	14.5	7.9	12.3	6.2	14.3	7.0
Korea	6.1	3.1	6.3	3.1	5.3	3.1	5.9	3.1
Malaysia	6.2	3.9	6.0	3.6	4.8	2.6	5.7	3.4
Mongolia	32.4	24.9	22.8	9.9	18.3	7.8	24.5	14.2
Myanmar	15.0	-1.4	16.8	3.6	14.8	10.6	15.5	4.3
Nepal	7.7	2.4	8.0	-0.8	8.0	-1.3	7.9	0.3
Papua New Guinea	12.4	7.7	9.9	3.8	10.5	5.2	10.7	5.6
Philippines	9.7	4.9	8.9	4.1	6.4	3.1	8.3	4.0
Sri Lanka	10.9	1.2	16.1	4.1	11.0	3.8	12.8	3.0
Chinese Taipei	4.6	3.5	3.8	2.5	2.8	1.4	3.7	2.5
Vietnam	9.8	3.0	12.1	0.2	14.5	2.3	11.9	1.8

Note: Real lending rate = Nominal lending rate – expected inflation (i.e., inflation in the next period) .
Source: IMF; Author's Calculations.

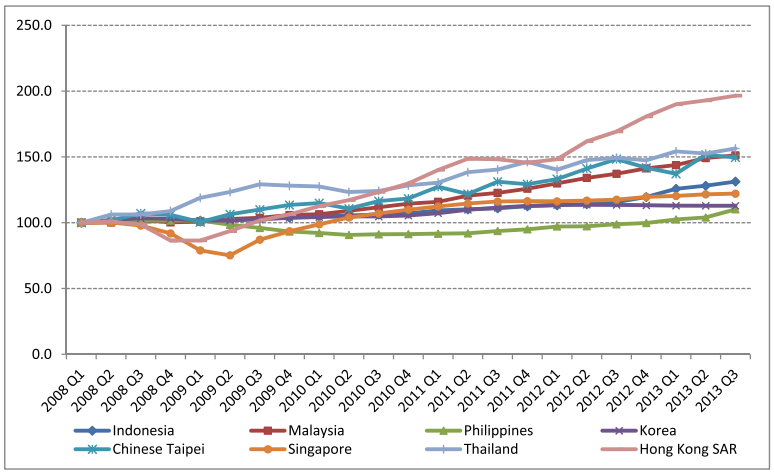
3.2.4 Anticipations of Increasing House Prices

The strong economic fundamentals, low interest rate regimes and high rates of urbanisation in the SEACEN economies have helped push housing demand which, in turn, have led to rising house prices. Gerlach (2012) observes that since real assets are typically used as collateral for bank lending, rising property prices are often associated with rapid credit expansion. Anticipations that the increasing trend in house prices will continue have led to speculative purchases of housing properties which further boost prices. In Indonesia, for example, some households take out multiple mortgage loans to invest in properties.

Figure 4 shows the trend in house prices in some selected SEACEN economies. It is based on the property price data series that the BIS constructed. Between 2008 and 2013, Hong Kong SAR experienced the highest average growth rate of house prices at 15.6%. Market analysts observe that real estate in Hong Kong SAR ranks as one of the most expensive in the world. House prices in Thailand, Malaysia, Chinese Taipei and Singapore have also been growing at robust rates, averaging at 8.4%, 8.2%, 7.4% and 5.4%, respectively. Meanwhile, house prices in Indonesia (4.9%), Korea (2.1%) and the Philippines (0.8%) have been growing at relatively lower rates. It is worth noting that the period considered here covers the meltdown of the US subprime mortgage market

in 2008 which triggered a global financial crisis. The recent global crisis underscored the importance of carefully monitoring the housing and property sectors. Developments in these sectors often have significant implications for the financial system. Cognizant of the possibilities, the authorities in the SEACEN economies have enacted measures to cool down their housing and property markets. In Figure 4, some economies (e.g., Indonesia, Korea and the Philippines) exhibited relatively stable growth rates during the 2009 to 2011 period. Growth rates picked up towards the end of 2012 and 2013.

Figure 4
House Prices in Selected SEACEN Countries
(Index, 2008 = 100)



Note: Hong Kong SAR (Hong Kong Census and Statistics Department); Indonesia (Bank Indonesia House Price Index); Korea (Bank of Korea House Price Index); Malaysia (NAPIC House Price Index); Philippines (Colliers International Philippines); Singapore (Urban Redevelopment Authority); Chinese Taipei (Sinyi Realty Inc.); Thailand (Bank of Thailand House Price Index)
Sources: BIS, Author's Calculations.

3.2.5 Demographic Factors: Rise of the Middle Class and Urbanisation

Economists have pointed out that the emerging economies in Asia are now entering the growth phase referred to as the "sweet spot" – the stage in economic development when people start moving from poverty to the middle class in their millions. The expansion of the middle class in the Asian countries is an important development that has wide-ranging implications for growth in the region.

Strong demand for Asia's exports drove the region's economic expansion in the last decade. However, with a global slowdown, the Asian economies are faced with potentially sluggish exports. Thus, there is a need to tap into other potential factors of growth to sustain the economic expansion. Countries in Asia are now looking towards rebalancing the growth strategy from being exports and investment-fuelled to domestic demand-driven. Under this approach, the rise in the number of middle class households in Asia is expected to lead to higher consumption demand and, in turn, provide the needed support in sustaining growth in the region.

Many studies have highlighted the positive contribution of the middle class to economic growth. Bhalla (2007) estimated that a country's growth rate rises by half a percentage point for every ten percentage point increase in the size of its middle class. Thus, the larger the middle class in a country, the faster will be its growth. The importance of the middle class to economic growth relates to their purchasing power and their propensity to consume. Kharas (2010) noted the impressive growth potential in the purchasing power of the middle class. Global spending by the middle class is estimated to increase to US$56 trillion in 2030 from US$21 trillion in 2009 – with over 80% of the growth in demand expected to come from Asia (Table 4). In 2000, Asia (excluding Japan) accounted for only 10% of the global middle class spending. This could reach to 40% in 2040 and continue to rise to almost 60% in the long run. China and India account for the bulk of this projected increase in demand. In 2009, these countries comprised a little over 5% of global middle class spending; in 20 years, they are projected to account for 41% of global middle class spending (Morgan Stanley Smith Barney, 2011).

Table 4
Spending by the Global Middle Class, 2009 to 2030
Total (in millions of 2005 PPP dollars)/share (in percent)

	2009		2020		2030	
	Total	Share	Total	Share	Total	Share
North America	5,602	26	5,863	17	5,837	10
Europe	8,138	38	10,301	29	11,337	20
Central and South America	1,534	7	2,315	7	3,117	6
Asia Pacific	4,952	23	14,798	42	32,596	59
Sub-Saharan Africa	256	1	448	1	827	1
Middle East and North Africa	796	4	1,321	4	1,966	4
World	21,278	100	35,045	100	55,680	100

Source: Kharas (2010).

In many SEACEN economies, the rising number of middle income households resulted in increased demand for housing, cars, consumer goods (e.g., electronic gadgets, luxury and designer goods) as well as health care and educational services. This increased demand has, in turn, contributed to rising mortgage and consumer loans across these economies. The middle class have relatively stable sources of income which enable them to access credit to finance their consumption needs.

The rise in the number of middle class in Asia augurs well for sustaining economic growth not only in the region, but globally as well. Kharas (2010) concludes that with the expected slowdown in demand from the mature markets like the US and Europe, the rapidly expanding middle class in Asia can provide the impetus for demand growth needed by the global economy.

A closely linked development to the rise in middle income households is the rapid urbanisation seen across Asian cities. The UN Habitat (2011) stated that no country has ever achieved sustained economic growth or rapid social development without urbanisation. The unprecedented rate of urbanisation in Asia has been identified as an important factor in the rising demand for housing. The ADB (2008) estimated that in the next 20 years another 1.1 billion people will live in Asian cities. By 2030, more than 55% of the population in Asia will be urban. Moreover, existing cities are anticipated to merge together to create megacities. Such developments are expected to create demand pressure on housing and other vital social services.

3.2.6 Financial Sector Developments and Liberalisation

Financial liberalisation in many SEACEN economies began in the 1990s. It involved the lifting of interest rate restrictions, phasing out of directed credit, greater participation of foreign banks as well as the liberalisation of capital accounts. Cross-border financial transactions and the entry of foreign banks facilitated the transfer of technology and know-how on consumer lending in economies.[5] Financial innovations and technology contribute to the growth in household credit by enabling lenders to reach more consumers, better gauge

5. It has been observed that the entry of foreign banks in an economy provides greater stability and efficiency and improves regulation and governance (IMF, 2006). Studies have shown that, in developing countries, increasing the number of foreign banks leads to lower overhead expenses of domestic banks (Claessens, Demirguc-Kunt and Huizinga, 2001). Moreover, foreign banks tend to maintain higher loan growth rates than domestic banks even during times of adverse economic conditions (De Haas and Lelyveld, 2002 and 2003; Goldberg, Dages and Kinney, 2000).

market and lending risks, price loans more accurately and reduce lending costs (IMF, 2006).[6] The deepening of financial markets in these economies allowed households to finance their current consumption with future income. This, in turn, resulted in the rapid growth of mortgage finance and other consumer loans. With weakening demand for corporate loans, financial institutions in the SEACEN economies turned to households to diversify their lending portfolios. The growing number of middle class households in these economies offers lending institutions with profit opportunities in terms of higher investment and borrowing needs. The intense competition among banks led to lower intermediation costs and to the introduction of new financial products and arrangements that facilitated the access of households to housing and other consumer loans. Banks have also partnered with housing developers in providing mortgage loans to households.

Empirical work has established the link between financial liberalisation and rapid credit growth. The IMF (2006) examined episodes of rapid credit growth in 28 emerging market economies (e.g., India, Indonesia, Malaysia, Philippines, Singapore and Thailand) during the period 1970 to 2002. Estimates show that periods of rapid credit growth were preceded by financial liberalisation about one-fifth of the time. Meanwhile, strong capital inflows triggered episodes of rapid credit growth by about one-third of the time. Financial liberalisation and capital inflows played a larger role in credits booms. Robust capital inflows preceded credit booms more than half of the time and financial liberalisation by about one-sixth of the time (Table 5).

6. Financial innovations are said to have paved the way for the unlocking of the purchasing power of the middle class in wealthy countries (Kharas, 2010).

Table 5
Credit Growth, Capital Inflows and Financial Liberalisation
(Frequency distribution, percent)

	Capital inflows[1]	Financial liberalisation[2]	Capital inflows and financial liberalisation	Neither capital inflows nor financial liberalisation
Credit booms				
1970 – 2002	55.6	16.7	11.1	16.7
1970 – 1979	11.1	5.6	-	5.6
1980 – 1989	16.7	11.1	5.6	5.6
1990 – 2002	27.8	-	5.6	5.6
Episodes of rapid credit growth				
1970 – 2002	30.6	22.2	5.6	41.7
1970 – 1979	5.6	11.1	-	27.8
1980 – 1989	11.1	-	2.8	5.6
1990 - 2002	13.9	11.1	2.8	8.3

Source: IMF (2006); Abiad and Mody (2003).

1 The annual net capital flows to the private sector rank in their top quartile in the emerging market sample.

2 The three-year change in the financial liberalisation index in Abiad and Mody (2003) ranks in their top quartile in the emerging market sample.

3.2.7 Government Programmes

The provision of decent and affordable housing to families is an overriding concern of national governments. Thus, governments initiate programmes that are targeted towards helping households, particularly those in the lower-income bracket, secure their own housing units. These programmes often come in the form of subsidised credit, tax concessions or financial assistance to families. Government programmes such as these can boost the demand for housing and mortgage loans. Mongolia provides a case in point. Beginning in the fourth quarter of 2012, Mongolia implemented a housing finance programme that saw mortgage rates being cut from an average rate of 16.6% to an average rate of 7 – 9%. Previous loans were also re-priced to reflect the new mortgage rates. Mortgage loans were growing at a monthly rate of 8.8% in mid-2011 but declined to 2.3% by the end of 2012. With the implementation of the interest rate cut, average growth of mortgage loans substantially rose to 23.3% by July 2013. The mortgage programme encouraged new credit and allowed previous borrowers an opportunity to switch to lower rate loans.

4. Implications of Rising Mortgage Finance and Consumer Credit on Financial Stability in SEACEN Economies

The discussion in the previous section highlighted the rising trend in mortgage finance and consumer credit in the SEACEN economies. Several factors have been identified as driving these trends. While the increase in household credit can lead to higher household utility as well as economic gains for financial institutions, there is growing concern that debt accumulation of households in the SEACEN economies is occurring at a very rapid pace and that they could be approaching unmanageable levels.

Debelle (2004) notes that regardless of whether households have over-borrowed, a larger stock of household debt has significant macroeconomic implications. Higher debt makes households more sensitive to changes in income, interest rates, labour market conditions and house prices. This could be a concern for the SEACEN economies, particularly in the face of the current developments in the US. The Federal Reserve has gradually begun to taper its quantitative easing and this may signal the end of the low interest rate regime experienced by the emerging economies during the past years. Higher interest rates can affect households in at least two important channels. One, it can cause an increase in the payment of households for existing debts, specifically for mortgage loans. Consumer credit which are often short-term loans are generally extended at fixed rates while longer-term mortgage loans are extended at both fixed and variables rates.[7] Second, higher interest rates have an impact on house prices. An increase in interest rates makes borrowing for house purchases or construction more costly. Demand for housing may therefore decrease which can cause a decline in house prices. Housing and real estate properties constitute a large portion of a household's asset. With decreasing house prices, households' wealth perception is affected which can potentially cause them to cut back on their consumption. Moreover, since properties are commonly used as collateral for bank credit, the declining house prices decreases the collateral values of these assets and reduces banks' willingness and ability to lend to firms and households (Gerlach, 2012). Reduced household consumption and bank lending tightening adversely affects aggregate demand. Higher interest rates triggered the collapse of the subprime mortgage market in the US in 2007. Overleveraged households started to default on their mortgage payments. With massive defaults and plummeting house and property prices, banks' balance sheets deteriorated. The result is a severe financial crisis.

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7. Most housing loans in the SEACEN economies are fixed in the initial period, usually, for one to five years and then they are re-priced at variables rates.

Periods of excessive credit growth has often been linked with episodes of financial and macroeconomic instability. Historically, the rapid credit growth in Asia have been characterised by a higher incidence of crises (i.e., banking, currency and debt crises) relative to all the other emerging economies (Elekdag and Wu, 2011).

This section of the integrative report assesses the implications of rising mortgage finance and consumer credit on the stability of the financial systems in the SEACEN economies. It addresses the question of whether credit growth in the SEACEN economies is approaching unmanageable levels such that it can cause financial stress and adversely affect economic growth. The excessive accumulation of mortgage loans and consumer credit in the SEACEN economies puts households at risk of becoming overleveraged and banks exposed to the possibility of loan defaults. These issues are also looked into in this section. The section likewise provides a summary of the assessments and findings of the 13 project team papers included in this research project on the implications of the recent trends in mortgage finance and consumer credit on financial stability in their respective economies.

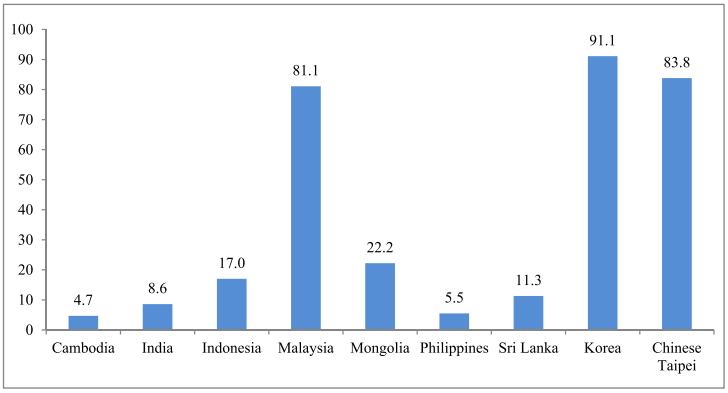
4.1 Decomposing the Rise in Mortgage Loan and Consumer Credit in SEACEN Economies

Empirical studies have tried to establish thresholds and metrics to assess the implications of household debt on financial stability and on the general economy. Cecchetti, Mohanty and Zampolli (2011) used data from 18 OECD countries for the period 1980 – 2010 to estimate the threshold at which debt turns from a welfare-enhancing, growth-boosting activity into an economic risk. For household debt, they estimated a threshold of 85%. This means that if household debt as a percent of GDP exceeds 85%, it becomes a drag on the growth potential of the economy. The authors, however, cautioned that the threshold they derived for household debt may be imprecisely estimated given the limitations of the data available to them.

Figure 5 presents household debt as a percent of GDP for 2012 in the selected SEACEN economies. Of these economies, Korea has the highest household debt to GDP ratio at 91.1%. This figure is higher than that of the other advanced economies like the US (81.9%), Germany (58.7%), Spain (86.0%), Italy (59.4%) and France (55.0%) for the same year. Based on the findings of the project team report for Korea, the household debt ratio of the country is nearing the consumption-hampering threshold. This has serious macroeconomic implications for Korea. The other country with household debt to GDP ratio that

is near the threshold is Malaysia at 81.1 %. However, it should be mentioned that by end-2013, Malaysia's household debt to GDP ratio increased to 86.8%. Similar to Korea, the large stock of household debt in Malaysia has been a source of concern for the economy. Policy measures and initiatives have been enacted in Malaysia to curb the accumulation of household debt, including the introduction of maximum loan-to-value (LTV) ratios on mortgage loans.

Figure 5
Household Debt to GDP, 2012
(in percent)



Sources: CEIC, FRED, Bloomberg, Standard and Poor's.

While the household debt to GDP ratio of most SEACEN economies are still below the estimated consumption-hampering threshold, concerns have been raised that households in the SEACEN economies are accumulating debt at a very fast rate. An insightful exercise that can be undertaken to determine whether the increase in household credit (i.e., mortgage finance and consumer credit) in the SEACEN economies have proceeded at an unusually rapid rate is to look at its long-run trend and cyclical movements. This is a methodology that is commonly employed by empirical studies on credit or lending booms. Credit booms are episodes when real credit to the private sector, of which household credit constitutes a share, expands considerably faster than what is normally observed in an economy. Periods of credit booms have often been associated with banking crises.

In their paper, Elekdag and Wu (2011) decomposed real credit (i.e., real private non-financial credit) into its trend and cyclical components using the detrending method developed by Hodrick and Prescott (1997) (i.e., the HP filter) to identify the occurrence of credit booms. These authors looked for periods

when credit growth deviates substantially from the usual credit cycle of an economy. Specifically, these are episodes when the cyclical component of real credit is larger than 1.55 times its standard deviation.[8] The authors derived thresholds to determine periods of rapid credit growth. To the trend, 1.55 times the standard deviation of the cycle is added to derive the threshold. Meanwhile, for the cyclical component, the peak threshold is equal to 1.55 times its standard deviation. Periods when credit grew beyond the peak threshold are classified as episodes of credit booms. A lower threshold was estimated at one standard deviation of the cyclical component. This threshold is used to determine the start and end dates of the credit booms. It should be noted that the resulting thresholds are country specific which assures that periods of rapid growth are large deviations relative to the economy's credit cycle.[9]

Following the methodology of Elekdag and Wu (2011), real household credit in the 11 selected SEACEN economies is decomposed into their trend and cyclical components. Quarterly data covering the period 2002 – 2013 is used.[10] However, countries like Cambodia, Mongolia and Sri Lanka have shorter data series. The penalty parameter (i.e., lambda) is set to 1600, which is typical for quarterly data. Figure 6 provides a summary of the trend-cycle decomposition of real household credit in the selected 11 SEACEN economies. The left panel shows the log of real household credit and its trend while the right panel presents deviation of real household credit from trend – or the cyclical component.

There are important observations that emerge from this exercise. One, in most of these economies, the increase in household credit (i.e., log of real household credit) is in keeping with their long-run trends. Second, there were periods when the SEACEN economies experienced large cyclical swings in their

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8. Elekdag and Wu (2011) used a pattern recognition algorithm to derive their threshold for the occurrence of a credit boom. The threshold they derived is lower than the one used by Mendoza and Terrones (2008) – that is, 1.75 time the standard deviation of the cyclical component.

9. To assess the sensitivity of results to the thresholds used, a value of 1.96 (similar to Elekdag and Wu) and a lower threshold value of 1.0 were also considered. The variations do not change the conclusions derived.

10 Real household credit data pertains to credit extended by commercial banks to households. Elekdag and Wu (2011) noted that using a narrow definition of credit (i.e., credit extended by the banking sector) against using a broader definition (i.e., including credit extended by non-depository financial institutions) affects the resulting analysis. According to these authors, the sole reliance on credit extended by banks does not give off any early warning that could help guide policymakers undertake corrective actions to foster financial stability. This is a data limitation that needs to be taken in consideration as it poses a challenge to the detection of credit booms.

real household credit. These are times when real household credit grew faster than the usual rate of growth in their credit cycle. The occurrence of these periods, their duration and magnitude differed across economies. This can be attributed to the differences in the credit cycles of these economies and in their fundamentals, including the structure and degree of development of their financial systems. Third, the episodes of rapid household credit growth in the SEACEN economies that took place in recent years did not result in the instability of their financial systems.

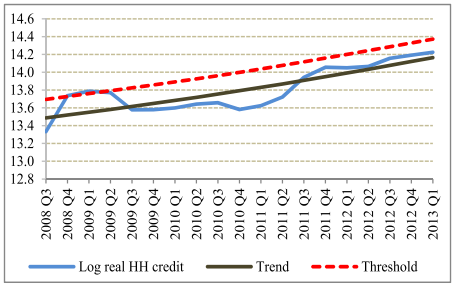
The last observation is consistent with the findings of many studies that examine the link between credit growth and financial instability. Credit growth and the occurrence of financial crises are found to be positively linked but the correlation is often statistically small and not always significant. Earlier studies like that of Demirguc-Kunt and Detragiache (2002) and Kaminsky and Reinhart (1999) observed that fast credit growth increases the probability of banking crises. Borio and Lowe (2002) also found that rapid credit growth accompanied by accelerated increase in asset prices is frequently associated with episodes of financial instability. Gourinchas, Valdes and Landerretche (2001), who focused on episodes of lending booms in Latin America, found that the probability of having a banking crisis after episodes of rapid credit growth depend critically on the magnitude of the boom. Moreover, they noted that most lending booms are not followed by financial crises. Their result is consistent with that of Barajas, Dell'Ariccia and Levchenko (2009) and Tornell and Westermann (2002).

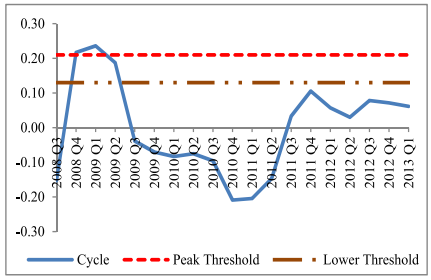
Some empirical studies analysed the link between financial sector developments and economic growth (Rajan and Zingales, 1998; Levine and Zervos, 1998). According to these studies, episodes of rapid credit growth are natural occurrences for countries experiencing financial deepening and economic development. Such lending phases may reflect permanent shifts rather than transitory expansions and they may not revert to their previous lower levels. Hence, even if rapid credit growth is considered an important determinant of banking and financial crises, it is possible that these periods subside with a subsequent permanent deepening of domestic financial markets and increased economic growth (Gourinchas, Valdes and Landerretche, 2001).

In the previous section of this report, financial sector developments and economic growth are two of the important factors underlying the rapid growth of household credit in the SEACEN economies. The rise in household credit in these economies could therefore reflect a permanent shift in the level of credit growth that is sustainable for these countries and not just a temporary credit boom.

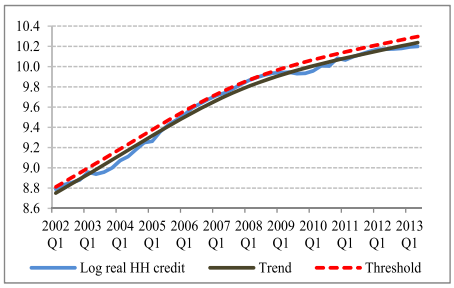
Figure 6
Real Household Credit in Selected SEACEN Economies: Trend and Cyclical Components

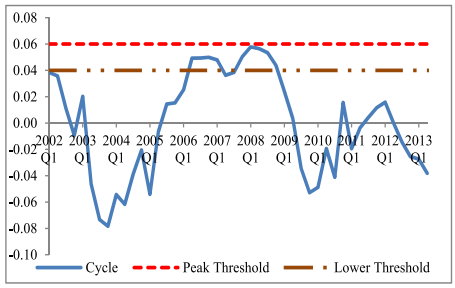
Cambodia



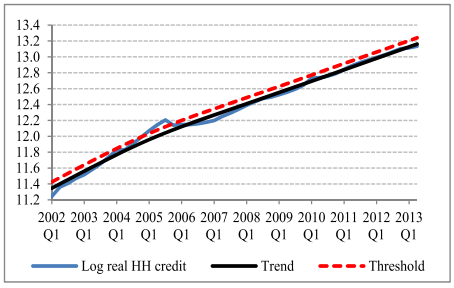


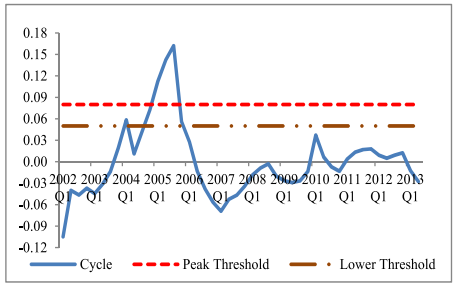
India



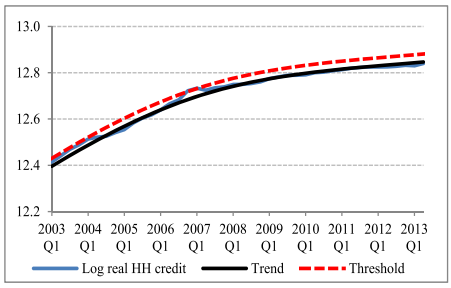


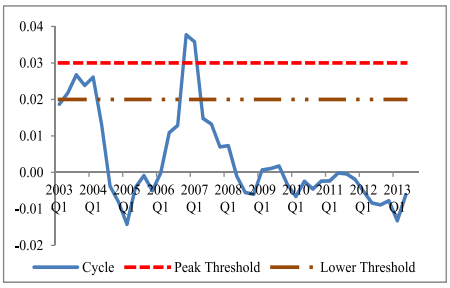
Indonesia



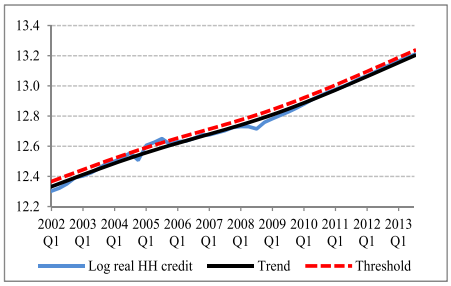


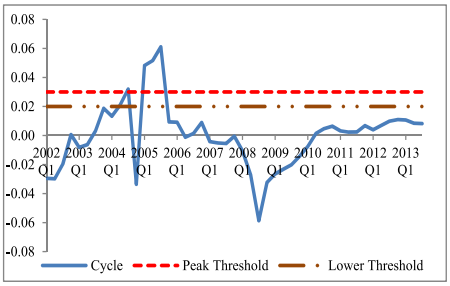
Korea



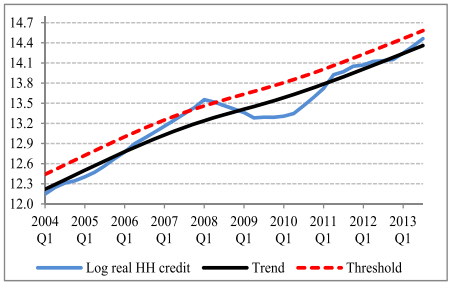


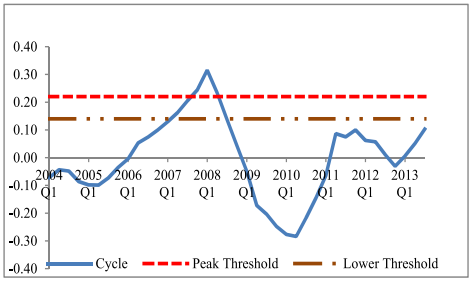
Malaysia



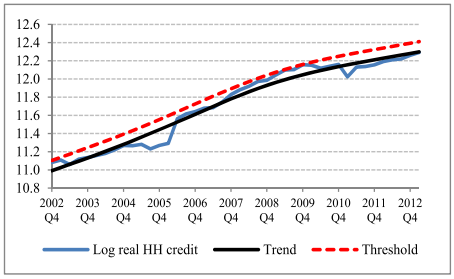


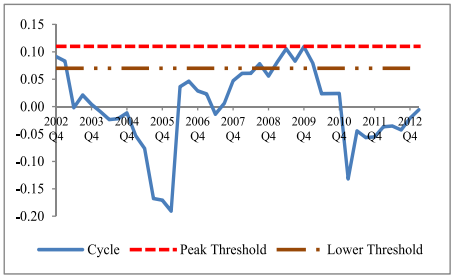
Mongolia



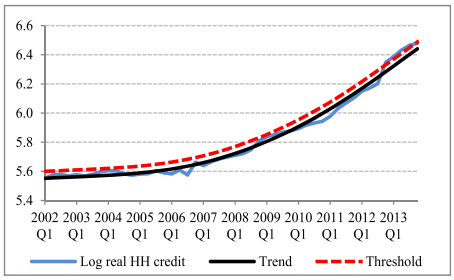


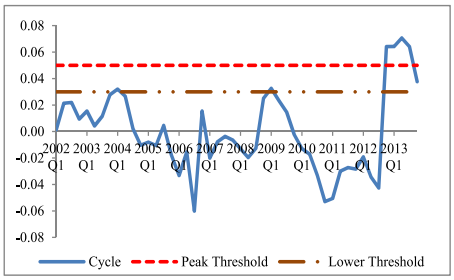
Nepal



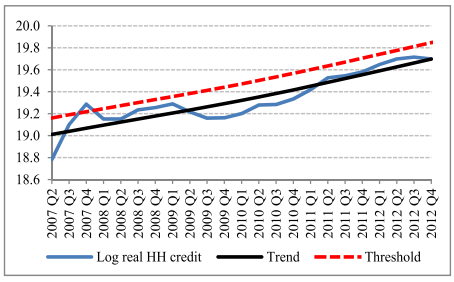


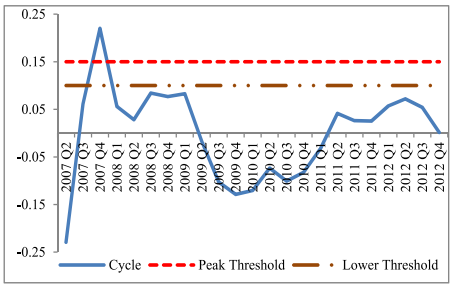
Philippines



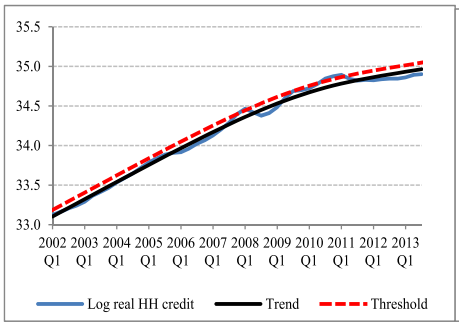


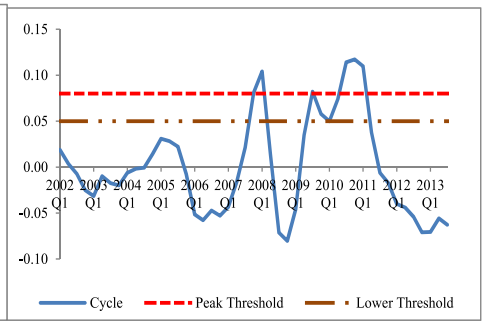
Sri Lanka



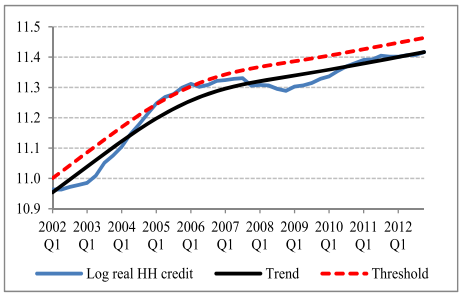


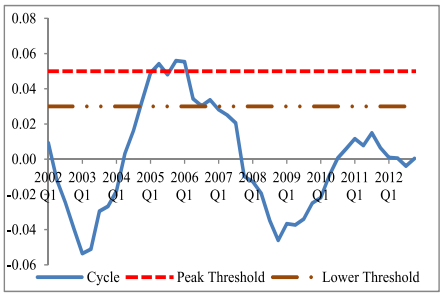
Vietnam





Chinese Taipei





4.2 Managing Household Leverage and Banking Sector Stability

While developments in the financial systems of the SEACEN economies are conducive to the expansion of household credit, there is a growing concern that the households in these economies are becoming over-leveraged. This issue is particularly important in the face of potential increases in interest rates following movements in the US market. The low interest rate regime experienced by the SEACEN economies for a number of years has lulled households into taking in more credit. Higher interest rates can push these households into an over-leveraged position.

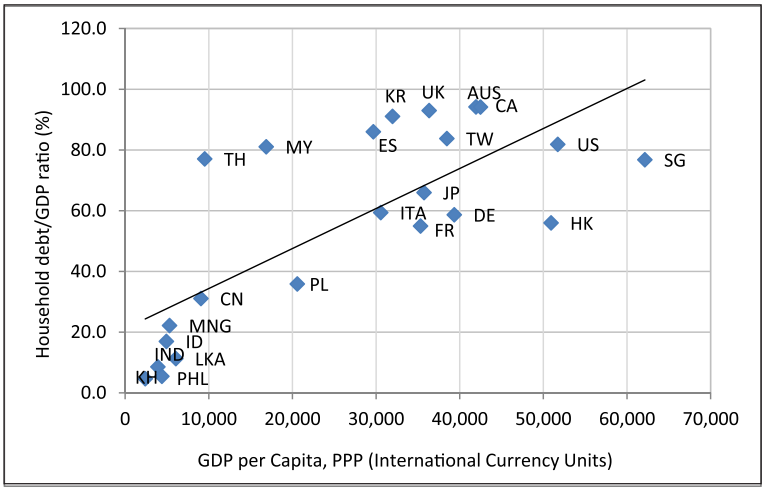
Income, interest rate or employment shocks can weaken the repayment capacity of households and erode their net worth. This, in turn, can translate into higher NPLs for the banking system. The rise in NPLs causes the deterioration of the balance sheet of the financial sector.

4.2.1 Household Leverage in SEACEN Economies

Figure 7 plots the household debt to GDP ratio against GDP per capita (in PPP terms) in selected economies. The figure shows differing pictures for the SEACEN economies. For economies like Cambodia, India, Indonesia, Mongolia, Philippines and Sri Lanka, the rise in household debt relative to GDP remains aligned with the growth in their GDP per capita. In essence, these economies can be considered as "appropriately leveraged" (Standard Chartered, 2011). For example, the estimated household leverage in Indonesia, India and Chinese Taipei in 2012 are 26%, 34% and 65%, respectively, while the debt service ratio (DSR) in these economies and in the Philippines, range between 2% to 7% (Standard Chartered, 2013). Based on the thresholds derived by Cecchetti, Mohanty and Zampolli (2011), the potential stress on consumption of such levels of household leverages and DSRs are quite low. It is therefore deemed that these economies still have room for further household loan expansion.

By contrast, household credit in Malaysia and Korea grew at a rate that markedly outpaced income growth. Household leverage in Malaysia is estimated at 177% in 2012 while for Korea it is at 135% (Standard Chartered, 2013). The high household leverage in these economies makes their banking systems vulnerable to increasing interest rates and declining property prices. Moreover, as has been shown in Figure 5, these are the countries whose household debts are at consumption-hampering levels. Nonetheless, the pace of increase in household credit in these economies has already slowed down in recent years. This could be attributed to the implementation of policy measures and initiatives aimed at reining credit growth, particularly in the housing and property sectors.

Figure 7
Household Debt as a Percent of GDP vs. GDP per Capita in PPP Terms (Percent, International Dollars) – 2012



Sources: IMF, World Bank, OECD, CEIC, FRED, Bloomberg, Standard and Poor's.

4.2.2 Banking Sector Stability

Evidence from the advanced economies suggests that household loans have lower default rates compared to larger corporate loans. Moreover, relative to losses from corporate loans, those incurred from household loans tend to be smaller and predictable (IMF, 2006). Thus, the risk that household loans pose to financial stability is less compared to corporate loans. While the share of household loans to commercial banks' total loans has been generally increasing across the SEACEN economies in the recent years, it remains within the low to moderate range (Table 6). Among the selected economies, Malaysia and Nepal have the highest shares of household loans to total bank loans at greater than 50%. Korea, Mongolia and Chinese Taipei have ratios that are more than 40%. The other SEACEN economies' share of household credit to total bank loans ranges from an average of 17% (i.e., Cambodia) to 29% (i.e., Indonesia).

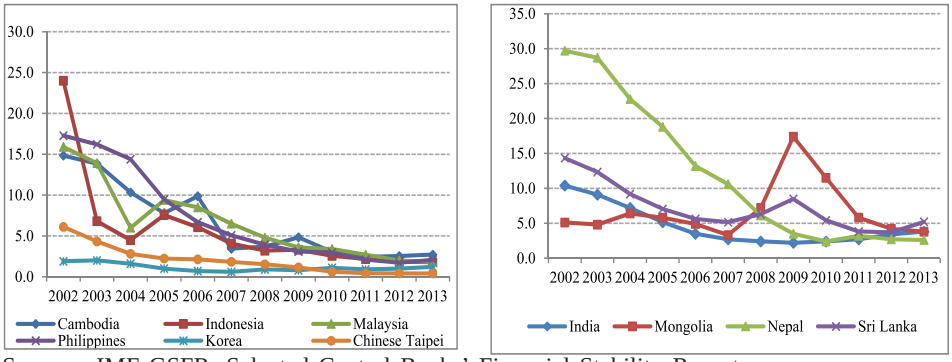
Table 6
Household Loans as Percent of Commercial Banks' Total Loans

	2006	2007	2008	2009	2010	2011	2012	2013[1]
Cambodia	10.3	19.2	21.8	19.0	16.2	17.1	17.1	-
India	23.3	22.3	20.1	19.4	16.7	16.4	15.6	-
Indonesia	28.6	28.2	28.1	30.4	30.4	30.3	29.5	28.6
Korea	49.5	45.2	42.4	42.9	43.7	42.9	42.5	41.8
Malaysia	57.3	56.6	54.5	55.3	55.7	55.3	55.9	56.5
Mongolia	41.5	40.8	38.5	34.1	41.9	43.5	44.3	45.0
Nepal	58.0	57.9	61.3	59.9	60.4	58.9	58.6	58.5
Philippines	15.0	15.0	16.0	17.0	18.0	19.0	22.0	22.0
Sri Lanka	-	22.0	23.3	22.4	23.0	23.4	23.8	-
Chinese Taipei	46.9	46.6	45.5	46.4	46.7	46.1	46.4	-

1 Indonesia (as of August 2013); Malaysia (as of September 2013); Mongolia (as of September 2013); and Nepal (as of April 2013). Full-year figures for Korea and the Philippines.
Source: Central Bank Websites; Team Project Reports.

Figure 8 shows commercial banks' NPL ratios in the selected SEACEN economies between 2002 and 2013. The NPL ratios in these economies display declining trends which indicates declining credit risk during this period. The low NPL ratios in the SEACEN economies can be attributed to the prudence that commercial banks exercise in their lending, particularly in the housing and property sectors of the economy.

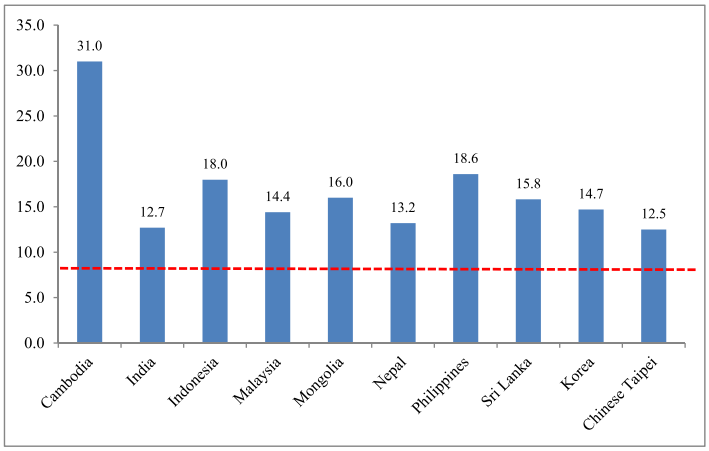
Figure 8
Non-performing Loan Ratios in Selected SEACEN Economies, 2002 – 2013



Source: IMF GSFR; Selected Central Banks' Financial Stability Reports.

With declining NPLs, the banking systems in the SEACEN economies have capital adequacy ratios that are higher than that required under Basel II (i.e., 8%).[11,12] The relatively high capital adequacy ratios of banks in the SEACEN economies imply that they are sufficiently capitalised to weather possible financial risks that may be brought about by increasing household credit. Some of the project team papers (e.g., Cambodia, Nepal, Sri Lanka) conducted stress tests to determine the potential impact of higher NPLs on their banking system. The results show that, given the level of bank capitalisation in these economies, it would take a high level of NPL for their banks to become problematic.

Figure 9
Capital Adequacy Ratios in Selected SEACEN Economies, 2013



Notes: Capital adequacy ratios for Mongolia and Chinese Taipei are as of end-2012; Cambodia and Malaysia (end-2013); India (Sept 2013); Indonesia (June 2013); Nepal (July 2013); Philippines (Sept 2013); Sri Lanka (Sept 2013); Korea (June 2013).

Sources: Selected Central Banks' Financial Stability Reports.

11. To ensure that banks are adequately capitalised and thereby protect financial systems and depositors, the BIS designed a framework for setting a minimum level of capital each bank should hold. This minimum level of capital would be determined with regard to the riskiness of the assets banks held. Each asset on the balance sheet of a bank was given a weighting between 0% and 100%, where 0% represented the safest assets such as government bonds and 100% the riskiest exposures such as corporate debt and unsecured personal loans. Loans secured on residential property were given a 50% risk weighting. Banks would be required to hold Tier 1 capital of at least 4% of risk weighted assets (RWA) and total capital of at least 8%.

12. While the BIS Basel framework requires banks to have a minimum CAR of 8%, many central banks set their own minimum CAR higher than 8%. For example, the Bangko Sentral ng Pilipinas set the minimum CAR at 10% while the National Bank of Cambodia, Reserve Bank of India, Bank Indonesia and Central Bank of Sri Lanka require banks to have minimum CAR of 15%, 9%, 8% and 10%, respectively.

4.3 Project Team Papers: Assessments and Findings

It is the guiding objective of this research project to assess the possible impact of rising mortgage finance and consumer credit on financial stability in the SEACEN economies. Towards this end, the team project researchers were tasked to look into the trends in household credit in their respective economies and to determine the potential implications of these developments on the stability of their financial systems.

Starting in 2011, Myanmar's new democratic government started to enact a series of reform measures that relaxed banking restrictions and allowed for the development of consumer credit. The country is yet to have a mortgage market but initiatives are also underway for its development. Access to financial services in Myanmar is still limited as indicated by the low outstanding loans to GDP ratio of 8.3% and deposits to GDP ratio of 12.6% in 2012 (IMF Country Report, 2013). However, with the reforms in the banking sector, consumer credit has been steadily increasing. Loans for motorcycles account for the biggest portion of consumer loans. Anecdotal evidence suggests that a large part of consumer loans in Myanmar is provided for by non-banking institutions like money lenders, friends/relatives, pawnshops and microfinance institutions. It is expected that as the banking sector in Myanmar develops, more households will access credit from these financial institutions. For now, consumer credit in Myanmar is still at a relatively low level to have serious implications for the country's banking system.

Of the SEACEN economies included in this study, Cambodia posted the highest CAGR for nominal and real household credit for the period 2002 – 2012. The country undertook banking reforms in 1998 – 2000 which paved the way for mortgage finance and consumer credit to significantly expand from a very low base. Housing loans constitute the largest share of household loans in Cambodia at 70%. A stress test was conducted to assess the vulnerability of banks in Cambodia to possible household defaults (i.e., increase in NPL). The results show that the current level of mortgage finance and consumer credit in Cambodia does not pose risks to the stability of the banking system. An increase of 1% in the NPL of household loans leads to a 0.08 percentage point decline in the CAR of the country's banking system. Looked at the other way around, it is estimated that the NPL ratio on household loans should be more than 180% to cause the CAR of banks to fall below the 15% minimum CAR required by the National Bank of Cambodia (NBC). There is minimal probability that the NPL of the banking system in Cambodia will be more than 180%.

Stress testing was likewise used in the team project reports of Papua New Guinea, Nepal, Sri Lanka and Indonesia to determine the potential risk that rising mortgage finance and consumer credit have on their respective financial sectors. Papua New Guinea's economy grew at an average growth rate of 8% between 2007 and 2013. The robust growth is attributed to the construction of a Liquefied Natural Gas (LNG) project and high international prices of the country's major export commodities (i.e., gold, copper, coffee and cocoa). The LNG project has resulted in higher demand for housing and expectations of increases in real estate prices in the country's major cities and towns. With rising prices of housing and real estate in the cities, middle-income households in Papua New Guinea locate to smaller suburbs where property prices are within their reach. Thus, the possibility of households in the country defaulting on their mortgage loans is deemed to be low. Moreover, the results of the stress test done on the financial system of Papua New Guinea, show that even with a 100% household default on their loans, the CAR of the country's banking system remains above 60%. This underscores the fact that banks in Papua New Guinea are adequately capitalised to withstand possible pressures from the household sector.

In Nepal, the rapid increase in household credit was fuelled by the high demand for housing and real estate loans. Anticipations of rising property prices pushed the prices of housing and real estate in Nepal at high levels. Developments in the real estate market are very important in Nepal given that almost 56% of total loan and advances of commercial banks in the country have fixed assets and real properties as collaterals (NRB Quarterly Economic Bulletin, 2013). Declining prices of these assets lead to lower collateral values for bank. In 2009, the real estate market in Nepal reached its saturation point with prices becoming flat. To avert a real estate crisis, the Nepal Rastra Bank (NRB) instituted directives to regulate investments in real estate and commercial housing. The results from the stress tests on commercial banks in Nepal show that the NRB directive has been effective in lessening the loan exposure of banks to the real estate sector and in lowering the risk that is posed by real estate loans on Nepal's banking system. The number of commercial banks that will be unable to meet the regulatory 15% CAR set by the NRB in cases of performing real estate loans turning into substandard/bad loans has decreased in the last 3 years.

Sri Lanka experienced an increasing trend in household credit on the back of favourable macroeconomic fundamentals. Household credit (i.e., housing, pawning and credit card loans) as a percentage of total banking credit averaged at 20 – 25% during the period 2008 – 2012. Bank credit is the major source of financing for the housing needs of households in Sri Lanka. Total housing loans in Sri Lanka amounted to Rs. 306 billion in 2012; almost 2.3 times its level

in 2007. Nonetheless, the NPL ratio of housing loans has declined from an average of 8 – 10% in 2008 – 2012 to 6% by the end of 2012. Compared to housing loans, pawning and gold loans (i.e., loans backed by gold as collateral) are relatively more risky for banks. These types of loans account for nearly 17% of the total loan portfolio of Sri Lanka's banking system. Some commercial banks are heavily exposed to pawning and gold loans and they do not hedge against these exposures. Also, they impose a relatively small haircut on their gold collateral that may not be in line with the volatility of gold prices (IMF, 2012). While these can be sources of risks for banks in Sri Lanka, the stress tests reveal that the overall banking sector is resilient to shocks from declines in gold prices. The banking sector can likewise withstand declining house values. It is only under very high levels of default rates (i.e., 50% and 100%) in household credit that a few banks will become vulnerable.

In Indonesia, consumer credit steadily increased from 21.6% in 2002 to 29.5% in 2012 boosted by the strong demand for housing and auto loans. Anticipations of higher property prices due to increasing demand have led some Indonesian households to take out multiple mortgage loans. Such speculative buying further pushed housing and real estate prices higher; making it difficult for first-time home seekers to get affordable housing. Meanwhile, loose auto requirements and payment scheme can encourage people to take credit beyond their funding capacity. However, based on the consumer survey of Bank Indonesia (BI), the debt-to-income ratio of households in the country is at 15%. This is relatively low compared to Indonesia's banking requirement of 30 – 40%. This implies that households in Indonesia remain prudent in managing their finances and they still have the financial capacity to increase their loans. Based on the stress test conducted on the banking system of Indonesia, an increase in the default rate on property credit of 10% will cause several banks to have NPLs higher than BI's threshold of 5% but no bank will have CAR that is lower than the minimum required by BI of 8%. The results of the stress tests support the claim of Sukada and Santoso (2009) that since Indonesian households have assets in excess of their liabilities and have relatively little exposure to financial assets, they do not pose a serious threat to the financial sector.

Some of the team project reports focused on the housing market in their economies and assessed the implications that rising mortgage finance have on their financial stability. In India, mortgage finance started to increase in early 2000s from a very low level. Mortgage loans as a percent of GDP in India increased from 2% in 2002 to 9% in 2012. Several factors contributed to the rise in demand for housing loans in India including economic growth, easing of lending rates, rapid urbanisation and expanding middle class population. Based

on the empirical findings of the project report on India, the lending rate was the key driver of the increase in housing loans in the country. Moreover, the analysis shows that there is low probability that the mortgage and personal loans in India can cause instability in the financial system. The reasons cited for this include: (i) the relatively low level of mortgage finance in India compared to many advanced and emerging economies; (ii) there is no evidence of house price bubbles; (iii) high household savings (i.e., 22%) which reflects strong household balance sheets; (iv) relatively stable housing demand; and (v) implementation of macroprudential measures and monetary policy actions against the build-up of risks from mortgage loan portfolios.

Starting in 2003, Mongolia experienced the rapid development of its mortgage market. The share of mortgage loans to total outstanding loans rose from 1.3% in 2002 to12.1% in 2012. The Bank of Mongolia (BOM) implemented a mortgage lending programme beginning in the last quarter of 2012. Under this programme, mortgage rates were cut to 8% (+1%) from the average rate of 16.6%. The rate cut was applied not only to new loans but also to previous mortgage loans. The mortgage lending programme resulted in a surge in the growth of mortgage loans from 2.3% as of end-2012 to 23.3% in July 2013. Also, the housing price index indicated that housing prices in Mongolia are 5 times higher in 2012 than in 2002. A key finding of the project paper for Mongolia is that housing prices in the country are diverging from their fundamental values. One of the factors that drove this divergence is the sharp reduction in lending rates implemented by BOM. This implies that the continued growth in the housing market of Mongolia is predicated on the ability of BOM to sustain the stimulus it provided through reduced lending rates. This is an issue that BOM needs to address.

The development of the mortgage market in Vietnam has been affected by some of its unique features. The country's Constitution and Land laws mandate that citizens can have access to lands only through allocation or lease that is granted by the government. Bank loans are therefore tied to the assigned property rights. Also, home buyers in Vietnam typically pay in cash since taking out mortgage loans is still a very uncommon practice. The maximum LTV ratio in Vietnam of 50% is below the 70 – 80% LTVs generally implemented in the developed and other emerging countries. In the project report for Vietnam, an SVAR model was employed to look into the effect of different shocks on income, house price, real estate credit, CPI and NPL ratio on the mortgage market of Vietnam. Positive shocks to income and housing price cause an increase in real estate credit while shocks to the CPI affect real estate credit with a lag. Similarly,

an increase in the NPL ratio on real estate leads to an overall deterioration of the loan portfolio of banks. Recommendations were made to develop the mortgage market in Vietnam while ensuring the soundness of the financial system.

The recent years saw household debt in the Philippines increase both in absolute terms and relative to the size of the economy. Between 1999 and March 2013, the outstanding household debt rose at an average rate of 16.3%; as a proportion of nominal GDP, it steadily increased from 2.9% in 1999 to 6.0% in March 2013. Several factors contributed to the increase in household credit in the Philippines including strong macroeconomic fundamentals, lower interest rates and financial sector deepening. The robust growth of housing and consumer credit in the Philippines has led to concerns over possible price bubbles. Using an approach that involves unit root and cointegration analysis, the formation of bubbles in housing and consumer credit was assessed. The results obtained showed that rising housing and consumer credit in the Philippines can be reasonably explained by fundamentals. Furthermore, a stable long-run relationship exists between prices and value of housing and consumer credit. It can thus be concluded that the rising housing and consumer loans observed in the Philippines in recent years do not pose any threat on financial stability.

During the last fifteen years, Chinese Taipei has faced several challenges concerning mortgage finance and consumer credit. The aggressive promotion of credit card use in the early 2000s ended in a crisis in 2005 that left banks with very high NPL ratios. Banks attitude towards consumer lending became more conservative following the credit card crisis. Average household debt to GDP ratio in Chinese Taipei for the period 1998-2012 averaged at 81.1%. Mortgage loans accounted for about 70% of total household debt. Empirical analysis on household credit in Chinese Taipei revealed that macroeconomic conditions such as real GDP and unemployment affect the NPL ratios (i.e., proxy for financial stability) of consumer credit and mortgage loans. Real interest rates affect both mortgage and consumer credit markets while real housing price has an impact on mortgage loans. The growing amount of mortgage loan and consumer credit in Chinese Taipei are seen to be within manageable levels and are not expected to cause unfavourable changes in the NPL ratios of banks or lead to financial instability.

In Malaysia, household debt and residential property prices have been observed to increase simultaneously. Household debt grew at an average rate of 12.3% since 2009 while the residential property price, measured as the Malaysian House Price Index (MNPI), increased at an average rate of 10.4%

since 2010. The current level of household debt in Malaysia is seen as not posing an immediate risk to the financial system. Households' financial asset is 2.3 times of household debt. The repayment capacity of Malaysia households remained strong given sustained income growth and low unemployment rate. However, two crises – the 1997 Asian financial crisis and the 2009 global financial crisis have underscored the dire consequences to financial stability of the unwinding of credit-driven booms in the property sector. Analysis of the link between household debt and residential property prices in Malaysia indicated that the rise in house prices did not moderate even with the decline in credit momentum between 2010 and 2012. The econometric exercise done to study the determinants of house prices yielded results that point to the weak explanatory power of credit disbursement. Other indicators, like costs and household wealth, were found to have a much stronger explanatory power over the growth in prices. While the increase in house prices in Malaysia appears to be not credit-driven, there is still the possibility that developments in household debt and property market can affect financial stability in Malaysia. Thus, careful monitoring of these two areas is warranted.

Household debt has been a major source of concern in Korea since the early 2000s. The substantial increase in household debt between 2001 and 2003 was in the form of credit card loans that was extended mostly to low income households with poor credit ratings. The credit card boom eventually ended in a crisis in 2003. Following a period of adjustment in 2003 – 2004, household debt in Korea resumed its rapid growth by averaging at an annual rate of 11% during 2005 – 2007. The rate of increase declined in the years after the 2009 global financial crisis (i.e., 2010 – 2012) to an annual rate of 8.1%. Household debt to GDP ratio in Korea rose from 74% in 2002 to 91% in 2012. Meanwhile, the ratio of household debt to disposable income increased from 131% in 2002 to 164% in 2012. Concerns have been raised on whether the current level of household debt in Korea can lead to a financial crisis and trigger an economic recession. Estimation results of the structural VAR analysis that explored the dynamic relationship between aggregate household debt and aggregate consumption revealed that these two variables are closely and positively correlated. Moreover, the counterfactual analyses using conditional forecasting techniques indicated that there could be a prolonged consumption slump linked to deleveraging scenarios in the household sector. Household panel data analysis showed that, on average, household debt ratio in Korea is near the consumption-hampering threshold. Results from these analyses suggest that prompt policy intervention needs to be undertaken to enhance the resiliency of the household sector and ensure sustained growth.

5. Policy Gaps and Key Areas for Improvement

The 1997 Asian financial crisis left valuable lessons for the SEACEN economies on the need to strike a balance between the positive and adverse effects of household accumulation of mortgage loans and consumer credit. Economies cannot be over cautious in extending credit to households because this can constrain households from achieving higher utility. Moreover, it hampers potential consumption and investments which is important for sustaining economic growth. Conversely, household credit has to be maintained within a reasonable level. Excessive debt makes households vulnerable to macroeconomic shocks and increases the risks to the stability of the financial system.

Most of the SEACEN economies adopted policies and measures, including some macro-prudential regulations, to ensure that households' debt exposure does not become excessive, particularly on the housing and property sectors. The team project reports included in this project outline the policy measures on mortgage finance and consumer credit that were implemented in their respective economies. According to the analysis and findings of the team project researchers, these policies have thus far helped in mitigating the risks that rising trends in mortgage finance and consumer credit pose to the stability of their financial systems. However, there are two crucial areas that need further policy review and improvement. These include: (1) enhancing household credit data and information; and (2) strengthening macroprudential regulations and supervision.

5.1 Enhancing Household Credit Data and Information

Nakornthab (2010), in an earlier SEACEN study on household debt, pointed out the importance of reliable, timely and comprehensive information on developments in household credit in identifying and assessing the potential risks and threats that it poses for financial stability. The establishment/strengthening of central credit information bureau and compilation of better household level (micro) data are seen as vital steps towards enhancing credit surveillance in the SEACEN economies.

In the early 2000s, the SEACEN economies, like Singapore, Malaysia, Thailand, and Korea, established new credit bureaus or strengthened their existing ones to ensure the effective reporting of credit risks. These developments were partly triggered by the rapid credit growth experienced in the region and the occurrence of credit card crises in Korea and Chinese Taipei. Credit bureaus collect pertinent information about borrowers, including debt history and payment information. The information is used by lenders to make informed loan decisions

which, in turn, lower the potential credit risk and losses. Credit information bureaus are beneficial to both borrowers and lenders. The knowledge that lenders have access to their credit histories can provide an incentive for borrowers to repay their loans to maintain good credit standing. Moreover, borrowers who have established good credit rating may be able to secure better terms for their loans. For lenders, the credit scores of borrowers that credit bureaus provide given them a standardised benchmark on which they can judge the borrowers' creditworthiness (Federal Reserve Bank of San Francisco, 2011). With the exception of Myanmar and the Philippines, the SEACEN economies included in this research project have existing credit information bureaus. The Philippines is expected to have its national credit information bureau by December 2014. Myanmar has already drafted the framework for a central credit bureau and it likewise expects its establishment in 2014.

Credit information bureaus collect substantial data that can be used by financial institutions in improving their credit risk assessment of households and in developing risk metrics and indicators. Such information likewise allows authorities to monitor the extent of loan exposure of the banking system to particular sectors (e.g., households) thereby strengthening the monitoring of systemic risks. With the rapid growth in household credit in the SEACEN economies, the establishment of new credit bureaus and the strengthening of existing ones enhance credit surveillance in the region and significantly help mitigate the risk of financial instability in the region.

Many of the studies that focus on household debt use aggregate data in their analysis. However, the use of aggregate data does not reflect the differences in household characteristics which have an important bearing on their credit behaviour. For example, the life cycle model of Ando and Modigliani (1963) posits that during periods when income is low relative to the average lifetime income of the household, the household borrows to finance its current consumption and repay the loan in the future when its income is higher compared to the its current level. Given that households' income increase over their working life, household debt will tend to be high relative to income early in life and then gradually decrease with age. Economies with relatively younger households will therefore have a more rapid increase in mortgage finance and consumer credit relative to those with older households. The availability of household (micro) level data is therefore important in providing a richer analysis of households and their credit patterns as well as in determining household debt vulnerabilities. Households in the lower income deciles are more sensitive to income, employment and interest rate shocks relative to households in the higher income brackets. Observations such as these are better validated and looked into using household

(micro) level data. The formulation of economic policies that affect household credit behaviour is better supported with household (micro) level data. Moreover, the availability of micro data allows for the development of new measures and indicators to better identify and assess the risks that household debt have on financial stability.

An important detail that household (micro) level data may be able to capture is the portion of household credit that is sourced from shadow banking. There is a dearth of information on the extent of shadow banking activities in the SEACEN economies. Estimates show that they account for a large share of households' credit in some economies (e.g., Philippines, Thailand). The potential risk that shadow banking pose for financial stability in an economy is better assessed with the relevant data and information.

5.2 Strengthening Macro-prudential Regulations and Supervision

The 2009 global financial crisis underscored the need for macroprudential regulations and supervision for ascertaining financial stability. Macroprudential policy differs from micro-prudential regulations in that it focuses on the system as a whole rather than targeted towards individual institutions or sectors. It aims to mitigate the risk of financial instability (i.e., systemic risk) and its consequent costs to the economy. Macroprudential policy is seen as bridging the gap between macroeconomic policy and the traditional microprudential regulation of financial institutions. While the focus of macro- and microprudential differs, the tools used to implement them are basically the same. Most of the macroprudential instruments currently in use are based on existing microprudential instruments (Bank of England, 2009).

Various measures have been implemented in the SEACEN economies to manage the rise in household exposure, particularly in the real estate sector. Common policy responses include LTV ratios, capital requirements and reserve requirements, loan provisioning rules, limits on debt repayment-to-income, debt repayment-to-debt or credit line-to-income ratio and limits on banks' credit exposure to a particular sector (Siregar, 2011). To manage credit growth and risk taking in the domestic banking sector, BI relied on a combination of loan-to-deposit ratio and reserve requirement policies. Moreover, to curb speculative buying in the property market, BI imposed a maximum LTV ratio for housing loans (i.e., 70%) in March 2012. The Bangko Sentral ng Pilipinas (BSP) has likewise implemented LTV ratio requirements to limit the risk exposure of the banking sector to the real estate market. Since November 2010, a maximum

LTV ratio of 70% is imposed on home loans approved by financial institutions and development financial institutions. The BSP has also put a limit on the loan exposure of universal and commercial banks to the real estate sector (i.e., 20% of total loans portfolio, net of interbank loans). A similar measure was implemented by NRB which limits the exposure of financial institutions to housing and real estate loans to 25% of their total investment portfolio. Likewise, the LTV ratio in Nepal has been set at 60%. Korea adopted an LTV regulation in 2002. The caps on LTV ratios are differentiated based on loan maturity, the housing price, and the location. Lower LTV ratios are applied on loans with longer maturities, higher housing price and more speculative location (Kim, 2014). The LTV regulation was eventually complemented with the debt repayment-to-income (DTI) ratio in 2005. The DTI puts a limit on the ratio of the amount of annual debt payment to the debtor's annual income. Since their implementation, the LTV ratio has been adjusted a total of nine times, within the 40 to 70% range, while the DTI ratio has been adjusted a total of eight times between 40% and 75% (Kim, 2014). Malaysia's high household debt to GDP ratio has become a source of concern in recent years. Thus, Bank Negara Malaysia (BNM) has implemented prudential measures to rein in the rise in household debt in the country. The LTV ratio was capped at 70% for the 3rd outstanding housing and over in 2010. For non-individuals (e.g., business enterprise, sole proprietor), the applicable LTV ratio for housing loans is at 60%. In 2013, BNM shortened the personal financing tenure to a maximum period of 10 years and it capped the maximum tenure for residential and non-residential property financing at 35 years. Furthermore, it prohibited the pre-approved personal financing. In 2007, the Central Bank of Sri Lanka (CBSL) introduced the Direction on Maximum Amount of Accommodation regulation which is intended to limit a bank's credit exposure to any person or company, or to any groups of people or companies. Table 7 provides a summary of the existing macroprudential measures related to mortgage finance and consumer credit that have been implemented in selected SEACEN economies.

Table 7
Macroprudential Measures in Selected SEACEN Economies

	LTV	Capital	Exposure Limit	Lending Criteria
Cambodia		✓	✓	
India		✓	✓	✓
Indonesia	✓	✓	✓	
Korea	✓			✓
Malaysia	✓	✓	✓	✓
Mongolia		✓		
Nepal	✓		✓	
Philippines	✓	✓	✓	
Sri Lanka		✓	✓	
Chinese Taipei	✓	✓	✓	✓
Vietnam		✓	✓	

Note: LTV = Loan-to-value ratio; capital = capital requirements and reserve requirement; lending criteria = limits on debt repayment-to-income, debt repayment-to-debt or credit line-to-income ratio; exposure limit = credit to exposure to a sector.
Source: SEACEN Questionnaire Survey (October 2010); Project Team Papers.

Team project researchers observed that the implementation of these macroprudential policies have helped curb the rapid increase of household credit in their respective economies and mitigate risks to the financial sector.

6. Conclusion

Since the early 2000s, households in the SEACEN economies have been accumulating debt (i.e., mortgage loans and consumer credit). The growth in household indebtedness is attributed to a number of factors including favourable macroeconomic conditions, financial market deepening and demographic factors like population growth, expanding middle class and urbanisation. The rapid increase in household debt in the SEACEN economies has raised concerns that it is reaching excessive levels which could pose risks to the stability of the financial system.

The implications of rising mortgage finance and consumer credit to financial stability in the SEACEN economies was assessed using different methodologies (e.g., stress testing, econometric models, trend-cycle analysis). The results show that the current level of household credit in most of the SEACEN economies remain within manageable levels and does not pose an immediate threat to the stability of the financial system. In Korea and Malaysia, however, household indebtedness has breached the estimated threshold when it

becomes a drag on the economy. Nonetheless, the growth in household debt in these economies has declined in recent years on the back of the policy measures and initiatives implemented by their governments to address rising household debt.

Learning from two crises – the 1997 Asian financial crisis and the 2009 global financial crisis – the banking sectors of the SEACEN economies have been cautious in extending household credit, particularly mortgage finance. Developments in the housing and property sectors are closely monitored in the SEACEN economies to mitigate the formation of price bubbles. Policy measures, including macroprudential regulations (e.g., ceiling on LTV ratios, cap on maximum loanable amount), have been implemented in the SEACEN economies to ensure that the households' exposure to mortgage loans and consumer credit remain within manageable levels.

Going forward, the key challenge facing the SEACEN economies is ensuring that the pace of household credit growth is kept aligned with the underlying macroeconomic fundamentals and the necessary prudential and regulatory frameworks are properly established and functioning efficiently. This is to avoid the costly repercussions of excessive household mortgage loans and consumer credit.

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Chapter 2

CONSUMER LOANS IN CAMBODIA: IMPLICATIONS ON FINANCIAL STABILITY

By
Channarith Meng*

1. Introduction

It is widely recognised that the development of a financial system plays a crucial role in the economic prosperity of a country. Focusing on household's welfare, the development of consumer loans help relax the constraint of the households by allowing them to frontload some of their consumptions on the expectation of higher income flow in the future. However, at the same time, the expansion of loans to households implies increasing household indebtedness which, if excessive, may create significant risks to financial stability. This instability is realised at the time when the deterioration of the economy or the occurrence of a strong-enough negative shock affects the households' balance sheet and cash-flow position. The resultant outcome is loan defaults creating a threat to the banks' balance sheet and financial instability if the exposure of the banking portfolio to consumer loans is high enough.

A vivid example is the recent financial crisis which shows that excessive lending, especially mortgage lending, creates vulnerability not only to households but also to the financial system, and is one of the factors that triggered the financial crisis. This experience of the financial crisis has caught the attention of the supervisory authorities to scrutinise the development of consumer loans or household indebtedness and to design the policies and measures to prevent excessive lending while at the same time considering their benefit-and-risk balancing.

In Cambodia, consumer loans have been soaring in the recent years from a low base. This surge has been underpinned by, from the demand-side factors,

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increase in the middle-income class and changing family structure; and, from the supply- side factors, stronger competition in the banking systems, coupled with more financial literacy which increases financial intermediation.

Given the rapid development of consumer loans in Cambodia, it is always interesting and noteworthy to question whether or not the current growth poses any risk to the stability of the banking system in Cambodia and whether or not it is time to take actions against this fast developing trend, considering the benefit-and-risk tradeoffs. This paper is a first attempt to study in depth the consumer loans and its implication on financial stability in Cambodia, with the aim primarily of addressing these questions.

This paper is organised as follows. Section 2 gives an overview of the related literature on the implication of consumer loans, particularly housing loans, with regard to financial stability. Section 3 describes the current development of consumer loans in Cambodia. Section 4 provides an in-depth analysis with stress testing method to investigate the question whether the current development of consumer loans poses any significant risks to financial stability, followed by the policy implication to achieve the sustainable development of the financial system, and Section 5 presents the conclusion.

2. Literature Review

The concept of consumer loans has been increasingly examined just over the past decade. Prior to that, it had traditionally been a minor subject for study involving the identification of the causes and implications for banking and financial distress, since households were considered trustworthy borrowers or normally have collaterals pledged with their borrowing. These enable the banks to prevent excessive losses on household lending, compared to corporate lending, and the concentration of studies and examination of loan performance and its implication for banking crisis had been put on the corporate sector.

Since the late 1990s, as the build-up of household debt accelerated, the studies of the household debt have been growing, and household debt is clearly gaining greater focus in the advent of the sub-prime crises. A growing literature on consumer loans started to emerge (Girouard, et al., 2006), focusing on the causes and consequences of the widespread growth in consumer loans.

A number of studies have identified the various common underlying causes of the build-up of household borrowing or consumer loans (see Girouard, et al., 2006; Dynan and Kohn, 2007; Dynan, 2009, and IMF, 2012). These factors

include favourable financial conditions resulting from favourable monetary and macroeconomic conditions, financial liberalisation and innovation in credit markets, and buoyant housing markets that have eased credit access for lower income borrowers and loosened credit constraints for first-time buyers. Together with rising credit availability and declining lending standards, a wave of household optimism over the future increase in income and wealth from increasing housing price also explains the acceleration of household borrowing.

Greater access to consumer loans, at one end, enables households to relax their financial constraints by frontloading some of their consumption on expectations of rapid income growth in the future. However, at the other end, increasing consumer loans may lead to household over-indebtedness which raises concerns about its implications on financial stability, especially in the period of weak and uncertain economic outlook.

A number of studies identified how rising consumer loans pose risks to financial stability. Relaxation of borrowing constraint to households enables households to increase their spending and decrease their saving buffer as they expect to borrow instead of solely relying on their own savings to buffer against shocks to their income or wealth. Thus, the decreasing saving buffers and high debt burden make households more vulnerable to shocks and that can then lead to financial distress. Also, less liquidity constraints and strong credit growth will lead to an increase in credit to less creditworthy borrowers and subsequent rise in the number of loan default in the event of a shock (Mian and Sufi, 2009). Herrala and Kauko (2007) did simulation studies and concluded that even though the consumer loans bear a relatively low credit risk to banks, under extreme conditions coinciding with large and persistent adverse shocks to unemployment, interest rates and house prices, large consumer loans can become a threat to financial stability.

For other implication of consumer loans on financial and economic stability, the IMF (2012) also highlighted that for countries where household debt was high, the housing bust and the subsequent recessions happen to result in more severe and protracted contraction in consumption and general economic activities, compared to countries with low household debt. As a result of bust, real consumption declines by more than 3.9 percentage points more in the case of high household borrowing. Real GDP generally decreases more and unemployment rate increases more. Cerra and Saxena (2008) and Reinhart and Rogoff (2009) suggested similar results that high household leverage exacerbates the consequence of the housing bust and recession. Mian and Sufi (2011) used

country-level data to identify the household debt and found that a higher level of household debt is positively associated with sharper declines in consumption spending especially on consumer durables, residential investment, and employment.

There are a number of main channels through which accumulated consumer loans can intensify the downturns. Tobin (1980) argued that borrowers have high marginal propensity to spend from wealth, current income, or other available resources they can have. This suggests that a shock to the borrowers will force them to deleverage and reduce their spending, thus leading to greater decline in aggregate activity in the country with high household debt. Guerrieri and Lorenzoni (2011) also explained that the consumption depression was enforced in the case of high consumer loans, as households need higher precautionary saving in the presence of uncertainty following the shocks. Lorenzoni (2008) and Krishnamurthy (2010) identified from the channel from fire sales or forced sales that increasing unemployment as a result of shock reduces household's ability to service their debt, leading to increase in household's defaults, foreclosures, abrupt sales of foreclosed properties at distressed prices, and ultimately a quick undershooting of house price. The decrease in house price reduces economic activity and forms self-reinforcing contractionary spirals. The house bust and fire sales also affect the balance sheet of the financial institutions and firms and tighten credit supply for productive investment. In a severe case, the continuing deterioration of banks' balance sheet will create vulnerability of the banking system and can lead to banking crisis.

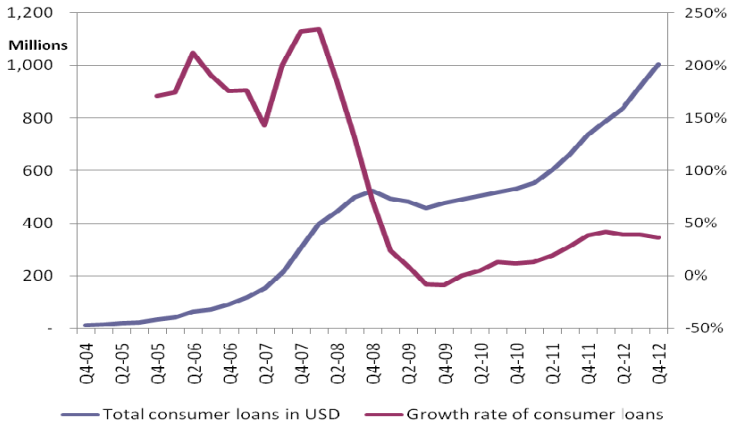
Overall, despite the widely accepted benefit of consumer loans for relaxing the consumption and investment spending constraints, the literature identified, from past experience, the possible implications that high consumer loans have a negative implication for the financial stability and economic activity, particularly through the bursting of housing markets, given generally the large proportion of housing borrowing to the total household borrowing. The realty sector in Cambodia, marked by strong housing price increase, rapid development of consumer loans, particularly housing loans, provides a noteworthy observation and case study of its potential implication on the stability of the banking system, which is dominant in Cambodia. To all my knowledge, this paper provides the first attempt to study in depth the implication of consumer loans on financial stability in Cambodia.

3. Consumer Loans and its Development in Cambodia

Consumer loans in Cambodia, in the nascent stage, are starting to develop within the last decade from a very low base, after the banking reform in 1998-

2000. The growth has been very high with an average rate of 177% during 2005-2008 before Cambodia's economy were affected by the global financial crisis in late 2008, as shown in Figure 1. However, the growth significantly dropped in 2009 and turned negative in late 2009 for 3 quarters, as the result of the tightened credit condition in the banking system and consumers' increased cautiousness on spending. It quickly recovered and now sustains at 32% on average over the past 2 years.

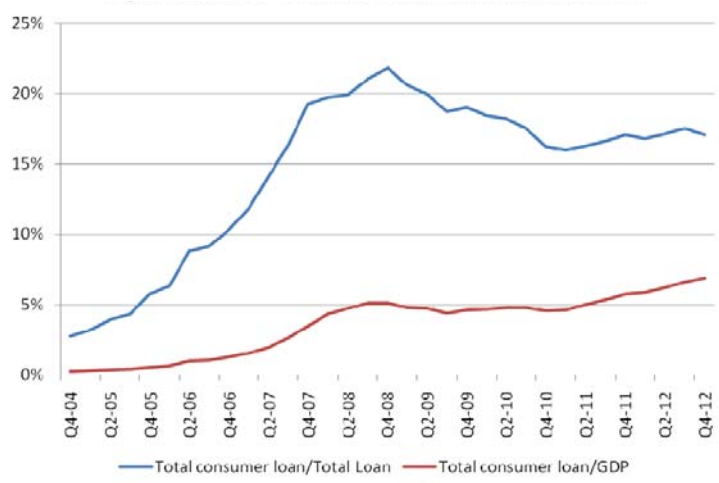
Figure 1
Consumer Loans



Source: National Bank of Cambodia.

Despite such a fast development, the size of consumer loans still represents a small share. Figure 2 demonstrated that the share of consumer loans to GDP was around 7%, continuously increasing from less than 1% in 2004. Relative to total loans, their share increased from less than 5% in 2004 and reached the peak at 22% in end-2008, before dropping back and staying relatively constant at 17% in the present period.

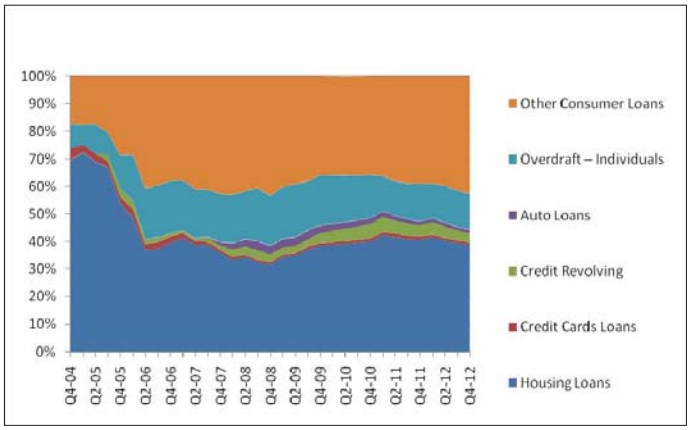
Figure 2
Ration of Consumer Loan to Total Loan and GDP



Source: National Bank of Cambodia.

In Cambodia, consumer loans are classified into housing loans, overdraft facilities, credit revolving, credit card loans, auto loans, and others. Figure 3 shows that among its components, housing loans occupy the largest proportion, followed by overdraft facilities and credit revolving, while the auto loans and credit card loans assume a small share.

Figure 3
Components of Consumer Loan



Source: National Bank of Cambodia.

The share of housing loans stood at 70% in 2004 and then gradually decreased to around 40% from 2006. However, the size of housing loans increased rapidly with an average of almost 70% from 2005 to 2012. For banks and other financial institutions, housing loans have relatively low risks compared to other consumer loans, as collaterals are required to get the loans and lower risk weight are put in accordance with the Basel principles compared to others, suggesting that the banks have lower cost of setting aside the required amount of capital.

The fast development of housing loans in Cambodia can be translated into high demand and supply of housing loans. Cambodia's economy has registered a remarkable growth in the past decade at an average rate of 8%, resulting in continuous increase in the income and size of the middle class. This encouraging economic achievement, coupled with the continued macroeconomic and political stability, provides a positive outlook and expectation for the country, and thus is a factor explaining higher demand for housing loans. Moreover, the change of family structure in Cambodia also contributes to higher demand for housing loans, as more newly-wedded couples prefer to move out and live in their own separate homes away from their parents. On the supply side, the number of banks has reached 39, almost double the number compared to that in 2006, and most of the new entrants are the internationally big banks that bring with them financial innovation spurring competition in the banking industry in Cambodia. The growing size of the banks and their competition, together with the growing financial literacy, have led to high growth of financial intermediation and supply of new financial

products, including housing and other consumer loans. In addition, as a result of more competition, the average interest rate on housing loans has steadily fallen to 10% from 15% in mid-2000s. The fall in the interest rate means cheaper cost of housing loans, thus stimulating higher demand.

The overdraft facilities and credit revolving are the second and third largest components of the consumer loans, capturing around 13% and 3.4%, respectively. Overdraft facilities allow consumers to overdraw from their bank account, making the account balance fall below zero. The revolving credit facility allows the borrower to drawdown, repay and re-draw loans advanced to it of the available capital during the term of the facility.

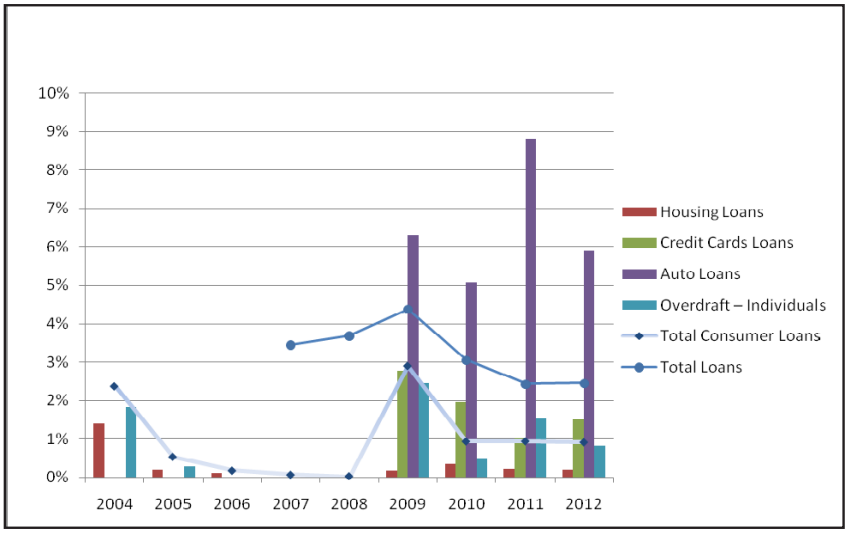
Credit card loans and auto loans are growing but still at the groundwork stage compared to other loans. Credit card loans represent only 1% of the total consumer loans. As of December 2012, the number of credit cards issued is only 18,198 cards, with the number decreasing by 14.7% compared to 2011. The auto loan is not popular in Cambodia; its share consists of 1% of the total consumer loans.

The continuing minor share of credit cards and auto loans as well as other consumer loans may mainly be reflected by the people's behaviour towards borrowing. In Cambodia, the cultural norms around borrowing have delineated borrowing purposes into two categories: investment and consumption. Borrowing for consumption such as purchasing furniture, TVs, and other consumer durables is often perceived to be negative, while the borrowing for investment in houses, property, and businesses is viewed to be positive and prosperous. This behaviour is likely to shift over time as the younger generations express their interest in consumer loans, in response to better economic prospects and better financial literacy. On the supply side, the establishment of a centralised credit bureau in 2012 allowing for the sharing of credit information on borrowers will provide more incentives for banks to offer such loans, thereby fostering the development of this sector.

Looking at the non-performing loans (NPLs) with regard to consumer loans, it has been low at around 1% in the past 3 years, though it was as high as 2.9% in 2009, as shown in Figure 4. The NPL ratio on consumer loans was lower than that of the total in the banking sector which was 2.5% in 2012 and 4.5% in 2009. Of its components, the housing loans have the lowest NPL ratio at less than 0.5% over the past decade. This very low NPL ratio of housing loans can be mainly explained by the conservative approach taken by banks, as the loan-to-value (LVT) ratio for housing loan is less than 50%. The auto loans have the

highest NPL ratio at 5.2% on average in the past 5 years, followed by the credit card loans which have 1.5% NPL ratio. However, they represent a very minor share of the consumer loans.

Figure 4
Non-performing Loan Ratio



Source: National Bank of Cambodia.

4. Housing Finance and Consumer Credit: Implication on Financial Stability

The fast development of consumer credit can represent a new trend of financial product development and overall reflects Cambodia's past economic achievement and positive outlook. However, experiences show that rapid development may create potential risks when households becomes increasingly leveraged and the financial sector exposes itself too much to the housing or real estate sector, which can undermine financial stability as well as macroeconomic stability. This section provides an analysis as to whether the current development of consumer loans can be a threat.

4.1 Methodology

Stress test is conducted to investigate the importance and potential risks of consumer loans on banking system stability in Cambodia. Stress testing is one

of the increasingly popular tools used by the regulatory and supervisory authorities to identify and assess the vulnerability of banks' asset portfolio to major changes arising from exceptional events or scenarios. It helps the banks and supervisory authorities to identify the sensitivity of the banks' portfolio to different types of risks, such as credit risks, liquidity risks, market risks, operational risks, etc.

We conduct the static stress testing by assessing the vulnerability of banks' solvency to the performance of the banks' consumer loan portfolio under various scenarios, particularly in the case where defaults on consumer loans or its components happen. Specifically, we want to answer the question what if there is default on consumer loans or its components, by how much will the current level of the solvency ratio decrease. For the analysis, we use the aggregate-level banking data from 2004 to 2012, obtained from the National Bank of Cambodia (NBC).

This stress test method embeds some underlying assumptions. Firstly, given the use of aggregate data, we assume a standardised banking system; that is, when we stress test the scenario of 1% default on consumer loans, the method implicitly assumes that NPL on consumer loans will increase uniformly by 1% in every bank. Secondly, the method assumes zero interconnectedness between banks and banks. When there is a shock and the negative event happens to a bank, there is no effect or spillover to other banks. This assumption may not be unrealistic in the case of the banking system in Cambodia, as there is no formal interbank market and banks do not involve significantly with interbank lending. Thirdly, the method is static stress test, capturing only the effect of a stress in just a one-time period. So, this assumption excludes the case where the default on one consumer loan may give incentives for other consumers to default on their loans subsequently. Again, this assumption is ignorant of the factual situation, since the consumer loans, particularly the housing loans, are attached to the collaterals and are given by considering the income and wealth of the borrowers. Also, this assumption can be addressed when we consider various scenarios with different default rates, including the extreme case when all consumer loans default.

4.2 Results

The results of the stress test show that the current level of consumer loans do not have any potential impact and do not pose a threat to the Cambodia's banking system. Table 1 shows the impact on the capital adequacy ratio (CAR) if the NPL on consumer loans increase. As the NPL on consumer loans increase by 1%, the CAR of the whole banking system will decrease by 0.077 percentage

point, which is trivial. The current CAR of the whole banking system is also strong enough which is at around 28%. If we look at the housing loans, the main components of consumer loans, the impacts are even much smaller. A 1% increase in NPL on housing loans will lead to only 0.032 percentage point decrease in the CAR of the banks. For credit card loans, auto loans, and other consumer loans, the effect is quite negligible.

Table 1
Percentage Point Decrease of Capital Adequacy Ratio, as of June 2012

	(as a result of 1% increase in NPL)		
	Total Banks	**Top 10**	**Top 5**
Housing Loans	0.032	0.035	0.039
Credit Cards Loans	0.001	0.001	0.001
Credit Revolving	0.004	0.004	0.004
Auto Loans	0.001	0.001	0.001
Overdraft – Individuals	0.009	0.010	0.012
Other Consumers Loans	0.030	0.033	0.037
Total Consumer Loan	0.077	0.083	0.094

Source: Author's calculation.

By classifying the banks further into the top 10 and top 5 banks, the impact sensitivity is higher in housing loans and total consumer loans, compared to the combined banks, as these top banks stand as the major providers of consumer loans. However, the impact of the default on the housing loans and total consumer loans is still very limited.

Looking from another perspective on the importance of consumer loans in the banking system, Table 2 indicates the required NPL ratio on consumer loans to reach the minimum CAR, which is 15% as required by the NBC. For the total banking system, it takes more than 180% of consumer loan defaults to cause the CAR to fall below 15%. However, the result of the stress test shows less resilience for the top 10 and top 5 banks. For banks in the top 10 category, they will need to raise the capital if the consumer loans default by more than 60%, while for the top 5 banks, capital will need to be raised if more than 42% of the consumer loans default. Still it is rare and unusual for the consumer loans to default by this much.

