1. **Introduction**

Thai household debt has drawn considerable attention since it has continued to grow over the past decade, reaching its highest record at 81.2% out of the nation’s GDP in Q4/2015 (Figure 1.1). Previously, the household debt growth peaked at 18.5% year-on-year in Q4/2012. According to the BIS data, the Thai household debt to GDP ratio ranked among the top and the fastest rising in Asia (Figure 1.2).

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2. **Household debt** is calculated from the individuals’ or households’ loans outstanding (overdrafts, general loans, non-negotiable bills and investments in account receivable) with financial institutions. The financial institutions include ODCs (Other Depository Corporations) and OFCs (Other Financial Corporations):

   1) ODCs include commercial banks (both domestically registered commercial banks, branches of foreign banks and international banking facilities), Special Financial Institutions (SFIs), saving cooperatives and other deposit-taking corporations (finance companies and credit foncier companies)
   2) OFCs include credit card, leasing and personal loan companies, insurance companies, securities companies, asset management corporations, pawnshops and others (Financial Institutions Development Fund, Government Pension Fund, Secondary Mortgage Corporation and Thai Credit Guarantee Corporation).

3. **Household debt to GDP ratio** is calculated from household debt divided by rolling 4-quarter sum of GDP (the method of calculating GDP by accumulating the sum of gross domestic product at current prices of the past 4 quarters, starting from the reference quarter backwards).

4. **Note** that the BIS household debt data is different from the Bank of Thailand (BOT) household debt data in three aspects: 1) Borrowers: the BIS data includes households and non-profit institutions serving households (NPISHs), while the BOT data includes only households 2) Creditors: the BIS data includes only domestic ODCs and cross-border banks, while the BOT data includes ODCs and OFCs 3) Instruments: the former includes loans and debt securities, while the latter includes only loans.
Although Thai household debt has already been seen deleveraging\(^5\) for 7 consecutive quarters since Q4/2015, the debt level remains high and the debt overhang looms large on economic growth. This raises much concern to Thai policy makers on its effect to macroeconomic and financial stability.

5. Deleveraging is defined as a decline in the ratio of household debt to GDP, which is calculated by rolling 4-quarter sum of GDP.
The objective of the paper is to review recent developments and to investigate the household debt problem systematically by understanding its background and characteristics from both macro and granular perspectives. Specifically, the paper attempts to address three main questions. First, how is the situation of household debt literally? Second, how is the relationship between rising household debt and private consumption? And last but not least, what policies/measures have been implemented to address the problem?

To answer these questions, the paper analyses both macro (administrative) and micro (household surveys) data. At the macro perspective, the paper mainly uses the data collected from financial institutions reporting to the Bank of Thailand (BOT). The aggregate analysis shows the development and types of loans behind the rising household debt. This also includes the household debt serviceability from the non-performing loans (NPLs).

The aggregate analysis, however, lacks the details on characteristics of each household/borrower. There is a potential danger of basing the conclusion solely on macro findings. To fill in the gap left out by the aggregate analysis, the household surveys step in to address the heterogeneity of households, i.e., each household has its own characteristics and cannot be treated or looked upon uniformly. The household surveys also include the informal sector, which plays an important part in financial system.

The rest of the paper is organized as follow. Section 2 takes a comprehensive look at the household debt situation in Thailand from both macro- and micro-level analyses. Section 3 presents the relationship of household debt and private consumption. Section 4 investigates what Thai policy makers have done to mitigate the problem. Section 5 concludes.

2. Overview on Thailand’s Household Debt

The household has been an important actor in the Thai economy and financial system. This can be seen by household credit which is a larger proportion out of total private credit, than business credit\(^6\). Similarly, on the asset side (deposits), the proportion of household deposits is also larger than that of businesses\(^7\). If household finance, especially on household debt, becomes problematic, e.g., through the debt-default channel, it could pose risks to the economy and trigger financial turmoil. Therefore, it is essential to understand the household debt situation clearly.

2.1 Macro Perspective

It is common to see a circumstance where household loans grow in parallel with the economy\(^8\). According to the data collected from financial institutions reporting to the BOT, from the earliest available data (Q1/2003) to Q3/2011, Thai household loans have been slowly growing alongside GDP, which resulted in a gradual increase in the ratio of household debt to GDP (Figure 2.1, gradual increase phase)\(^9\).

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6. Private credits consist of two sectors: household/consumer (61.8% as of Q2/2017) and business/non-financial corporations (NFC) loans (38.2% as of Q2/2017).
7. Calculated from the sum of deposits in Other Depository Corporations (ODCs) from the BOT data.
8. The household loan can be used interchangeably with consumer loan which is a part of private credit.
9. Many analysts use the debt-to-GDP ratio in place of the debt-to-income ratio because GDP data are comparable across countries and available in advance of household disposable income data. However, the use of GDP instead of household disposable income might not reflect households’ financial adjustments, especially when the ratio of household disposable income to GDP changes significantly.
However, since Q3/2011, the household debt began to accelerate significantly due to several reasons, ranging from the first-time car buyer scheme\textsuperscript{10}, the great flood during 2011–2012, to a surge in agricultural prices due to both global price cycles and government subsidies which raised farmers’ income expectations. The debt surge was also spurred by the low interest rate environment following the global financial crisis. This growth in household debt had far exceeded the growth of income which resulted in the rapid increase of household debt to GDP, reaching a peak of 81.2% in Q4/2015 (Figure 2.1, acceleration phase). However, household debt leveled off and has slowed down since Q1/2016, when the household debt to GDP ratio decreased from the peak to 78.3% in Q3/2017 (Figure 2.1, deleveraging phase).

\textbf{Figure 2.1: Household Debt and Economic Growth}

The debt deleveraging, a reduction in debt relative to GDP, slowly took place (Figure 2.2, orange line) with economic growth outpacing loan growth.\textsuperscript{11} This is reflected in a higher contribution of nominal GDP relative to contribution of debt creation (Figure 2.3, blue line above black line). This deleveraging phenomenon occurs when household debt accumulation relative to income accelerates to certain levels, at which the households are constrained by ability to service debt. Households, therefore, have to adjust their financial positions which marks the beginning of debt deleveraging.

\footnotetext{10. An excise tax rebate, 50,000 – 100,000 Thai baht, for first-time car buyers. This policy was enacted from September 2011 to December 2012.}

\footnotetext{11. Deleveraging occurs whenever loan growth is outpaced by income growth—regardless of whether loan growth is faster, stable, or slower than in the past.}
It is worth noting that debt deleveraging can take various forms. One way is through debt reduction, which usually occurs following an economic crisis originating from asset price bubbles in the real estate sector or other financial stability issues. As such, this leads to a pronounced decline in credit extension and an extreme debt deleveraging. This is not the case for Thailand, which saw a gradual deleveraging process following a debt acceleration. This gradual process would yield benefits in the long-run because households’ adjustment would alleviate financial vulnerabilities and strengthen their balance sheets. As a result, risks to financial stability would be reduced and consumption would once again become an important economic growth driver.
Considering the types of loans, this deleveraging process was particularly apparent in auto loans (approximately 10% share of household loans) given the end of loan contract terms under the first-time car buyer scheme. Housing loans (the largest share of household loans) and loans for business purpose (approximately 20% share of household loans) exhibited a relatively slow deleveraging pace because such loans still continued to expand (Figure 2.4).

Figure 2.4: Index of Household Debt to GDP (by types of loan)

The debt level itself may not clearly explain how the household debt situation is without considering household’s ability to service its debt. As reflected in the non-performing loans (NPL ratios)\(^{12}\), the aggregate data shows that the household debt serviceability deteriorated mainly from the housing loans (Figure 2.5).\(^{13}\) The NPL ratio for total consumer loans rose to 2.74% in Q3/2017 from 2.66% in the previous quarter. This signifies the vulnerability of Thai households, though the household debt to GDP ratio has leveled off.

\(^{12}\) The NPL ratios are collected and calculated from the Thai banking system (latest data as of Q3/2017). Thai banking system includes commercial banks, foreign branches of Thai commercial banks, full branches (foreign branches of Thai banks), subsidiaries (foreign banks registered in Thailand), retail bank. Unlike the household debt data, the Other Financial Corporations (OFCs) are excluded from NPL ratios’ calculation.