Table 2
Required NPL Ratio on Consumer Loan to Reach Minimum CAR Requirement (15%), as of June 2012

	Total Banks	Top 10	Top 5
Housing Loans	430	145	101
Credit Cards Loans	>500	>500	>500
Credit Revolving	>500	>500	>500
Auto Loans	>500	>500	>500
Overdraft – Individuals	>500	491	343
Other Consumers Loans	459	155	108
Total Consumer Loan	179	61	42

Source: Author's calculation.

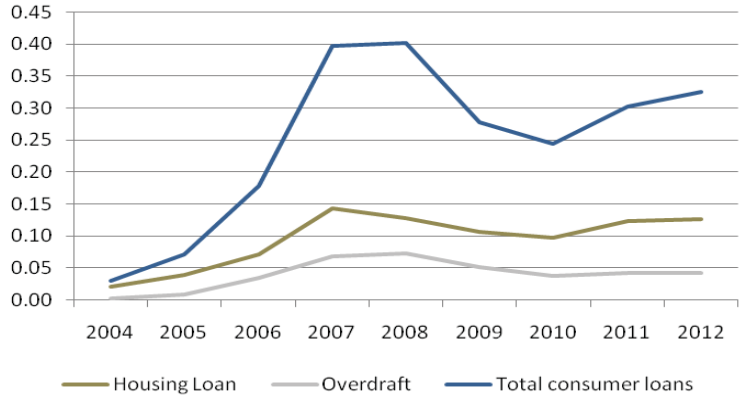
Even in the case of an adverse economic situation where Cambodia's economy suffered from the global financial crisis in 2008-2009 and the bursting of the housing price bubble, the NPL on consumer loans was at the highest rate of 2.9% in late 2009, relatively low compared to the overall NPL ratio, which was 4.5%.

Of the main components of the consumer loans, the current level of housing loans is insignificant to be a threat to the banking system. Even if all the housing loans default in the extreme case scenario, the banks' CAR is still higher than the minimum required ratio. The same conclusion is also obtained with the top 10 and top 5 banks. For the credit card loans, auto loans, and overdrafts, the result show even minor importance and it takes several times the volume of the current loans to default for CAR to fall to the minimum required level.

Figure 5 shows the elasticity of CAR with respect the NPL ratio over time. For the total consumer loans, the elasticity of CAR had increased sharply by 2007 during the boom periods before the impacts of the global financial crisis and the bursting of the housing bubbles in Cambodia. During that time, the banking sector showed rapid development in terms of credit growth, number of bank entries, and new financial products. The credit grew at the average rate of more than 50% during 2004-2008, and the number of banks has increased to 39 as of 2012, almost twice the number in 2006. New banks entered the financial market and took aggressive actions in giving loans, absorbing deposits, and introducing new financial products.

However, the elasticity started falling in late 2008 and jumped back again in 2010 when the economy recovered from the negative impacts of the financial crisis and credits revived again strongly. As of end-2012, the elasticity is 0.32, implying that 1% increase in NPL on consumer loans will decrease the CAR by 0.32%. Still, the elasticity is lower than that during the pre-crisis period.

Figure 5
Elasticity of CAR with Respect to NPL Ratio



Source: Author's calculation.

Figure 5 also suggests that the elasticity of CAR with respect to NPL on housing loans is relatively minor and has been stable with the fluctuation between 0.1 and 0.15 for the last 5 years, and the elasticity with respect to NPL on overdraft and other components of consumer loans was even petty.

Overall, the results of the stress test suggest that the current level of consumer loans has an insignificant implication on the banking stability in Cambodia. This current position can be explained by the relatively small proportion of the consumer loans at this early stage of development of the financial services in the banking sector, as well as the currently strong capital base of the banking sector. The result also reveals the gradually increasing importance of the consumer loans in the context of the rapid development of financial products and strong credit growth in the banking system, in line with the continued macroeconomic stability and positive economic prospect of the country.

5. Concluding Remarks

Evidence from the recent financial crisis has prompted closer investigation by many countries into the development of consumer loans or household indebtedness to prevent the potential risk build-up in the financial system. The analysis of this paper found that the current level of consumer loans provided by banks in Cambodia pose little threat to financial stability, given the still relatively small share of consumer loans to total loans and sufficient capital base of the banks. This finding is supported by the stress test result as well as by the experience of Cambodia during the recent global financial crisis which shows that the consumer loan quality and performance is insignificantly affected.

The current level of consumer loans in Cambodia may reflect the consequence of positive development in the banking system and economy as a whole rather than a threat to the banking stability to be concerned. The increasing use of loans by households improves their quality of life helping them to smoothen their lifetime consumption and make their purchase easier, especially houses the price of which is usually on the upside trend. Moreover, from the banks' perspectives, the development of consumer loans help banks diversify their loan portfolio by not just concentrating on the business or corporate loans.

Despite the current insignificance of the consumer loans to the financial stability, from a regulatory and supervisory standpoint, vigilance rather than complacency is needed against the continued increasing size of the consumer loans. The discipline of "prevention is better than cure" should be borne in mind. In this sense, the surveillance work should not be ignored but strengthened in the good times in order to prevent the risk build-up as this loan sector surges. The surveillance work should be expanded to monitor the fast development of household indebtedness and particularly its indebtedness on housing loans, as excessive indebtedness creates vulnerability to financial instability.

Of course, sufficient surveillance work needs good quality and timely data. Nakornthab (2010) suggested that 3 areas of data collection is needed which are centralised household credit information system, better loan classification, and household-level data, in order to offer a complete picture of the loan exposure of the banking system and the household leverage. In Cambodia, with the presence of a centralised credit information bureau established in 2012 and loan classification, the data at household level is additionally needed. This household-level data is useful to capture the complete picture of household leverage,

particularly to non-bank borrowers, since in a developing economy like Cambodia, access to banking finance is still relatively low, and many people still rely on informal financing methods including money lending, loan shark, and so on.

Another area is to enhance the risk assessment framework. As a number of indicators are already in place including new loans, NPL, delinquency rates, and so on. However, such indicators are backward-looking in nature. This underscores the need to develop forward-looking risk assessment tools such as stress testing and simulation exercises that provides a glimpse into the future and the interactions among agents in the financial and real sectors. To strengthen this, the supervisory capacity has to be continuously enhanced.

Although not currently necessary, to prevent risk build-up in the banking system as a result of excessive consumer loans, at some point in the future, macroprudential policy, which has been gaining prominence, can be considered to complement with microprudential policy. Macroprudential policy tools include LTV ceilings on housing loans, cap on maximum loan amounts and minimum income requirements for credit card holders. They are proved to be effective but the costs and benefits of each policy need to be cautiously analysed.

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Chapter 3

MORTGAGE FINANCE AND CONSUMER CREDIT: IMPLICATIONS ON FINANCIAL STABILITY

By
Rakesh Kumar[1]

1. Introduction

The housing sector has strong real and financial linkages with construction activities and financial services in the economy. At present housing loans work out to 9% of GDP in India which is lower than the levels achieved in the advanced and emerging market economies. Over the years, the rising demand for housing finance has also provided new business opportunities for the banking sector. Part of the initial increase in mortgage finance was due to unrealised pent up demand of housing stock. A major source of the demand for housing finance emerged from favourable demography, urbanisation and economic development. However, even at the present level, there is still scope for the expansion of mortgage loans in India.

Mortgage finance provides ample opportunities for development while it may also sow seeds for future banking and financial crises, as witnessed in a number of countries over the past decades. Cross-country literature provides strong evidence of consumer credit boom preceding banking and financial crises. In particular, credit boom is a major driver of house prices and increased household's leverage behaviour all over the world. Thus, increasing the financing of the housing industry can have serious implication for the financial sector against the backdrop of unfavourable trends in house prices and adverse macroeconomic scenarios.

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The current study reviews the mortgage finance and consumer credit in India from the perspective of financial stability. The study assumes more relevance for India, given the trade-off between the development of housing finance vis-à-vis its implication on financial stability. The overall study is spread into six sections. Section 2 provides the chronology of the relevant literature done on India as well as other cross-country experiences. Section 3 highlights the recent trends and developments in mortgage finance and consumer credit in India. In this context, it also reviews the drivers of mortgage finance in India. Section 4 is the quantitative part of the study. It provides an overall assessment of the potential impact of mortgage finance and consumer credit on financial stability using macro stress testing approach. Section 5 provides some policy recommendations, building from the empirical assessment done in Section 4. Finally, Section 6 concludes this study.

2. Mortgage Financing: Literature Review

The empirical evidence suggests strong co-movement between the rise in house price and credit expansion in an economy. Episodes of credit boom are also significantly related with the incidences of financial instability in the economy. Irrational expectations of continuous price appreciation in the housing sector often strain the balance sheet of banks and households together. The business cycle movements also play an important role in lending and default behaviour and bring about changes in house prices. Against this backdrop, this section draws evidence from the empirical literature to review the impact of housing credit boom on financial stability.

2.1 International Literature

The large swings in credit associated with housing market boom had culminated in banking and financial crises all over the world. Reinhart and Rogoû (2009) show that the six major historical episodes of banking crises in advanced economies since the mid-1970s were all associated with housing price bust. On average, a 10% increase in household credit is associated with increase in house prices of about 6%. However, the severity of financial crisis may not be similar across countries. The domestic financial market conditions and regulatory framework have an important role in the manifestation of a financial crisis.

Numerous empirical analyses confirm that rapid mortgage credit growth and strong house price rise moves together. Moreover, the relationship works both ways, with house price increases in turn leading to stronger credit growth by boosting both household net worth and expectations of further house price

increases (IMF, 2011). Jorda, Schularick and Taylor (2011) find that recessions preceded by greater private sector leverage are associated with worse outcomes in terms of economic growth, investment spending, and credit growth than those associated with less leverage. House price bust has a significant impact on financial stability as well. IMF (2011) estimated the GLS regression for 36 countries during 2004-09 and found that a 1% lower house price growth is associated with about a 0.1 percentage point higher non-performing loan (NPL) ratio.

The house price bubble led by mortgage credit can severely impact financial stability on account of a sudden change in the macroeconomic scenario. The supply of housing is generally inelastic, while the demand for houses is more sensitive to various factors. As a result, weak demand sentiments play an important role dragging down house prices. Generally a house price bubble bursts due to a number of reasons. An unanticipated fall in house price affects the demand conditions particularly when the households are highly leveraged. The first round of corrections of house prices cause valuation loss in bank's balance sheet, which significantly constrains banks' lending capacity, which further moderates house price by constraining new buyers, particularly when NPAs are rising (Gerlach, 2012). As a result, the housing and credit boom will reverse in the same fashion as it developed in the credit boom stage.

Empirical studies have shown that macroprudential reforms can prevent the house price bubble from developing into a full blown financial crisis. Lim, *et al*. (2011) based on the IMF survey data of countries' experiences found that the loan-to-value (LTV) and loan-to-interest (LTI) limits and dynamic provisioning, among other instruments, may be effective in reducing credit growth. Ahuja and Nabar (2011) found that the LTV and LTI limits slow property lending and that the LTV limits lower non-performing loans over the longer term.

2.2 Indian Perspective

There is no empirical study that links consumer credit, housing prices and financial stability in the case of India. The empirical research on house price bubble coinciding with credit boom and bust could not be attempted earlier due to the non-availability of data for measuring house price in India. Furthermore, the mortgage market still remained at lower levels compared to the advanced and East Asian countries.

Some studies have analysed the role of monetary policy and assets prices in India. Financial stability is one of the objectives of monetary policy in India.

In this regard, Singh, et al. (2010) has pointed out that monetary policy does not respond to asset price behaviour in India; rather, asset prices respond to monetary policy in India. Some of the studies have used rental data available from consumer price index for industrial workers (CPI-IW) for assessing housing market (Joshi, 2006 and Mahalik, et al., 2008). Nevertheless, the scope of these studies remained limited to explaining the determinants of housing prices.

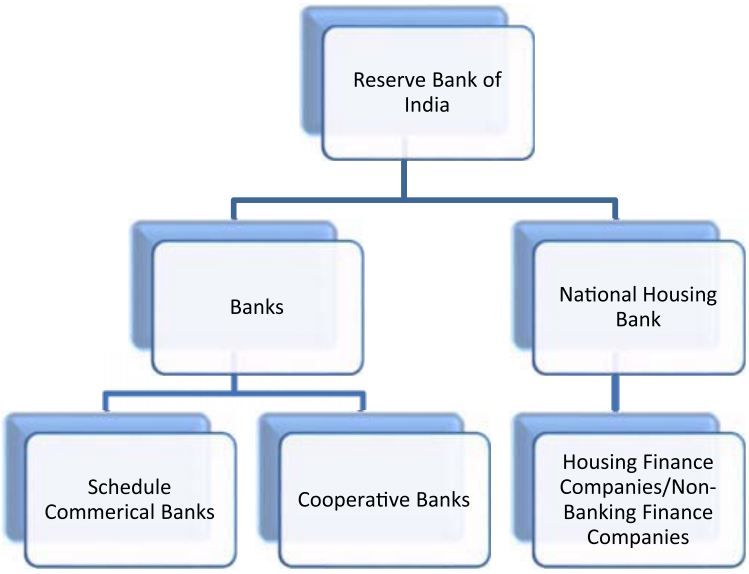
3. Mortgage Finance and Consumer Credit: Developments and Trends

3.1 Housing Finance: Institutional Framework

Housing finance is provided both by private and public sector financial institutions in India. These financial institutions can be further classified into banks and housing finance companies (Figure 1). The Reserve Bank of India (RBI) regulates the banking sector and provides guideline for provisioning and other macroprudential measures to avoid the building up of the concentration of risks. The RBI also plays an important role in the development of the housing sector as a major chunk of credit to housing comes from the banking sector.

The National Housing Bank (NHB) is a regulatory authority to the housing finance companies. The NHB was formed in 1988 under the National Housing Bank Act, 1987, and is wholly owned by the RBI. The major objective of the NHB is to promote a sound financial system to cater for all segments of the population and to integrate the housing financial system with the overall financial system. The NHB promotes a network of housing finance companies with an objective of providing affordable housing credit.

Figure 1
Structure of Housing Finance in India



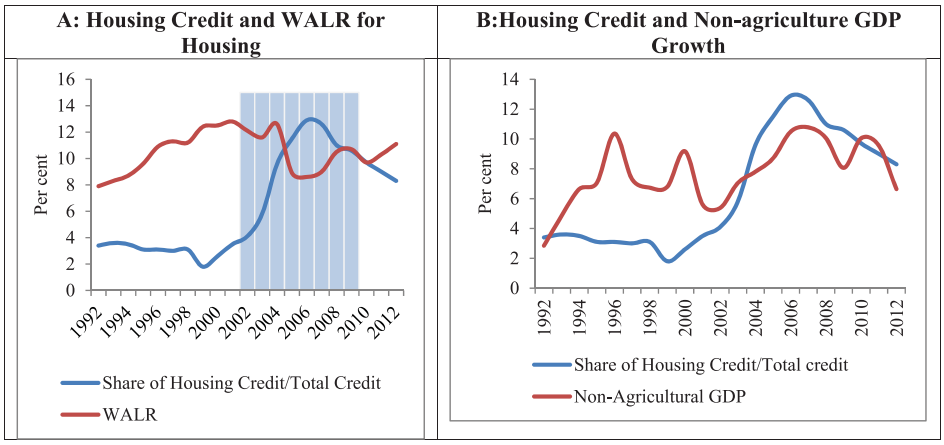
3.2 Development and Trends in Mortgage Finance

The housing industry is one of the fastest growing industries of the economy. During the last decade, a number of factors such as rapid urbanisation, rising middle-class population, economic growth and easing of lending rates have proliferated demand for housing stock as well as housing finance in India. As a result, mortgage loans as percentage of GDP increased to 9% of GDP in 2012 from 2% in 2002. The performance of the last decade looks impressive except the fact that this sharp rising trend can also be attributed to initial high rate of growth stemming from a low level of mortgage finance in early 2000. Nevertheless, the current level of mortgage finance in India is still quite low compared with many advanced and emerging economies. This shows that mortgage finance has scope for further improvement in the future, given the current demand-supply mismatch of housing stocks and in view of the accelerating economic growth and development.

Housing loan as a percentage of total loans increased from the 2000 onwards, well before the high growth phase that the economy witnessed during 2003-04 to 2007-08 (an average GDP growth of 8.9%). The demand for housing finance largely moved in tandem with the gradual fall in weighted average lending rate

(WALR) that began from 2000 onwards, except for occasional rise in 2004 (Chart 1). Further, the sharp rise in housing loan could be seen with the corresponding sharp fall in WALR since 2004 onwards. The fall in WALR could be an outcome of a benign macroeconomic environment and global economic conditions. Thus, a priori, it appears that the moderation in WALR could be the major factor in driving housing finance demand in India.

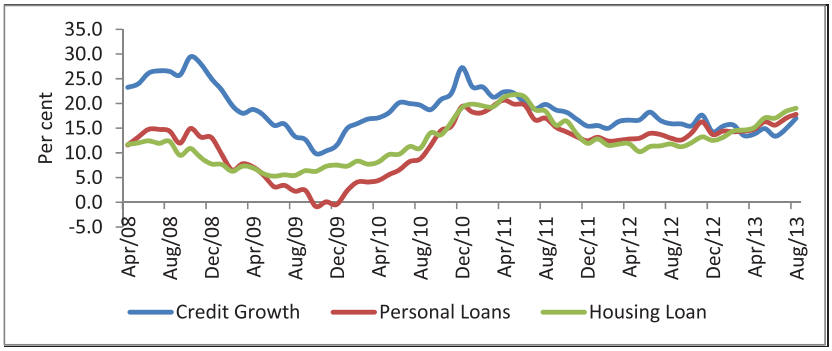
Chart 1
Determinants of Housing Loans in India



Source: RBI and CSO.

The WALR and housing loan data from the basic statistical returns are available with lag. However, the latest trend of housing loan data may be gathered from the sectoral deployment of banking credit in India for select banks available at monthly frequency. Based on the monthly data, non-food credit growth shows a strong co-movement with personal loans and housing loans. After the global financial crisis, non-food credit and housing loan grew in tandem with the rebound in GDP growth and improvement in other macroeconomic fundamentals (Chart 2).

Chart 2
Recent Trends in Credit Growth



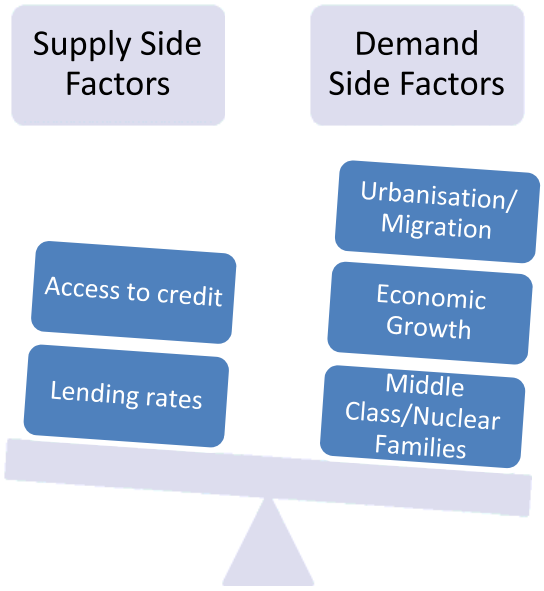
Source: RBI.

In the post-financial crisis period, housing credit reached the trough in April 2012. A combination of domestic and global factors significantly dampened demand for housing credit. The weak demand condition and low GDP growth along with high inflation also adversely impacted the demand for housing credit. Against this backdrop, the growth of housing loan also moderated to around 15% in 2013 after witnessing a peak growth of 27% in October 2010.

3.3 Drivers of House Prices and Mortgage Finance in India

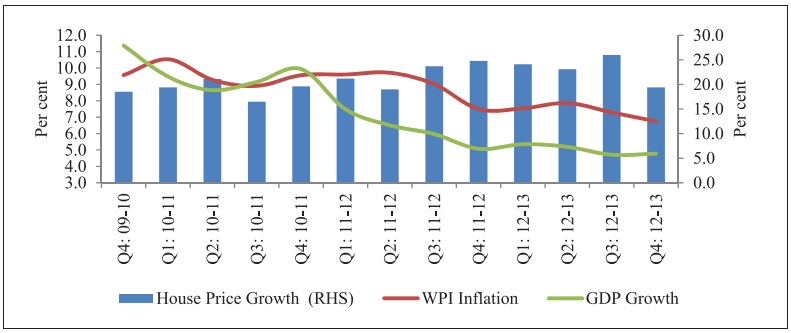
Housing is the fundamental need of human beings. During the last decade, the demand for housing emanated from increasing urbanisation, rising economic growth, migration and middle-class population. The emergence of second tier cities such as Hyderabad, Navi Mumbai, Pune and NCR region have also boosted the demand for housing as a consequence of inter-city migrations. Furthermore, the supply-side factors such as financial market reforms and easy availability of mortgage finance also facilitated the demand for mortgage finance in India (Figure 2).

Figure 2
Drivers of Mortgage Finance



According to the latest data, the growth of RBI's House Price index suggested a stable price rise even though there has been significant drag in housing demand. Adverse macroeconomic conditions such as high inflation and lower returns from other avenues of investments (stock market and lower bank deposit rates) have significantly pushed demand as well as house prices. The preference of households towards household physical savings also points towards the stable demand for housing in India, even though there is a significant fall in economic activities in the recent years. Since 2008-09, the growth in house prices remained stable at around 20%, except in few quarters (Chart 3).

Chart 3
Macro Determinants of House Prices in India

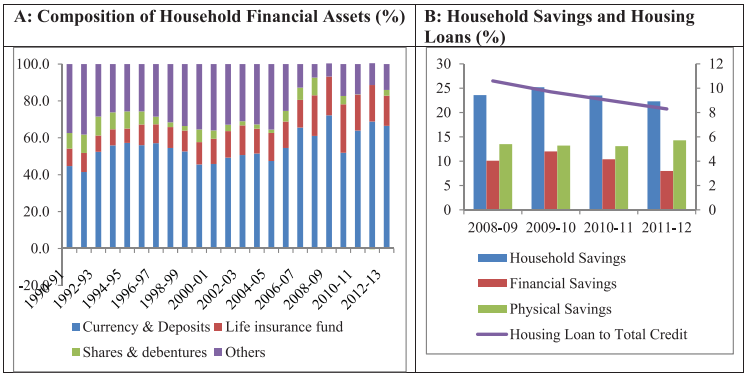


Source: RBI House Price Index and MOSPI.

3.4 Household Savings and Mortgage Finance

The estimates of household leverage and household wealth are difficult to measure in India due to the presence of a large unorganised sector. Moreover, the time series data of household debt is also not available for taking policy measures. In this regard, the data of national income accounts may be used for assessing the household wealth (change in wealth) in physical assets and financial assets. The data of household savings indicates the preference of households towards savings in physical assets as against financial assets. The mortgage loans are around 9% of GDP while the household savings remained close to 22% of GDP. The households are net savers in the economy and have high savings even in the slacked economic environment. Furthermore, the household savings (surplus funds) may serve as a cushion during the period of financial crisis and may prevent possibilities of loan defaults. Thus, the household savings coupled with lower savings portfolio in risky assets such as equities will be useful in protecting banks' balance sheet from deteriorating household balance sheet in the event of a financial crisis (Chart 4).

Chart 4
Household Savings and Housing Loans in India



Source: RBI and MOSPI.

In sum, mortgage finance in India has a potential to grow from the current level. The initial growth in housing finance was driven by strong growth cycle, urbanisation and easy availability of credit. The growth in housing prices also contributed to a rise in mortgage finance, which provided alternative investment opportunity in the face of lower returns from the financial market instruments. The mortgage finance is given by banks and housing finance companies. The banks provide roughly two-thirds of the total mortgage loans, while the share of housing finance companies is also increasing due to aggressive marketing. In the banking sector, housing loan constitutes more than half of the personal loans. Going forward, the demand for housing finance continues to rise in India mainly due to demand-side factors.

Section 4 will assess the implications of consumer credit and house prices on the overall financial stability of the economy. In the absence of micro data for doing stress testing, a broad macroeconomic model will be used for measuring the potential risks emerging from the current level of mortgage loans to overall banking sector by using the macro stress testing.

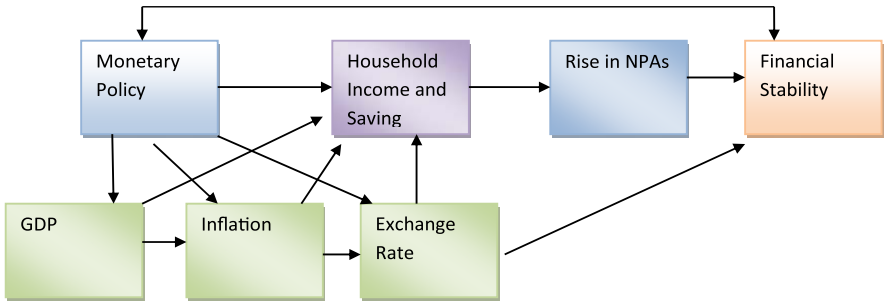
4. Empirical Assessment

4.1 Mortgage Finance and Consumer Credit: Implications for Financial Stability

The household sector is one of the key sectors in the economy and housing loans have a significant impact on the asset liability management of banks. The disproportionate rise in housing credit in the retail portfolio of banks can cause

systemic risk to banks in the wake of house price bubble bust. The share of housing loans and other retail loans have increased in total credit in India, like many other advanced and emerging market economies. This section attempts to measure the impact of the rise in mortgage finance and consumer credit on financial stability in India. The surplus funds (savings) moves from household sector through intermediaries, such as bank and financial institutions, to the deficit sectors in the economy. The housing loan portfolios also expose banks to the risks indirectly associated with the household balance sheet from income loss, inflation, adverse exchange rate movements and monetary policy changes (interest rates). The macroeconomic stability is also reflected in asset price movements that also indirectly impact both the bank and household balance sheets. The flow chart shows the transmission of mortgage loans risks to financial stability passing through the household's balance sheet to the non-performing assets of the banks.

Figure 3
Mortgage Finance and Consumer Credit Linkage with Financial Stability



4.2 Determinants of Mortgage Loans in India

In order to assess the risk associated with the mortgage finance and consumer credit, this section attempts to measure the determinants of housing loans in India. The data is collected from the basic statistical return (BSR) of the scheduled commercial banks (SCBs) as compiled by the RBI annually. The latest data available for March 2012 is used for empirical analysis along with other related macroeconomic variables. In the absence of long time series data relating to non-banking sources, the empirical assessment broadly done on BSR data applies to SCBs.

The housing credit demand largely depends on a number of macroeconomic variables such as income, interest rates, house prices, etc. The house prices, like any other asset, are interest rate sensitive and affect the transmission of monetary policy (Mohanty, 2013). The simple correlation analysis suggests that housing loans as a percentage of total loans is positively related with GDP growth and negatively related with the dependency ratio and interest rates on savings deposits, which is also statistically significant. The correlation coefficients have correct signs with other macroeconomic variables, such as inflation and lending rates (WALR). However, they are not statistically significant (Table 1).

Table 1
Correlation between Housing Credit and Macroeconomic Variables: 1992 to 2012

Correlation/ Probability	HLT	DR	PE	WPI	WALR	Y	SRT
HLT	1						

DR	-0.81	1.00					
	(0.00)	----					
PE	-0.27	0.47	1.00				
	(0.23)	(0.03)	-----				
WPI	-0.18	0.34	0.67	1.00			
	(0.43)	(0.14)	(0.00)	----			
WALR	-0.30	-0.13	-0.51	-0.51	1.00		
	(0.18)	(0.57)	(0.02)	(0.02)	----		
Y	0.61	-0.57	-0.18	-0.36	0.00	1.00	
	(0.00)	(0.01)	(0.44)	(0.11)	(0.99)	----	
SRT	-0.69	0.65	0.42	0.53	-0.14	-0.35	1
	(0.00)	(0.00)	(0.06)	(0.01)	(0.54)	(0.12)	----

HLT= Housing Loan; DR=Dependency Ratio; PE=Price Earnings Ratio of BSE Sensex;
WPI = WPI inflation; WALR=Weighted Average Lending Rates; Y=GDP growth; and
SRT=Saving Deposit Rate (1-3 years).
Figures in parenthesis are p values.

Further, the correlation analysis is supported by the ordinary least square (OLS) regression for 1992 to 2012 (annual data). The time series analysis required all the variables to be stationary *i.e.* I(0), to have a meaningful estimation of regression coefficients. As a result, all the variables were tested for unit root properties using the ADF test. The results show that housing loan as a percentage of total credit and WALR are I(1) in level and I(0) in first difference, while non-agriculture GDP growth is stationary series at levels. Hence, in order to do

regression analysis, all the I(1) variables were taken at first difference to convert to stationary variable. The regression results show that the weighted average lending rates and non-agriculture GDP growth are possible determinants of change in housing credit in India (Table 2).

The regression analysis shows that the change in WALR has a negative relation with housing loans, which is also statistically significant. Among this specification, the first specification seems to be the best representative of determinants of housing loans in India. As noted earlier, the change in housing loans is mainly guided by the moderation in WALR, while other determinants such as non-agriculture GDP growth have no significant impact on changes in housing loans in India. The lag dependent variable is also used to overcome possible endogeneity problem in the OLS estimates. However, the lag dependent variables are not significant in all the two specifications. The Lagrange multiplier (LM) test also does not provide evidence of serial correlation in all the estimated equations, even with the second and third lag.

Table 2
Determinants of Household Credit (1992-2012)

	EQ03OCT20		
Eq Name:	13	EQ0OCT	EQOCT2013
Method:	LS	LS	LS
Dep. Var:	Δ (HL)	Δ (HL)	Δ (HL)
C	0.704	0.041	0.643
	(0.70)	(0.19)	(0.86)
NAG	-0.073		-0.074
	(0.10)		(0.10)
Δ(WALR)	-0.566	-0.400	-0.394
	(0.10)**	(0.21)	(0.22)
DUM2004	4.230	3.773	3.731
	(0.19)**	(0.90)**	(0.91)**
$\Delta (HL)_{t-1}$		0.227	0.234
		(0.20)	(0.20)
DW Stat	1.74	1.95	2.21
R-squared:	0.70	0.72	0.73
F-statistic:	12.48	12.66	9.31
Prob(F-stat):	0.00	0.00	0.00

WALR: Weighted Average Lending rate for housing loan,
NAG= non-agriculture GDP growth rate; Dum2004=1 for 2004, otherwise 0;
: significant at 5% level; *: significant at 10% level.
Figures in parenthesis are standard errors stats.

4.3 Impact of Housing Loan on Financial Stability

Financial stability for the banking sector may be viewed in terms of rising non-performing loans. The non-performing loans can rise due to a number of factors in the economy, such as disproportionate rise in NPAs in particular segments like housing or retail credit through the direct impact of significant corrections in house prices, which may impair asset quality. Apart from the direct impact, there can be significant indirect risks that can arise from adverse changes in other macroeconomic variables. The credit boom during an upturn in the business cycle can significantly raise the leverage, and thereby NPAs during the downturn movements in the business cycle. Furthermore, the impact of high inflation can also severely impact the changes in household income and savings decisions. There can be valuation loss in the balance sheet of households and banks due to rising inflationary pressures.

Table 3
Impact of Housing Loan on Gross NPA to Advances
(1996-97 to 2012)

Eq Name:	EQ01	EQ02	EQ03
Dep. Var:	Δ (GNPA)	Δ (GNPA)	Δ (GNPA)
C	-1.78	-1.52	-1.84
	(0.34)**	(0.32)**	(0.28)**
Output Gap_{t-1}	-0.27		-0.26
	(0.07)**		(0.06)**
Δ (Housing Loan)	-0.51	-0.45	-0.54
	(0.08)**	(0.12)**	(0.06)**
Inflation	0.22	0.14	0.21
	(0.05)**	(0.04)**	(0.05)**
$\Delta (GNPA)_{t-1}$	0.11		
	(0.12)		
Output Gap		-0.02	
		(0.06)	
DW:	1.73	2.05	1.67
R-squared:	0.91	0.75	0.90
F-statistic:	22.69	10.99	33.71

Housing Loan= Share of housing loan in total credit.
Inflation= based on WPI,
Output gap= Actual Growth less GDP trend growth measured by HP filter method
*: significant at 1% level **: significant at 5% level,
Figures in parenthesis are standard errors

In order to test the above mentioned hypothesis, a simple OLS approach is used for the period 1996-97 to 2012-13 (annual data) (Table 3). The empirical exercise is restricted to this period due to data availability of the gross NPA. Furthermore, the parsimonious approach is followed to somewhat overcome the degree of freedom due to the small sample size. The first specification shows that the change in housing loans to total credit has a negative relationship with change in gross NPAs. This suggests that housing credit may not have significant incidence of gross NPAs as a result despite rising house loan in overall credit, the gross NPAs has come down in the sample period. In the second equation, the output gap and inflation (WPI) have been imputed to assess the impact of the macroeconomic variables on gross NPAs. The signs of the coefficients of WPI and output gap are correct and statistically significant. The WPI inflation coefficient suggests that inflationary pressures may raise gross NPAs primarily on account of creating income uncertainty and hurting the real income of households. Further, pro-cyclicality as measured by the output gap suggests that gross NPAs increases with negative output gap though with one period lag. This suggests that higher lending made during upturn in business cycle results in significant pressures on banks' balance sheet during the economic downturn with a one period lag. Lastly, it may also be highlighted that the empirical analysis has a major limitation of small sample properties, which makes the estimates somewhat less robust. The quarterly data could not be used in the empirical estimation due to non-availability of data in the public domain.

In sum, the empirical findings of this section suggest that the lending rate turns out to be the major driver of housing loans. The removal of financial repression in the form of reduction in lending rates supports pent-up demand for housing in India. Further, the negative relationship between the gross NPAs of banking sector with the housing credit to total credit could be seen in the light of progressive reforms in the banking sector such as the implementation of Basel I and II. This resulted in the lowering of gross NPAs along with the rise in housing credit. Going forward, the mortgage loans are expected to rise in the future due to rising income and other social economic factors. The trends of mortgage loans look appropriate at present given the current level of household savings in India. The household savings may provide some cushion against mortgage loans in the period of financial crisis. However, efforts should be continued to monitor and control the building up of house price boom and its impact on financial stability in India.

5. Policy Recommendations

The demand for housing and mortgage loans in India is likely to expand further from the current level. The demand for housing will arise from the changing demography, rising income and urbanisation. At present the level of mortgage loans is not at high levels and does not pose a significant risk to financial stability. Going forward, with rising mortgage penetration, policy measures will be needed to address and mitigate the risk to household's balance sheet.

A number of policy measures have been taken by the RBI to promote as well as prevent the building up of risks in banking loan portfolios. However, at present there is a need to develop mortgage finance in India to support the housing market. In this regard, some of the policy measures are as follows:

5.1 Empirical and Policy Recommendations

1. The empirical finding shows that mortgage loans are interest rate sensitive in India. The weighted average lending rate (WALR) could explain the significant variation in the housing loans in India. This may be a useful policy variable to prevent a housing price bubble.

2. The business cycle as measured by output gap and inflation has a significant role in impacting the non-performing asset ratio. Given this pro-cyclicality of non-performing assets, measures taken to prevent negative output gap and inflation management also factored in the possible spillover effect of these macroeconomic indicators on default ratios. In the past, macroprudential measures taken by the RBI in 2007 have abated the building up of housing bubble and risk to banks' balance sheet from housing loan portfolios. Thus, counter-cycle prudential measures hold the key to avert the building up of financial and banking crisis.

3. The RBI and NHB provide index of house prices. However, in the absence of one consolidated index of house prices, there is some lacuna in measuring the building up of housing bubble. In this regard, a consolidated and exhaustively measured house price index for country as a whole is required for the policy making framework.

4. There is a need to have a credible estimate of household debt in India. In the absence of data of household debt/wealth, policy measures are often formulated based on the borrowing behaviour of households limited to banks. However, the long term policy may require the linking of housing debt and wealth with macroeconomic variables for long term developments.

5. Housing finance companies are playing a greater role in providing mortgage finance. The regulation and supervision of these housing finance companies are becoming important. They are regulated by the NHB. High frequency data (quarterly) of housing finance companies at consolidated level needs to be made available in the public domain for enhancing transparency and monitoring risk associated with HFCs (Housing Finance Companies).

6. Purchase of housing for investment (third housing loan) may be treated differently. The third housing loan should have higher LTVs requirement.

6. Conclusion

The low level of mortgage finance and demand-supply gap in housing stock provides ample opportunities for the development of the housing market in India. In the post-global financial crisis period, the rising pace in house price and mortgage finance has moderated. The risks to financial stability emerging from mortgage and personal loans are somewhat limited in India due to various factors. Firstly, the share of mortgage and personal loans to GDP as well as to total credit of the banking sector are relatively small at about 9% of the GDP in India. Secondly, there is no evidence of house price bubbles in the country as such. Anecdotal evidence suggests that the price pressures have moderated in the post-crisis period even in cities like Mumbai and Delhi, where the rally in prices was high during the pre-crisis period. Thirdly, the strength of the household balance sheet as reflected by household savings provides the cushion to the household sector against any adverse macroeconomic development. This will possibly lower the chances of the default scenarios and protect the banks' balance sheet accordingly. During the post-crisis period, the household savings have moderated largely on account of savings in shares and debentures, while the savings in deposits and other contractual savings remained somewhat robust. Hence, the strength of the household balance sheet imparts stability to the bank's balance sheet against vulnerability from mortgage and personal loans. Fourthly, the demand for housing is likely to remain stable driven by the changing

demography and urbanisation. As a result, the house price may not crash and the housing market is likely to remain vibrant. Finally, the macroprudential measures and monetary policy actions in the past have worked well for India against the building up of risks from mortgage loan portfolios. The RBI follows the multiple indicator approach wherein all the macroeconomic variables are taken into account while formulating monetary policy. Going forward, this framework is expected to pacify any adverse asset price movements in India.

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Chapter 4

MORTGAGE FINANCING AND CONSUMER CREDIT, AND THEIR IMPLICATIONS TO FINANCIAL STABILITY: A CASE STUDY OF INDONESIA[1]

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and

Shinta Fitrianti[3]

1. Introduction

Household consumption in Indonesia occupies the largest portion of gross domestic product compared to export. Household consumption grew approximately 11% in 2011 and 2012. Such high consumption demand is mainly driven by Indonesia's huge population since Indonesia is the fourth most populated country in the world with around 240 million people in 2012. Meanwhile, as the national income per capita expanded from $ 2,200 in 2000 to $ 3,563 in 2012, the demand for consumer credit also increased. The share of consumer credit to total banking loans grew from approximately 8.8% in 1995 to 29.5% in 2012, with an exception of a decrease in consumer credit during the Asian financial crisis in 1998 when the consumer credit declined by 5.5%.

On one side, the high reliance on consumption is advantageous for the Indonesian economy in maintaining sustainable growth, particularly amidst the current weakening of the global economy as demand from the developed countries declined. Nevertheless, the growth of consumer credit may pose some challenges and risks to financial stability and to the economy as a whole.

In Indonesia, consumer credit encompasses housing loans/mortgages, automotive loans, multi-purpose loans and other credit. Housing loans, auto loans,

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1. Disclaimer: This paper's finding, interpretations, and conclusions are entirely those of the authors and do not represent the views of Bank Indonesia, or its Board of Governors. The authors are grateful to receive any suggestion for review, comments, and discussion.
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and multi-purpose loans share the largest parts of consumer credit in Indonesia. Therefore, this paper will focus on these types of loans, putting greater emphasis on housing loans.

In recent years, Indonesia has been experiencing higher growth in the property/real estate sector. Various types of property are built, including houses, condominiums, hotels, condotels (condominium and hotel on one building), housing stores (a house and a store in one building) and housing offices (a house and an office in one building), with prices rising persistently. Such phenomenon is believed to be contributed by the consistent growth of property loans. There is also a tendency that speculative motives induce the property demand. In Indonesia, property becomes an investment alternative for certain people who assume the property price will continue to increase in the future. They buy properties to be re-sold for profit, and not for self-occupation. Such behaviour drives up property prices in general, and makes the price unaffordable, particularly for the low/medium income people who have not owned any first house. For banks with large exposure to property loans, when the property price escalates extremely high, they may face increasing risks of non-performing loans.

This paper will elaborate the recent trends and developments in Indonesia's banking mortgages and consumer credit, and identify the underlying drivers as well as several approaches for identifying the potential vulnerabilities. This description will be followed by an analysis of the implications and risks of credit development on financial stability, and recommend the possible measures.

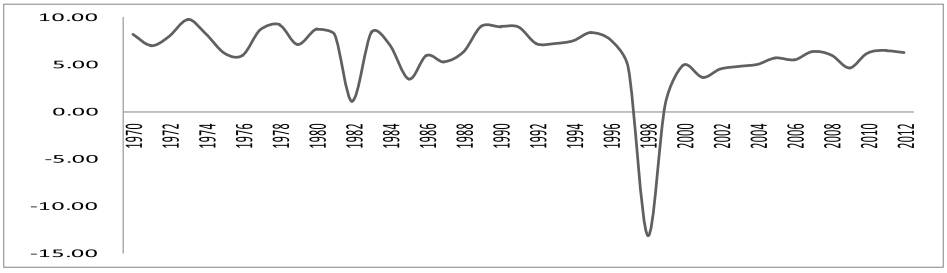
2. Mortgage Finance and Consumer Credit: Developments and Trends

2.1 Macroeconomic Overview

2.1.1 Economic Growth

Indonesia has been maintaining strong growth amidst the slowdown in the global economy. During the years leading up to the 1997-1998 Asian financial and economic crisis, Indonesia was experiencing high and sustained economic growth. The average annual GDP growth from 1970 until 1996 was 7.33% yoy. However, the crisis impacted the economy severely and turned the annual GDP growth rates into 4.70% and -13.3% during 1997 and 1998, respectively. Indonesia's economy started to recover in 2004 and gained momentum over the years thereafter. In particular the economy grew by 6.1% yoy in 2010, up from 4.5% yoy in 2009, despite the slowdown in the global economy. In 2012, Indonesia's real GDP growth was 6.2% yoy.

Graph 1
Economic Growth

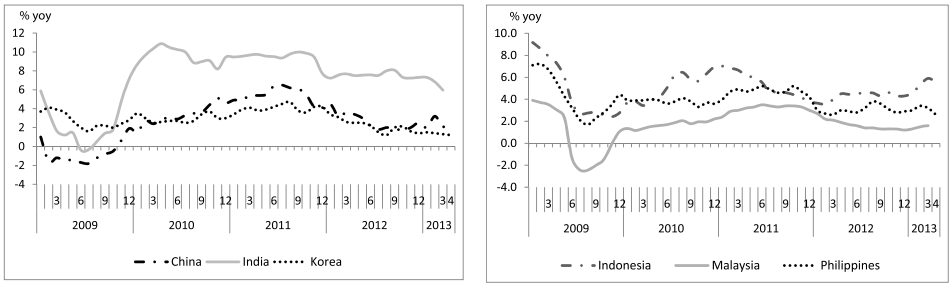


Source: World Bank.

2.1.2 Inflation

Indonesia has been experiencing relatively high and volatile inflation, a common phenomenon to most developing countries. The level of inflation reached its record in 1998 up to 77.64% when Indonesia was hit by the economic and financial crisis. The subsequent highest record was 18.38% in November 2005 driven by the reduction of fuel subsidies in October 2005 to align with the shock of international oil price. The escalating international price of commodities during the first three quarters of 2008, and domestic supply shortage during the second semester of 2010 drove prices upward. Since 2011 inflation tended to decrease from 7.02% in January 2011 to 3.79% in December 2011. Inflation remained contained during 2012 and recorded 4.3% yoy, achieving the government's target range of 4.5% ± 1%. Meanwhile, the target of inflation for 2013 as established by the government was 4.5% with ± 1% deviation.

Graph 2
Inflation in Emerging Economies



Source: Bloomberg.

2.1.3 Inflation and Interest Rates

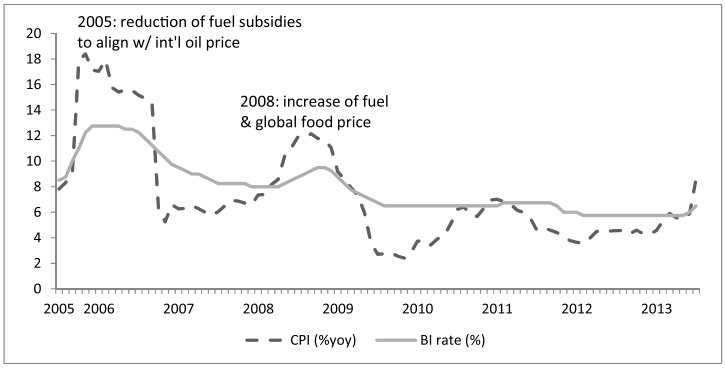
Bank Indonesia (BI), as Indonesia's central bank and monetary policy authority, has one ultimate mandate, i.e. to establish and maintain rupiah stability. This objective incorporates two key aspects: the first is a stable rupiah for goods and services, reflected by the inflation rate. Meanwhile, the second is aspect is reflected by the development of Rupiah exchange rate against other foreign currencies.

To implement monetary policy, BI has formally adopted Inflation Targeting Framework (ITF) as a working framework on July 2005. The inflation target is the level of inflation that must be achieved by BI in coordination with the Government. The target is established by the Government. In this regards, BI attempts to manage pressure on prices from aggregate demand relative to supply side conditions. The policy is not intended to respond to inflationary spikes arising from factors representing temporary shocks that will dissipate on their own with time.

For the inflation target to be reached, monetary policy is implemented with a forward-looking approach, meaning that any change in the monetary policy stance is undertaken after evaluating whether future developments in inflation are on track with the established inflation target. At the operational level, the monetary policy stance is reflected in the setting of the policy rate (BI Rate) with the expectation of influencing money market rates and in turn the deposit rates and lending rates in the banking system.

BI Board of Governors announces the BI Rate on monthly Board of Governors meeting and implements the decision on BI monetary operations through liquidity management in the money market to achieve the monetary policy operational objective. The operational target of monetary policy is reflected by interest rates on the Overnight Interbank Money Market, which are expected to be followed by deposit interest rates, and in turn, the banking credit interest rates. By considering other factors in the economy, BI will generally raise the BI Rate in the future when inflation is estimated to exceed a predetermined target; and BI will lower the BI Rate when inflation is expected to be below the target that has been set.

Graph 3
Inflation and Policy Rate



2.1.3 Related Banking Policy

Since the end of 2008, the BI Rate gradually went down from 9.50% in October 2008 to 6.00% in November 2011. The rate was further lowered 5.75% on February 2012. The level was preserved until May 2013. The declining policy rate were followed by several policies such as Statutory Reserve-Loan to Deposit Ratio Policy[4] and Announcement of Prime Lending Rate Policy[5] in order to encourage intermediary activities and transparency, and resulted in decreasing bank lending rate.

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4. Regarding the banking liquidity conditions as well as the role of the bank in intermediary functions, since March 1, 2011 the Rupiah Statutory Requirement-Loan to Deposit Ratio provisions (SR-LDR) is set within a range that is considered capable of encouraging banking intermediation function but still maintain the prudential principle, i.e., 78%-100%. With this provision, the bank that previously had LDR less than 78% was encouraged to disburse more credit.

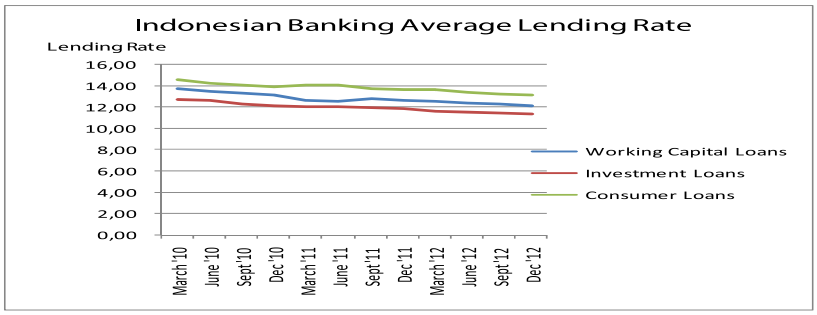
5. The BI Circullar Letter Number 13/5/DPNP dated February 8, 2011 required banks with total assets of Rp 10,000,000,000,000 (ten billion rupiah) or more to publish its Prime Lending Rate (PLR) information in rupiah through (1) notice boards in each Bank Office and (2) the main page of bank's website and newspapers since April 2011. The PLR is the interest rate base used by the bank as a reference in determining the interest rates of to the debtor. The calculation of the PLR is the result of the calculation of 3 components: (1) Cost of fund; (2) Overhead costs incurred in the process of granting Bank credit; and (3) Profit margin. The PLR has not taken into account the risk premium component, the magnitude or size of which is dependent on banks' evaluation regarding the riskiness of each individual debtors or group of debtors. Thus, the effective interest rate charged for loans to each individual debtor or group of debtors, which have incorporated such risk premium, may differ from the PLR.

Table 1
Indonesian Banking Average Lending Rate

Indonesian Banking	2010				2011				2012			
Average Lending Rate	March	June	Sept	Dec	March	June	Sept	Dec	March	June	Sept	Dec
Working Capital Loans	13,71	13,42	13,29	13,12	12,63	12,54	12,81	12,60	12,52	12,36	12,33	12,13
Investment Loans	12,75	12,64	12,33	12,18	12,08	12,06	12,02	11,87	11,64	11,50	11,42	11,37
Consumer Loans	14,58	14,28	14,06	13,93	14,11	14,10	13,74	13,64	13,63	13,45	13,24	13,17

Source: Bank Indonesia.

Graph 4
Indonesian Banking Average Lending Rate



Considering Indonesia's stable economic conditions, low inflation and declining interest rates, the condition is conducive for credit expansion. Granted by the sluggish global economic situation, consumer credit is the easiest area that can be focused on. Therefore, there is a possibility that consumer credit may hike, and may require anticipative measures in order to avoid any unwanted effects.

2.2 Banking Consumer Credit Overview

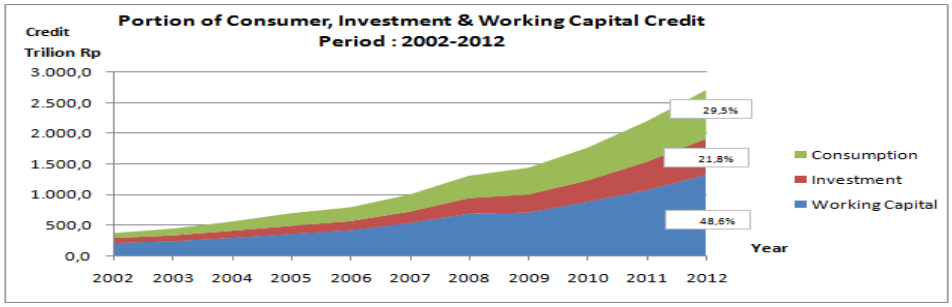
Indonesia's banking credit are broadly categorised into Working Capital Credit, Investment Credit, and Consumer Credit. The first two categories are intended for productive purpose and their share have been dominant, around 70% in 2012. Meanwhile, although consumer credit plays a relatively smaller part, the share increased from 21.6% in 2002 to 29.5% in 2012.

Table 2

Banking Credit Outstanding (Trilion Rupiah)											
Credit (Rp)	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Working Capital	206,4	235,5	289,7	354,6	414,7	533,2	684,7	703,0	880,2	1.068,4	1.316,7
Investment	84,3	96,3	118,7	134,4	151,2	186,2	255,9	297,9	348,5	464,2	591,4
Consumption	80,1	112,5	151,1	206,7	226,3	282,6	367,1	437,0	537,1	666,4	799,7
Total	370,8	444,3	559,5	695,6	792,2	1.002,0	1.307,7	1.437,9	1.765,8	2.199,1	2.707,9
Persentase	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Working Capital	55,7%	53,0%	51,8%	51,0%	52,3%	53,2%	52,4%	48,9%	49,8%	48,6%	48,6%
Investment	22,7%	21,7%	21,2%	19,3%	19,1%	18,6%	19,6%	20,7%	19,7%	21,1%	21,8%
Consumption	21,6%	25,3%	27,0%	29,7%	28,6%	28,2%	28,1%	30,4%	30,4%	30,3%	29,5%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Source: Bank Indonesia.

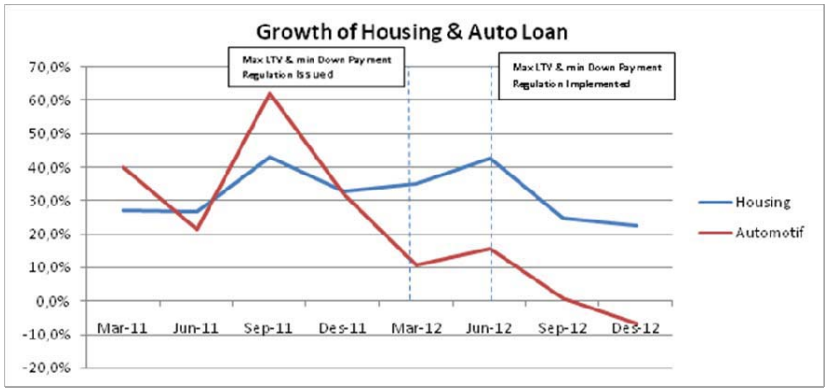
Graph 5



Source: Bank Indonesia.

Consumer credit comprises housing loans/mortgages (including landed house loans, apartment loans, house & store loans, house & office loans), automotive loans, multi-purpose loans, home appliance loans and other aggregate consumer credit. The share of each type of loans from overall banking consumer loans were 30.2%, 12.3% and 32.2% or 8.9%, 3.6% and 9.5% respectively of banking total credit. In December 2012, housing loans, auto loans and multi-purpose loans were the three largest consumer credit. Throughout 2012, housing loans and automotive loans grew by 22.4% and -6.8% and (yoy), respectively. Such growth is lower than the previous year, in which the growth of housing loans and automotive loans were 32.9% and 32.1% (yoy) respectively, which were far exceeding the aggregate loan growth (24.9% yoy).

Graph 6



Source: Bank Indonesia.

High growth on housing loans and automotive loans was partly driven by high demand for houses and by inefficient public transportation in Indonesia which thus force people to use private transportation, such as cars and motorcycles. Automotive loan growth was also driven by relatively relaxed loan requirements. Usually, automotive points of sales or dealers, in collaboration with bank or financial institution, offer low down-payment along with loose requirement. Should the auto loan debtor be unable to pay their monthly installment in the future, the purchased vehicle will be recalled by the bank.

High growth on housing loans and auto loans were accompanied by satisfactory credit performance. Non-performing loans (NPLs) of both housing loans and auto loans were relatively low. As of December 2011, the NPL was about 1.8%. However, in regard of auto loans, if the number of vehicles recalled by the bank due to the failure of installment payment were taken into account, the NPL was about 10%.

2.3 Property Sector Overview

The development of the property sector in Indonesia is propelled by various factors, mainly by the strong economic growth and increasing household consumption. The demand for property, particularly for housing, continues to burgeon from time to time, as the population increase rapidly with an annual growth rate of 1.49%. The growth of per capita income, household income, and the expanding middle-income class enhance the housing demand as well. Rising incomes increase people's disposable income, purchasing power, as well as saving, and allowing them to buy or invest on new property.

Rapid urbanisation also drove demand further. In particular, the population growth in DKI Jakarta province to a large extent is affected by migration from all over Indonesian territory, motivated by better jobs and education. The side effect emerged in the wake of urbanisation is the worsening traffic situation and rising land prices, which spurred the demand for city-based apartments. Responding to this, the government is in the process of providing and improving the necessary infrastructures, such as highways and mass transportation. Nevertheless, this turns out to be a vicious cycle, as infrastructure development induces further demand for housing as well, particularly in the capital's surrounding rural areas.

From the supply side, both domestic and foreign investors perceived Indonesia's high and fast-growing population, robust macroeconomy, and political stability as favourable investment opportunities in the property sector. Moreover, Indonesia's investment grade rating[6] becomes a good incentive for the expansion of investment, particularly amidst the global economic uncertainties.

In particular, the Global Property Guide positioned Indonesia as offering the third highest yield in property investment in Asia region, after Malaysia and Thailand. Survey by BI also confirmed such observation and added that the property price in Indonesia is considered to be cheaper than in the other Asian countries, but offers higher yield. With such positive economic outlook, the property sector in Indonesia is projected to continue to advance steadily.

From the funding aspect, high and stable economic growth has been helping to boost banks' balance sheets, adding further to their confidence on the security of their lending. Stable inflation expectation, as indicated by a lower and stable central bank's policy interest rate, support this stance as well. This is obvious in recent years, as competition among banks to win customers are getting more and more intense, many banks are offering easy mortgage credits. In general, banks have been offering fixed and low rates for the first two-year period of mortgage installment to facilitate people in obtaining a housing loan.

Nevertheless, the pace of housing ownership is not at the equal pace as that of population growth. On 2011, around 77.7% of households owned houses, while 8.68% of households fulfilled their housing needs by rent. Bahana Securities predicts that the high housing demand will continue to persist over the next two decades, with a total backlog of 8.6 million houses. At the beginning of 2012,

6. Based on Moody's and Fitch sovereign credit ratings. Moody's rating for Indonesia sovereign debt is Baa3 (January 2012). Fitchs credit rating for Indonesia is BBB- (December 2011).

the Association of Real Estate Indonesia (REI) estimated that the total need for housing can reach 2.6 million per year. Meanwhile, in mid-2011, based on the result of its 2010 census, Statistics Indonesia (BPS) stated that Indonesia's housing shortage approximately is 13.6 million units. The backlog is predicted to increase to 15 million units by 2015.

Strong housing demand, along with increase in price of construction materials, workers' salaries, and permittance fees, raised property prices as well. Cushman & Wakefield Indonesia noted that in 2011 landed house price increased by 27.7% and in 2012 by 27.8%. Meanwhile, the Bahana Securities analyst estimates that price grew by 30% during 2012, and predicts that house prices will further rise 15 to 20 % in 2013-14.

On the regional aspect, some areas are experiencing faster growth in price than the others. In this regard, Jakarta and Bali recorded the highest rising property prices during 2012, dominated by upscale properties in the elite area. During 2012, property prices in Jakarta and Bali rose 38% and 21% respectively. The spike surpassed many other elite cities such as Dubai (20%), Miami (19.5%) and Sao Paulo (14%). Jakarta benefited from strong continous GDP growth, which has stood at, or above, 6% for five out of the past six years and from rapid growth in its middle-class[7].

2.3.1 Bank Indonesia's Policy Responses

Such high growth of housing and auto loans became a concern of the central bank. High housing loan growth drives up property prices, particularly in Jakarta and its surrounding areas. On the other hand, there is also a tendency for the loan growth to be driven by speculative motives which boosts property prices higher, thus making it difficult for first-home buyers to obtain affordable houses. Based on a residential property survey conducted by BI, small type of building experienced the highest price increase.

With regard to auto loans, relaxed auto loan requirements and payment schemes may lead people to take credit beyond their funding capacity, and thus may trigger credit risk. As a matter of fact, BI simulation showed a negative correlation between down payment (DP) and non-performing loan (NPL). Loan with smaller DP will likely has higher NPL, and vice versa.

7. Knight Frank, Wealth Report 2013.

Responding to such development, in March 2012 BI issued a regulation regarding maximum Loan-to-Value (LTV) for housing loans and minimum down payment (DP) for auto loans. The action deploys the countercyclical approach which implements tighter regulation during periods of high credit growth. The regulation aims to improve banks' prudentiality in providing housing loans and auto loans, and to reduce the excessive growth of consumer loans in order to prevent vulnerabilities in the financial sector. This provision will be a screening mechanism for potential buyers as well. Higher down payment will require a prospective borrower to be viable and bankable, and reduce monthly installments. This will reduce credit risk.

Several months after the implementation of the regulation, the growth of auto loans decreased from 36.1% in December 2011 to -9.6% in April 2013. There was indication that the auto loan consumers shifted to multi-finance companies that have looser requirement[8]. However, as multi-finance companies began to implement minimum down payment, the growth of auto loans lowered from around 26.7% in December 2012 to 16.3% on April 2013. The nominal NPL in banking auto loans also decreased and was stable at around 1%. Nevertheless, the housing loan growth was only softened temporarily. The growth declined to 39.5% in November 2012 from 50.3% on May 2012 after the implementation of LTV regulations, and returned to 45.1% on April 2013.

The decline in housing loan growth upon LTV enactment did not restrain the rising property prices as well. It has been observed that there were consumers paying property purchase in cash, in particular for purchase of larger type of houses, and thus they were not influenced by LTV policy. Nevertheless, the impact of such consumer behaviour on raising the property prices was similar, and even may trigger further property overvaluation. This condition in turn requires consumers who needs housing loans to borrow more to be able to buy properties.

3. Review of Related Literature

Development and problems in the property and real estate sector impact not only the property sector itself but also the stability of the financial system. Although the failure of an individual enterprise in the property sector may have limited influence on financial stability, but if the number of companies failing at

8. Minimum down payment in banking are 30% for car and 25% for motorcycle. Meanwhile, multi-finance companies' thresholds for minimum down payment are 25% for car and 20% for motorcycles.

the same time are relatively large and are accompanied by high level of outstanding debts, the stability of the banking and financial systems may be harmed. Furthermore, since the property and real estate industries are closely related with various supporting industries, including the financial and banking sector, any disruptions may trigger crisis in the wider economy.

Experience from financial crises, both in the developing and advanced economies, indicated that the property and real estate sectors play a significant role in the financial system stability of a country. The financial crisis in Indonesia (1998), Japan (1990) and the United States (2007) were closely related to the development of property and real estate sector. The other countries notably the United Kingdom and three of the Nordic countries in the 1980s and 1990s experienced financial instability, and one of the causes was due to the property sector in these countries (Greef and Haas, 2000). Moreover, due to the systemic role of the US economy and currency, the US subprime mortgage crisis in 2007 had escalated into a global financial crisis, with worldwide spillover which further triggered the global economic crisis.

3.1 Lesson from Spanish Housing Bubble

The Spain housing bubble began in 2005 (Hadzelec and Prieto, 2012). Previously, Spanish banks invested strongly in the real estate sector during the 1990s and 2000. Spaniards' demand for property surged exhorted by the media and economists to buy property. House prices rose, in line with the increasing demand. During Spain's period of economic growth from 1997 to 2007, house prices grew by 155%, or 8% annually. Nevertheless, salaries remained and thus raising the ratio of housing price to earning average to almost tripled that of the EU-15 countries.

House prices fell by 22% between the onset of the financial crisis in 2008 and 2011. In order to keep the prices from falling, the banks were allowed to hold on to stocks of unoccupied housing. Banks are also protected their interests by rejecting new loans to small- and medium-sized businesses. This in turn led to an increase in unemployment and further harmed the prospect of economic recovery. In addition to the housing bubble as Spain's structural problem, the crisis was also contributed by uncontrolled expansion of the fiscal spending of the government.

Actually, Spain's banking system is structured in two tiers: large banks (Santander, BBVA) and smaller, such as territorial cajas (Summers, 2012). The caja system dates back to the nineteenth century. Cajas at that time were meant

to be almost akin to village or rural financial centres. As a result, the Spanish country is virtually saturated with them. There is approximately one caja branch for every 1,900 people in Spain, which account for 50% of all Spanish deposits. The caja banking system was virtually unregulated until 2010-2011 and were not required to reveal their LTV ratios and the quality of collateral they took for making loans. After the Spanish property bubble peaked in 2007 and when the larger Spanish banks began slowing the pace of their mortgage lending, the cajas went "all in" to the housing market, offering loans as well. Cajas played significant role. In 1998, the Spanish mortgage debt to GDP ratio was only approximately 23%. By 2009 it had more than tripled to nearly 70% of GDP, and cajas owned 56% of all Spanish mortgages.

3.2 Global Trend in Housing Prices Following US Subprime Crisis

Survey carried out by Case and Shiller (2012) indicated that US home buyers still view that house prices will likely rise in value over the next 10 years. Buyers predict that there will be steady long-term increases in home prices, even after US subprime financial crisis in 2009 in which US property prices fell more than 30%. With such continuing confidence, America's housing market seems to be resuming. Nationally, prices jumped more than 12% in January 2013 over the previous year, marking the largest increase since 2006. Prices are up in more than 100 cities, with increases above 10% in more than 47 major centres (Zillow, 2013).

The same sign of real estate revival is occuring in other countries as well. Swiss bank, UBS, in December 2012, warned that the Swiss national "real estate bubble index" had hit its highest point in 20 years. Such development prompted the government to require Swiss banks to preserve more capital reserves on February 2013. In Norway, home prices have quadrupled over the past decade, even after being adjusted for inflation. The International Monetary Fund (IMF) warned that the country's housing market may be overvalued by 20%. In Hong Kong, home prices increased more than 160% since 2008, with the IMF warning of a "risk of an abrupt correction." Even in Ireland, where house prices fell more than 40% at the depths of the crash, reported its largest price increase in December 2012 since the collapse of its housing market (McMahon, 2013).

Like the pre-2008 housing bubble, which sent house prices skyrocketing in Spain, Ireland, Denmark and Australia, the current boom is also led by prolonged low interest rates as part of the monetary stances taken by countries like Norway and Switzerland in order to hold their currencies from appreciating too rapidly. Nevertheless, the different driver of today's prices is that such price developments

are also helped by the wealthy global investors looking for safe havens to invest their money, not by any explosion of subprime lending like the one that fuelled the 2008 bubble. In this regard, Paddy Dring, the head of international residential property at Knight Frank, affirmed that today's real estate boom is driven by fundamental changes in the global economy, in particular by the abundance of new millionaires in the emerging economies and the aging population looking for convenient property for retirement purpose.

Nevertheless, such development may also be short-lived, cyclical, or even speculation driven. For instance, California experienced rebounding prices in 2009 and 2010, only to see them decreased again in 2011. Denmark, whose real estate bubble burst and house prices dropped by almost 20% in 2008, also saw a sudden spike in prices in 2011 before the downward spiral began. It is common sense that any shock to the economy, originating either internally or externaly, can cause fluctuations or volatility in economic activities.

3.3 Building Appropriate Bubble Indicators

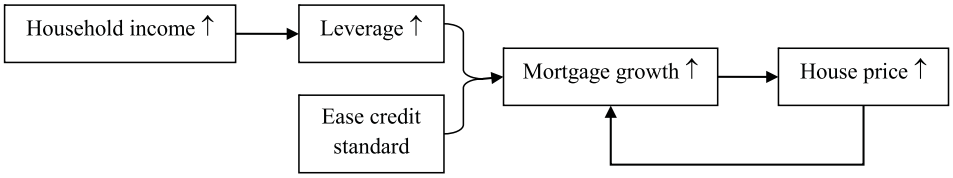
In order to identify the signs of property bubbles, economists have developed a number of financial ratios and economic indicators to assess whether properties in a given area are fairly valued. To come up with an educated guess on whether a real estate market is having a bubble, current indicator levels are compared with the levels that have proven unsustainable in the past (i.e., have led to, or at least accompanied, crashes). In this regard, the indicators that are useful in describing the two interwoven aspects of housing bubble are: (a) Valuation component and (b) Debt (or leverage) component. The valuation component measures how expensive houses are relative to what most common people can afford. Meanwhile, the debt component measures how indebted households become after buying a home, and also how much are banks' exposure to mortgage and household debts. However, we also need to be alert to the factors that drive housing prices, particularly the factors that tend to be inconsistent with the demand and supply fundamentals, as falling housing prices tend to result in higher rates of mortgage delinquency (non-performing loans).

Sukada and Santoso (2009) analysed the threat of both household credit to financial stability by using the balance sheet approach, in particular, by assessing household's maturity mismatches and solvency problems. These two types of problems are considered to be relevant to households.

According to Holt (2009), the major causes of property bubble that can lead to financial crisis are: (i) Low short-term interest rates; (ii) Low housing loan/

mortgage rates; (iii) Irrational exuberance that the property prices would never go down; and (iv) Relaxed standards for mortgage loans. In the same vein, the IMF cited that the likelihood of a housing crisis happening depends on whether the housing boom resulted from a deterioration of lending standards and the degree of leverage. Household leverage and ease of credit may fuel a strong mortgage credit growth (IMF GFSR, April 2011). The IMF also found that there are correlations between housing prices and mortgage credit growth. During the boom, stronger mortgage growth (as measured by the ratio of mortgage debt to GDP) may result in faster house price increase. In addition, the relationship between house price growth and mortgage credit growth works conversely, in that mortgage credit growth is also boosted by house price increases due to higher household wealth and expectations of further house price increases. Empirical analysis by the IMF on advanced countries has shown that, on average, a 10% increase in household credit is associated with about 6% in house prices.

Graph 7
Relation between Household Credit & Housing Price



With regard to the relaxed standard for mortgage loans, the US subprime crisis is clear evidence of how loosening credit requirement is extremely risky to the economy. During the decades prior to the development of the housing bubble, the standards for mortgage loans in the United States were fairly consistent. Most mortgages were 30-year fixed rate loans, requiring a down payment of at least 20% of the loan, or mortgage insurance if the 20% down payment requirement was not met. The borrowers also had to present underlying proof that their income was sufficient to ensure that the monthly mortgage payments would be affordable. But, in the mid-1990s new governmental policies were enacted that contributed to relaxing the mortgage loan standards. Furthermore, in 1995, the Community Reinvestment Act was modified pushing banks to increase their mortgage lending to lower-income households and resulted in the relaxation of mortgage lending standards by many banks.

Empirical studies by the IMF suggested that the type of interest rate being used in the mortgage market may affect mortgage growth as well. The use of variable-rate loans amplifies mortgage credit growth. While variable rate loans expose borrowers to interest rate risk and the banks to credit risk when interest rates go up, the lower variable rates relative to fixed rates may tempt myopic borrowers to take on excessive credit.

3.4 Indonesia's Case

Based on the BI Property Survey in 2006, the modalities of Indonesian house purchase include using bank loan (77.23%), using short installment (14.13%) and in cash (8.64%). Of that total bank loan, 75.57% was via commercial scheme (non-subsidised) and the remaining (24.43%) was under subsidised scheme.

Graph 8

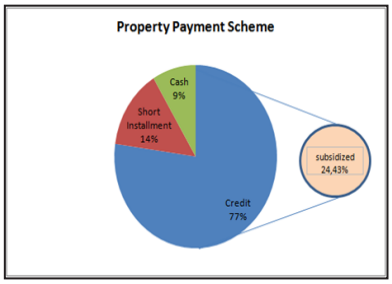


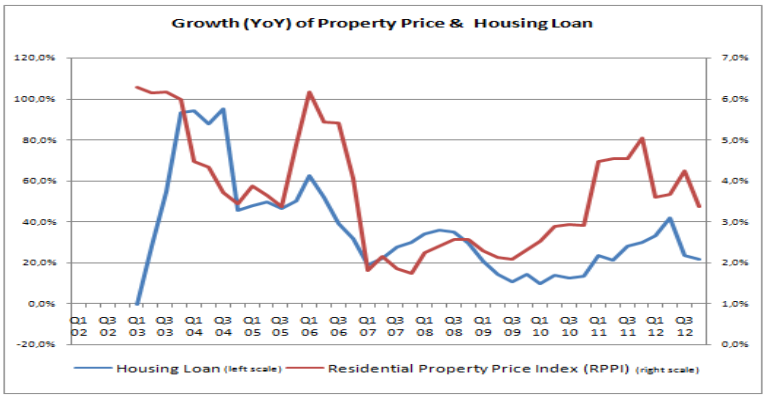
Table 3
Payment Scheme Used To Buy Residential House

Payment Scheme	Small Type (non subsidized)	Small Type (subsidized)	Medium Type	Large Type
Credit	70%	66%	60%	51%
Short Installment	9%	17%	17%	20%
Cash	21%	17%	23%	29%

Meanwhile, the main factors that affected people in applying property loans are interest rates, earnings, and the size of the down payment.

The BI study in 2011 revealed that there is a positive corelation between the growth of housing loan and growth of property price. The movement of Housing Loan Growth and the Residential Property Price Index (RPPI) is relatively in line.

Graph 9



The indication of factors that may trigger property bubble in Indonesia can be seen particularly in the form of low short-term interest rates and irrational exuberance, whereas the standards for mortgage loans are still prudent and banks' housing loan/mortgage rates are still relatively higher than the rates in other countries.

In Indonesia, banks usually offer Adjustable Rate Mortgages (ARM) scheme to attract more house buyers. Under such a scheme, banks give lower and fix housing loan interest rate for specific time, for example, the first two years of the mortgage contract. Afterwards, the rate is adjusted to a floating rate. Such initial lower fix rate could provide house buyers with a lower and relatively affordable monthly payment during the first two years. Nevertheless, when the fixed rate period is over, and the interest rate and mortgage installments are adjusted upward, debtors with insufficient payment capacity may find difficulties in fulfilling their obligation.

The low short-term interest rates (ARM scheme) contributed to the increasing housing price in two primary ways. First, the scheme encourages the practice of leveraging (investing with borrowed money). With short-term interest rates extremely low, investors can increase their returns by borrowing at low short-term interest rates and investing in higher yielding long-term investments, such as mortgage-backed securities. Such practice of leveraging then increases the financing availability for mortgage lending, and thus contributed to rising home prices. Second, as the scheme provides relatively affordable monthly payment during the first years, it can attract and acquire a wider range of customers and therefore increase housing demand. With higher demand, housing price will rise as well.

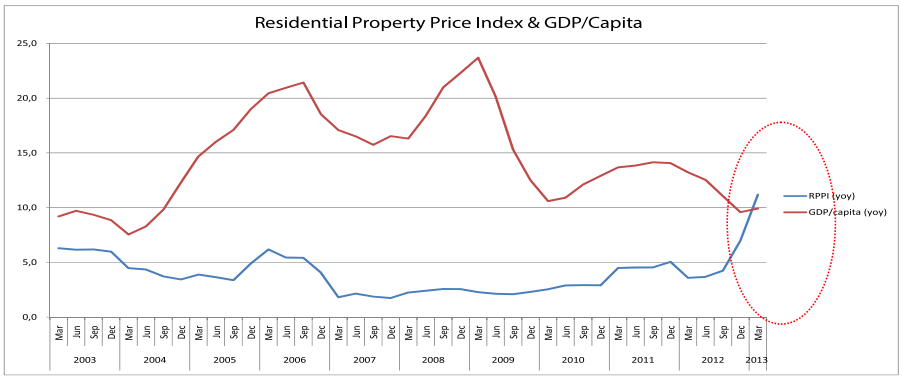
Irrational exuberance that the property prices will never go down is also visible in Indonesia's property market. BI's survey shows that people tend to invest in property instead of other investment alternatives, such as gold and other financial market instruments. Investors continue to buy property at any price, motivated by the expectation and belief that property prices will continue to rise in the future. Such behaviour may push price higher and trigger a housing bubble. When the rising house price turn into a housing bubble and eventually burst followed by home price drop, the impact on the economy may be augmented by the degree of leverage in the economy. In Indonesia, these possibilities need to be explored further in order to identify the magnitude of the related risk and vulnerabilities.

4. Mortgage Finance and Consumer Credit: Implication on Financial Stability

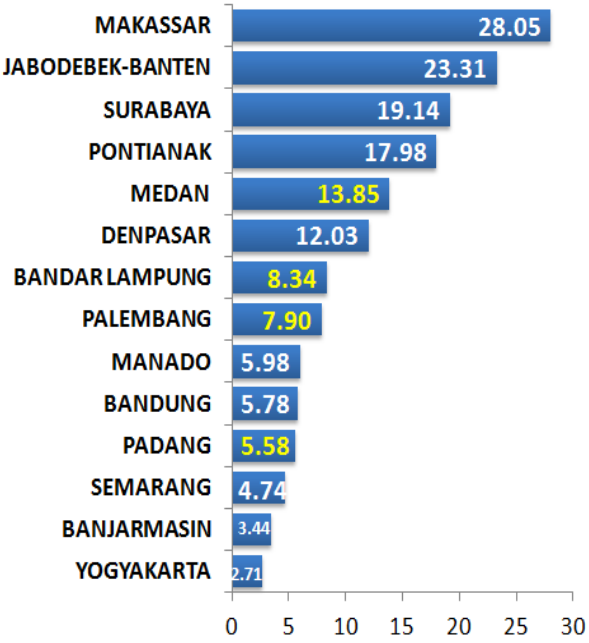
It is hard to predict when a property bubble is going to burst. Indonesia does not have any experience related to it. However, based on past experiences of other countries, there are some developments in the Indonesian property sectors that are similar to some indicators that are considered as major causes of a property bubble.

In Indonesia, the rapid growth of housing loan/mortgages is followed by a high increase in the Residential Property Price Index (RPPI) in the majority of the surveyed regions. In Q1 2013, the RPPI was 11.2 % (yoy) cumulatively. This index reflected the highest growth increase since the inception of the survey. In Q1 2013, the growth of property prices surpassed the growth of the GDP/capita. If this condition continues, it can render housing price unaffordable.

Graph 10



Graph 11
Residential Property Price Index in Several Areas



Even though as the national RPPI Q1 2013 grew 11.2% (yoy), based on the BI survey, higher RPPI growth occured in many areas, even in outer Java Island, areas remote from Jakarta, such as in Makassar, Pontianak, Medan and Denpasar.

For housing projects, a rise in property prices for a unit of the same type varies across locations. In South Jakarta, it reached 45% /year; in Tangerang, it reached 28% /year; in East Jakarta, it was 27% /year; and in Cileungsi area, it was 17% /year. In Semarang-Central Java, the increase in property price was between 7%-40 % /year; and in Bandung-West Java, it reached 9%-78 % / year.

In Indonesia, residential property is classified according to its building size. There are three main catagories: Large (>70m^2); Medium (22-70m^2); and Small (<22m^2). Each type consists of landed house and apartment. Besides the above categories, there are semi-commercial buildings, such as housing stores and housing offices. These are buildings designed for residential cum store or office use.

In April 2013, the largest share of housing loans was the landed house type 22-70m^2 loan (41.5%) followed by landed house loan type > 70 (37.4%). By growth, the growth of apartment loans was the highest. Apartment type < 22 loan grew 118.6% (yoy), apartment type 22-70 loan grew 83.8% (yoy) and apartment type >70 loan grew 71.4% (yoy). The BI survey also revealed that 5% of the respondents use multi-purpose loans to purchase properties. Multi-purpose loan is a facility for an individual customer who wants to fulfill his various needs with a certain collateral, usually property and salary base. Another type of multi-purpose loan does not require the borrower to provide any guarantee, but the interest charged is higher than ordinary loans.

Table 4
Outstanding/Share of Housing Loans/Mortgages

Housing Loan	Outstanding	Credit Share	NPL	Credit Growth (yoy)			
	Nominal (RpTrillion) Apr'13	% Apr'13	% Apr'13	Nominal (RpTrillion) Apr'13	Dec-11	Dec-12	Apr-13
Landed Housing Loan type <22	21,5	8,4%	4,5%	(8,2)	57,2%	-32,4%	-27,6%
Landed Housing Loan type 22 - 70	106,9	41,5%	2,9%	16,4	23,3%	18,6%	18,1%
Landed Housing Loan type > 70	96,4	37,4%	1,6%	29,9	26,9%	47,2%	45,1%
Apartment Loan type <22	0,7	0,3%	1,9%	0,4	56,2%	295,3%	118,6%
Apartment Loan type 22 - 70	6,0	2,3%	1,2%	2,7	59,7%	80,4%	83,8%
Apartment Loan type > 70	4,4	1,7%	0,3%	1,8	35,1%	68,1%	71,4%
Housing Store/Office Loan	21,7	8,4%	2,3%	5,5	82,8%	31,4%	34,0%
Total Housing Loan	257,6	100,0%	2,4%	48,6	32,9%	22,4%	23,3%
Multi Purpose Loan	261,0		1,0%	48,2	156,9%	32,8%	22,6%

The share of mortgages is still dominated by banks with total share of more than 99.7%. Another source of fund for mortgages are Rural Bank and Multi Finance Company. However, the shares of both institutions are still very small. Secondary financing by PT Sarana Multigriya Financial Tbk (SMF) is also relatively small. Cumulatively, the total outstanding balance of financing channelled by the company reached Rp 8.5 trillion.

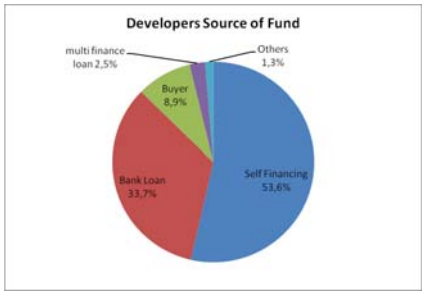
Table 5
Mortgage Financing by Bank, Rural Bank & Multi-Finance Companies (as of Dec. '12)

Mortgage	Outstanding (Rp Billion)	%
Bank	241,741	99.68%
Rural Bank	766	0.32%
MNC	10	0.,00%
Total	**242,517**	**100.00%**

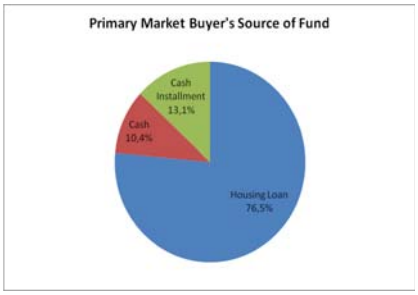
Securitization	Rp Billion	%
PT SMF	8,500	100.0%

Bank mortgage is the main source of home purchasing by consumers both for the primary and secondary market. On the other hand, developers mostly use their own funds to build the property. In the secondary market, medium size residential property dominated the market with share of around 61.8% and followed by large residential property.

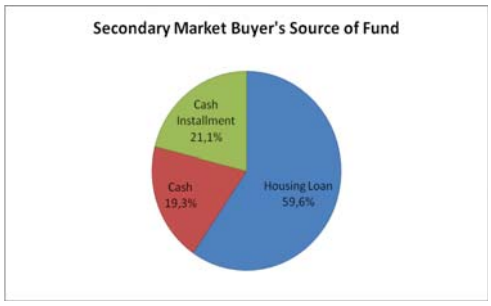
Graph 12



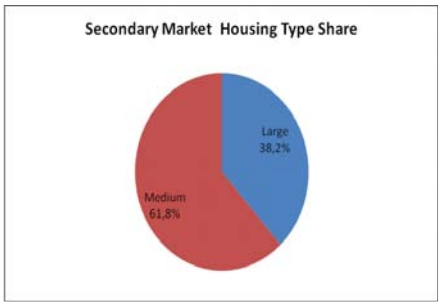
Graph 13



Graph 14



Graph 15



4.1 Speculative Behaviour in Indonesian Property Market

BI detected the ocurrence of bulk property purchase, whereby a customer puchases more than one unit of property, even more than 10 units at a time, either using a mortgage or cash/short installment. The central bank debtor information system revealed that there were 35,298 debtors who own more than one mortgage at the same time, with total mortgage outstanding at Rp 31.8 trillion (accounting for 12.4% of the total mortgage loans in April 2013). Most of these debtors (70%) have outstanding mortgage loan below Rp750 million, with mortgage tenors ranging from 6 to 10 years, and the average mortgage interest rates below 10%, with total outstanding at Rp 6 trillion. Note: Not including bulk (more than one) property purchase tied in one credit agreement.

Table 6
Number of Debtor Having More Than More Housing Loan/Mortgage Facilities

No	Credit Ceiling Range	Debtor Number	Debtor Number Share	Number of House	Total Ceiling (Rp Billion)	Total Ceiling Share	Total Out-standing (Rp Billion)	NPL (Rp Billion)	% NPL
1	0 - 750 jt	24,820	70.3%	51,.930	6,733	19.5%	6,019	98	1.6%
2	750jt – 1.5M	5,097	14.4%	11,102	5,402	15.7%	4,978	89	1.8%
3	1.5M - 2,25M	2,091	5.9%	4,727	3,836	11.1%	3,572	46	1.3%
4	2.25M -3M	1,110	3.1%	2,581	2,879	8.3%	2,685	35	1.3%
5	3M – 3.75M	637	1.8%	1,551	2,133	6.2%	2,016	35	1.7%
6	>3.75M	1,543	4.4%	4,132	13,519	39.2%	12,562	118	0.9%
	TOTAL	**35,298**	**100.0%**	**76,023**	**34,502**	**100.0 %**	**31,830**	**420**	**1.3%**

No	Number of Housing Loan Facility	Debtor Number	Debtor Number Share	Number of House	Total Ceiling (Rp Billion)	Total Ceiling Share	Total Out-standing (Rp Billion)	NPL (Rp Billion)	% NPL
1	2	31,368	88.9%	62,736	24,878	72.1%	22,968	366	1.6%
2	3 - 6	2,937	8.3%	8,811	5,796	16.8%	5,288	45	0.9%
3	6 - 9	947	2.7%	4,092	3,211	9.3%	3,001	9	0.3%
4	9 - 12	39	0.1%	292	496	1.4%	455	-	0.0%
5	12 - 15	5	0.0%	54	73	0.2%	71	-	0.0%
6	15 - 18	-	0.0%	-	-	0.0%	-	-	0.0%
7	> 18	2	0.0%	38	49	0.1%	47	-	0.0%
	TOTAL	**35,298**	**100.0%**	**76,023**	**34,502**	**100.0%**	**31,830**	**420**	**1.3%**
	Total Housing Loan Apr'13	768,132					257,635	6,179	2.4%
	Percentage	4.6%					12.4%	6.8%	

Around 50% of the debtors with more than one mortgage loan took the facilities within the last 3 years. The trend of a customer taking more than one mortgage appears to be rising since 2010.

Table 7
Number of Debtors With More Than One Housing Loan/ Mortgage Facilities Since 2010

No	Year	Number of Mortgage	Share (%)	Outstanding (IDR Billion)	Outstanding (%)	Ceiling (IDR Billion)	Ceiling (%)
1	<2009	13,298	38%	5,102	16%	6,025	17%
2	2010	4,700	13%	3,500	11%	3,852	11%
3	2011	6,570	19%	7,300	23%	7,958	23%
4	2012	8,299	24%	11,803	37%	12,378	36%
5	2013 (up to Apr'13)	2,431	7%	4,126	13%	4,290	12%
	Total	**35,298**	**100%**	**31,830**	**100%**	**34,502**	**100%**

4.2 Demand for Property Will Remain High

Besides for residential purpose, the high demand for property is also driven by investment/speculation due to expectations of rising property prices. The BI survey in June 2013 revealed that in the last one year 42.5% of the respondents chose to invest/buy property in comparison to gold, stocks/mutual funds and deposits. Demand for property in one year ahead is also forecasted to remain strong. 64% of the respondents chose to invest in property instead of other options. The same survey also revealed that not all of the first mortgages are used for residential purpose. 13.9% of the respondents said that they use their first mortgage to buy property as an investment instrument or for rent. 65% of second mortgages are used for investment and 100% of third mortgages are used for investment. Therefore, it is clear that the more property is owned, the more likely it is used as an investment/speculation instrument. 81.1% of the respondents stated that the reason for buying a property is the expectations of its rising price.

Table 8
Investment Options

Penempatan	Last 1 year Investment Realisation		Investment Plan for next 1 year	
	Respondents	%	Respondents	%
Property	111	42.5%	199	64.0%
Gold	72	27.6%	79	25.4%
Stock/Mutual Funds	38	14.6%	20	6.,4%
Time Deposits	70	26.8%	43	13.8%
Respondents :	261		311	

Explanation : Respondent can choose more than one investment options, then total percentages is more than 100%.

Table 9
Usage of Property #1, #2, #3

Pemanfaatan Properti	Residential Purpose		Investment / For Rent	
	Respondents	%	Respondents	%
Housing Loan #1	334	86.10%	54	13.90%
Housing Loan #2	10	34.50%	19	65.50%
Housing Loan #3	0	0%	2	100%

Table 10
Reason for Choosing Property as an Investment Instrument

Reason	Respondents	%
Increasing Price	90	81.1%
Interesting Gain	54	48.6%
Easy to be Resaled	13	11.7%
Respondent :	111	

The BI consumer survey[9] revealed that the average Indonesian Debt Service Ratio (DSR)[10] is relatively low, i.e., 15%. The Indonesian household uses most of its revenues for basic necessities (65%). Only about 15% of the revenue is used to pay financial obligations (including mortgage and other loans) and still has 20% of its revenues to be kept as a savings. The DSR of 15% is still lower than Indonesia's banking requirements that range from 30% to 40%[11]. This situation indicates that the household sector in Indonesia is still prudent in managing its finances and still have the capacity to increase its loan.

Table 11
Average Percentage of Household Income Usage

Usage of Household Income	2012	2013 (Jan-Apr'13)
Consumption	65.5%	65.0%
Credit Installment	14.7%	15.4%
Saving	19.9%	19.6%
Average of Respondent Number	6,450	6,448

9. Based on consumer surveys in 30 cities by BI Statistic Department.
10. Debt CService Ratio = the ratio of principal and interest payment compared to income)
11. BI survey on June 2013.

With such characteristics, the demand for housing is predicted will continue to increase. This behaviour is feared will drive housing price increase. The increasing price needs to be controlled to maintain financial stability. A more targeted policy response needs to be taken to slow down the growth, particularly for the debtors who have more than one mortgage. Along with that, other measures such as financial market deepening can provide people with investment alternatives.

4.3 Policy Response Regarding High Increasing Property Price in Many Countries

In general, the response to a rise in property prices in many countries is by implementing policy targeting on mortgage growth, tax, or combination of both measures. The often taken policy measures, among others, are: (i) Loan To Value; (ii) the Stamp Duty (Taxation); (iii) Debt Service Ratio; and (iv) adjustment on Right Weighted Asset. The existence of speculative behaviours in the property market has become one of the biggest concerns of the authorities in the comparison countries. It is indicated by the adoption of: (i) Policies that imposed additional tax on property sale and purchase under certain periods (holding periods); and (ii) A distinction in LTV levels in areas that are prone to speculative behaviour.

Based on current discussions with several property consultants, the Indonesian property sector is described among others as follows: From the supply side, in 2013, it is estimated there will be increased supply of residential property since developers have postponed launching several residential projects in 2012. Following the delays, the residential property supply is expected to increase in 2013. In terms of house prices, it is estimated that residential property prices will continue to experience an increase in 2013. This prediction is supported by the historical trend of land prices increasing which has occurred in the year 2012 by 28% (yoy). Several locations with high residential property increase are indicated as overvalued, but not bubble. Overvaluation occurs in the primary market due to developers' marketing gimmick. Overvaluation is usually characterised by high price spreads (generally greater than 20%) between property prices in the primary and secondary markets. In turn, this situation can cause a decrease in property prices.

Meeting with several mortgage lender banks in order to solicit input regarding the current property sector condition, yielded the following findings:

- In general, the banks said that the previous LTV provision was in effect an early enactment. However, after a few months, mortgage applications were back to normal.

- There was a bank stating when it finances residential properties in certain areas that are considered to have a high price rise, the bank imposes lower LTV provisions. This stance actually can only be practised by large banks which have relatively high competitive advantage. However, there are also several banks which said that in conditions of intense competition, if bank does not provide good services and facilities to the borrowers, the banks will lose their competitiveness.

In short, we can find some behaviours in Indonesia that need to be given more attention, such as:

- Banks need to consider its debtor payment capacity when interest rates on the mortgages are adjusted upward (typically after two years). The higher mortgage payments can lead to unmanageable repayment when the debtors do not have sufficient capability. Banks also need to take into account some shocks that can lower debtors' income in the future.

- The belief in Indonesian society that the property bubble will not occur and prices will not come down can be concluded from the above survey where people tend to invest in property rather than in other alternatives, such as gold and other financial instruments. Another fact is that there are many borrowers taking out housing loans/mortgages to invest in property. Some of them even have more than nine housing loans/mortgages at the same time.

- Another indicator that needs more attention is the fact that the growth of property price already exceed the growth of GDP/capita. This can be a measure as to how expensive houses are relative to what most people can afford.

However, the findings indicating that Indonesian households are less indebted, still have room to save, growth of the middle class, growth of the younger generation and soundness of banks in Indonesia give much hope that the property sector in Indonesia can be properly managed. Nevertheless, this does not imply

that BI does not have to do anything regarding the current development in the property sector. Since the majority (99%) of housing loan/mortgage lenders are commercial banks, one of the most crucial tasks that should be addressed is the enhancement of the banks' prudential standards for mortgage loans.

In Indonesia, the BI has issued the following regulations covering the property sector:

a. Circular Letter No. 30/2/UK and SK Dir No. 30/46/KEP/DIR dated 7 July 1997 concerning Restrictions on the Credit Granting by Commercial Banks for Land Procurement and/or Tilling Financing.

   With the regulations, banks are prohibited from giving direct/indirect credit to developers to support land procurement and/or tilling as well as purchase and/or guarantee securities issued by developer companies for land procurement and/or tilling. The ban is excluded for purchasing/lending credit/ underwriting securities from developer companies intending to procure lend for construction of simple houses/apartments for low-income folks, shop/ traditional market and highway development.

b. Circular Letter No. 13/6/DPNP dated 18 February 2011 concerning Guidelines of Risk Weighted Asset (RWA) Calculations for Credit Risk Using Standardised Approach. RWA for mortgage-backed security for Houses: 35% when maximum Loan-to-Value (LTV) is 70%; 40% if the maximum LTV is 70% - 80%; 45% when LTV 80% - 95%; Credit risk weights for commercial-property-backed security is 100%.

c. Circular Letter No. 14/10/DPNP dated 15 March 2012 concerning the Implementation of Risk Management at Banks that Lend Housing and Auto Loan. LTVof Housing Loan for residential property type > 70 m^2 maximum is 70%. The regulation is exempted for housing loan to finance property of building size <70m^2 and all govermennt housing programmes.

Maximum LTV regulation for housing loan type > 70m^2 has been in force since 15 June 2012. However, the growth of housing loan type > 70m^2 and loan for apartment type > 70m^2 remain high, each type reaching 45.1% and 71.4% in April 2013. This high housing/apartment loan growth was coupled by a high rise in the RPPI index. The increasing price was driven by high demand for housing, either for residential purpose or for investment. The central bank found that there are many borrowers using bank credit to purchase more than one property at the same time. This issue is a cause for concern as it can become

a trigger for financial instability in the event of a spike in defaults. Therefore, a policy is needed to control property purchases, especially property purchases that are not used to fulfill basic needs.

In view of these facts, BI pays more attention to those banks that may lower prudential standard to be competitive in this market. The possibility of such a situation happening is one of the considerations that warrant the introduction of certain minimum standards. BI hopes that there will be no bank that is too aggressive, lowering its prudential standard to exist in the mortgage market.

In the longer term, BI needs to coordinate with the government, in this case the tax authority, especially to dampen property speculation using cash/short installment. This step is needed since BI provisions can only affect property demand that use credits, but not effective to influence the property purchases using cash/short installment. Usually, property investors/speculators purchase property in large quantities, hold them for a while and then re-sell them for a profit. This action drives the property price upward rapidly. Additional taxes related to the duration of the property's buying and reselling period (holding period) hopefully can influence property demand that is indicated as speculation.

4.4 Stress Test

In Indonesia, there are 120 commercial banks of which 109 disburse housing loans/mortgages. The top ten banks with the biggest housing loans/mortgages outstanding have a combined share of 83% of the total national housing loans/ mortgages outstanding.

Property credit consists of housing loans/ mortgages, construction loans and real estate loans. In April 2013, total Non-Performing Loans (NPL) of property credit was 2.31%, contain NPL of housings loan/mortgages was 2.4%, NPL of real estate loans was 0.68% and NPL of construction loans was 3.52%. Besides of the credit, NPL of multi-purpose loans was 0.98%.

The Department of Statistics-Bank Indonesia survey on May 2013 revealed that 5% of the respondents having multi-purpose loans use them to purchase property. The largest multi-purpose credit utilisation are for business working capital (32.8% respondents), house renovation (29.2% respondents) and educational fees (15.2% respondents). Thus, the stress test on property credit took into account all the credit related to property such as housing loans/ mortgages, construction loans, real estate loans and certain percentage of multi-purpose loans.

Assuming the default of property credit increase to 10%, several banks will have NPL of more than 5%[12] but no bank will have a Capital Adequacy Ratio (CAR) under 8%[13]. Based on this stress test result, to maintain financial stability, it is important to enhance bank prudential standard to avoid higher risk on very fast growing property price, especially when the mortgages is used to finance the second, third or more properties.

5. Policy Recommendations

Considering all the facts related to the property sector development, it can be concluded that in general banking credit related to property is still at a manageble level in Indonesia. However, the high growth of mortgage loans, rapid increase in house price and the motivation of people to use property for investment/speculation need to be addressed in the early stages so that the symptoms will not lead to an unwanted situation.

The Indonesian demographic characteristics make up of a growing younger generation and expanding middle class and coupled with continuing stable economic growth, it can be predicted that property demand, especially residential property, will increase. Considering the fact that there is a backlog in the property supply, property price will undoubtedly rise. However, people need to be more cautious when faced with rising property price that does not adequately reflect sound fundamentals. If all the parties are of the view that the property price will never go down, then the vulnerabilities will actually materialise. Due to intense competition, banks struggling for a share in the mortgage market may lower their prudential standard to survive. Enhancing prudential regulation is one method by which the central bank can maintain financial stability amidst a very high growth property sector.

12. Threshold of NPL for bank is 5%. When the NPL is above 5% , the bank is considered to need more attention and below 5% is acceptable.
13. Minimum Capital Adequacy Ratio (CAR) for banks in Indonesia is 8%.

Some regulation is needed to enhance the prudential standard of the financial sector. The new regulations are as follows:

Previous Regulation	Amendment	Consideration
Consumption Loans, including multi- purpose loans, which use property as collateral have not been regulated yet.	LTV regulation also be applied for Consumption Loans (such as multi-purpose loans, etc.) backed by property collateral.	Bank has risk exposure related to increasing property price used as collateral.
Usage of other types of credit that can be used as additional loans to fulfill the advance payment of property purchases have not been regulated	Banks are prohibited from providing additional financing as a complement to the mortgage to fulfill the advance payment of property purchase.	Restrict the possibility of any additional credit/financing toward mortgages that will add to the bank's credit exposure.
Provisions regulated residential properties, including apartments but did not including Home Stores and Home Offices.	Provisions need to be extended by regulate Home Stores and Home Offices, but only for the acquisition of second and more facilities.	Home Stores and Home Offices have productive functions. Therefore, purchase of the first property facility will be excluded from LTV regulation. However, Home Stores and Home Offices have quite high credit growth and are used broadly as an investment / speculation instruments.
The highest LTV ratio is 70% for mortgages with buildings size > $70m^2$. The regulation does not take into account the second, third mortgage, and so on.	Implement lower LTV for second or more mortgages with building type > $70m^2$ and even for certain mortgages with building size < $70m^2$	The second or more mortgage loan has more potential to be used as an investment / speculation instrument. Policies that require lower LTV for second or more mortgages are also intended to provide wider opportunities with the lighter requirements for people who need a home for the first time, compared to others that seek second or more facilities.

Previous Regulation	Amendment	Consideration
Minimum LTV regulation for apartments is the same for landed houses although these two property types have different characteristics.	Distinguish LTV rules for apartments and for landed houses.	Compared to landed house, apartments have higher credit growth, higher price per unit and are commonly sourced by upper-middle class.
Spouses as debtor have not been regulated.	Husband and wife considered as one debtor and provable based on the family card. If the husband singly has an outstanding mortgage loan, then a new mortgage loan on behalf of the wife will be perceived as a second mortgage loan and will be imposed lower LTV. This regulation will be excluded if husband and wife have a Separation Wealth Agreement endorsed by the authority.	Limits the possibilities to use the name of a wife or husband to avoid the provisions.
Mortgage contract that ties more than one property unit has not been regulated.	In the event that a mortgage loan agreement binds more than one unit of property, the banks determine which one is the first property financed by mortgage loan, the second, and so on. The first financed property is the one with lowest market value.	Addressing the possibility of bank/debtors exploiting a loop hole within the existing regulation by financing more than one unit of property in one loan agreement.
Object of property, whether the construction of the building is completed (ready stock) or the building needs to be built has not been regulated.	Second or more facilities only be allowed to finance a ready stock properties. First facility still be allowed to finance a property that has not been built or are in the development stage.	This regulation will avoid usage of banking credit to buy more than one property unit that has not been built or are in the development stage for any purpose, including speculation.
Mortgage disbursment from bank to developer has not been regulated.	Mortgage facility disbursment from bank to developer can only be disbursed based on progress of development of property.	In Indonesia, bank usually disburses credit for the home ownership (that should be extended to debtor), directly to developer who builds the property purchased by the debtor. This regulation will enhance prudential practice and consumer protection aspect.

Table 12
Proposed Adjustment Value to Previous LTV Regulation

Type	Maximum LTV		
Loan For	**I**	**II**	**> II**
Landed House Type > 70m^2	70%	60%	50%
Landed House Type 22-70m^2	-	70%	60%
Landed House Type <22m^2	-	-	-
Apartment Type > 70m^2	70%	60%	50%
Apartment Type 22 - 70m^2	80%	70%	60%
Apartment Type < 22m^2	-	70%	60%
Housing Store/Housing Office	-	70%	60%

All the above LTV regulation is exempted for government housing programme and/or mortgage that receives government subsidies. With this adjustment:

- Multi-purpose credit, as a consumption credit that often use property as a collateral, will be included in the LTV regulation. BI's monitoring has revealed that the credit has the largest proportion of consumption credit, and is showing a high growth over the past few years.

- Productive credit, such as Investment Credit and Working Capital Credit which often have property (land and building) as collateral, will be excluded from the LTV provisions.

Thus, the advanced settings of LTV/FTV regulation require all banks to apply equal administrative terms for mortgages, treatment for husband and wife debtor, the arrangements for additional credit/financing based on properties that are still being used as collateral for mortgage facilities (top-up credit), arrangements for consumption credit/financing backed by properties, and restrictions for banks to provide additional credit/financing for the fulfillment of the advanced payment of property purchasing. Policy that imposes lower LTV/FTV for the second, third, or more properties are also intended to provide opportunities with the lighter requirements for people who need to acquire a home for the first time than for parties who apply for second or more mortgage facilities. In addition, the provisions are also intended to enhance consumer protection by requiring that second or more mortgage facilities are not allowed to be used to finance the purchase of a property that has not been built or is in a development stage. This provision will prevent anybody from using banking credit to buy more than one property unit for any purpose, including speculation, when the property has not been built completely. While the first mortgage is still

permitted for purchase of a property that has not been built completely, some regulation is required to cover bank's relationship with developers.

Besides the enforcement of above regulation by the central bank, coordination with the fiscal authority is needed to deal with property buyers using cash since the LTV regulation cannot influence this categeory of property buyers.

5.1 Additional Taxes Related to the Holding Periods

To maintain financial stability, the central bank needs to coordinate with the government, especially the fiscal authority, in setting a holding-period regulation associated with an additional tax when there is a sale of the property within a certain period after the purchase. This kind of action (buying properties usually in multiple units, then selling them for a gain in short periods) is able to boost property price and often makes the real property consumer pay a higher price for property they need. To minimise this activity, an additional tax is proposed to be imposed when the residential property is sold within 4 years of its purchase date. The quicker a property is purchased and resold, the higher the additional tax or, in the other words, the additional tax will be higher when the holding period is shorter. The principle of the additional taxes is to discourage people intending to sell the property in order to gain margin in quick time after purchase using cash/short installment as a payment method. Thus, the value of the additional tax that will be imposed must take into account the level of profitability obtained. The expected result is to limit the activity of property speculators expecting a rise in property prices.This measure also able to address every parties that conduct property speculation without using banking credit. As an illustration, the Table 13 below describes the proposal of an additional tax regulation that is related to the holding period.

Table 13
Holding Periods Related to Additional Tax of Property Selling

Holding Period	Additional Tax toward Property Seller	
0 - < 1 year	16%	from selling price
1 - < 2 year	12%	from selling price
2 - < 3 year	8%	from selling price
3 - < 4 year	5%	from selling price
> = 4 year	0%	from selling price

6. Conclusion

- The share of consumer credit in Indonesia has been increasing. The share accelerated from 21.6% in 2002 to 29.5% in 2012. Housing loans, auto loans and multi-purpose loans have been among the biggest components of consumer credit in Indonesia.

- In March 2012, BI issued a regulation regarding maximum LTV for housing loans with building size > $70m^2$ (large size) and minimum down payment for auto loans to address the high growth in housing loans and automotive loans. This action is a deployment of the countercyclical approach which enforces tighter regulation during periods of high credit growth. The objective of this regulation is to improve bank prudential in providing housing loans and auto loans. As a result, auto loans have been decreasing and the nominal NPL is declining, but the housing loan growth was only sluggish temporarily. After several months, the growth increased and, as of April 2013, the loan growth of housing type > $70m^2$ remains high.

- In April 2013, the growth of housing loan was around 45.1% for landed house type > $70m^2$ and was 71.4% for apartment type > $70m^2$, far above the average banking credit that grew at 21.9%. This housing loan type > $70m^2$ growth was accompanied by soaring price of house in many cities in Indonesia. In several areas the rise was so high, arround 30% - 45%, even more than 70% yoy. This soaring price increase is worrisome as it will influence other types of property price, especially property for the low-middle income population catering for their their primary need, to be unaffordable. This situation becomes a concern since the biggest backlog lies in this housing type. Besides that, a fast growing property price will made people apply for much more credit. This means the banks will be exposed to higher risk when the increasing property price is excessive.

- It is hard to predict when a property bubble is going to burst. Moreover, Indonesia does not have any experience related to it. However, from the lessons of experience learned from others countries, the major causes of property bubble that can lead to financial crisis are as follows: (i) Low short-term interest rates; (ii) Low housing loan/mortgage rates (iii) Irrational exuberance; and (iv) Relaxed standards for mortgage loans. Some of the signs such as irrational exuberance are already happening in Indonesia. Nowadays, property is the most preferred instument as investment tool. The belief that the property price will always increase is the most reason why people choose to invest in property. The central bank also identified

an increasing preference by borrowers to use bank loans to buy more than one property. In April 2013, the number of debtors who have more than one housing loan facility is around 35,000 persons or about 5.1% of the total housing loan debtors owing an outstanding 12.4% of the total housing loan outstanding. Around 3,000 of 35,000 debtors have 3-6 housing loans and almost 1,000 of 35,000 debtors have 6-9 housing loans. The number of debtors which have more than one housing loan from year to year is on the increase. With the above trend, the housing loan demand is predicted to go up.

- As of end-2012, Indonesia's mortgages/GDP was relatively low around 2.7%. The share of mortgage to total banks' credit is also relatively low around 9.1% (April 2013). If we take into account all the credit related to property, such as construction credit and real estate credit, then the property credit in April 2013 was around 13.4%. The average household's Debt Service Ratio (DSR) also is still at a safe level. In 2013 (data up to April 2013) the Indonesian household DSR was around 15%. This DSR ratio is far below the bank DSR standard that usualy fall between 30% - 40%. Moreover, the households still can keep 20% of their income as a savings. This means that the households in Indonesia still have the capacity to take on more bank loans.

- Considering inter-bank competition to attract clients, stress test result and the vulnerabilities that may occur from uncontrolled housing loan growth, the only way to maintain financial stability is by evaluating the related provisions and enhancing banks' prudential standard. Most people are in need of housing loans for residential purpose while there are some people who take housing loans to invest in properties. Therefore, more targeted provisions are needed to address this current situation to discourage the people who take more than one housing loan, but still accommodate the people who genuinely need to take housing loan for a primary need. Since the majority (99%) of the housing loan/mortgage lenders are commercial banks, central bank regulation can hopefully influence the mortgage growth.

- BI awares that there are many people who buy properties using their own cash. This category of buyers often use propety as their investment/ speculation instrument by acquiring property in advance, often in multiple units even before their construction, and then sell the property units they own in a short period. This practice can cause the property price to overshoot and this behaviour can be find in many places. That is why it is easy to find unoccupied properties in almost every residential location. To deal with this

kind of behaviour, BI needs to coordinate with the fiscal authority to explore the possibility of imposing additional tax or duty on properties that are bought and sold within a certain period of time.

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Chapter 5

THE EFFECT OF HOUSEHOLD DEBT ON CONSUMPTION: DELEVERAGING AND FINANCIAL STABILITY IN KOREA

By
Jong Chil Son[1]

1. Introduction

Household consumption depends upon the household's economic conditions, including its income, wealth, return to savings, preferences, and the uncertainty that it faces. However, gross debt is not typically regarded as an independent determinant influencing consumption in the traditional models; rather, consumption is presumed to react to changes in net financial assets. Recently, since the eruption of the 2008 financial crisis triggered by increased leverage among U.S. households and the accompanying sharp decline in housing prices, many researchers have started to pay more attention to high levels of debt and to leverage's independent influence on consumption (Dynan, et al., 2012). Theoretically, a debt contract is an inter-temporal financial transaction made based upon the borrower's future income, enabling consumption smoothing in response to changes in household income and leading to efficient resource allocation over time. However, once debt exceeds a certain level it could have the opposite effects on economic fluctuations and growth, due to the limited liability of the borrower. This characteristic often becomes a source of financial crisis and ensuing economic recession, by leading to risk transfers among economic agents and then to asset price bubbles (Allen and Gale, 2000; Cecchetti, et al., 2011).

While the advanced economies, such as the U.S. and the U.K., have experienced deleveraging in their household sectors since the global financial crisis, household debt in Korea has been increasing. Accordingly, the Korean household debt has been regarded as one critical potential factor that can trigger another financial crisis. A sharp deterioration in the quality of household debt in Korea within a short period of time may be unlikely, thanks to the macroprudential measures taken so far such as the LTV (Loan-to-value) and DTI (Debt-to-income) ratio regulations in the 2000s. However, given that the

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slump in the world economy has persisted since the Great Recession, and that Korea's real economy with its heavy dependence on export-driven growth has stagnated, its high level of household debt is presumed to have begun to constrain private consumption and growth. Furthermore, given the precipitous decline in housing prices in Korea, concerns are growing that the possibility of deleveraging in the household sector will be realised.

Against this background, this paper attempts to answer the question of how much household debt, which has been increasing rapidly over the last 10 years in Korea, can affect consumption. We in addition explore the household debt deleveraging effect on consumption using scenario analysis. Further, this paper tries to answer the question of whether there exists a threshold level of household debt beyond which consumption and economic growth can be hampered by an additional rise in household debt, using household-level panel data. The results of these estimations can shed light on useful policy implications for financial stability associated with household debt.

There will be mainly two methods adopted for analysis, in accordance with the data and the methodology used: a standard time series analysis, structural VAR, using aggregate data; and panel data regression, a fixed effect model, using household survey data at the micro level. An analysis based on these two approaches can be quite useful in revealing the macroeconomic implications of household indebtedness with its close relationship with consumption. Moreover, as shown below, the findings drawn from these approaches are consistent with and complementary to each other.

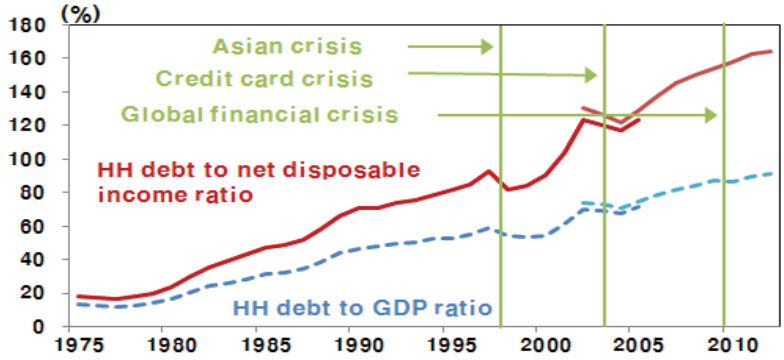
This paper comprises six sections. In Section 2 the trends and distributional characteristics of household debt in Korea are briefly overviewed. Section 3 provides a review of the relevant previous literature. The main estimations of the relationship between household debt and consumption are then conducted and analysed in Section 4. Section 5 draws out the policy implications based upon the estimation results, and Section 6 concludes.

2. Household Debt: Developments and Trends

Household debt in Korea has increased rapidly since the 2000s, without there being a relevant financial infrastructure set up that supports a sound household credit market, such as credit bureaus and systems for information-sharing among financial institutions. A substantial portion of the increase in household debt seen from 2001 to 2003 was in the form of credit card loans, and held mostly by low income households with poor credit ratings. When tighter

supervisory rules and regulations were introduced by the government in 2003, most low credit households became insolvent. This led to a credit card crisis at the end of 2003, driving credit card companies to the brink of bankruptcy and creating numerous delinquent borrowers. The credit card crisis was settled down through M&As among credit card companies, the repairing of financial firms' balance sheets by means of capital injections and asset restructuring, and establishment of a debt-restructuring scheme for delinquent borrowers. Although mild, this was the first financial crisis caused by excessive household debt in the country's history, and resulted in meager GDP growth of 2.8% in 2003.

Figure 1
Household Debt in Korea



Source: BOK ECOS.
Note: Breaks in lines due to data break in 2002.

After a period of adjustment during 2003-2004, household debt in Korea resumed its rapid pace of increase from 2005, rising by an annual average of 11% during 2005-2007. Even since the global financial crisis, the household debt has remained on the rise, growing by 8.1% annually over the period of 2010~2012—in contrast to the cases in other major economies, including the U.K. and the U.S. whose household sectors have been deleveraging until now. As a result, the ratio of household debt to disposable income rose by 33%p, from 131% at the end of 2002 to 164% as of end-2012, with 16%p of this increase coming after the global financial crisis. The steeper increase in the ratio since the crisis has been due largely to the dampened rate of growth in disposable income. The annual average rate of growth in nominal disposable

income was 6.1% during 2002-2007, but then slowed to 5.4% over the 2008-2012 period. Meanwhile, the ratio of household debt to GDP has risen by 17%p since 2002—from 74% at that time to 91% in 2012—and by 6.8%p since the global financial crisis.

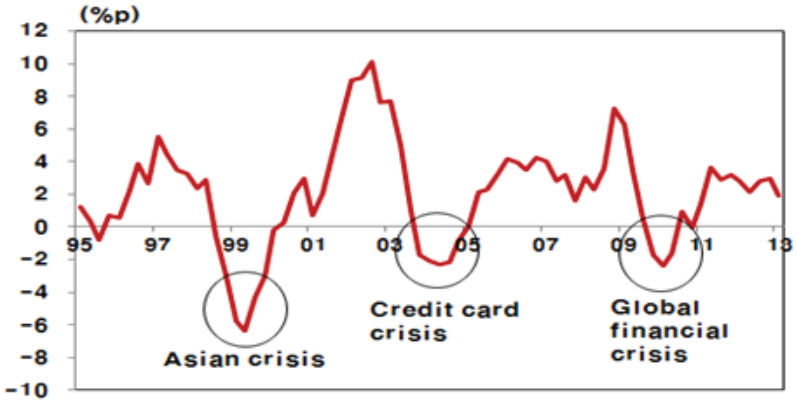
Table 1
Household Debt in OECD Countries (as Percentages of GDP)

	Levels				Changes (%p)		
	198	199	200	201	1980-	1990-	2000-
Median of 18 OECD	39	47	65	94	8	8	31
Weighted	46	60	69	90	14	9	18
Simple average	37	48	61	93	11	11	27
G7	43	59	65	87	16	6	16
Other	32	39	58	97	7	14	34
Std. deviation	17	20	21	28			
Korea	16	46.7	54.6	86.2	30	8	32

Sources: Cecchetti, et al. (2011) [Original data from OECD and the nations concerned]; BOK.
Notes: (1) Some figures refer to 2009; (2) The U.S., Japan, Germany, the U.K., France, Italy, Canada, Australia, Austria, Belgium, Denmark, Finland, Greece, the Netherlands, Norway, Portugal, Spain and Sweden; (3) Based on 2005 GDP and PPP exchange rates.

As seen in Table 1, the pace of debt increase in Korea seems similar to those in other OECD members. During the 2000s the ratios of household debt to GDP increased by 20-30%p in almost all advanced economies, with the median value of the changes in the ratio in 18 OECD members being 31%p between 2000 and 2010 while in Korea it was 32%p. The household debt-to-GDP ratio in Korea stood at 89% as of 2011, a bit lower than the median 94% for a select group of 18 OECD members as of 2010.

Figure 3
Changes in Household Debt-to-GDP Ratio*



Source: BOK ECOS.
* Year-on-year changes.

Table 2
Rates of Growth in Household Debt and Consumption*

(%)

	Debt	Consumption
95.Q1-97.Q3	17.9	7.2
97.Q4-99.Q2 (Asian crisis)	-1.7	-5.2
99.Q3-03.Q2	16.6	7.8
03.Q3-05.Q1 (credit card crisis)	5.2	0.1
05.Q2-08.Q3	10.7	4.6
08.Q4-09.Q3 (global financial crisis)	6.6	-2.4
09.4q-12.4q	8.1	3.0

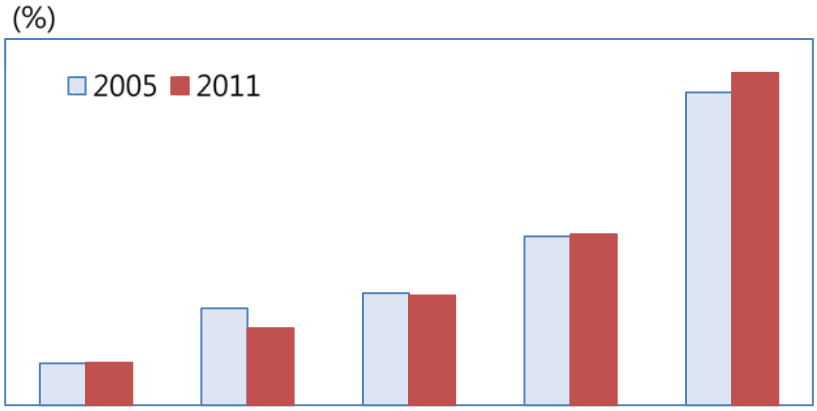
Source: BOK ECOS.
* Average growth rates for the periods.

Even though no sharp deleveraging of household debt has been realised, the household debt-to-GDP ratio has exhibited mild declines on three occasions since 1995. As displayed in Figure 3, the changes in the ratio showed around a 6%p drop during the 1997 Asian crisis, and drops of around 2%p during the 2003 credit card crisis and the 2008 global financial crisis. Table 2 illustrates that the household debt also showed a rate of growth of -1.7% during the Asian crisis—its only case of negative increase recorded since the compilation of household debt statistics. Household debt growth also showed significant slowdowns during

the later credit card and global financial crises. Meanwhile, the rate of growth in household consumption also exhibited sharp decreases during the three crises, especially with a sizable reduction of -5.2% during the Asian crisis.

In Korea there are two kinds of household panel data that can be used for analysing households' balance sheets: the Korean Labour and Income Panel Study and the Survey of Household Finances. The former was compiled by the Korea Labour Institute during 1998-2008, with its original sample including 5,000 households. Unfortunately this is no longer available, and the latter has thus been used instead for the period since 2009. It has been compiled jointly by Statistics Korea, the Bank of Korea, and the Financial Supervisory Service since 2010, with 10,000 households in the sample. The cross-sectional distribution of Korean household debt shows that around 70% of the total is held by the fourth and fifth income quintile groups and less than 20% by the first and second quintiles. This distributional characteristic does not show any conspicuous changes between before and since the 2008 global financial crisis.

Figure 4
Korean Household Debt Distribution, by Income Quintile



Sources: Korean Labour and Income Panel Study (2005),
Survey of Household Finances (2011).

3. Review of Related Literature

According to the life-cycle (or permanent income) hypothesis, a rational and forward-looking household decides its level of consumption in view of its expected permanent income over its life cycle. Even if one's income level is

low at the initial stage, one can maintain a relatively high level of consumption in consideration of the higher future income to be generated from the human capital accumulated over one's entire life. And the gap between current income and consumption can be filled by debt¯that is, negative savings. Purchasing a house through borrowing is also considered to be present consumption of housing services based on income to be earned later. The provision of real assets as collateral can significantly lower the uncertainty involved in mortgage lending contracts, and in this way collateral helps the efficient allocation of resources over time by supplementing for market imperfections like information asymmetry. On the other hand, however, real assets provided as collateral for debt contracts may serve as financial accelerators that further amplify the business cycle through interactions between asset prices and credit availability in both the expansionary and the contractionary phases (Bernanke, et al., 1999).

Relatively little attention was given to household debt issues before the recent global financial crisis. Substantial literature instead focused on whether credit constraints on households could explain the excessive sensitivity of aggregate consumption to aggregate income (Ludvigson, 1999). At the micro household level, the consumption of households with low levels of liquid assets and high debt-service burdens was found to be more sensitive to changes in income (Johnson and Li, 2007). Associated with household debt, some research focused on the role of appreciation in the prices of housing, which could be the collateral for households with borrowing constraints, especially from the early 2000s when housing prices began to rise rapidly (Iacoviello, 2005; Disney, et al., 2010). Since the recent financial crisis, much research has focused on household debt itself or on mortgages in the U.S. This emerging strand of literature has investigated the rises in defaults among household loans and in securitisation (Mayer, et al., 2009; Foote, et al., 2009; Bhutta, et al., 2010; Keys, et al., 2010). Meanwhile, as many advanced economies have witnessed continuous and rapid increases in household debt over the past two or three decades, some studies have explored the primary causes driving this trend. The fundamental factors presumed to underlie these causes are financial deregulation, financial innovations such as asset securitisation, demographic changes like the increases in proportion of the middle-aged in the entire populations, and the stable macroeconomic environment¯the so-called Great Moderation¯and accompanying optimism concerning the economy (Debelle, 2004; Dynan and Kohn, 2007; Cecchetti, et al., 2011).

Since the onset of the recent financial crisis, much more research has begun to pay attention to the high levels of debt and to the independent influence of leverage on consumption, adopting both theoretical and empirical approaches.

With regard to the theoretical literature on the household debt-consumption relationship, recent macroeconomic theory points out that the accumulation of household debt could be a factor underlying the stagnated consumption and prolonged recession since the recent crisis, with a particular focus on the negative effects of deleveraging in the household sector on consumption as well as on economic growth (Eggertsson and Krugman, 2011; Guerrieri and Lorenzoni, 2011; Midrigan and Philippon, 2011). According to these studies the borrowing constraints imposed by the financial crisis can dampen consumption, given that the deleveraging in the household sector can be transferred to defaults. The effects of changes in household debt on consumption can vary depending upon the housing prices, the LTV ratio level, the degree of financial system stability, and the effects of policy implementation in each country. While the previous empirical literature used an aggregate consumption function that included only aggregate net worth, Dynan, et al. (2012) found that highly leveraged homeowners showed larger declines in spending than other homeowners between 2007 and 2009, using household-level data incorporating debt leverage as the explanatory variable. This study is in line with Mian and Sufi (2012) and Mian, et al. (2013), which link credit distress, and particularly deleveraging, to economic activity using U.S. county-level data with different degrees of leverage on household balance sheets.

Some attention has also been paid to defining an excessive debt threshold beyond which an additional increase in debt begins to negatively affect consumption and economic growth. Reinhart and Rogoff (2009) and Cecchetti, et al. (2011) point out a growth-hampering level of debt estimated to be 80-90% of GDP in the case of sovereign debt. Regarding household debt, Cecchetti, et al. (2011) estimate a threshold similar to that for sovereign debt, but find its effect on economic growth to be statistically insignificant. Historical data indicate that the U.S. household debt-to-GDP ratio was 98% when the sub-prime crisis hit the economy, and the household debt level in Japan 82% of GDP when the asset bubble burst in the early 1990s. Mendoza and Terrones (2008), on the other hand, identify credit booms by evaluating how far the private credit-to-GDP or real private credit per capita ratios deviate from their long-term trends. And they verify that, even though a credit boom does not always lead to financial crisis, countries having credit booms tend to have higher propensities to experience crises. All of these studies investigating the threshold household debt level use aggregate household debt. The distribution of household debt can however be more relevant in identifying this threshold level, in that the share of total debt held by high-risk households, which are highly vulnerable to external shocks due to their excessive debt holdings, matters more than the sheer amount

of total debt. This paper can contribute to the literature in that it explores the household debt threshold based upon household-level panel data.

Most of the previous literature in Korea dealing with the relationship between household debt and consumption has been empirical analyses. Studies, such as Sim (2004) and Sung (2006), have shown that the patterns of consumption are closely related with changes in household debt, using household survey data. The previous empirical analyses of these two variables have however offered little perspective regarding financial stability in Korea, because the problem of household debt overhang has only been known quite recently, since the 2000s.

Building upon these previous studies of household debt, this paper investigates the dynamic relationship between aggregate household debt and aggregate consumption using scenario analysis assuming the possible paths that household sector deleveraging will take in Korea. It moreover explores whether the level of household debt in Korea approaches a threshold beyond which it can negatively affect consumption and growth, using household survey panel data. All of these analyses can give some hints as to the macroprudential policies needed to enhance financial stability associated with household debt in Korea.

4. Estimation Results from Structural VAR and Panel Analyses

This section investigates the relationship between household debt and household consumption adopting two econometric approaches: Bayesian structural VAR and fixed effect panel analyses. First, using structural VAR, the growth rates of household consumption are forecasted under the household debt deleveraging scenarios and other macro variables associated with household debt. Second, household survey panel data are used to identify a threshold household debt-to-disposable income ratio level beyond which the consumption expenditures of households may be reduced or slowed down seriously upon any additional increase in the ratio.

4.1 Deleveraging Effects of Household Debt on Consumption: Scenario Analysis

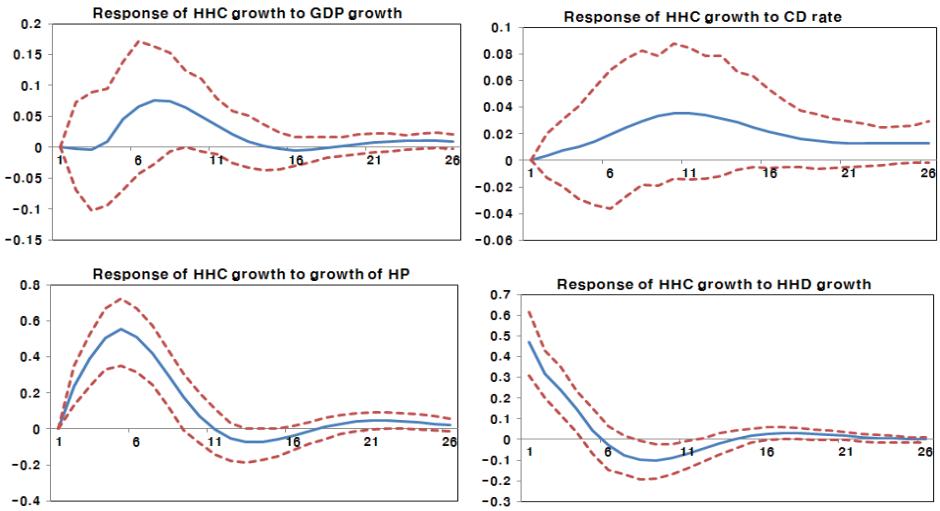
To investigate the effects of household debt deleveraging on household consumption, the structural VAR is constructed using the following macro variables: the rate of real GDP growth, the 3-month CD (a convertible deposit) interest rate, and the rates of growth in real housing prices, household debt, and real household consumption. More details on the data are presented in Appendix 1. The VAR structure is identified through Cholesky decomposition as an ordering

of the endogenous variables indicated above. This ordering basically represents a causal flow from the real and the financial sectors to household consumption, which is assumed to be the most endogenous variable.

This analysis is a scenario approach following Waggoner and Zha (1999), in which the path of household consumption growth will be projected, conditional upon the household debt deleveraging scenarios and other macro variables. The sample period covers from Q1 2000 to Q2 2013 with a quarterly data frequency, and the VAR system is composed of four lagged variables, which implies one year of interactions among the endogenous variables.

Before the scenario analysis the impulse response functions are estimated, as displayed in Figure 5. One standard deviation shocks to the rate of growth of real housing prices and household debt show significant positive effects on the rate of household consumption growth. The response function of household consumption growth to housing price growth is particularly interesting, in that the positive wealth effect through housing assets predominates over any possible burdensome effects on consumption through the increase in residential costs. This finding is well in line with the fact that the housing assets account for 70-80% of households' total assets. Meanwhile, a shock to the GDP growth rate also has weak positive effects on the rate of household consumption growth, while the CD rate[2] has insignificant effects possibly due to a cancelling effect between the positive wealth effect from increased financial or asset income and the negative effect from substitution between current and future consumptions. These results from the impulse response functions are more or less consistent with the theoretical expectations and previous empirical findings.

Figure 5
Responses of HH Consumption Growth to Other Variable Shocks[2]



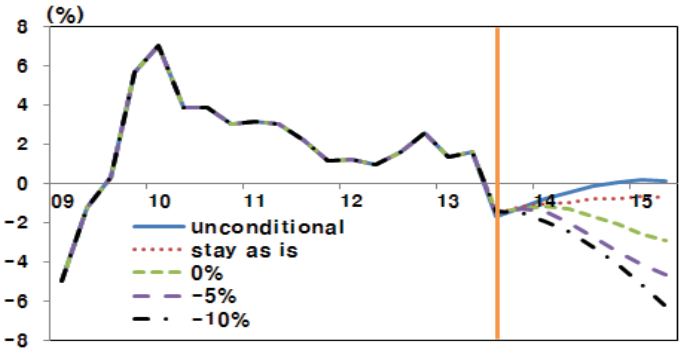
Note: 1. Impulse response functions to 1-standard deviation shocks to each variable are reported, with the red dotted lines indicating 68% confidence intervals.

Now, upon stable identification of the VAR structure using the impulse response functions, the scenario analyses are conducted based upon two approaches. First, we exogenously impose various future paths for the rate of household debt growth, with the other macro variables being unrestricted, as follows: (1) it stays as it now is, 4.5%, for two years; (2) it falls back to 0% for two years; (3) it gradually drops to -5% for two years; and (4) it suddenly drops to -10% for two years. The fourth scenario can be interpreted as replicating the episode of the 1997 Asian crisis, which drove the rate of household debt growth to a historic low of -10.7% in 1998.

The other scenarios are based upon combinations of different possible paths for GDP and housing price growth for two years as follows: (1) real GDP growth of 0% and real housing price growth of -3%; (2) real GDP growth of 0% and real housing price growth of -5%; (3) real GDP growth of -2%p and real housing price growth of -3%; and (4) real GDP growth of -2%p and real housing price growth of -5%. The rate of growth in real housing prices was around -3% during the 2008 global financial crisis, and dropped to below -5% during the 1997 Asian crisis.

2. The shock to long-term real interest rates also has insignificant effect on consumption.

Figure 6
Projected Paths of Real Household Consumption Growth*



	Avg. growth rate of HH consumption	HH consumption growth rate in Q2 2015
Unconditional forecast	-0.5	0.1
HH debt growth stays as is	-0.9	-0.7
HH debt growth 0%	-1.8	-2.9
HH debt growth -5%	-2.7	-4.7
HH debt growth -10%	-3.3	-6.3

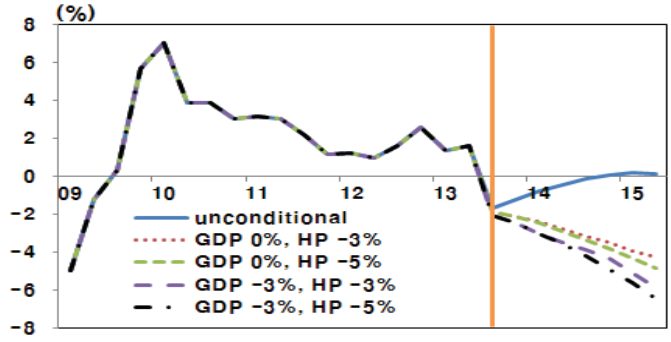
* Projected paths conditional on the rate of household debt growth, displayed from Q3 2013 to Q2 2015.

Figure 6 displays the projected paths for household real consumption growth conditional upon the different scenarios for household debt growth. The unconditional forecast for household real consumption growth shows a slight drop and then a convergence to 0% in two years. This can be explained by the two facts that the real GDP growth has been weak since Q2 2012, at 1~2% points less than the long-term potential growth rate of presumably around 3.5%, and that real housing price growth has begun to fall since the end of 2012. As discussed earlier, these two variables are critical for the movements of consumption growth. As expected, the rate of real consumption growth shows a further drop from -0.9% to -3.3%, depending upon the extent of decline in household debt growth under the scenarios assumed. Especially, if household debt growth turned out to be -10% as it was during the Asian crisis, real consumption growth will be -6.3% in Q2 2015.

Figure 7 displays the projected paths for household real consumption growth conditional upon each scenario for the four combinations of real GDP and real housing price growth. The rate of consumption growth shows a monotonic decrease upon the declines in real housing prices, but the difference between

the two paths of consumption growth does not appear substantial. Especially given the scenario in which GDP growth is assumed at -3% and housing price growth at -5%, consumption growth will be projected at -6.5% in Q2 2015 - quite similar to that in the case where household debt growth is assumed to be -10% in Figure 6:

Figure 7
Projected Paths of Household Real Consumption Growth*



	Avg. growth rate of HH consumption	HH consumption growth rate in Q2 2015
GDP 0%, HP -3%	-3.0	-4.3
GDP 0%, HP -5%	-3.2	-4.8
GDP -3%, HP -3%	-3.8	-5.9
GDP -3%, HP -5%	-4.1	-6.5

* The projected paths conditional on the combinations of real GDP and real housing price growth displayed from Q3 2013 to Q2 2015.

4.2 Threshold Level of Household Debt Hampering Consumption

In the previous section, the dynamic correlation between household debt and consumption was verified through structural VAR analysis using aggregate macro data. This direct relationship between the two naturally raises a question of whether the increased ratio of household debt to disposable income in Korea will harm its economic growth through a contraction in consumption or further trigger a financial breakdown in the near future. This question is quite urgent and relevant to policymakers. And in this section, therefore, the fixed effect panel technique is adopted to identify a threshold level of the household debt-

to-income ratio, using household-level survey data from the KLIPS (Korean Labour and Income Panel Study) from 2000 to 2010. The estimated fixed effect model can be written as follows:

$$\log(C_{it}) = \beta_0 + \beta_1 \log(Y_{it}) + \beta_2 dsr_{it} + \beta_3 NFA_{it} + \beta_4 RA_{it} + \beta_5 dti_{it} + \beta_6 dti_{it}^2 + \beta_7 X_{it} + u_i + v_t + \varepsilon_{it}$$

In this equation, *C* represents a consumption level excluding social contributions and taxes etc. in its compilation. *Y* represents household disposable income, *dsr* the debt service ratio, *NFA* net financial assets, *RA* real assets (mostly composed of housing assets), *dti* the household debt-to-disposable income ratio, and *X* the control variables including individual characteristics such as age, family size, the proportion of family members in middle or high school, the proportion of family members in college or higher education, the number of years of schooling of the household head, and a dummy variable representing whether the household resides in the Seoul metropolitan area or not. In addition, *v* is a year dummy to control for an aggregate macro shock and ε is the error term.

Table 3
Directions of Outlier Removal*

- *dsr*	D*sr* cannot exceed the household disposable income. $0 \leq \text{dsr} \leq 1$
- *dti*	The highest 2% in the distribution is removed.
- *NFA*	The highest 1% and lowest 1% in the distribution are removed.
- *RA*	The highest 1% is removed.

* Additionally, the cases of income or consumption ≤ 0 and of financial assets and debt < 0 are removed.

The variables consumption (*C*), disposable income (*Y*), net financial assets (*NFA*) and real assets (*RA*) are all compiled in real terms denominated by the consumer price index. Since the consumption function equation has a squared term for *dti*, the threshold of the household debt ratio hampering consumption can be calculated directly as follows: $-\beta_5/2\beta_6$. The outliers in the debt service ratio (*dsr*), household debt ratio (*dti*), net financial assets (*NFA*) and real assets (*RA*) are removed based upon the directions displayed in Table 3. More details on the data are provided in Appendix 2.

The results of estimation are shown in Table 4. Column (a) in Table 4 is an estimated consumption function without the variable of a squared term of the household debt ratio (*dti*). The results show the expected signs for the coefficients, excepting the debt service ratio (*dsr*). Usually, if the *dsr* rises, then households can suffer from increased principal and interest payments, which can in turn restrict household consumption, generating a negative sign. This abnormality can be explained by the distribution of household debt. The rapid increase in household debt in the 2000s has been driven by the higher income fourth and fifth income quintiles, as discussed in Section 2. In this context, as high income households have taken higher leverage coupled with the steady appreciation of housing prices in the 2000s in Korea, they have expanded their consumption through a wealth effect from housing assets. Interestingly, the household debt ratio (*dti*) has insignificant effects on consumption in column (a), which reminds us of the cancelling-out effects of the household debt role on consumption. As previous theoretical and empirical research points out, households can facilitate consumption smoothing across time via borrowing up to a certain ratio, beyond which households can instead suffer from debt overhang, presumably dampening their consumption.

Briefly noting the results of estimation of the other control variables, increases in disposable income, net financial assets and real assets are positively correlated with the level of household consumption. The age of the household head also shows significant non-linear effects on consumption, in that as households become older their consumptions grow to a certain threshold beyond which they then start to drop as shown in columns (b), (c) and (d). The bigger the family size and the larger the proportion of students in the family, the more the household spends. Finally, the years of schooling of the household head are closely related with the household's consumption level, while the dummy variable for residency in the Seoul metropolitan area has no effect.

Further estimations allowing a square functional form for *dti* are conducted and the results displayed in columns (b), (c) and (d). As expected, *dti* exhibits significant positive signs and dti^2 significant negative signs, indicating the existence of a threshold for *dti*'s effects on household consumption. The threshold calculated using $-\beta_5/2\beta_6$ based on the estimated coefficients is around 167% of *dti*. This value of 167% is quite close to the 164% household debt-to-net disposable income ratio calculated from aggregate macro variables using the flow funds and national accounts. In short, the average household in Korea is at a near-threshold level, which is likely to dampen household consumption and hamper long-term economic growth.

Table 4
Estimation of Consumption Function[1]

Dependent Variable		Consumption Level			
Explanatory	Exp.	(a)	(b)	(c)	(d)
Disposable Income (*Y*)	+	0.202*** (0.004)	0.202***	0.202***	0.202***
Debt service ratio (*dsr*)	-	0.173***	0.174***	0.174***	0.174***
Net financial assets (*NFA*)	+	0.014***	0.015***	0.015***	0.015***
Real assets (*RA*)	+	0.003**	0.003**	0.003**	0.003**
Household debt to disposable	+	**-0.002 (0.003**	**0.011* (0.007**	**0.011* (0.007**	**0.011***
Household debt to disposable	-		**-0.003***	**-0.003***	**-0.003**
Age of household head	+	0.044***	0.042***	0.044***	0.044***
Age of household head [2]	-	-0.000	-0.000	-0.000	-0.000
Number of household	+	0.108***	0.110***	0.108***	0.108***
Proportion of students enrolled in	+	0.257***	0.257***	0.256***	0.256***
Proportion of students enrolled in	+	0.374***	0.371***	0.374***	0.374***
Years of schooling of household head	+	0.017***		0.017***	0.017***
Dummy for residency in Seoul	+ or -	-0.010 (0.032			-0.010
Within R-square		0.282	0.281	0.282	0.282
Number of observations		20261	20261	20261	2026
Number of groups		2263	2263	2263	2263
Period		2000-	2000-	2000-	2000-

Notes: (1) Figures in parentheses are the standard errors, and ***, ** and * denote significance levels of 1%, 5% and 10%, respectively.

Now, using the quintile data from the household survey, we check how many households in each quintile actually surpass the 167% estimated threshold. Table 5 shows the proportions of households in each quintile exceeding the threshold. On average, 12.1% of all households exceed it, with roughly one-third of indebted households doing so. As shown in Table 5, the proportions of over-

indebted households are relatively high in the low income 1st and 2nd quintiles, at 11.8% and 16.4% of total households and 51.4% and 47.3% of indebted households, respectively. The proportions are meanwhile lowest in the 4th quintile.

Table 5
Proportions of Households Exceeding Threshold*

By income quintile	Total	1st	2nd	3rd	4th	5th
Proportions in total households (%)	12.1	11.8	16.4	14.1	7.9	9.8
Proportions in indebted households (%)	34.6	51.4	47.3	35.2	20.1	23.9

Note: (1) Quintiles based on KLIPS data of 2010.

5. Policy Recommendations

Since the 2008 global financial crisis, Korean household debt has been increasing at a higher rate than nominal GDP, unlike the cases in other major economies such as the U.S. and the U.K. which have suffered household sector deleveraging. This has raised serious concerns over whether the increased household debt, as a potential risk factor, can lead to an economic contraction through a slowdown in consumption, and further trigger another financial crisis. Against this background, the dynamic relationship between household debt and consumption has been thoroughly investigated and the over-indebted households identified based upon both structural VAR and household-level panel analyses.

The overall estimation results suggest the following policy recommendations, which are critical to rebuilding a resilient household sector and restoring robust long-term growth. First, the increased household debt ratio needs to be gradually lowered, since in Korea it has already reached a consumption-hampering threshold level. Accordingly, the maturities of mortgage lending need to be adjusted from the short-term maturities of five years, which account for a considerable proportion of lending contracts, to long-term maturities of from 20 to 30 years. The principal and interest repayment structure also needs to change, from the method of one-time repayment in three to five years to amortisation covering 20 to 30 years. In line with this, relevant and long-term policies for development of the mortgage lending market are required. The current structure of Korea's mortgage lending market is based upon the steady appreciation of housing prices, and it is now

time to renovate the market to enable a better response to upcoming changes in the macroeconomic environment, such as demographic change as represented by population ageing.

Also, as verified in the empirical analyses, the movements of housing prices can hugely affect consumption and are closely associated with financial system stability. Policies to facilitate trade in housing assets should be accompanied with efforts to balance demand and supply in the housing market. From a long-term perspective, relevant housing market policies need to be implemented to efficiently mitigate excessive market expectations of housing prices in either direction.

Finally, one of the underlying factors behind the rise in the household debt ratio has been the weak income flow in the household sector, and low income households in particular seem vulnerable to any negative income shocks such as during the 2008 global financial crisis. Orderly financial aid procedures will therefore be needed, to help over-indebted low income households in the debt restructuring process and prevent another financial crisis.

6. Conclusion

Household debt in Korea has increased rapidly throughout the 2000s. Indeed, its level and pace of increase have been on par with those observed in a selected set of OECD countries despite without there being a relevant financial infrastructure when compared to those countries. The factors contributing to this trend in Korea have not been that different from those explaining the similar trends in advanced countries—including asset price hikes, financial deregulation, demographic changes, a relatively robust macroeconomic environment, and so on. As Korea's ratio of household debt to disposable income is relatively high, however, the question arises of whether a certain level of household debt leads to economic recession and further triggers financial crisis.

Since a household debt overhang can affect economic activity through consumption behaviour, a structural VAR analysis is conducted to explore the dynamic relationship between aggregate household debt and aggregate consumption. The results of the estimation indicate that these two variables are closely and positively correlated. Also, scenario analyses using conditional forecasting techniques indicate the possibility of a prolonged consumption slump linked to deleveraging scenarios in the household sector.

Then, is the household debt ratio in Korea high enough to dampen consumption? To answer this question, household panel data analysis is conducted. The estimation results indicate that, on average, the household debt ratio is near the consumption-hampering threshold.

The overall findings suggest that prompt policy intervention should be taken to restore a resilient household sector and robust growth. First of all, the increased household debt ratio needs to be gradually lowered. Second, the mortgage lending market needs to be restructured from a long-term perspective, including through arrangements such as lengthening of maturities and amortisable repayments. Third, it is pivotal to achieving financial stability in Korea that housing prices be stabilised in either an upward or a downward direction. Lastly, macroeconomic policy is needed to enhance the income flows of households, especially of low income families that are very vulnerable to external aggregate shocks.

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Appendix 1

Summary Statistics of VAR Data, and Compilation Method[1] [2]

	Mean	S.D.	Max	Min	Compilation
Growth rate of real GDP (%)	4.3	2.9	12.6	-4.2	- Yearly rates of real GDP growth from the national accounts
Interest rate of CD (%)	4.3	1.3	7.1	2.4	- Quarterly average basis - 3 month maturity - In Korea, a considerable portion of mortgage lending rates are pegged to CD rates.
Growth rate of real housing prices (%)	1.7	4.9	14.6	-5.7	- Nationwide housing prices - Real growth rates calculated by subtracting rates of CPI growth from nominal rates of growth
Growth rate of household debt (%)	10.8	5.9	28.3	4.3	- Household debts the liabilities of households and non-profit institutions in the flow of funds
Growth rate of real household consumption (%)	3.6	3.6	12.4	-5.0	- Yearly rates of growth of real household consumption from the national accounts

Notes: (1) Growth rates are year-on-year basis.
(2) All data obtained from the BOK ECOS database with the exception of housing prices, which are from the Kookmin Bank housing price index.

Appendix 2

Summary Statistics of Panel Data[1]

Variable	Mean	S.D.	Min	Max	Compilation
Household consumption (C)	2.9	0.6	-0.4	5.4	- Consumption excluding social contributions and taxes
Household disposable income (Y)	3.2	0.9	-2.8	7.0	- Logarithmic level of household disposable income - Comprehensive income including labor income, financial income, asset income, social transfers, etc.
Debt service ratio (dsr)	0.1	0.1	0.0	1.0	- (principal + interest payments) / household disposable income
Real net financial assets (NAF)	0.1	0.6	-5.2	29.5	- Denominated by CPI
Real real assets (RA)	1.4	2.4	0.0	60.2	- Denominated by CPI
Household debt-to-disposable income ratio (dti)	0.5	1.0	0.0	6.0	- Comprehensive debt including money borrowed from financial institutions and private persons, money deposits for rent, etc.
dti_sq	1.3	4.0	0.0	35.9	-
Age of household head	52.1	12.3	19.0	93.0	-
Age of household head2	2869.0	1338.0	361.0	8649.0	-
Family size	3.4	1.3	1.0	10.0	-
Proportion of middle and high school students	0.07	0.15	0.00	0.75	-
Proportion of college students	0.13	0.19	0.00	0.75	-
Years of schooling of household head	10.91	3.59	0.00	23.00	-
Dummy for residence in Seoul metropolitan area	0.43	0.50	0.00	1.00	-

Note: (1) All data obtained from KLIPS (Korea Labour and Income Panel Study).

Chapter 6

MORTGAGE FINANCING AND CONSUMER CREDIT: IMPLICATION TO FINANCIAL STABILITY IN MALAYSIA

By
Chuin Siang Bu[1]

1. Introduction

Over the years, Malaysia saw a steady increase in household debt[2] and residential property price levels. The household debt in Malaysia grew at an average pace of 12.3%. In 2012, for example, outstanding household debt stood at 80.5% of GDP. Similarly, residential property price, measured as Malaysian House Price Index (MHPI), grew at an average rate of 10.4% over the quarters.

This paper examines the link between residential property prices and household debt to study the determinants of house price growth. The motivation behind the study echoes lesson learned from the advanced economies and past financial crises, where unwinding of credit-driven boom in the property market became a source of vulnerability to the stability of financial sector. Malaysia's credit landscape is fundamentally different from the advanced economies, due to absence of risky Asset-backed Securities (ABS) and a stronger financial stability mandate placed within the central bank. Nevertheless, the simultaneous increase in household debt and residential property prices warrants close examination to ensure that these sectors do not pose significant risk to the functioning of the financial system moving forward.

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2. Household debt refers to the financing owed to financial institutions by Malaysian households. Financial institutions include not only the banking system, but also the Development Financial Institutions (DFIs), insurance companies, as well as the non-banks such as payment instrument issuers, credit/ leasing businesses, Treasury Housing Division at the Ministry of Finance and Building Society.

The paper proceeds in two parts: Firstly, to obtain an overview of Malaysia's mortgage financing market, the paper compares recent mortgage financing trend to its historical trend. We find that in recent periods, mortgage financing increased at a faster pace vis-à-vis its number of borrowers. Intuitively, from a bank's perspective, a faster increase in financing coupled with slower expansion in borrower base signals greater concentration of repayment obligation on individual borrowers. In other words, each borrower has higher repayment obligation, and thus is exposed to greater interest rate, employment and income risks. The increase in financing vis-a-vis borrowers, however, has decelerated post-introduction of two loan-to-value (LTV) measures, one in November 2010 and another in December 2011. The deceleration is consistent with indicators of borrowers with multiple housing loans. Since the implementation of LTV ratio, growth in borrowers with multiple housing loans has shown marked signs of moderation. Borrowers with three or more housing loans, in particular, moderated in growth from 14.5% high in November 2010 to 1.9% in end-2012.

The slowdown in credit momentum, nevertheless, is not met with similar moderation in house prices. The second part of the paper studies this phenomenon by using an econometric estimation to examine the determinants of house price growth. The hypothesis that anchors the study is other variables, apart from credit, have significant impact on the growth in house prices. By carefully observing for proper diagnostics, we find that non-credit variables have significant impact on the movement in house prices growth. Using standardised beta, the model also shows that in comparison to credit variables, one standard deviation in movement of non-credit variables exhibits larger movement in real house price growth. This finding is consistent with assessments in earlier literatures performed in this area.

The econometric assessment highlights the need for comprehensive policy measures to address weaknesses in the housing market. Macroprudential measures need to be complemented with fiscal policies to ensure that the weaknesses are holistically addressed. Efforts to improve financial literacy among Malaysian households should be enhanced to ensure that households are obtaining loan in a responsible and prudent manner.

The paper is organised as follows: Section 2 of the paper provides a brief review on the past literature. Section 3 provides an update on the stylised facts and trends in Malaysian household debt. Sections 4 and 5 details the methodologies and findings pertaining to the study on mortgage financing and the econometric estimation of house prices against the selected variables. Finally, Sections 6

addresses the policy implications and Section 7 concludes with the policy recommendation.

2. Literature Review

There is significant room to contribute to the study of household debt in Malaysia. Past studies have typically focused on unsecured credit and the behaviour of borrowers. Zainal and Ismail (2011), for example, focus on the accrual of education loans among Malaysian graduates. They surveyed 186 Malaysian graduates from public and private higher institutions and conclude that the education debt-to-income ratios for these individuals range between 1.8 to 12.0%, above a comfortable level of 8%. Tan et al. (2011), on the other hand, studies the behaviour of credit card users. Using a Tobit model, the authors conclude that several indicators, such as household size, age, income and education levels, are affecting credit card behaviour.

On a broader basis, Endut and Hua (2009) study the role of aggregate household debt in Malaysia's monetary policy and financial stability. The paper highlights the increasing importance of household debt in the Malaysian financial system, and calls for strengthen risk management practices to ensure better efficiency and soundness of the banking institutions. Ghani (2010) enhances our understanding between non-performing loans (NPLs) of household debt and macroeconomic variables (debt-to-GDP ratio, interest rates, inflation and income). The variables that are found to significantly affect NPLs are household indebtedness, debt repayment ratio, inflation and gross domestic product. The paper also calls for greater efforts to collect data at a granular level to assist deeper understanding on the issue of household debt. Similar call for granular household information in Malaysia is also found in paper by Lee (2013).

A final key reference in this area is Bank Negara Malaysia's Financial Stability and Payment System Reports (FSPSR). The report, published on an annual basis, contains significant write up on household debt's updates on trends, key risks and measure implementation. In FSPSR 2012, a box article is produced to link house prices to various indicators. The conclusion of this article is that house price movement is largely reflective of macroeconomic factors, and the increase in house prices have not been fuelled by excessive credit.

This paper contributes to the existing pool of literature by studying the link between household debt and movements in house prices. The subsequent section provides an update of the stylised facts and development within the household sector post-Ghani (2010), and also lists some of the determinants of household

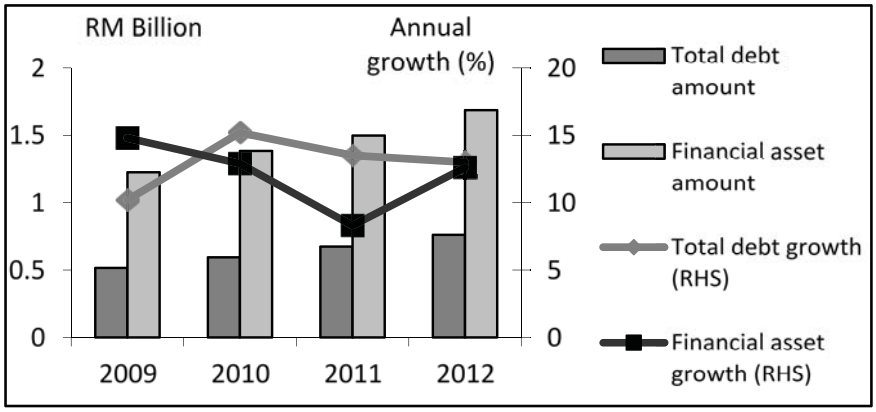
debt with reference to Endut and Hua (2009). The paper then focuses on the largest component of household debt, the mortgage loans, and studies its recent development vis-a-vis the historical trends. Finally, using specification and indicators alternative to the box article in FSPSR 2012, the paper produces an econometric estimation on the determinants of house prices movements. The estimation is able to reaffirm the conclusion reached in FSPSR 2012, i.e., the growth in house price is significantly affected by variables other than credit.

3. Review of Household Debt in Malaysia

Household debt has been increasing steadily over the years, growing at an average rate of 12.3% since 2009. In 2012, the total household debt grew to reach RM 80.5% of GDP. At the same time, household financial asset, measured as accumulation of savings, employee provident funds, equity and unit trusts holdings, and insurance surrender value, reached 189% of GDP. The financial asset is 2.3 times to household debt (Diagram 1).

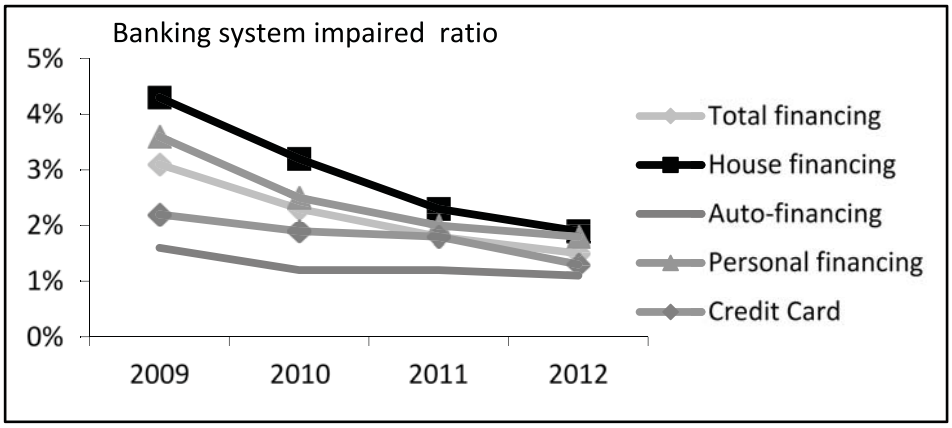
The current level of household debt does not seem to pose immediate risk to the financial system. Income growth has been sustained and unemployment rate at the aggregate level is low. As a result, the repayment capacity among Malaysian households has remained strong. The repayment-to-disbursement ratio in the banking system for the household loans has maintained at 91.3%, with overall impaired loans ratio declining to 1.4% (Dec 2012: 1.5%) (Diagram 2).

Diagram 1
Household Financial Asset Remains 2.3 Times to Household Debt



Source: Bank Negara Malaysia.

Diagram 2
Impaired Loans Ratio Decline Across Loans Facility

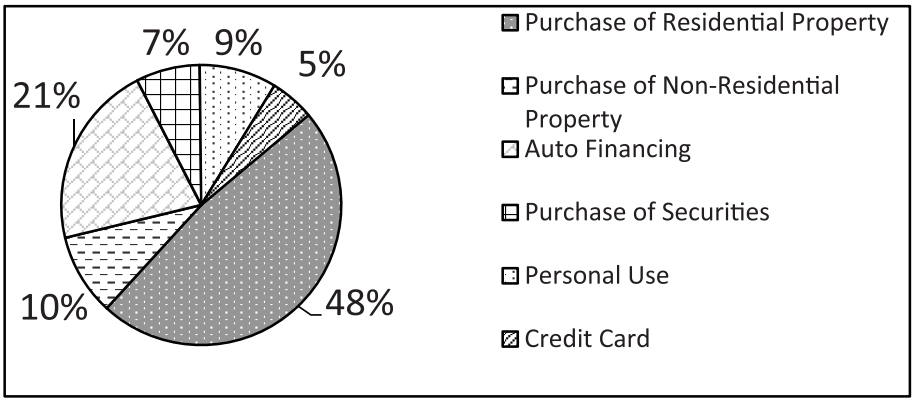


Source: Bank Negara Malaysia.

Malaysian households typically obtain financing through the banking system, regulated non-banks, and non-regulated financial entities. To date, a total of 43 banks (Commercial and Islamic) are involved in extension of credit to the household sector. The banks hold over 80% of the total outstanding debt and disburse, on average, RM22.2 billion of credit to the household sector per month. Financing by banking institutions are largely for the accumulation of wealth, i.e., purchase of asset. 56% of the outstanding financing held by banks in 2012 goes into the purchase of residential and non-residential properties, while auto-financing and unsecured financing constitutes 21% and 14%, respectively.

The banking institutions, in turn, are largely funded by households and business deposits. Loan-to-deposit ratio of banks remained in healthy levels of approximately 80%. The deposits, although are typically at call, have demonstrated sustained levels of stability. Wholesale and short-term interbank lending constitutes a small portion of the overall banking system's source of funds. Under an environment of ample liquidity, Malaysian banks have largely been net interbank lenders to the central bank. For example, in 2012, the banking system placed a significant amount of RM114 billion (or 8.1% of total deposits) with the central bank.

Diagram 3
Financing by Banking Institutions are Largely for Purchase of Asset



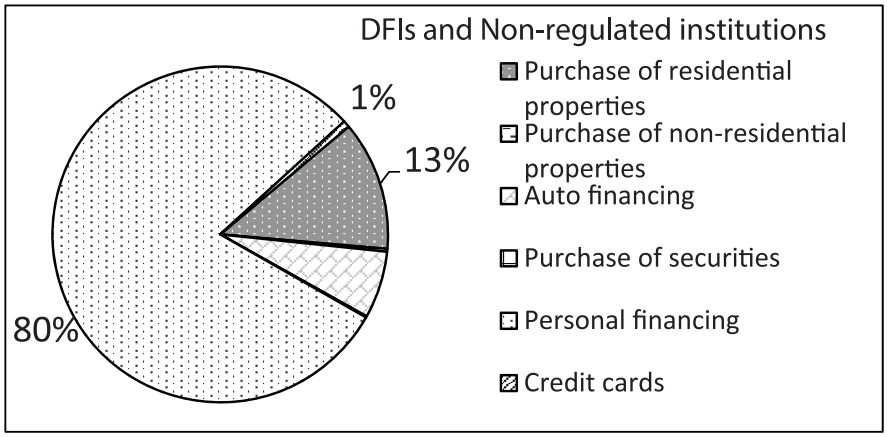
Source: Bank Negara Malaysia.

Apart from banks, Malaysian households also obtain financing from the Development Financial Institutions (DFIs), non-regulated financial institutions (building societies, payment instrument issuers and credit/ leasing businesses) and a government division. Collectively, these institutions contribute 19% to total household debt in Malaysia. Aside from financing by a government division, which is intended for the purchase of residential properties, the bulk of the financing (80%) issued by DFIs and non-regulated entities are in the form of personal financing. Total outstanding personal financing extended to the household sector grew at 20.5% in 2012. The non-banks (responsible for 57% of total personal financing extended) grew 30.6%, much faster than growth in the banks (9%). The target audience of the DFIs and non-bank entities also differs from the banks. These entities target largely civil servants, where an automated salary deduction scheme is available and monthly repayment is deducted at the income source. This is not a threat to financial stability, due to job security attached to civil service position, so civil servants are less susceptible to employment and income risks.

Over the years, the DFIs and non-regulated financial entities have extended loans with longer tenure (up to 25 years) to improve affordability and attractiveness of personal financing. As a result, certain segments of the household sector have migrated from the banking system towards these institutions for the personal financing facility. Although a longer tenure increases affordability of a loan, an uncapped tenure is not in the long term interest of

borrowers, as it exposes household sector to prolonged employment and income risks. The Central Bank recognises this risk. In July 2013, the Central Bank imposed a measure to cap the maximum tenure of personal financing to 10 years. The measure is implemented across banks and non-banks institutions, with the intention of consistency in credit extension practice (BNM Press Release, 2013).

Diagram 4
Financing by Non-banks is Largely for Personal Use



Source: Bank Negara Malaysia, Treasury Housing Division, Payment Instrument Issuers, Credit/Leasing Businesses, Building Society.

Table 1
Measure to Cap Maximum Tenure of Personal Financing to 10 years

Household Measure Introduced in July 2013	
Financing facility	Maximum tenured allowable
House financing	35
Personal financing	10
Additional Measures:	
• Financial institutions are required to observe prudent debt service capacity of borrowers prior to extension of loans • Ban pre-approved personal financing product without proper application from the borrowers	

The next section lists some of the determinants of household credit from the supply and demand angles. Separating the driving factors into supply and demand factors is a challenging task. This is because the factors are more likely to have simultaneous impact on both supply and demand for credit. The factors are organised with reference to past studies on the household debt sector in the Malaysian market (Endut and Hua (2009); BNM FSPSR 2012).

4. Factors Influencing Supply and Demand of Household Credit

4.1 Factors Influencing Supply of Household Credit

4.1.1 Diversification in the Banking Industry

Progressive development in the financial sector has seen corporations and businesses turning to the capital market for alternative source of funds. As a result, after the Asian financial crisis, the banking institutions have been actively diversifying businesses into the household segments. To date, lending to household sector constitutes close to 55% of the entire banking system loans. The shift towards the household sector allows for extension of lower-valued loans to more individual borrowers. This greatly reduces the concentration risk, because in the previous case failure of a large corporation can lead to extensive losses to the bank.

4.1.2 Financial Restructuring

After the Asian financial crisis, the banking institutions have undergone progressive restructuring to strengthen institutional resilience in order to provide wider coverage of lending to the household sector. As a result, diverse institutions have emerged over the years to cater for credit needs from the different layers of society and various geographical regions around the nation. Progressive consolidation of systems have also enabled for more stringent risk management practice to be in place, supporting extension of credit to the household sector in a prudent and sustainable manner.

The evolution of the nation's credit reporting systems is, in particular, an impactful and noteworthy development. A Public Credit Registry (PCR) has been established in Malaysia since 1982 under the Central Banking Act 2009. In 2001, the implementation of an on-line system known as the Central Credit Reference Information System (CCRIS) allowed financial institutions to access real-time borrower's credit information prior to approval of new loans. They system contains credit information extended by the banking system, DFIs and

several large unregulated non-banks. To date, 7.9 million customer profiles and more than 22 million active credit accounts are housed within the database (Saari, 2013; Lee, 2013). The availability of this information has allowed for the development of credit scoring models within the individual banks, supporting robust credit decisions and a sustainable lending culture.

4.1.3 Interest Rates

As with many countries, the interest rate is one of the key determinants of household credit in Malaysia. Since the onset of the global financial crisis, the interest rate has been set at a level accommodative to growth and issuance of credit. The sustained downward pressure on the interest rate, particularly on the rates to the household sector, is partly attributable to increased competition within the banking system. In 2012, for instance, the weighted average lending rate (ALR) of total loans outstanding for businesses and households in the banking system stood at 5.52%, a moderation of 14 basis points.

4.2 Factors Influencing Demand for Household Credit

Several factors contribute to changes in the demand for consumer credit. Among them:

4.2.1 Stable Macroeconomic Conditions

Malaysian households demand for credit is dependent upon the macroeconomic well-being of the nation. Over the years, steady increase in national output growth, income levels and employment prospects have improved household's financial capacity and flexibility to borrow. National output growth has been increasing steadily, averaging 4.2% over the years. This is further supported by a low unemployment level at the national level, averaging 3.3% over the last five years. Stable inflation rate, averaging 1.8% in four years, allowed for little adjustment to living cost and hence greater assurance for sustainable levels of monthly repayment from the household each month.

4.2.2 Urbanisation and Population Factors

Malaysia, as with its regional peers, is experiencing a progressive expansion of the middle income class in its economy due to strong economic growth and marked poverty reduction since the 1980s. The expansion in the middle income class is expected to assume the role of key economic driver through greater private consumption. The demand for long-term assets such as residential

properties and vehicles are expected to remain sustained especially in the key employment centres. As a result, households are expected to continue leverage upon the credit channels from banks and non-banking financial institutions to acquire these assets.

4.3 Lending to Household and Property Prices

Given that the majority of the household debt is used for the purchase of residential properties, residential property price movement has a significant relationship to accumulation of debt.

Residential property prices growth, measured by the MHPI, has been growing at a sustained pace, averaging 10.4% over the past few quarters since 2010. Growth in prices is most apparent in the states with major employment centres. The average growth over the past few quarters in these centres are Selangor, 13.9%; Johor, 7.5% and Penang, 9.3% (see Table 2).

Table 2
Residential Property Prices Growth Has Been Growing at a Sustained Pace

Annual change (%)	01-'09 Average	4Q' 10	4Q' 11	2Q' 11	1Q' 12	2Q' 12
Malaysia	3.2	8.2	10.0	10.6	12.0	11.2
Kuala Lumpur	4.3	7.1	13.9	12.7	18.0	9.1
Selangor	2.3	13.0	11.9	13.9	15.2	16.5
Johor	-0.2	4.4	9.1	8.7	7.1	8.1
Penang	4.3	4.0	11.4	7.8	11.4	11.9

Source: National Property Information Centre.

As mentioned in the introduction, the simultaneous increase in household debt and residential property prices warrants close examination. The following sections lists the methodologies used for studying the link between household debt and house prices. In the first section, mortgage financing is studied as a preamble to the econometric estimation listed in the second section.

5. Environment Study – Movements in Mortgage Financing

A comparison is made between the mortgage financing vis-a-vis number of borrowers. There is a strong intuition to perform this comparison. From a bank's perspective, growth in house financing is excessive, if the increase in financing does not commensurate with an equal expansion in number of borrowers. A faster increase in financing coupled with slower expansion in borrower base signals greater concentration of repayment obligation on the individual borrower. In other words, each borrower has higher repayment obligation, and thus is exposed to greater interest rate, employment and income risks.

This comparison treats for structural breaks and anomalies in data. As a developing country, Malaysia's data collection effort is always expanding and improving. A jump in data time series is inevitable, whenever a new institution is included in the database. By comparing financing vis-a-vis borrowers, for example, in a form of ratio, a break in time series for financing is offset by the similar break in number of borrowers. So the impact of structural break to our study, from updates in data collection and policies introduced by authorities, is mitigated in the comparison.

We acknowledge, however, that comparing mortgage financing vis-a-vis number of borrowers has its limitations. The comparison may not be the most accurate representation of excessiveness in financing, since it does not consider other factors relevant to "excessiveness", such as the income position of a borrower.

Nevertheless, the comparison is intuitive and has yielded interesting conclusions. We find that in comparison to the pre-2008 trend, recent mortgage financing has increased faster vis-a-vis number of borrowers. Studying the growth in difference between the recent and past data points, we find that the momentum of this increase declined post-introduction of two LTV measures.

5.1 Environment Scan – Comparing Housing Loan Value to its Borrower Base

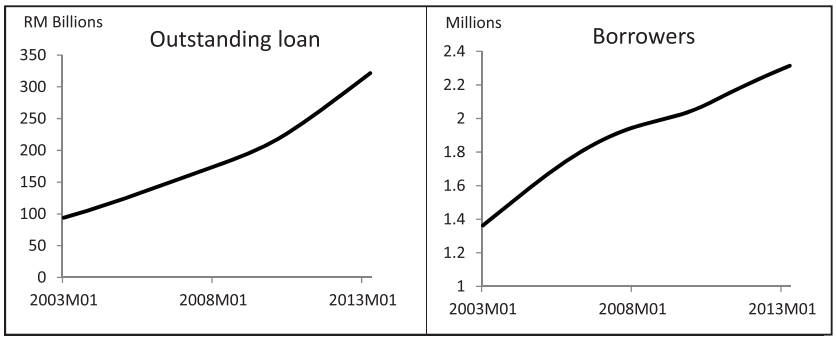
The variables used are sourced from the CCRIS database housed in the Central Bank of Malaysia. The chosen variables are: *banking system loans outstanding for purchase of residential properties mortgage (hereby outstanding loan)*, and *number of housing loan borrowers (hereby borrowers).* Both are monthly outstanding variables, from January 2003 to March 2013. Descriptive statistics of the variables is shown in Table 3.

The Hodrick-Prescott filter is then used to derive the trend from both the variables, as shown in the Diagram 5. Immediately from eyeballing, we observe that the outstanding loans started to show some faster uptrend towards 2013. In contrast, the borrower trend showed some form of slow-down in the uptrend post-2008.

Table 3
Descriptive Statistics of Outstanding Mortgage Loan and Number of Borrowers

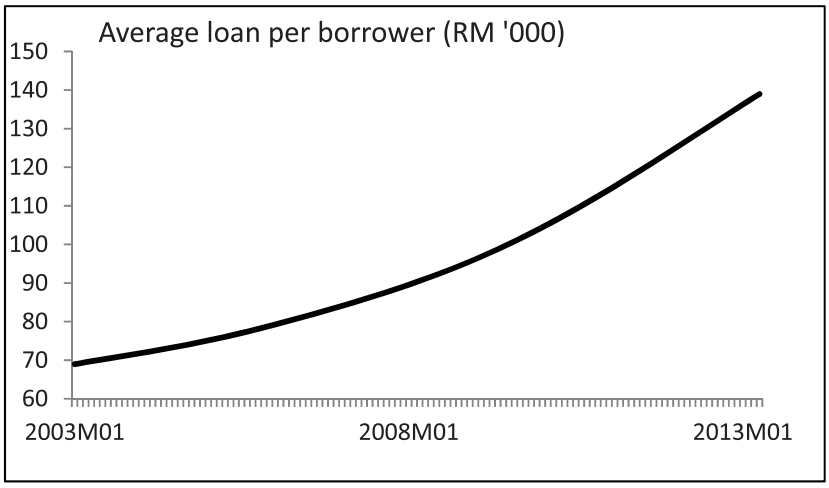
Variable	Standard deviation	Mean	25th Percentile	Median	75th Percentile
Outstanding loan (RM billion)	64.3	186.6	133.6	176.9	236.1
Borrowers (million)	0.3	1.91	1.74	1.96	2.14

Diagram 5
Outstanding Loans Show Some Faster Uptrend Towards 2013. In Contrast, Borrower Trend Showed Some Form of Slow-down in Uptrend post-2008



For comparison purpose, the difference between the outstanding amount and borrower can be taken as a ratio, and interpreted as average loan per borrower. The average loan per borrower shows a similar uptrend post-2008 (Diagram 6). This shows that a development exogenous to mortgage financing accelerated the outstanding loan amount, but not the number of borrowers. The first incident that comes to mind is the possibility that the recent increase in house prices have played a role in causing such a shift. However, the house prices only started to grow in double digit beginning around 2010. Before 2008, the house prices growth remained below 10%.

Diagram 6
The Trend of Average Mortgage Loan per Borrower Shows a Similar Bend Post-2008



To compare the recent data with the past trend, the average loan per borrower needs to be juxtaposed with a hypothetical counterfactual. We ask, what would the trend look like, if the afore-mentioned exogenous development that affected the outstanding growth did not happen. One method to proxy for this hypothetical counterfactual is to fit a trend equation to the pre-2008 data points, and allow this equation to extrapolate to the recent periods. This can be done using EVIEWS, where the averaging loan per borrower is regressed against the trend variables for data points prior to 2008.

Maximum least-squares is used to find the best equation for the average loan per borrower. By trial and error and by observing residual movements, the quadratic equation stated below is found to have the best fit for the data points up to December 2007. This is because, when the quadratic equation fits the data up till year 2007 month-12, the residual stays within a 5% acceptance region and continues to dampen, reflecting an improving fit. When the 2008 January data is included, the residual began to increase. In particular, when the June 2008 data point is included in the equation, the error term is found to be out of the 5% bound. This shows that the fit of the quadratic equation is the best for the data points up until December 2008 (Diagram 7).

The quadratic equation is then extrapolated into the recent period (Diagram 8). At 1Q 2013, the deviation between the current real data and the extrapolated

2008 trend is about 7% at 1Q 2013. The deviation is smaller than expected, given that house prices have been increasing at a faster pace (average rate of 10.4%) in the recent period.

$$\textit{Average mortgage loan per borrower} = 69.1 + 0.19t + 0.002t^2 \qquad (1)$$

Diagram 7
Equation (1) Fits Data up Till December 2007 Best. When June 2008 Data Point is Included in the Fit, the Error Term Increased Out of Bound

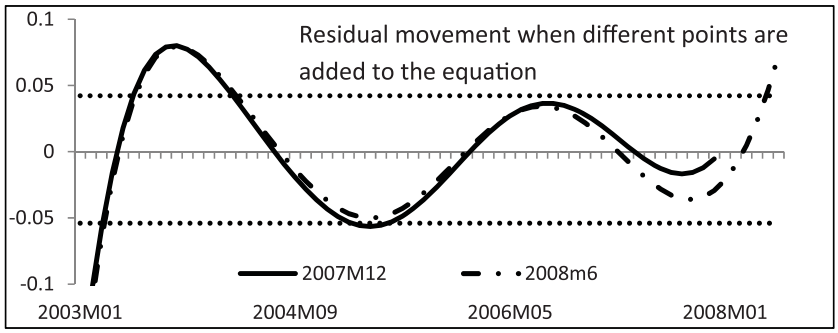


Diagram 8
Real Data is Juxtaposed with Extrapolation of Historical Trend

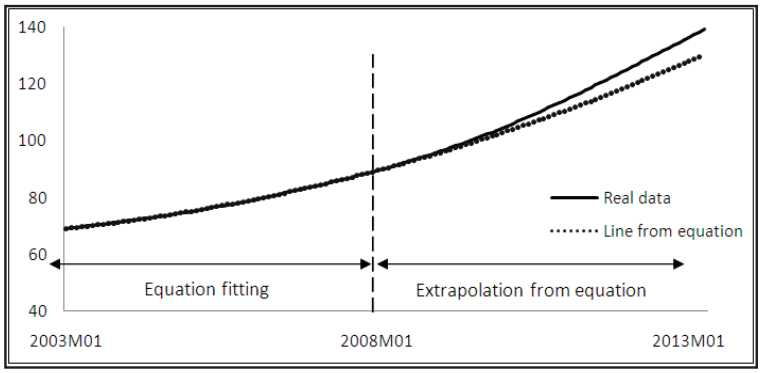


Diagram 8 points out that the increase in mortgage financing in the recent period is faster vis-a-vis number of borrowers. Further, we can obtain the gap between the actual and extrapolated data by taking a ratio of the two time series (Diagram 9a). By observing the growth of the gap, we find that the gap accelerated in early from January 2008 to November 2010 (Diagram 9b). Post-

November 2010, however, the acceleration stabilised, and began to decelerate thereafter.