\(^{13}\) Though the special mentioned loans (SM) ratio is relatively constant (Figure 2.6)
Figure 2.5: Household Non-performing Loans

Source: Bank of Thailand

Figure 2.6: Household Special Mentioned Loans

Source: Bank of Thailand
2.2. Micro Perspective

As mentioned previously, the Thai household debt to GDP ratio has been gradually decreasing for 7 consecutive quarters. The macro picture, however, might be misleading in the context of the current situation. Looking closely at a more granular level, the deleveraging process is not seen to be broad-based. According to the Household Socio-Economic Survey (SES)\textsuperscript{14}, deleveraging was evident among some high-income households (4\textsuperscript{th} quintile in Figure 2.7) and some households in Bangkok and Central Region (Figure 2.8). This was primarily due to a decrease in debt while income was broadly unchanged. Meanwhile, low-income households and households in other regions continued to leverage further since 2015, owing to debt acceleration while income was largely unchanged or increased slightly.

\textbf{Figure 2.7: Index of Household Debt to Annual Income Ratio Across Income Groups (Median)}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2.7.png}
\caption{Index of Household Debt to Annual Income Ratio Across Income Groups (Median)}
\end{figure}

\textsuperscript{14} This annual data (with the exception of 2017 which is semi-annual data) were collected by the National Statistical Office based on a sample size of approximately 52,000 households. In Figure 2.6 and 2.7, data were from 2007 to 2017H1. Income data were available every other year.
In addition, the worsening debt serviceability of Thai households is pronounced by the granular data. The SES shows that Thai households are more fragile due to its decrease in financial cushion/buffer, exhibited by a sharp rise in the ratio of household debt to financial assets (or savings) across both income groups and occupations (Figure 2.9).

**Figure 2.9: Debt to Financial Assets Ratio**

Remarks: Calculated from only indebted households

1/ Income groups are segregated by income per capita; Quintile 1 = lowest monthly income per capita, Quintile 5 = highest monthly income per capita

Source: Socio-Economic Survey, National Statistical Office; calculations by the Bank of Thailand
Nevertheless, regarding household debt profile, the micro data found that indebted households are largely concentrated in formal and semiformal sectors\textsuperscript{15}, while only a small portion is in the informal sector (Figure 2.10). Indebted households also tend to decrease its informal debt overtime (Figure 2.11). This somewhat alleviates policymakers’ concerns on the problem of loan sharks/money lenders who might charge interest rates exceeding the level indicated by law\textsuperscript{16}.

\textbf{Figure 2.10: Household Debt Profile (As of Q2/2017)}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure10.png}
\caption{Household Debt Profile (As of Q2/2017)}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure11.png}
\caption{Development of Informal Debt Sector}
\end{figure}

\textsuperscript{15} This paper segregates debt sectors into 3 groups: 1) formal sector (commercial banks, SFIs, other depository corporations); 2) semi-formal sector (saving cooperatives, village funds); and, 3) informal sector (individuals, loan sharks, ROSCA)

\textsuperscript{16} The Civil and Commercial Code Section 654 indicates that interest shall not exceed 15\% per year; when a higher rate of interest is fixed by the contract, it shall be reduced to 15\% per year.
The largest share among Thai household loans is taken by housing loan due to its relatively high value and importance in meeting one of the basic human needs. It is, therefore, necessary to understand the market of its underlying asset, i.e., Thai housing sector, including its current situation and ongoing concerns.

As of the end of 2017, the Thai housing market exhibited strong fundamentals. Demand in residential real estate continued to rise in accordance with an overall economic recovery. This is reflected in a continuing increase in the number of residences financed by newly approved housing loans in Bangkok and its vicinity (Figure I). On the supply side, real estate developers attempted to meet the demand by both selling the completed units and launching new projects, as shown by the number of new residential projects in Bangkok and its vicinity (Figure II). The overall financial position of the developers, specifically the SET listed companies\(^\text{17}\), also remained solid, evident in the ability to generate profit and service its debt.

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17. The companies listed in the Stock Exchange of Thailand (SET)
Residential real estate prices gradually rose in tandem with the continuously increasing costs of land prices (Figure III). This partly contributes to the growing value of housing loans over time. Looking forward, the BOT estimated that the risk of having housing price bubbles is limited since: i) there is still the remaining supply of housing units, especially condominiums, and ii) commercial banks continue to maintain its strict lending standard in providing housing loans to both pre-finance (developers) and post-finance (residences).