It is interesting to note that the onset of deceleration in the gap coincided with Bank Negara Malaysia (BNM)'s introduction of maximum loan-to-value ratios (LTV) on the mortgage loans. BNM has since year 2010 introduced measures to tackle speculative activities through the lending channel. In particular, BNM introduced LTV ratios of 70% for third loans and above in 2010, followed by another LTV ratio of 60% at the end of 2011 to prevent speculation from non-individual buyers.

The finding above is consistent with the additional indicator for growth of borrowers with multiple housing loans. Since the implementation of LTV ratio, the growth in borrowers with multiple housing loans has shown marked signs of moderation. In particular, the growth in borrowers with three or more housing loans went from 14.5% in November 2010 to 1.9% in end-2012 (Diagram 10). Furthermore, from the CCRIS we also find that 85% of the borrowers have 1 housing loan account, while 12% and 3% of borrowers have 2 housing loans, and more than 3 housing loans, respectively.

Diagram 9a (top)
The Gap in Actual and Extrapolated Data is Taken as a Ratio
Diagram 9b (bottom)
Growth of Gap Accelerated from January 2008 to November 2010, and Stabilised and Decelerated Thereafter

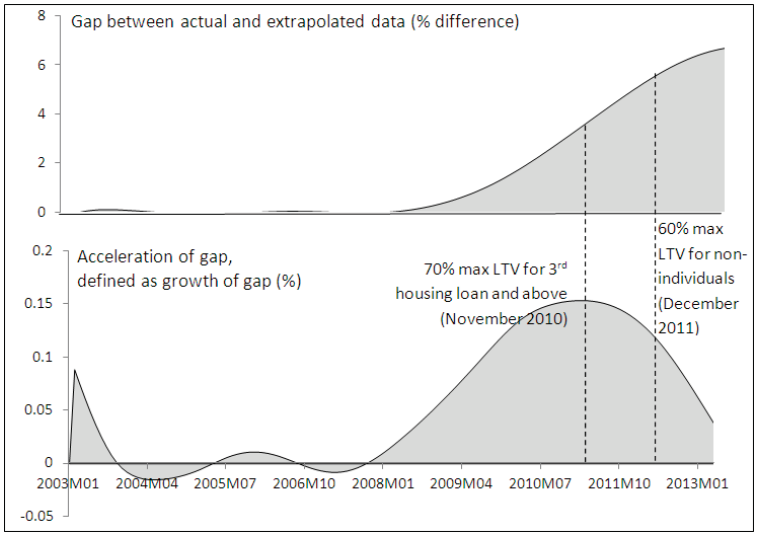
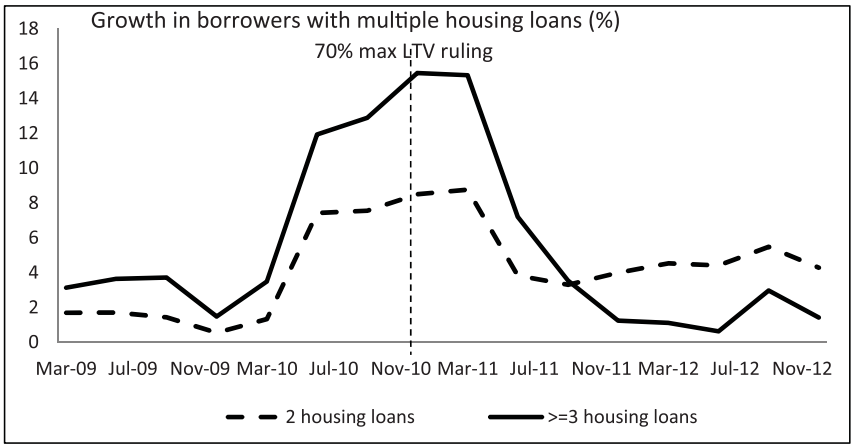


Diagram 10
Growth in Borrowers with Multiple Housing Loans Showed Marked Sign of Moderation



Source: Bank Negara Malaysia.

The assessments in this section seem to suggest that post-introduction of LTV measures, the lending momentum for purchase of residential properties dampened significantly post the introduction of LTV ratios. Despite this, as pointed out in the introduction, the moderation is not met with equal slowdown in house prices. The second part of the paper is devoted to studying the additional factors, apart from the credit channel, that contribute towards the growth in house prices.

5.2 Estimation- Determinant of House Price Growth

5.2.1 Selection of Independent Variables

The literature survey is performed to find a list of common indicators that affect growth in house prices in other countries. This is summarised as Table 4. The most common dependent variable is real house price growth, while the most common independent variables are lending, stock, income and cost indicators. From the list of the literature, we gather a list of proxy data, which we think most sensibly capture the elements of independent variables found in the literature (Table 5). All variables are taken as log-difference, and are stationary, verified using the Augmented Dicky-Fuller (ADF) test. Data ranges from Q1 2002 to Q1 2013 on quarterly basis:

Table 4
List of Common Indicators in Affecting Growth of House Prices

Dependent	Paper/ Country	Independent variables
Real housing prices	Greef and Haas (2000)/ Netherlands	Real disposable income per capita Real house price lagged Real effective mortgage lending Number of double income households Total real mortgage lending
	Francke, Vujic, and Vos (2009)/ Netherlands	Disposable labour income Long-term interest rate CPI Wealth indicator Housing stock
	Leung, Chow, and Han (2008)/ Hong Kong	Real house price (Lag 1) Real GDP per capita Real Interest rate Real Residential investment deflator Real Hang Seng Index
	Craig and Hua (2011)/ Hong Kong	Real GDP per capita Real interest rate Real construction cost index Real domestic credit Land supply with 5-quarter lag

Table 5
Proxies Used for Dependent and Independent Variables in This Paper

Dependent variable*	Proxy variable	Source	Symbol
Real house prices	Average transacted price for properties priced above RM250,000, divided by headline CPI	National Property Information Centre (NAPIC) Department of Statistics Malaysia (DOSM)	Hpc
Independent variables*/ expected sign	**Proxy variables**	**Source**	
Wealth (+)	Composite of household financial asset	Multiple sources	Wlt
Credit availability (+)	Banking system mortgage loan disbursement	Central Credit Reference Information System (CCRIS)	Disb
Cost of borrowing (-)	Average lending rate	Survey to banking institutions	Alr
Stock supply (-)	Unsold unit/ newly launched units	National Property Information Centre (NAPIC)	Stk
Construction cost (+)	Building and construction index	Department of Statistics Malaysia	BCI
Lag of real house prices (+)	Dependent variable lag	Same as dependent variable	Hpc

Number of observations: 45.
*All variables are in log-difference form.

5.2.2 Estimation

The model is estimated using the Ordinary Least Square (OLS) method. While Vector Autoregression (VAR) or Vector Error Correction (VEC) models are more suited in this study, due to issues of possible endogeneity between house price growth and the said independent variables, the limited number of observations in the data hamstrung an accurate estimation using these models. In short of an alternative, as much as we can, we use independent variables that appear to have uni-directional Granger causality relationship, from variable to house price, in the OLS model.

Two models are estimated. The first model runs real house price growth against the all independent variables (Equation 2). When the variable is not significant in the current period, we move on to test the significance of one lag. We move on to a new variable once a lag is found to be significant (maximum lag test is 6).

The second model adds an autoregressive term into the equation (Equation 3). Inclusion of the autoregressive term is a result of discussion post-engagement with members in this SEACEN research workshop. The rationale is house price growth may be self-inducing; i.e., the past period's growth is significant in affecting the next period's growth due to persistent market behaviour. However, we acknowledge that inclusion of the autoregressive term has to be done with caution. If the primary model contains significant serial correlation in residual, the use of the autoregressive term could over-correct for this weakness. The overall fit of the model would improve markedly, but the explanatory power of other variables could be significantly eroded (see Achen, 2000). We take note of this concern and scrutinise the two models separately for robustness.

$$d(\log(hpc)) = \beta_0 d(log(Wlt))_{-1} + \beta_1 d(\log(Disb))_{-2} + \beta_2 d(\log(Alr))_{-3} + \beta_3 d(\log(Stk))_{-6} + \beta_4 d(\log(BCI))_{-2} + c_a + resid_a \quad (2)$$

$$d(\log(hpc)) = \beta_0 d(log(Wlt))_{-1} + \beta_1 d(\log(Disb))_{-2} + \beta_2 d(\log(Alr))_{-3} + \beta_3 d \quad Stk \quad_{-6} + \beta_4 d(\log \ BCI \quad_{-2} + \beta_5 d(\log \quad\quad_{-4} + c_b + resid_b \quad (3)$$

5.2.3 Result and Discussion

The table below shows the result of the estimation (Table 6). The two models, carefully observed for proper diagnostics, conclude that a comprehensive set of variables are more significant and impactful in affecting the growth in real house prices. Under the specification of model I, 1% increase in household wealth corresponds to 1.06% increase in real house price growth, and is highly significant with one lag. This is followed by growth in commodity costs: 1% growth corresponds to 0.36% growth in real house price growth, and is also highly significant. Finally, 1% growth in loans disbursed correspond to 0.18% increase in real house price growth, and is weakly significant at 5% with the lag of two quarters.

Model II shows that lagged real house prices have a significant impact on current house price growth. In particular, a 1% increase in real house price growth, significant at the 4th quarter lag, can be associated with 0.33% increase in the current growth. Interestingly, when a lagged dependent variable is included, the disbursement variable becomes weakly significant at only 10%.

As pointed out by Achen (2000), inclusion of a lagged dependent variable markedly improved the model's fit, from an adjusted R^2 of 50% to 62%. At the same time, some moderation in explanatory power of other variables is also seen. However, since the primary model (Model 1) was already verified to pass the diagnostic tests for serial correlation (see Section 4.2.2), the concern for overcorrection of the serial correlation should be much muted in our case. Model (2), thus, should be considered as a more believable model.

Reported together are the standardised coefficients, obtained by removing the mean value and dividing by standard deviation in each variable. Because they are standardised, we can now compare the influence on the growth in house prices across the independent variables within the group (Freedman, 2009). In both models, the credit disbursement growth is found to have less impact: a standard deviation increase in disbursement growth contributes to 0.33 and 0.23 increase in the standard deviation of real house price growth, less compared to other factors such as household wealth and construction costs, average lending rate and past house prices growth. As with the above, significance of the lending credit is also significantly weakened when real house price growth is included.

Both models are put through the diagnostic tests to, as much as possible, ensure that it is robust and results are believable. The list of tests performed is listed in Table 7, and the models were able to pass all the diagnostics listed in the table.

Table 6
Credit Disbursements is Weakly Significant and Less Impactful Compared to Other Variables

	Model 1		Model 2	
y = Hpc	β	$\beta_{standardised}$	β	$\beta_{standardised}$
Wlt (-1)	1.06*** (0.3097)	0.42*** (0.1246)	1.07*** (0.2897)	0.45*** (0.1104)
Disb (-2)	0.18** (0.0747)	0.33** (0.1329)	0.13* (0.0729)	0.23* (0.1222)
Alr (-3)	-0.37*** (0.1189)	-0.36*** (0.1182)	-0.34*** (0.1111)	-0.35*** (0.1041)
BCI (-2)	0.36*** (0.1162)	0.36*** (0.1110)	0.33*** (0.1086)	0.34*** (0.0983)
Stk (-6)	-0.12** (0.0469)	-0.28** (0.1222)	-0.11*** (0.0438)	-0.30*** (0.1080)
Hpc (-4)	--	–	0.33*** (0.1180)	0.33*** (0.1075)
c	-0.03 (0.0108)	–	-0.02 (0.0101)	--
R^2	58%	57%	69%	67%
Adjusted R^2	50%	51%	62%	62%

Observations (after adjustment): 34. Standard error reported in bracket.
***, **, * denotes 1%, 5%, 10% significance, respectively.

Table 7
Models are put Through Diagnostic Tests to Ensure that it is Robust

Tests	Functions
Jarque-Berra test	Normality of residual
LM tests, Correlogram	Serial correlation of residual
Correlogram-squared, ARCH	Autoregressive conditional heteroskedasticity condition
White's test	Heteroskedasticity of residual
Augmented Dickey-Fuller test	Stationarity of variables and residuals
Variance Inflation Factor (VIF)	Multicollinearity
CUSUM, CUSUM-squared	Structural breaks

Two observations can be derived from the models presented. Firstly, the significance of credit disbursement in explaining house price growth is much weaker compared to other variables. The variable is found to be significant only at 10%, when lag of dependent variable is included in the equation. We have tested Model 1 for serial correlation, so concerns about over-correcting for serial correlation as listed by Achen (2000) is muted in our case. Secondly, the explanatory power of credit disbursement in explaining house price growth is also less compared to other variables. This is done via a standardised beta across all variables in the equations.

The conclusion from the models is consistent with a widening of the supply-demand gap for housing in the urban areas, especially for low- to medium-priced range houses (FSPSR, 2012). Driven by higher margin, developers have increased the concentration of supply in property prices ranged above RM 1 million. Houses below price range of RM 500,000/- has seen a decline since 2010 (FSPSR, 2012). The lack of supply in affordable houses, coupled with the continuous expansion of middle income household in the urban region, has led to continuous uptrend in house price growth. This calls for increase in the supply of affordable houses, which is progressively being rolled out by the government in its Budget announcement for 2013 and 2014. A detailed assessment on the development in the property market can be found in Bank Negara's FSPSR 2012.

6. Policy Implications

The assessment in the previous section highlighted the need for comprehensive policy measures in maintaining rising house prices. Macroprudential measures, such as implementing maximum LTV ratios, need to be complemented with fiscal policies to ensure that the weaknesses in the housing market are holistically addressed. It is noted that the government and the Central Bank has implemented a series of policy measures targeted at addressing the weaknesses in the demand and supply gap and affordability of houses (Table 8). These measures, as shown in previous findings, have shown some positive impact on mortgage lending and the housing market.

More progressive initiatives, particularly those targeting at resulting in medium- to longer-term impact, need to be introduced to fully address the weaknesses in the housing market. One recommendation is to enhance the nation's research capacity with regards to housing supply and housing affordability issues. Two concrete proposals should be given thorough consideration.

Firstly, a specialised body within the government authorities can be tasked to produce research pertaining to the developments within the domestic housing market. Many agencies have the relevance and capacity to perform this task; among them are the National Housing Department (JPN), PR1MA, and Ministry of Urban Wellbeing, Housing and Local Government. On top of that, the domestic academic researchers in the public and private universities should also be incentivised to enhance the production of research in this topic. This paper particularly recommends setting up a social science research foundation, similar to the National Science Foundation (NSF) in the United States, which distributes research funds to academic individuals performing research in this particular area.

Secondly, echoing Endut and Hua (2009) and Lee (2013), databases containing high quality, granular, and longitudinal household information should be initiated and maintained. Two options are available to gather granular panel data. The government can amalgamate the existing databases from the various

agencies into a unified system. As of now, various authorities across the government agencies collect individual information only relevant to their respective mandates. This information is often related, and can be linked together using Identification Number (IC). This paper recommends that the cross-agency information to be collated and unified under the roof of one authority, with controlled access given to researchers interested in studying household issues.

An alternative initiative is to transform the Household Income Survey (HIS) and Household Expenditure Survey (HES) into panel surveys. Panel household survey has been made available in the advanced countries for a long time. The countries with such databases are, for example, the United States (Panel Study of Income Dynamics; PSID), United Kingdom (British Household Panel Study; BHPS), Germany (German Socio-Economic Panel; SOEP), Australia (Household, Income and Labour Dynamics in Australia Survey; HILDA), nd Italy (Survey on Household Income and Wealth; SHIW). The availability of granular Panel data in Malaysia will give domestic and international researchers the quantitative instruments required to produce high quality research in the Malaysian housing market and Malaysian household debt.

Table 8
Government and Central Bank Implemented a Series of Policy Measures Targeted at Addressing Weakness in Housing Market

<table>
<tr><th>Housing market/ mortgage lending related measures</th><th>Description</th><th>Date</th></tr>
<tr><td rowspan="2">Loan-to-value ratio</td><td>Maximum LTV ratio of 70% for third housing loans and above</td><td>November 2010</td></tr>
<tr><td>Maximum LTV ratio of 60% for non-individual borrowers purchasing residential properties</td><td>December 2011</td></tr>
<tr><td>Guidelines for responsible financing</td><td>● Require financial institutions to closely observe borrowers' debt service ratio before granting of financing of any facilities
● Inquiry to borrower's income need to take into account statutory deductions</td><td>November 2011</td></tr>
<tr><td>Restriction on maximum tenure</td><td>● Maximum tenure of 35 years for financing granted for the purchase of residential and non-residential properties;</td><td>July 2013</td></tr>
<tr><td>Improving affordability of houses</td><td>● Introducing My First Home Scheme and 1Malaysia People’s Housing Scheme (PR1MA)
● Joint-venture with private sector to build affordable houses</td><td>Budget 2013 and 2014</td></tr>
<tr><td></td><td>To stem speculative activities by revamping the RPGT structure. The rates have been adjusted upwards post announcement of Budget in 2014:
<table><tr><th>Residential properties sold</th><th>RPGT rate</th></tr><tr><td>0 up to 3 years</td><td>30%</td></tr><tr><td>More than 3 up to 4 years</td><td>20%</td></tr><tr><td>More than 4 up to 5 years</td><td>15%</td></tr></table>For non-citizens, RPGT is fixed at 30% for disposal of property from 0 up to 5 years, and 15% for disposal of property in the 6th year</td><td>Budget 2014</td></tr>
<tr><td>Price floor for Purchase of Property by Foreigners</td><td>Foreigners are only allowed to purchase properties above RM1,000,000</td><td>Budget 2014</td></tr>
<tr><td>Developer Interest Bearing Scheme (DIBS)</td><td>Prohibited to prevent inclusion of interest rates on loans during construction of house into final house prices</td><td>Budget 2014</td></tr>
</table>

7. Conclusion

The simultaneous increase in Malaysia's household debt and residential property prices warrants close examination. This paper examines the link between the two phenomena. We find that mortgage financing in recent periods have grown at a faster pace vis-a-vis the number of borrowers. This increase, however, has decelerated post-introduction to the two LTV measures. The slowdown in mortgage financing is consistent with the fact that the growth in borrowers with multiple housing loan has moderated sharply, from 14.5% in November 2010 to 1.9% in end-2012. Nevertheless, we observe that the decrease in credit momentum was not met with similar moderation in house prices, which prompted the study into whether credit disbursement is a significant and powerful indicator of house price growth.

The second part of the paper conducted an econometric regression to study the determinant of house prices. Carefully controlling for proper diagnostics, we find that the credit disbursement variable has weak significance and explanatory power in affecting overall house price growth. Other indicators, such as costs and household wealth, have much stronger explanatory power over the growth in prices.

The government has, in its 2013 and 2014 Budget announcements, rolled out a comprehensive set of measures targeted at home affordability issues. The paper calls for the strengthening of initiatives that are medium to longer term in nature. In particular, the paper strongly recommends measures that can enhance research capacity in the areas of household debt and property market. Two initiatives are recommended. Firstly, a specialised body within the government authorities can be tasked to produce research pertaining to the developments within the housing market. Secondly, databases containing high quality, granular, and longitudinal household information should be initiated and maintained. The availability of granular panel data in Malaysia will give domestic and international researchers the quantitative instruments required to produce high quality research, in areas pertaining to Malaysian household debt and housing market.

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Chapter 7

MORTGAGE FINANCE AND CONSUMER CREDIT: IMPLICATIONS ON FINANCIAL STABILITY IN MONGOLIA

By
Tsenddorj Dorjpurev[1] and Khash-Erdene Badrakh[2]

1. Introduction

In many countries housing prices are subject to booms and busts and they are more likely to be associated with financial instability and with losses of many households' investments. The Mongolian economy has experienced a severe economic downturn in 2009 after the global financial crisis (GFC), combined with a mortgage market crash followed by its golden years based on mining revenues and capital inflows up until the global meltdown in 2012. In absence of a stabilisation fund, the Mongolian economy lacked capital inflows and faced macroeconomic volatilities. However, the successful first issuance of international bond and unconventional monetary policies sustained the economy through the difficult periods making some progress in such areas as infrastructure and housing finance. The Mongolian economy, faced with housing market crash back in 2008 and yet dealing with unfavourable economic conditions, however, is on the way to a new housing finance system. With the awareness of the U.S mortgage crash, research interest on the housing market increased enormously lately. But, at this juncture, needless to say, it is crucial to evaluate the housing market, and this paper aims to investigate the housing market in the Mongolian economy in the hope of contributing some additional insights to this issue. This paper concludes that housing price in Mongolia is overvalued with regards to its fundamentals.

2. Mortgage Finance and Consumer Credit: Developments and Trends

2.1 Overview of the Economy

Thanks to the mining boom, the Mongolian economy has experienced rapid economic growth with an average rate of 8.7% in last decade. The Mongolian economy has become the fastest growing economy with 17.5% growth in 2011. The economic expansion decreased slightly to 12.3% in 2012 and grew at 11.6%

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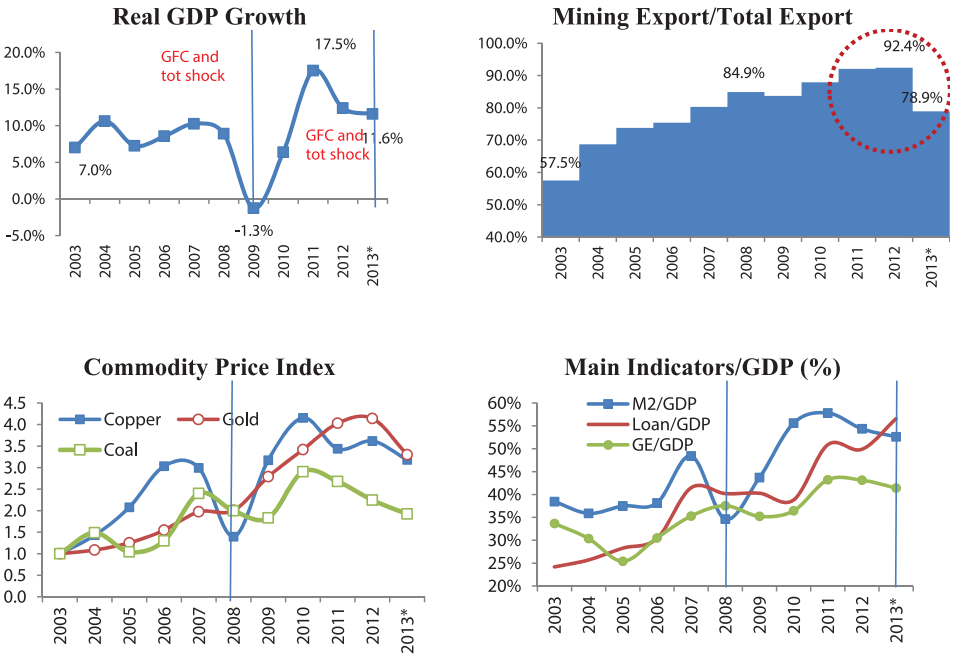
at the first half of 2013. However, its economic growth is heavily dependent on commodity price which makes the economy vulnerable to global demand, foreign investment and terms of trade (TOT) shocks. The mining export is 92.4% of Mongolian total exports by the end of the 2012, making most of the economic indicators pro-cyclical. The government expenditure for instance, a stabilising tool, as it should be, is highly correlated to the commodity price fluctuations due to the tax income from mining projects. As seen in Figure 1, the main macro indicators such as real GDP growth, government expenditure (GE), money supply (M2) and inflation show almost the same pattern as the mining exports' price. As such, bank loans and real estate prices have figuratively followed the same pattern.

Figure 1



Source: World Bank.

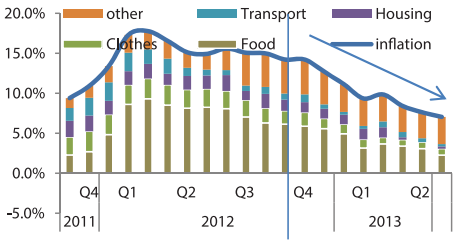
Source: NSO of Mongolia.

The Mongolian economy has received large amounts of capital inflows to the mining sector compared with its gross national output for the last few years. This inflow has caused the real exchange rate to appreciate, thus putting pressure on the price of the non-tradable sector, including real estate. However, in 2008 and in 2012, severe economic condition in the global economy drove down the commodity price and hit the Mongolian economy. In the 2008 crisis, the economy declined by 1.3%, pulling down the financial sector and causing the housing

market to crash. With some learned lessons, in late 2012, the Mongolian government issued bonds totalling US$1.5 billion, almost 15% of the GDP, on the international market in the absence of capital flows from FDI and exports, and a sovereign wealth fund to stabilise the economy. Although the issuance of the bond had a calming effect on economy, its effectiveness will depend on the usage of the money and the way it will be paid back. There is also a bond issuance targeted for Japanese market in the pipeline in addition to the previous one.

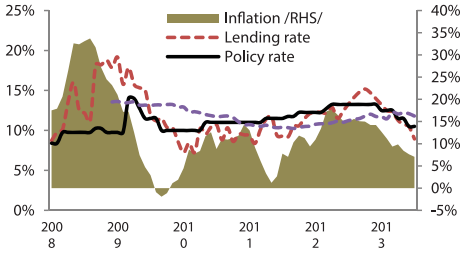
Figure 2

CPI Measured Inflation



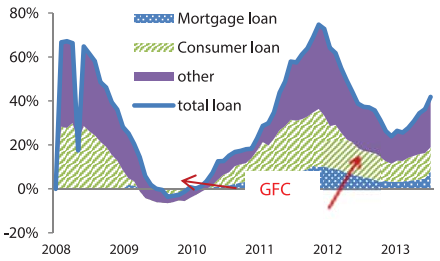
Source: NSO of Mongolia.

Interest Rates



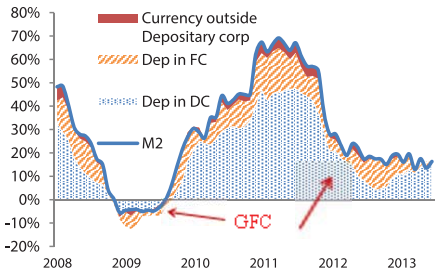
Source: NSO and Bank of Mongolia.

Growth of Loan



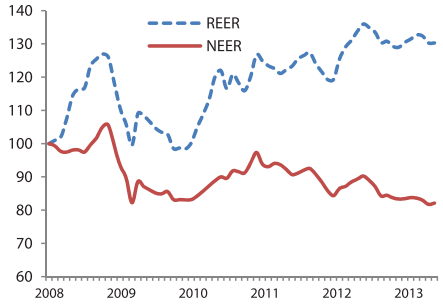
Source: Bank of Mongolia.

Growth of Money Supply

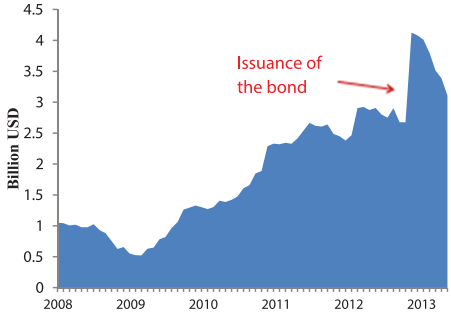


Source: Bank of Mongolia.

Nominal and Real Effective Exchange Rates (2008.1=100)



International reserve



Given the shortage of liquidity and capital inflow in the economy, the central bank acted proactively to fight inflation in an unconventional manner. Starting from Q4 2012, the central bank started several programmes in cooperation with the individual ministries and the government itself to reduce the supply-side inflation with subsidised credits to the corresponding sectors. Although the initial intention is to smoothen the supply-side shocks to inflation, it has been done by an enormous amount of liquidity injection to the economy, which can later cause another episode of inflation. In addition to the price stabilising programmes, the Bank of Mongolia cut mortgage rates to 8% ±1[3] from the average rate of 16.6% and replaced the previous loans with a discounted rate. The aim is to support capital accumulation in the overall economy as well as cut unnecessary consumption that boosts inflation. Given the economy was in shortage of liquidity, the central bank succeeded in keeping the inflation at a modest level and reduced the interest rate at the same time. Also the necessary liquidity injections prevented the economy from a severe slowdown and sharp decline of money growth. But the liquidity injections led to large exchange rate depreciation, which was already on downside due to the bad performance of exports. The Mongolian economy in recent years is prone to the terms of trade fluctuations due to the pro-cyclical actions. However, these intentions to act in a countercyclical way entail great cost, where in this case, it relies on the bond money and international reserve. Because the programme involved massive intervention in the market with discounted lending rate and injection of money to the market, the impacts on financial and macroeconomic stability should be evaluated carefully.

2.1.1 Mortgage Market

Mongolia has population of 2.7 million with a total land area of 1.56 million km^2 and with 1.76 persons per km^2, the lowest density among all sovereign countries[4]. But almost half of the population resides in the capital city, Ulaanbaatar, which is only 0.3% of the country in terms of land area. Thus, the concentration of population makes the Ulaanbaatar market the main leading mortgage market despite the existence of two other urban areas. When considering the supply and demand factors of the mortgage market, Ulaanbaatar has 106,300 apartments for 317,100 families; 21,100 of them share houses with another family and 189,600 of them live in "ger khoroolol" without basic infrastructure such as heat and water supply[5]. Basically there is an enormous need for apartments

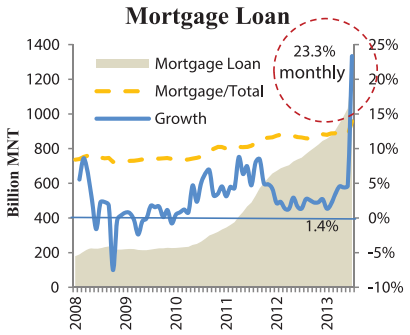
3. This discounted is applied for the apartments under 80m2.
4. National Statistics Office of Mongolia 2010census statistic.
5. National Statistics Office of Mongolia and staff calculations.

considering the people in ger khoroolol who aspire to raise their living standard. When it comes to supply, Ulaanbaatar's area is restricted by the surrounding mountains and by the existing number of thermal power stations which cannot adequately support further provision of apartments in addition to the current stock of apartments.

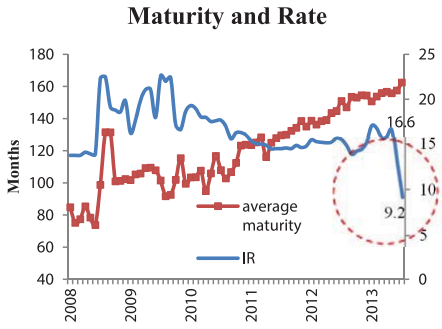
The mortgage market started to develop rapidly in Mongolia since 2003. In 2003, the outstanding loan was 8.2 billion MNT making only 1.3% of total outstanding loan, and reached 845.2 billion MNT making up 12.1% of total loan by the end of 2012. Taking into account that the supply of apartments is limited to available infrastructure and land area, an enormous need for apartments are fueled by GDP growth and increasing mortgage loan opportunities. The most rapid increase in mortgage loans took place in 2010 and 2011 which corresponds to the time of the mining boom and intensive capital inflows. However, the strong 8.8% monthly growth rate in mid-2011 declined to 2.3% by end of 2012 and increased to 23.3% in July of 2013 with the start of housing finance programme. The mortgage programme has not only generated new credit but also allowed previous borrowers an opportunity to switch to the low rate loans, thus the impact has been sudden as reflected in the figures. Before the implementation of mortgage programme, the average interest rate was on a declining trend and average maturity was increasing.

Looking at the production of the construction sector, we can see that the volume of production has picked up in early 2000's and in 2013 significantly. On the other hand, there was a significant expansion of nominal value production despite a flat level of real production throughout the last decade. When the GDP deflator is taken into account, it almost tripled since 2000 up to 2013 and there is also a visible divergence between the nominal and real GDP. The figure below clearly shows that since the development of mortgage market, the housing price has been driven up, but not production of the construction sector, except in the early 2000's, 2011 and 2013. The sudden increase in the level of production in 2013 is due to the mortgage lending programme of the central bank combined with interest rate subsidy to the construction sector. After implementation of the programme, the annual growth of the construction sector picked up from 6% to 64% within three quarters.

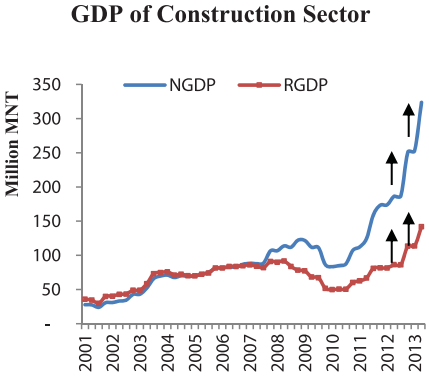
Figure 3



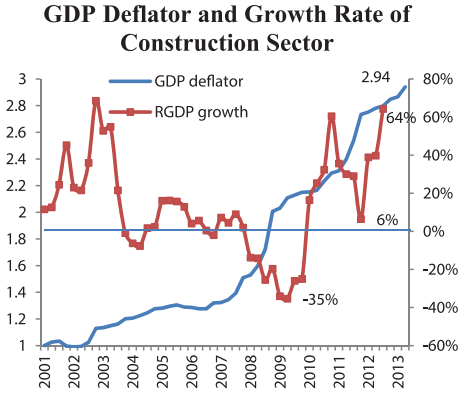
Source: Bank of Mongolia.



Source: Bank of Mongolia.



Source: NSO of Mongolia.

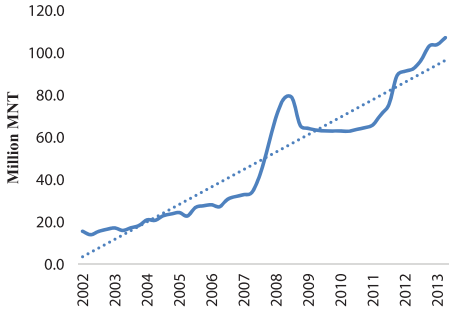


Source: NSO of Mongolia.

When we also take a look at the housing price index, it indicates that housing price is 5 times more than of 2002 in 2012. In 2008, the Mongolian mortgage market crashed with the global financial crisis. The crisis has affected the economy through trade and the terms of trade and worsened the banking system with bad loans from the mining companies. The extension of mortgage loans stopped and that caused the real estate market to crash. However, in 2012, although the economy was hit by trade and by the terms of trade shocks, the housing market was not as inflated as before and the central bank acted cautiously in preventing a drop in lending. Thus, in 2012 and 2013, house prices continued to increase. It is also possible to say from the official statistics that the prices of houses were rising despite a comparably small increase in the cost of construction in 2011 and 2012. This means that there are still demand-side factors to inflate the market and consistency of these factors should be checked in order to see whether this increase is a healthy one or not.

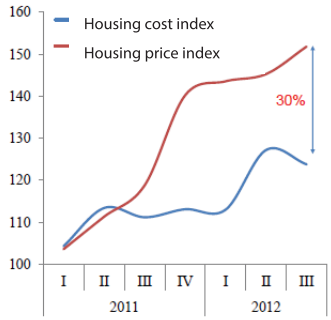
Figure 4

Housing Price Index[6]



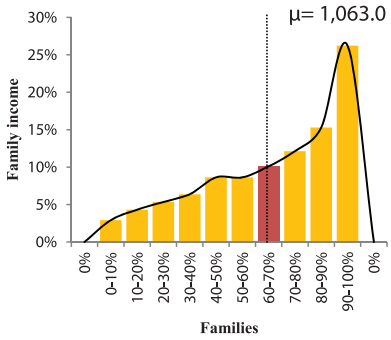
Source: Author's calculation.

Housing Price and Cost Index



Source: NSO of Mongolia.

Household Income Distribution



Source: Author's calculation.

House Price and Monthly Payments

Size	*price /million mnt/*	*monthly payment thous. mnt*	*sufficient income thous. mnt*
80 m.sq	*149.20*	*873.58*	*1,941.20*
70 m.sq	*130.60*	*764.38*	*1,698.60*
60 m.sq	*111.90*	*655.18*	*1,455.90*
50 m.sq	*93.30*	*545.99*	*1,213.30*
Average H/H income		***1,063.00***	
43m.sq	*80.20*	*469,548.00*	*1,043.40*
old apartments	*78.00*	*456,696.00*	*1,014.80*

Source: NSO of Mongolia.

One of the considerable factors to push the housing market is the mortgage rate cut by the government. The mortgage rate cut was targeted at those wishing to buy an apartment up to 80m^2. In addition to that, the requirement for loan is that the mortgage payments cannot exceed 50% of the family's income. When we consider the distribution of Ulaanbaatar city's family income distribution, an average family can afford less than 50m^2 apartment with the discounted mortgage rate and more than 60% of the households are below the average income. Given there are 317,100 families in the city, around 30% or around 100,000 of them can afford the mortgage loan. This means the stock of apartments will increase 100,000 in a short time to meet the demand. Moreover, there is a strong likelihood that people affording the loan are likely to already have apartment or apartments

6. This index has been constructed by extending the index used in D. Batnyam (2010) by NSO's housing price index from Q4 2007.

since they are the top 30% of the city. In this case, housing purchases are much likely to be speculative investments.

3. Review of Related Literature

The latest financial crisis has taught us to pay more attention to housing price booms, to check whether it is a moderate growth or speculative growth that can threaten financial stability with a later bust. Although there is no consensus as to when the housing price can become a threat to financial stability, there is a widely accepted approach that we can adopt. First, we see whether the housing prices are really reflecting the fundamentals. If they do not, the correction is inevitable. Second, we shall see how consistent these fundamentals are and whether the price-determining factors can be sustained for long period, otherwise there is bound to be a correction. The approach of building a price index with the given characteristics is called the Hedonic Pricing technique, pioneered by Rosen (1974) and Rosen and Topel (1988). Following that, Poterba (1991) has explained housing price dynamics with respect to fundamentals such as construction cost and income per capita; and DiPasquale and Wheaton (1994) have shown that housing price can overshoot with demand shocks, but it converges to its fundamental value as the new constructions increase.

The very person who foresaw the U.S housing collapse, Robert J. Shiller, highlights the importance of build-up of expectation which leads to bubble as such:

> *During a housing price bubble, homebuyers think that a home that they would normally consider too expensive for them is now an acceptable purchase because they will be compensated by significant further price increases. They will not need to save as much as they otherwise might, because they expect the increased value of their home to do the saving for them. First-time homebuyers may also worry during a housing bubble that if they do not buy now, they will not be able to afford a home later. Furthermore, the expectation of large price increases may have a strong impact on demand if people think that home prices are very unlikely to fall, and certainly not likely to fall for long, so that there is little perceived risk associated with an investment in a home.*

In case of the Mongolian economy, given the restricted supply, there is a strong likelihood that economic agents rush into buying houses and raise expectations when there is a positive income shock to the economy.

In a study conducted by (Westin et al., 2011) on financial stability, they found a strong correlation between mortgage credit growth and housing price increase. They also conclude from the empirical evidence that countries with more government involvement experienced deeper house price declines. This paper proposes some policy lessons after studying numerous country cases: (1) enhanced risk management, underwriting standards, and supervision; (2) more careful calibration of government participation; and (3) improved alignment of incentives for participants using capital market funding.

4. Mortgage Finance and Consumer Credit: Implications on Financial Stability

This section checks whether or not the housing price is actually becoming a bubble to threaten financial stability. To identify that, a model is proposed to explain the housing price with following economic fundamentals, given the economic overview of the previous section:

$$hpi = \alpha + \beta_1*(cons\_gdp\_g) + \beta_2*(gdp\_g) + \beta_3*(ir) + \beta_3*(neer) + \beta_4*(cement\ price) + \varepsilon_t$$

Where *hpi* is the housing price index used above; *cons_gdp_g* and *gdp_g* are construction sector annual real production growth and annual real GDP growth, respectfully[7]; *ir*[8] is the paid interest rate paid on loans; *neer*[9] is the nominal effective exchange rate; and *cement price*[10] is the cement price index to represent the construction input cost. The *hpi, neer, cement price index* are taken natural logs and *hpi, ir, neer,* and *cement price index* are seasonally adjusted.

For the empirical methodology, the VECM model is used in order to avoid the endogeneity problem of the explanatory variables. The integration levels are checked and confirmed that the variables are integrated at the same level AR(1) (Appendix 1)[11]. As suggested by Engle and Granger (1987), we can now test whether there is a cointegration relationship. The test results show that we have

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7. Construction sector GDP and GDP are taken as annual growth due to the fact that level statistics prevail AR(2) characteristics and due to the seasonality of the Mongolian economy and construction sector itself, and annualised growth is better illustrating the purchasing power change of household and supply of houses in this case.
8. From BoM monthly statistics bulletin.
9. BoM monthly statistics bulletin.
10. Cement price index from NSO of Mongolia.
11. The optimal lag(s) has been determined by the Schwartz Information criteria (Appendix 2).

one cointegrating vector (Appendix 1), thus we can estimate VECM. By using VECM, the long-run relations have been derived and built a fundamentals' vector to compare with the actual price to define a bubble. The fundamental price is easily derived when we estimate the long-run cointegration equation above and by using the estimated coefficients a long-run price vector determined by the above fundamentals are calculated. In the following figure, the market price of housing deviated from the fundamental price predicted by the model, not because it is driven up by itself, but because the fundamental price has been decreased. In the 2008 crisis, the fundamental values are also declining before the housing bust occurred. Moreover, on the right hand side of Figure 5 it is shows that the model proposed in this paper is perfectly predicting the early stages of housing market, although there are strong divergences when the price level goes up to 60 million when the 2008 crisis happened. It also clear that similar divergences are visible in the current price levels.

Figure 5

The long-run relationship estimated by the model tells us that when the construction sector growth increases by one percentage point, the effect is a 0.272% reduction in house prices, whereas a one percentage point increase in overall GDP growth has tendency to increase the demand of the houses, thus the price level by 1.86%. The cement price to no surprise has a positive relation with housing price. When there is a 1% increase in the cement price, the housing price tends to increase by 0.7%. The loan rates are also one of the important factors such that when it increases by one percentage point, it decreases the housing price by 0.035%. On the other hand, when local currency loses its value of 1%, it increases the price of houses by 1.05%. This might be related to the fact that many construction companies use imported inputs and foreign labour and tend to tie their price to foreign currency. Moreover, the variance decomposition graph above for ten quarters indicates that the cement price, loan rate and economic growth are the main factors explaining the housing price's variance.

Estimated longrun relationship

HPI	=	CONS_GDP_G	+	GDP_G	+	LOANRATE_SA	+	NEER_SA	+	CEMENT	+	C
1		**-0.2718*** **		**1.8603*** **		**-0.0353*** **		**-1.0537*** **		**0.7006*** **		**5.599156**
S.E		-0.07574		-0.45949		-0.00865		-0.30076		-0.15715		
t statistics		[3.58879]		[-4.04879]		[4.07874]		[3.53958]		[-4.46459]		

Note: *** indicates 1% significance level

Adj. R-squared: 0.6575

5. Conclusion and Policy Recommendation

This paper has investigated the housing market of the Mongolian economy and its implications on financial stability. The study has indicated that the Mongolian housing market had deficiencies on the supply side, and favourable conditions, such as high GDP growth and improving mortgage condition, created a price boom rather than a quantity boom. Moreover, the market price has been increasing, not because there is plenty of demand, but it was more likely due to speculative buying. The mortgage lending discount initiated by government and central bank fuelled the demand and kept the market alive while there are unfavourable macroeconomic conditions prevailing in parallel. Although there are discounted lending subsidies to the construction sector and construction input suppliers, the tendency of the housing price to increase in 2011 and 2012 was because of larger increase in demand than the supply.

Another key finding of this paper is that the warning indicator of the housing market is that the housing price is diverging from the fundamental value. The bond issuance and liquidity injections have prevented many difficulties in the economy, but the main fundamentals remain weak. Therefore the increasing housing price does not necessarily reflect buyers' purchasing power. The key factors explaining the variance in housing price are economic growth, interest rate and cement input price. Among these factors, the interest rate has been reduced by the central bank and the prices of inputs, such as cement, are being subsidised. The GDP is expected to grow at the same pace so that the mortgage market can continue to operate without interruption. In the impulse responses, it shows that a shock from GDP growth takes 6 quarters on average to take effect on the housing price. If the following years are buoyant, as it was in 2010 and 2011, there will not be much to fear about the housing market. However, if things go a little wrong or the fragility continues, then it is likely that the market will correct. Thus, the central bank shall "plan for the worst and hope for the best" by taking the initiative to put in place regulative measures to prevent speculative buying. Tax imposition on the second or further home purchase or restriction of house sale in first year of purchase are examples of useful measures to employ against speculative buying.

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Appendices

Data Definitions and Sources

Appendix 1
Unit Root Test Results

Variable	Level		1'st difference		
	ADF	PP	ADF	PP	Integration Level
hpi_sa	0.241	0.457	-4.008**	-3.057**	1
cons_gdp_g	-1.101	-1.869	-4.258**	-6.428***	1
gdp_g	-2.315	-2.07	-4.495***	-4.491***	1
loanrate_sa	-1.574	-1.603	-8.196***	-8.047***	1
neer_sa	-1.555	-1.554	-6.425***	-6.425***	1
cement_sa	-0.606	-0.41	-8.886***	-8.863***	1

Note: **, *** indicates 5% and 1% significance level, respectively

Appendix 2
Defining Optimal Lag(s)

Lag(s)	0	1	2	3	4
SC	-3.077349	-10.09913*	-9.54864	-8.067988	-8.188178

Note: SC is Schwarz information criterion and * indicates optimal level of lags

Appendix 3
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

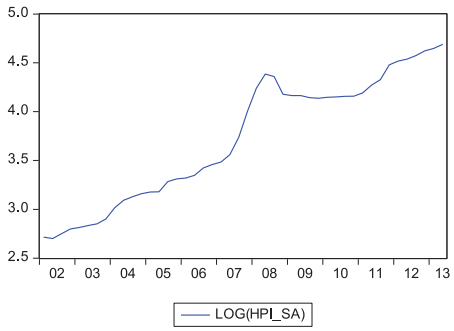
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.62185	42.78846	40.07757	0.0241
At most 1	0.48451	29.15601	33.87687	0.1651
At most 2	0.359043	19.5709	27.58434	0.3716
At most 3	0.315378	16.67109	21.13162	0.1881
At most 4	0.137496	6.508303	14.2646	0.5489
At most 5	0.063973	2.908864	3.841466	0.0881

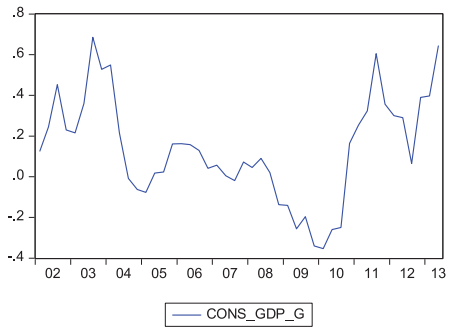
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

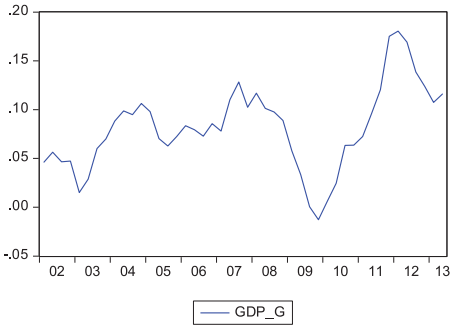
* denotes rejection of the hypothesis at the 0.05 level

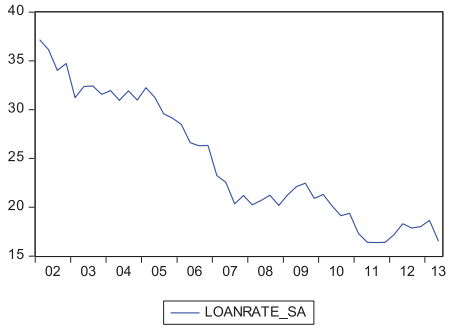
**MacKinnon-Haug-Michelis (1999) p-values

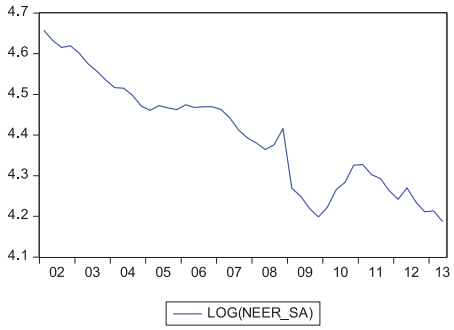
Appendix 4
Graphs of Variables in the Model

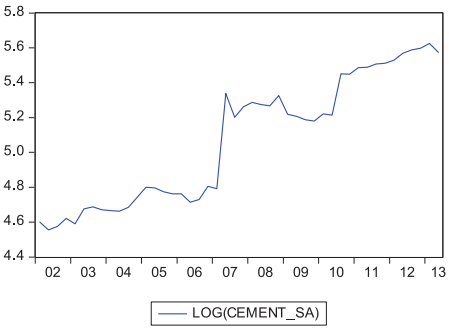




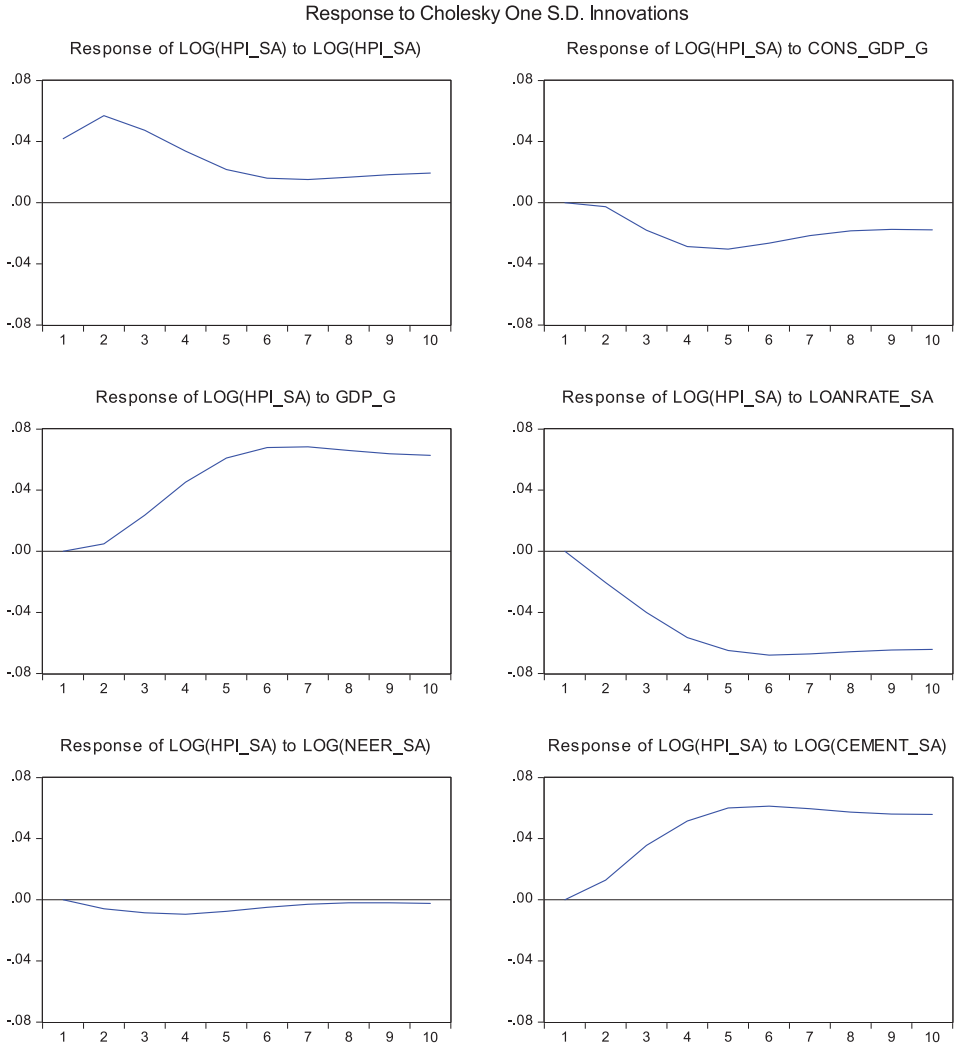








Appendix 5
Impulse Responses of Housing Price



Chapter 8

MORTGAGE FINANCE AND CONSUMER CREDIT: IMPLICATIONS ON FINANCIAL STABILITY

By
Myat Thida Min[1]

1. Introduction

Mortgage finance and consumer credit are closely linked to financial and macroeconomic stability. Since mortgage loans comprise a large portion of consumer credit, fluctuations in house price can affect the value of the collateral and hence the financial soundness of the lending institutions. Moreover, housing prices tend to have strong implications on household behaviour, and consequently macroeconomic stability.

The objective of this research is to review the current development of the Mortgage Finance and Consumer Credit in Myanmar identifying the factors influencing the increase in household debt as well as the emergence of asset price bubbles and determining their impact on financial stability. This paper is expected to provide a better understanding of the interaction between mortgage finance and consumer credit with respect to financial stability.

From the standpoint of the Central Bank of Myanmar (CBM), household debt, measured by loans for personal consumption, hitherto has not been important to the economy as a whole. Given the low rate of non-performing loans (NPLs) and the small proportion of loans for personal consumption to total loans, the household debt in Myanmar is not as serious an issue as compared to the regional

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1. The author is the Assistant Director, Financial Institutions Supervision Department of the CBM. Sincere appreciation goes to the Honorable Governor of the CBM for his nomination for me to participate in the SEACEN research project. Thanks also to the Director General of Financial Supervisory Department of CBM for advice and guidance. Profound thanks to the Deputy Director General of Financial Institutions Supervision Department for his encouragement and this assignment and for providing reliable data for this study. My sincere and special thanks go to Ms. Thi Da Myint, Socio-Economist of UNDP for her tireless effort and discussion on this paper. Finally, my deepest gratitude goes to The SEACEN Centre, project team leader Dr. Faith Christian Q. Cacnio and all the project team members participating in our project as researchers of member economies for SEACEN for sharing their insights and experience in the workshop. The views expressed in this paper those of the author and do not necessarily represent the stance of the CBM.

countries. This paper looks at Myanmar's mortgage finance and consumer credit situation and their implication to the country's financial stability.

This paper is organised as follows. Section 2 describes mortgage finance and consumer credit: the development and trends in Myanmar. Section 3 is a review of the literature. Section 4 discusses the implications of mortgage finance and consumer credit on financial stability. Section 5 presents the policy recommendations, and Section 6 concludes this paper.

2. Mortgage Finance and Consumer Credit Development and Trend

The financial sector in Myanmar is small and developing. Access to financial services is limited as reflected by the low outstanding loans to GDP ratio of 8.25% and deposits to GDP ratio of 12.6% according to International Monetary Fund's country report on January 2013. The financial sector consists of the banking sector and non-banking sector. The banking sector, which includes four state-owned banks and 20 private banks, dominates the financial sector. The non-banking sector includes one state-owned Insurance Enterprise, twelve Domestic Private-owned Insurance Companies, four Domestic Private Finance Company, One Foreign Finance Company, Myanmar Securities Exchange Centre Co., Ltd., and 154 Microfinance Institutions (MFIs). Since the banking sector is still underdeveloped with many constraints in their operation, only 10-20% of the population has access to formal financial services; the rest have to rely on the informal financial sector.

While the state-owned banks are given major emphasis in providing loans to agricultural-related economic activities, the private banks focus more on financing non-agricultural businesses. In fiscal year 2012-2013, the three state-owned banks, Myanmar Economic Bank, Myanmar Investment and Commercial Bank, and Myanmar Agriculture Development Bank made loans amounting to kyat 1,204,521.61 million, and 19 private banks extended loans up to kyat 4,130,732.78 million to their customers, including state-owned enterprises, co-operatives, private companies and households.

In Myanmar, most of the loans provided by both state-owned banks and private banks are one-year working capital loans. There are two major types of loans: commercial and consumption loans. The commercial loans go to various economic sectors such as agriculture, manufacturing and production, trade, transportation, construction and other services. At the end of FY 2012-2013, total loans outstanding stood at kyat 5,335,255 million, of which commercial loans account for 96.89% whereas consumption loans took up only 3.11%.

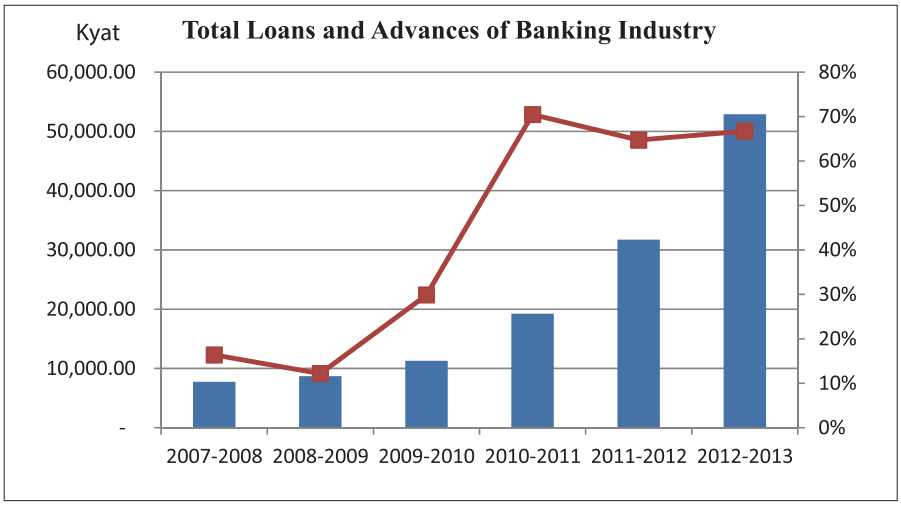
The mortgage credit market has not yet been developed in Myanmar. In 2011, under the new democratic government, the country has taken a series of reform measures including relaxation on banking restrictions, and allowance of new products including such consumer credit as hire-purchase system.

2.1 Commercial Loans

Lending principles must be beneficial to the clients, solve liquidity problems and increase profitability. The types of collateral for commercial loans are: landed property, gold and jewellery, some export items, fixed deposits, government securities, and guarantees. Interest on loan must be paid quarterly and principal at maturity.

The banking industry's loans and advances showed an increasing trend, from kyat 775,457.85 million in FY2007-2008 to kyat 3,172,230.65 million in FY2011-2012 and to kyat 5,335,254.39 million in FY2012-2013. In other words, their growth has increased from 16.38% in 2007-2008 to 64.71% in 2011-2012 and to 66.73% in 2012-2013.

Figure 1



Source: Central Bank of Myanmar.

In 2012-2013, of the commercial loans outstanding, 16.53% went to the agricultural sector, 16.72% to industry and production sectors, 32.83% to trade loans, 1.61% to transportation, 9.89% to construction, 10.97% to services and 11.45% to others.

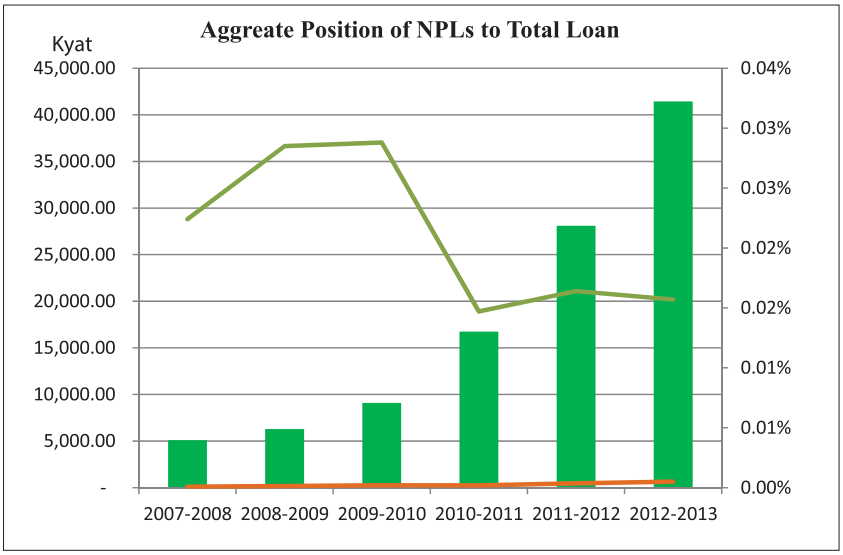
The CBM has made the necessary adjustments in the interest rates. It has relaxed its restrictions on deposit-taking, loan extension, product innovation, and network expansion.

With a view to promoting competition among the local banks, the CBM stopped setting flat interest rates for all local banks but set ceilings for both loans and deposits. With effect from 1 January 2012, the CBM reduced its interest rate (Bank Rate) from 12 to 10% p.a. Accordingly, the interest rate on bank deposits can be set not less than 8% p.a., which is 2% lower than the bank rate, and interest rate on loans not more than 13% pa, which is 3% higher than bank rate, maintaining a spread of 5%. At the same time, the interest rates for government treasury bonds were adjusted to 8.75% for two-year tenor, 9.00% for three-year tenor and 9.50% for five-year tenor.

Of the commercial loans outstanding, state-own banks account for 22.58%, with the other 77.42% provided by the private banks. By the end of 2012-2013 FY, the outstanding commercial loans of the state-owned banks reached kyat 1,204,521.61 million, representing an average year-on-year growth rate of 30.01% over the last 2011-2012 FY. Meanwhile, the growth of commercial loans contributed by the private banks was about 40.85%.

The NPLs, an important indicator intended to identify problems with asset quality in the loan portfolio, have increased from kyat 11,418.37 million (2.24% of loan portfolio) in 2007-2008 FY to kyat 65,124.25 million (2.84% of loan portfolio) in 2012-2013 FY. After increasing to 2.88% in FY 2009-2010, the NPLs fell to 1.47% in 2010-2011 FY and increased slightly to 1.64% in 2011-2012 and fell to 1.57% in 2012-2013 FY. Figure 2 shows the aggregate position of NPLs in relation to commercial loans of the private banks.

Figure 2



Source: Central Bank of Myanmar.

2.2 Consumer Credit in Myanmar

Consumer loans are granted to individuals and households. The main lenders of consumer loans in Myanmar are pawnshops, money lenders, friends/relatives, MFIs and banks.

In order to promote the development of the consumer credit market for the households, the government of Myanmar has put in place a series of credit policies. These policies spell out the basic supporting and regulatory framework to facilitate the development of HP (consumer credit). Friends/relatives, pawnshops and MFIs offer only a small loans programme. In the meantime, private banks such as Kanbawza, Co-operative, Asia Green Development, Ayeyarwaddy, United Amara and Myanmar Apex banks provide larger loan size than other banks. The purpose of loans is varied depending on the supplier. The CBM has allowed the local banks to extend HP facilities to their customers starting on 21 October, 2011. It helps to stimulate domestic demand and effectively raises the peoples' living standards.

Thus, Myanmar has initiated the development of consumer credit since the end of 2011. Since then, the amount of consumer loans has been steadily

increasing, reaching kyat 114,716.30 million in FY 2012-2013 and representing 3.11% of loans outstanding.

2.3 Consumer Credit Trend in Myanmar

Since 2011, consumer credit provided by the private banks has been increasing gradually. This type of credit covers loans for procuring electrical appliances, motor cars, phones/handset, jewellery, machinery and equipment. HP is the legal term for a contract, in which persons usually agree to pay for goods in parts or a percentage at a mutually agreed time.

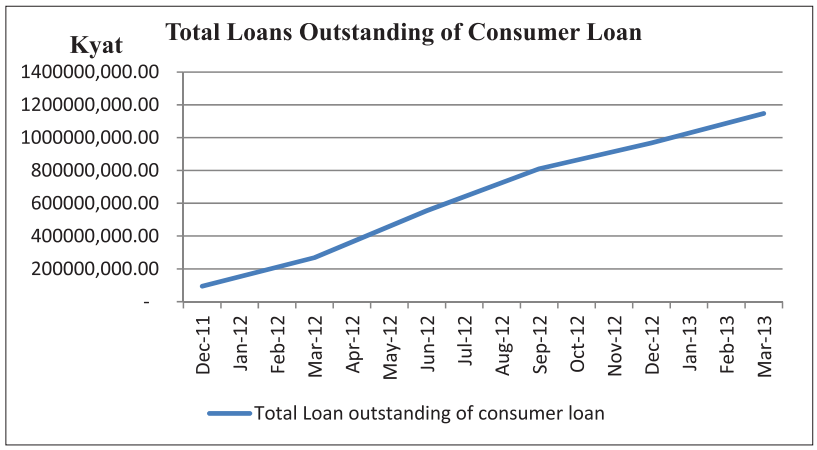
The HP loan system is allowed for the convenience of household consumers and it raises the living standard of the consumers and also supports the development of the banking sector.

The HP loan system in Myanmar:

Down payment:	At least 30% of total amount
Rental fees:	7% to 9% on loan amount
Services/commission charges:	1% on loan amount
Repayment period:	12 - 36 months

Myanmar's outstanding consumer loan (HP) has increased four times since December 2011. By the end of 2012-2013 FY, hire-purchase loans accounted for 3.11% of total loans outstanding.

Figure 3



Source: Central Bank of Myanmar.

Currently, the ratio of consumer credit (HP) loans to GDP is negligible. Auto loans make out the largest component. Besides HP loans from the private banks, another source of consumption finance available to households in Myanmar is friends/ relatives, pawn shops and MFIs. Anecdotal evidence suggests that a large part of consumer credit is provided by moneylenders, friends and relatives, followed by pawn shops and the rest by MFIs. Normally the loan size is smaller than the commercial credit from the private banks. Since the banks' HP system has started recently, the banks find no serious issues in extending these loans.

2.4 Potential Trend in Consumer Credit

In future, consumption credit in Myanmar tends to be driven by such possible factors as the revival of the property market, enactment of condominium law, demographic changes, and increasing urbanisation. The government has planned to develop and reactivate the housing market in Myanmar with provision of more housing loans. In this regard, the development of the housing market in Myanmar may be a driving force for the growth of consumer credit.

3. Literature Review

There are numerous international research studies on the linkage between household debts and financial vulnerability. A number of these studies identified how rising consumer loans pose risks to financial stability.

A research on the causes of the rise in US household debt since 1970 was done by Barnes and Young in 2003. Based on the calibrated partial equilibrium overlapping generation's model, they analysed and reasoned that shock to real interest rate and income growth expectations, combined with demographic changes were the source for the rise in US household debts. The two researchers further identified financial liberalisation as an additional cause of borrowing growth between the 1970s and 1990s.

Making use of micro data, Persson (2009) finds that high income households in Sweden who own large real and financial asset, hold the majority of the housing loans, whereas the most vulnerable households are found to be largely debt-free.

Santoso and Sukada (2009) proved that Indonesian households pose a minimal threat to the financial sector. Constructing the households' balance sheets of Indonesia, the authors assessed the households' relationship with the financial sector. Their finding suggests that Indonesian households possess net worth of

a large share of fixed assets as opposed to financial assets. Hence, the total household assets suggest there is a considerable scope for financial institutions to engage in loan product expansion for the households in Indonesia.

As there is rapid rise in housing prices along with the doubling of the aggregated household debt between 2001 and 2008, Kida (2009) attempted to analyse the linkage between financial viability and mortgage-indebted households in New Zealand. Using the information from the Household Economic Survey for 2001, 2004 and 2007, Kida finds that fast increase in house prices was not having a strong impact on financial vulnerability in New Zealand. However, simultaneous large shocks in house value, interest rates and employment are contributing factors to increase vulnerability to some households.

4. Mortgage Finance and Consumer Credit: Implications on Financial Stability

The household sector has the power to influence the overall economy, not just because of its size but also for its significant exposure to the financial sector.

It also plays an important role in financial stability as the behaviour of households can have impact on market prices. Hence, in recent years, household (consumer) credit has grown in the emerging and industrialised countries along with progressive financial liberalisation and financial sector consolidation. An optimistic view of this type of credit is generally good for households reflecting a sounder economic and financial environment.

While consumer credit has facilitated smooth spending by consumers and improved profitability, it raises concern over its sustainability and becomes a new source of risk for the financial system and macroeconomy as a whole. The recent financial crisis occurred in association with the growth in consumer credit. The competitive banking system gives rise to competitive interest rate which motivated the expansion of credit coverage.

Meanwhile, market imperfections coupled with the effect of the moral hazard of lenders may boost household debt to excessive levels resulting in the growth of non-performing loans (NPLs), which consequently impacts negatively on the financial stability resulting in a financial crisis. Therefore, there is a growing need for attention to be paid to the household (consumer) credit, which is important for financial policy consideration.

4.1 Observed Trend of Consumer Credit

Until 2011, banks in Myanmar focused only on commercial finance, which include loans to agricultural and livestock & fishery sector, industry and production sector, trade sector, transportation sector, construction sector, services sector, and others. As of end- March 2013, loans to the agricultural and livestock & fishery sector amounted to kyat 882,002.17 million, industry and production sector received Kyat 892,272.04 million and trade sector loan amounted to kyat 1,751,754.84 million. In 2011, Myanmar banks turned to the household sector as a new area for loan growth and profits. The central bank encourages the financial institutions to extend consumer credit to households to boost domestic consumption and to reduce reliance on the informal markets.

The new type of household sector loan comprises HP of electrical appliances, motor cars, phones/handset, jewellery, machinery and equipment. By the end of March 2012, total loan disbursement under HP system amounted to kyats 26,874.53 million constituting 0.72% of total loans disbursed in Myanmar. This type of loan is operated by commercial banks. Currently, 20 private banks and 4 state-owned banks offer such type of loans. Apart from HP loans, financial institutions in Myanmar have rather limited credit product diversification. As of March 31, 2013, consumer credit (HP loans) outstanding accounted for kyats 114,716.30 million out of total loans outstanding of kyat 5,335,254.39 million. However, the growth of consumer credit is much lower than that of other type of bank loans.

Table 1
Type of Loans as of 31 March 2013

No.	Types of loans	Percent
1	Short-term loans	8.20%
2	Overdrafts	88.69%
3	Hire purchase	3.11%
4	Credit card	0%
5	Housing loan	0%

Source: Central Bank of Myanmar.

The annual growth of consumer credit is found to be quite low at 3.11% only. As shown in Table 1, the overdraft loans outstanding in Myanmar is increasing. However, compared to other neighboring economies, the credit market in Myanmar is relatively small. As banks have to maintain liquidity reserve of 20%, the focus of the financial institutions has shifted to serving the more profitable businesses of the larger trade and construction companies. This limits the amount of credit offered in the form of consumer credit and other small loans for business activities. At this early stage, consumer credit in Myanmar is doing well with nearly 100% recovery rate and thus non-performing loans (NPLs) for HP is found to be zero.

4.2 Consumer Credit Provided by Non-banks and Demand Analysis for Consumer Credit

As the consumer credit offered by the formal banking or financial institutions is quite limited, households turn to the informal sources for their financial needs. According to Livelihoods and Food Security Trust Fund (LIFT) study, only 16% of the households rely on the formal financial services. The most common sources of micro loans are family, friends, moneylenders and pawn shops. As these sources are the most convenient types to consumers, they can be easily available in both urban and rural areas. The purpose of loan access is found to be varied. For the people of lower income segments, they utilise the loan for consumption and health needs, whereas the higher income groups borrow for procuring inputs and business investment. As family and friends cannot offer sufficient amount of loan, households still need to rely on the moneylenders, who charge high interest rates of between 10-20% per month. UNCDF estimates that the demand for micro loans alone was close to US$1 billion in 2012. This clearly indicates that the demand for credit is so high that the formal financial institutions cannot meet it.

All in all, since the demand for consumption loans is in excess of its supply, they expose low risk for the financial sector. From a financial stability perspective, Myanmar households pose a minimal threat to the financial sector in the current state of consumer credit development. This suggests that there is considerable scope for formal financial institutions to make their products particularly consumer credits, such as credit cards, insurance related products and banking deposits products, available to households.

4.3 Future Growth in Consumer Credit and Mortgage Finance

Since 2011, Myanmar has carried out liberalisation measures in the financial sector. In 2012, the liberasation gathered momentum and is expected to be accelerated in the coming years. Increase in demand- and supply-side factors will contribute to the market shift to consumer finance and will provide the financial institutions with a new range of profit opportunities. On the supply side, the financial institutions may turn to the household sector to meet the demand gap, boosting the role of domestic consumption. Innovation of financial products such as consumer credit and mortgage loans may lead to rapid growth in consumer credit. In addition, the government has introduced the Microfinance law in 2011 that allows different suppliers to participate in providing small loans to the households. Local/international NGOs, UNDP, cooperatives and private companies are beginning to provide loans for the households in order to fill the credit gaps. The government has planned to provide adequate and affordable housing loans through the Construction and Housing Development Bank established on July 15, 2013. The shifting of the attention of financial and non-financial institutions to the households is expected to spur rapid growth in consumer credit in terms of mortgage loans.

While consumer credit is growing, there is the risk associated with the rapid growth of loans. The US mortgage crisis in 2007 gives a clear example of financial instability associated with the rapid growth in housing loans that led to a financial crisis. Too much borrowing with flawed financial modeling largely based on the assumption that home prices will go up were the main factors that dragged the US economy into the financial crisis. The credit card crisis on the financial system of Korea in 2003 is another example of credit risk in the household sector. Deteriorating asset quality, tight liquidity and solvency challenges were the culprits that exposed the banks and financial markets to systematic risks and which in turn severely affected the economy. Therefore, it is important that the necessary preparations be undertaken to have a sound financial system in place before introducing new financing products to the household sector.

4.4 Reviewing Soundness of Financial System and Other Factors in Myanmar

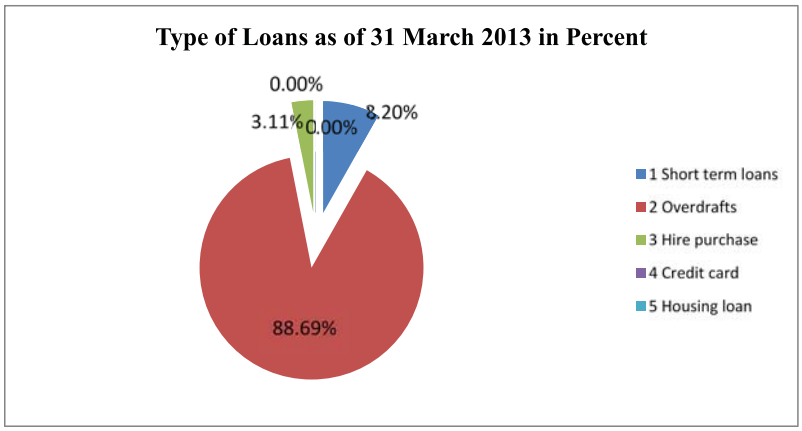
If the liberalisation of the consumer credit facilities is not backed up by effective supervision, serious flaws or problems may develop in the financial system. Therefore, financial soundness should be in place before innovation of new products. Financial soundness of the Myanmar financial institutions should

be on the basis of identifying specific sectors with credit share, liquidity status, portfolio quality, profitability of financial institutions and supervisory response. In addition to that, the government's efforts in improving the credit system in Myanmar should also be reviewed in terms of credit information sharing.

4.5 High Credit Share in Corporate Sector

A high share of a specific sector can indicate susceptibility to changes in this sector's position. In Myanmar, as indicated in Figure 4, the corporate sector receives 96.89% of total credit, whereas consumer credit receives (HP loans) only 3.11%.

Figure 4



Source: Central Bank of Myanmar.

This clearly indicates that the corporate sector receives a large share of loans compared to consumer credit, but when compared to other countries, the share is relatively low. Nevertheless, consumer credit is expected to grow in the near future along with financial liberalisation and the innovation of new consumer products. Hence, close monitoring of the specific household sectors which acquire large share of credit is required.

4.6 Sector-wise Loans by State-owned and by Private Banks

A major portion of the loans extended by the state-owned banks goes to the agricultural sector and the trade sector receives most of the loans from the private banks (Figures 5 and 6). Private Banks' lending is based on collateral such as land and buildings, gold and gold ornaments, merchandise, fixed deposit, government securities and personal and corporate guarantee.

Figure 5
Sector-wise Loans by State-owned Banks (2012-2013)

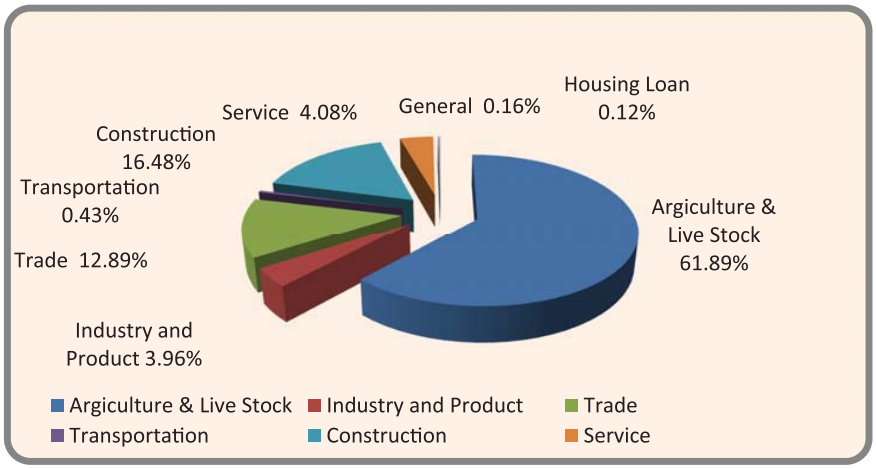
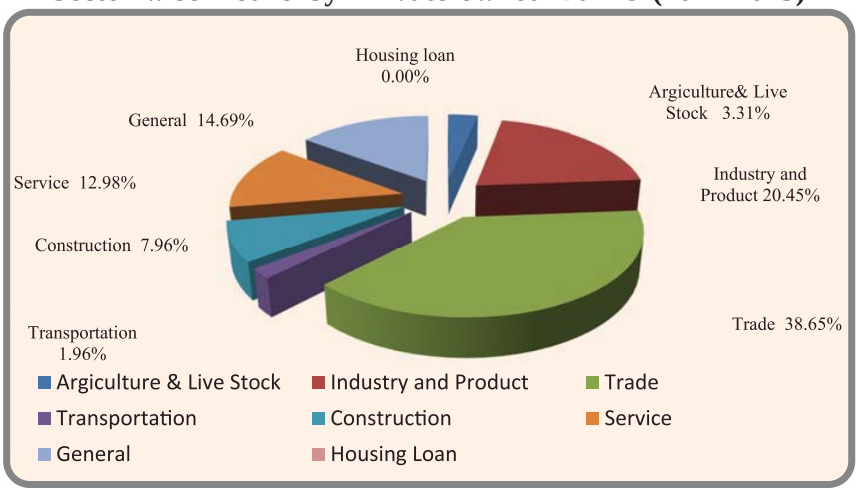


Figure 6
Sector-wise Loans by Private-owned Banks (2012-2013)

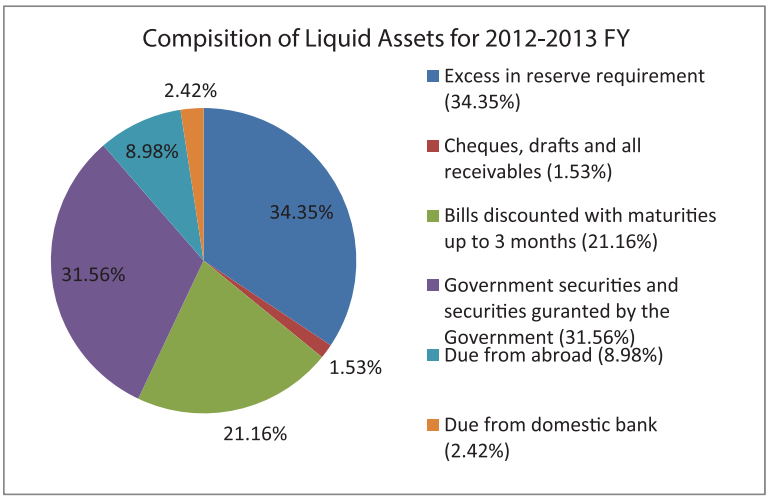


Source: Central Bank of Myanmar.

4.7 Assets and Liabilities of Banks

Whereas cash, gold, cheques, bills, government securities and dues from banks are accepted as liquid assets, demand deposit, time deposits, cheques and bills can be used as liabilities in Myanmar. The Figure 7 below shows the liquidity position of the private banks for FY 2012-2013. The position has been strengthening in that year. At the same time the amount of banks' liabilities has been amplified. However, the growth of both the indicators has not been increasing at the same rate.

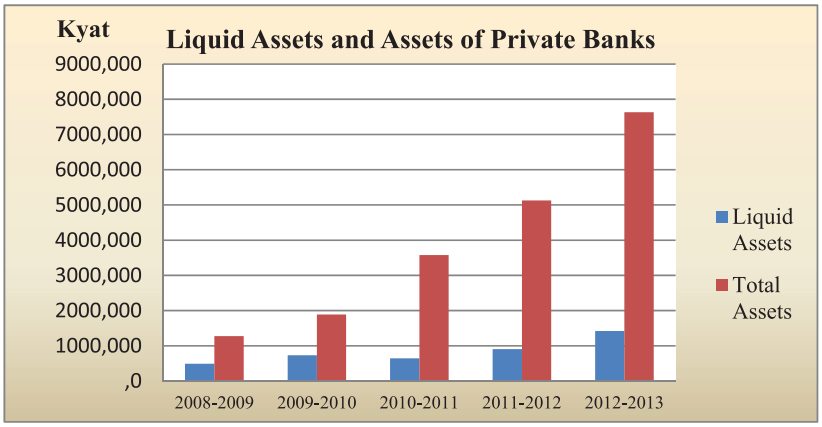
Figure 7



Source: Central Bank of Myanmar.

According to Figure 8, the growth of liabilities is more rapid than that of liquid assets. That is mainly due to fact that the banks tend to invest in more secure and sound assets with low risk but with accompanying high return. Looking at this figure, the financial institutions in Myanmar require close supervision given the possibility of unexpected shortfall in investment in assets.

Figure 8

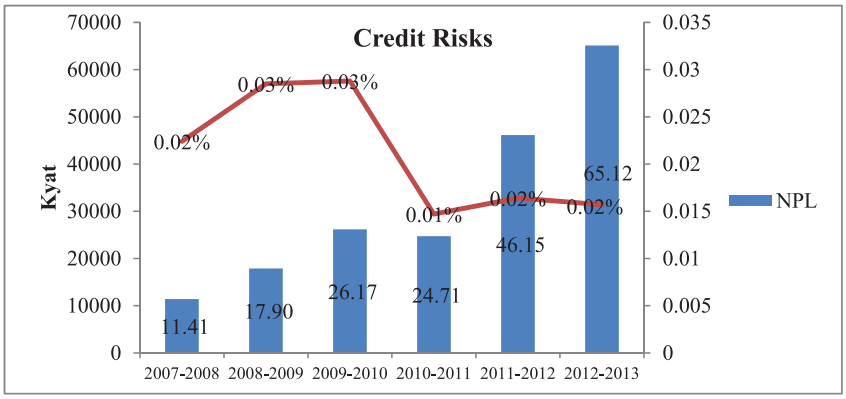


Source: Central Bank of Myanmar.

4.8 Portfolio Quality of Banks

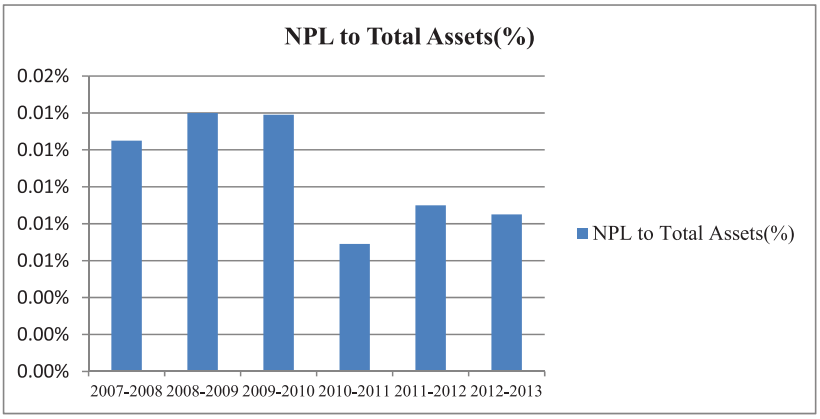
A rise in the ratio of defaults to total lending is another indicator of deteriorating portfolio quality. As shown in Figure 9, the non-performing loans (NPLs) increased from kyat11.41 billion in FY 2008 kyat to 17.9 billion in FY 2009 and kyat 65.12 billion in FY 2013, while the share of NPLs to total loans, rose from 2.24% in FY 2008 to 2.85% in FY 2009 and fell to 1.57% in FY 2013. The rising amount of bad debts, its share to total assets warn of unstable portfolio quality even at the early development stage of the credit market.

Figure 9



Source: Central Bank of Myanmar.

Figure 10

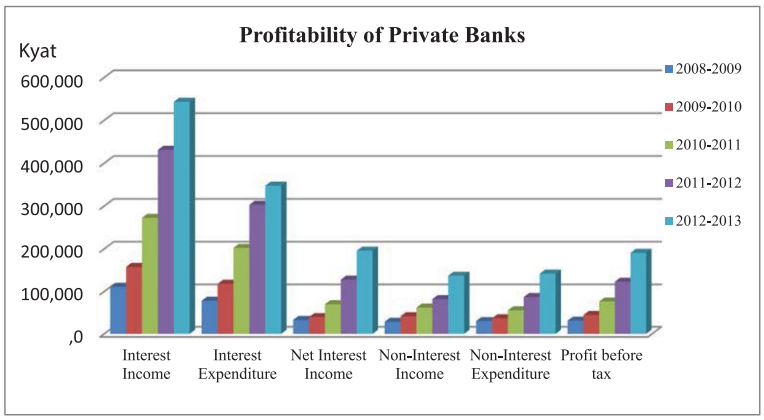


Source: Central Bank of Myanmar.

4.9 Profitability of Financial Institutions

The ability of the financial institutions to support their present and future operations is based on their strong earnings and profitability, which enable them to absorb losses and to finance their expansion. Generally, the banks' profitability continued to increase in FY 2012-2013.

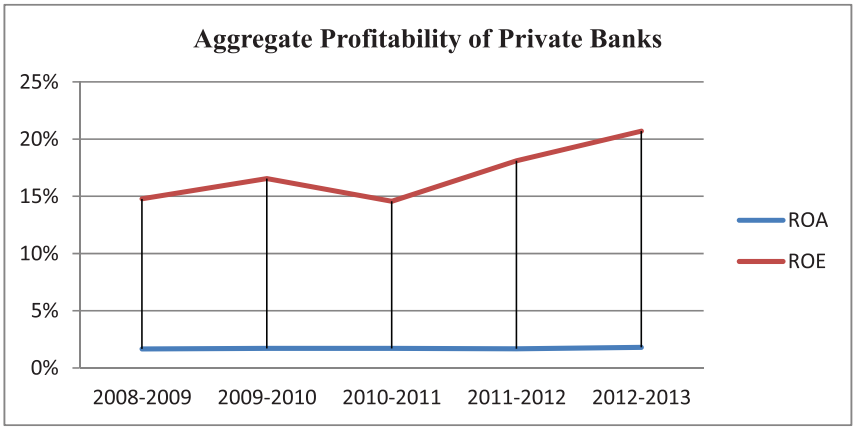
Figure 11



Source: Central Bank of Myanmar.

The profit before tax of the banking industry has steadily increased from kyat 23,554.84 million in FY 2007-2008 to kyat 31,293.59 million in FY 2008-2009 to kyat 190,773.85 million in FY 2012-2013. This was mainly due to the increase in interest on loans and high operating profits on remittances.

Figure 12



Source: Central Bank of Myanmar.

Return on Assets (ROA) and Return on Equity (ROE) are the two important indicators that measure earnings and profitability. The ROA shows how profitable a bank is relative to its total assets whereas the ROE indicates how much the equity of a bank is in terms of equity investment. Figure 12 above indicates a declining ROA with constantly low level of ROE reflecting increased risk of credit institutions. In sum, according to the financial soundness indicators, the financial institutions in Myanmar have not developed yet, requiring the financial institutions to be strengthened.

4.10 Credit Information Sharing

Inadequate information on the creditworthiness of households may cause over-borrowing by households and businesses and it increases the NPL portfolio. Hence, it is important for banks to have access to the financial position of borrowers. Although Myanmar still does not have any credit information sharing scheme, it plans to establish such a scheme in the near future. In 2013, the CBM initiated a legal framework for the establishment of a credit information

bureau through which lenders can share information on borrowers. The establishment of this system is expected to promote a data-sharing culture that help lenders reduce their risks of loan default, while protecting consumers against over-indebtedness by allowing for responsible lending by the credit suppliers. Hence, the growing level of consumer credit can be managed under this system to help reduce the credit risk in the near future. In other words, the establishment of a Credit Bureau will promote access to credit information and responsible lending; it will strengthen the surveillance of consumer indebtedness and reduce credit losses.

At the moment, the consumer credit market is not yet developed in Myanmar. The HP system is the only type of credit that households can access. The development of this type of loan is in its early stage, and thus it is too insignificant to affect financial stability. However, along with financial liberalisation, the government's new policy on housing loan programme and microfinance programme, the future will allow more credit suppliers to participate in the credit markets to service the needs of the households. Given the rapid growth of consumer credit, this study finds that the financial institutions should be prepared to encounter problems associated with consumer credit and mortgage finance in the near future.

5. Policy Recommendations

For a country to achieve sustainable economic growth and high employment, the stabilisation of financial institutions is an important precondition. In the absence of financial stability, the financial institutions will not be able to carry out their intermediary functions efficiently, which results in loss of confidence in the financial system leading to a financial crisis. For these reasons, the CBM has been making attempts to stabilise the financial sector.

Under the umbrella of the Ministry of Finance and Revenue, the CBM controls financial institutions by undertaking its two main responsibilities of managing monetary policy and bank supervision by institutionalising a proper regulatory framework. To maintain macroeconomic stability and to promote domestic savings, the CBM uses interest rate policy as its main monetary policy instrument while reserve requirements and moral suasion have also been used to a certain extent. In 2012, to promote the availability of bank loans, the CBM reduced its interest rate. Since then, the lending rate has been reduced from 15% to 13% and the deposit rate from 10% to 8%.

While monetary policy instruments are employed to achieve macroeconomic stability, the supervisory framework is anchored on off-site and on-site supervision so that a sustainable, stable financial system can be maintained in Myanmar. Off-site monitoring assesses the performance of financial institutions and examines their compliance with the legislation, regulations, directives and instructions issued by the Central Bank. To cross-check and verify the daily reports of off-site supervision, on-site supervision teams inspect HQ of banks and their branches by scrutinising their financial data whether they are in line with the supervisory ratios laid down by the central bank. Cases of non-compliance with CBM's directives, regulations, and instructions will be subject to the appropriate actions by the central bank.

Along with the rapid development in the private banking sector, a number of measures have been taken to strengthen the regulatory and supervisory framework of the banks. The regulatory framework includes the following:

1. Single exposure: no customer's borrowing should exceed 20% of capital and reserves.
2. Reserve requirement: minimum reserve requirements 10% of total deposits.
3. Liquidity ratio: liquid assets should be 20% of current liabilities.

    - Liquid assets:
      Excess reserve, i.e., cash+ deposit with central bank + cheques
      Bills receivables
      Government securities
      Due from banks

    - Current liabilities:
      All deposit (net)
      Bills payables

4. Capital adequacy ratio: total capital to be 10% of risk weighted assets

    - Core Capital (Paid-up capital, reserves, retained profits)
    - Weighted on loan categories:

Mortgage (title deeds of landed properties)	50%
Secured (pledge, gold, jewellery, trading goods, etc.)	50%
Unsecured (e.g., credit cards)	100%
Fixed Assets	20%
Other Assets (suspense, prepaid and accrued income, etc.)	100%

The reserve ratio and liquidity ratios are required to be submitted to the CBM weekly. If a bank falls short of the required limits, it is fined the amount equivalent to 1/5 of 1% of the shortfall.

5. Provision of 2% loan balance at each financial year must be made to cushion the impact of loan losses.

6. Non- performing loans and advances:

Types of NPL	In Default of Principal & Interest
(a) Sub-standard	6 - under 12 months
(b) Doubtful	12 - under 24 months
(c) Bad	24 months and above

In addition, the banks are required to set aside 50% and 100% provisions for doubtful and bad loans, respectively.

In November 2011, the Government of Myanmar enacted a new Microfinance Law. This law allows local and foreign investors to establish fully private-owned microfinance institutions (MFIs). The objectives of the Law are to:

(a) Reduce poverty at the grass root level;

(b) Promote the social, educational, health and economic standards of these people;

(c) Create job opportunities;

(d) Promote saving habit among the people;

(e) Encourage establishment of new MFIs;

(f) Create and promote cottage industries;

(g) Help people at the grass root level to set up income generating business; and

(h) Disseminate knowledge and technology.

With the permission of the Microfinance Management Committee, a microfinance institution can conduct small loan extension, receive deposits, remit money, offer insurance services, borrow externally and internally and provide other financial services.

In the near future, along with progressive financial liberalisation, financial sector consolidation and technological advances will contribute to the growth in household credit. Since 2012, government new policy is to provide adequate and affordable housing to the local people in Myanmar, for which financing can be carried out through the mortgage loan system.

The growth of household debt can have a negative impact on household welfare, financial institutions and the economy as a whole. The increase in household debt may result insolvency of financial institutions and generate financial instability, which may in turn have a negative impact on the real economy. Hence, the adoption of the appropriate policies is important for the advancement of consumer credit and mortgage loans in Myanmar.

In preventing financial instability associated with consumer and mortgage loans, the Central Bank needs to make sure whether lenders have the proper risk management systems in place and whether consumers have sustainable debt burden. While carrying out various liberalisation measures, the prudential and supervisory framework of the CBM is also in need of upgrading. The following additional measures of risk management may need to be planned ahead of household credit expansion. The monetary authorities should draw up the "Best Practices for Consumer Credit", which provides clear guidelines for marketing, lending criteria/approval process, credit risk management, and underwriting standards, including supervision. The underwriting standards need to take into account borrowers' creditworthiness, verification of submitted information and sound appraisal. As discussed in the previous section, the establishment of a Credit Bureau is currently underway and is good preparation for future credit growth. The establishment of this system is expected to provide the financial institutions with accurate information on individual borrowers so as to be able to prevent households from over-borrowing.

The global financial crisis which stemmed from consumer credit/mortgage finance has shown that active government involvement in the financial sector can help maintain economic stability, drive growth, and create jobs. The government new policy on housing loans programme and microfinance programme will allow more credit suppliers to participate in the credit market to provide for credit needs of the households. However, household credit boom followed by bust should be protected with state intervention at least in the short run. The state has a very important role to play in a number of ways, especially in providing supervision, ensuring healthy competition, and strengthening the financial infrastructure (Demirgüç-Kunt and Èihák, 2013).

In regulation and supervision, the development of solid and transparent institutional frameworks and strengthening of supervisory capacity by the government are essential. In addition to that, the state needs to encourage competition through healthy entry of well-capitalised institutions and timely exit of insolvent ones. With good regulation and supervision, bank competition can help improve efficiency and enhance access to financial services (Demirgüç-Kunt and Èihák, 2013). Finally, lessons of experience point to the important role of government in supporting the financial infrastructure in a transparent manner. More specifically, the government can facilitate the inclusion of a broader set of lenders in the credit reporting systems and promote the provision of high-quality credit information.

Policy Taken	Policy Gap
Monetary policy ● Reducing lending/deposit rate to promote credit accessibility	
Central Bank monitoring and supervision ● Carry out both off-site and on-site monitoring of financial performance to verify compliance with the legislation, regulations, directives and instructions issued by the Central Bank	● Introduction of "Best Practices for Consumer Credit" to provide clear guidelines for marketing, lending criteria/approval process, credit risk management and underwriting standards, including supervision.
Regulatory framework ● Strengthen regulatory framework and supervision of the banks supported by new Microfinance Law	● Establishment of Credit Bureau system in Myanmar.
Government policy ● Financial liberalisation ● Approval of Microfinance law ● Consideration of housing loan programme ● Initiation /planning for Credit Bureau system	Supervision, ensuring healthy competition, and strengthening financial infrastructure.

6. Conclusion

The mortgage loan and consumer credit are very closely associated with the financial system, as they play the dual role of savers and borrowers of funds, with the financial sector serving as intermediary. On the other hand, consumer credit accumulation and spending is influenced by the cost and accessibility of financing from the financial system. On the other hand, the stability of the financial system is affected by the soundness and financial health of the household sector as bank loans to the latter form an important part of the balance sheet of the former.

In Myanmar, consumer credit markets have been initiated since 2011 and are still at a rudimentary stage. HP which is the only type of credit offered by the financial institutions is said to be too small to affect financial stability. Moving forward, along with financial liberalisation, government new policy on housing loans and microfinance, the way is open for more credit suppliers to participate in the credit market to cater for the needs of the households. Accordingly, rapid growth of consumer credit can be expected in the near future in line with the strengthening of the financial institutions to avoid the credit risk and over-borrowing problems, which can have a negative impact on the financial stability. Currently, the financial institutions are weak and underdeveloped. The Central Bank has to ensure that lenders have proper risk management systems and consumers have sustainable debt burden. On the other hand, the monetary authority should promote the role of supervision, encourage healthy competition, and strengthen the financial infrastructure.

Playing a leading role in the shaping and promotion of the economy, the CBM is responsible for financial stability and for managing the country's financial system to effectively mobilise domestic financial resources. Recently, the new Central Bank of Myanmar Law has been enacted dated on 11th, July 2013. The Law gives the CBM the authority and responsibility to carry out all the central banking functions, including the implementation of the country's monetary policy and exchange rate policy independently. So, in the near future, CBM will be in a good position to pursue the credit policy for mortgage and consumer loan to improve household welfare and provide better business opportunities for the financial institutions. At present, Myanmar households' debt remains manageable, and is not expected to pose any significant threat to the overall stability of the country's financial system.

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Chapter 9

LOAN AGAINST FIXED COLLATERAL AND CONSUMER CREDIT: RECENT TRENDS AND IMPLICATION ON FINANCIAL STABILITY IN NEPAL

By
Guru Prasad Paudel*

1. Introduction

The rapid growth in household debt in mortgage and consumer credit offers both opportunities and challenges. Debt is a two-edged sword. When used wisely and appropriately, it improves society's welfare. Various types of loans give different advantages to the bank and financial institutions as well as to the whole economy. Similarly, different types of credits provide portfolio diversification for the banking sector. Credit facilities provide employment, production and consumption. In the longer term, a healthy and vibrant household finance sector also facilitates a shift towards domestic demand that will help rebalance the export-oriented growth model. However, high levels of household debt may heighten an economy's vulnerability to instability and crises. Excess use of debt can be a disaster. Like in individual households and firms, over-borrowing leads a country to economic wreck and it weakens the government's ability to deliver essential services to its citizens (S. G. Cecchetti, et al., 2011). Such problems have been seen in boom-bust cycles in some credit card markets, rapid house price increases in several economies and the recent global financial turmoil. To make a stable financial system, there should be balanced credit system.

The financial system plays a vital role in the economy. Being a caretaker of a financial system, the central bank's concern has been heightened in the aftermath of the global financial crisis. In a stable financial system, financial institutions, markets and infrastructures should be able to perform their functions smoothly and be capable of withstanding various shocks without any disruption in the operation of the financial system (NRB, 2013). Excess loans towards any sector can be a serious concern for the central banks.

Mortgage and consumer credit differ significantly across countries along a number of dimensions, including product diversity, type of lender, mortgage funding, purpose of loan and the degree of government participation. In this study, different classifications of mortgage finance have been employed. The Nepalese Banking

and Financial Institutions (NBFIs) are categorised into four types, namely: Commercial bank (Class A), Development Bank (Class B), Finance Companies (Class C) and Microfinance Development Bank (Class D). The development banks and finance companies do not provide the hypothecation loan. Almost all loans which they provide are mortgages. However, due to the unavailability of longer and reliable data, loans from development banks and finance companies are ignored. Loans from the development banks and finance companies occupy around 20% of total loan. So, in this report, mortgage finance is defined as commercial bank loans that use land and building as collateral.

The data sources are mostly secondary including the Nepal Rastra Bank's (NRB) annual reports and quarterly economic bulletins and various issues of Economic Survey of Ministry of Finance, Nepal (MOFN).

It is the intent of this paper to look into the recent trends and development in mortgage finance/ fixed collateralised loans and consumer credit in Nepal and to identify the driving forces for the observed trends. Moreover, the paper reviews the directives, rules and regulations implemented by the NRB pertaining to real estate loans and their impact on ensuring financial stability.

The overall paper consists seven sections. Section 2 discusses the development and trends of mortgage finance and consumer credit; basically, this section explains how the Nepalese economy has affected by the development of mortgage finance and consumer credit along with the some macro-economic indicator, such as economic growth, interest rates, demographic factors, financial innovations, etc.; Section 3 provides a survey of the related literature; Section 4 presents the results from a stress testing exercise; Section 5 discusses the policy measures or actions that have been taken central banks and national governments in mitigating the potential adverse impact of mortgage finance and consumer credit. In Section 6 the policy gaps that need to be addressed are identified to ensure that the growth of mortgage finance and consumer credit do not negatively affect financial stability; the last section concludes.

2. Mortgage Finance and Consumer Credit: Developments and Trends

2.1 Background

In Nepal, there is very low volume of project and hypothecation loans compared to collateral-based credits. In another words, most of the Bank and Financial Institutions (BFIs) grant the loans where fixed assets or properties are pledged as collateral. Banks accept the land and building as collateral not only

for housing loans, sometimes they prefer fixed assets as collateral in business loans also. According to the quarterly economic bulletin (2013) around 56% of the total loan and advances were secured by fixed property as collateral. The bulletin incorporates the total collateral outstanding credit of Commercial Banks (CBs) which classifies the collateral in 18 categories. Such types of securities include gold and silver, government securities, machinery, export bills, domestic bills, overdraft, and house and land, etc.

Consumer credit (CC) is basically the amount of credit which is used by the ultimate consumers to purchase non-investment goods or services that are consumed. This heading includes loans to purchase different gadgets, automobiles, and education, but excludes debts taken out to purchase real estate or margin on investment accounts. Here, in this study a mortgage for purchasing a house is excluded from consumer credit. In Nepal, credit card loan is not significant. Loans against gold and silver are considered consumer credit. This type of loan occupies around 3%. Due to the unavailability of actual data, the loans which are used for consumable goods and services are excluded. As mentioned above, most BFIs grant loans and advances to the ultimate consumer against fixed asset pledged as collateral.

In case of project financing the probability of loan default depends upon the project's success or failure, but in the case of mortgage financing, the recovery of credit and advances rely upon the quality of collateral. If the fair market value of the fixed collateral falls, the loan may converted into Non-performing Loan (NPL). When the credit risk arises and converts into higher level of NPL, it may lead to the financial instability. In this way, safeguarding financial stability may require the BFIs to identify the main sources of banking risks and vulnerabilities.

Like the developed economies, Nepal also experienced the some escalation in real estate prices in 2008/9. Most of Nepalese aspire to own their own homes. Due to the massive increase of foreign remittances, Nepalese BFIs have excess liquidity but there was lack of investment in the productive areas due to the domestic violence. At that right time, the real estate market was in the boom phase whereby the prices of the real estate properties were soaring significantly. The prices of real estate properties soared nearly 2-3 folds within a year. However, when the real estate boom reached near saturation, the price of the real estate did not move further. In 2009, to save from the real estate crisis the NRB issued a directive to stop further investment towards the real estate and commercial housing. As per the directives, real estate and commercial housing loans have to be restricted to 30% of the total portfolio by the end of that year

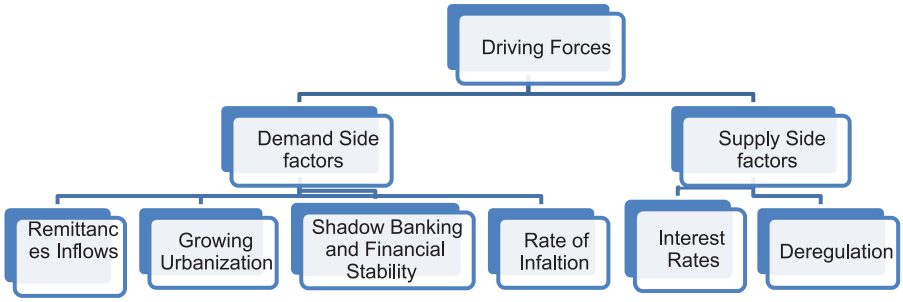
and to 25% by the end of the next fiscal year. Since then the real estate and commercial housing business have been declining. In this situation, these BFIs are unable to extend further credit because most of BFIs had already exceeded the NRB ceiling. Moreover, the hiked interest rates had put a squeeze on the extension of fresh credit, but it also affected the existing borrowers.

2.2 Driving Forces of Real Estate and Consumer Credit Booming in Nepal

Foremost, the financing of the BFIs is the driving force behind the real estate and housing price boom. According to Kent C., et al. (2007), households demand credit for a number of reasons. Perhaps chief among these is the desire to purchase residential property. In Nepal also, people's per capita income is very low. In this situation, the majority of the people cannot afford individual homes by self-financing, so bank financing has become a convenient tool for constructing or buying a house. Real estate entrepreneurs also depend on bank financing to smoothen and expand their business.

The literature explains the number of developments which have fueled to increase both the demand and supply of mortgage and consumer credit over the past few decades. The demand-side factors are the increasing need for housing units, growing urbanisation, expansion of economic growth, emerging middle class, and migration towards the urban or semi-urban area. In spite of moderate economic growth, Nepal has gained in poverty reduction. This was mainly driven by soaring remittances. Besides the demand-side factors, the role of supply-side factors such as deregulation in banking rules and regulation, easy access to BFIs, moderate interest rate are also key factors that have contributed to a significant rise in real estate in Nepal. Broadly, these factors can be categorised in terms of demand- and supply-side factors (Figure 1).

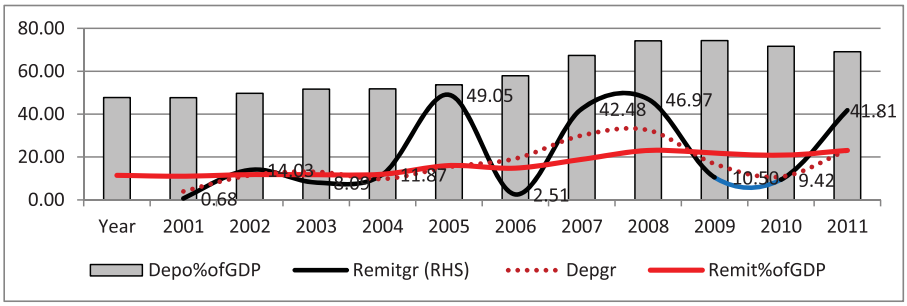
Figure 1
Driving Forces of Real Estate Boom



2.2.1 Remittances Inflows

Remittances inflow is considered as a demand-side factor. In Nepal, workers' remittances had risen by 41.8% to Rs. 360 billion in 2012/13, compared to its growth of 9.4% in the previous year. Although the growth of remittances is sporadic, it accounted for 23% of GDP in 2012/13. The growth rate of remittances is associated with growth of BFIs' deposit. Due to increasing inflows of remittances, the banking sector's deposits are also increasing, that's why banks are able to expand their credit in mortgage and consumer credit. Moreover, the remittance inflow is found to be correlated with the liquidity situation of the banking sector. As remittances turned sluggish, foreign reserves fell sharply, money growth and bank deposit growth also slowed down, compared to the previous year.

Figure 2
Remittances and Its Impact on BFIs Deposit



Source: Nepal Rastra Bank, Statistics Division and authors' own calculations.

The Nepal Living Standards Survey (NLSS) III, 2010/11 explains the use of remittances. Among the five significant uses of remittances, daily consumption occupies around 79%; it is the key reason to increase the import of foreign goods and services and trade deficit. Furthermore, the survey elucidated that in 2010/11, almost 56% of total Nepali households are receiving remittances, which is a remarkable rise over 23.4% recorded in 1995/96 (NLSS I). In spite of moderate economic growth, Nepal has achieved gains in poverty reduction. This was mainly driven by increased remittances, greater connectivity and urbanisation. Growing remittances have increased consumer credit and the consuming habit of peoples. The adjoining Table 1 shows the details on the use of remittances according to NLSS III, 2011.

Table 1
Uses of Remittances

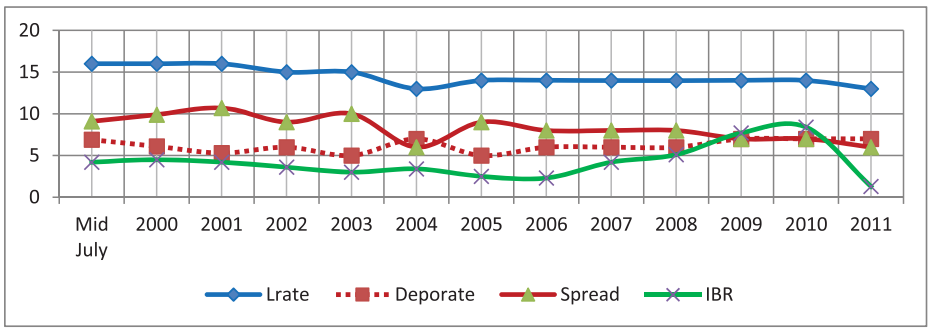
Use of Remittances	Percent
Daily consumption	78.9
To purchase Household property	4.5
Repay loans	7.1
Education	3.5
Capital Formation	2.4

Source: Nepal Living Standard- III, 2010/11.

2.2.2 Interest Rates

Some scholars argue that low interest rate imposes fears of bubbles. Low interest rates make credit cheaper and increase the demand for housing. Sá and Wieladek (2010) explain that in recent years a number of OECD countries experienced a rapid increase in housing market activity, which coincided with a period of low real and nominal interest rates. In Nepal the weighted average lending rates of commercial banks remained at lower level compared to that of the previous period. The lending rate of commercial banks remained below 14% in 2011 compared to higher than 15% in 2000. Similarly, the weighted average interbank rate remained below 2% at 2012 compared to 4.2% in 2000.

Figure 3
Interest Rates and Its Impact to Credit Growth



Source: Nepal Rastra Bank, Statistics division and authors' own calculations.

2.2.3 Deregulation

Deregulation and liberalisation, aftermath the 1980s, financial sector encouraged the new entrance of numbers of bank and financial institutions and enhanced the financial competition. After the establishment of numbers of BFIs it has created more diversity in the products offered. After 1980s couples of joint ventures banks and private sectors banks were entered into the Nepalese financial system. Furthermore, number of deposit taking non-bank financial institutions e.g. development banks and finance companies were entered in the system. Interest rates were deregulated since 1993. Banks are free to entered new area of consumable loans and advances. Deregulation has positively affected by new technological innovation. Due to techno-based MIS many potential credit customers found access to credit. Internationally after the deregulation many kinds of loans, e.g. credit card were invented.

Table 2
Growth of Financial Institutions

	Mid – July											
Types of BFIs	**1985**	**1990**	**1995**	**2000**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Commercial Banks	3	5	10	13	17	18	20	25	26	27	31	32
Development Banks	2	2	3	7	26	28	38	58	63	79	87	88
Finance Companies			21	45	60	70	74	78	77	79	79	69
Micro-finance Dev. Banks												
Total	**5**	**7**	**34**	**65**	**103**	**116**	**132**	**161**	**166**	**185**	**197**	**189**

Source: Banking and Financial Statistics, Vol. 58, Nepal Rastra Bank.

2.2.4 Growing Urbanisation

The rate of urbanisation is accelerating. Intense urbanisation, urban-led village areas and its neighbouring markets offer opportunities for bank lending. The demand for houses and for consumer credit would arise from changing demography, rising income and urbanisation. In 1971, the urban inhabitants comprise only 4% and latest census 2011 shows the urban population at 17 %.

Table 3
Demographic Situation of Nepal

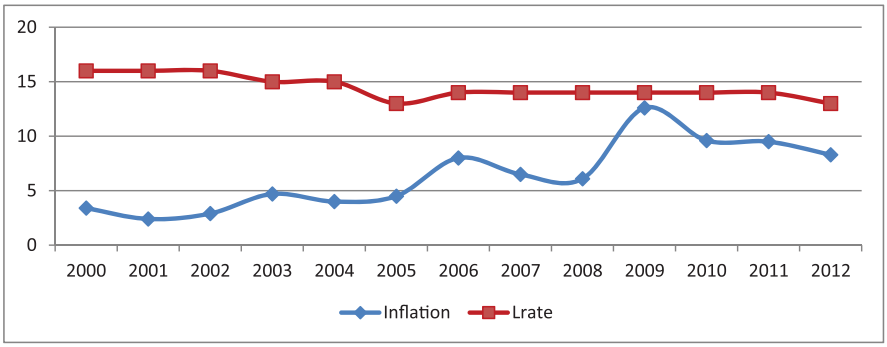
Indicators	1971	1981	1991	2001	2011
Population (millions)	11.6	15	18.5	23.2	26.7
Incremental Growth Rate (%)	2.1	2.6	2.1	2.2	1.4
Population Density (Pop./km2)	79	102	126	157	181
Urban (%)	4	6.4	9.2	13.9	17

Source: Central Bureau of Statistics & NLSS Reports.

2.2.5 Rate of Inflation

The rate of inflation is considered as demand side factor. Monetary policy is also responsible for up and down of inflation rate and its great impact is on consumer housing credit. In Nepal, since 2005 inflation was below 5%, it was maintained in the range of 3 to 6% during the 2000 to 2008. In 2009 it was accelerated significantly to 12.6%. Since then it is accounted around to 10%. Nepali rupee is pegged with the Indian rupee. In spite of this and an open border with India, Nepal's domestic price level is affected by India's price level. Due to the high inflation lending rate of BFIs are affected.

Figure 4
Inflation and Lending Rate



Source: Nepal Rastra Bank.

2.2.6 Shadow Banking and Financial Stability

However, we are not able to determine specifically the extent of shadow banking in the country. This is because it is the unregulated portion of the financial system or it refers to non-banking financial institutions (NBFIs) with some banking functions. The use of the term 'shadow bank' is not meant to be critical; but there is the issue as to whether bank-like risks should receive a bank-like regulatory treatment. Simply, shadow banks do not take deposits directly from public; however, they are the players in the financial system and they are subject to less regulation than the traditional banks. As being the unregulated portion of financial system they can heighten the risk in the financial system. Unregulated shadow institutions can be used to avoid the strictly regulated mainstream banking system and therefore avoid the rules designed to prevent financial crises. Furthermore, shadow banks can also cause a systemic risk indirectly because they are inter-connected with the traditional banking. As shadow banks use a lot of short-term deposits but their deposits are not insured. Shadow banks' collateralised funding is also considered a risk because it can lead to high levels of financial leverage. Shadow banking fuelled real estate bubbles by providing sufficient and easy bridge-gap loans that was a major contributing factor of the global financial crisis when it burst.

The Financial Stability Report (FSR) 2013 explains that the Nepalese financial structure has been characterised by a dualistic nature, that is, formal financial structure existing side-by- side with informal financial structures. Such dualistic phenomenon has been prevailing in the Nepalese financial system over a long period of time. The NLSS (2010/11) shows that only 20% of lending in Nepal is obtained from formal financial institutions. So, the informal sector plays a vital role in creating the demand for land and buildings.

3. Review of Related Literature

There is very limited native literature regarding this topic. However, housing booms and busts have been associated with financial instability, so reviewing the association between housing/real estates and financial stability should be important topics for many researchers. This section of the research paper is a review of the related international literature along with some Nepalese literature.

In Nepal, there is still debate regarding whether real estate or housing business is productive or not. The NRB has classified real estate loan as unproductive sector. However, the Nepal Land and Housing Developers' Association (NLHDA) claims that real estate is also a productive area which

has provided employment to more than 350,000 people in building construction and its related areas. After the completion the real estate project, dozens of people can get jobs in each colonial buildings. The foremost reason behind the skyrocketing of the real estate price was the easy bank financing from the BFIs. There is a significant relationship between easy financing towards realty sector and its soaring price. NINJA (No Income No Job or Assets) financing and other lubricating investments in the real estate sector have had ill effects in the developing economies. Realising this fact, basing on the best practices, the NRB took a welcome step to limit loans and advances towards the housing and real estate sector in Nepal.

According to the IMF (2011), to be effective and efficient, housing finance systems need to be supported by explicit legal institutions and instruments. There should be strong legal prerequisites for housing finance systems. The report explains further, these are not only necessary to acquire and transfer ownership rights in real estate, but they also represent the foundation for the orderly functioning of mortgage lending. Legal arrangements must also take into account the additional layers of complexity raised by the mobilisation of collateral in the secondary mortgage market. A robust legal framework for housing finance systems should include rules on the foundation of the system, mortgage lending, and the mobilisation of loans and secured interest in collateral in the secondary mortgage markets.

Paudel Ramu (2012) carried out an academic research entitled, "An Analysis of Financial Stability and Application of Macroprudential Policy in Nepal." The paper which explained the financial stability analysis part reviewed the performance of macroeconomic indicators as well as the performance of different sectors over the years, and drew the conclusion that the credit growth and financial development directly have not been supporting the economic growth of Nepal. Inflation is a main obstacle affecting the banks' earning and profitability including the recovery of loans. Higher money growth and credit growth are encouraging the maintenance of high credit to deposit ratio and are prone towards instability. Appreciation of exchange rate, the huge amount of trade deficit, loss of foreign exchange reserve and unproductive use of remittance all created risks to liquidity. Lower capital expenditure by the government and high surplus amount in the treasury are the secondary risks for the stability of financial institutions in terms of liquidity management in Nepal. The Financial Stability Institute's (FSI)'s result and analysis found mixed result. The situation of capital adequacy and assets quality, including the NPL, showed a sound financial system in the recent years. But the hidden risk with the individual bank which was not the objective of this study was also discussed and doubt expressed concerning

the performance of certain individual banks and their impact to systemic risk. Further, from the econometric analysis, the researcher found that the higher spread rate of banks had greater impact on the financial stability. Similarly, the deterioration in asset quality due to higher exposure of credit in unproductive sectors, e.g. real estate, and concentration in a few sectors might have larger impact on the profitability, capital adequacy and towards the maintenance of the required credit-to- deposit ratio by the commercial banks.

To date, the NRB has not prescribed specific Loan-to-value (LTV) ratios in the lending guidelines. BFIs have practicing different LTVs. However, in case of housing and real estate loans, the amount of loan to be extended against the security shall not be more than 60% of the fair market value (FMV). But there is no specific definition of FMV and distress value (DTV). The IMF, 2011 explains that a number of countries have, historically or more recently, used limits on LTV ratios as a macroprudential tool. Despite the fact, LTV ratios on new loans vary widely across and within countries. For example, the average LTV ratio in Brazil ranges from 80% to 100%; and in South Korea, the LTV range limit for covered bonds is substantially lower than that for insured mortgage loans. LTV ratios for new loans are not necessarily representative—for example, while the average LTV ratio in the United States was 76% in the years before the crisis, sometimes we can find the LTV ratios above 100%.

4. Mortgage Finance and Consumer Credit: Implications on Financial Stability

4.1 Database Methodology

4.1.1 Background

Firstly, this study has reviewed the mortgage finance and consumer credit in Nepal. For this purpose, loans against real estate and other fixed assets is categorised as mortgage finance while loans against gold and silver is categorised as consumer credit. However, BFIs have granted loans to import and purchase consumable goods and services. Here in this study due to unavailability of appropriate data, only loans against gold and silver are considered as consumer credit. Another important area of this study is the financial stability of Nepal. Financial stability heavily depends upon the banking sectors' lending activities. For this purpose a quantitative analysis is presented relying upon the secondary data. The conclusion drawn is based upon the analysis and suggestion made to the relevant authorities to review the policies regarding financial stability.

4.1.2 Database

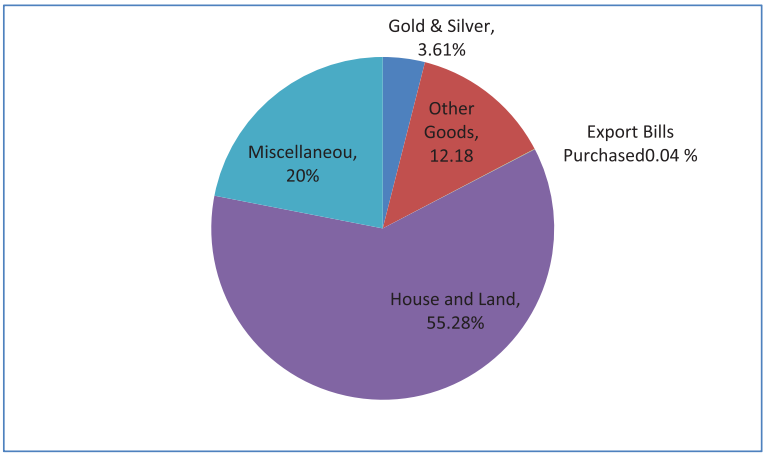
In order to study the impact of mortgage finance on financial stability, various data are used. The literature explains that quarterly series of GDP is crucial for the study of financial stability, but this report has not incorporated their use due to data unavailability. Our main dataset includes the quarterly series of mortgage loans which are provided by all the commercial banks, which include NPLs, advances and interest rates for the period of 2002 to March 2012. Due to unavailability of the older data of commercial banks and systematic data of B- and C-class financial institutions, we concentrate on this period as our sample. However, the data provides a broad perspective of fluctuations in domestic real estate prices and its consequences. Moreover, we can compare with global real estate markets and common effects across economies in this period because the global financial crisis or subprime crisis falls under this period. Though not all the domestic mortgage loans are captured because we have ignored B- and C-class loans, our sample provides a good representation as commercial banks holds up to 80% – 85% of the market share.

Data used in this paper are specified in Annex 1 and Annex 2.

4.2 Present Security-wide Exposure of Banks

The analysis of credit composition shows that the direct real estate exposure accounts for less than 17 % (BSD, 2012) but the actual exposure is believed to be significantly higher than as reported. Overdraft loans which occupy around 18% are believed to have used in real estate. Among the mortgage finance of commercial banks, the real estate loans have grown rapidly. As mentioned, rapid credit growth had fuelled real estate prices in 2009-10. In response, to maintain the financial stability, the NRB issued a directive to impose a ceiling and limit the real estate loans. The credit returns of the commercial banks show that about 56% of total credit is made against the collateral of real estate, house and land. Observing this fact, the continual slowdown of real estate and fixed assets might have some significant impact on the quality of their credit portfolio. The banks do not publish separate report of NPLs for real estate loans. However, the overall NPL is declining in the Nepalese Banking system. The outstanding credit of commercial banks are secured as follows:

Figure 5
Security-wide Exposure of Banks

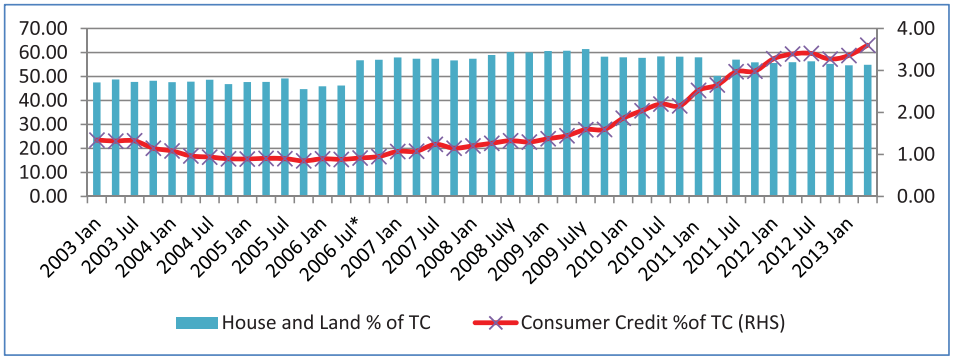


Source: Economic Bulletin and Financial Statistics, Nepal Rastra Bank.

4.3 Consumer Credit and Fixed Collateralised Loans Compared to Total Credit

Consumer credit occupies around 4% of total credits. Only loans against gold and silver are assumed as consumer credit.

Figure 6
Consumer Credit & Fixed Collateralised Loan Compared to Total Credit



Source: Economic Bulletin and Financial Statistics, Nepal Rastra Bank.

4.4 Credits-to-Deposit Ratio

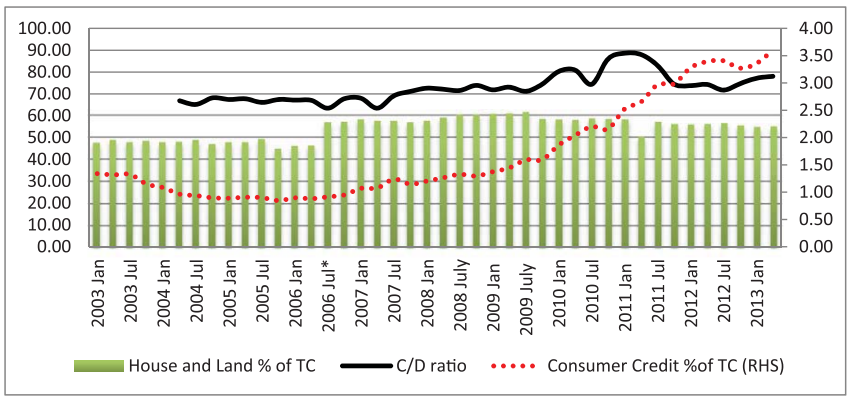
It has been assumed that a high credit-to-deposit (CD) ratio is a sign of weak credit administration of BFIs and cause of financial stability. The Average CD ratio of the Nepalese Banks has increased from 66% over the period 2000–2007 to around 90% by January 2010. The new commercial bank (CB) entrants are significantly exposed in pursuing market share. As a result, approximately 20% of the banking assets in 2011 are held by the new small private banks with CD ratios at around 100%, which is very high by international standards. However, the two state banks, and some foreign joint venture banks which account for significant banking sector assets, have CD ratios close to around 60%.

Since 2008, following the entry of a number of new CBs having NRs 2 billion paid-up capital, the NRB eased the provision on the calculation of the CD ratio which is popularly known as CCD (credit to core-capital-cum-deposit) ratio in a bid to allow banks and financial institutions to enhance their lending capacity. Moreover, the BFIs can now exclude long-term foreign borrowings of at least five years or more while calculating the CCD ratio. After that not only the CD ratio is artificially reduced, but also the credit enhancing capacity of BFIs has been increased.

According to the IMF (2010), an examination of the frequency distribution of the annual CD ratios over 2000–2008 in comparable countries - Bangladesh, Bhutan, India, Pakistan, and Sri Lanka – shows that the CD ratio tends to cluster around 60% –70%. Nepal's CD ratio of 88% as of January 2010 is high by regional standards.

To show the relationship of consumer credit, mortgage finance and whole commercial banks' CD ratio has been plotted as follows:

Figure 7
Consumer Credit & Fixed Collateralised Loan Compared to CD Ratio

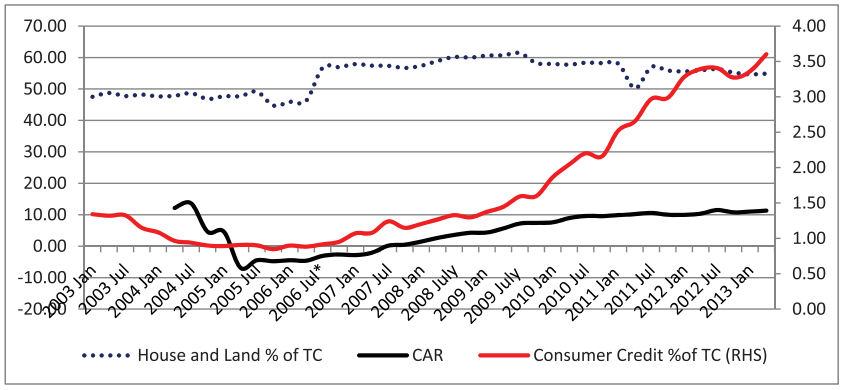


Source: Economic Bulletin and Financial Statistics, *Nepal Rastra Bank.*

4.5 Consumer Credit and Fixed Collateralised Loan Compared to Capital Adequacy Ratio (CAR)

The Capital Adequacy Ratio (CAR) is a very important measurement of BFIs. A sound CAR indicates that the bank has the capacity to absorb loss and has capacity to expand further loans to new clients. So every regulatory authority used to define the specific requirement of CAR. Furthermore, a sound CAR indicates that the bank has the capacity to meet its obligations without ceasing operations. With a view of adopting the international best practices, the NRB implemented Basel II in banks in FY 2007-08 while simultaneously unveiling the New Capital Adequacy Framework, 2007 (NCAF). According to the NCAF, all the commercial banks should maintain minimum capital requirements for Tier 1 and Tier 2 capital at 6% and 10% of Risk Weighted Exposure (RWE), respectively. These ratios are relatively higher than prescribed by the original document of the Basel Accord.

Figure 8
Consumer Credit & Fixed Collateralised Loan Compared to CAR



Source: Economic Bulletin and Financial Statistics, Nepal Rastra Bank.

The CAR of the Nepalese Banks, which was more than 10% in 2004, has further deteriorated, reaching negative in 2005. Their recovery took 3 years for the CAR to become positive. The two large state-owned commercial banks, namely the Nepal Bank Ltd and the Rastriya Banijya Bank Ltd., faced some problems having negative net worth and negative overall CAR. Realising this fact, the government of Nepal and the NRB commenced the Financial Sector Reform Programme to improve the overall financial sector as well as the financial condition of the two state-owned banks. The CAR increased along with recovery of the two state banks. However, CAR has not shown significant relationship with the fluctuations in fixed collateralised loans.

4.6 Consumer Credit and Fixed Collateralised Loan and its Impact to NPL

From the review of the literature it has found that there is a significant reverse relationship between NPL and bank soundness. As mentioned above, the two large state-owned commercial banks plunged into crisis, incurring large NPL, and causing the overall NPL% of banks to be at 28.68% in 2003. The gross NPL ratio of the Nepal Bank Ltd, the first bank of Nepal, stood in single digit in 2008 at 8.95% and the effect of the overall gross NPL ratio also stood in single digit at 6.08%. While the gross NPL declined rapidly reaching 2.66% in 2012, the soundness of the banks is not much better off in spite of the falling

NPL. Banks are searching the ever greening policy and only categorising the loans on the basis of aging. That is the reason for the declining NPL. In this situation, we cannot determine the relationship of collateralised loan and the impact on NPL.

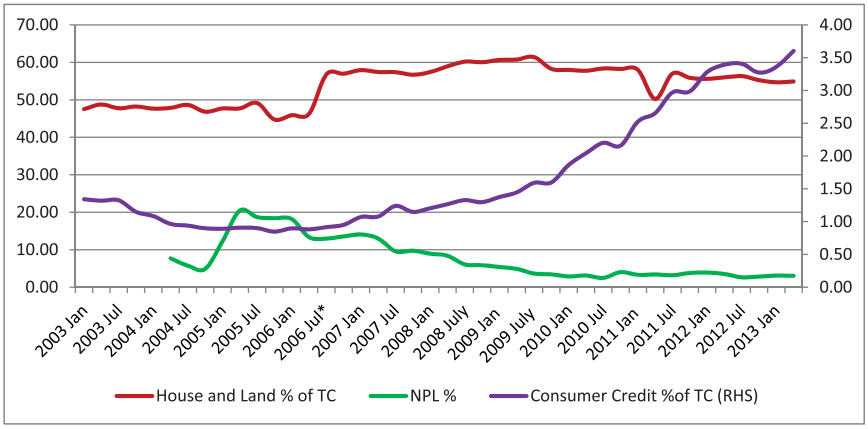
Table 4
Non-performing Loan Status of Commercial Banks of Nepal

		2003	3004	2005	2006	2007	2008	2009	2010	2011	2012
1	Nepal Bank Ltd	60.47	53.74	49.64	18.18	13.49	8.95	5.91	2.28	5.28	5.83
2	Rastriya Banijya Bank Ltd.	60.15	57.64	50.70	34.83	27.65	21.65	15.68	11.45	10.92	7.27
3	NABIL Bank Ltd	5.54	3.35	1.32	1.38	1.12	0.79	0.80	0.14	1.77	2.26
4	Nepal Investment Bank Ltd.	1.98	2.47	2.69	2.07	2.37	1.12	0.82	0.46	0.59	1.98
5	Standard Chartered Bank Nepal Ltd.	4.13	3.77	2.69	2.13	1.83	0.92	0.66	0.54	0.62	0.74
6	Himalayan Bank Ltd.	10.08	8.88	7.44	6.60	3.61	2.35	2.16	3.16	3.92	2.06
7	Nepal SBI Bank Ltd.	8.90	6.25	6.54	6.13	4.56	3.65	2.02	1.47	1.13	0.54
8	Nepal Bangladesh Bank Ltd.	12.73	10.81	19.04	29.88	39.76	31.10	19.30	1.77	19.18	4.29
9	Everest Bank Ltd.	2.20	1.72	1.63	1.27	0.80	0.64	0.48	0.16	0.34	0.84
10	Bank of Kathmandu Ltd.	8.67	6.66	4.99	2.72	2.51	1.76	1.27	1.18	1.82	2.30
11	Nepal Credit and Commerce Bank	20.63	12.72	8.64	21.87	31.37	16.36	2.74	2.71	3.94	2.80
12	Nepal Industrial & Commercial Bank	6.66	3.92	3.78	2.60	1.11	0.86	0.90	0.56	0.60	0.73
13	Lumbini Bank Ltd.	11.70	7.36	15.23	30.99	20.37	14.87	9.06	4.66	0.96	0.47
14	Machhapuchhre Bank Ltd.	2.08	0.98	0.39	0.28	1.16	1.04	2.75	1.78	4.48	2.69
15	Kumari Bank Ltd.	1.70	0.76	0.95	0.92	0.73	1.35	0.43	0.40	1.12	2.24
16	Laxmi Bank Ltd.	0.00	0.00	1.63	0.78	0.35	0.13	0.05	0.12	0.90	0.62
17	Siddhartha Bank Ltd.	0.00	1.61	2.58	0.87	0.34	0.60	0.45	0.42	0.59	2.25
18	Agriculture Development Bank Ltd.				20.59	17.96	11.63	8.83	8.22	8.64	6.35
19	Global Bank Ltd.					0.00	0.00	0.09	0.61	2.52	1.55
20	Citizens Bank International Ltd.						0.00	0.00	0.04	1.17	2.01
21	Prime Commercial Bank Ltd						0.00	0.00	0.21	0.48	0.47
22	Bank of Asia Nepal Ltd.						0.00	0.01	0.10	0.65	3.22
23	Sunrise Bank Ltd.						0.00	0.16	1.34	3.44	3.03
24	Development Credit Bank Ltd.						2.16	1.62	1.19	1.64	1.25
25	NMB Bank Ltd.						1.52	0.49	0.70	0.27	2.45
26	Kist Bank Ltd.							0.00	0.19	0.99	4.90
27	Janata Bank Nepal Ltd.							0.00	0.00	0.00	0.00
28	Mega Bank Nepal Ltd.									0.00	0.49
29	Commerz and Trust Bank Nepal									0.00	0.00
30	Civil Bank Ltd.									0.00	0.00
31	Century Commercial Bank Ltd.									0.00	0.00
	Total	28.68	22.77	18.79	13.16	10.56	6.08	3.53	2.39	3.20	2.66

Source: Banking and Financial Statistics, Vol. 58, 2012. Nepal Rastra Bank.

We do not have the breakdown of NPLs by credit product-type to help identify which sector is going to deteriorate. It will be better to segregate the NPLs into different sectors so that timely action can be taken to address the sector(s) that requires attention. The NPLs in the banking system remained very low following the entrance of new banks. The NPL increased slightly in 2011; at that right time the NRB had put a cap on the real estate loans to correct the past error.

Figure 9
Consumer Credit & Fixed Collateralised Loans Compared to NPLs

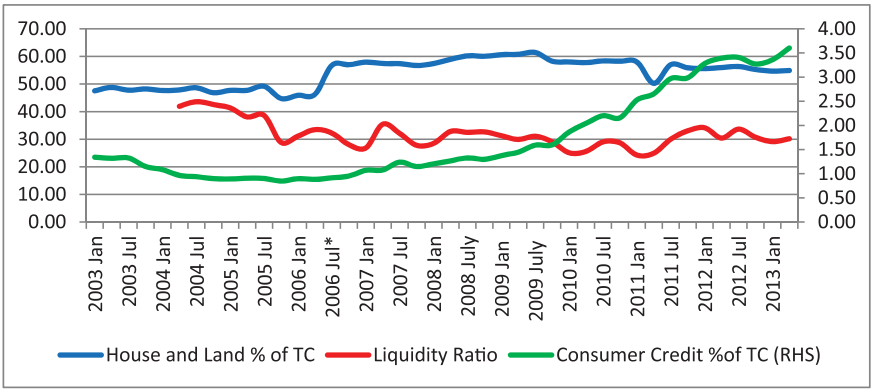


Source: Economic Bulletin and Financial Statistics, Nepal Rastra Bank.

4.7 Consumer Credit and Fixed Collateralised Loans and its Impact on Liquidity Ratio

During the international financial crisis, the Nepalese banks were not affected seriously. Some individual banks were in difficulty due to poor asset liability mismatch. Further, these banks had poor corporate governance and falling profitability. The liquidity position of the Nepalese banks today is around 30%, but it was around only 22% in 2011. Presently, the liquidity pressure has lifted and banks are managing their real estate loans and overall asset liability management.

Figure 10
Consumer Credit & Fixed Collateralised Loans Compared to LR



Source: Economic Bulletin and Financial Statistics, Nepal Rastra Bank.

4.8 Stress Testing and its Result

The purpose of system-focused stress testing is to identify the common vulnerabilities across institutions that can lead to a systemic failure (Jones, et al., 2004).The key objective is to identify the weak spots of a financial institution. Besides these, as common vulnerabilities are often driven by the banks' exposure to macroeconomic risks, such stress tests typically aim to understand how changes in the macroeconomic variables impact the stability of the financial system. Stress testing may be performed at three levels viz. individual institutions, group of institutions as well as for the financial system as a whole. The most important thing is that such tests are flexible as well as forward-looking.

The NRB has performed the stress test on the commercial banks of Nepal since mid-2010. With regard to the stress testing methodology for the banking system, the NRB has unveiled one stress testing guidelines for commercial banks. According to the Bank Supervision Report (2012), as the first step in stress testing, the guidelines cover simple sensitivity tests in different areas of risk management. There are simple shocks, which provide minimum standards for stress testing in Nepalese banking. At minimum, all the commercial banks are required to conduct stress test at corporate level on a quarterly basis. Banks are encouraged to introduce more complex and advanced techniques of stress testing to improve their own internal risk management practices. Based on the nature, size and complexities of the business activities, the techniques for stress testing may vary.

Banks are required to conduct stress test on a quarterly basis on some basic assumptions and the result should be reported to Bank Supervision Department (BSD). The results of the credit shock on whole commercial banks are as follows:

Table 5
Result of Stress Testing of Commercial Banks of Nepal

Credit Shocks	April, 2013	Jan, 2013	Oct 2012	July 2012	Jan 2012	July 2011	Jan 2012	July 2010
	No. of banks with CAR < 10%							
15 % of PL deteriorated to SL, 15 % of SL deteriorated to DL, 25 % DL deteriorated to BL., 5% of PL deteriorated to BL	27	28	23	22	23	20	14	13
All NPLs under SL category downgraded to DL and All NPLs under DL category downgraded to BL	3	3	2	2	3	2	3	2
25% of PL of Real Estate & Housing sector loan directly downgraded to SL category of NPLs	**2**	**3**	**3**	**2**	**6**	**4**	**5**	**13**
25 % of PL of Real Estate & Housing sector loan directly downgraded to BL of NPLs	**11**	**13**	**12**	**8**	**16**	**16**	**19**	**18**
Top 2 Large exposures downgraded: PL to SL	2	3	3	2	7	5	3	2

Sources: Nepal Rastra Bank, Bank Supervision Department, Offsite Section.
Notes: PL = Performing loans, SL = Substandard Loans, DL = Doubtful Loans, BL = Bad Loans, NPLs = Non-performing Loans.

The latest stress testing results of the CBs as of mid-April 2013 revealed that if 25% of the performing real estate loans directly downgraded to substandard, then only 2 CBs out of 32 would unable to maintain their regulatory CAR. The numbers of such banks were 13 in July 2010 and 5 in July 2012. Similarly, if real estate shock is next applied, i.e., if 25% of the performing real estate loans directly downgraded to bad loans, 11 CBs would unable to meet their prescribed CAR. The numbers of such banks were 18 in July 2010 and 8 in July 2012. So, the result unveiled that the banks' performance to the real estate shocks showed significant improvement under the review period. Further, the results validated the stringent policies taken to control the real estate loans of the banking system. Presently, the loan exposure of banks to the real estate sector has significantly decreased compared to the past four years, and the banking system is on the way to recovery.

5. Policy Recommendations

Due to the socio-economic nature of Nepal, the demand of housing/real estate and consumer credit is likely to increase from the current level. As we have seen in Section 2, the driving forces of mortgage finance and consumer credit in Nepal are rising income level, massive use of remittances to pay for consumable goods and services, pace of urbanisation and so on. The promotion of housing loans is essential, but the commercial real estate loans were a big problem in Nepal. Most of the BFIs were engaged lending to the real estate sector which is considered as an unproductive sector. The only factor behind the escalation of the real estate price is massive bank financing. It may be beneficial to look into the coordination between the central bank and the government of Nepal in dealing with the following described gaps for the purpose of financial stability. Firstly, this section includes the NRB policies and directives to address the financial stability; and secondly it explains the policies to be taken by the NRB.

5.1 Cap on Real Estate Loan

Housing and real estate loans extended by the BFIs have increased not only for the purchase of residential property, but also in speculative investment in real estate financing speculators to obtain short-term profits from their investment. Around 60% of total loans and advances provided by the BFIs are secured by fixed assets comprising mostly of land and buildings, declining real estate price will severely affect the value of such securities. Moreover, most of the BFIs do not apply transparent, fair and periodic revaluation tools and techniques. Deterioration in the value of such securities affects the quality of assets. Currently there is no asset management company (AMC) to manage the crisis-ridden properties. Observing this scenario, during the 2008-09 when the bubble appeared, the NRB took extensive measures to maintain the financial stability. NRB applied a cap on the exposure of banks and financial institutions to housing and real estate loans, requiring them to limit such exposure to 25% of their total investment portfolio. The details of the realty sector loan management conditions imposed by the NRB on December 17, 2009 were as follows:

a. The amount of loan to be extended against the security of housing land and real estate shall not be more than 60% of the fair market value of the housing land and real estate under the collateral security.

b. No licensed institution shall be allowed to advance loan in real estate more than 25% of the total loan and in real estate and residential housing both more than 40% of the total loan.

c. The loans under this head shall have to be brought to the following limits within the following time limit:

Head	Mid-July, 2011	Mid-July, 2012
Real estate loans	Not exceeding 15% of the total loans	Not exceeding 10% of the total loans
Real estate and Residential housing loans both	Not exceeding 30% of the total loans	Not exceeding 25% of the total loans

After some period, the ceiling for individual residential home loans have been raised to NRs.10 million from existing ceiling of Rs. 8 million. The time limit to bring down the real estate loan to 25% by BFIs has been extended by one more year to mid-July 2013. The real estate borrowers are allowed to renew such loans up to mid-July 2013 upon payment of all the interest dues. Some positive signals have been observed in the real estate business because of the policies adopted by NRB for the sustainable improvement of this sector.

5.2 NRB Stress Test Guideline, 2012

Banking is a risky business. There are several inherent risks which should be identified in a timely manner. A number of quantitative techniques have been developed to assess the potential risks to the individual bank and financial institution as well as financial system. Several quantitative techniques have been developed for risk management in the banking business. After the recent global financial crisis, the use of the quantitative techniques has been increasing. “Stress Testing” is the risk management tool that is widely used in the global context. The IMF and the Basel Committee on Banking Supervision (BCBS) have also

developed guidelines for conducting stress tests of the banks and financial sector. In this context, the NRB has recently launched the Stress Test Guideline, 2012. According to NRB (2012), the prescribed Guideline will be useful for:

a. Forward-looking risk assessments;

b. Overcoming limitations of historical data analysis;

c. Facilitating internal and external communication;

d. Capital and liquidity planning procedures;

e. Setting the risk tolerance; and

f. Facilitating the risk mitigation process and developing contingency plans.

The main areas of Stress Test are credit risk, market risk and liquidity risk.

5.3 Deposit Guarantee Scheme

As a prime objective in promoting financial stability and building public confidence, the NRB has managed the deposit insurance/guarantee system. However, this system only covers about one fifth of the total deposits of the system. Newly established schemes catering for natural persons' deposits of up to NRs. 200,000 have been introduced in Nepal. However, the limit of the guaranteed amount is not enough to safeguard the large number of depositors and the modality of the payment of guaranteed amount is still ambiguous.

5.4 Macroprudential Supervision

A great lesson learned from the aftermath the recent global financial crisis is that regulation and supervision of banks in isolation is not sufficient for maintaining financial stability. A macroprudential perspective evaluates and monitors the financial system as a whole. Globally, efforts are underway to initiate combined approaches to micro and macroprudential perspectives to create a stronger supervisory framework. Adopting macroprudential supervision is an issue that needs to be addressed for the stability of the Nepalese financial system.

5.5 Risk-based Supervision

According to Bank Supervision Report (2012), Risk-based Supervision (RBS) is a proactive and efficient supervisory process, which enables the supervisor

to prioritise and focus efforts and resources on areas of significant risks and/or banks that have high-risk profiles. It entails a shift from a rigid rules/compliance-based supervisory approach to a more risk-sensitive one, which seeks to encourage a bank to develop, and continuously update its internal risk management system to ensure that it is commensurate with the scope and complexity of its operations. When Nepalese banks were affected by the crisis in the real estate sector, the Bank Supervision Department utilised the RBS.

6. Consolidation of Nepalese Financial System

To develop sound, efficient and robust financial system with strong capital base, merger policy has been adopted by the NRB. In this regard, the NRB has issued Merger Bye-laws, 2011 to implement financial consolidation. A separate desk has been established in Bank and Financial Institution Regulation Department to facilitate the merger process. Encouraged by the effectiveness of NRB's merger policy, a number of BFIs have shown keen interest to undertake financial consolidation.

In spite of above-mentioned provisions, the following table shows the major policies taken by NRB as well as by government of Nepal to promote the financial stability. However, there are still some gaps remaining that should be addressed to maintain and promote a safe and sound financial system.

Table 6
Policy Taken and Policy Gaps

Policy Taken	Policy Gaps
Issued real estate management directives which has put a cap to finance the real estate credit - 2009	• There is no Asset Management Company to manage the problematic BFIs' fixed collateral.
Issued stress Test Guidelines, 2012 which includes : • Credit Risk • Market Risk • Liquidity Risk	• Stress Test Guideline has not included operational and other types of risk.
Government policies towards the Housing sector	• Still there is no housing price index
Issued risk management guidelines, 2010 which includes : • Credit Risk • Operational Risk • Market Risk • Liquidity Risk Single Borrower Limit (SOL) introduced in 2005 to minimise concentration risk on single borrower or sector	• There is no specific Loan-to- value (LTV) ratio so different BFIs are practicing own standards.
Loan against Securities have been managed, for this purpose : • Margin Lending (Haircut limits) • Margin Call	No margin lending features lending is practiced.
To address the problem and to keep financial stability some institutional arrangements have been managed: • Separate Supervision Department for different BFIs. • Deposit Insurance and Credit Guarantee Corporation (DICGC) • Financial Stability Unit. • Proposing to establish problematic BFIs Resolution Unit.	• No Credit Rating Agencies (CRAs) • DICGC have low capacity to address the financial crisis • Financial Stability Unit is in Primitive phase and has not addressed the areas of whole financial system. • Still there is a space for strengthening the capacity of Debt Recovery Tribunal.
Issued directives concerning Market Risk, which includes : • Forex-lending restrictions • Currency mismatch limit • Net Open position of Forex	No other financial risks have been captured

From the perspective of qualitative research on mortgage finance and its impact on financial stability, the above Table identifies some institutional and infrastructural gaps. The NRB has implemented many policies but there still remain some issues to be resolved to improve stability. Hence, the above-mentioned gaps should be addressed in a time way to help ensure a sound financial system in Nepal.

7. Conclusion

We know that the cost of financial instability and its effects on the economy can be very expensive due to its contagion or chain effects to other parts of the economy. Moreover, the risk of financial stability has threatened from real estate and consumer lending globally. The experience of other countries (e.g., USA) has shown that bubbles from the real estate sectors can trigger financial instability, so central bank intervention is necessary to save the whole economy.

In Nepal, most banks use land and building as collateral for housing and real estate loans. Around 60% of the loans are collateralised by fixed assets. In this situation, fluctuations in the the price of land and building have an impact on the banking system, so the BFIs should be aware of the value of real estate. However, the size of Nepal's mortgage finance is quite smaller compared to that of the developed and emerging economies. Some prudent policies need to be adopted to ensure that the developments in the mortgage market do not cause financial instability. The Nepalese Banks have implemented different LTV ratios; however, the NRB has prescribed LTV of 60% for residential loan based on fair market value. Accordingly, the LTV ratio should be defined. Nepal currently does not have a housing price index (HPI). To analyse the associated risk, the HPI should be implemented.

Despite almost three decades of financial liberalisation, Nepal's financial sector remains particularly weak in infrastructures – there are no well equipped CRAs to evaluate the borrower; the deposit insurance company is quite undeveloped; and there is still no AMC to manage the problematic credits' fixed collateral. The establishment and development of these institutions is of prime concern to ensure that the financial sector plays a more constructive role in supporting broad-based economic development.

However, we have no evidence of asset price bubbles in the real estate sector, but realty sector heated up in 2009. The NRB issued directives to limit loans to the realty sector and imposed credit-to-deposit ratio along with liquidity ratio to control the situation. As a result, the loans against the realty sector have decreased. Moreover, the stress testing guidelines have also been issued. The latest stress test results of commercial banks as of mid-April 2013 revealed lower risk exposure as compared to 3 years before.

According to NLSS III, remittances have increased significantly. Today some 56% of all Nepali households are receiving remittances. Despite the huge remittance inflows, capital formation has been not significant. Moreover, the

high consumption has not supported economic growth, rather it has added to the trade imbalances. The government should take initiative to leverage remittances for economic development.

Lastly, the building of a sound banking system requires a sound and transparent financial infrastructure. The policies recommendations discussed in this report are intended to contribute towards ensuring a stable financial system in Nepal.

Abbreviations

AMC	Asset Management Company
BSD	Bank Supervision Department
BFIs	Banks and Financial Institutions
CAR	Capital Adequacy Ratio
CBs	Commercial Banks
CC	Consumer Credit
CD	Credit-to-Deposit
CCD	Credit-to-Core capital plus deposit
CRA	Credit rating agency
DICGC	Deposit Insurance and Credit Guarantee Corporation
DTV	Distress Value
FMV	Fair Market Value
FSIs	Financial Soundness Indicators
GDP	Gross Domestic Production
GON	Government of Nepal
IMF	International Monetary Fund
LTV	Loan-to-value
MIS	Management Information System
MOFN	Ministry of Finance, Nepal
NBFIs	Nepalese Bank and Financial Institutions
NCAF	New Capital Adequacy Framework, 2007
NINJA	No Income, no Job and Assets
NLHDA	Nepal Land and Housing Developers' Association
NLSS	Nepal Living Standards
NPL	Non- performing Loan
NRB	Nepal Rastra Bank
NRs	Nepali Rupees
OECD	Organization for Economic Development and Cooperation

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Appendices

Annex 1

In Million NRs

Mid-Month (1)	Gold & Silver (2)	HL (3)	HLgr (4)	TC of CBs (5)	CC % of TC (6)	HL % of TC (7)	CAR (8)	NPL % (9)	CD (10)	Liquidity Ratio (11)
2003 Jan	1,546.1	54,793.2		115,297.0	1.34	47.52				
2003 Apr	1,549.3	57,281.4	4.5	117,462.5	1.32	48.77				
2003 Jul	1,600.6	57,659.4	0.7	120,754.5	1.33	47.75				
2003 Oct	1,429.9	59,996.6	4.1	124,424.4	1.15	48.22				
2004 Jan	1,396.3	61,327.6	2.2	128,726.9	1.08	47.64				
2004 Apr	1,278.9	63,458.5	3.5	132,603.0	0.96	47.86	12.15	7.7	66.85	41.91
2004 Jul	1,286.5	66,691.8	5.1	137,081.0	0.94	48.65	13.64	5.73	65.16	43.61
2004 Oct	1,310.4	68,334.3	2.5	145,894.4	0.90	46.84	4.61	4.89	68.2	42.57
2005 Jan	1,350.6	72,297.7	5.8	151,580.6	0.89	47.70	4.58	12.26	67.44	41.33
2005 Apr	1,414.7	74,381.5	2.9	155,878.0	0.91	47.72	-6.84	20.46	67.77	38.06
2005 Jul	1,435.4	78,325.8	5.3	159,323.1	0.90	49.16	-4.46	18.7	66.09	38.61
2005 Oct	1,405.4	74,225.9	-5.2	165,895.0	0.85	44.74	-4.79	18.41	67.44	28.85
2006 Jan	1,534.2	78,471.6	5.7	170,969.3	0.90	45.90	-4.45	18.19	67.15	31.12
2006 Apr	1,555.5	81,556.5	3.9	176,320.3	0.88	46.25	-4.62	13.36	67.03	33.49
2006 Jul*	1,820.8	112,894.4	38.4	198,848.7	0.92	56.77	-3.08	12.97	63.45	32.22
2006 Oct	1,958.6	117,365.3	4.0	205,981.0	0.95	56.98	-2.65	13.54	67.81	28.04
2007 Jan	2,262.6	122,394.5	4.3	211,277.7	1.07	57.93	-2.83	14.08	68.01	26.83
2007 Apr	2,414.0	128,655.7	5.1	224,033.0	1.08	57.43	-2.08	12.97	63.45	35.44
2007 Jul	2,875.2	133,060.1	3.4	231,844.7	1.24	57.39	0.18	9.55	69.13	32.09
2007 Oct	2,863.8	141,466.2	6.3	249,462.0	1.15	56.71	0.48	9.74	71.13	27.79
2008 Jan	3,280.3	156,323.8	10.5	272,284.3	1.20	57.41	1.47	8.94	72.62	28.49
2008 Apr	3,583.8	166,915.2	6.8	283,161.4	1.27	58.95	2.63	8.38	72.11	32.81
2008 July	4,069.5	184,555.7	10.6	306,535.7	1.33	60.21	3.58	6.08	71.57	32.49
2008 Oct	4,323.3	200,118.1	8.4	333,325.5	1.30	60.04	4.27	5.88	73.9	32.66
2009 Jan	4,729.7	208,683.4	4.3	344,077.8	1.37	60.65	4.34	5.38	71.85	31.27
2009 Apr	5,296.4	222,545.0	6.6	366,289.3	1.45	60.76	5.66	4.89	73.11	29.92
2009 July	6,396.0	246,825.2	10.9	401,777.5	1.59	61.43	7.22	3.64	71.18	31.06
2009 Oct	6,872.0	250,673.3	1.6	430,202.1	1.60	58.27	7.41	3.42	74.45	29.04
2010 Jan	8,696.8	270,670.5	8.0	466,664.3	1.86	58.00	7.58	2.87	80.28	25.08
2010 Apr	9,681.6	273,771.5	1.1	473,997.2	2.04	57.76	8.94	3.13	80.91	25.58
2010 Jul	10,333.3	273,935.8	0.1	469,331.8	2.20	58.37	9.62	2.48	74.4	29.04
2010 Oct	10,419.5	281,190.7	2.6	482,837.3	2.16	58.24	9.56	4.02	86.04	28.68
2011 Jan	12,792.2	293,852.1	4.5	506,504.3	2.53	58.02	9.9	3.3	88.63	24.25
2011 Apr	13,887.6	262,859.5	-10.5	523,194.2	2.65	50.24	10.19	3.41	88.02	24.93

2011 Jul	15,631.8	300,026.2	14.1	526,246.5	2.97	57.01	10.59	3.19	83	30.01
2011 Oct	16,110.6	301,538.9	0.5	539,662.8	2.99	55.88	10	3.8	74.49	33.04
2012 Jan	18,424.9	312,331.0	3.6	561,722.5	3.28	55.60	9.96	3.9	73.78	34.16
2012 Apr	19,982.8	329,734.7	5.6	589,119.1	3.39	55.97	10.34	3.53	74.33	30.41
2012 Jul	21,213.1	350,816.4	6.4	622,537.4	3.41	56.35	11.5	2.63	71.73	33.65
2012 Oct	21,532.2	363,622.6	3.7	658,131.2	3.27	55.25	10.77	2.83	74.66	30.71
2013 Jan	23,482.9	382,236.9	5.1	699,066.6	3.36	54.68	11.01	3.1	77.17	29.12
2013 Apr	26,195.1	399,200.8	4.4	727,115.6	3.60	54.90	11.3	3.04	78.07	30.18

Notes:

Column No. 2 denotes: loan of commercial banks against Gold and Silver (consumer credit).
Column No. 3 denotes: loan of commercial banks against House and Land.
Column No. 4 denotes: loan against House and Land growth rate.
Column No. 5 denotes: Total Credits of commercial banks of Nepal.
Column No. 6 denotes: percentage of consumer credit of total credit.
Column No. 7 denotes: percentage of house and land loans of total credit.
Column No. 8 denotes: Capital Adequacy Ratios of Commercial banks of Nepal.
Column No. 9 denotes: Non-performing loans of Commercial banks of Nepal.
Column No. 10 denotes: Credit to deposit ratios of Commercial banks of Nepal.

Annex 2

Mid July	GDPg*	Inflation*	Creditg	M2g	REER*	Lrate	Deporate	Spread	IBR
1975					150.1	17	15	2	
1976	3.8	-0.7	20.7	27.7	121.7	18	14	4	
1977	1.7	2.7	23.9	17	115.8	16	12	4	
1978	3.2	11.2	24.3	19.6	131.7	16	12	4	
1979	1.6	3.4	43.9	17.2	131	16	12	4	
1980	0.3	9.8	30.3	19.3	130.3	16	12	4	
1981	8.9	13.4	5.6	18.2	129.2	16	12	4	
1982	4.8	10.4	2.3	23.7	126.8	17	12.5	4.5	
1983	1.1	14.2	17.6	13.4	135.6	17	12.5	4.5	
1984	8.8	6.2	27.2	17.6	120.9	17	12.5	4.5	
1985	6.9	4.1	28	23.3	108.3	17	12.5	4.5	7
1986	4.8	15.8	17.7	15.4	114.2	21	12.5	8.5	10
1987	2.1	13.3	29.6	22.4	116.9	21	12.5	8.5	8
1988	7.1	10.8	30.3	24.2	125.5	21	12.5	8.5	7
1989	5.4	8.3	12.8	18.6	120.1	21	12.5	8.5	5
1990	4.9	9.7	20.7	19.5	115.1	21	11.5	9.5	8
1991	6.7	9.8	26	21.1	107	21	8.8	12.2	5
1992	4.9	21.1	19.3	27.7	99.2	21	8.8	12.2	7
1993	3.5	8.9	39.6	19.6	98.8	21	8.8	12.2	8
1994	7.9	8.9	41.7	16.1	97.9	18	8.8	9.2	7
1995	3.0	7.7	32.4	14.4	99.9	19	8.8	10.2	6.7
1996	5.7	8.1	16.5	11.9	97.7	18	10.3	7.7	9.3
1997	5.0	8.1	18.8	21.9	101	18	10	8	8.6
1998	3.4	8.3	18.2	20.8	101	17	9.8	7.2	3.3
1999	4.6	11.4	20.5	21.8	103.8	16	8.4	7.6	1.7
2000	6.1	3.4	15.8	15.2	103.6	16	6.9	9.1	4.2
2001	4.9	2.4	5.2	4.4	100	16	6.1	9.9	4.5
2002	0.2	2.9	13.2	9.8	98.6	16	5.3	10.7	4.2
2003	3.8	4.7	14.3	12.8	100.2	15	6	9	3.6
2004	4.4	4	14.2	8.3	103.1	15	5	10	3
2005	3.2	4.5	8.8	15.6	104.3	13	7	6	3.4
2006	3.7	8	13.6	-0.2	107.9	14	5	9	2.5
2007	2.8	6.5	12.3	14	111.6	14	6	8	2.3
2008	5.8	6.1	24.3	25.2	118.9	14	6	8	4.2
2009	3.9	12.6	29	27.3	120.3	14	6	8	5.1
2010	4.3	9.6	14.2	14.1	130.5	14	7	7	7.7
2011	3.8	9.5	45.3	28.1	140	14	7	7	8.4
2012	4.6	8.3	11.3	22.7	145	13	7	6	1.3

Chapter 10

MORTGAGE FINANCE AND CONSUMER CREDIT – PAPUA NEW GUINEA

By
Boniface Aipi[1]

1. Introduction

Financial systems are crucial in channeling household savings to firms and investment funds from one firm to another, enabling households and firms to diversify risks. It is through the process of financial intermediation that the savings of an individual and corporation can be turned into investment funds.

Financial system in a country includes institutions such as banks, superannuation funds, securities exchanges, regulatory bodies, the central bank, etc. These firms provide a framework for transactions, monetary policy and channel for savings to be converted to investments. An effective financial system encourages savings to be transferred to investment and provides a framework for transactions and monetary policy transmission.

The recent global financial crisis prompted financial analysts, market players and regulators around the world to objectively appraise their financial system. The aftermath of the 1997 Asian financial crisis induced countries to review their financial systems by giving prominence to supervision and regulation of the financial systems, by establishing regulatory institutions and by expanding the scope of regulation to other financial institutions that were formally never regulated. The subprime mortgage crisis in the United States in 2008/2009 also prompted regulators and players alike to examine the financial system, particularly the financial products which were offered in the financial system with their associated risks and how these risks were packaged and traded.

The Asian financial crisis spurred the strengthening of the supervisory responsibility of the central banks, while the recent subprime mortgage crisis in the US provoked supervisors and regulators to identify the trading of risks involving new financial products in the financial system.

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The negative impact of the Asian financial crisis on the economy of Papua New Guinea (PNG) in 1997, which had a spill-over effect into the years 1998 and 1999, compelled the government to pass two bills, specifically, the Central Banking Act (CBA) 2000, and the Banks and Financial Institutions Act (BFIA) 2000. The first act empowered the central bank to independently (without political interference) formulate monetary policy, with the main objective of achieving price stability, while the second act gave regulatory powers to the central bank to supervise all the licensed financial institutions in the country. With the enactment of the BFIA 2000, the central bank set up a supervisory department which carries out the regulatory functions of the financial system. This department is tasked in carrying out both on-site and off-site supervision.

The recent subprime mortgage crisis in the United States had minimal impact on the country and could be attributed to the strengthening of its regulatory aspects. With regular on-site and off-site supervision, the systemic risks were mitigated for any domestic or external shocks to permeate the domestic financial system. The other reason why the recent crisis had a minimal impact on the economy could have been due to the shallowness of the financial system, trading mostly traditional financial products with no secondary markets. Without a secondary market, risk- adverse individuals or businesses are restricted from trading their risks, minimising information asymmetry.

With the expansion of the economy as a result of major developments taking place in the economy, such as the billion-dollar PNG Liquefied Natural Gas (LNG), the potential for expansion and development of the financial system in PNG is imminent. Consequently, this paper will be forward-looking and will highlight the possible developments, especially addressing the increase in household debt in mortgage and consumer credit in PNG. The paper is organised as follows: the next section looks at the definitions and current trends in consumer lending, which is followed by a discussion on the cause of the rise in household debt. The final section of the paper will be centered upon the discussions of the stress test results.

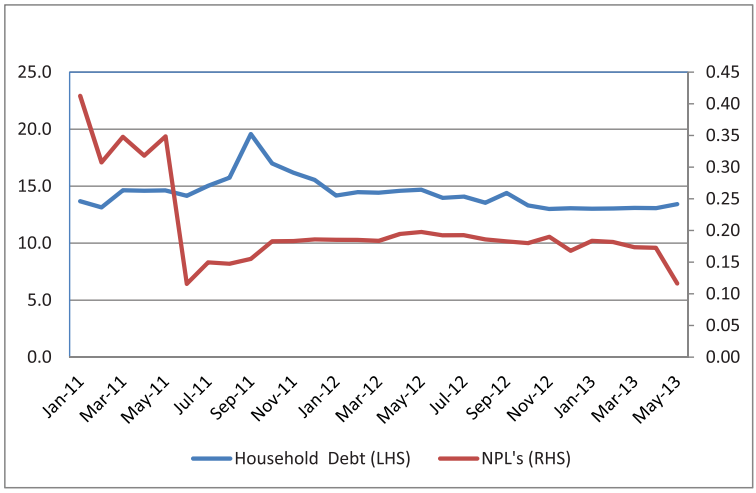
2. Mortgage Finance and Consumer Credit: Developments and Trends in Papua New Guinea

Except for commercial banks, the other regulated financial institutions of PNG's financial system, report aggregate private sector credit. Therefore it is difficult to determine the household debt figures from the total private sector credit extended by the financial system. Commercial banks in PNG play a dominant role in the financial system, retaining more than 65% of total financial

system asset, while more than 90% of formal total household debt is sourced from the commercial banks. Mechanically, commercial banks whose monthly reports are meticulous, demarcating household debt from total private sector credit, take precedence in this analysis, while the other regulated financial institutions are excluded. Household debt in this paper therefore is defined as credit extended to the household sector by the commercial banks.

Household debt in PNG comprises of mortgage loans and other personal loans extended to households by commercial banks. Other personal loans will include credit card, school fee loans, car loans, individual small business financing, and other personal consumer credits.

Graph 1
Household Debt and NPLs as a Percentage of Total Loan



Source: Bank of Papua New Guinea.

Household debt as a percentage of total loans average around 13% over the period January 2011 to May 2013, peaking at 19% in September 2011 and falling back to its period average as shown in Graph 1. Household debt compared to total loans is quite small compared to the other SEACEN economies, like South Korea, Taiwan, Singapore and Malaysia. In recent times, the household debt has remained stable and at a manageable level. Non-performing loans (NPLs) as a percentage of total loans declined from 0.4% in January 2011 to as low as 0.11% in May 2011, remained steady at around 0.19% in the recent

past, declining further down to 0.11% in May 2013, which is very low compared to other neighbouring economies. Even though in percentage terms, the household debt has remained stable, the absolute numbers show an increase in consumer credit and household debt over the past few years. This could imply a proportional increase in lending to other sectors of the economy as well as household debt.

Household debt and consumer credit have remained stable proportionally. However, in absolute terms, the household debt has increase steadily over the past years. What has been the major driving force behind the increase in mortgage finance and consumer credit in PNG? In order to highlight the fundamental factors influencing the increase in mortgage finance and consumer credit, both the demand and supply side factors will be examined to provide definitive explanations for the developments in the credit market.

2.1 Demand-side Factors behind the Increase in Mortgage Finance and Consumer Credit

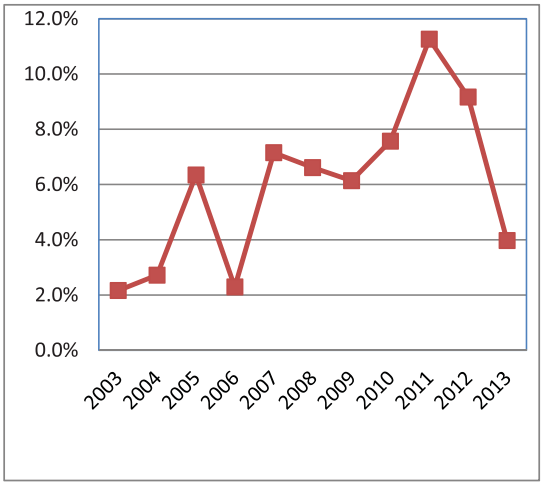
Demand-side factors have played a pivotal role in the increase in household debt and consumer credit. These factors are discussed at length henceforth to highlight the market fundamentals.

2.1.1 Sound Macroeconomic Fundamentals

a. High GDP growth

PNG's economy has been growing rapidly over the years since 2007. Growth averaged at 8% between 2007 and 2013. The rapid growth experienced by the country was spurred by two defining factors, the construction of the LNG project and high international commodity prices.

Graph 2
Real GDP Growth

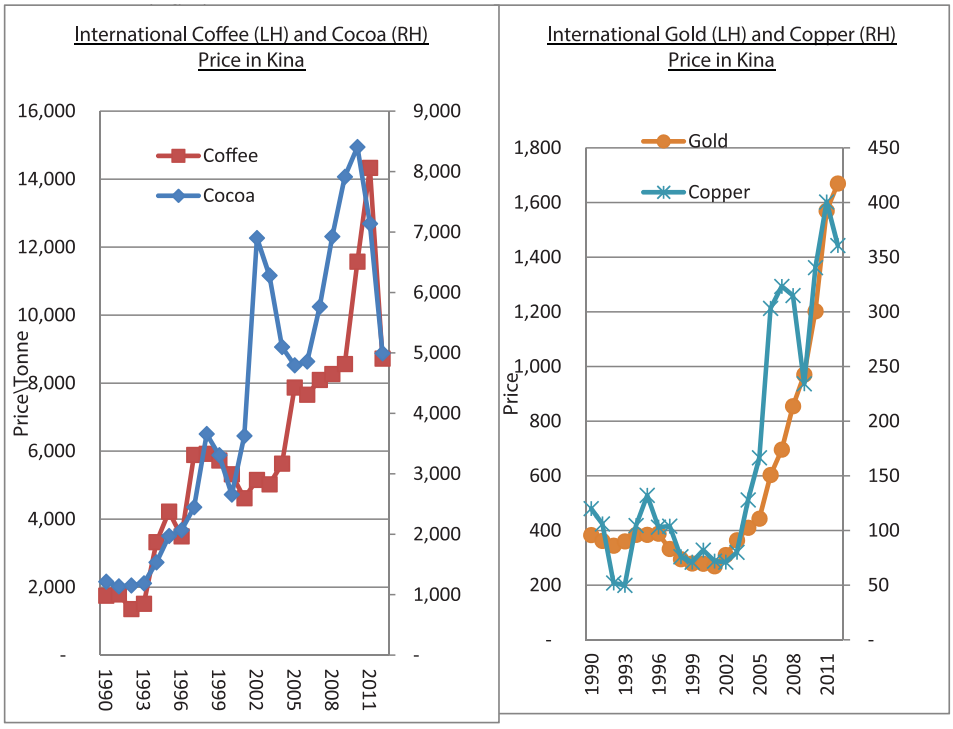


Source: Bank of Papua New Guinea.

The billion dollar cost of construction of the LNG project in PNG over the recent years have stimulated growth in other sectors of the economy, as these sectors align themselves to profit from the spillover effects. The laying of both on-shore and off-shore pipeline, the construction of the Hides and NapaNapa processing plants and construction of a world-class airport, to mention a few, has spurred spillover benefits to other sectors of the economy. Growth is projected to slow down in 2013 as a result of the winding down of the construction phase and subsequent production of LNG in 2014.

Between the years 2005 to 2009, the international prices of PNG's major export commodities increased, resulting in high tax revenue for the government. The government continuously ran budget surpluses, while at the same time the extra monies collected were parked in trust accounts earmarked for various projects. From the trust accounts that were created, the government assisted landowners from the LNG project with large sums of start-up capital to go into business in order to benefit from the spin-offs of the LNG projects. Landowners who virtually had no start-up capital were boosted by the government to involve in fruitful business ventures, which have resulted in high employment growth, and hence enhancement of their living standards. Ultimately, this contributed significantly to growth in GDP.

Graph 3
International Commodity Prices



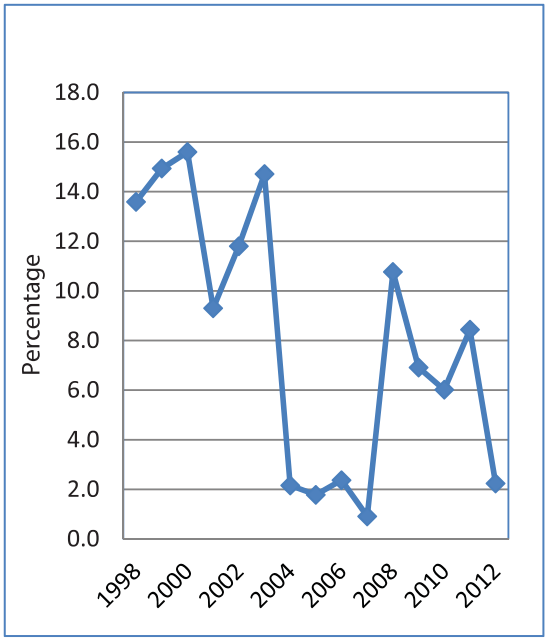
Source: Bank of Papua New Guinea.

Since 2005, there has been an increase in the international prices of PNG's major export commodities. Rising export prices lead to a surge in government revenues. These revenues were largely spent by the government on infrastructure development. The windfall revenue generated from the rising international commodity prices were not only spent on infrastructure development, but also a large portion of these were saved both in the form of trust accounts at commercial banks, and indirectly as foreign reserves at the Bank of PNG. The increase in trust account funds held at the commercial banks resulted in high financial system liquidity, which apparently was not inflationary, as most companies had adequate funds for their operations during the construction phase of the LNG project.

b. Low Inflation

The linkage between high financial system liquidity, real GDP growth and inflation was inarticulate as credit growth was apparent, but not significant to stimulate demand-driven inflation in the economy. The traditional interest rate channel if properly working would mean increased financial system liquidity coupled with low interest rates, would instinctively lead to high credit growth, and hence increased demand for investment and consumption leading ultimately to GDP growth, and hence high inflation. This has not been the case in PNG. Though the GDP was growing, there was high liquidity in the banking system and credit growth was not sufficient, as the big companies involved in the LNG project were able to adequately fund their operations.

Graph 4
Domestic Inflation



Source: Bank of Papua New Guinea.

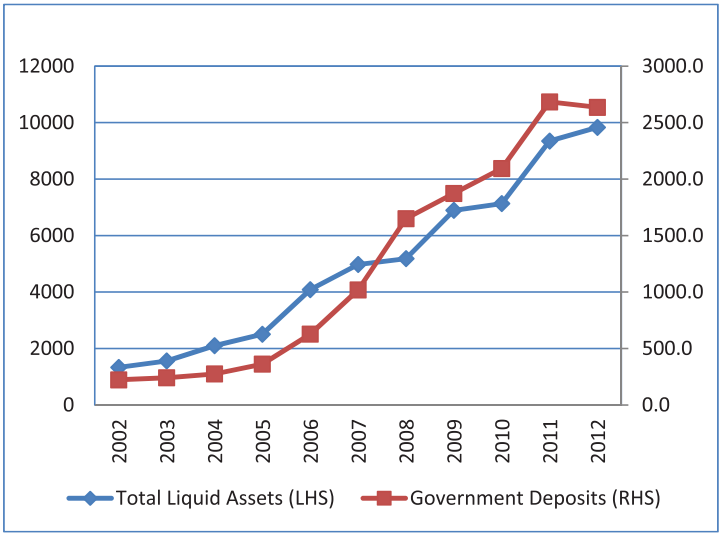
From a high of 15.6% inflation in 2000, inflation averaged 4.6% between 2004 and 2012. The effect of high build-up of liquidity in the banking system between 2004 and 2012, and the growth experienced by the PNG economy does not seem to translate into inflationary outcomes, because most businesses

were able to fund their operations during the construction phase of the LNG project. Inflation was maintained at single digits during the period

c. Increased Bank Deposits – Main Source of Funding for Banks and High Liquidity in Banks

High international commodity prices translated into increases in the coffers of the government, resulting in government spending money on the maintenance of the existing infrastructures and on development projects. The windfall tax revenue from the high international commodity prices were deposited with commercial banks in trust accounts, exacerbating the problem of high liquidity in the banking system.

Graph 5
Government Deposits in K million and Total Liquid Assets of Financial System



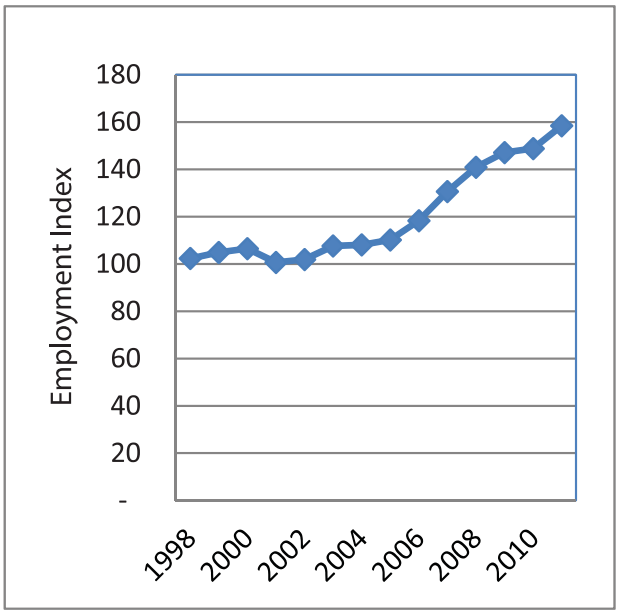
Source: Bank of Papua New Guinea.

Graph 5 shows that government deposits increased from 2003 onwards as excess funds from windfall revenue collected from taxes rose. As can be seen from Graph 5, a perfect correlation between total liquid assets of the financial system and government deposits exists, implying that the increase in system liquidity during this period was driven primarily by the government deposits in trust accounts with the commercial banks in PNG.

d. General Improvement in Wages, Employment and Income Opportunities, Especially from the Mining Sector, Permeating to Other Sectors of the Economy

Starting from 2003, the level of employment has increased steadily in PNG, as depicted by Graph 6. Though there is no data available for wages and salary, anecdotal evidence shows that wages and salaries have also increased. This was stimulated by the LNG project which had a spillover effect on most of the related sectors, such as building and construction, hospitality, travel, etc.

Graph 6
Employment Index for PNG



Source: Bank of Papua New Guinea

The incentives provided by the LNG project sub-contractors stimulated competition for skill labour within the country. However, job security and minimal wages or salary increases ensured minimal labour mobility between the different sectors, especially from other sectors of the economy to the LNG sector.

d. Expectations of Increase in Real Estate Prices as a Result of Higher Demand for Housing in Anticipation for the LNG Project

There is no data available to measure the real impact of the expectations driving real estate demand. However, anecdotal evidence shows that the real estate industry has seen a boom. There is widespread construction of new office complexes and residential buildings in all the major cities and towns. Port Moresby has seen an increase in building and construction, with shortage of registered government land, resulting in land grabbing at the peripheries of the city to build residential blocks. Real estate prices and rentals have gone up substantially. According to reliable investors within the real estate industry, the construction of new large office complexes and residential blocks has been funded by two large superannuation funds in PNG. These two superannuation funds have decided to invest more in real estate in anticipation of an increase in business activity as a result of the large LNG project.

3. Review of Related Literature

According to the Macroprudential Oversight and Financial Stability Report of September 2012 by the International Monetary Fund, PNG has seen significant development opportunities as investments in the mineral sector increased at an unprecedented pace. The risk of such unprecedented growth of investment in the mineral sector to financial stability is real.

The mission analysed the main risks to financial stability and how these influences the analytical tools and macroprudential policy measures to be used for mitigating the risks. The mission found that the main risks lie in: (i) the reliance on the LNG project and mining proceeds; (ii) the small number of banks operating in PNG and the disproportionate size of one of them; (iii) the interconnectedness of the financial system as a whole through state ownership, bank subsidiaries, and investment; (iv) the lack of a reliable real sector and inflation data; and (v) excess liquidity largely because of deposits by the state in banks.

The report did not highlight any risks to the financial system driven by consumer credit and household debt. Most of the growth that is experienced in the country is expectation-driven, as a result of the construction of the LNG project which has also stimulated the government's counterpart funding, resulting in an expansionary fiscal policy to assist land owner companies with start-up capital.

A report by the Oxford Business Group in November 2012 on the property development boom in PNG observed high-end residential and commercial properties market take off in the recent past. According to industry sources, most of these high-end residential and commercial properties are developed by the two large pension funds that have enough cash to finance investment properties. Therefore, middle-class Papua New Guinean consumers are pushed to the smaller suburbs and settlements where they can afford the price of accommodation. Data collected from the banks and stress-test run on the banking system shows that household credit defaults do not seem to be a problem as households are pushed to the peripheral properties market which is affordable.

4. Mortgage Finance and Consumer Credit: Implication on Financial Stability

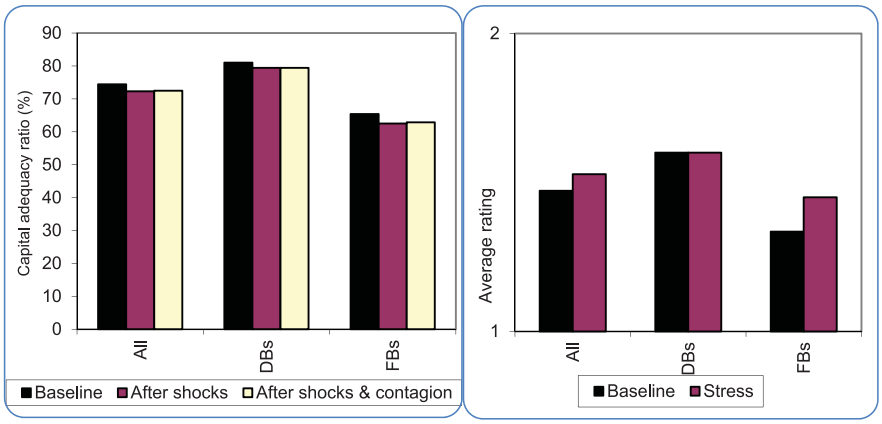
This section highlights the need for central banks or regulatory institutions to be vigilant in identifying the key risks associated with mortgage finance and consumer credit that may have contagious effect on the financial system. Most central banks or regulatory institutions run stress test on the financial system to test the stability of the financial system, while others run econometrics model and shock the financial system with certain associated risks. Running such models and stress test is crucial for a financial supervisory institution, as it will highlight the effects of such shocks on the financial system. This paper runs a simple stress test of the PNG banking system which, as a component, makes up more than 50% of the financial system asset. The stress test model used is taken from Cihak, et al. (2007).

1. Credit Risk			
Sectoral Shocks to NPL's	Baseline Scenario (%)	Scenario 1 (%)	Scenario 2 (%)
Agriculture/Fish/Forest	0.0	10	30
Manufacturing	0.0	5	15
Building & Construct.	0.0	5	15
Wholesale & Retail	0.0	5	15
Household	0.0	35	100
Real Estate	0.0	20	90
Others	0.0	10	30
2. Interest Rate Risk			
Nominal interest Rate: assumed % change	1.5	2.5	4.5
3. Exchange Rate Risk			
Assumed Exchange Rate Change	55	55	65

Source: Author's Calculation.

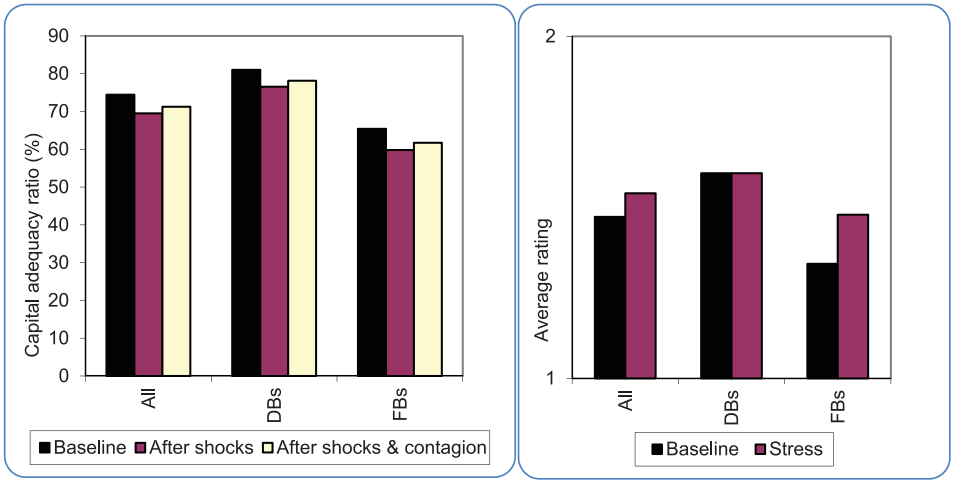
Stress Test Results

Baseline



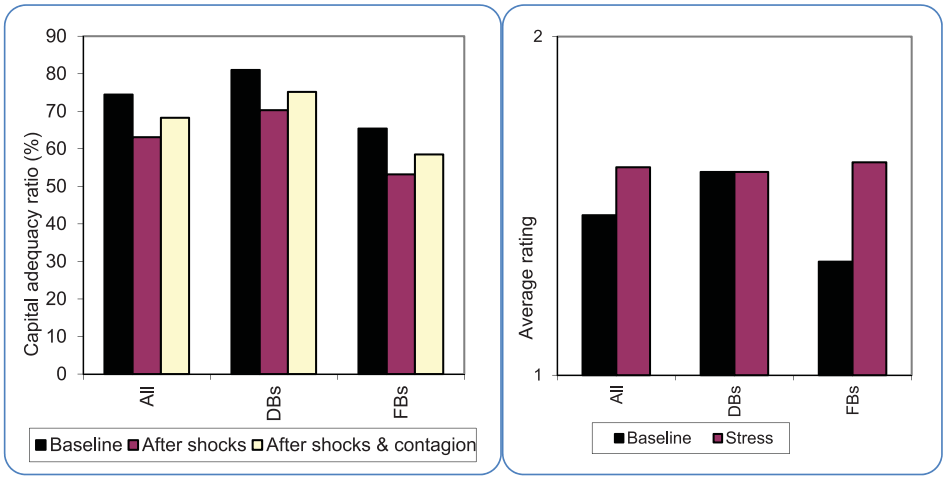
Source: Author's Calculations.

Scenario 1



Source: Author's Calculations.

Scenario 2



Source: Author's Calculations.

According to the stress test results, the financial system is sound as banks are well capitalised to withstand any pressure stemming from the household sector. Even an extreme scenario of the household sector defaulting on 100% of its performing loans does not seem to have any major effect on the overall performance of the banking system. The CAR values of the banking system after shock and contagion are above 60% and the Average rating which measures

the probability of default of the commercial banks remains at less than 0.1 % for all the shock scenarios. This could be because of the fact that household debt as a percentage of total loan is less than 15% in the country and default on household debt would not have any major impact.

Apparently the spiraling real estate and property prices in the market and the boom in construction of new homes in the country have been driven by real demand rather than by property price bubbles, as the stress test results show minimal impact from private household debts, while most properties newly built in the country were fully funded by the two major retirement savings funds in the country.

Adding to that, only 3% of land in PNG is owned by state, hence spike in house prices nationwide was demand driven as people's income levels improved over time. The LNG project and the increase in commodity prices in the past improved the people's income levels, as evident with double-digit GDP growth. Shifts in the income levels of the people have increased the general consumption patterns, and hence the high demand for housing in the country, resulting in genuine demand driven high house prices.

Banks concentrate on lending to the people who want to build or purchase houses built on 3% of the land in the country. The potential for commercial banks to expand mortgage lending to the household sector is constrainted by limited land belonging to the government. As a result, most of the deposits of the commercial banks are either used to purchase government bonds or Central Bank Bills to generate income for depositors. Stress test results show that the banks are well capitalised because most of their assets are locked in zero risk bonds, while stringent screening procedures are applied to screen household borrowers.

5. Policy Recommendations

Content	Policy Taken	Policy Gaps	Recommended Policy
Real Estate Pricing Information	There is no policy in place to regulate the industry. Consequently compiling real estate price movements is difficult.	The industry is not regulated, and there is no proper policy that guides the industry.	• Regulate the industry. • Compile an industry index. • Encourage banks to translate the Central Bank's views on household mortgage credit.
Central Information Bureau for Creditors.	Currently, there is no central information database for creditors to validate outstanding liabilities of individual households.	No central data collection point for all creditors to cross-check outstanding liabilities of household debtors. With no consolidated debt updates of individual households, some households live beyond their means.	• Encourage the setup of a Credit bureau to collect credit information for all households and companies from all sources of credit in the economy.
Growth of Informal Creditors and Loan Sharks.	There is no policy in place to align informal creditors to complement formal creditors.	Growth of informal creditors results in individual households over burdening themselves.	• Relaxing of lending policies by commercial banks and other formal lending institutions. • Ensure competitive lending market . • Encourage informal creditors to enter the formal lending market.
Stress Testing the Model	There is currently no model used at the Central Bank to stress test the banking system.	With no stress testing model, banking system stress cannot be identified in advance for corrective measures to be taken. Currently the Supervision Department of the Bank uses the CARMEL framework to assess the banking system.	• Set up formal stress testing model within the Bank.
Compile a Financial Stability Index (FSI)	Currently, the Financial Stability Index is not calculated in the Bank.	There is a need to compile a Financial Stability Index to measure the stability of the financial system. Early warning signs can be gauged from such an index to give authorities enough time to cull eminent financial crises.	• Compile Financial Stability Index.

6. Conclusion

Mortgage finance and consumer credit in PNG is diminutive compared to other economies in the region, averaging around 13% of total loans. The small size of the household debt does not pose any threat to the financial system. However, the rising price of real estate in the country may be a concern. Without proper data it is difficult to assess the real estate market, as such it appears to commentators as a mystery. The price increases could be driven by real demand or speculative buying which may pose a threat to the financial system.

The financial system in PNG does not seem to have any issues as the stress test results show that the financial system is stable. Banks are well capitalised to fund their own operations and the results from the different test scenarios show that banks are capable of withstanding any shocks. However, the high liquidity levels in the banking system and the concentration risk of one major commercial bank in the country does pose threat to the financial system. In order to monitor these, a formal stress test model is needed in the Bank.

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Chapter 11

HOUSING AND CONSUMER CREDIT IN THE PHILIPPINES: RECENT TRENDS AND IMPLICATIONS ON FINANCIAL STABILITY

By
Veronica B. Bayangos [1]

1. Introduction

This paper analyses the developments and policy implications of the rising housing and consumer credit extended by banks to households in the Philippines. There are two areas in which this paper can be applied: First, components of private sector loans for production and household consumption are regularly monitored by the Bangko Sentral ng Pilipinas (BSP, Central Bank of the Philippines) in the conduct of monetary policy. Year-on-year growth of outstanding loans of banks rose from 4.5% in end-December 2006 to 10.0% in end-December 2009 and to 14.2% in end-August 2013.[2] In recent years, loans for productive activities, mainly to real estate, renting and business services as well as to construction and transportation, storage and communication sectors, led the rise in loans extended by banks to productive activities. Meanwhile, loans for consumption purposes rose steadily starting in 2009, driven mainly by borrowings for residential real estate and credit card receivables. This paper examines the factors driving the loans extended by banks for household consumption.

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1. Veronica Batallones Bayangos is Deputy Director at the Centre for Monetary and Financial Policy (CMFP) of the Bangko Sentral ng Pilipinas (BSP). This paper is part of the research project on "Mortgage Finance and Consumer Credit: Implications on Financial Stability," organised by The SEACEN Centre. I am grateful to Deputy Governor for Monetary Stability Sector Diwa C. Guinigundo for his insightful comments and to Director Rosabel M. Guerrero, Acting Deputy Director Fernando Silvoza and Ms. Mia Donna De Jesus (Bank Officer II) from the Department of Economic Statistics and Ms. Lily Elloso (Bank Officer III) from the Centre for Monetary and Financial Policy (CMFP) for their invaluable contribution in consolidating the data on consumer loans extended by the banking system. The views expressed in this paper are those of the author and do not necessarily represent the position of the BSP or the BSP policy.
2. Based on the BSP-DES Selected Economic and Financial Indicators as of 11 October 2013. The data refer to loans outstanding of universal and commercial banks, thrift banks and rural banks, net of reverse repurchase and net of interbank transactions.

Second, the Financial Stability Committee (FSC) of the BSP periodically evaluates movements of loans to households from the financial stability perspective. The household sector is a significant driver of the Philippine economic growth. The share of household final expenditure to nominal Gross Domestic Product (GDP) has averaged 73.7% from 1998 to 2012, while year-on-year growth has averaged 4.6% during the same period. In the latest BSP Flow of Funds Report, the household sector remained the prime saver in the economy for 2011. This finding could be attributed to the sustained inflow of remittances from overseas Filipinos, positive outlook for the economy as revealed in the Consumer Expectations Survey, and the relatively favourable labour market conditions. Moreover, the household sector has been the biggest accumulator of capital since 2009. Accounting for 42.8% of the economy's capital accumulation in 2011, the household sector continued to build up capital, mainly on dwellings. Housing and consumer credit are the major financing channels for household spending.

The BSP monitors developments in household debt. In many empirical studies, the increase in household debt can have both positive and negative aspects. On the one hand, higher indebtedness suggests that the financial system is accomplishing one of its basic roles, that is, acting as an intermediary of financial resources and facilitating households' access to credit. It has also been noted in many studies that facilitating financial access has positive impacts on welfare as it allows households to smooth consumption, both over the life cycle and during business cycles (Alvarez and Opazo, 2013). On the other hand, the growth of debt and the resulting increase in debt service can be a source of concern with regard to household payment capacity, especially in the face of income shocks. Some literature on these issues suggests that with higher debt, households are more sensitive to shocks to income, interest rates and exchange rates. Such shocks may affect households' default on bank loans and consumption, and hence affect both price and financial stability.

This paper observes that Philippine household debt has gained importance in recent years, both in absolute terms and relative to the size of the economy. But, compared with selected countries, the Philippine household debt relative to GDP appears to be modest. Several factors have contributed to the strong growth in consumer credit. The principal factors include, from the demand side, the relatively lower interest rates in the Philippines, deepening financial sector, optimistic outlook not only on the real estate sector but on macroeconomic fundamentals, improvements in employment situation and consumer confidence and expectations by the public of rising residential real estate prices. From the supply side, the effect of the increase in households' borrowing capacity has

been reinforced by an increase in the availability of housing construction and finance, including the government initiatives to continue with the National Shelter Programme in the urban and rural areas and buoyant retail market developments.

Moreover, as a first approximation, this paper finds that the rising housing and consumer credit in the Philippines from 1999 to 2012 can be reasonably explained by fundamentals and that there is a stable long-run relationship between prices and value of housing and consumer credit. Hence, the expanding housing and consumer loans especially in recent years do not pose any threat on financial stability. This finding follows the general approach by Yiu and Jin (2012) in identifying episodes of bubble formation in housing credit by using unit root and cointegration analysis.

This paper is part of a growing literature covering different aspects of household sector dynamics, such as consumption, debt, portfolio allocation, retirement decisions, and default risk, among others (Alvarez and Opazo, 2013). This paper analyses the steady rise in outstanding household debt and offers possible implications on financial stability in the Philippines from 1999 to 2013. Throughout this paper, household debt includes outstanding housing (mainly residential real estate loans) and consumer credit (mainly auto loans and credit card receivables) extended by the banking system. The Philippine banking system is composed of universal and commercial banks, thrift banks, rural and cooperative banks.

This paper is organised as follows: Section 2 discusses the trends in housing and consumer credit and the reasons why Filipino consumers keep on borrowing. Section 3 surveys related local and international literature on household debt dynamics. Section 4 examines the risks in the steady rise in housing and consumer credit and implications on financial stability while Section 5 discusses some policy recommendations. Section 6 concludes.

2. Why Do Filipino Households Keep on Borrowing?

2.1 Data Description

In the Philippines, the household sector sources credit from the formal financial intermediaries, which are basically composed of banks regulated by the BSP, other financial institutions and the informal credit market. While household debt data can be sourced from the BSP through banks, loans from other financial institutions may include loans from key shelter agencies (KSA), such as the Home Development Mutual Fund (HDMF) and Social Housing

Finance Corporation (SHFC) and government institutions, such as the Government Service Insurance System's Social Insurance Fund (SIF) and Social Security System's (SSS).[3] However, official data series on outstanding loans to member households by these financial institutions are currently unavailable.

Another important source of household debt data is the Flow of Funds (FOF) report. The BSP compiles the FOF which serves as a basis for the analysis of the link between saving, capital accumulation and financial flows for the whole economy and for each of the institutional sector. Households include all resident households both as consumers and as entrepreneurs of household-based businesses such as small-scale stores and farm operations. Also included are non-profit institutions serving households, such as the non-governmental organisations. However, due to some limitation in compiling the FOF, this paper uses data on household debt coursed through banks. A comparison between the FOF data and bank data on household debt shows that data based on the FOF are relatively lower than data from banks.[4] As a proportion of nominal GDP, household loans climbed from 0.8% in 2005 to 1.5% in 2009 and further to 2.2 % in 2011. As indicated in the previous section, banks are further classified into universal banks and regular commercial banks, thrift banks, rural and cooperative banks. Data are limited to housing and consumer loans extended by banks to Filipino households.

2.2 Trends in Household Borrowing

The latest data show a steady rise in household debt in recent years, both in absolute terms and relative to the size of the economy, based on consumer loans extended by banks.[5] Outstanding household debt, as indicated by housing and consumer loans by banks, rose from PHP 66.0 billion in December

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3. Total loans financed by the SIF consist of consolidated loans, salary loans, restructured salary loans, summer one- month- salary loans, policy loans, real estate loans, e-card cash advance loans, e-card plus cash advance loans, deeds of conditional sale, private loans, emergency/calamity loans, pension loans and emergency loan. Meanwhile, SSS loans cover member loans and housing loans.

4. Estimates on household loans using the FOF are based on available data from counterparties' financial statements. The estimates include entrepreneurial activities of households as well as all other unaccounted transactions in the domestic economy; also covers non-profit institutions serving households.

5. Consumer credit extended by banks includes auto loans, credit card receivables, residential real estate loans and other personal loans. For purposes of classifying household loans into housing and consumer credit, we reclassified consumer credit to include auto loans and credit card receivables only.

1997 to PHP 226.5 billion in December 2005 to PHP629.3 billion in December 2012 (Table 1). As of end-March 2013, the outstanding household debt settled at PHP647.1 billion. Between 1999 and March 2013, the outstanding household debt rose, on average, by 16.3%. As a proportion of total banking portfolio, residential real estate and consumer loans rose from 6.3% in 1999 to 13.1% in 2005 and to 16.5% in March 2013. In terms of proportion to nominal GDP, the household debt steadily inched up from 2.9% in 1999 to 4.0% in 2005 and to 6.0% in March 2013 (Figure 1). In terms of national disposable income, the outstanding household debt rose from 3.8% in December 1999 to 5.7% in December 2005 and to 7.9% in December 2012.

Meanwhile, 43.2% of the outstanding household debt as of end-March 2013 was residential real estate loans. From 2001 to 2012, year-on-year growth in residential real estate loans of banks has averaged 16.2%, with particularly strong growth in 2004 to 2006, 2008, and 2010 to 2012. This is slightly faster than the annual growth in auto loans, which has averaged 15.9% during the same period. However, outstanding credit card receivables by banks grew faster than auto loans and residential loans. The year-on-year growth in credit card receivables has averaged 19.6% since 2001, with the highest growth recorded at 103.4% in 2002. As of end-December 2012, the bulk (or 67.0%) of the total loan portfolio of the banking system is extended by universal and commercial banks, while around 39.0% by thrift banks.

Table 1
Philippines: Housing and Consumer Loans Extended by Banking System in Billion Pesos

Year	Total Banking Loan Portfolio [1/]	Total Household Loans [2/]	of which:		
			Consumer Credit		Housing Credit
			Auto Loans [3/]	Credit Card Receivables [3/]	Residential Real Estate Loans [4/]
1997	1,713.6	66.0	18.3	14.8	33.0
1998	1,646.1	73.2	27.3	16.7	29.2
1999	1,478.4	92.8	25.9	18.8	48.1
2000	1,578.1	95.0	28.4	21.8	44.8
2001	1,556.9	112.2	34.5	26.6	51.0
2002	1,589.4	151.6	42.2	54.2	55.2
2003	1,643.9	166.9	46.8	59.0	61.1
2004	1,704.1	189.8	49.9	69.3	70.6
2005	1,730.7	226.5	61.2	82.8	82.4
2006	1,912.2	272.7	72.2	99.6	100.9
2007	2,112.0	313.0	86.2	116.1	110.7
2008	2,576.2	363.2	78.6	130.7	153.9
2009	2,719.9	413.1	94.5	115.5	162.6
2010	2,960.1	472.6	117.6	120.3	188.3
2011	3,483.6	545.9	139.2	132.2	220.8
2012	3,938.9	629.3	159.9	148.7	264.5
2013 (March)	3,929.8	647.1	167.2	143.7	279.3

1/ Values for 1997-1998 refer to total loan portflio of the Philippine Banking System. Values from 1999-2008 were computed as sum of UKBs and TBs total loan portfolio, gross, net of amortization less IBL. Values for 2009 onwards were from SDC's schedule on consumer loans.

2/ Inclusive of auto loans, credit card receivables, real estate loans (residential) and other consumer loans.

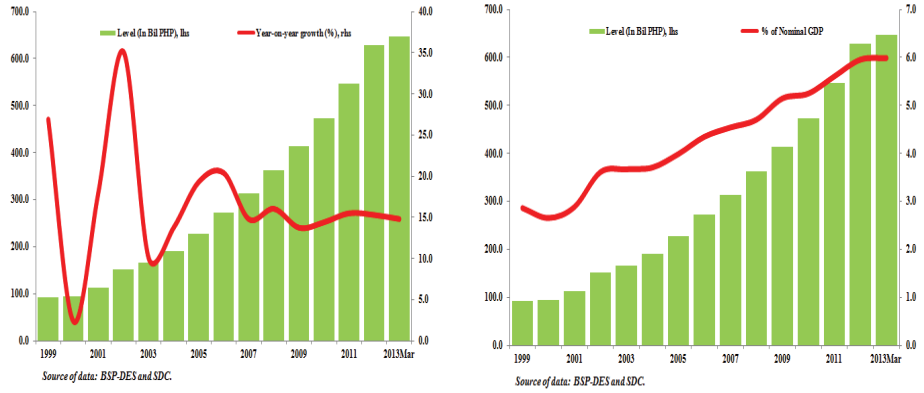
3/ Inclusive of thrift banks subsidiaries of universal and commercial banks

4/ Data on real estate include bank proper only.

Source : Supervisory Data Center, Supervision and Examination Sector, BSP.

A closer look at the year-on-year growth of consumer loans by universal and commercial banks suggests that their lending operations have consistently been rising at double-digit rates since its peak at 76.3% in 2008 and have outpaced auto loans and credit card receivables. From a modest year-on-year growth of 1.4% in 2009, the growth of residential real estate loans outstanding by universal and commercial banks swelled to 27.0% in 2010 and further to 32.7% in 2012. By contrast, the growth of residential real estate loans outstanding by thrift banks dropped from its peak at 33.4% in 2000 to 21.8% in 2005 and further down to 3.3% in 2012.

Figure 1
Banking System's Outstanding Housing and Consumer Credit, December 1999-March 2013
Year-on-year Growth (left panel) and as a Proportion of Nominal GDP (right panel)



Meanwhile, compared with selected countries[6], the Philippine household debt relative to GDP appears to be modest. For developed economies such as the US and the UK, the household debt represents more than 100% of GDP (Debelle, 2004; Girouard, et al., 2006; Karasulu, 2008; Ma, et al., 2009). The growth of indebtedness in the household sector is attributed to financial innovation and decreases in nominal and real interest rates (Debelle, 2004). In selected Asian economies, South Korea's latest household debt with GDP recorded the highest at 89.0% in 2011, although the figure covers not only banks but other financial institutions. At the lowest end of the range are the Philippines at 6.0% in March 2013, followed by Indonesia at 7.4% in 2008. It can be noted that both Philippines' and Indonesia's data only cover banks.

2.3 What is Driving the Steady Rise in Banking Systems' Housing and Consumer Credit?

Demand-side and supply-side factors reinforce the steady rise in household debt. Several factors have contributed to the strong growth in consumer credit over recent years, the principal factor being the relatively lower interest rates in the Philippines which stimulated households to borrow more.

6. These economies include Indonesia, Mongolia, Cambodia, Nepal, Thailand, Malaysia, Singapore, Chinese Taipei and South Korea.

This pushes up the size of new loans and, over time, the size of loans outstanding. Between 1997 and 2012, the average bank lending rate (all maturities) fell from 16.2% in 1997 to 10.2% in 2005 and further down to 5.8% in January to June 2013. The fall in bank lending rates was due mainly to the decrease in inflation – and hence in nominal interest rates – but also to the appreciation of the average peso-dollar rate from PHP55.09/US$ in 2005 to PHP43.31/US$ in 2011 to PHP41.24/US$ in January to June 2013. Over the last few years, the steady increase in labour productivity, stemming from the IT revolution and the progress of globalisation, has kept prices relatively stable.[7] Defined as GDP per employed person, year-on-year growth labour productivity increased from 0.5% in 2002 to 3.7% in 2007 and to 5.6% in 2012.

The relatively low interest rates were accompanied by deepening of the financial sector as seen in the rise in domestic liquidity, driven largely by continued increase in remittances from overseas Filipinos as well as the financial sector reforms initiated after the currency crisis in 1997 to 1998. Between 2005 and 2012, year-on-year growth of domestic liquidity averaged 11.9% while overseas remittances grew by an average of 12.3% during the same period. In terms of nominal GDP, the domestic liquidity rose from 41.2% in 2005 to 49.0% in 2012.

Following the decline in the country's unemployment rate from 7.3% in 2007 to 6.9% in 2012, per capita household final expenditure (in real terms) grew, on average, by 3.0% from 2007 to 2010.[8] As a result, consumer and housing credit rose, on average, by 15.0% from 2007 to 2012. While outstanding consumer and housing loans had increased, loan repayments as a share of household disbursement schedule slightly edged up from 2.5% in 2003 to 2.8% in 2009, based on the Family Income and Expenditure Survey.[9]

Middle-class growth in Southeast Asia, including the Philippines, has been among the most rapid in Asia and has boosted consumption growth (OECD, 2013). Middle-class development is affecting the structure of demand in Emerging Asia. Middle-class households, particularly those in the higher portion of the

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7. Based on data from the Philippine Institute for Development Studies (PIDS).

8. Based on the PIDS database. For data on unemployment rates, start of the new series is 2007 while the latest available data for per capita household final expenditure (in real terms) is 2010.

9. The Family Income and Expenditure Survey (FIES) is the main source of income and expenditure data in the Philippines. It is a nationwide survey of households conducted regularly by the National Statistics Office (NSO).

middle-income range, tend to devote a larger portion of their income to the purchase of automobiles and other major consumer durables. Middle class households also tend to spend a higher portion of their income on education and health services, and to purchase more sophisticated services. A study by the OECD (2011) projected the share of spending by the middle class in various regions. By 2030, the middle class of Asia Pacific countries, including the Philippines, will account for 59% of the world's consumption spending (compared with 28% and 23%, respectively, in 2009). The same study also projected that the role of the middle class in Asian countries will capture 54% of the world's middle class by 2020 and further to 64% by 2030.[10] There is also the growing number of foreign-educated youth who are bringing in skills, capital and new ideas to their home countries, and contributing to the economic and social welfare of their nations. From these individuals will eventually rise a new generation of companies that will embody modern entrepreneurial ideas and insights. As the middle class becomes more educated, they begin demanding more from themselves and the government.

Related to the rise in middle-class is the view that the Philippines has entered the second demographic dividend phase (Mapa, et al., 2010). This dividend results when individuals accumulate savings in their working years to serve as buffer during their retirement years. While accumulation of capital can be used to deal with the lowering of income in the older ages, this capital also influences economic growth, funded by the increase in private household expenditure.[11]

From the supply side, the effects of the increase in households' borrowing capacity have been reinforced by an increase in the availability of housing credit. Property analysts and developers agree that the boom in the real estate sector will remain strong in the medium term due to the strong growth prospects in remittances and business processing outsourcing units and the relatively lower interest rates offered by banks and other financing institutions. This positive sentiment is also echoed by consumers. Based on the BSP's 2013 Second Quarter Consumer Expectations Survey[12], more respondents considered

10. See Kharas, Homi, (2011), "The Emerging Middle Class in Developing Countries," OECD 2011 Report.

11. As Mason (2007) pointed out, it is when society increases its savings rate that more rapid economic growth results — creating the second demographic dividend. Mason estimated that the first and second demographic dividends account for 37.7% of the yearly average per capita growth rate of Japan from 1950 to 1980.

12 . The Consumer Expectations Survey (CES) is a quarterly survey of a random sample of 5,000 households in the Philippines. Results of the CES provide advance indication of consumer sentiments for the current and next quarters and the year ahead as reflected in the overall CI, as well as in selected economic indicators.

2013 as the best time to spend, particularly for big-ticket items such as real property, followed by consumer durables and motor vehicles. Easy installment terms contributed to consumers' favourable buying conditions outlook in the current quarter of 2013 and for 2014. The overall improvement in buying intentions is consistent with the more favourable consumer sentiment on family income and family financial situation for the near term.

Government initiatives to continue with the National Shelter Programme (in rural and urban areas) and availability of affordable housing to underprivileged citizens in the urban centres and resettlement areas as well as to beneficiaries of overseas Filipino workers contributed to the rise of housing loans from government and private social security. It can be noted that public housing finance institutions account for a significant share of aggregate home financing loans, broadly matching the share of housing credit provided by banks. However, as of end-December 2011, housing backlog in socialised, economic and low cost housing was reported at 3,919,566 units. This means that we can see an increase in construction of residential units in the next 18 years, based on the Philippine Housing Industry Plan: 2012-2030.[13]

In anticipation of real estate price increases due to abundant global liquidity towards the emerging economies, including the Philippines, residential real estate lending expanded rather sharply (Figure 2). The real estate sector highly benefits from remittances as more overseas Filipinos and their beneficiaries are purchasing residential units, particularly condominium units in urban areas. According to Metro Manila property agents, 60% to 70% of their sales are from overseas Filipinos and their beneficiaries.[14] Most industry players and market watchers claim that about 30% of remittances are spent in the real estate sector, either to buy a property or to spend on home improvement.[15]

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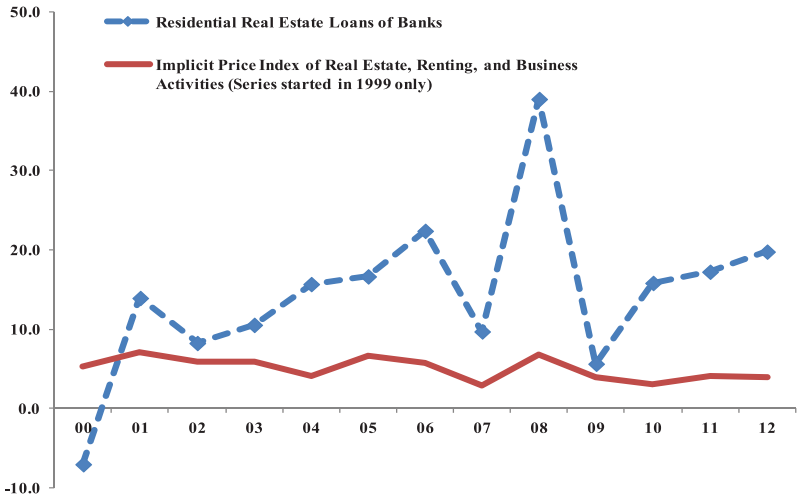
13. The Philippine Housing Industry Plan of 2012 to 2030 is reported by the Sub-division and Housing Developers Association, Inc. (SHDA) in cooperation with the Centre for Research and Communication (University of Asia and the Pacific -CRC-UAAP); HUDCC, SHFC 2011 Annual Report.

14. See, http://www.condiminiums.ph/node/21. .

15. Bayangos, V., (Forthcoming in 2013), "Deeper Attachment of Overseas Filipinos to the Philippines Drives Overseas Remittances," BSP.

Figure 2
Residential Real Estate Loans of Banks and Implicit Price Index of Real Estate, Renting and Business Activities, 2000 to 2012
(Year-on-year Growth, %)



Source of data: NSCB, BSP-SDC.

Figure 2 shows the behaviour of the year-on-year growth of Implicit Price Index of Real Estate, Renting and Business Activities (price index on a national basis and based on National Income Accounts) and outstanding residential real estate loans of banks. For the period 2000 to 2012, the year-on-year growth of the implicit price index of real estate, renting and business services averaged at 5.1%, lower than the average growth of outstanding residential real estate loans extended by banks at 14.4% during the same period. However, there are indications that average land values in high-end residential areas have been rising especially during the last two years (2011 to 2012).

Favourable population dynamics in terms of one of the fastest growing working age populations within Asia should provide a "demographic dividend" to GDP growth. Beginning in 2015, the Philippines' "home" market will expand by a factor of ten as the ASEAN Economic Community comes into full existence (Singh, 2013). The Philippines has vast deposits of mineral wealth and responsible extraction of these natural resources can contribute to growth for decades. The more than 7,000 islands, 35,000 kms of shoreline, coral reefs and natural beauty make the Philippines a natural tourist destination. Finally, the large English-speaking

youthful workforce can help sustain the phenomenal growth in BPOs and large remittances from overseas Filipino workers in the context of an ageing population elsewhere.

Meanwhile, based on the Report by the Housing and Land Use Regulatory Board (HLURB), the total licenses issued by HLURB for condominiums across the country increased, on average, by 19.0% from 2002 to 2011, translating to an annual average growth of 25.4% in units. Moreover, based on the 2013 First Quarter Report by Colliers International, the overall residential licences issued by the HLURB from November 2012 to January 2013 increased significantly by 157%. The latest figures indicate that 70,566 units were licensed during the period, up by 43,112 units compared from the year-ago level. The increase was mainly driven by the growth of licences issued in the high-rise segment which reached 36,140 units. Moreover, with a growth of 104%, the number of socialised housing units has shown signs of sustainability against its double digit contraction in 2011. Meanwhile, the number of licences in the middle-income housing segment has consecutively dropped for the last two years, registering a 9.7% drop in 2012. Licences in the same sector are expected to continually decrease in number as more middle-income developments are targeted to the high-rise residential segment.

In tandem with a boost in real estate sector, the retail market is expected to grow significantly in the near term based on the 2012 Euromonitor International Report on the Philippine retail market. The Report also highlighted that Filipino consumers have become more discriminating. [16] Aside from hunting for the lowest bargains and biggest discounts, customers increasingly demand an overall great shopping experience. This put pressure on retailers into competing by differentiating themselves through an assortment of higher quality merchandise, specific value services, better ambiance, and more convenient payment schemes. In addition, the creation of a wider pool of middle-income customers in urban areas drove growth of non-grocery retailing enabling it to overtake grocery retailing's growth. Supported by the boom in residential developments, consumers' purchase of electronics and appliances, furniture and furnishings, and home care significantly improved.

16. With more money to spend, Filipino consumers have become more discerning, opting for convenience and picking branded goods in modern retail chains, based on Nomura (2013) Research Notes. In its latest research note, Nomura indicated that the consumer sector has seen major developments in the last two years, giving consumers a wider array of options from which to choose.

Although dominated by traditional, independent retailers, the Philippine retailing landscape continued to see the aggressive moves of chained players trying to carve out greater share. The emergence of fast growing cities encouraged chained players to move outside Metro Manila to tap key cities in the provincial areas through smaller brand formats, such as supermarkets and discounters in the case of SM Investments Corp and Puregold Price Club, Inc. Customers have welcomed the outlet expansion of chained players as these promise shopping convenience, assortment of products, and specific services compared to those offered by independent stores.

This section highlights the growing importance of consumer and housing credit in recent years as major financial channels for household spending. In many cases these developments reflect financial sector deepening. As mentioned in Section 1, rapid growth in household borrowing offers both opportunities and challenges. Household debt offers several advantages: better access by households to credit facilities for consumption smoothing, a new source of income for Asian financial institutions, and portfolio diversification for the banking sector. However, the rise in household debt also may come with a downside. Excessive household indebtedness makes households vulnerable to shocks which may lead to financial instability. On the whole, the country's household debt remains manageable. However, given the uncertain pace of the global economic recovery, possible decline in household income and savings especially from those households dependent on overseas remittances may ensue. Under such a scenario, the household sector's earning and debt-servicing capacity may weaken, thus, the situation warrants close monitoring since a continued increase in the households' credit accumulation can affect the balance sheet of the banking system as well as the overall stability of the financial system.

3. A Survey of Related Empirical Studies on the Extent of Household Debt in the Philippines

The findings from the empirical studies so far point to the growing role of private sector bank credit to support economic growth. For instance, Bayangos (2010) examined the role of bank credit channel in transmitting impulses to the real economy in the Philippines by estimating a bank credit behaviour that takes into account not only the monetary variables but also specific banking indicators to monetary policy actions, such as bank capital and non-performing loans. The results indicate a feedback loop from the aggregate demand to bank credit through the financial accelerator and wealth effects. This latter finding underscored the need to look further into the behaviour of credit channel in the Philippines to include banking conditions.

Studies on the impact of Filipino household debt on financial stability remain relatively scant. In the Philippines, the empirical studies focus on the contribution of the household sector to economic growth (Dakila, et. al, 2013). However, only few studies have focused on the impact of household indebtedness on economic growth. One of these studies is the paper by Tan (2008), which discussed consumer credit developments in the Philippines. In his paper, Tan (2008) noted that the growth of retail lending in the country, especially unsecured lending, has been accompanied by high delinquency rates which could be, in part, due to the extension of credit to low-income earners.

Meanwhile, Samarita (2010) observed that despite the increase in credit card and residential real estate loans extended by banks, the BSP measures on credit accumulation and consumer spending were able to help maintain the stability of the Philippine financial system in terms of better loan quality, improved credit environment and increased financial awareness of the household sector. These measures helped maintain the overall stability of the country's financial system during the 2008 global financial crisis.

Nakornthab (2010) analysed the evolution of household debt and its potential consequences on financial stability in the SEACEN economies (Cambodia, Malaysia, the Philippines, Chinese Taipei and Thailand). The findings of this study suggested that the threat of a household-debt-induced instability in Southeast Asia is remote. Most importantly, the levels of aggregate household indebtedness in SEACEN economies did not appear excessive relative to their economic fundamentals. A large part of the developments in household indebtedness in SEACEN economies can be explained by countries' stages of economic development and the contemporaneous macroeconomic and financial environments. At the same time, the shares of household loans in total bank loans were found to be low to moderate in general. Finally, there appears to be no signs of significant stress on either household balance sheets or financial institutions' household credit portfolios. The majority of household loans are in collateralised residential mortgages which have low risk in the absence of a property price bubble. Nevertheless, regional policymakers cannot afford to be complacent, but need to remain vigilant against increases in household indebtedness and financial institutions' household credit risk.

Meanwhile, several approaches have also been used to analyse the role of household debt on growth and financial stability. For instance, Fang (2010) examined Chinese Taipei's household debt to relevant macroeconomic variables usable by policymakers for scenario analysis and stress tests. In essence, Fang's paper constructed two error-correction models for household debt and the NPL

ratio of household loans, respectively, which are linked to the relevant macroeconomic variables. In addition, given the importance of the real estate for financial stability, Fang (2010) conducted stress tests to assess the impact of a fall in real housing prices on the NPL ratio of household loans.

Djoudad (2012) emphasised that the rising level of household indebtedness has created concerns about the vulnerabilities of households to adverse economic shocks and the impact on financial stability. To assess these risks, Djoudad (2012) presented a formal stress-testing framework that uses micro data to simulate how various economic shocks affect the distribution of the debt-service ratio for the household sector. Djoudad introduced a combined methodology where changes in the probability of default on household loans are used as a metric to evaluate the quantitative impact of negative employment shocks on the resilience of households and loan losses at financial institutions.

On a macro scale, Kaufmann and Valderrama (2004) investigated the relationship between interest rate and demand variables to household loans and in particular the asymmetry of the reaction of lending to these variables over the business cycle within a Markov-switching Vector Autoregressive Model. They concluded that spending and interest rate variables have marginal effects on lending. Moreover, Kaufmann (2001) revealed the asymmetric effects of monetary policy on bank lending over the business cycle in Austria. During the economic recovery from Q2 1993 to Q2 1998, the effect of interest rate changes on bank lending was modest, while from Q2 1990 to Q1 1993 interest rate changes had significant, albeit counter-intuitively positive effects on bank lending.

However, a number of econometric studies of other countries' credit variables have been conducted. Papers by Calza, et al. (2003a and 2003b) both estimated a vector error correction model (VECM) for the euro area with the log of the real credit stock, the log of real GDP and cost variables (both a long-term and a short-term real interest rate in the former study and a constructed composite real interest rate in the latter). Meanwhile, Calza, et al. (2003a and 2003b) showed, in line with other studies, that the development of private sector loans in the euro area have been reasonably explained by aggregate macroeconomic variables and that a stable long-run relationship between real loans, GDP and real interest rate variables has been found. Calza, et al. (2003a and 2003b) employed log-linear relationships between a credit variable and its determinants. In their paper they found weak evidence for a log-linear cointegration relationship in econometric specification. Hence, they did not conduct a threshold cointegration analysis accounting for possible nonlinearities in lending.

In a recent work, Lindquist (2012) suggested an operational definition of household debt-sustainability within a broader financial stability perspective. Data at the household age-group level are used to test debt sustainability within a counter-factual history approach. Since the interest rate is the primary policy instrument of an inflation targeting central bank, and since macro prudential policy is aimed at mitigating systemic risk by smoothing credit growth through the cycle and making the banks more resilient, it is particularly relevant to look at the vulnerability to increases in the interest rate and how close to a maximum manageable debt level households are.

The survey so far reveals that the role of household debt on economic growth has risen in recent years. The studies suggest that household leverage can be an early and powerful predictor of crisis. Overall, our findings suggest that focus on household finance may help elucidate the sources of macroeconomic fluctuations.

4. Implications of the Rising Housing and Consumer Credit on Financial Stability

4.1 Preliminary Estimation Suggests Formation of Housing and Consumer Credit Bubble to be Remote

Section 3 suggests that household debt can be an early and a significant indicator of a crisis. As a first approximation, this section attempts to detect possible bubbles in housing, auto loans and credit card receivables using annual data from 1999 to 2012. A bubble occurs when the price of an asset rise sharply at a sustained rate such that it exceeds the valuation justified by macroeconomic fundamentals. A real estate bubble or property bubble, in particular, is characterised by rapid increases in valuations of real estate property, such as housing, until they reach unsustainable levels and then decline. Recognising when a bubble may occur is difficult. However, there are perceived signs or indications in the areas of lending and spending.

Following the general approach of Yiu and Jin (2012), this paper uses unit root and cointegration tests of the prices and values of housing credit by banks as a preliminary step to detect formation of housing bubble. This study modifies the coverage employed by Yiu and Jin (2012) to include auto loans and credit card receivables. This study assumes that when asset prices and their fundamental values are stationary and are found to be cointegrated, the null hypothesis of no bubble is confirmed. The results are presented in Table 2. To check the robustness of results, the trend component of the variables are similarly

evaluated for unit root and cointegration tests to determine possible formation of bubble episodes. The results are shown in Scenario 2 in Table 2.

The use of unit root and cointegration tests to determine the possibility of a bubble episode is a matter of judgment. We can use regression analysis to determine the bubble formation. However, in the absence of longer time series, this study uses unit root and cointegration techniques as reasonable options which will help examine the initial relationship between prices and value of housing, auto loans and credit card receivables. It should be emphasised that the use of cointegration test in this paper is meant to check for robustness of the results of stationarity test due to relatively shorter time series.

It can be recalled that the standard unit root test and cointegration test on the price series and fundamental value series have been widely used for detecting asset bubbles because of their ease of implementation. The unit root and cointegration tests have been applied to detect property market bubbles in different economies for the past two decades. For example, Drake (1993) used this method to study the price boom in the mid-1980s in the UK property market while Arshanapalli and Nelson (2008) employed cointegration test to verify the housing bubble in the mid-2000s in the US housing market. For Hong Kong, Peng (2002) used this method to detect the 1997 bubble in the residential property market. The test has also been extended in different ways over time, such as using panel data and regime switching techniques.

Table 2
Results of Unit Root and Cointegration Tests

Variables/Pair	Scenario 1		Scenario 2 (Trend Component Only)	
	Unit Root Test (Levin, Lin & Chu, using 5% critical value)	**Co-Integration Test (Johanssen System, using 5% critical value)**	**Unit Root Test (Levin, Lin & Chu, using 5% critical value)**	**Co-Integration Test (Johanssen System, using 5% critical value)**
Implicit Price Index of Real Estate [1] and Residential Real Estate Loans	Stationary	Co-integrated	Stationary	Co-integrated
Implicit Price Index of Financial Intermediation and Credit Card Receivables	Stationary	Co-integrated (at 10% CV)	Stationary	Co-integrated
Implicit Price Index on Financial Intermediation and Auto Loans	Stationary	Co-integrated (at 10% CV)	Stationary	Co-integrated

Source: Author's estimates.

Unit root and cointegration group tests are conducted for three pairs of indicators:

(1) Year-on-year growth in Implicit Price Index for Real Estate, Renting, and Business Services and Outstanding Residential Real Estate Loans by Banks scaled to Nominal GDP;

(2) Year-on-year growth in Implicit Price Index of Financial Intermediation and Outstanding Auto Loans by Banks scaled to Nominal GDP; and

(3) Year-on-Year Growth in Implicit Price Index of Financial Intermediation and Outstanding Credit Card Receivables by Banks scaled to Nominal GDP.

The scope and coverage of Implicit Price Index for Real Estate, Renting and Business Activities (RERBA) include ownership of dwellings, real estate, renting and business activities and business process outsourcing (BPOs), other business activities (Non-BPOs; including Renting of Machineries and Equipment, etc.). In an earlier run, this paper included data on Capital Values of Luxury Residential Units and Residential Real Estate Loans to determine whether there is a bubble brewing in the luxury residential units.[18] However, due to shorter

17. Refers to Implicit Price Index of Real Estate, Renting, and Business Activities.

18. In pesos per square meter. Consistent data on Capital Values of Luxury Residential Units started in 2001only, hence, the results are not that robust.

time series, the results are not that conclusive. In the absence of a concrete price index for auto loans and credit card receivables, this paper uses the Implicit Price Index on Financial Intermediation (IPFI). IPFI covers measures through the financial intermediation services indirectly measured (FISIM). FISIM is derived by the difference between the reference rates, the actual interest rate charged on loans and actual interest rate offered on deposits by banks.

The results of the exercise show that all the series in growth and in ratios are stationary at 5% level of significance. The results further suggest that the variables under investigation are integrated of order one, I(1). There are cases when auto loans and credit card receivables and their assumed prices are cointegrated at 10% level of significance (Scenario 1 in Table 2). However, when the trend component is examined, auto loans and credit receivables and their prices become cointegrated at 5% level of significance.[19] On balance, these findings suggest that formation of housing, auto loans and credit card bubble episodes seems to be remote and that banks' exposure to these types of loans do not pose any major threat to financial stability.

It should be noted that the results from the tests need to be interpreted with caution. The presence of a rational bubble may be one of the many possible reasons in the behaviour of indicators. Other possible factors include, for example, the non-stationarity nature of unobservable variables. Moreover, because the method utilises a linear model to detect any non-linear growth of the bubble component, the method's power of detecting explosive bubble behaviour and identifying the origin and collapse of a bubble, particularly the collapse, is limited.

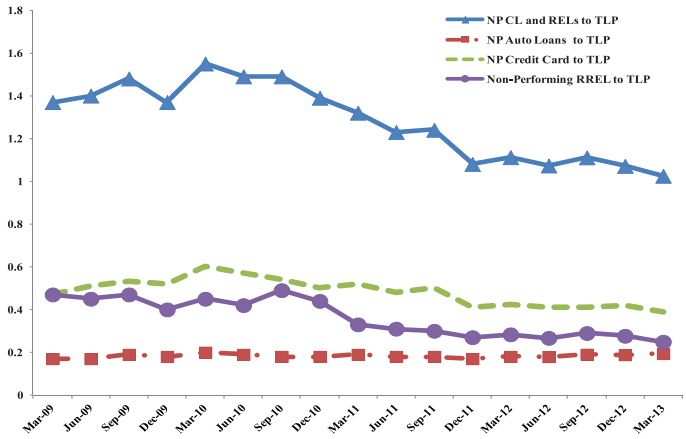
4.2 Banking System's Exposure to Household Sector Appears to be Modest

From a financial stability perspective, observations in the previous section reveal that Filipino households pose minimal threat to the banking system. Figure 3 shows that the banking system's NPL ratios (defined as the ratio of non-performing loans to banking system's total loan portfolio) dropped from 1.4% in March 2009 to 1.2% in September 2011 and further to 1.0% in March 2013 (Figure 3). It can also be seen in Figure 3 that residential real estate loans, auto loans and credit card receivables exhibited decelerating NPL ratios since March 2009. In particular, the NPL ratios dropped from 0.5% in March 2009 to 0.3%

19 Cyclical components are derived using HP filter.

in September 2011 and to 0.2% in March 2013. This means that housing and consumer loans, in general, do not pose any significant threat to the banking system and that there is still scope for the financial institutions to market their products to households.

Figure 3
Philippines: Non-Performing Loans (Residential Real Estate, Auto Loans, Credit Card Receivables) to Total Loan Portfolio of the Banking System (%)



Source of data: BSP-Banking Statistics Website.

It can be recalled that a risk weight of 150% on non-performing loans was imposed when Basel II was implemented in 2007, higher than the 125% risk-weight implemented under the BSP Circular 475, dated 14 February 2005. A higher risk weight of 100% (from 75% under the BSP Circular 475) on NPLs for housing purposes, fully secured by first mortgage on residential property, was also implemented in 2007. These measures kept the non-performing loans of the banking system under manageable levels (Samarita, 2010).

It has also been observed that during periods of risk aversion, which usually coincides with a marked increase in NPLs, banks could resort to credit tightening. During the recent global financial crisis, residential real estate loans decreased markedly while the volume of transactions of 364-day Treasury bills in the primary market went up during the same period. These developments reflected the risk-averse behaviour of banks during the period, such that they reduced their loan

exposure to the household sector and, instead, shifted more of their portfolio to the safer government securities, particularly the longer-term 364-day Treasury bill (Samarita 2010).

4.3 Household Sector Debt Service Ability Remains Firm

The observations in the previous sections so far point to the relatively sound debt service ability of Filipino households. Empirical studies reveal that employment typically affects households' ability to repay loans. A household with unstable stream of income and with insufficient income buffer is expected to experience difficulty in repaying debt obligation which can eventually lead to loan default. Moreover, people may also consider the outlook in employment. This is especially true when new job entrants start to apply for loans on the expectation that they will be able to service their loan obligation by having a stable source of income.

As discussed in Section 2, the Philippine employment rate has remained stable at about 7.0%.[20] In its latest Business Expectations Survey (BES), the BSP revealed that the employment outlook for the next quarters of 2013 remains optimistic.[21] The BSP Survey noted that firms in the services sector are the most optimistic in their employment outlook, consistent with their bullish outlook in the second quarter of 2013. Business sentiment across employment size improves in the quarter ahead. Large-sized firms' business confidence for both the current and next quarters was the most buoyant, followed by those of medium- and small-sized firms. Moreover, firms with expansion plans are broadly steady. The percentage of businesses with expansion plans for the next quarter of 2013 grew by about 30%.

There are also indications that difficulty in debt servicing may be rather limited. Based on the latest Consumer Finance Survey (CSF), many households considered their home as the most important asset they hold in 2009. About 68.8% of households are homeowners (38% own/co-own their house and lot and 30.8% own/co-own their house only). The rest (31.2%) are broken down as follows: renting (13.0%), neither owned nor rented their housing unit (18.0%),

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20. Based on the latest Labour Force Survey, the country's unemployment rate in July 2013 was estimated at 7.3%.

21. The First Quarter 2013 BES was conducted during the January 3 to February 8, 2013. There were 1,555 firms surveyed nationwide. Respondents were drawn from the Securities and Exchange Commission's Top 7,000 Corporations.

and did not respond (0.2%). This finding indicates that a significant number of families lived with relatives or are part of extended families. Most households that owned their house/house and lot acquired the property through cash payment (64.8%) and inheritance/gift (29.6%). Only 6.7% of households borrowed money for their housing. Almost one-half of households with outstanding loans paid their monthly amortisation either ahead of or on schedule, while the other half were behind schedule.

In addition, interest rates and bank lending are effective channels for transmitting monetary policy impulses to the real economy in the Philippines, even in the presence of significant sources of foreign exchange such as overseas remittances (Bayangos 2012). This highlights the potency of monetary policy in enhancing the effectiveness of the transmission mechanism. This underscores the importance of carefully calibrated policy rate adjustments so as not to erode the debt servicing capacity of households. On the other hand, it can be argued that excess household indebtedness may constrain the effectiveness of monetary policy because fewer households are able to borrow for consumption smoothing.

4.4 The Household Sector is Seen as Vulnerable to Interest Rate and Exchange Rate Shocks, Based on the 2011 Income and Outlay Schedule

Given the continued uncertainty in the global economic recovery, possible decline in household income and savings especially from those households dependent on remittances may ensue. Based on the NSCB's latest Household Income and Outlay Schedule, about 73% of household sector's total income in 2011 came in the form of compensation, of which 38% originated from the rest of the world, while 35% was sourced from the domestic economy. This finding suggests that the household sector is vulnerable not only to interest rate shocks but also to exchange rate shocks. Under such a scenario, the household sector's earning and debt-servicing capacity can weaken, thus, the situation warrants close monitoring since a continued increase in the households' credit accumulation can affect the balance sheet of the banking system as well as the overall stability of the financial system.

This section finds that the rising housing and consumer credit in the Philippines from 1999 to 2013 can be plausibly described by fundamentals and that there is a steady long-run relationship between prices and value of housing and consumer credit. Hence, the increasing housing and consumer loans extended by banks especially in recent years do not pose any major threat to financial stability. This finding underscores the relatively firm ability of households to

service its debt and a modest record of banks' non-performing loans on housing and consumer credit. However, the findings in this section imply that the household sector can be exposed to interest rate and exchange rate shocks based on the 2011 Income and Outlay Schedule.

5. Insights for Policy Going Forward

The results in Section 4 indicate that, on the whole, the Philippine household debt remains manageable. However, given the uncertain pace of the global economic recovery, possible decline in household income and savings especially for those households dependent on overseas remittances may ensue. Under such a scenario, the household sector's earning and debt-servicing capacity may weaken. Since a continued increase in the household sector's credit accumulation can affect the balance sheet of banking system as well as the overall stability of the financial system, close monitoring of tail events becomes reasonable.

For its part, the BSP has taken significant stride to pursue measures that will address the possible excesses in financial system's exposure to household sector. Following the Joint Center for Housing Studies and Harvard University's Symposium Proceedings on "Moving Forward: The Future of Consumer Credit and Mortgage Finance," this section discusses the areas where the BSP has taken initiatives to strengthen the surveillance of household debt dynamics and looks at areas where intervention may be considered. These initiatives fall into two areas**:** (a) BSP's role in supporting further initiatives in housing and consumer credit; and (b) support for regulatory reform measures, including improvements in transparency through enhanced information disclosure (Table 3). These reform measures are expected to deepen further the BSP's tool kit in identifying and assessing key challenges and potential risks to financial stability.

Table 3
Policy Initiatives Taken and Possible Areas for Improvement

	Policy Initiatives Taken	Possible Areas for Improvement
A	**BSP's Role in Strengthening Housing and Consumer Credit Initiatives**	
1	BSP prudential measures	Include lower loan-to-value (LTV) ratios for second/subsequent purchases
2	Expanding economic and financial learning campaigns, including consumer education programme	• More frequent financial learning campaigns in remote areas and countries with large overseas Filipinos • Consumer Protection Framework for the Philippines
3	Stronger data surveillance on household debt dynamics	• More frequent release of Consumer Finance Survey • Construction of Residential and Commercial Real Estate Price Indices, housing affordability measures like price-to-income ratio • Compilation of micro data on consumer credit and real estate loans
4	In-depth research/studies on housing and consumer credit	• Conduct studies on vulnerability of household sector, including bank stress tests • Assessment of shadow banking activities in the Philippines
B	**Support for Regulatory Reforms**	
5	Credit Card Industry Regulation Act	• Support for faster deliberation of the Credit Card Industry Act at the Lower and Upper House of Representatives • Tighten rules on credit card disclosure through Implementation of the Truth in Lending Act (Republic Act No. 3765)
6	BSP Charter Amendments	• Faster deliberation of the BSP Charter Amendments at the Lower and Upper House of Representatives • Monitoring of non-banks' loan exposure to household sector

In view of the possible impact of increasing household loans on the stability of the financial system, the BSP implemented several measures to address the risks posed by the banking system's loan exposure to the household sector, particularly through credit card and residential real estate loans.

On credit card receivables, the BSP issued various regulations aimed at protecting both the public and banking industry. The BSP issued on 27 August 2002, Circular No. 349 which significantly tightened the rules on credit card and other lending operations by requiring banks and their subsidiary credit card companies to ascertain that cardholders are capable of fulfilling their commitments and by setting credit limits based on their net take-home pay. On 23 August

2003, through Circular No. 398, the BSP required that the development of consumer credit through innovative products such as credit cards, shall be under the conditions of fair and sound consumer credit practices. Meanwhile, the BSP issued Circular No. 454 on 24 September 2004 and required the alignment of the credit card operations of banks in the country and their subsidiary credit card companies, including affiliates, with global best practices.

With regard to real estate loans (RELs), the BSP has tightened the regulations on real estate lending since June 1997. The prescribed ceiling on commercial bank's loan to the real estate sector is 20% of a bank's total loan portfolio (TLP), exclusive of loans to finance the acquisition or improvement of residential units amounting to not more than PHP 3.5 million. Inclusive of these loans, however, aggregate RELs should not exceed 30% of the bank's TLP.

In addition, the allowable loan value of the real estate used as collateral for commercial bank loans has also been reduced to not more than 60% (from 70%) of the appraised value of the real estate property, except the following which shall be allowed a maximum loan value of 70%, (a) any loan not exceeding PHP 3.5 million to finance the acquisition or improvement of residential units; (b) housing loans extended or guaranteed under the government's National Shelter Programme; and (c) loans extended to housing developers for socialised and/or low-cost housing under the government's National Shelter Programme. Given the recent rise in demand for real estate loans, subsequent purchases of real estate (or second purchases) may be given lower loan-to-value requirement. This measure is meant to discourage borrowers from purchasing real estate properties for investment or for speculation.

On 17 January 2008, the BSP approved the rationalisation of limits on the exposure of universal/commercial banks to the real estate industry by imposing a single 20% overall limit on their real estate lending. The new limit, which primarily serves as a prudential safeguard against over-concentration of credits of universal/commercial banks to commercial lending, is expected to provide these banks with more flexibility in delivering credit to high priority areas, such as infrastructure development and construction of residential properties.

Meanwhile, loans for the construction of public infrastructure are now excluded from the definition of RELs and consequently from the 20% loan limit. Housing loans to individual households, regardless of amount have also been excluded from the limit, as well as loans extended to real estate developers for

the construction of socialised and low cost residential properties under the various government housing programmes. This measure is meant to sustain the government's National Shelter Programme aimed at addressing the country's housing shortage. Meanwhile, RELs to the extent guaranteed by the Home Guarantee Corporation (HGC) or collateralised by non-risk assets shall continue to be excluded from the said limit.

In September 2012, the BSP expanded the coverage of real estate exposures of banks which now includes loans as well as investments in debt and equity securities to finance real estate activities.[22] It should be noted that the BSP imposes a 20% overall ceiling on U/KBs' real estate lending (i.e., 20% of TLP, net of interbank loans). This limit will continue to be implemented during the duration of the observation period of the enhanced real estate exposure of banks. The new guidelines also require the reporting of real estate exposures as share of adjusted capital.[23] Meanwhile, the regulations on real estate exposures will be revisited after sufficient data is gathered from this expanded report to determine any further need to regulate banks' exposure on real estate activities. The expanded report on banks' exposure to real estate activities started with the reporting period last 31 December 2012.

The BSP has taken a proactive stance in embarking on a consumer education programme that aims to improve the basic financial literacy of the public. In line with this programme, the BSP approved in January 2004 the creation of the BSP Consumer Education Committee. The Committee initially addressed the basic financial literacy needs of consumers of financial products and services. This involved familiarising the public on the various banking products and services that they usually encounter in ordinary financial transactions. Moreover, the BSP promotes consumer rights awareness and protection through its linkage with an inter-agency group, ConsumerNet. ConsumerNet is a group of national government agencies that have banded together to facilitate the resolution of consumer complaints and disseminate information regarding consumer rights. The BSP also created the Financial Consumer Affairs Group (FCAG) of the

22. Under the new guidelines, real estate activities shall refer to the construction and development of real estate projects as well as other ancillary services, such as buying and selling, rental and management of real estate properties. This covers a broader scope compared to the definition specified under Circular No. 600 dated 4 February 2008, which limits real estate activities to the acquisition, construction and improvement of real estate property.

23. This is embodied in the BSP Memorandum No. M-2012-046, dated 21 September 2012.

Supervision and Examination Sector (SES) to ensure protection of depositors and investors and enabling the smooth and orderly functioning of the entire financial system.

Consistent with the BSP's objective to raise the public's understanding of economic and financial issues, the BSP launched the Economic and Financial Learning Programme (EFLP) on 28 July 2010.[24] In the same year, the EFLP campaigns were conducted in six key areas of the country: Pampanga, Legazpi, Davao, Bacolod, Dagupan, and General Santos. These activities coincided with the re-launching of the Economic and Financial Learning Centres (EFLCs) in these areas.[25] In 2011, the EFLP campaigns were also held in the following cities: Tuguegarao, Dumaguete, Naga, Zamboanga, Cabanatuan, and Tacloban. In 2012, similar programmes were conducted in Ilocos Norte and in the cities of Roxas, Ozamiz, Lucena, Cagayan de Oro, Iloilo, Cotabato, and Tarlac. Four key component programmes of the EFLP include Public Information Campaign (PIC) on the Role of the BSP in the Economy, Financial Education Expo (Fin-Ed Expo)[26], Financial Learning Campaign (FLC) for overseas Filipinos and beneficiaries. There are also other EFLP component programmes such as the Users' Forum on BSP-produced Statistics.

Stronger data surveillance on household debt dynamics is equally important. Given the limited data on Filipino household's balance sheet, the BSP needs to continuously support the more frequent release of a national survey to obtain a broader picture of the financial sector risks posed by households as well as those to which these households are exposed to. In 2012, the BSP released the first Philippine Consumer Finance Survey (CFS). The CFS generates data on the financial conditions of households, including what they own (financial and non-financial assets) as well as from whom and how much they borrow (sources

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24. The EFLP embodies the BSP's thrust to promote inclusive and proactive economic and financial education among its stakeholders, the underlying philosophy of which is that a citizenry that is well informed in economics and finance is a more effective partner of the BSP in maintaining the effectiveness of monetary policy as well as in ensuring a stronger and safer banking and payments system.

25. The EFLC aims to provide information services, programmes, and materials to introduce the work of the BSP and its role in the Philippine economy and to promote greater understanding of the essential economic and financial concepts and issues.

26.. The Fin-Ed Expo aims to instill awareness about the availability and accessibility of financial education programmes to all Filipinos, increase personal financial consciousness on the values and benefits of being financially empowered, and orientate the public about available financial tools that will help in the promotion of their financial well-being.

of credit and level of indebtedness). It also generates data on the income, spending and insurance coverage of households residing in the National Capital Region and in areas outside the National Capital Region. An indicator that can be particularly relevant for ensuing surveys is the extent of households' non-performing loans to total household loans.

Studies on the vulnerability of the household sector, including banks' stress tests on household income, are priority research areas of the BSP. The BSP is also supporting the construction of a residential real estate property price index for the Philippines. Residential property prices are used to assess and value properties. Valuations of residential real properties are typically used for acquisition and disposal, mortgages, taxation, land and property management, among others. However, there are shortcomings/weaknesses in the compilation of housing statistics. In view of the significant contribution of the sector to economic growth, there is a need to develop a system that will generate an official residential real estate price index for the Philippines which can help the BSP in assessing trends in asset prices and the risk of bubbles in the housing prices.[27]

Regular estimates of housing affordability measures such as price-to-income ratio can be considered. The price-to-income ratio is the basic affordability measure for housing in a given area. It is generally the ratio of median house prices to median disposable incomes of families, expressed as a percentage or as years of income. It is sometimes compiled separately for first time buyers.

Micro data on mortgage finance and consumer credit are important indicators in assessing the build-up of stress before it becomes excessive. There are pockets of data on mortgage finance in the Philippines but the data are unorganised. In most empirical literature, the impact of household indebtedness in the financial sector is assessed using aggregate data. While aggregate data typically give us a useful first approximation, micro data on distribution of debt among household members provide important indicators in determining the financial risk of a given amount of household debt (Dey, et al., 2008; Herrala and Kauko, 2007; Faruqui, 2008). With this in mind, several countries have developed surveys at the household level with the purpose of analysing risk in the household sector. The BSP may also consider gathering data on debt distribution among household members.

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27. Moreover, the availability of data on property prices is one of the information gaps identified in the Group of Twenty (G-20) report following the financial crisis, and was also included in the proposed Special Data Dissemination Standard (SDDS) Plus categories under Financial Soundness Indicators.

The need to bring shadow banking activities more firmly into the regulatory system has been raised in the empirical literature as well as in dialogues/ consultations with the public, but specific aspects of how this should be done are yet to be firmed up. Another specific point raised in the literature is the need for a regulator to have responsibility for overseeing systemic risk. The BSP has taken a crucial role to strengthen the connection between monetary policy and addressing systemic risk. The BSP has established the Financial Stability Committee (FSC) in September 2010 to provide broad directions in identifying and assessing the key challenges and potential risks to the stability of the financial system. The FSC is tasked with monitoring developments and market vulnerabilities which have potential systemic implications on domestic financial markets. The FSC is also in the process of identifying tools and indicators to address macro prudential issues.

To ensure financial stability across a broader spectrum, the Financial Stability Coordinating Council (FSCC) was convened in April 2012 and is composed of the BSP, the Securities and Exchange Commission, the Philippine Deposit Insurance Corporation, the Insurance Commission and the Department of Finance. The FSCC serves as a collaborative venue for discussing financial stability issues and taking necessary actions/steps to address the build-up of system-wide risks.[28]

Support for regulatory reform measures by the BSP is crucially important. Currently under deliberation at the Lower and Upper House of Representatives, the Credit Card Industry Regulation Act is expected to establish fair and transparent practices relating to the extension of credit under an open end consumer credit plan, and for other purposes. In the Upper House, Senate Bill (SB) No. 602, or the Credit Card and other Access Device Act was proposed and filed in August 2013 to regulate the interest rate charged by credit card companies so that a healthier environment will prevail for the benefit of the credit card holders and credit card companies. SB 602 requires credit card companies to provide additional information regarding repayment of the outstanding balance of the credit card holders, accompanied by information on the minimum payment, the number of years and months it will take to repay the balance under a monthly minimum-payment scheme, and total cost to the consumers, broken down as principal and interest payments, of paying the balance in full if no further advances are made. The proposed SB 602 bill imposes a cap on

28. The FSCC has identified the following areas which have systemic implications: (a) corporate leverage; (b) non-bank sources of credit; (c) managing capital flows; (d) financial crisis management; and (e) reforms relevant to the capital markets.

interest rates at 1% per month, or 12% per annum without compounding, and a monthly ceiling of 1% on surcharges or penalties.

Meanwhile, the rules on the Implementation of the Truth in Lending Act (Republic Act No. 3765) were updated in 2011 to ensure consistent and comprehensive application of disclosure rules and a uniform method of computing interest charges for compliance by all banks, non-banking financial institutions and credit granting entities (Circular No. 730 dated 20 July 2011; Circular No. 754 dated 17 April 2012; and Circular No. 755 dated 20 April 2012). These regulations[29] seek to address the transparency and disclosure practices of the entire credit-granting industry that will lead to a more level and robust competitive environment among credit providers and ensure better informed and protected consumers.

In line with its advocacy on consumer protection, the BSP now takes a closer look at covered institutions' compliance with the updated rules implementing the "Truth in Lending Act" (RA No. 3765). Covered institutions refer to banks, non-banking financial institutions and BSP-registered credit-granting institutions that engaged in lending activities. To ensure a level playing field among the credit providers, other regulatory bodies such as the Securities and Exchange Commission (SEC), the Cooperative Development Authority (CDA) and the Insurance Commission (IC) issued parallel regulations mandating institutions under their respective jurisdictions to observe the updated implementing rules and regulations of the "Truth in Lending Act".

For its part, the BSP will continuously monitor covered institutions' compliance to ensure that the updated rules on loan transparency are observed, including the credit card activities of banks. In fact, the BSP tightened watch on credit card operations of banks anew to ensure that consumers are protected amid the increasing use of credit cards. Starting in October 2013, all banks (banks and quasi-banks and their subsidiaries and affiliates with credit card businesses) will be required to submit reports on the scope of their credit card operations, the number of issued and type of cards, fees and charges for transactions and credit limits for the average user. The data will be included in the credit card business activity reports (CCBAR) to be submitted to the regulator every month. These new reporting requirements are part of the BSP Circular No. 812-2013 which was published during the last week of September 2013. In particular, reports

29. The Effective Interest Rate (EIR) calculation models for all types of loans for the guidance of all NBFIs and entities with credit-granting facilities were issued under Memorandum Nos. M-2012-018 dated 19 April 2012 and M-2012-020 dated 25 April 2012.

on credit card issuers and acquirers, cardholders and complaints will have to be submitted monthly, while data on the usage location of credit cards will be submitted quarterly. By following these requirements, banks will disclose the number of cards per network or brand, the types of cards issued, approved applications and the number of cards based on credit limits.

Meanwhile, the BSP is fully supporting amendments to its Charter. The explicit mandate of financial and payments system stability for the BSP merely formalises the practice being adopted by the BSP in recognition of the fact that monetary stability is deeply intertwined with financial stability and that the conduct of monetary policy and financial policy are completely rooted in the stability and soundness of the payment and settlements system. It can be noted that the proposed amendments to the BSP Charter cover the areas of monetary policy and enhancing the BSP's access to information from the non-banking sector. Specifically, the BSP proposes the following amendments:

- Explicit objective of financial stability and payment system stability;
- Removal of the limitation on monetary growth;
- Removal of the restriction on the issuance of securities;
- Authority to create reserve accounts to smoothen the impact of financial losses on its balance sheets;
- Symmetric distribution of gains and losses;
- An increase in its capitalisation; and
- Expansion of the authority of the BSP to obtain data from the non-banking sector.

The primary motivation for the amendments is the maintenance of effective monetary control. Monetary control is a means of achieving the final policy objective of the BSP, which is price stability. Inflation cannot persist without sustained increases in the money supply. It follows then that for the objective of price stability to be achieved, the BSP has to be able to issue effective constraints on monetary expansion. The proposed amendments are sought in order to grant BSP the flexibility to fully utilise the monetary tools at its disposal and to adopt best practices used by other central banks.

With respect to greater power to access data from the non-banking sector, the proposed change is likely to expand and enrich the information set upon which the BSP bases its policy decisions as well as further improve the quality

of research done by the BSP. Moreover, the proposed amendments are expected to strengthen the financial stability function of the BSP by expanding its supervisory function to include additional categories of financial institutions such as credit card companies and money changers. Meanwhile, the proposed creation of reserve accounts and a more symmetric distribution of net income combined with an increase in capitalisation will help to insulate the credibility of monetary and financial policy from the implications of losses to its financial position.

6. Conclusion

This paper examines the developments and policy implications of the rising housing and consumer credit extended by banks to the household sector in the Philippines from 1999 to 2013. Throughout this paper, household debt includes outstanding housing (mainly residential real estate loans) and consumer credit (mainly auto loans and credit card receivables) extended by the banking system. The Philippine banking system is composed of universal and commercial banks, thrift banks, rural and cooperative banks.

The household sector's role has consistently been robust as a driver of the Philippine economy. In recent years, household debt has gained importance in recent years, both in absolute terms and relative to the size of the economy. However, compared with selected countries, the Philippine household debt relative to GDP appears to be modest.

Several factors have contributed to the strong growth in housing and consumer credit, the principal factors include, from the demand side, the relatively lower interest rates in the Philippines, government initiatives to continue with the National Shelter Programme in the urban and rural areas, including the underprivileged citizens and beneficiaries of overseas Filipino workers, optimistic outlook not only on the real estate sector but on macroeconomic fundamentals, and some improvements in employment situation. From the supply side, the effect of the increase in households' borrowing capacity has been reinforced by an increase in the availability of housing construction and finance, buoyant retail market developments and improved consumer confidence.

Moreover, as a first approximation, this paper finds that the rising housing and consumer credit in the Philippines from 1999 to 2013 can be reasonably explained by fundamentals and that there is a stable long-run relationship between prices and value of housing and consumer credit. Hence, the expanding housing and consumer loans especially in recent years do not pose any major threat on financial stability. This finding is reinforced by the relatively firm ability of

households to service its debt and a modest record of banks' non-performing loans on housing and consumer credit. However, the household sector is seen as vulnerable to interest rate and exchange rate shocks based on the 2011 Income and Outlay Schedule.

In general, the Philippine household debt remains manageable. However, the rise in household debt may come with a downside. Given the uncertain pace of global economic recovery, possible decline in household income and savings especially from those households dependent on remittances may ensue. Under such a scenario, the household sector's earning and debt-servicing capacity can weaken. Since a continued increase in the household sector's credit accumulation can affect the balance sheet of banking system as well as the overall stability of the financial system, close monitoring of tail events becomes reasonable.

For its part, the BSP has taken significant and comprehensive stride to pursue measures that will address possible excesses in the financial system's exposure to the household sector. These measures include BSP's prudential measures and reporting requirements, expanding economic and financial learning campaigns, including consumer education programme, stronger data surveillance, and in-depth studies on housing and consumer credit. In the area of regulatory reforms, the BSP supports faster deliberation of amendments to its Charter and the Credit Card Regulation Act. These two reform measures are expected to deepen further the BSP's tool kit in identifying and assessing the key challenges and potential risks to financial stability.

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Chapter 12

MORTGAGE FINANCE AND CONSUMER CREDIT: IMPLICATIONS ON FINANCIAL STABILITY IN SRI LANKA

By
H.P.G.S. Ratnasiri[1]

1. Introduction

1.1 Background

The household sector, which is a part of the real sector of the economy, plays an important role. The household sector acts not only as a surplus sector, but also as a deficit sector. As a surplus sector, households allocate their funds earned as wages or other sources of income to financial assets, such as bank deposits, shares and other securities. As a deficit sector, households receive funds from financial and non-financial institutions to finance consumption and investment or savings. Household debt has increased at a rapid pace over the past few decades, raising concerns about its sustainability and therefore its consequences for the financial system and for the macroeconomy (Debelle, 2004).

The demand for credit may vary considerably across households, depending on the characteristics, such as age, income and home ownership status. The willingness of lending institutions to supply credit will also depend on the household characteristics. It is obvious that the trends in household indebtedness reflect a mix of supply and demand factors. Borrowing by households can increase household welfare whilst providing business opportunities for financial institutions. However, recent experiences show that loose lending standards that led to excessive indebtedness can make households vulnerable to adverse

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1. H.P.G.S. Ratnasiri is Additional Director attached to the Financial Stability Studies, Department of the Central Bank of Sri Lanka (CBSL). This paper is a part of the research project organised by The SEACEN Centre on "Mortgage Finance and Consumer Credit: Implications on Financial Stability." The author would like to thank SEACEN and the CBSL for their assistance in the preparation of this report. The views expressed in this paper are those of the author and do not necessarily reflect the position of the CBSL or The SEACEN Centre.

shocks and thereby increasing the risks to financial system stability. It has been revealed that with the development of new financial products and the evolution of risk management in financial institutions, there has been a tendency to shift risks to the household sector. The authorities thus need to work towards improving the risk management and market infrastructure. In addition, it has been revealed that at times the authorities may need to encourage the widening of safety margins, such as limits on leverage, debt service in relation to income and minimum repayment terms. Countries need to manage household credit at an optimum level so as to minimise adverse implications for consumer welfare and economic growth, which enables the maintenance of financial stability in economies.

1.2 Objective of Study

This study is done as part of the SEACEN research project on "Mortgage Finance and Consumer Credit: Implications on Financial Stability" with respect to Sri Lanka. It is intended to identify the factors associated with the dynamics in relation to household debt, risks emanating from the growth of household debt and their implications for financial stability. Hence, this study would help in suggesting measures to mitigate risks in maintaining financial stability.

1.3 Data

The banking sector data received by the Central Bank of Sri Lanka (CBSL) on quarterly basis and the information of the quarterly survey on "Commercial Banks Loans and Advances to the Private Sector" are used in this study.

1.4 Structure of the Paper

The structure of the remainder of this paper is as follows. Section 2 will focus on Mortgage Finance and Consumer Credit: Developments and Trends in Sri Lanka. The related literature will be discussed in Section 3. Household debt and its implications for financial stability will be discussed in Section 4. Section 5 provides policy recommendations for maintaining financial stability, while Section 6 contains the conclusion to the study.

2. Mortgage Finance and Consumer Credits: Developments and Trends

2.1 Overview

Household credit in Sri Lanka, as a percentage of GDP was in the range of 10% to 14% during the recent past five-year period. The share of consumer

credit as a percentage of total credit was around 25% - 30% and the share of housing loans was around 13% - 16 % during the corresponding period. The banking sector granted Rs. 2,363 billion to the private sector, of which Rs.702.6 billion representing 30% was for consumer credit[2] as at end of December 2012. Among these loans, pawning, consumer durables and credit cards sectors were recorded significant amounts which accounted for 14%, 3 % and 2%, respectively. Loans for housing purposes amounted to Rs.330 billion and it was approximately 15% of the total loan portfolio as at end December 2012. Based on the CBSL quarterly survey on "Commercial Banks Loans and Advances to the Private Sector" data, approximately 45% of the total loan portfolio was for household credit. Meanwhile, the non-banking sector institutions granted approximately 7% of their total accommodations backed by gold loans, which are also considered as consumer credit.

Sources of the consumer credit are financial intermediaries and informal credit institutions. Other than banks, non-banking financial institutions, leasing companies and cooperative societies also engage in this business. However, the major role is played by banks in granting housing loans and property loans under mortgage finance.

2.2 Macroeconomic Conditions

Sri Lanka with a population of 20.5 million has been maintaining an average of 6% growth rate during the previous decade. Per capita GDP at market prices is on an increasing trend and was at US$ 2,923 in 2012[3]. The Sri Lankan economy entered a high growth trajectory since 2009 after ending three decades of civil conflict and is expected to continue on this high growth path, benefitting from the improved infrastructure facilities and favourable macroeconomic fundamentals under a peaceful environment. The Colombo Consumers' Price Index on the basis of which inflation is measured, showed a slight upward movement in 2012 and inflation was 9.2% in 2012, compared to 4.95% in 2011, mainly due to the supply-side constraints and administrative price revisions. It has been revealed that Sri Lanka which recorded double-digit inflation during the war time, has reported single-digit inflation over the past 55-month period.

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2. Loans to consumer durables, pawning, credit cards, personal education, and personal health care were classified in the total consumer credit portfolio.
3. Exchange rate: Sri Lankan rupee/US$ as at 31 December 2013 was Rs.127.60.

The unemployment rate was around 4% in 2012 and it is on a declining trend during the last decade. In the banking sector, the Average Weighted Prime Lending Rate (AWPR) which was on an increasing trend since 2010 was at 14.4%, while the Average Weighted Lending Rate (AWLR) was at 15.98% in 2012. The recent upward adjustment in the interest rates of the banks was due to the ceiling on credit growth, increased policy rates by the Central Bank, tight liquidity in the market, and the increased cost of funds due to the high deposit interest rates.

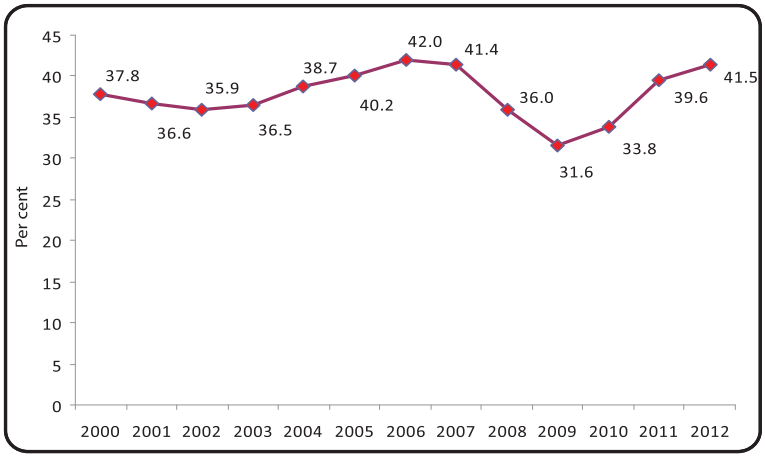
2.3 Household Credit

In Sri Lanka, the total credit granted to the private sector by licensed banks and licensed finance companies as a percentage of GDP, has been increasing above 30% in recent past (Diagram 2.1). Since 2008 it is on an increasing trend and it was at 41% in 2012. Total credit growth was also on an increasing trend since 2009 and reached its peak of 35.6% in 2011 (Diagram 2.2). The CBSL had to impose a ceiling on credit growth in 2012[4] in order to curtail the credit growth. As a result, the total credit growth declined to 20.9% year-on-year in 2012 from 31.7% in 2011.

Household credit (housing, pawning and credit card loans) as a percentage of total credit remained in the range of 20% to 25% during the period 2008 – 2012 (Diagram 2.3).

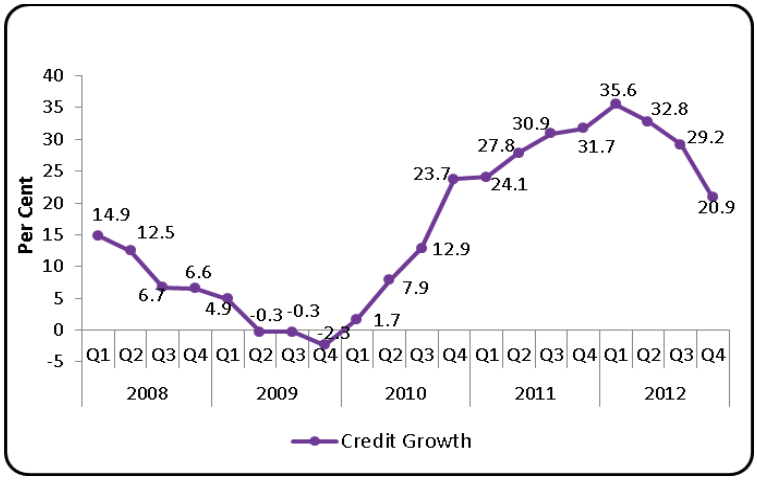
4. Licensed banks were required to limit the growth of their rupee denominated credit in 2012 to 18% or Rs.800 million, whichever is higher, whilst allowing a growth of 23% or Rs.1 billion, whichever is higher, for those banks raising funds from overseas to fund the additional growth of credit. This ceiling on credit growth imposed on licensed banks on 12 March 2012 was allowed to expire on 31 December 2012.

Diagram 2.1
Credit Obtained by Private Sector as a Percentage of GDP



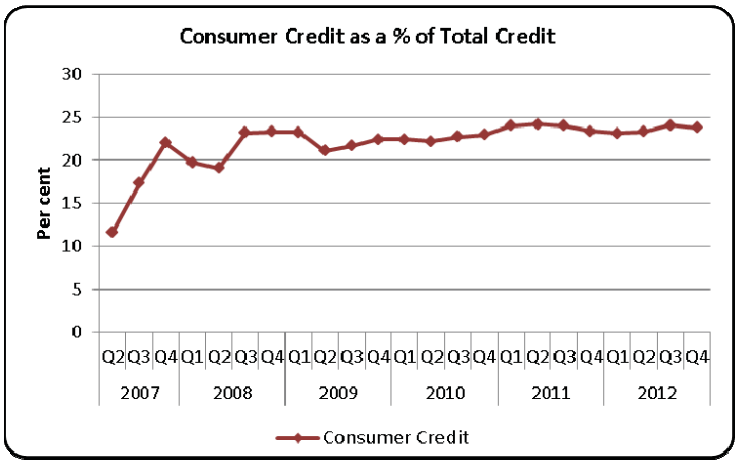
Source: Author's calculations based on CBSL data.

Diagram 2.2
Total Credit Growth (YoY)



Source: Author's calculations based on CBSL data.

Diagram 2.3
Household Credit



Source: Author's calculations based on CBSL data.

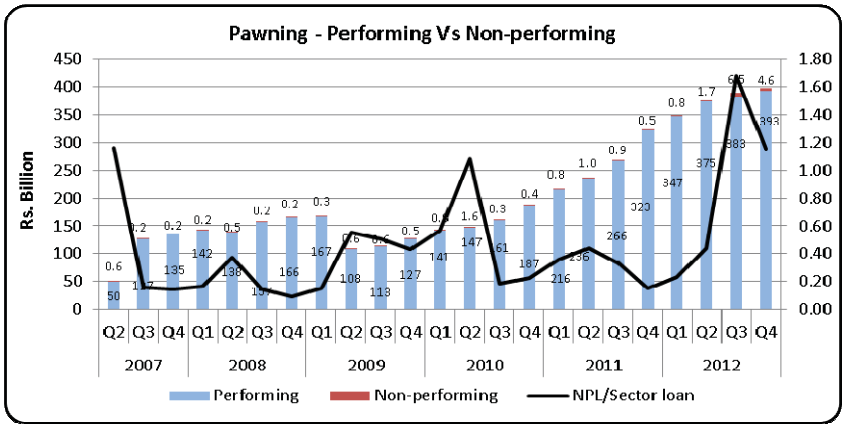
In this section, the housing loans are discussed under mortgage finance while the credit card loans and pawning are discussed under consumer credit. Since the banking sector is dominant in lending to those areas, the discussion is limited to the credit granted by banks. Hence, the banking sector household statistics are mainly used in the study.

As at end of December 2012, banks had provided Rs.703 billion in consumer credit while Rs.330 billion has been provided for housing purposes. The interest rates relating to loans are subject to change over time. In November 2009, in line with the easing of the monetary policy stance, there was a reduction in the short-term market interest rates. With further easing of the monetary policy stance by reducing the policy rates, the CBSL requested banks to reduce interest rates on housing loans to 14% per annum and interest rates on credit card advances to 24% per annum in September 2010. Further, the CBSL requested banks to reduce the interest rates on other loans and advances by around 1% – 2 % per annum by October 2010. Considering the trends in market interest rates in April 2012, the banks were allowed to increase interest rates on housing loans to 16% and interest rates on credit card advances were allowed to be increased to 28% per annum. For the banking sector, interest rates on pawning advances are capped at 20% by a direction issued in 1988.

2.4 Pawning Loans

Pawning loans are secured loans that are offered to people with personal property offered as collateral. They are basically of two types, namely, pawn broking and gold loans. These facilities are provided by banks, non-banking financial institutions and other private sector institutions. Pawn broking activities are regulated by the Pawn Brokers Ordinance No.13 of 1942 while gold loans are regulated by the Mortgage Act No. 6 of 1949[5]. Pawn broking also differs from most banks' lending as it is generally characterised by a high volume of small-size advances made for a relatively short period of time (less than 1 year). A credit evaluation of the borrower is not required nor is the loan monitored. On average, it is considered that 70% of the total loans for pawning were for consumption purposes. Pawning advances issued by the banks are shown in Diagram 2.4.

Diagram 2.4
Pawning Loans



Source: Authors calculations based on CBSL data.

During the period 2007 to 2012, the pawning amount has increased from Rs.50.6 billion to 397.2 billion. It is observed that the non-performing loan ratio for pawning was below 2% during the period 2007 to 2012. In terms of direction, the interest rates applicable to pawning advances which were in the range of

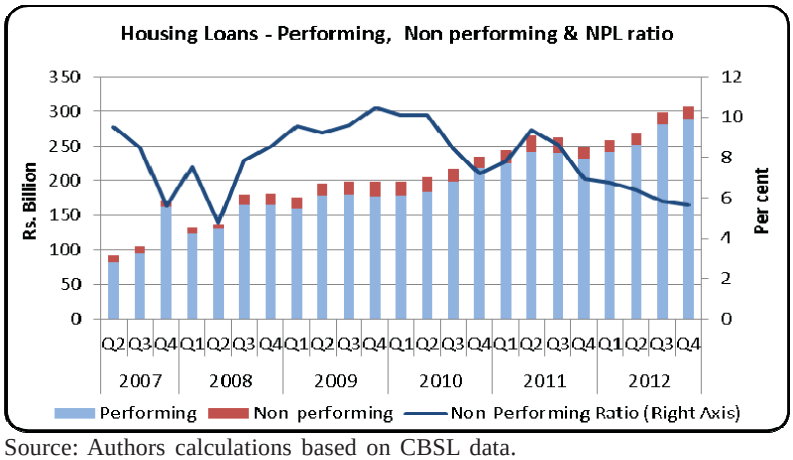
5. If an item is pawned for a loan within a certain contractual period of time, the pawner may redeem to the amount of the interest. If the amount is not repaid when it is due, the pawn broker can recover the advance by auctioning the collateral.

11% - 19% in 2011 have moved upward to a range of 11% – 20% at the end of 2012.

2.5 Housing Loans

Housing loans are considered to be relatively less risky due to their collateralised nature (Fitch Ratings, 2006). As shown in Diagram 2.5, the total housing loans amounted to Rs.91 billion in 2007, which then increased to Rs.306 billion in 2012. The non- performing loan ratio of the housing loan sector which was in a range of 8% -10% in 2008-2010, started to decline since Q3 2010 and it was around 6% as at the end 2012.

Diagram 2.5
Housing Loans



Source: Authors calculations based on CBSL data.

The growth in housing loans is due to favourable demand- and supply-side factors. The major factors relevant to the demand side are: (a) low interest rates over the recent years; (b) rise in income levels; (c) tax concession extended to borrowers; and (d) demand arising from the migrant workers and Sri Lankans residing abroad.

The major factors relevant to the supply side are: (a) emerging competition in the housing finance sector between lenders resulting in lower interest rates and better facilities; (b) an increasing number of new entrants to the housing finance market (both foreign and local banks); (c) the introduction of several

new products by lending institutions to meet the needs of a wide variety of customers (e.g. floating rate of mortgages, expansion of loan portfolios by way of securitisation): and (d) increasing collaboration between lending institutions and housing developers (Piyasiri S.H., 2008).

The annual demand for housing in Sri Lanka is estimated at a rate of 80,000 to 100,000 units and this number is expected to increase gradually in the future. Under the national housing policy of house ownership for all, it has been planned to have 600,000 houses by 2016, fulfilling the government-led Mahinda Chintana development policy framework. The strategy involves both public and privately funded projects with full- or part-sponsored construction or financial assistance provided to individuals. The national housing policy mainly targeted the low- and middle-income families and focused on a multi-dimensional approach to the construction of new houses, rehabilitation of existing housing facilities, relocation from low quality housing, and provision of assistance to low- and middle-income families to construct their houses. In this process, both public and private institutions in the housing finance market are expected to play a dynamic role. It is observed that the state-owned institutions play a major role in the housing finance market in Sri Lanka. These institutions include the State Mortgage and Investment Bank (SMIB), Housing Development Finance Corporation (HDFC), National Housing Development Authority (NHDA), and the National Savings Bank (NSB). These institutions contribute approximately 2/3 of the loans granted for housing purposes. In addition, the state-owned commercial banks and private commercial banks have also entered the housing finance market. Housing loans to employees by keeping the Employee Provident Fund (EPF) balance as collateral have also helped increase the supply of credit by banks. The NHDA and the Urban Settlement Development Authority (USDA) have started projects to increase housing facilities in the country under the Janasevana Housing Development programme. Licensed banks are heavily depending on deposit mobilisation and funds borrowed from the debt market for their mortgage market activities. Meanwhile, the gap between the Average Weighted Lending Rate (AWLR) and the Average Weighted Deposit Rate (AWDR) is still high although it has been declining over the recent past. The AWDR and the AWPR were 10.10% and 14.29%, respectively, by end 2012. However, the lending institutions have to maintain considerable margins due to the high corporate tax of 35%, VAT on banking activities, stamp duties, high overhead cost, etc.

Fixed and floating interest rates which have been offered by the lending institutions made more options available to borrowers in making their financing decisions. Tax incentives to housing loan lenders, borrowers as well as property developers contribute to increase the demand for housing loans. Special corporate

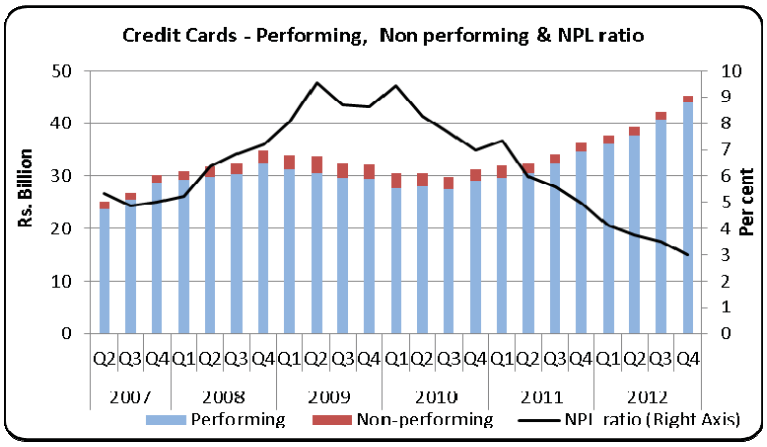
tax rate of 20% which was applicable to specialised housing banks was lifted since 2011, and presently these banks are taxed at 28%, in parallel with other corporates. Tax concessions are available for individuals who obtain loans for housing purposes. Accordingly, interest paid on housing loans can be deducted from statutory income in the tax declaration. Concessions are also available for individuals on capital payment of housing loans and the rental income received subject to some limitations.

2.6 Credit Card Loans

The CBSL through the Payment and Settlement System Act No.28 of 2005 is entrusted with a legislative mandate to implement the national payment system policy and oversee the payment and settlement system in the country to ensure its safety, efficiency, competitiveness and stability. The CBSL has taken steps to execute the Service Providers of Payment Cards Regulations No. 1 of 2009 on 31 July 2009. With effect from 1 March 2010, the guidelines for operations in respect of credit cards have been issued by the CBSL in order to ensure safety, security and efficient operations when a credit card is used as a payment instrument.

The credit card has become the most vital component of business banking and personal money management today. Diagram 2.6 shows that credit card advances have increased since Q4 2010. The outstanding advances in relation to credit cards amounted to Rs. 45.3 billion as at end of December 2012. Non-performing loan (NPL) ratio with respect to credit card loans is gradually declining from Q4 2010, and it stood at 3% in Q4:2012.

Diagram 2.6
Credit Card Advances



Source: Authors calculations based on CBSL data.

The data revealed that the use of credit cards is spreading widely and cards are being used by more and more people representing all segments of society. Therefore, credit cards provided by the banking industry are an emerging source of credit in Sri Lanka.

Table 2.1 shows the total number of credit cards issued in 2012. New cards issued have declined from 2006 and started to increase again from 2009. The growth of new issues is mainly due to the factors such as seasonal offers, attractive promotions, and zero interest instalment plans extended by banks which issue cards.

The NPL ratio for credit card advances has started to decline since Q1 2010 and it is around 3% at the end of 2012.

Table 2.1
Usage of Credit Cards

	2007	2008	2009	2010	2011	2012
Total number of credit cards issued	200,679	122,033	68,430	90,489	148,481	173,017
Total number of credit cards in use	905,561	929,112	840,509	778,544	862,352	952,256
Domestic and international cards	833,998	871,357	782,167	719,773	801,032	892,207
Domestic only cards	71,563	57,755	58,342	58,771	61,320	60,049
Total number of transactions ('000)	18,261	18,867	16,627	16,451	18,609	20,052
Total value of transactions (Rs. mn)	67,091	72,749	65,315	74,917	93,498	111,590

Source: Central Bank of Sri Lanka.

No interest is charged for credit card advances if the full payment is made by the due date. If not, interest will be charged on the daily outstanding balances. Current interest rate for credit cards is around 28%.

3. Review of Literature

There are four widening channels of discussion in the household borrowing and spending literature[6]. According to these channels, the household propensity to borrow mainly depends on the factors such as expected housing tenure, financial constraints, consumption, and ability to provide collateral.

In this section, the relevant literature in terms of housing loans, credit card loans and pawning has been examined. It is observed that not much work has been carried out on household credit in Sri Lanka. It is also clear that in many countries housing booms and busts are directly related with the provision of credit and also it is country specific. Studies revealed that many countries

6. There are four widely discussed theoretical channels: First, for households with a long expected housing tenure that are not financially constrained when working consumption decisions, the propensity to borrow against housing equity for consumption is zero (Sinai and Souleles, 2005). Second, for households that have a short housing tenure and plan to consume part of their housing capital before death, the propensity to borrow against housing equity for consumption is positive (Campbell and Coco, 2007). Third, for credit constrained households, the propensity to borrow against increased housing equity is also positive, since these home owners want to borrow more today to smooth consumption, but are unable to do so because they have limited collateral (Lacovielli, 2005). Finally, households that have a recurring urge for immediate consumption may aggressively borrow against their increased access to housing equity in order to finance current consumption (Laibson,1997) (Bank of Canada, Review, winter 2011-2012).

experienced crises in the mortgage markets but the severity of the impact varied between countries. However, there have been no crises in the housing finance market in Sri Lanka as experienced by the many developed countries.

Ramachandra and Zainuddin (2006) have done a study on the relationship between the Sri Lankan economy and the property market and concluded that in Sri Lanka construction contributes around 7 – 9 % of GDP during the recent past decades. There are upturns and downturns in the construction value-added growth rate while the construction capital formation growth rate follows a similar trend of GDP growth rate. It has also been revealed that the economic policies have influenced the construction sector in the past.

Ratnasinghe and Ali Khartibi (2012) have done a review on the residential mortgage default at the HDFC/EPF security in Sri Lanka, and found that a sizable number of customers who have kept EPF balance as the security for the housing loans granted by the HDFC bank, have a higher probability of defaulting and observed a practice of allowing loans to be recovered from the EPF fund account balance. As a result, the acceptance of EPF balances as a security for housing loans at HDFC has become an opportunity for early withdrawal of EPF funds.

Sadiq Ahmed (2007) et al. has done a study on the opportunities and challenges facing housing finance in Sri Lanka, and found that Sri Lanka has embarked on a gradual progression from a system of direct credit in a higher segmented market towards an integrated market-driven housing finance system. They further found that this transition has included an increased role of private universal banks in the immediate term and a functioning secondary mortgage market in the long run. To mature the home mortgage market, this ambitious agenda wll require a stable macroeconomy with low inflation and careful fiscal policies. It is further evident in this study that housing prices have been increasing and actively fuelling both construction and speculative or investment housing purchases. The increase in real land price is in line with alternative investments in the equity markets. Thus price behaviour appears rational and a bubble in the housing market is not evident. To boost effective demand for homes to match actual needs, housing finance availability is essential.

Further they have found that potentially half of the Sri Lankan population are faced with the housing finance gap. Their view is that the government institutions and state-owned specialised banks are carrying out an outdated mandate single-handedly to bridge the housing and the finance gap. They also found that the amount of funds available for housing finance does not permit a

rapid expansion of the primary mortgage market and a stable basis for active secondary market development. They have also noticed that the banking sector is reluctant to expand mortgage lending to a wider middle income group, perhaps due to lack of bankable opportunities and higher entry costs into the new market segment, or to a lack of sufficient credit information and inadequate credit scoring mechanism to manage risks effectively. They have suggested the importance of having a supportive regulatory mechanism, proper borrower recording system and an improved risk management system for home loans at banks.

Most of the studies on credit card loans are related to the western economies. Credit cards have become a vital component of personal money management and consumer lifestyle management (Garcia, 1980; Holt, 1997; Feinberg, 1980). The literature provided evidence of the availability of credit cards for working and middle class families as credit cards lenders have extended credit to riskier customers (Littwinn, 2008).

Consumers use credit cards, which are issued by financial institutions as a payment device and source of revolving credit (Garcia, 1980; Hirschman, 1981). When consumers use credit card as a mode of finance, credit cards compete with bank loans and other forms of financing (Brito and Hartly, 1995). As a result, the credit card account for a substantial and a growing share of consumers' debt through incremental borrowing (Cannar and Luckett, 1992).

In view of this situation, credit cards have raised two areas of concern, namely, whether consumers are fully aware of the cost and implications of using their credit cards and whether credit cards have encouraged widespread over-indebtedness, particularly among those who are least able to pay. These two issues are identified as related because the lack of awareness may result in over-indebtedness (Durkin, 2000). Hence, an individual level of intellectual understanding and comprehension of credit cards and their use, knowledge and ability compare in literacy on personal financing have become very important (Feinberg, 1986; Mitchell, 1989; Kim, et al. [2005]).

The knowledge that has been gathered through research relating to credit cards ownership and behaviour has been mostly continued in western societies. However, there are few studies done on credit card loans in Sri Lanka. V. Wickramasinghe and A. Gurugamage (2009) explored the issues of credit card ownership and usage practices and demographic and socioeconomic characteristics of credit card users in Sri Lanka. They have identified five broad lifestyles emerging from credit card usage. They are: (a) indebtedness; (b) probability of speed and magnitude of spending could be enhanced in the presence

of credit cards; (c) the habitual use of credit cards could become an addiction and could lead to difficulties in personal financial practices; (d) consumers also value the symbolism expressed by credit cards that allows them to access mainstream contemporary society; and (e) consumers attitudes towards credit card debt have changed considerably as to see credit cards as a convenient and relatively painless way of spending and that debt has become more socially acceptable.

There are only some limited studies done on gold pawning and gold loans in Sri Lanka. The GTZ study in 2002 found that pawn loan defaults are low due to their collateralisation, because gold is auctioned twice a year in the case of default. Their study further reveals that, from the borrowers' perspective, not only is the interest rate important, but also the transaction cost is important. These costs comprise cash expenses for various fees, transportation, and the opportunity cost of time spent on bank visits due to lengthy procedures. With the development of loan schemes, all these costs are relatively high compared to pawn loans.

Pawning is perceived as a more attractive banking activity than lending. There are fewer procedures involved, thus allowing a greater number of transactions per day, and the rate of interest is generally higher. In addition, pawning is seen as safer because the bank holds the collateral, which is generally four times the value of the loan. Customer demand for pawning is greater than demand for loans. This can be explained by the facts such as simplicity of procedures involved in pawning, allowing immediate access to funds, and most customers own the required collateral.

The interest rates charged are market-oriented and not subsidised. For poor clients, having access to financial services outweighs the importance of low interest rates. If the loan is not paid back, the collateral will be auctioned. Should they pay back, they can rely on the bank to renew the loan. Following this approach, they learn to accept responsibility for their actions and to rely upon themselves. As the Asian Development Bank has pointed out, by providing access to financial services, the bank helps the poorer customers to manage their cash flows for consumption, and lends money for productive investment (GTZ, 2002).

4. Mortgage Finance and Consumer Credit: Implications on Financial Stability

It is widely acknowledged that excessive credit growth has preceded the majority of financial or banking crises. A high credit growth can possibly have

an adverse effect on loan repayment. In Sri Lanka, the private sector credit growth lies between the range of 22% - 28% during Q3 2004 to Q3 2007 which is relatively at a high level. The growth in non-performing loans amounted to 30% during 2008 and 2009, whereas in 2007 it was around 6%. Household sector credit is partly responsible for the excessive credit growth as it constitutes the private sector credit. Therefore, this study aims to investigate the impact of household credit on financial stability (mortgage finance and consumer credit) and its implications on the financial stability employing certain quantitative techniques.

4.1 Banking Soundness Index and Household Credit

The CBSL compiles a Banking Soundness Index (BSI)[7] for the banking sector based on quarterly data. In order to explore the relationship between the BSI and household credit (credit cards loans, housing loans, and pawning loans), the ordinary least square (OLS) model was employed, considering annual growth of BSI as dependent variable (PPBSI) and annual growth of credit cards loans (PPCR), housing loans (PPHOU) and pawning loans (PPPAWN) as independent variables.

Model: $PPBSI_t = \beta_0 + \beta_1\ PPCR_t + \beta_{2\ PP}HOU_t + \beta_{3PP}PAWN_t\ +\ E_t$

Results: $PPBSI_t = 0.00178 - 0.0128\ PPCR_t - 0.00015\ PPHOU_t + 0.0006\ PPPAWN_t$
(1.96) (-2.33) (-0.038) (0.323)

T statistics which are shown in brackets indicate that only growth of credit cards is statistically significant at 5% level. It implies that, when credit card growth increases by 1 percentage point, holding housing loan growth and pawning loan growth constant, the annual growth of BSI will go down by 0.01 percentage point. The OLS estimation further shows that growth of credit card loans, housing loans are negatively correlated to the BSI, while the growth of pawning loans are positively related to the BSI. As shown in the Table 4.1, the observed negative correlation of three variables with the BSI is not so high and amounted to -0.57, -0.20 and -0.23, respectively.

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7. A Banking Soundness Index (BSI) is a simple aggregate indicator that can be used to assess the soundness of the banking sector, which is the most important component of the financial system with respect to financial stability. The BSI is based on selected financial soundness indicators representing capital, asset quality, profitability, liquidity and sensitivity to market risk. There are six sub-indices covering capital, non-performing loans, profitability, liquidity, interest rate risk and foreign exchange risk which are normalised before aggregation to achieve the same variance.

Table 4.1
Correlation Matrix

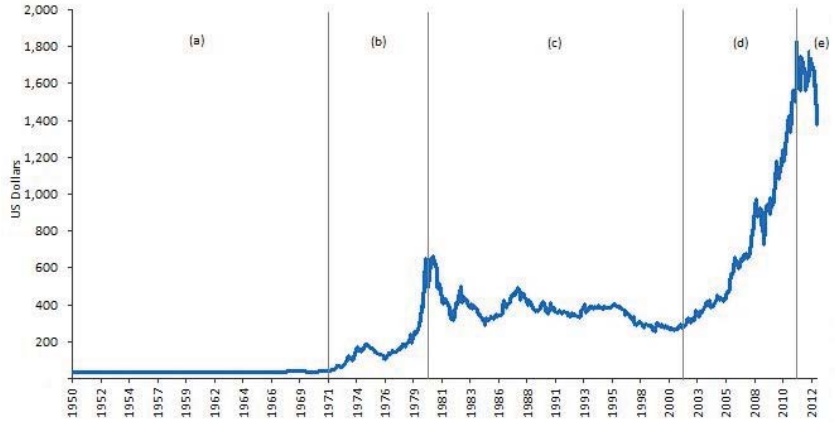
Variable	PPBSI	PPCR	PPHOU	PPPAWN
PPBSI	1.000000	-0.570987	-0.201331	-0.237704
PPCR	-0.570987	1.000000	0.328726	0.519943
PPHOU	-0.201331	0.328726	1.000000	0.096334
PPPAWN	-0.237704	0.519943	0.096334	1.000000

4.2 Gold Loans and Financial Stability

Pawning and gold loans account for about 17% of the total loan portfolio of the banking sector. Some banks in Sri Lanka are heavily exposed to pawning and gold-backed lending. On the other hand, banks do not hedge their gold exposure and impose a relatively a small haircut on the collateral which is in the range of 10% – 20% and which may not be in line with the volatility of gold prices (IMF, 2012).

The movement of international gold prices during 1950 – 2013 shows that there have been fluctuations in prices as shown in Diagram 4.1.

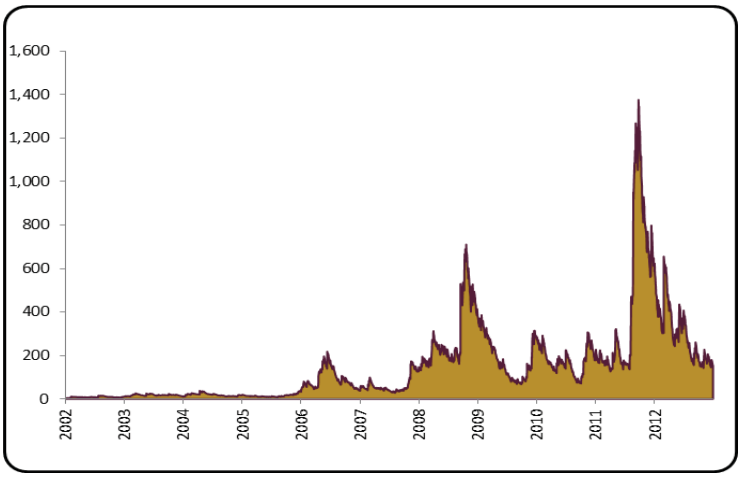
Diagram 4.1
Movement of International Market Gold Prices (1950 – 2012)



Note: Although gold prices have enjoyed a steady growth over the last 4 years, since Q4:2012 it has stated to decline due to several reasons in the international markets, such as the rebounding stock markets (e.g. S&P 500; Dow Jones; NADSAQ, New York; Nikkei 225; etc.), revival of the US dollar, deepening losses in crude oil and declining demand from the Asian markets (India and China), etc. During 2013, the gold prices have declined by 17.6% to US$1,379.95 (per ounce) on 17 April 2013, from US$1,675.35 (per ounce) at end 2012.

Significant price drops can be observed during the period of March – October, 2008 and Sept – December, 2012. Huge decline in price can result in an erosion of collateral value, thereby increasing the probability of default of the sector. There has been a high volatility of gold price in the recent period as shown in Diagram 4.2. The standard deviation that measures the volatility of the price of gold over the last five years was around 20%.

Diagram 4.2
Volatility of Gold Prices



A large drop in gold prices can result in a significant erosion of collateral value, thereby increasing the probability of default. This is based on the assumption that when there is a significant decline in gold prices, a customer would be at an advantage to default the loan rather than redeem the gold which kept as collateral since the same amount of gold could be purchased much cheaper in the market. Banks have seen their NPLs in pawning portfolios increased due to increased defaults and the inability to recover part of capital and or interest by auctioning the collateralised gold.

In Sri Lanka, four banks have reported high exposure to pawning as a percentage of their total lending portfolio. These banks have reported 35.1%, 33.2%, 23.6% and 19.5%, respectively, of their total loan portfolio, and their size in terms of the banking sector assets are 16.97%, 9.87%, 5.92% and 20.49%, respectively. Haircuts imposed on the loan collateral of pawning of banks are at the range of 10% – 20% while interest charge on these loans around 19%

- 20%. It is a common practice in banks to pay the interest component at maturity and roll over the loan for another year. Therefore, defaults of these loans are not considered as NPLs. However, in a situation where the borrower has defaulted and price of gold declined, the banks may have difficulty in recovering the loan and the interest. Stress tests can be conducted on banks which have gold-backed lending portfolios to ascertain the resilience of each institution to gold price shocks as well as default shocks.

4.2.1 Stress Tests on Gold Loans

A stress test was conducted to analyse the impact of the gold price decline on the capital of banks based on the Comprehensive Approach Methodology used by both IMF and BIS (Appendix 1). This approach is used for collateralised transactions to calculate the exposure risk on collateral. Price shocks (price drops) of 15%, 20% and 25% were used and, under each of these price shocks, default shocks (run-off rates) of 15%, 25%, 50% and 100% were tested. The capital adequacy ratio (CAR) was used as a benchmark to measure the resilience.

The stress test results of the banks with high exposure to gold price risk are given in Table 4.2. It shows that none of the banks falls below the minimum CAR of 10% under any assumed run-off rates (i.e., 15%, 20%, 25%, 100%) when the gold prices declined by 15%. However, when the gold price declined by 18%, one bank accounting for 16.72% of banking sector assets, falls below the minimum CAR at 50% run-off rate. Moreover, it shows that 2 banks representing 38% of the banking sector assets fall below the minimum CAR at 100% run-off rate.

Table 4.2
Gold Loan Stress Tests and Capital Adequacy Ratios of Banks

CAR Ratios	15% Price Shock					18% Price Shock					25% Price Shock				
	All Banks	Bank 1	Bank 2	Bank 3	Bank 4	All Banks	Bank 1	Bank 2	Bank 3	Bank 4	All Banks	Bank 1	Bank 2	Bank 3	Bank 4
Pre-shock	**15.0**	**12.1**	**12.4**	**11.3**	**18.7**	**15.0**	**12.1**	**12.4**	**11.3**	**18.7**	**15.0**	**12.1**	**12.4**	**11.3**	**18.7**
Market share based on assets	100.00	16.72	6.07	21.75	9.89	100.00	16.72	6.07	21.75	9.89	100.00	16.72	6.07	21.75	9.89
Run-off rate of:															
- 15 per cent	14.9	11.8	12.3	11.2	18.5	14.8	11.4	12.1	11.1	18.3	14.5	10.3	11.8	10.7	17.6
- 25 per cent	14.8	11.6	12.2	11.2	18.4	14.8	10.9	12.0	10.9	18.0	14.2	9.1	11.4	10.3	16.9
- 50 per cent	14.7	11.1	12.1	11.0	18.1	14.7	**9.6**	11.6	10.5	17.2	13.5	**6.0**	10.4	**9.3**	15.1
- 100 per cent	14.5	10.1	11.7	10.7	17.5	14.3	**7.1**	10.8	**9.4**	15.7	12.0	**(0.1)**	**8.4**	**7.3**	11.5

Under the scenario of 25% drop in gold prices, one bank representing 16.72% of the banking sector assets falls below the required minimum CAR at 25% run-off rate, while two banks representing 38 % of the banking sector assets fall below the minimum CAR at 50% run-off rate. At 100% run-off rate, three banks representing 45% of the banking sector assets fall below the minimum CAR of 10%.

Capital deterioration of banks are shown in Table 4.3, which depicts that when gold price declined by 18% or above for all the default rates, the CAR deterioration is more than one per cent.

Table 4.3
Gold Loan Stress Tests and CAR Deterioration

Run-off Rate (default)	CAR Deterioration (percentage points)		
	15% price shock	18% price shock	25% price shock
15%	0.1	0.2	0.5
25%	0.2	0.2	0.8
50%	0.3	0.3	1.5
100%	0.5	0.7	3.0

The stress tests results show that the overall banking sector is resilient to shocks from drops in gold prices. However, few banks are vulnerable to extreme situations under very high default rates.

4.3 Housing Loans and Financial Stability

In Sri Lanka, as the debt market is not adequately developed, banking credit is the major source for housing finance. The major housing finance institutions depend on deposit mobilisation and funds borrowed from the debt market activities. Most banks use short-term funds from savings and current accounts and deploy these funds to disburse on long-term basis, thereby creating an asset-liability mismatch in banks (Piyasiri, 2006).

The collection ratios of housing finance institutions of Sri Lanka are estimated to be in the range of 80% - 95%. However, in certain cases, the non-performing loans ratio is around 20%. Studies have revealed the following reasons attributing to such high default ratio: (a) political interference in granting loans; (b) defaulting loans being written–off by successive governments; (c) lack of credit information and credit ratings; (d) inefficiencies in government-owned banks; (e) loop holes in the regulatory process in taking actions against default customers; and (f) social and cultural problems as auctioning of residential house would be difficult due to social pressure.

However, the NPL ratios of most lending institutions are relatively better and most banks follow provisioning directions mandated by the central bank. Currently, the licensed commercial banks and licensed specialised banks are required to provide 20% for sub-standard category, 50% for doubtful category, and 100% for the loss category, after deducting the realised value of the collateral giving due consideration to the minimum haircut of valuation and the age of NPL.

Most of the housing loans are mortgaged and when the borrower defaults the lending institutions are eligible for Parate Rights, i.e., the right of the lending institutions to sell the debtors' mortgaged assets without intervention of the court. Those realised collateral can be used to recover the defaulted loan. However, the enforcement of parate execution rights do not seem to be very effective (Piyasiri, 2006). The exercising of parate rights which was applicable to the recovery of mortgage loans irrespective of loan size was limited to mortgage loans of above Rs.5 million capital outstanding since 2011. Social and political pressure has been brought upon the state-owned banks to abstain from parate action.

Proper property valuation is an important factor in determining the accurate loan amount extended to the prospective borrowers by the financial institutions. It has been revealed that there are some inconsistencies in property valuation.

Sometimes this has resulted in unethical property valuation. In the absence of proper standards of valuation, the adverse implications may be reflected on the accounting statements, especially in the areas of fair-value calculations of investment properties.

Due to such reasons, the estimated value of the property can be artificially high, resulting in higher loan values. When the market value of the property declined, the collateral value also will decline simultaneously and, in a case of default, the financial institutions will find it difficult to recover the loan. Hence, the housing values can drop due to various reasons, including low demand, over-valuation of property, etc.

4.3.1 Housing Loans and Stress Tests

Stress tests were conducted for 10 banks which have housing loan portfolios representing 86.1% of total assets of the banking sector to ascertain their resilience to the decline in house prices.

The first scenario is a drop in housing value by 25% and with 25% haircut for the loan. The impact on the CAR of banks was tested with the default rate of 15%, 25%, 50% and 100%. The stress test results show that all the banks are resilient to that shock by maintaining CAR above 10% levels.

Table 4.4
Result of Stress Test: A Drop in Housing Loan Value by 25% & with 25% Haircut on Capital Adequacy of Banks

Banks	Market Share Based on Assets	CAR Pre-shock	CAR Post-shock			
			15%	25%	50%	100%
Bank 1	20.49	11.3	11.2	11.2	11.0	10.7
Bank 2	16.97	12.1	11.9	11.8	11.4	10.7
Bank 3	9.91	13.0	13.0	13.0	12.9	12.8
Bank 4	8.57	15.0	14.9	14.8	14.7	14.4
Bank 5	2.35	15.1	15.0	15.0	15.0	14.9
Bank 6	3.14	12.4	12.4	12.4	12.3	12.2
Bank 7	5.92	12.4	12.3	12.3	12.2	12.0
Bank 8	3.60	13.7	13.6	13.6	13.5	13.2
Bank 9	5.28	14.5	14.4	14.4	14.4	14.4
Bank 10	9.87	18.7	18.3	18.0	17.3	15.9

The second scenario is a drop in housing value by 30% and with 25% haircut for the loan. The impact on CAR was tested with default rate of 15%, 25%, 50% and 100%. The banking sector as a whole is resilient to that shock by maintaining capital adequacy ratio at above 10% level, except for one bank representing 16.97% of banking sector assets that is not resilient.

Table 4.5
Result of Stress Test: A Drop in Housing Loan Value by 30% and with 25% Haircut on Capital Adequacy of Banks

Banks	Market Share Based on Assets	CAR Pre-shock	CAR Post-shock			
			15%	25%	50%	100%
Bank 1	20.49	11.3	11.2	11.1	10.8	10.2
Bank 2	16.97	12.1	11.7	11.5	10.8	9.5
Bank 3	9.91	13.0	13.0	12.9	12.9	12.7
Bank 4	8.57	15.0	14.8	14.7	14.5	14.1
Bank 5	2.35	15.1	15.0	15.0	14.9	14.8
Bank 6	3.14	12.4	12.4	12.3	12.2	12.0
Bank 7	5.92	12.4	12.3	12.2	12.1	11.7
Bank 8	3.60	13.7	13.6	13.5	13.3	12.8
Bank 9	5.28	14.5	14.4	14.4	14.4	14.3
Bank 10	9.87	18.7	18.0	17.5	16.3	13.8

The stress results further show the capital deterioration of the banks under a 25% price drop of property is less than 1%. However, under the scenario of 30% price drop in property value and a 100% default situation, the capital deterioration of banks is above 1%. So, it can be concluded that the banking sector in Sri Lanka is resilient to a drop in property prices.

Table 4.6
Housing Loan Stress Tests and CAR Deterioration – (percentage points)

Run-off rate Default	25% price drop	30% price drop
15%	0.1	0.2
25%	0.2	0.3
50%	0.3	0.7
100%	0.7	1.3

The stress tests results reveal that the entire banking sector is resilient to declining house-value shocks. However, only few banks are vulnerable to extreme situations under very high default rate conditions.

4.4 Credit Card Loans and Financial Stability

Credit cards loans account less than 2% of the total loan portfolio of the banks. As at the end of 2012, there were 12 credit card issuers licensed by the CBSL, and the NPL ratio of the credit card loans was around 3% (refer Chart 2.6). Since the exposure is very small and NPL is at low level, it can be concluded that credit card loans do not have significant adverse effect on the deterioration of capital of the banks in Sri Lanka. (Refer to Table 2.1 in Section 2)

4.5 Household Budget Data

Monitoring the household sector financial position is important in financial sector stability assessment. When household default is high, it will badly affect the asset quality of the banking sector. As an example, Australia, Netherlands, Singapore, and United Kingdom conduct periodic surveys to monitor their household conditions on financial stability. They employ the balance sheet approach to monitor the financial condition of households which will show whether the household assets are adequate to cover the household liabilities periodically.

5. Policy Recommendations

The CBSL has been maintaining the regulatory structure of the banking sector in line with the developments in the international regulatory framework. A consultation paper was issued in April 2012 to the licensed banks, under Pillar 2 of the Basel II framework which is known as the Supervisory Review Process. This was to ensure that the banks maintain adequate capital above the minimum capital requirement in order to cover their exposures to all risks through the adoption of an internal capital adequacy assessment process, Draft guidelines for the adoption of the Sri Lanka Accounting Standards (LKAS) 32, 39 and the Sri Lanka Financial Reporting Standards 7 and draft formats for the publication of quarterly and annually financial statements were issued in April 2012. A summary of the guidelines and regulations relating to Mortgage Finance and Consumer Credit were issued and is presented in Table 5.1.

5.1 Pawning Loans

Pawning advances of the banking sector have doubled since 2010 and contributed over 25% during the period. The changes of business strategies of some banks' zero capital allocation for pawning exposure; customer-friendly, quick-loan approval process; and the prevailing high gold prices were the major contributory factors for such growth. However, the growth in pawning advances dipped slightly during 2012 with the introduction of a credit ceiling on rupee credit loans.

The quality of the pawning portfolio has substantially deteriorated during the late 2012. Meanwhile, few banks have shown relatively high concentration on pawning advances in response to the prevailing high gold price in the market. Moreover, it is observed that pawning advances are rolled-over / re-scheduled upon the receipt of the interest components. This practice may cause the underestimation of pawning NPLs. Following the recent fall in gold prices, the banks have already taken a series of precautionary measures. According to the data, the banks have not yet encountered any capital losses in recovering NPLs.

The following recommendations can be made to mitigate the risk of gold loans arising from drop in gold price:

i) The lending institutions can impose a cap on the Loan-to-value (LTV) ratio. This will help the institutions to be better equipped to respond to the gold-price-related shocks.

ii) Banks may make provisions on potential losses on non-performing pawning advances. This will cover any potential losses on the non-performing pawning advances.

iii) Banks make general provisioning for performing advances. This will ensure that there is enough capital to cushion any excessive risks.

iv) Reduction of concentration in pawning advances to a reasonable level. This should be decided based on the respective banks' risk management framework.

v) Effective monitoring of the pawning business activities to be observed so that gaps in relation to internal controls, staff awareness, and use of technology can be identified.

5.2 Housing Loans

The NPL ratios of most of the lending institutions are in a relatively better position. The banks follow the provisioning direction issued by the CBSL. At present, the licensed commercial banks and licensed specialised banks are required to provide a provision of 20% for sub-standard category, 50% for doubtful category, and 100% for the loss category after deducting the realisable value of the collateral, giving due consideration to the minimum haircut of valuation and the age of the NPL.

In terms of the amendments to the 2011 Banking Act, banks are not entitled to obtain possession of foreclosed property when the loan value is less than Rs. 5 million. As most of the loans granted by the lending institutions are not so large, such loans may be exempted from the parate execution. Therefore, the effectiveness of parate execution in the recovery process may not be effective. It seems that the decision for the recovery of mortgage loans irrespective of loan size was limited to mortgage loans of above Rs. 5 million capital outstanding since 2011 obstructs the expansion of the mortgage market in Sri Lanka. As an example, in some housing banks which mainly cater to the low- and middle-income sector, the average loan size is Rs 300,000 and almost 99% of the loans are less than Rs 5 million. Therefore, these banks are faced with an extra challenge in maintaining their asset quality. The authorities should re-consider reinstating the parate execution rights in full or reduce the applicable limit to Rs. 1 million in loan value.

Proper valuation of property is critical for lenders as it provides a basis for the determination of collateral value. It has been revealed that there are some inconsistencies in property valuation. (where finance is provided.) Therefore, it is important to regulate the valuers and have a set of valuation standards in line with the international valuation standards, which can enhance the credibility of the financial statements. Maintaining a central data base of land price will also facilitate the valuation and lending process in the mortgage finance market.

The mortgage market growth is mainly dependent on the availability of long-term funds. In order to overcome the lack of funds for long-term housing loans, banks can develop credit instruments backed by their mortgage portfolio, thus enabling these institutions to issue mortgage-backed securities to raise long-term funds. Existence of a proper yield curve will facilitate such activities by providing a conducive environment. At the same time, risk mitigation techniques such as derivative instruments are to be developed. The expansion of mortgage insurance is also important in enhancing housing finance.

5.3 Credit Card Loans

Banks need to have a proper assessment on the credit worthiness of their borrowers. Therefore, in order to achieve higher credit quality, it is necessary for the banks to maintain procedures for investigating the past track records of borrowers when issuing cards to new customers and when enhancing credit limits to credit card holders. The effective functioning of the Credit Information Bureau (CRIB) will facilitate the evaluation of creditworthiness of customers. Meantime, the banks also need to take steps to avoid frauds and malpractices of credit card usage.

5.4 Creditworthy Borrowers

In addition to strengthening the risk management framework, lending institutions need to be cautious in selecting creditworthy borrowers. The lending institutions themselves need to develop methods such as internal rating systems, financial scoring models and so forth to identify creditworthy retail and corporate borrowers. Meanwhile, the CRIB need to expand the scope of its operation to include other credit providers, thereby including SMEs and a wide potential pool of users, such as insurance providers, utility and superannuation funds. It will facilitate the identification of creditworthy borrowers. This will also facilitate the expansion of demand for credit.

5.5 Household Budget Information

Conducting household surveys will provide information of household financial situation which will facilitate the assessment of financial stability. Some of the important policies taken on Household credit are given in Table 5.1.

Table 5.1
Policies Taken

1	The CBSL issued guidelines to banks with respect to interest rates. In line with the easing of the monetary policy stance which led to a reduction in the short-term market interest rates in November 2009, the CBSL requested banks to reduce interest rates for credit cards to a range of 24% to 36% and to explicitly publish it in their customer statements.
2	Effective 1 January 2012, all licenced banks were required to maintain 0.5% general provision on the total outstanding amount of their on-balance sheet personal loans accounts (PLAs) and special-mentioned on-balance sheet credit facilities net of interest in suspense, by reducing the existing 1% general provision to 0.5% at a rate of 0.1% per quarter during the five quarters commencing 1 October 2010.
3.	With further easing of the monetary policy stance by reducing the policy rates, the CBSL requested banks in September 2010 to reduce interest rates on housing loans to 14% per annum and interest rates on credit card advances to 24% per annum.
4	The CBSL issued a regulation on interest rates on credit card and housing loans. Accordingly, the licensed banks were allowed to increase interest rates on housing loans to 16% per annum and credit card advances to 28% per annum with effect from 17 April 2012.
5	The Monetary Board, at its meeting dated 22 October 2012, considered the high interest rates charged on pawning advances by private banks compared to the state banks and decided inter-alia that the interest rate charged by licensed banks on pawning advances should not exceed 20% per annum pursuant to Section 104(1) (b) of the Monetary Law Act.
6	By the Circular dated 28 August 2012 issued by the Ministry of Finance and Planning, all state banks were instructed to defer the recovery of loans extended for agricultural purpose, including the pawning advances, till the MAHA season due to severe drought in the several areas in the country. Accordingly, some banks deferred their recovery of pawning advances of around Rs. 57.3 billion till the MAHA season. The quality of the pawning portfolio of the banks may further deteriorate, if the banks encounter difficulties in recovering these exposures even after MAHA season.
7	In order to curtail the high credit growth, a ceiling was imposed on the growth of rupee credit granted by licensed banks pursuant to the Monetary Law Act Order No.1 of 2012 on 12 March 2012, and it was allowed to expire on 31 December 2012.

6. Conclusion

The household sector in Sri Lanka is closely associated with the financial system, as it plays the dual role of savers and borrowers of funds, with the financial sector serving as intermediary. Household sector credit in terms of housing loans, pawning loans and credit card advances account approximately 20% to 25% of total loan exposure of the banking system in Sri Lanka. Therefore, changes in the household sector financing wealth have significant implications in terms of their debt repayment capacity and the overall stability of the financial system. At present, the Sri Lanka household debt remains manageable and is not expected to pose any significant threat to the overall stability of the country's financial system. Specially, the banking institutions have managed to maintain household credit well under their risk management framework. However, given the greater integration and dynamic inter-linkages among the sectoral balance sheets, deterioration in the balance sheet of households can weaken the banking system and pose a threat to financial stability. Therefore, banks need to be

vigilant and watchful over the current developments and strengthen their risk management strategies in line with the potential internal and external developments.

The measures taken by the CBSL as the regulator were able to help maintain the stability of the financial system in terms of better loan quality, improved credit environment and increased financial awareness of the household sector. It is important to investigate the soundness of households whether they have the ability in meeting their financial obligations, qualify for new credit and sustain their traditional role as consumers. Therefore, it is necessary to investigate the household balance sheet as a framework for understanding the determinants and implications on household financial stability.

The home mortgage market is growing and deepening in Sri Lanka. The banking sector has a limited potential to fuel the housing finance boom. Meanwhile, funds necessary to fill the gap are not likely to be found outside the banking sector. Therefore, banks can explore the possibility of creating new loan products. As an example, steps can be taken to promote insurance-related products, capital market products and banking deposit products to expand the depth of the housing market. A well established yield curve for government bonds facilitates financial market development and helps price the various financial instruments, including mortgages and mortgages-backed securities. Banks also need to launch and promote a customer education programme to ensure that households are better informed about financial products. It is also important to strengthen the legal infrastructure in order to facilitate more effective management of retail credit risk.

Abbreviations

AWDR	Average Weighted Deposit Rate
AWLR	Average Weighted Lending Rate
AWPR	Average Weighted Prime Lending Rate
BSI	Banking Soundness Index
CAR	Capital Adequacy Ratio
CBSL	Central Bank of Sri Lanka
CRIB	Credit Information Bureau
EPF	Employees Provident Fund
GDP	Gross Domestic Product
HDFC	Housing Development Finance Corporation
IMF	International Monetary Fund
LKAS	Sri Lanka Accounting Standards
LTV	Loan to Value
NHDA	National Housing Development Authority
NPL	Non-performing Loan
NSB	National Savings Bank
SEACEN	South East Asian Central Banks
SMIB	State Mortgage and Investment Bank
OLS	Ordinary Least Squares
VAT	Value Added Tax

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Appendix

Calculation of Exposure Risk on Collateral

- The comprehensive approach methodology to credit risk mitigation was followed. (BIS Basel II, paragraph 147)

- For a collateralised transaction, the adjusted exposure amount is calculated as follows:

E* = max { 0,[E *(1+He) – C *(1-Hc)] }

Where:

E* = the adjusted exposure amount
E = current value of the exposure
He = haircut appropriate to the exposure
C = the current value of the collateral
Hc = haircut appropriate to the collateral *(shock to collateral value*)

Chapter 13

MORTGAGE FINANCE AND CONSUMER CREDIT: IMPLICATIONS FOR FINANCIAL STABILITY IN CHINESE TAIPEI

By
Pi-Chun Hsu and Yihming Yu[1]

1. Introduction

In the past 15 years, Chinese Taipei has experienced several headwinds concerning mortgage finance and consumer credit. For example, as many banks promoted card business aggressively during 2002-2005, consumer credit grew rapidly. The significant surge in credit growth in such a short period of time increased the vulnerability of the economic and financial system to unanticipated shocks. The NPL ratio of credit cards and cash cards hit a historical high when the boom busted in 2005. The spillover effect of a lending boom-bust in card loans was that the banks' attitude toward consumer lending became more conservative. Excessive indebtedness led to rising credit cost and caused tighter lending standards, contracting credit, further credit loss, prolonged balance sheet adjustments, and brought risks to the broader financial system and damages to the real economy. More broadly speaking, such lending booms and busts can be viewed as part of a more general problem involving the build-up and unwinding of financial imbalances.

The mortgage finance and consumer credit have quite distinctive characteristics. For example, the lending period of mortgage finance is usually longer than that of consumer credit. In addition, collateral for mortgage finance is required by the banks, whereas consumer credit usually unsecured. Such distinguishing characteristics may give us useful information to analyse household debt more accurately. Therefore, this paper will explore the impact of the mortgage finance and consumer credit on financial stability, respectively. It first

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1. Authors are Senior Economist and Junior Specialist of Department of Economic Research of the Central Bank, Chinese Taipei The views expressed in this paper are exclusively those of the authors and do not necessarily represent the view of the Bank. We would like to express our thanks to Department of Economic Research and Department of Financial Inspection in the Bank for their invaluable feedback and support. However, all remaining errors are our exclusive responsibility.

focuses on the trends and developments of mortgage finance and consumer credit in Chinese Taipei. The past incidents of household indebtedness enabled us to learn how to deal with lending booms and busts and to avoid them from happening again. In addition, this paper also attempts to employ an econometric model to identify the factors behind the build-up of indebtedness and how the factors impact financial stability.

Preventing financial and macroeconomic instability associated with consumer lending requires policymakers to ensure that lenders have proper risk management systems in place and consumers have sustainable debt burdens. Policymakers also need to learn more about the risks arising from consumer lending and respond with enhanced supervisory capacity, better market infrastructure, and appropriate prudential measures.

The remainder of this paper is organised as follows. In Section 2, we will discuss the recent trend of mortgage finance and consumer credit in Chinese Taipei. Section 3 is a review of the related literature with a particular focus on Chinese Taipei. Section 4 will introduce the research methodology and exhibit the empirical results to help us examine the implications for financial stability. Section 5 will identify the policy gap that needs to be addressed and present the policy measures taken by the central bank and government authorities. Section 6 concludes this paper with a summary of this study.

2. Mortgage Finance and Consumer Credit: Developments and Trends

2.1 Recent Trends of Mortgage Finance in Chinese Taipei

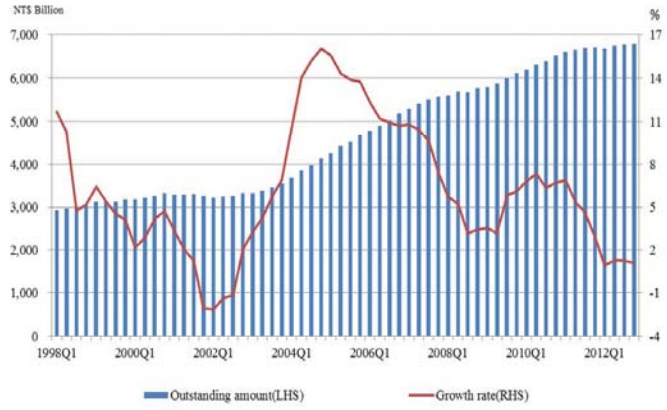
The average annual growth rate of mortgage loans[2] extended by banks for the period 1998-2012 was 5.83%. Figure 1 displays the trends of the outstanding amount and the growth rate of mortgage loans. As the mortgage loans accounted for about 70% of household debt, the trend of household debt[3] to GDP ratio was similar to that of mortgage loans. The average household debt to GDP ratio for the period 1998-2012 was 81.08%.

2. The mortgage loans cover real estate related credit extended by banks to individuals, including housing loans, loans for housing repair and construction loans.

3. The household debt covers loans and credit card revolving credit extended by financial institutions (including monetary financial institutions, life insurance companies, securities finance companies, and securities firms) to individuals.

After the Asian financial crisis, bank loan growth slowed as the weak economy curbed corporate loan demand, and the correction in the property market dampened the demand for mortgage. In addition, the construction developers suffered from the financial crisis and the house price slumped. The growth rate of mortgage loans declined significantly from 11.68% in Q1 1998 to -2.15% in Q1 2002. Mortgage loans began a fast rise from Q2 2002, owing to falling interest rates, tax deduction and continuation of the government's preferential mortgage programmes. Because of the fast growth of mortgage loan between 2002- 2004, the growth rate of mortgage loan began to move towards the normal tendency from Q4 2004. Following the global financial crisis in the second half of 2008, the growth rate declined further.

Figure 1
Outstanding Amount and Growth Rate of Mortgage Loans



Source: Financial Statistics Monthly, CBC.

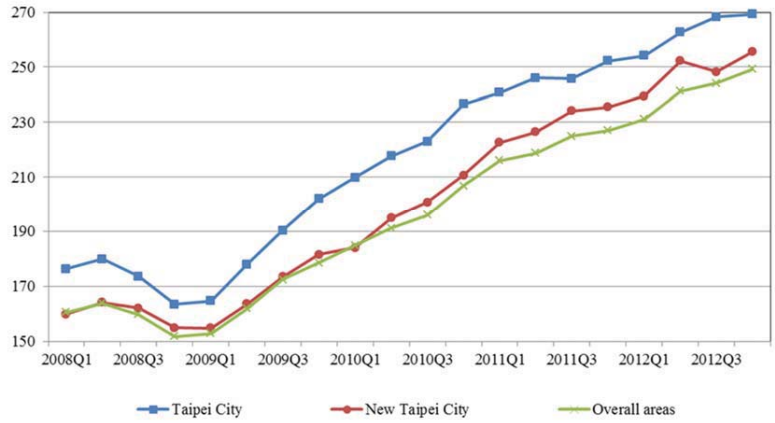
Since mid-2009, bolstered by the economic recovery, low interest rates and a capital inflow, housing prices soared on growing demand. From Q1 2009 to the end of 2010, existing home prices rose 25% with geographical variation. The increase in housing prices has been more pronounced in the Taipei metropolitan area[4] (Figure 2), adding to the burden of homebuyers. Moreover, the price-to-income ratio and the debt-to-income ratio for the Taipei metropolitan

4. Metropolitan Taipei or Taipei metropolitan area generally refers to Taipei City and several major districts within New Taipei City.

5. The price-to-income ratio of the Taipei metropolitan area was 11.85, whereas the rest of the areas of Chinese Taipei was 8.9; the debt-to-income ratio of the Taipei metropolitan area was 47.15%, whereas the rest of the areas of Chinese Taipei was 36%.

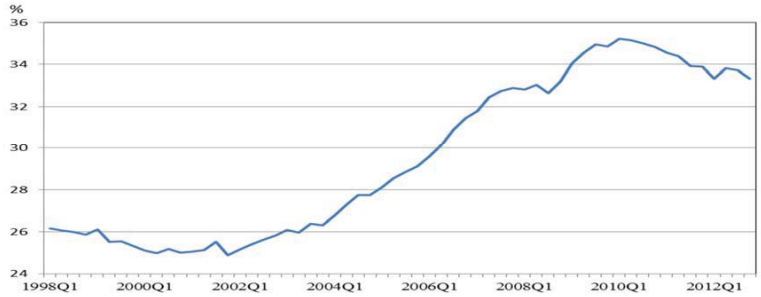
area were higher.[5] In light of housing price hikes in the Taipei metropolitan area and continued growth of mortgage loans, the Central Bank, Chinese Taipei (hereafter "the CBC") decided to take targeted prudential measures to safeguard financial stability (details will be discussed in Section 5). As a result of such measures to strengthen risk management regarding real estate lending, the annual growth rate of mortgage loans slid from 6.68% at the end of 2010 to 1.14% at the end of 2012. Meanwhile, the ratio of mortgage loans to total loans also declined from 34.83% to 33.16% (Figure 3).

Figure 2
Housing Price Index in Chinese Taipei



Note: The housing price indices based on secondary market prices. (2001 Q1=100).
Source: Sinyi Realty Inc.

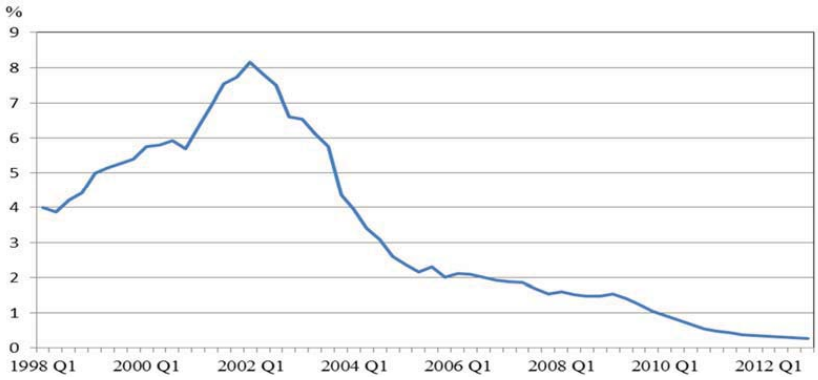
Figure 3
Mortgage Loans to Total Loans Ratio



Source: Financial Statistics Monthly, CBC.

During the period from 2000 to 2002, the housing prices lingered at a low level. In addition, the economy fell into recession and the asset quality of mortgage loans deteriorated. The NPL ratio of mortgage loans peaked at 8.14% at the end of Q2 2002. In order to address this problem, the government launched financial reforms to ask banks to improve asset quality. In addition, it assisted banks to write off bad loans by cutting the tax rate. After these measures taken by the government, the NPL ratio of mortgage loans began to trend downward, indicating improved asset quality (Figure 4). At the end of 2012, it reached a historical low at 0.26%.

Figure 4
NPL Ratio of Mortgage Loans



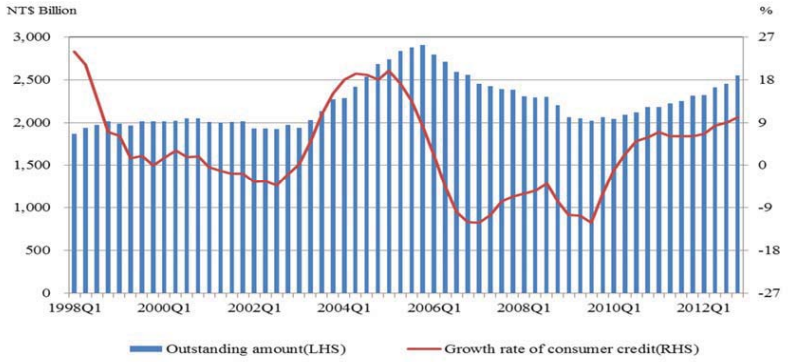
Source: Joint Credit Information Center, R.O.C.

2.2 Recent Trends of Consumer Credit in Chinese Taipei

The consumer credit[6] extended by banks grew at an average annual rate of 2.05% during 1998-2012. Figure 5 depicts the trend of the outstanding amount and the growth rate of consumer credit.

6. The consumer credit covers short-term and intermediate-term credit extended by banks to individuals, including car loans, student loans, cash card loans, revolving credit for credit cards, etc., and excluding mortgage loans.

Figure 5
Outstanding Amount and Growth Rate of Consumer Credit

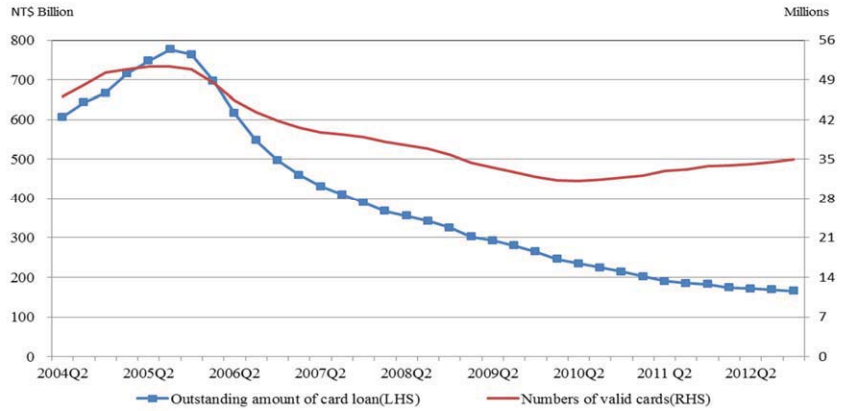


Source: Financial Statistics Monthly, CBC.

The consumer credit grew rapidly from 2002. Following the Asian crisis and the U.S. IT bubble, the NPL borne by corporates were rising. Commercial banks became more cautious in lending to corporates. Stiff competition among banks to attract the limited pool of corporate customers who still had high credit ratings has kept profits low in the corporate finance segment. To increase profits, banks moved enthusiastically into the credit card and cash card business, leading to a marked increase in both the outstanding amount of card loan[7] and the number of valid cards[8] (Figure 6). The loan balance of credit cards and cash cards rose to a historical high of NT$776.7 billion at the end of Q3 2005. In the meantime, the number of valid credit cards and cash cards reached 51.4 million.

7. It includes revolving credit of credit cards and loan balance of cash cards.
8. The number of valid cards represents the number of cards issued minus number of cards cancelled.

Figure 6
Outstanding Amount of Card Loans and Numbers of Valid Credit and Cash Cards



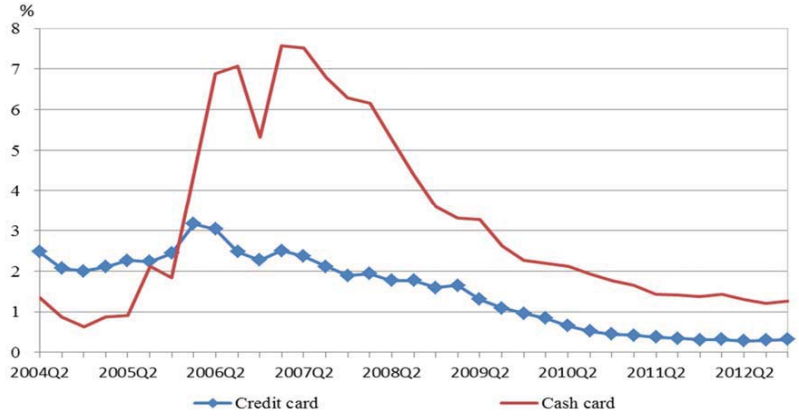
Note: The data revealed starts from May 2004.
Sources: Financial Supervisory Commission, R.O.C.

The lending standards began to loosen when banks started competing for a larger share of the credit card and cash card market. As the banks could not properly check borrowers' overall indebtedness, some less creditworthy borrowers were able to obtain several credit cards or cash cards from different banks with the combined credit limits far exceeding their repayment capability. Furthermore, the borrowers did not have sufficient financial literacy, so they could not make effective decisions with all of their financial resources. The boom eventually became unsustainable in 2005. The NPL ratio of credit cards and cash cards began to soar (Figure 7). For example, the NPL ratio of cash cards rose from 0.62% in Q4 2004 to 7.57% at Q1 2007. The banks suffered huge losses because of bad debt write-offs.

The Financial Supervisory Commission (FSC) took some steps to deal with the card loans problem. For example, the FSC required banks to modify their requirements for credit cards and cash cards applications. Some of the changes included raising the income and job requirements and adopting differential interest rates according to credit status of the applicants. Moreover, the FSC introduced the Consumer Debt Clearance Act to enable borrowers to negotiate their debts with the banks efficiently. After the new regulations came into force, the outstanding amount of card loans fell by 78.68% over 2005-2012. Since the

height of the lending boom in card loans, the banks' attitude toward consumer lending has become more conservative. After the global financial crisis, the consumer credit grew at the moderate pace of 3.78% yearly during 2009-2012.

Figure 7
NPL Ratio of Credit Cards and Cash Cards



Note: The data revealed starts from May 2004.
Source: Financial Supervisory Commission, R.O.C.

3. Review of Related Literature

3.1 Household Indebtedness

Shih and Tsao (2004) found that the household debt in Chinese Taipei has been increasing in the past two decades as a result of a housing market boom, deregulation of bank entry, narrow profit margins in corporate finance, etc. However, the household debt is not excessive and the overall financial position of the household sector is largely sound as demonstrated by a low debt-servicing ratio, low debt-to-asset ratio and the quality of the debt.

IMF (2006) reviewed the factors affecting the supply and demand for household credit, including macroeconomic and financial sector linkages. It was followed by a description of the recent trends in household credit in a sample of 23 emerging market (EM) countries, including Chinese Taipei. It also discussed approaches to managing risks stemming from household credit and risk transfer mechanisms, the legal and regulatory framework.

In most EM countries, retail credit expansion from relatively low levels is desirable and does not seem to pose a direct threat to financial stability. EM policymakers should simultaneously act in four key areas to prevent a build-up of associated vulnerabilities. These include prudent macroeconomic management to minimise income, exchange rate, and interest rate shocks; introducing sound prudential norms for household credit and encouraging good origination standards and information sharing by banks; developing a comprehensive legal and regulatory framework and infrastructure; and improving the availability of information that enables better assessment of systemic risks and their mitigation.

MasterCard (2007) indicated that the recent stress on consumer debt in Chinese Taipei (2004-2006) have raised concerns over the household sector. Their report assessed credit extension to households in Chinese Taipei and attempted to estimate how these trends will play out in the future. It stated that the outlook for household credit in Chinese Taipei has been generally positive since 2007. The downturn in household credit began to ease. As banks were mostly over the hump of managing down their credit card-related debts, this drag on household credit has been reversed in 2007. In the longer term, banking sector will be able to support a more sustainable pace of household credit growth.

Fang (2010) constructed two error correction models for household debt and the NPL ratio of household loans, respectively, which are linked to the relevant macroeconomic variables. First, it showed that a 100-basis-point increase in unemployment rate and loan rate leads to about 3.2% and 2.5% decreases in household debt, respectively. Second, it also showed that the NPL ratio of household loans increases with the rises of the ratio of real household debt to real GDP, loan rate, and unemployment rate, but it decreases with housing price declines. A 100-basis-point increase in the real household debt to real GDP ratio, loan rate, and unemployment rate leads the NPL ratio of household loans to increase about six basis points, 52 basis points and 183 basis points, respectively, while a one-basis-point increase in real housing prices brings the NPL ratio of household loans down by 9 basis points.

3.2 Mortgage Finance and Housing Prices

Fang (2010) conducted stress tests to assess the impact of a fall in real housing prices on the NPL ratio of household loans. According to the results, the mean of the forecasts of the NPL ratio from Q3 2009 to Q2 2010 will be higher than the historical mean of the NPL ratio from Q1 1997 to Q2 2009 if the real housing prices drop linearly by more than 10.3% between Q3 2009 and Q2 2010. It also showed that the downward trend of the real housing prices has

a severe impact on the NPL ratio of household loans under a higher unemployment rate environment.

IMF (2011) aimed to capture the feedback effects between housing price changes and loan-loss growth or those between housing price change and mortgage credit growth. The analysis covered 36 countries including Chinese Taipei during two episodes: the 2004-07 global liquidity expansion (the "boom"), and the 2007-09 crisis period (the "bust").

The main empirical results showed growth in housing prices fed back into overall loan losses and mortgage credit growth. Mortgage credit growth was fueled by housing prices growth and vice versa. However, during the crisis, it is hard to explain the mortgage credit crunch, owing to a multitude of factors that could have restrained mortgage lenders or household borrowers. Mortgage credit and real GDP growth explains 50% of the pre-crisis housing prices growth, while real housing price growth alone explains 20% of the mortgage credit growth before the crisis.

Tsai and Peng (2011) used panel data tests to examine the housing prices of four cities in Chinese Taipei to determine whether there are bubbles in Chinese Taipei's housing market. It constructed the bubble indicator for the housing market in Chinese Taipei and discussed its relationship with mortgage rate, money supply, inflation rate, economic growth rate, homeownership rate, and user cost for housing. The empirical results showed that the bubble-like behaviour of housing prices in Chinese Taipei before 1998 is explained by the investment demand of the housing market, since bubble indicators are highly positively correlated with money supply and stock price index.

The relationship between homeownership rate and bubble indicator showed that bubbles made it more difficult to own a house. Even though the homeownership rate increased annually in Chinese Taipei during the same period because Chinese people prefer owning real estate, the bubble still slightly affected the pace of increase. The government would be mistaken to conclude that the housing bubble has not reached a serious level based on the increasing homeownership rate. User cost for housing is highly related to housing prices, indicating that a housing bubble is a heavy burden on the public. The public must reduce consumption of other goods to pay for higher housing costs, thus reducing their quality of life. Therefore, both soaring and dropping housing prices have important policy implications. The government cannot merely interfere with low housing prices while overlooking bubbles.

4. Mortgage Finance and Consumer Credit: Implications for Financial Stability

The goal of this section is to provide an assessment of the potential impact of mortgage finance and consumer credit on financial stability. The first step is to determine the indicators of the status of financial stability of Chinese Taipei related to mortgage finance and consumer credit. We then use the appropriate model to assess long run and short run interactions. Moreover, we investigate the effect of interest rate rises, guided by monetary policy, on financial stability.

4.1 Indices Description and Data Set

The indicator considered illuminating for the status of financial stability related to mortgage finance and consumer credit is NPL ratios. We notice that loans is often not a problem in itself but rather reflect the ability of households and consumers to smooth their consumption. Whether in the form of mortgage or consumer credit, such debt contributes to improving household well being. However, problems may arise when too much debt burden imposes financial stress on households and consumers, especially for those exposed to personal or macroeconomic shocks. Financial institutions will be affected as more and more borrowers default on their loans, pushing up the NPL ratios. Therefore, to gauge the vulnerability of mortgage finance and consumer credit as well as credit quality, we use the NPL ratios as the indicator.

Alternatives under consideration as proxy for financial stability related to mortgage finance are loan-to-value ratio and concentration (i.e., mortgage loans to total loans) of mortgage loans from the Financial Stability Report issued by the CBC. Since the time-series aggregate data has a structure break due to some policy changes, their characteristics will be discussed in the next section.

The empirical model is applied with quarterly data over the period Q1 1998 to Q4 2012, each series consisting of 60 quarterly observations. The sample period is limited by data availability. According to the ability-to-pay hypothesis, borrowers tend to default if they face income shocks, for example, decreasing wealth due to economic slowdown or unemployment, or higher costs of repayment due to interest rate hikes. On the other hand, mortgage borrowers may benefit from the housing price rises. As mortgage loans are usually amortized over a long period, borrowers may enjoy the balance sheet effect through selling their

houses at higher prices, or higher rents may be able to cover the contracted amount of repayment. Thus the balance sheet effect could lead to a decline in the NPL ratio of mortgages. The variables in this study are shown in the following table.

Table 1
Indexes and Variables

	Mortgage Finance	Consumer Credit Finance
Dependent variables		
Financial stability index	NPL ratio of mortgage loans	NPL ratio of consumer loans
Independent variables		
• Market scale	• Real mortgage loans	• Real consumer loans
• Macroeconomic conditions	• Real GDP	• Real GDP
	• Unemployment rate	• Unemployment rate
• Cost of repayment	• Real interest rate of new mortgage loans	• Real interest rate of consumer loans
• Balance sheet effect	• Real housing price index	NA

As mentioned above, the NPL ratios as proxy for financial stability and the explanatory variables such as market scale, macroeconomic conditions, and cost of repayment are conjectured to affect the markets of mortgage finance and consumer credit. In addition, consumer loans are amortised over a shorter period of time than mortgage loans, which makes it less likely for the balance sheet effect to fruit. For the NPL ratio of consumer loans, the explanatory variables do not include balance sheet effect.

It is expected that NPL ratios may either rise or fall in accordance with loan level, depending on the status of market development. The healthier the development of financial markets, the lower the possibility of asset bubbles. The scale of the loans does not necessarily raise the NPL ratios. For macroeconomic conditions, GDP and the unemployment rate capture the performance of the economy, while the real interest rate indicates the cost of repayment. The housing

price is the proxy for balance sheet effect on borrowers. All real variables are deflated by the headline consumer price index. In addition, we convert monthly data into quarterly data by using three-month averages. The data definition and source of each variable are provided in Appendix.

4.2 The Empirical Study

We apply the Augmented Dickey-Fuller (ADF) test to the NPL ratios of mortgage loans and consumer loans. We also apply the ADF test to the other variables, such as market scale, macroeconomic conditions, cost of repayment, and balance sheet effect, respectively. As shown in Tables 2 and 3, each series is integrated of order one. The ADF tests fail to reject the null hypothesis that each variable has a unit root. Hence, the estimation process has to deal with the unit root problem.

Table 2
ADF Unit Root Test

	t-Statistic	Probability	Lag-length
NPL ratio of mortgage loans	-1.5	0.12	5
NPL ratio of consumer loans	-1.06	0.26	5
Log real mortgage loans	-1.09	0.71	3
Log real consumer loans	0.20	0.74	2
Log real GDP	-0.58	0.87	0
Unemployment rate	-0.03	0.66	6
Real interest rate of new mortgage loans	-1.70	0.42	0
Real interest rate of consumer loans	-1.66	0.45	0
Real housing price index	1.98	0.99	1

Notes: (1) Exogenous: None.
(2) Probability represents the Mackinnon (1996) one-side p-values.
(3) Each lag-length is automatically selected based on Schwarz Information Criterion with the maximum equal to 8.

Table 3
ADF Unit Root Test (First Order Difference)

	t-Statistic	Probability	Lag-length
NPL ratio of mortgage loans	-2.32	0.02	4
NPL ratio of consumer loans	-2.71	0.01	4
Log real mortgage loans	-2.49	0.01	2
Log real consumer loans	-2.04	0.04	1
Log real GDP	-4.93	0.00	0
Unemployment rate	-2.51	0.01	5
Real interest rate of new mortgage loans	-7.78	0.00	0
Real interest rate of consumer loans	-8.47	0.00	0
Real housing price index	3.77	0.00	0

Notes: (1) Exogenous: None.
(2) Probability represents the Mackinnon (1996) one-side p-values.
(3) Each lag-length is automatically selected based on Schwarz Information Criterion with the maximum equal to 8.

The long-run equilibrium relationship is described by the equations:

$$\text{NPL ratio of mortgages}_t = \beta_0 + \beta_1 \log(\text{real GDP})_t + \beta_2(\text{real interest rate})_t + \beta_3 \log(\text{real loan})_t + \beta_4(\text{real housing price})_t + \beta_5(\text{unemployment})_t + \varepsilon_t$$

and

$$\text{NPL ratio of consumer loans}_t = \beta_0 + \beta_1 \log(\text{real GDP})_t + \beta_2(\text{real interest rate})_t + \beta_3 \log(\text{real loan})_t + \beta_5(\text{unemployment})_t + \varepsilon_t .$$

In order to detect the cointegration in the long-run regression, we run the Johansen cointegration test to identify the long-term relationship of the models. The results of the maximum eigenvalue test, shown in Table 4, indicate each specification has one cointegrating equation.[9] The results confirm the cointegration with the ADF test on first order difference.

9. Following the suggestion by Johansen and Juselius (1990), we adopt the results of the maximum eigenvalue test when the results differ between the eigenvalue and trace test.

Table 4
Johansen Cointegration Test

	NPL ratio of mortgage loans		NPL ratio of consumer loans	
	λ-Max	trace	λ-Max	trace
r = 0	83.02**	183.76**	33.79**	74.15**
r≦1	36.32	100.74**	20.72	40.36**
r≦2	25.10	64.41**	14.34	19.64
r≦3	22.35	39.32**	4.75	5.30
r≦4	14.08	16.97	0.55	0.55

Note: r denotes the maximum number of cointegrating vectors and λ denotes the eigenvalue. The symbols of ** indicate significance at 5% level.

Table 5 reports the results of the long-run relationship of mortgage finance model and consumer credit model. All variables are in first order difference. Moreover, the real loan level and the unemployment rate are both significant in these two models. However, simple OLS regressions are implicitly within the problem of endogeneity and serial autocorrelation. Hence, following Fang (2010), we apply the Vector Error Correction model (VECM) to align the cointegration in order to investigate the implication of mortgage finance and consumer credit for financial stability. The estimated VECM of the two NPL ratios are reported in the following boxes. Notice that the VECM models include not only long-term equilibrium estimation but also the short-term error correction dynamic in vector auto regression (VAR) format. However, since NPL ratios is the primary focus of our study, we only report NPL-ratio-related correction dynamic estimation as a part of VECM.

Table 5
Results of OLS (in First Order Difference)

Variables	Coefficient	NPL ratio of mortgages loans	NPL ratio of consumer loans
Constant	β_0	0.02	-0.09
		(0.31)	(-1.06)
Log real GDP	β_1	0.15	1.70
		(0.06)	(0.42)
Real interest rate	β_2	0.05	0.01
		(1.19)	(0.22)
Log real loan	β_3	-6.67**	-6.01**
		(-2.31)	(-2.15)
Real housing prices	β_4	-0.01	---
		(-0.57)	
Unemployment rate	β_5	0.38**	0.68**
		(2.32)	(2.28)
Adjusted R^2		0.29	0.22

Notes: All variables are in first order difference. The t-statistic of each coefficient is reported in parenthesis. The symbols of ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

Box 1 presents the results of estimated coefficients of the long-term equilibrium and short-term correction of the NPL ratio of mortgages. As shown in the long-term cointegration, the sign of the coefficients is expected. First, an increase of 1% in the log of real GDP significantly relates to a 1.93% reduction in the NPL ratio of mortgages. Second, increases of 1% in real interest rate and in unemployment rate are related to 0.58% and 0.38% increases in the NPL ratio of mortgages, respectively. Third, the real housing price has a positive effect on the decline of the NPL ratio of mortgages. The result for the housing price points to a significant balance sheet effect. Notice that the estimation of real housing loans insignificantly effect on the NPL ratio of mortgages.

The short term dynamic of the mortgages NPL ratio changes is also significant. The negative sign of estimated error correction indicates that the NPL ratio of mortgages reversed when the system deviates from the long-term equilibrium. However, the changes in the NPL ratio of mortgages are auto-correlated, meaning that a unit of increase in the NPL ratio of mortgages will only lead to a 0.49 unit increase in the following quarter. The changes of a one unit increase in real GDP and the real housing loan will lead to 4.64 and 7.19 unit reductions in the NPL ratio of mortgages, respectively. The changes of a

one unit increase in unemployment rate will lead to a 0.46 unit increase in the NPL ratio of mortgages. In addition, the changes in the real interest rate and the real housing prices show irrelevance to changes in the NPL ratio of mortgages.

Box 1
Estimated VECM Model of NPL Ratio of Mortgage Loans

Long-term cointegration:

$$\begin{aligned}\text{NPL ratio of mortgages}_t = & -1.93 \times \log(\text{real GDP})_t + 3.68 \times \log(\text{real loan})_t \\ & \quad (-0.67) \qquad\qquad (0.90) \\ & + 0.58^{***} \times (\text{real interest rate})_t - 0.06^{***} \times (\text{real housing price})_t \\ & \quad (4.75) \qquad\qquad (4.81) \\ & + 0.38^{*} \times (\text{unemployment})_t \\ & (-1.27)\end{aligned}$$

Short-term error correction of ΔNPL_t :

$$\begin{aligned}\Delta\text{NPL ratio of mortgages}_t = & -0.05^{***} \times \hat{\text{EC}}_{t-1} + 0.49^{***} \times \Delta\text{NPL ratio of mortgage}_{t-1} \\ & \quad (-2.32) \qquad\qquad (3.79) \\ & - 4.64^{**} \times \Delta \log(\text{real GDP})_{t-1} - 7.19^{**} \times \Delta \log(\text{real loan})_{t-1} \\ & \quad (-1.93) \qquad\qquad (-2.03) \\ & - 0.01 \times \Delta(\text{real interest rate})_{t-1} - 0.007 \times \Delta(\text{real housing price})_{t-1} \\ & \quad (-0.32) \qquad\qquad (-1.40) \\ & + 0.46^{***} \times \Delta(\text{unemployment})_{t-1} \\ & \quad (2.43)\end{aligned}$$

Adjusted R^2=0.40

Notes: (1) Number of observation equals 57 after adjustment.
(2) The symbols of ***, **, and * indicate significance at 1%, 5%, and 10% levels,

Box 2 presents the results of estimated long-term equilibrium and short-term correction for the NPL ratio of consumer loans. As shown in the long-term cointegration, the sign of the coefficients are expected, similar to the results of Box 1. Moreover, the effect of economic conditions (e.g., GDP and employment rate) and repayment cost, in general, on the NPL ratio of consumer loans are stronger than on the NPL ratio of mortgages. Notice that consumer loans are usually repaid in short periods, hence the absence of the balance sheet effect estimation in Box 2. Unfortunately, the result of the short term dynamic equation of the NPL ratio of consumer loans indicates poor significance and slight equilibrium reversion. However, the NPL ratio of consumer loans also presents auto-correlation, similar to that of mortgages.

Box 2
Estimated VECM Model of NPL Ratio of Consumer Loans

Long-term cointegration:

$$\begin{aligned}\text{NPL ratio of consumer loans}_t = &-15.90^{**}\times \log(\text{real GDP})_t + 11.7^{**}\times \log(\text{real loan})_t \\ &\quad (-2.27) \qquad\qquad (2.03) \\ &+1.00^{**}\times(\text{real interest rate})_t + 2.77^{***}\times(\text{unemployment})_t \\ &\quad (2.08) \qquad\qquad (4.21)\end{aligned}$$

Short-term error correction of ΔNPL_t :

$$\begin{aligned}\Delta\text{NPL ratio of consumer loans}_t = &-0.02\times \hat{\text{EC}}_{t-1} + 0.41^{***}\times\Delta\text{NPL ratio of consumer loan}_{t-1} \\ &\quad (-0.95) \qquad (2.83) \\ &-4.10\times\Delta\log(\text{real GDP})_{t-1} - 0.70\times\Delta(\text{real loan})_{t-1} \\ &\quad (-0.82) \qquad\qquad (-0.20) \\ &-0.01\times\Delta(\text{real interest rate})_{t-1} - 0.43\times\Delta(\text{unemployment})_{t-1} \\ &\quad (-0.32) \qquad\qquad (-1.10)\end{aligned}$$

Adjusted R^2=0.15

Notes: (1) Number of observation equals 57 after adjustment.
(2) The symbols of ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. Below the estimated coefficients, the t-statistics are in parenthesis.

Comparing the results of Box 1 and Box 2, the long-term equilibrium indicates that macroeconomic conditions, such as real GDP and unemployment, significantly affect the NPL ratios, especial on the NPL ratio of consumer credit. In terms of mortgages, the market scale does not adversely impact the NPL ratio, as shown by the statistically insignificant estimated coefficient of real mortgage loans. By contrast, the level of real consumer loans has a notable effect on the increase in the NPL ratio. These results reveal that the consumer credit market has not been deepened enough; comparable to shallow dish of which water could spill out easily with a jolt, susceptible to macroeconomic shocks. The main difference between mortgage finance and consumer credit market is that the mortgages are secured loans with the property as collateral and are usually repaid over a longer period than consumer loans. Therefore, it is not surprising our result indicates a volatile consumer credit.

The effects of real interest rate on both mortgage and consumer credit markets are in line with our expectation. This also points to the role of interest rate adjustments as a policy tool in financial stability. In addition to redistribution of benefits between lender and borrower, interest rate changes can have implications for macroprudential policy.[10] The real housing price shows a result

10. As point out by Huang (2012), the monetary policy and macroprudential policy can complement each other.

in accordance with the balance sheet effect as we expected and slightly reduces the NPL ratio of mortgages.

The empirical study indicates that the government should pay attention to the financial infrastructure for consumer credit, taking into account the extent of financial deepening of the consumer credit market. The establishment of a financial infrastructure for consumer credit can help consumer to weather macroeconomic shocks. In addition, when assessing the factors behind the effect of mortgage finance on financial stability, we find that the growing mortgage loan level and increases in prices of housing do not cause unfavourable changes in the NPL ratios or any other problems that might ensue. The NPL ratios have actually experienced a downtrend, thanks to the banks' efforts in writing off bad loans and the government's effective and timely countermeasures in this regard.

5. Policy Recommendations

As the discussed in Section 4, the empirical study shows that the measures taken by the government have helped avert possible impact of mortgage finance and consumer credit on financial stability. In response to surging housing prices in specific areas (Figure 2) and the excessive concentration on mortgage loans in the banking sector (Figure 3), since October 2009, a series of policy measures[11] have been taken by the CBC. In April 2010, the Council for Economic Planning and Development proposed the "Plan to Enhance the Soundness of the Housing Market". Under the plan, the FSC, the Ministry of Finance (MOF), and the Ministry of the Interior (MOI) have taken some actions. In this section, we first present the policy measures and actions in recent years in response to the rising housing prices in some areas in Chinese Taipei. The impacts of the policy measures on mortgage finance and the identified policy effects are discussed in the second section of this section.

In contrast to mortgage finance, the consumer credit has been stable in recent years and the loan balance and NPL ratios of borrowings in credit cards and cash cards have reduced rapidly since 2006 and remained steady afterwards (Figures 6 and 7). However, the empirical result points to potential vulnerability, which warrants a need to strengthen the financial infrastructure to protect consumers from macroeconomic shocks related to consumer finance. The "shallow dish"-like market of consumer credit implies it is important for consumers

11. The content in this section about government policy measures are drawn from the Financial Stability Report, Nos. 5, 6, and 7, issued by the CBC in May 2011, May 2012, and May 2013.

to have the ability to overcome macroeconomic shocks. When the 2008 global financial crisis indirectly gave rise to some consumer credit-related controversies in Chinese Taipei, the government addressed the problem and took heed of how it demonstrated the lack of protection of consumer rights relating to financial products. Therefore, the last part of this section briefly introduces the efforts to protect consumers, including a new piece of legislation and a new agency.

5.1 Measures to Strengthen Real Estate Market and Financial Stability

In the light of rising housing prices in several areas in Chinese Taipei, the heavy concentration on mortgage loans in the banking sector, and growing heavier house-purchase burden faced by homebuyers, the CBC has adopted a series of targeted prudential measures since October 2009:

(1) Moral suasion on financial institutions and improvement in the collection and analysis of housing loan data:
- Urging banks to rein in risks related to mortgage loans (October 2009);
- Addressing asset market problems in the Board meeting and reaching a decision that Board will take asset prices into account in its monetary policy setting (December 2009);
- Requesting the Bankers Association of the Republic of China to remind borrowers about the risk of increasing repayment and rising interest rates once grace periods expire (January 2010);
- Encouraging 15 domestic banks with regard to their investment-oriented borrowers to: (i) lower the loan-to-value (LTV) ratio (under the ceiling of 70%); (ii) raise the interest rate higher than that of general housing loans; and (iii) remove the grace period (March 2010);
- Requiring banks to submit call reports regarding newly approved mortgage loans to general borrowers and investment-oriented borrowers by region every 15 days. Target examinations will be undertaken where necessary, so as to ensure banks' compliance with the aforementioned policies (April 2010).

(2) Regulations to govern the extension of mortgage credit in specific areas by financial institutions:
- The CBC Board approved the Regulations Governing the Extension of Housing Loans in Specific Areas in June 2010. The key points of the Regulations include (i) capping the LTV ratio on second (or more) housing loans for home purchases in specific areas at 70%; and (ii) removing the grace period for such.

(3) Encouraging banks to draw up appropriate standards for land collateralised loans to reinforce risk management associated with land acquisition financing:
- The appropriate standards for land collateralised loans include: (i) requiring borrowers to offer elaborate and concrete plans of construction projects; (ii) setting up reasonable LTV ratios and interest rates; and (iii) adopting a package of measures (for example, withdrawal of loans or raising interest rates) to discipline borrowers who fail to commence construction on schedule (September 2010).

(4) The amendment of regulations to govern real estate loans granted by financial institutions:

The CBC Board approved the amendment to the Regulations Governing the Extension of Land Collateralised Loans and Housing Loans in Specific Areas in December 2010. The key points of the amendment are shown as follows:
- For housing loans in specific areas: (i) expanding the scope of specific areas; (ii) lowering the maximum LTV ratio for second (or more) housing loans by individuals to 60%; and (iii) subjecting housing loans by companies in specific areas to the applicable regulations; and
- For land collateralised loans, the amendment tightened underwriting standards for real estate loans collateralised by residential or commercial land plots located in urban planning districts. Financial institutions shall: (i) require borrowers to present concrete plans of construction projects and (ii) cap the LTV ratio at 65%, where 10% of the approved loan amount shall not be disbursed until the construction commences.

5) Continuing to enforce the regulations governing land mortgage loans and housing loans by financial institutions:

The CBC adopted targeted prudential measures with respect to high-value housing loans. Housing loans for properties located in Taipei City or New Taipei City with an appraisal or sale value of NT$80 million or above, or those located elsewhere in Chinese Taipei with an appraisal or sale value of NT$50 million or above shall be subject to an LTV ratio cap of 60% with no grace period.

With the measures mentioned above, the CBC endeavored to strengthen mortgage-related risk management of financial institutions, while promoting the healthy development of the real estate market and financial market. The effectiveness of these measures is discussed in the next section.

In line with the CBC's targeted prudential measures, in March 2011, the FSC announced three measures to strengthen surveillance of the real estate lending risks of banks, including:

(1) Providing a clear definition of mortgage loans for owner-occupied[12] real estate and raising risk-based capital charges for non-self-use residential loans;[13]

(2) Urging banks to strengthen risk management of real estate lending, improve the concentration on real estate lending, and exercise extra caution when verifying purpose of lending and appraising the value of collaterals;

(3) Making real-estate-related lending one of the focal points in financial examinations.

The policy stance of the FSC and the CBC in the risk management of mortgage finance has been in coordination with the "Plan to Enhance the Soundness of the Housing Market."

In June 2011, the MOF joined the line to improve a sound housing market by reinforcing tax audits with a focus on speculative real estate transactions. In particular, the MOF introduced the Specifically Selected Goods and Services Tax, which is often referred to as "luxury tax." The new tax imposes a levy of 10%-15% of the sale price on non-self-use residences and urban land with building permits (land for construction in urban planning areas) sold within one to two years of purchase, except for reasonable, ordinary or involuntary transfers of properties.

Following the steps of the CBC, the FSC, and the MOF, in October 2012, the MOI began to provide query service through an online database of the "actual sale prices of property transactions as reported."[14] The information disclosed by

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12. Mortgage loans for owner-occupied residence refer to loans taken out by nationals without domestic residence for the purpose of purchasing houses as their primary residence.

13. The FSC issued a directive in April 2011, allowing the use of either a 45% risk weight or 35%/75% risk weight under the LTV method for new self-use residential loans granted by banks, while non-self-use residential loans were assigned a weight of 100%.

14 . The "actual sale prices of property transactions as reported" is not the same as the "actual sale prices of property transactions as disclosed," according to the MOI, since local governments must remove the house number, lot number, building number, etc., before incorporating the data into the database for the purpose of privacy protection.

the MOI has helped shorten the real estate pricing perception gap between real estate buyers and sellers. The government believes that this service is the first step toward achieving the goal of "Justice in Housing."[15] Through a fair and just system with property price disclosure, then taxation, and then the supply of affordable housing, the government strives to curb the soaring housing prices and close the gap between rich and poor. The just systems will contribute to the healthy development of the real estate market as well as financial stability.

5.2 Positive Results of Targeted Prudential Measures

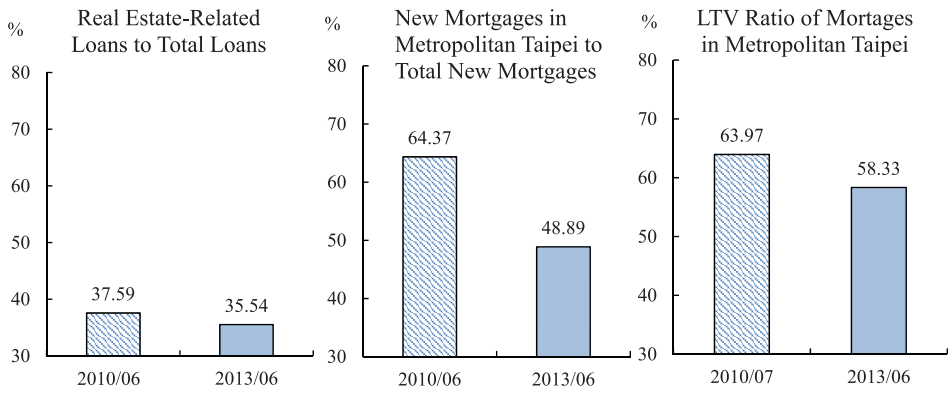
As a result of the targeted prudential measures by the CBC and the FSC, and the MOI's "Justice in Housing" project, there have been plenty of positive development as well as improvement in the real estate market and mortgage financial market.

The improvement includes:

(1) According to the CBC and the FSC, the concentration of real-estate-related loans by financial institutions decreased from 37.59% in June 2010, before the promulgation of the new regulations, to 35.54% in June 2013. The new share of mortgage loans in metropolitan Taipei by financial institutions decreased from 64.37% in June 2010 to 48.89% in June 2013. In addition, the average LTV ratios of mortgage loans in metropolitan Taipei fell from 63.97% to 58.33% during the same period. The risk management of mortgage loans has been effective (Figure 8).

15. The "Justice in Housing" project involves five bills, which are real estate brokerage management regulations, land laws, equalisation of land rights regulations, land acquisition regulations, and the housing act. The first three bills pertain to the registration of actual sale prices of property transactions.

Figure 8
Improvements in the Risk Management of Mortgage Loans

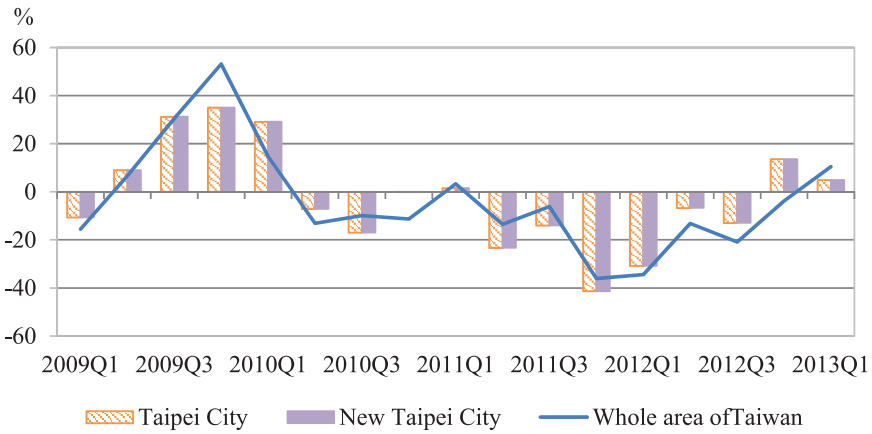


Sources: Financial Statistics Monthly, CBC; Financial Stability Report, CBC.

(2) Since the introduction of the "luxury tax," the building ownership registration for transactions has decreased 22.12% from June 2010 to May 2012. Moreover, during the same period, the building ownership registration for transactions of Taipei City and that of New Taipei City has decreased 33.34% and 34.96%, respectively. The ownership registration for transaction data show that the investment drives or speculative transactions have reduced along with the reduction of non-self-use residence transactions. After some housing market adjustment, the actual self-use housing demand emerged, and the growth of building ownership registration for transactions picked up in Q1 2013 (Figure 9).

(3) After the launch of the MOI's online database for actual housing sale prices, the information of real estate transactions has become more transparent. It not only helps buyers and sellers meet their needs, but it also prevents exploitation by unscrupulous agents.

Figure 9
Annual Growth Rate of Building Ownership Registrations for Transaction



Sources: Monthly Bulletin for Interior Statistics, MOI.

The CBC will continue to analyse financial institutions' regular reports and identify the risk factors inherent in the mortgage financial market at an early stage. In fact, the CBC and the FSC have conducted target examinations on certain financial institutions where necessary. In addition, the above-mentioned measures or regulations by government agencies have proved effective in curbing speculative trading. The government will ensure the growth of mortgage finance does not negatively affect financial stability. With the coordinated efforts by the CBC, the FSC, the MOF, and the MOI, it is expected the real estate market will not threaten the stability of the financial market.

As shown by the financial soundness indicators in Table 6, the health of the real estate market and financial stability have improved. The annual growth rate of housing price index has stabilised. Moreover, the non-performing loan ratio decreased to 0.41% at the end of 2012 while banks' provision coverage ratio reached 269.07% in the same period. In same, the general financial soundness indicators show that the asset quality of banks and financial conditions have been quite sound.

Table 6
Housing Price Index and Financial Soundness

%

	2009	2010	2011	2012
Annual Growth Rate of Housing Prices	17.66	15.83	9.76	9.79
Bank's Non-performing Loans to Total Loans	1.15	0.61	0.43	0.41
Bank's Provision Coverage Ratio	90.35	157.32	250.08	269.07

Notes: (1) Figures of annual growth rate of housing prices are based on the fourth quarter Sinyi housing price index.
(2) The "non-performing loans" include loans for which repayment of principal or interest rate has been overdue for three months.
(3) "Banks' provision coverage ratio" refers to loan-loss provisions as a percentage of non-performing loans.

Sources: Sinyi Realty Inc.; Financial Stability Report, May 2013, CBC.

5.3 Impacts of the Financial Consumer Protection Act

As shown by the results of the empirical study, the consumer credit market is sensitive to macroeconomic shocks. It is thus important to enhance consumer protection, as has been mentioned. In fact, in view of the steady growth of consumer credit and credit card loans, the government has noticed the indispensability of a financial infrastructure conducive to consumer protection. Moreover, the lesson from the recent global financial crisis, and the financial investment/consumption controversies caused by the huge macroeconomic shock also demonstrated the importance of laws to protect the rights of consumers in buying financial products, which would in turn bolster financial stability. In this light, the Financial Consumer Protection Act was implemented in December 2011. Furthermore, the Financial Ombudsman Institution (FOI) was set up in accordance with the Financial Consumer Protection Act and commenced work in January 2012. These symbolise a huge step forward in the protection of financial consumers in Chinese Taipei.

In addition, the government has taken action to enforce mechanisms to protect financial consumers, specifically with examples as the following:

(1) The amendment to the Banking Act[16] in September 2012 stipulates that when granting mortgages for self-use residence and consumer loans, banks cannot require their debtors to provide joint and several guarantor(s) for

16. The amendment refers to Article 12-1 and 12-2 of the Banking Act.

whatsoever reasons. In addition, when an applicant provides sufficient collateral to cover the entire amount of the mortgage, banks may not require the borrower to provide general guarantor(s). When banks do so they should be subject to certain restrictions.

(2) Institutions engaging in credit card business must provide cardholders who make long-term use of revolving credit and keep up to date on payments with an option of either paying off the balance in installments or taking out a consumer loan to pay it off.

The Financial Consumer Protection Act has improved the quality of provision of financial products and services, effectively protected consumers, and also boosted the confidence and trust between consumers and financial institutions, and decreased financial disputes. It has contributed greatly to financial stability.

The measures taken and effects discussed in this section are summarised in Table 7 below.

Table 7
Summary of the Measures and Their Effectiveness

	Measures Taken	Effectiveness
CBC	• Regulations Governing the Extension of Housing Loans in Specific Areas by Financial Institutions (effective June 2010) • Targeted prudential measures with respect to high-value housing loans. (since June 2012)	(1) The concentration on real estate loans by financial institutions improved. (2) The LTV ratio of real estate loans declined significantly.
FSC	• Enhance supervision of banks' management of the real estate lending-related risks (since March 2011)	
MOF	• Specifically Selected Goods and Services Tax (also referred to "luxury tax") (since June 2011)	(1) The number of building ownership registration for transaction has decreased.
MOI	• Actual Sale Prices of Property Transactions as Reported (since October 2012)	(2) Speculative transactions in the real estate market reduced.
FOI	• The Financial Consumer Protection Act (effective January 2012)	The quality of provision of financial products and services improved.

Source: The Financial Stability Report, May 2012, and May 2013, CBC.

6. Conclusion

In Chinese Taipei, the majority of household borrowing by purpose has often gone to mortgages. At the end of 2012, the share went up to 71.05%. Moreover, in the past 15 years, Chinese Taipei has experienced a rise in housing prices and a steady downtrend of the NPL ratio of mortgage loans.

Following Fang (2010), we build a VECM model to investigate the NPL ratios of mortgages and consumer credit and their interaction with macroeconomic conditions. The data set ranges from Q1 1998 to Q4 2012. Our findings show that in the long-term equilibrium, the increase in real GDP significantly reduces the NPL ratios of mortgages and consumer loans. Moreover, the rises of real interest rate and the unemployment rate are both related to increases in the NPL ratios of mortgages and consumer credit. In general, the estimation result of consumer credit market showed volatility reflecting the trait of a "shallow dish" like market. Furthermore, the real housing price has a positive effect, similar to that through the balance sheet effect, on reducing the NPL ratio of mortgages.

Since housing prices play an important role in housing consumption/investment, we find that the influence of housing prices is actually through the balance sheet effect. Therefore, the increasing loan level and housing prices have not fueled or become themselves concerns; instead, they might have improved financial conditions. In terms of the effects of mortgage finance and household debt on financial stability, our study finds that growing loan level and increasing housing prices have not been a source of problems yet, indicating the measures taken by the government have helped the development of the real estate market. Therefore, judging by the empirical study, we suggest measures to be taken with special attention to the financial infrastructure for consumer protection while strengthening their ability to overcome macroeconomic shocks.

The government aimed at building a real estate market supported by actual housing demand, preventing speculative trading and improving the financial stability. Under this plan, the CBC also strives to identify the risk factors inherent in the mortgage financial market by analysing the financial institutions' regular reports. Moreover, the CBC and the FSC have taken appropriate actions by conducting target examinations on real estate lending by the financial institutions as necessary. These measures or initiatives have achieved significantly in curbing speculative trading. The Plan concluded in May 2013 after fulfilling its part in the multi-phase efforts. Looking forward, the government and the competent authorities and relevant agencies will continue to work together and take

appropriate policy measures in accordance with the Housing Act (announced Dec. 30, 2011), in order to ensure the sound development of the housing market and safeguard financial stability.

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Appendix

Data Set

Variables	Description	Sources
NPL ratio of mortgage loans	Non-performing loans in percentage of residential mortgage loans	Joint Credit Information Centre, R.O.C.
NPL ratio of credit and cash cards	1. Credit cards Ratio of credit cards does not include the required minimum payment over 3 months to total receivables outstanding. 2. Cash Cards Ratio of past-due loans to loans outstanding.	Financial Supervisory Commission, R.O.C.
NPL ratio of consumer loans	Non-performing loans in percentage of total household loans (excluding mortgage loans)	1. Joint Credit Information Centre, R.O.C. 2. Authors' calculation
Mortgage loans	Outstanding amount of residential mortgages including real estate related credit extended by banks to individuals	Financial Statistics Monthly, CBC.
Outstanding consumer credit	Covers short-term and intermediate-term credit extended by banks to individuals, excluding mortgage loans	Financial Statistics Monthly, CBC.
Loan balance of credit and cash cards	Includes revolving credit of credit cards and loan balance of cash cards	Financial Supervisory Commission, R.O.C.
Consumer loans	Outstanding amount of household loans (excluding mortgage loans)	Financial Statistics Monthly, CBC.
Real GDP (S.A.)	Seasonally adjusted gross domestic product (2006=100)	Directorate General of Budget, Accounting and Statistics, R.O.C.
Unemployment rate	Official unemployment rate	Directorate General of Budget, Accounting and Statistics, R.O.C.
Mortgage loan interest rate	Interest rate of new loans for house-purchasing extended by five leading banks	Financial Statistics Monthly, CBC.
Consumer loan interest rate	Interest rate of consumer loans extended by five leading banks	Financial Statistics Monthly, CBC.
Housing Price Index	1. Sinyi housing price index, which represents the price level of secondary housing market (2001 Q1=100) 2. Real housing price: Sinyi realty housing price deflated by headline CPI	Sinyi Realty Inc.

Chapter 14

MORTGAGE FINANCE AND CONSUMER CREDIT: IMPLICATIONS ON FINANCIAL STABILITY THE CASE OF VIETNAM

By
Dr. Duc Trung Nguyen[1]

1. Introduction

Two decades of intense market-oriented development have transformed Vietnam into one of the fastest growing economies in the world with a remarkable poverty reduction record. A steady CPI at 6.18%, stationary exchange rate, reduced interest rate and improved financial system in terms of liquidity, define the economic landscape of Vietnam in 2012. However, some existing shortcomings in the economic structure, including the lowest GDP and credit growth rate over the past 10 years diminishing production scope, retrogressive household incomes, and freeze in the real estate market have been exacerbating fundamental instability and creating new challenges for Vietnam. These economic vulnerabilities can be blamed on the adverse impacts of the global financial crisis and macro fluctuations, specifically in the period after 2008 as well as the lack of public confidence for macroeconomic stabilisation policy, resulting in changes in consumer behaviour, downsizing of investment scale and sluggishness of the property market despite the slew of supporting packages by the government. Dominated by all these economic elements, the mortgage finance and consumer credit in Vietnam, which is still developing, has also been identified as unstable and immature. In other words, the unfavourable economic environment has hampered financial stability by eroding asset quality and partially hindering the non-performing loan settlement due to mortgage handling obstructions; thus partially exerting multi-directional effects on demand and supply sides of mortgage market in Vietnam. Consequently, all have created a vicious cycle of restraining economic growth and recovery.

This paper will present the fundamental features of mortgage finance and consumer credit in Vietnam through assessing the incentives behind household debt as well as the characteristics of the Vietnam property market, thus suggesting the implications on financial stability. Simultaneously, it also

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recommends a course of actions for policymakers in mitigating the potential adverse impact of mortgage finance and consumer credit's changes. All the contents are organised in six sections as follows:

Section 1	–	Introduction
Section 2	–	Mortgage Finance and Consumer Credit: Developments and Trends
Section 3	–	Literature Review
Section 4	–	Consumer Credit on Real Estate: Implication on Financial Stability
Section 5	–	Policy Recommendations
Section 6	–	Conclusion

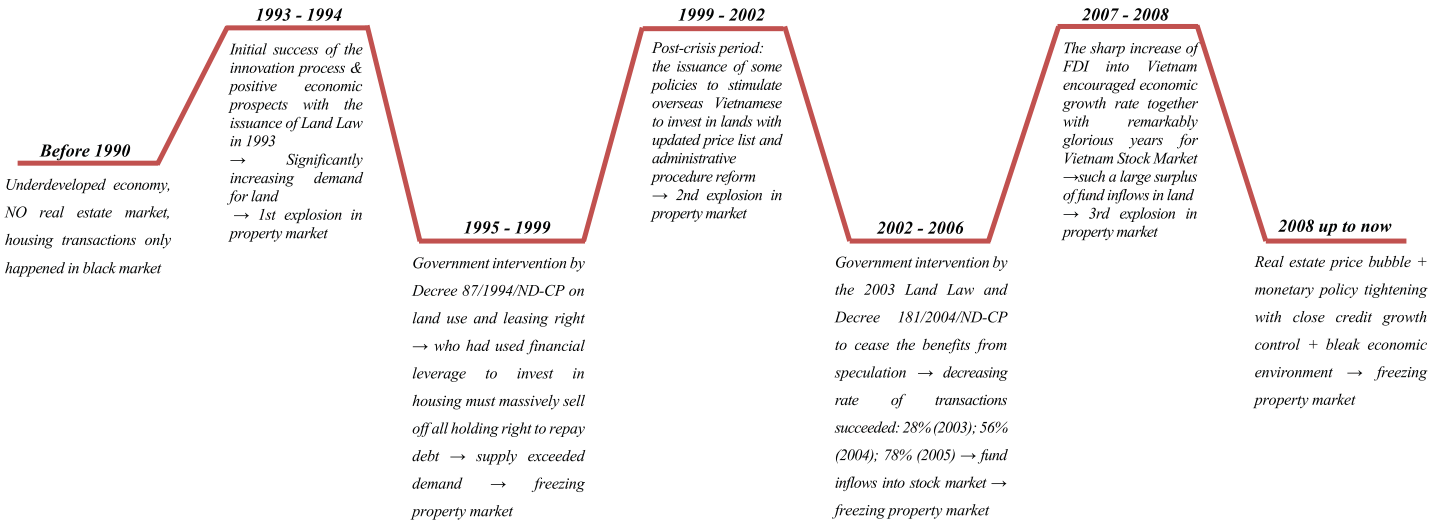
2. Mortgage Finance and Consumer Credit: Developments and Trends

The Vietnamese mortgage market is relatively underdeveloped, due to the transaction habits of the Vietnamese as well as to the specific regulations on land ownership. Initially, taking loan is still not a very common practice among homebuyers in Vietnam, the majority of whom prefers paying in cash. Another point is that freehold land is not allowed in Vietnam. The Constitution of the country and the Land Laws mandate that people residing in Vietnam can have access to land only through allocation or lease, granted by the government. Thus, the bank giving loans are to be collaterised with the property rights. Besides, the ratio of loan-to-value (LVT) can be up to a maximum of 50%, and for exceptional case where the borrower shows amazingly good financial condition, the LVT ratio will be upgraded to 60%, which is still far below the level of 80 – 90% in the developed countries. In short, the mortgage market in Vietnam is still in the stage of consolidation and progress has constantly fluctuated in periodic episodes (Figure 1). Consequently, it interacts in the multi-dimensional relationship with many external and internal macroeconomic factors, among which is credit.

With such peculiar features, the volatility of the Vietnam mortgage market has influenced the practice of consumer credit on real estate in Vietnam to continuously vary through time. Accordingly, it showed the fluctuations in total credit growth on real estate in the period 2003 – 2012, marked by the trough in 2009 following two peaks formed in 2008 and 2010, respectively (Figure 2). In detail, the Vietnam market witnessed the upward trend in consumer credit on land and housing lasting over the period of 5 years starting from 2003. The 2008 marked a record performance for consumer credit on real estate over the past 10 years; and it signaled a reversal in direction of the soaring tendency. Moreover, the vacillations of consumer credit growth on property market have been identified to have proportional relationships with total credit growth in general and housing price, especially during 2006 – 2009, and since 2011 up to now.

These features of housing finance in Vietnam can be explained by objective factors in the macroeconomic environment as well as by the subjective interventions of the government in an effort to balance all the targets and maintain its competitive edge, which, in turn, reflected in the interactions of both demand and supply of consumer credit on real property.

Figure 1
Cycle of Vietnam Real Estate Market



2.1 Demand Side

In Vietnam, due to the peculiarities of an emerging economy with a nascent but fast growing property market and fragile financial system, the demand for consumer credit and mortgage finance is dominated by four components, i.e., demographics, interest rate regime, economic growth and government policies.

2.1.1 Demographics

Vietnam's population continues to grow rapidly in recent years, putting more pressure on the needs for housing. Over the last five years, the population density has increased from 258.72 to 276.32 people per square kilometer (Figure 3). Besides, the demand for urban houses, especially social housing and low-cost housing for workers and students has increased sharply, reflecting the migration trend of the population (Figure 4). Accordingly, due to abundant employment opportunities, modern living style and more easy access to social and financial innovations, employees tend to move from the less developed rural areas to the metropolitan city or political, economic and tourism centers. This has created a huge demand for consumer credit for housing in those destinations, especially for low-cost houses, shelters and condominiums. Indeed, this also reflects the imbalance of the market structure in Vietnam, which offers massive supply of high-priced or luxury houses, but surprisingly leaves demand of medium to low-cost segment in abeyance.

Besides, the data on salary and average wage of the SOE (State-owned enterprise) sector during 2005 - 2011 clearly reflected the relationship between income and economic fluctuations. Accordingly, the 2008 – 2009 crisis pushed many corporations into distress, causing the monthly average wage of the SOE sectors to fall by 3.4% (inflation exclusive) (Figure 5). Except for 2009 when the stimulus packages of the government were launched, this situation did not improve until 2012 as the enterprises remained stagnant.

It should be noted that in Vietnam the average salaries and wages themselves do not have any significant impacts on credit for housing but it directly changed the consumption and investment behaviour of the households. According to a survey conducted by the National Financial Supervision Committee (NFSC) from 3/2012 to 2/2013 in all the big cities, the rate of real estate portfolio has sharply declined from 25.24% to only 10% (Figure 6). Therefore, it can be concluded that the movements in compensation for labour also influenced the demand for consumer credit for real estate. However, the extent of this impact has been

insignificant and temporary, especially on long-term home buying decisions. Notably, changes in income hardly encourage nor discourage the demand for housing credit; on contrary, for speculation, they do.

2.1.2 Interest Rate

Since 2002, Vietnam has carried out interest rate liberalisation, allowing financial institutions and customers to negotiate the cost of loan and borrowing (under surveillance). On the one hand, this policy has facilitated the accessibility of households to credit, thus smoothing their consumption that had been previously restrained by the ceiling rates. On the other hand, as a result of this policy, over the past 10 years, the medium- and long-term lending rate showed strong variation, particularly during the period of 2008 up to now. Whereas during the period of 2000 – 2007, the rate only steadily fluctuated in the range of 9 – 12%, stimulating the consumer credit; in 2008, in order to reflect tight monetary policy of the State Bank of Vietnam (SBV), this indicator was shifted up to 18.5% and beyond until it reached 21%. In the following years of 2009 and 2010, this long-term rate fell slightly to about 12 – 16% before rocketing back to the level of about 20% in 2011 due to high inflation (Annual Report of the SBV, 2002 – 2012) (Figure 7). However, the yield curve of deposit rates in Vietnam could be characterised as flat, or even inversed, if excluding liquidity premiums, implying the difficulties for consumers to access medium- and long-term capital for investment and consumption. The reason is that with the nearly the same deposit rate for all maturity terms, bank clients would prefer the short-term deposit, threatening the liquidity of bank. These movements of the lending rate directly reflected in the interaction of consumer credit demand for years.

2.1.3 The Economy

The incredibly sharp increases in domestic demand for credit on property in Vietnam are always driven by the level of economic growth. Vietnam which became the 150th member of the World Trade Organisation (WTO) in 2006 gradually decreased or removed tariff and non-tariff barriers on foreign goods and services and improved the legal and institutional framework for trading activities, etc. Vietnam has made remarkable efforts to open up its market for foreign companies and investors, including easing the limits on foreign ownership in many areas, stimulating tremendous inflows of Foreign Direct Investment (FDI) into the country. With the annual growth of approximately 8% plus a booming stock market, the Vietnamese economy saw an unprecedented surge of fund flows into real estate market before (Figure 8).

In the economic and social aspects, the robust and stable economic growth led to the opening and expansion of many industries, which in turn "activated" new demand for factories and office spaces, as well as for shelters in the major cities for the flow of employees from the less developed parts of the country. The prosperity of business in this period itself elevated employees to an improved standard of living and, more importantly, raised positive expectations about the future, thus making them seek out another profitable saving channel rather than deposit, i.e., real estate.

In terms of finance, the fast economic growth required a large amount of investment fund, leading to the imbalance between saving and investment when the average growth rate of spending was faster than the average growth rate of income since 2008 (Figure 9). The continuous increased difference between saving and investment has put pressure on the interest rate of the economy. To compensate these parts, investors themselves would seek out the riskier fund destination, specifically, real estate. Meanwhile, the stock market boom also enriched many households, thus leading to the demand to improve their living standards. Besides, the anticipation of continuing increase in housing price attracted investors to unremittingly purchase and re-sell the asset or lease them back to foreign expatriates at twice or even more than the price domestic customers would offers. In short, the opportunities generated by positive economic growth brought consumers a huge benefit, thus encouraging the demand for total credit in Vietnam generally and for housing credit in particular.

The real estate market in Vietnam encountered a down-side in 2008–2009. The economy tumbled at the beginning of 2008, and was followed by a serious downturn in the stock market. The market witnessed an astounding decline in housing prices and consumer credits on property at a much faster rate than total credit during this period. In summary, the demand for credit on housing in Vietnam depends on the economic condition at any given period. A sustainable and stable environment boosts up the demand for consumer credit which flowed into real estate market, creating not only positive housing credit growth, but also at a pace greater than the economic growth rate, giving rise to complicated and chaotic side-effects.

2.1.4 Government Policies and Subsidies

The Vietnamese real estate market has experienced many ups and downs; it went through three episodes of explosive growth over the past 20 years, with each episode followed by a market freeze (Figure 1). Noticeably, at each extreme, the government intervened in the market with administrative tools to balance all

the targets. The most remarkable development was the issuance of Decree 71/2001/ND-CP (Decree 71), providing guidance under the Law on Residential Housing on the November 2005, which aimed to discourage speculative real estate investment. Intended to minimise risks for buyers, Decree 71 required clearance from the Prime Minister for large-scale developments. Moreover, the Decree also contained revisions to the Housing Law allowing overseas Vietnamese the same rights as Vietnamese citizens to acquire unlimited property. The government's efforts also included other measures to create more demand for consumer credit for housing, partially contributing to the property market boom in the period of 1999 – 2002. However, right after that, to curb the uncontrollable development of the real estate market and consumer credits, the government issued the Decree 181/2004/ND-CP guiding the implementation of Land Law which consolidated some provisions pertaining to the registration of land use right, mortgage, tender offer on lands, etc.

Banks also conduct many supporting policies to bolster demand. For instance, a VND5 trillion credit package was given to home buyers by the Vietnam Bank for Industry and Trade (Vietinbank). An exemption of about 10% of the value added tax (VAT) for home buyers is being proposed by the Housing and Real Estate Market Department. Most recently, five commercial banks have allocated a social housing stimulus package worth VND 30 trillion (US$1.4 billion) for house renters and buyers from June 1st 2013 to unfreeze the property market. To this extent, all these endeavours of the government and SBV have made some impact on the demand for consumer credit and mortgage finance in Vietnam.

2.2 Supply Side

The period over the past 12 years witnessed the resumption of the upward trends of consumer credit growth in real estate of the first 10 years; then rapidly reversed in the opposite direction since 2010. Besides the above analysis on the demand side, this tendency has also been explained by the movement of the mortgage credit supply that was in turn dominated by Non-performing Loan (NPL) ratio, money supply and developments in the real estate market.

2.2.1 Overdue and NPL Ratio

Overdue and NPL ratio in general as well as overdue and NPL in real estate ratio in particular have been the major hindrances to new loan provision for real estate by the commercial banks in two ways. *First*, in the context of the challenging macroeconomic environment, overdue and NPL ratio in real estate

is definitely the closest indicator of investment risk evaluation and one of the leading factors in the lending decisions of financial institutions. That suggested the partial proof of downward movements of housing credit when the overdue and NPL ratio in Vietnam escalated sky-high in the period 2010 – 2012 (Figure 10), threatening the safety of the entire Vietnam financial sector. *Second*, overdue and NPL ratio in general have influenced the liquidity in the banking system, where high bad debts would prevent the banks from giving credit, especially mortgage credit, to their customers.

2.2.2 Money Supply

The money supply as a tool of monetary policy has had a great impact on consumer housing credit through promoting or inhibiting the supply side of the mortgage market from banks. Previously, in times of low inflation and stable economic development, the government loosened monetary policy, targeting at economic growth stimulus, parallel with the increase in both demand- and supply-side of credit on real estate. In the period of 2004 – 2007, the dramatic increase of money supply growth (up to 46%) together with abundant FDI flows created opportunities for housing credit to be maintained at a high level (18.17% in 2007 and a record at 36.78% in 2008) (Figure 11). The picture was marred in recent years with a substantial reduction in money supply with a view to combating inflation. It curbed credit to the non-manufacturing sectors (including mortgage credit) to 22% as of 30/6/2011 and to 16% as of 31/12/2011. This has constrained the funding of the commercial banks in their extension of mortgage credit during the recent years.

2.2.3 Consumer Behaviour in Real Estate Market

The Vietnamese mortgage market possessed some specific characteristics apart from others. At crisis point, the plunge in property price in the world market is likely to burst the housing bubble The glut of real estate put on sale would trigger a potential financial meltdown, like in the 2009 US subprime crisis. In Vietnam, the consumers act differently on the verge of land price declines. However negative the market signal, people will rather cling on to their assets rather than massively get rid of them at any cost. Consequently, in a crisis, instead of selling the property to repay debt to banks, the consumers stubbornly retain their ownership with the absurd hope of minimising loss. This resulted in booming level of bad debt as in the situation in Vietnam since 2010. Moreover,

loopholes in the law prevented commercial banks from foreclosing collateral, largely real estate, to recollect their loans. That is the reason why banks in Vietnam are quite reluctant to engage in the mortgage market.

3. Literature Review

3.1 Introduction to Literature Review

The development of the property market plays an important role in the economy as it directly involves a huge volume of assets and it indirectly have a bearing on other economic activities since a large proportion of total credit to the economy is channelled into the mortgage market. In addition, housing booms and busts have been associated with financial instability, causing substantial costs to the economy. Thus, the relation between housing finance and financial stability is a topic of interest to many researchers.

This section purposes to review the international research works and some researches on this topic in Vietnam to develop the theme for this research. In particular, this review focuses on: (1) Factors that impact house prices or housing booms; and (2) The relation between housing busts and financial stability.

3.1.1 Factors that Impact House Prices

The factors that impact house prices include income, credit availability, housing supply, population growth, expectations about housing market, and the development of financial markets.

First, a positive correlation between house prices and income growth has been found in quite a few researches (Muellbauer and Murphy, 2008). However, this is not the always the case. A negative correlation has also been found. When studying the mortgage credit expansion in the US in the period from 1991 to 2005, Mian and Sufi (2009) shows that income growth and house prices both increased during the period 1991-2001. But during the following period from 2001 to 2005, house prices and mortgage credit increased, despite the fact that relative income and employment growth experienced declines.

Second, increases in house prices are due to the greater availability of mortgage credit. It is the result of expansionary monetary policy with lower interest rates, which raises housing demand while housing supply is inflexible, resulting in housing supply falling short of housing demand, in turn causing house

prices to rise (Mishkin, 2007; Geanakoplos, 2010; Mian and Sufi, 2009). Moreover, relaxed lending standards due to expansionary monetary policy have stimulated housing demand, increasing house prices. The positive correlation between mortgage credit and house prices has been observed in many countries such as Slovenia and Poland (Cirman, 2005; Laszek, 2005).

Third, increases in house prices may largely be the result of restrictions on housing supply in some countries such as the UK (Mishkin, 2007).

Fourth, population growth may be an important factor behind increases in house prices in some areas due to its positive impact on housing demand while housing supply is constrained. In particular, house prices in the big cities where the upgrading and construction of new infrastructure and buildings have not kept pace with rapid population growth, witness sharp increases (Karantonis, 2008).

Fifth, the expectations of rising house prices in the future on the demand side combined with expectations of lower risks on the supply side lead to higher house prices (Renaud and Kim, 2007).

Sixth, the development of the financial market as well as macroeconomic policies which paved the way for the emergence of new and diversified mortgage credit products including securitisation, such as mortgage-backed securities, have created a new fund of mortgage finance besides the traditional channel of mobilising deposits by credit institutions, stimulating the demand for housing and causing house prices to increase (Renaud and Kim, 2007).

3.1.2 Relation between Housing Busts and Financial Stability

Mishkin (2008) concludes that asset price bubbles, in particular housing bubbles which are the result of credit booms have brought about significant challenges to the implementation of macroeconomic policies because of the possible serious consequences of their busts to financial stability which in turn affects real economy. The outstanding example of the tremendous impact of housing busts is the recent subprime crisis in the US which led to the global financial crisis and economic recession from which the world economy has not yet fully recovered.

The economic recessions which relate to housing busts usually have more serious and long-lasting consequences than those originating from other roots.

(Claessens, Kose, and Terrones, 2008; Crowe, et al., 2011a). Housing busts can create negative shocks, badly affecting the stability of the financial system of a country because a sharp decline in house price deteriorates the balance sheet of credit institutions, throwing them into liquidity, even solvency difficulties, making them unwilling and unable to make new loans to the economy. Without funds from the credit institutions, the economic actors will not have the capital to invest in new projects or to expand their existing businesses. Some are even required to cut back their spending, impacting adversely on the normal functioning of the economy, leading to financial instability and economic recessions. In addition, falling house prices exert a drag on household consumption. Mishkin (2007) argues that house prices are less volatile than stock prices, but changes in the house prices affect a larger proportion of population than changes in stock prices; changes in housing wealth and its impact on household consumption might be considered to be much bigger and longer lasting than changes in stock wealth.

IMF (2011) points to three channels that intensify the severity of housing busts to financial stability:

First, when homeowners who have mortgages with high loan-to-value ratios, are faced with falling house prices combined with tightening lending standards for new loans, they would be unable to refinance their property and be driven to default on their debts. That would worsen the credit standing of the borrowers and remove them from the potential buyers of houses, further depressing house prices.

Second, the foreclosures of mortgages make house prices decrease more than usual.

Third, if the possibility of default and foreclosure is high, then the borrowers with negative equity mortgages will not benefit from any increases in value of the property, making them unwilling to keep their property, and the rise in the supply of property makes house prices decline further.

Historical data of some countries show the existence of a relation between falling house prices and financial instability. However, this relationship is usually not causal, which means that not all housing busts end with a financial crisis (Mishkin and White, 2003; IMF, 2011). For example, housing bust in Hong Kong

in 1990s did not have a big impact on the financial system of Hong Kong (Crowe, et al., 2011b). Another example is the increases in mortgage defaults in the UK from 1991 to 1993 which had little impact on the banking system of the UK, and even at the peak of the defaults, the rate of foreclosures was still less than 1% with rather high rate of recovery (Mishkin, 2007).

Therefore, whether housing busts lead to financial instability depends on various factors. Under certain circumstances, the mortgage sector will not be the origin of financial instability because of some of these reasons:

First, house prices are less volatile than other asset prices, so a fall in house price will create a smaller shock as compared to that created by a substantial decrease in other asset prices, such as stock prices (Mishkin, 2007).

Second, in the past, mortgage credit was less complicated and less risky than commercial loans, especially unguaranteed loans because the loan-to-value ratio of mortgage was usually smaller than that of commercial loans. Thus, the rate of default on mortgage credit was low and the losses from default were relative small (Mishkin, 2007).

Third, nowadays, the property which is financed by mortgage credit is usually insured, reducing the possible losses that the financial system may have to bear (Scanlon, et al., 2011).

In sum, there are quite a few factors that can have significant impacts on house prices and housing booms. And the unwinding of these booms can lead to financial instability under certain circumstances.

3.2 Some Researches on Vietnamese Mortgage Market

A few researches have been conducted on the mortgage market in Vietnam. The results are quite consistent with the findings of international studies on mortgage credit reviewed above. Mortgage credit has a positive correlation with money supply growth (expansionary monetary policy), so the property market goes up when money supply and mortgage credit growth increases and goes down when money supply and mortgage credit growth decreases with the lag of about six months (National Financial Supervision Committee of Vietnam, 2012). Due to the contractionary monetary policy in the first half of 2011, mortgage credit decreased sharply, freezing up the property market since the second half of 2011. The dramatic plunge in house prices in all segments of the real estate

market has worsened the asset quality of, and possibly caused credit risk, to the credit institutions involved in granting mortgage credit, affecting both their liquidity and solvency. Mortgage credit may turn into bad debts and even become irrecoverable debts of credit institutions, which will have big impact on the stability of the financial sector of the country.

Another research was conducted on the relation between mortgage credit and house prices in the period from 2000 to 2012 in Vietnam by Doan and Le (2013). The authors conclude that the relation between mortgage credit and house prices in Vietnam is quite strong and positive. In general, mortgage credit goes hand in hand with house prices, but with a lag of three to six months. However, mortgage credit and house prices have a mutual interactive relationship. On the one hand, constant rising house prices create an anchor for house price increases in the future, promoting the housing demand, which in turn promote the demand for mortgage credit. On the other hand, mortgage credit growth stimulates the development of property markets, causing house prices to rise.

4. Consumer Credit on Real Estate: Implication on Financial Stability

4.1 Methodology Framework and SVAR Identification

This paper uses the Structural Vector Autoregression approach to identify the responses of the quality of consumer credit on real estate to other macroeconomic and institutional variables. The SVAR approach methodology is employed to facilitate the problems concerning the identification of the contemporaneous and dynamic relationships between variables in the model. The Vietnamese real estate credit market can be described by a structural form equation as follow:

$$A_0 Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + ... + A_p Y_{t-p} + \varepsilon_t$$

Where Y_t is a (N×1) vector of endogenous variables at time t; A_i is a (N×N) matrix of parameters for i from 0 to p; ε_t is a (N×1) multivariate white noise error process, whereby, $E(\varepsilon_t)=0$, and $E(\varepsilon_t,\varepsilon_\tau)=\Sigma$ if $t=\tau$ or 0 otherwise.

The SVAR approach assumes that the structural innovations ε_t are orthogonal, whereby the structural disturbances are uncorrelated, and the variance-covariance matrix Σ is constant and diagonal. The contemporaneous matrix A_0 is normalised across the main diagonal so that each equation in the SVAR system has a designated dependent variable.

As housing price, consumer credit on real estate, and NPL ratio are influenced by each other and also affected by the change in the macroeconomic conditions such as gross domestic product and consumer price index, this paper uses a SVAR approach to capture the responses of NPL ratio to the shocks of other variables. This ratio is considered a proxy for the financial stability of Vietnamese banking system. Finding the response of NPL ratio to other shocks and vice versa helps to identify the impacts of housing bubble and housing finance on financial stability and vice versa.

The author places the restrictions on the contemporaneous relationships among the variables as follow:

$$\begin{bmatrix} \varepsilon^{gdp} \\ \varepsilon^{cpi} \\ \varepsilon^{fsr} \\ \varepsilon^{rec} \\ \varepsilon^{hpr} \end{bmatrix} = \begin{bmatrix} 1 & a_{12} & 0 & 0 & 0 \\ a_{21} & 1 & 0 & 0 & 0 \\ a_{31} & a_{32} & 1 & 0 & 0 \\ a_{41} & a_{42} & a_{43} & 1 & a_{45} \\ a_{51} & a_{52} & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \mu^{gdp} \\ \mu^{cpi} \\ \mu^{fsr} \\ \mu^{rec} \\ \mu^{hpr} \end{bmatrix} \quad (1)$$

The coefficients $a_{m,n}$ in (1) indicate that variable n affects variable m instantaneously. The zero-coefficients indicate those variables are constrained to be zero. GDP is gross domestic product, CPI is consumer price index, FSR is NPL ratio of consumer credit on real estate provided by the banking system, REC is consumer credit on real estate, and HPR is housing price index.

Specifically, the first two equations in (1) assume that the gross domestic product and consumer price index are affected by each other contemporaneously but not by other variables such as the quality of consumer credit on real estate, consumer credit on real estate, and housing price. The quality of consumer credit on real estate is proxied by the NPLs on consumer credit on real estate. It is assumed to respond to income, proxied by gross domestic product, changing in proportion spent for living costs, proxied by the consumer price index. As consumer credit on real estate is disbursed quickly (usually at one time) than commercial real estate, there is a low probability that the stoppage of credit will occur. Moreover, consumer credit on real estate is for living rather than speculation on price; thus, housing price does not have contemporaneous impact on the quality of the loan. The author assumes that the banks have fully and

updated information on borrowers' income, living costs, the quality of the loan, and housing price. Housing price is supposed to respond contemporaneously to income and the living costs of the household. However, as mentioned in Section 2, the overheating of the economy from 2005 to 2007 is considered to have encouraged households to borrow money to finance real estate purchases, but this temporary increase in income seem to have little effect; so to test the impact of overheating economy, the output gap is employed instead of the gross domestic product.

4.2 Data Sources and Data Characteristics

This paper uses quarterly data for the period from Q1 2003 to Q3 2012. Although the data popularly used is monthly data, the unavailability of gross domestic product, NPL ratio and consumer credit on real estate on monthly basis compel the author to opt for the use of quarterly data as the frequency of input. The beginning of the sample is Q1 2003 because the SBV did change its interest rate policy in 2002 from a managed one with a band on lending rate to a more flexible one where credit institutions set the interest rate based on the market mechanism. Moreover, the beginning of the selected period is the end of the real estate bubble from 2001 to 2002 when investors speculated to take advantage of the government's move to allow overseas Vietnamese to buy houses.

Real gross domestic product, consumer price index, and housing price are taken from the General Statistics Office. The NPL ratio of consumer credit on real estate and consumer credit on real estate are collected from the SBV and Ministry of Construction. All the data, except for the NPL, is in log-form. The output gap is calculated by applying the Hodrick-Prescott filter method. Seasonal dummy variables are added to the model to trace the seasonality.

Unit root test indicates that all the variables, except for the output gap, are non-stationary, I(1), processes. Thus, the non-stationary variables are transformed to the first difference form, then, all of them are stationary.

4.3 Estimation and Results

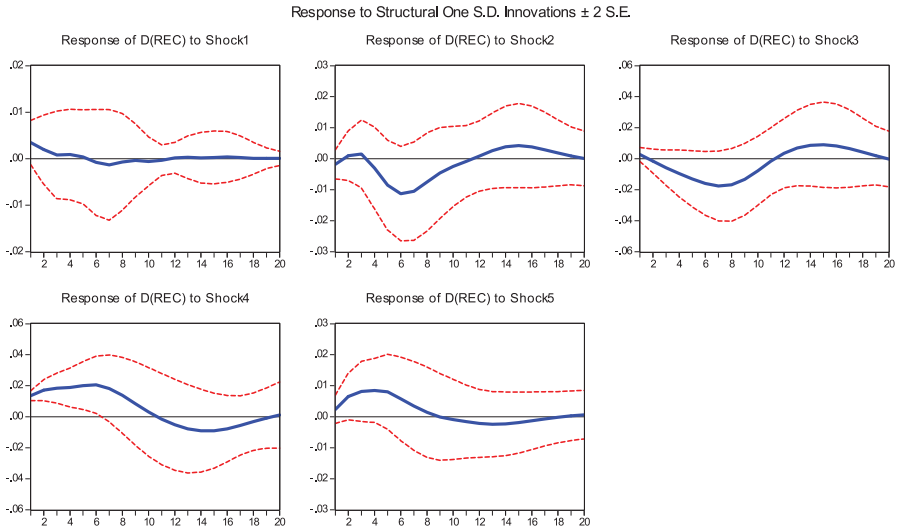
The likelihood test of over-identifying restrictions reports the chi-square as 0.3885 and probability as 0.5331; therefore, the identifying restrictions are not rejected at any conventional significance level. A lag length of two is chosen for this study to provide reasonable dynamics without shortening the estimation sample

although both the Akaike information criterion and Schwarz information criterion suggest lag length of four (The four-lag model does not satisfy the stability condition). The model is free of autocorrelation and heteroskedasticity. All roots lie inside the unit circle, ensure the stability of the model.

Not only a shock to one variable influences directly on itself but also affects other variables as suggested in the model restriction. An impulse response function traces the effect of a one-time shock to one of the innovations on current and future values of other endogenous variables. Figures 12, 13, and14 display the estimated impulse responses of consumer credit on real estate, housing price, and NPL ratio to a set of shocks, respectively.

The result of the impulse response function for real estate credit is shown in Figure 12. As expected, a positive shock to income, housing price, and real estate credit itself results in an increase in real estate credit. The shock in income tends to have a brief and small positive impact on the real estate credit, indicating that borrowers and lenders consider the permanent increase in income before making decision rather than a temporary one. The positive shock to real estate credit and housing price provides more immediate, persistent and intense effect on real estate credit. It means that the loosening policy on real estate and consumer credit as well as the development of real estate market creates an incentive for both borrowers and lenders to facilitate loans. ***This reflects the case of the Vietnamese credit market as the credit institutions usually priortise the liquidity and market value of the collateral, the real estate itself, as one of the most important criteria after the stability of repayment source, when appraising a loan.***

Figure 12
Responses of Real Estate Credit to Shocks

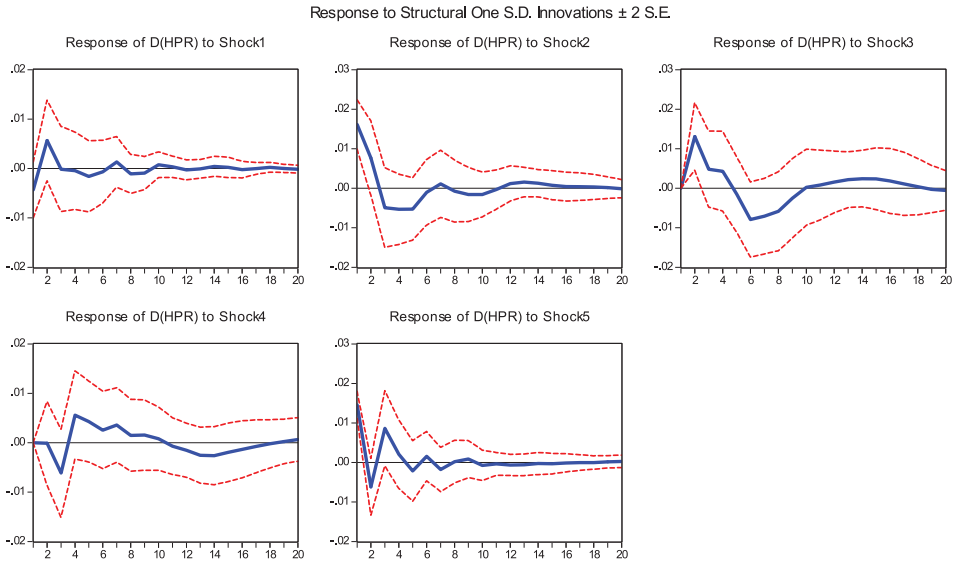


In contrast, a shock to the consumer price index has a delayed impact on real estate credit as an increase in the proportion of income spent on living costs needs time to change the willingness of borrowers for a loan application. A shock to the NPL ratio provides an immediate and strong movement in the response of real estate credit provided by the banks. ***The banks have full and updated information on the quality of the loan when they decide to classify a special mention debt to substandard category or higher ones. Given the low level of capital to absorb credit losses, the banks often try to reduce their exposure to real estate market risk by tightening their lending criteria when the NPL ratio increases.***

Figure 13 shows the responses of housing price to shocks. The housing price responds positively to a positive shock to income but the impact is quite short. Real estate is considered as an inflation hedging investment, so its demand and price respond to the inflation shock quickly and strongly in the first two quarters. The impact of a shock in the NPL ratio on housing price seems counter-intuitive when an increase in the NPL ratio initially leads to an increase in housing price. However, this phenomenon has been observed in Vietnam when the banking system usually tries to hide information on the quality of the loan. ***Because of low level of transparency in the real estate and credit markets, the market participants still continue pushing up the price. Only when the banks reveal***

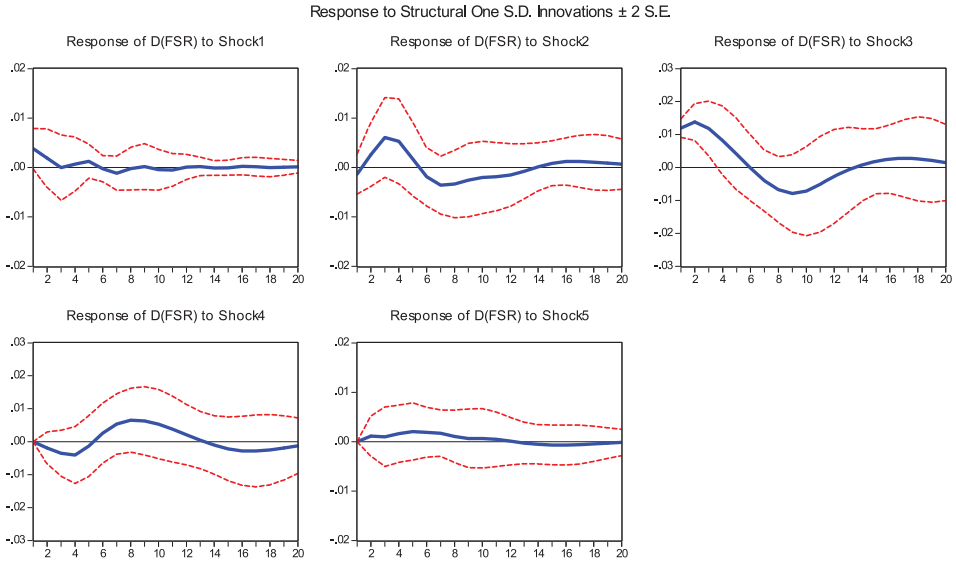
their financial condition together with the widespread information about the borrowers' bankruptcy, the house price is reverted to its initial price level.

Figure 13
Responses of Housing Price to Shocks



A positive shock to real estate credit has a strong impact on housing price only after four quarters. The response of housing price to its shock is quite volatile when an increase in price is followed by a reduction with smaller magnitude. This phenomenon represents the fact that the real estate price of Vietnam is usually manipulated by speculators. ***This type of investors often implement a strategy in which they buy and hold houses in a short period of time, pushing up the price and demand of other investors, then sell them for a small profit. To be implemented several times in one year, this profitable strategy is the main cause of the fluctuation in housing price.***

Figure 14
Responses of NLR to Shocks



The result of the impulse response functions for the NPL ratio is shown in Figure 14. A positive shock to the NPL ratio of consumer credit on real estate leads to an immediate and strong increase in NPL ratio. Moreover, ***the long lasting impact (five quarters) indicates that a negative shock in the quality of real estate loan has a domino effect where the bursts of bankruptcy in several real estate loans are likely to spread all over the market.*** An increase in consumer credit in real estate is followed by a decrease in the NPL ratio as the numerator increases; however, the NPL ratio is gradually built up after four quarters. A positive shock to housing price causes a small positive impact on the NPL ratio. This result seems counter-intuitive. However, in the case of Vietnam, there are two reasons: a higher housing price means higher risk for the bank if the income of borrower remains unchanged; and the banks often wait for an increase in housing price before reclassifying the undue loan to the NPL categories. As moving the loan to the riskier categories together with the higher housing price, the provision will be lower and the bank can sell the collateral for a higher price, ensuring the high recovery rate of the undue amount.

Table 1 presents the forecast error variance decomposition of three variables. The variance decomposition for the first four quarters, eighth, twelfth, sixteenth, and twentieth horizon in the future is reported. Consumer credit on real estate is determined mainly by its own shocks, although its proportion is gradually shared

by the increasing importance of the real estate loan's quality. Much of the variation in housing price in the short term is explained by its own shock and consumer price index. However, over the medium term, the NPL ratio gains its dominance over the housing price. It confirms the feature of real estate investment as an inflation-hedging instrument and the importance of the loan quality over the quantity in relation to the housing price. In the very short term, the NPL ratio is mainly affected by its own shock and the shock in borrowers' income. ***For the medium term, although its own shock still dominates, consumer credit on real estate and consumer price index progressively improve their impacts on the quality of the loans.*** Housing price and temporary change in income do not play a significant role in explaining the variation of quality of the loans.

Table 1
Variance Decomposition of Consumer Credit on Real Estate, Housing Price and NPL Ratio

Horizon	% of Variation due to				
	GAP	CPI	FSR	CRE	HPR
Consumer Credit on Real Estate					
1	5.68	1.58	3.45	86.61	2.69
2	2.85	0.77	1.78	85.94	8.66
3	1.65	0.66	4.47	81.76	11.46
4	1.13	1.03	8.93	76.70	12.20
8	0.47	8.75	26.44	57.54	6.80
12	0.44	8.62	29.53	55.01	6.40
16	0.40	8.62	31.12	53.90	5.96
20	0.39	8.66	31.60	53.51	5.85
Housing Price					
1	3.85	52.93	0.00	0.00	43.22
2	6.45	40.29	21.62	0.00	31.64
3	5.37	36.06	20.43	3.99	34.15
4	4.96	35.93	20.57	6.69	31.84
8	4.51	31.67	28.49	8.56	26.76
12	4.55	31.56	28.67	8.85	26.37
16	4.42	30.87	29.17	9.99	25.54
20	4.42	30.82	29.23	10.05	25.48
NPL Ratio					
1	9.09	1.14	89.77	0.00	0.00
2	4.94	2.36	91.36	1.00	0.34
3	3.24	8.21	85.25	2.90	0.39
4	2.76	10.98	80.68	4.87	0.71
8	2.46	11.95	70.81	12.88	1.90
12	1.96	10.74	68.05	17.68	1.57
16	1.92	10.71	67.28	18.44	1.65
20	1.85	10.63	66.52	19.36	1.64

5. Policy Recommendations

Consumer credit on real estate has contributed to the development of the Vietnamese economy but somehow negatively affects the stability of the banking system as well as the macroeconomy. Based on the findings of the analysis in Section 4, which presents the results of a quantitative research on the effects of rapidly increasing housing credit on banking stability, in this section are outlined the policies implemented and the policies that are needed by the national government and other related organisations to mitigate those adverse impacts.

Firstly, **a smooth market with synchronised policies** is a must to prevent shocks to the real estate credit and housing price leading to more immediate, persistent and intense effect on real estate credit. Secondly, the result of the model indicates an immediate and strong movement in the response of real estate credit caused by a shock to the NPL ratio, which requires solutions for **solving bad debts facilitating stable credit growth**. Thirdly, **the level of transparency in the real estate and credit markets should be enhanced** to avoid price manipulations in the housing market. Likewise, it is necessary to **fully improve the position of intermediate investors as well as market management task** in order to develop the real estate market completely.

5.1 Policy Taken

It is obvious that consumer credit on real estate has started adversely affecting the activities of commercial banks since 2011. After a long period of fast and overheated growth, bad debts gradually mounted and soared, resulting in an illiquidity situation in the banking system. Currently in the restructuring of the economy and banking system, two of the most important tasks are to stabilise the financial market and concurrently improve the quality of consumer credit on real estate. Here, the government plays a facilitating role, while the SBV and the Ministry of Construction (MOC) assume main responsibility for executing the two primary tasks.

Accordingly, the Vietnamese Government issued two important resolutions since 2011, which are significantly meaningful in controlling consumer credit on real estate and financial stability. Firstly, the Resolution No. 11 of the government was passed on 24/2/2011 with the aim of tightening non-productive credit, including consumer credit on real estate, to control the associated risk exposure between the banking system and land market. Wherein, the government directed the SBV to execute and control the credit growth in 2011, which must be lower than 20%, and to prioritise some productive sectors, such business, agriculture, export,

small and medium enterprises, over the non-productive sectors, namely real estate and securities investment. Secondly, Resolution No.02, issued in 2013, was passed to support the commodity and real estate markets in the situation of rapidly increasing bad debts. So borrowers can maintain their business to meet debt obligations and likewise reduce inventory. The resolution is viewed as a life line aimed at rescuing the whole economy, especially the housing markets and banking system.

Therefore, in a short time form 2011 to 2013, the two Resolutions issued by the government seem to in conflict with each other. While the first one tried to tighten consumer credit on real state as fast as possible, which resulted in freezing the land market today, the other directive aims at loosening the current policies to rescue a languishing market which is too weak and difficult to recover. Moreover, the two solutions are temporary measures as they do not focus on qualitative changes. In particular, the list of housing products remains unchanged with too many high quality plans, while the demand of the public at large is for low- and medium-cost accommodation. Most of commercial banks are reluctant to approve new housing loans for fear of increasing new bad debts; therefore their products are not improved to attract borrowers.

In another aspect, based on the direction of the government, the SBV introduced a number of solutions that were appropriate to the real banking situation at hand during the different periods.

Firstly, pursuant to Resolution No.11, all commercial banks are required to execute **Directive No. 01 on 1/3/2011 to restrict credit growth, especially consumer credit on real estate.** In particular, the share of non-productive credit over total loans must not exceed 22% on 30/6/2011and 16% on 31/12/2011. For the credit organisations that failed to meet the requirements, the central bank imposed a new reserve requirement, which doubled the existing level together with other restrictions on their business in the last 6 months of 2011 and during year 2012.

Secondly, to assure legitimate house demand of the public, the **Directive No. 01 in 2012 was directed at borrowers by clarifying the discouraged sector in more detail** compared to the previous directive. For example, loans for consumption including using credit cards were curbed, while loans for building house, home repair and living accommodation, which are underwritten by the wage and salary of customers, were excluded. Similarly, loans for real estate and securities investment were constricted, exclusive of commercial properties used to sell or rent to low-income people, workers at industrial areas, business

areas and export processing zones. These adjustments ensured not only the management task but also satisfied the proper fund demand of the public, resulting in positive changes in the commodity and land markets, facilitating the development of the macroeconomy. Furthermore, facing the reality that credit growth was not as good as expected, the SBV decided to remove the restraint on consumer credit on real estate, securities and consumption as well and established a new target of 12% credit growth in 2013 under the Directive No. 01. Then, their supervisory activities are enhanced with the aim of strengthening banking system safety, risk hedging and bad debt reduction. On 14/3/2013, the SBV issued Circular No. 07 concerning special monitoring applied to credit organisations which are subject to credit losses and illiquidity leading to an unsafe banking system.

Thirdly, the Decision No. 254 on 1/3/2012 was passed by the SBV to **restructure all the financial institutions.** For each type of financial institutions, the target, direction as well as solutions for restructuring were prescribed. Basically, all activities at this moment are focused on solving bad debts, enhancing financial soundness, and capacity building of the management system.

Fourthly, one of the most prominent policies during the period is **the establishment of the Vietnam Asset Management Company (VAMC) under the Decree No. 53** of the Prime Minister to promote trade and resolve the bad debts of commercial banks. With VND 500 billion of chartered capital granted by the SBV, the major activities of the company are buying bad debts of financial institutions, collecting outstanding loans, selling debts and collateral, restructuring loans, adjusting debt obligations, converting debts into equity, and so on. The VAMC is expected to settle about 80-100 trillion dong of bad debts with an estimated recovery ratio of 20-40%. In addition, the Decision No. 843 on 31/5/2013 of the Prime Minister also carefully guided solutions for resolving bad debts along with particular regulations on the responsibility of related ministries.

Thus, similar to the effect of the two resolutions of the government, tightened real estate credit policies in particular and general credit policy imposed by the central bank resulted in a difficult market. While borrowers' income were reduced due to the economic crisis, the interest rate was increased to curb lending, the ratio of NPLs climbed quickly and uncontrollably. Furthermore, the late implementation of banking system restructuring and establishment of the VAMC foundation may bring unexpected results. In addition, the operating mechanism of VAMC proposed by the State Bank is depreciated. First, the company just bought up bad debts to a worth of VND 3 billion and more. How will the commercial banks resolve the others when the overwhelming majority of business

enterprises in Vietnam are small- and medium-sized businesses whose loan contract values are relatively small. Second, the VAMC will issue special bonds for as much as the book value of the NPLs instead of trading at the market prices. Hence the bonds as collaterals will be refinanced from the SBV while the financial institutions still have to clean up the bad debts by themselves. This mechanism just supports the commercial banks in terms of liquidity, but does not create new impulse trading in the real estate market to clean up the bad debts. Final, the recovery ratio estimated being 20-40% is too modest in comparison with the scale of NPLs in the whole banking system. Besides, the legal framework of Vietnam has not been completed yet, inclusive of the procedure for the provision of collateral. In many developed countries, collateral will be foreclosed and sold right after the decision of financial institution about the unmet debt obligation situation of its customers. Differently in Vietnam, the procedure requires obtaining court judgement, which is costly and time consuming. Meanwhile, NPLs are accumulated, resulting in the instability of banking system.

Finally, the MOC has the responsibility for resolving real estate NPLs. The MOC temporarily stops commercial property building projects in the major cities of Vietnam like Hanoi, Ho Chi Minh City, where the supply is excessive. It also stops the appraisal of new commercial property that does not serve the current demand of the public at large. But all above, the Circular No.07 on 15/5/2013 of MOC approved a credit stimulation package, amounting to VND 30-trillion. The real estate bailout will offer property developers loans with low interest rates, hovering around 6%/year. Then, some prioritised customers, who are low-income earners, are allowed to borrow through refinancing with a reasonable interest rate and with the duration of housing loans up to 10 years.

Although the solution is expected to encourage housing credit and unfreeze the real estate market, in reality, this VND 30-trillion real estate bailout package appears to be a big amount, but is actually too little in the face of the current difficult conditions. With complicated mechanism and administrative procedure, the ambiguity of low-income earner identification, the effect of the package is insignificant. Additionally, due to the weak cooperation with the SBV, after 2 months, there have been 30 projects and several enterprises which plan to build social housing or change commercial housing into social housing, benefiting from the VND 30-trillion real estate stimulation package, while low-income individuals are not yet among them.

In conclusion, by clarifying the policies taken by the government, the SBV and MOC for Vietnam from 2011 onwards and by analysing their pros and cons,

I would like to offer some recommendations to stimulate consumer credit serving economic growth while controlling its negative influences. These solutions should focus on completing the supervisory system instead of restricting credit growth. A set of regulations on underwriting standards need to be issued soon, which **simplifies the procedure for the provision of collateral**. Moreover, the government should **manage citizen's incomes via the banking system**, which will be additional collaterals for consumer loans. Besides that, among the four implications flowing from the model, the government as well as the two organisations have not yet considered the **level of transparency in the real estate and credit markets and in the development of real estate intermediate investors**. Hence, it is necessary to research and prescribe new solutions for these problems. As a final point, **better calibrated government participation** also needs to be considered because setting too high a target for economic and credit growth may lead to financial instability.

Content	Policy Taken	Policy Gaps	Recommended Policy
Solutions for restraining consumer credit growth on real estate	Clearly identifying who should be encouraged and discouraged to use mortgage finance and consumer credit.	Unclear until 2012	
	Applying the ceiling rate of mortgage finance and consumer credit over total credit.	Immediate changes leads to unmet target	Synchronising policy system
	Doubling reserve requirements in the case that commercial banks break regulations.		
	Closely monitoring credit operations		**Enhancing the quality of reporting on banking activities and real estate market.** **M**anaging citizen's incomes via banking system
	Reducing housing credit demand		
Individual solutions for cleaning up bad debts	**Establishing VAMC**	**Ineffective because of inconsistent mechanism in the context of the current situation.**	**Changing the mechanism**
The cooperation among organisations in handling and solving bad debts	**A stimulation package worth VND 30 trillion issued by the MOC cooperating with the SBV**	**Ineffective cooperation because of unclear regulations, relative small amount.**	**Enhancing the cooperation between MOC and the SBV; Completing the regulatory system**
Legal system		**Complicated procedure for the provision of collateral.**	Simplifying the procedure for the provision of collateral.

6. Conclusion

It is obvious that household debt in mortgage and consumer credit plays a vital role in the banking system and macroeconomic growth as a whole. Nevertheless, it may bring about adverse effects surpassing a safe threshold, as in the case of Vietnam.

This paper clarifies the trends of housing credit growth from 2003 to 2012 from an analysis of the underlying reasons on the basis of objective factors in the macroeconomic environment and the subjective interventions of the Vietnamese Government in an effort to balance all the targets. In addition, by comprehensively reviewing the research studies done on consumer credit on real estate in and outside of Vietnam, the paper uncovers the factors affecting house prices as well as the relationship between housing busts and financial stability. And they form the basis for running an econometric model that assesses the potential impact of the observed housing credit trends on banking system stability in Section 4. The findings indicate the estimated impulse responses of consumer credit on real estate, housing price, and NPL ratio to a set of shocks. Thus, based on the results of the model as well as on the reality of the situation observed in the these sectors, Section 5 recommends that the government and central bank enhance risk management, underwriting standards and supervision along with well calibrated government participation, besides the available policies taken to stimulus consumer credit on real estate while ensuring financial soundness and stability.

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Data Definitions

GDP is the real gross domestic product at 1994 prices, in domestic currency.

CPI is the consumer price index, 2005=100.

REC is the consumer credit on real estate supplied by banking system.

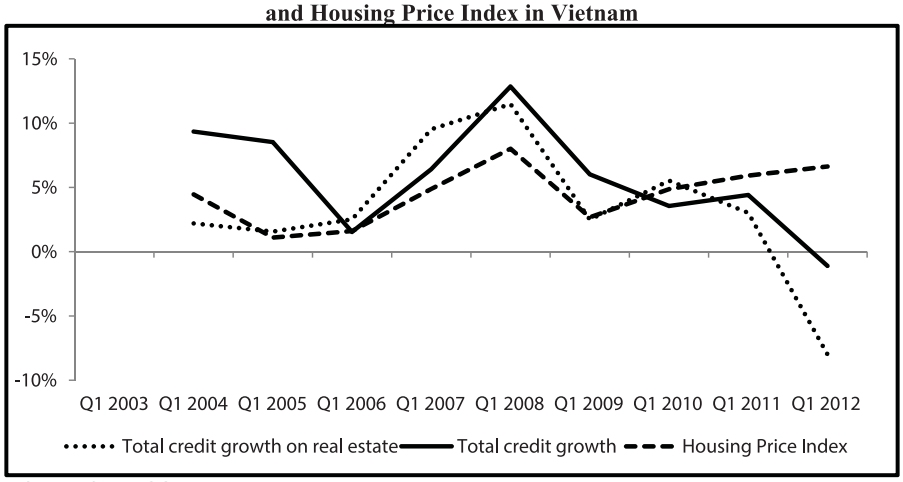
FSR is the NPL ratio of consumer credit on real estate. FSR is NPL divided by consumer credit on real estate.

HPR is the housing price and material construction index, 2005=100.

GDP, CPI, HPR are taken from the General Statistics Office. REC and FSR are taken from Monetary Policy Department, SBV and MOC. All the variables are from Q1 2003 to Q3 2012.

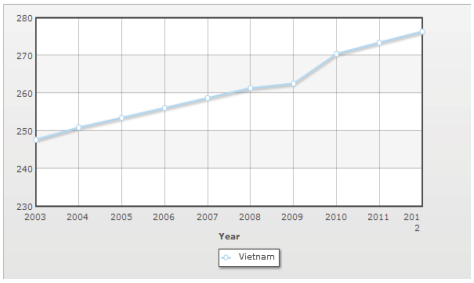
Appendix

Figure 2
Total Credit Growth Rate, Credit Growth Rate on Real Estate, and Housing Price Index in Vietnam



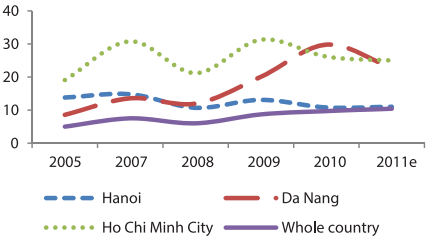
Source: SBV, MOC.

Figure 3
Vietnam's Population Density



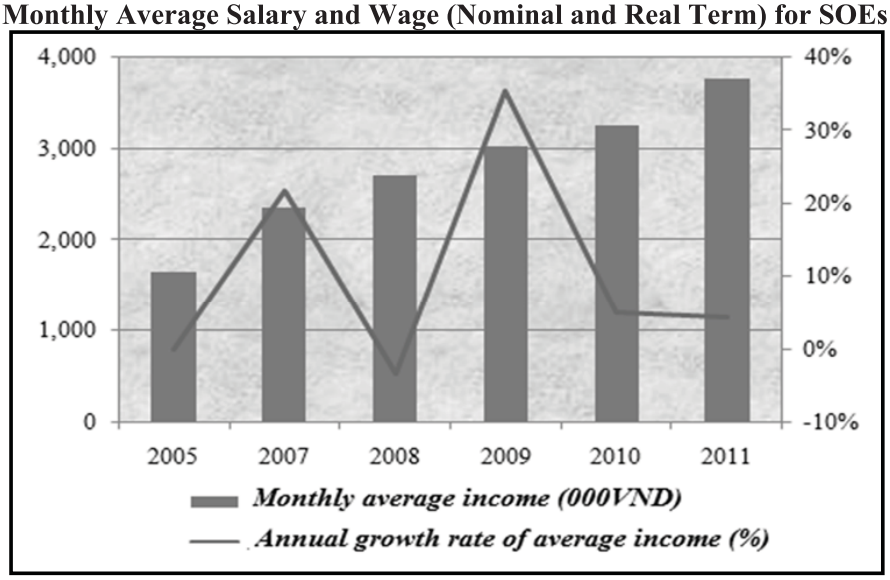
Source: CIA World Factbook.

Figure 4
Migration Trends in Big Cities of Vietnam



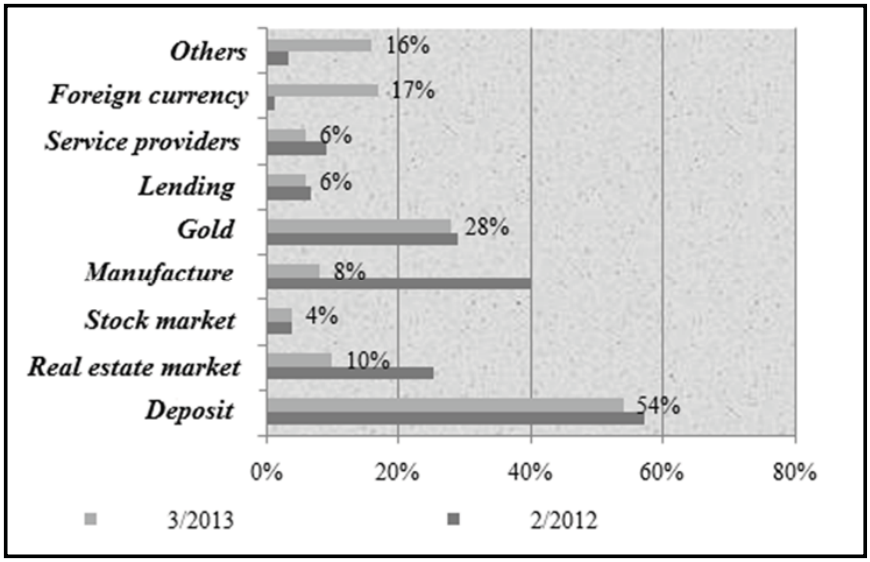
Source: General Statistics Office.

Figure 5
Monthly Average Salary and Wage (Nominal and Real Term) for SOEs



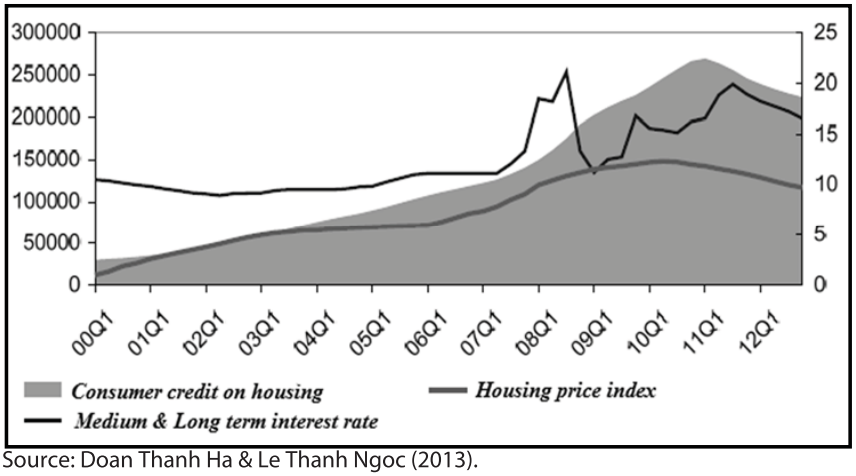
Source: General Statistics Office (GSO).

Figure 6
Investment Trends in Vietnam's Household Sector (2012)



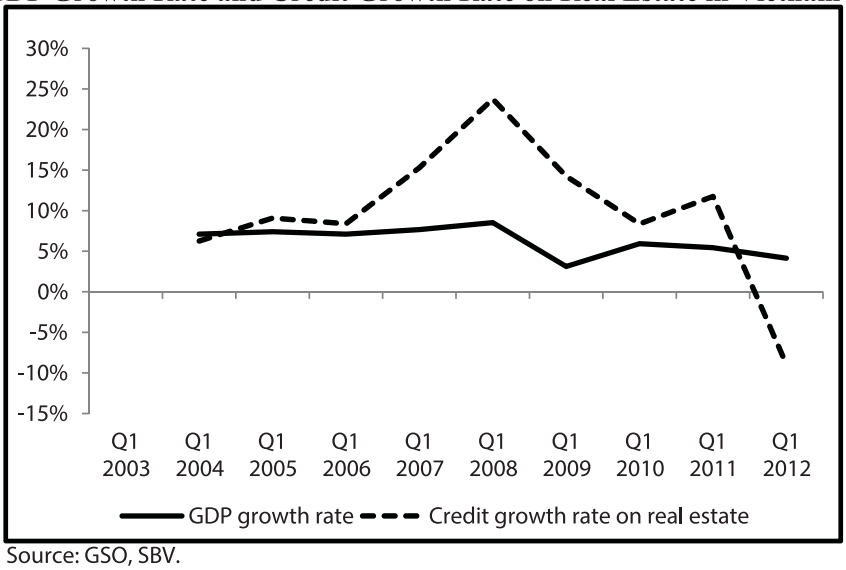
Source: NFSC.

Figure 7
Consumer Credit on Real Estate, Lending Rate and Housing Price in Vietnam



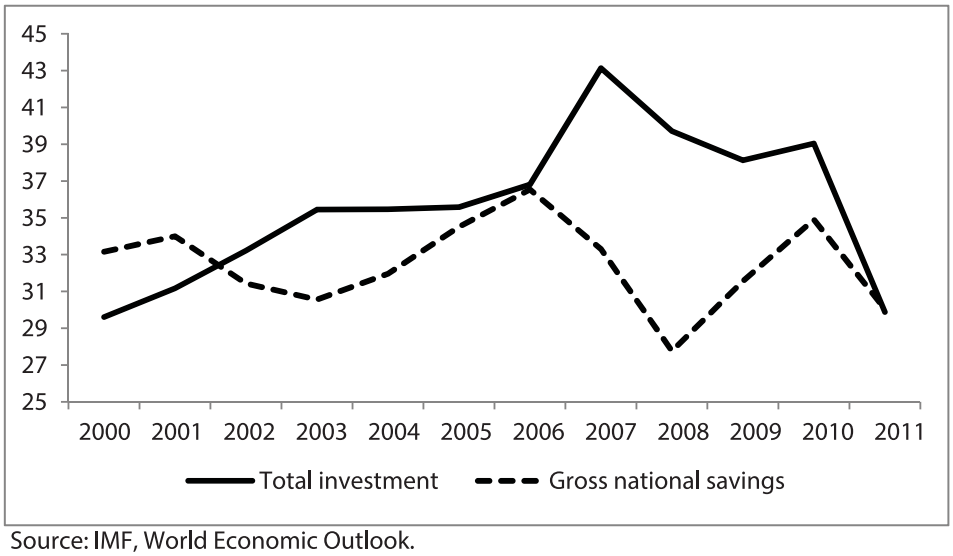
Source: Doan Thanh Ha & Le Thanh Ngoc (2013).

Figure 8
GDP Growth Rate and Credit Growth Rate on Real Estate in Vietnam



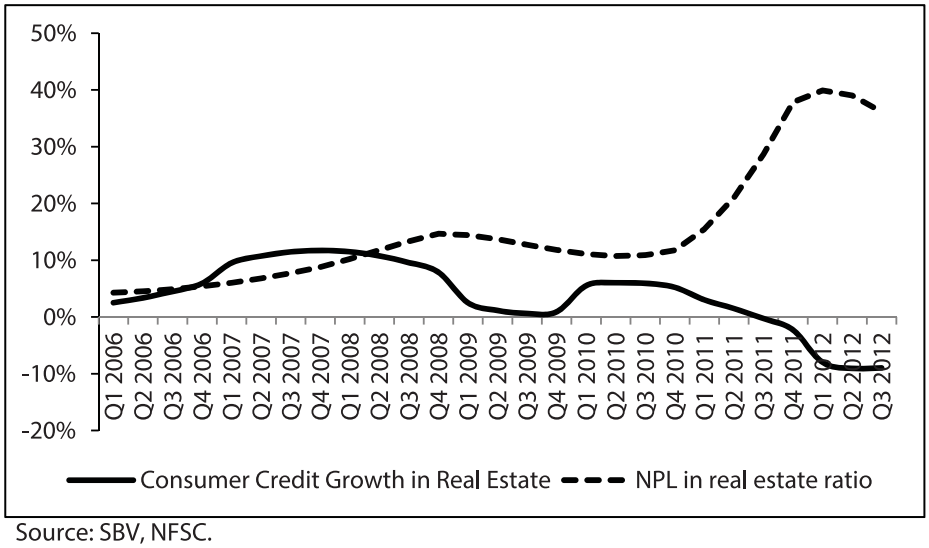
Source: GSO, SBV.

Figure 9
Investment and Savings in Percentage of GDP



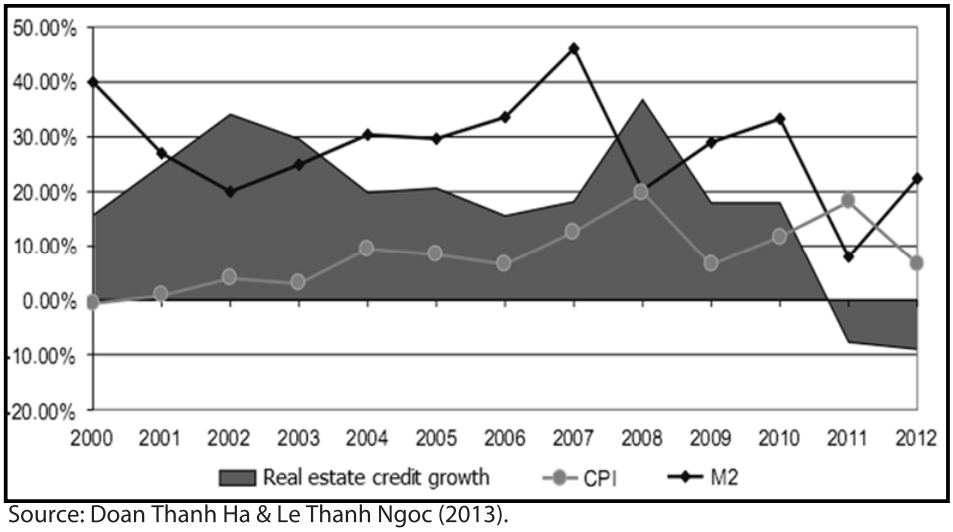
Source: IMF, World Economic Outlook.

Figure 10
Consumer Credit Growth in Real Estate and NPL in Real Estate Ratio



Source: SBV, NFSC.

Figure 11
Money Supply, CPI, Credit Growth Rate of Real Estate in Vietnam



Source: Doan Thanh Ha & Le Thanh Ngoc (2013).