**Figure III: Real Estate Price Indices**

![Real Estate Price Indices](image)

However, despite the strict lending standard, it would be worth monitoring the declining quality of post-finance housing loans, as reflected in the rising NPL ratio.\(^{18}\) Also, the potential rise of unsold units in some areas and certain price ranges should be constantly assessed. For instance, condominium units along the Purple Line Train\(^ {19} \) with the price range of one to three million baht and the Blue Line Train with the price range of two to five million baht (Figure IV). If the developers, whose financial position is affected by the unsold units, fail to service or roll over their debt, this would have an impact on investor confidence and financing costs of businesses in the real estate sector as a whole by means of affecting investor confidence in the financial market.

**Figure IV: Condominium Inventory in Bangkok and Vicinity by Location**

![Condominium Inventory](image)

Note: ‘Time to go’ is the time length that all housing inventory will be sold out, using the average sale rate since projects launched.

Source: AREA and calculation by the Bank of Thailand

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18. As already mentioned in Figure 2.5

19. The extension of the Sky Train line currently constructed in Bangkok and its vicinity
3. Household Debt Impact on Private Consumption

As discussed earlier, though a gradual deleveraging process has occurred, the household debt level is still high. This has raised a concern for policy makers especially on whether this household indebtedness will become a major constraint for consumption and future economic growth. This section therefore aims to examine how the debt overhang that Thailand has experienced over the past several years affect household spending.

3.1 Literature Review and Theoretical Framework

Recent papers by the International Monetary Fund (IMF) and Bank for International Settlements (BIS) observe that, in the short-run, an increase in borrowing props up economic growth and keep unemployment down. However, after a while, these gains are reversed. The results are consistent with various other studies. Economists such as Mian and Sufi (2013) have noted that areas with high household debt saw relatively poorer economic performance during the global financial crisis. Dynan (2012) also found that US mortgagors with high Loan-to-Value (LTV) ratios pre-crisis, subsequently experienced larger declines in spending. Others have suggested that households became more debt-averse, leading to consumption cutbacks among the most indebted households.

3.2 Nature and Definition of Data

For this study, we mainly use the dataset from the Household Socio-Economic Survey (SES) collected by the National Statistical Office (NSO) of which some of the stylized facts were highlighted in the earlier section. The research captured the data for a 10-year horizon from 2007 to 2017 (the first half of the year), which covers the period before and after the global financial crisis. This should shed light on the role of the household leveraging pattern more explicitly. The necessary variables include monthly income, expenditure, asset, debt, and household characteristics. We then constructed an unbalanced panel data of 76 provinces in Thailand. Thus we are able to observe income and spending across all areas in a high frequency setting. In addition, care had also been taken to eliminate or control abnormal observations and reweigh sample households by demographic characteristics and location to ensure no outlier has influenced our estimation (the Summary Statistics is provided in Table 3.1).

There are several reasons why it is worthwhile to examine the relationship of household debt and consumption by the micro-level data. Firstly, these granular data, which covers around 52,000 households across the country, provide sufficient cross-sectional variation. This allows us to determine the changing consumption behavior between periods which cannot be seen by aggregate data. Secondly, measuring impact across household groups with different characteristics, such as low and high debt-service ratio (DSR), could mitigate the simultaneity issue between consumption and income that plagues macro-level analysis. Last but not least, the micro-level data provides additional identification power by exploiting idiosyncratic income and wealth shocks, both of which are arguably exogenous.

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20. This annual data (with the exception of 2017 which is semi-annual data) were collected by the NSO based on a sample size of approximately 52,000 households. Income data were available every other year.

21. The debt-service ratio measures the share of income that is used to repay loan principal and interest payment. This ratio is used to determine the difficulty of repayment.
### Table 3.1 Summary Statistics from Household Socio-Economic Survey

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt</td>
<td>91,625</td>
<td>60,634</td>
<td>13,000</td>
<td>420,000</td>
</tr>
<tr>
<td>Consumption</td>
<td>13,306</td>
<td>4,149</td>
<td>3,640</td>
<td>29,303</td>
</tr>
<tr>
<td>Income</td>
<td>15,057</td>
<td>5,027</td>
<td>4,243</td>
<td>32,350</td>
</tr>
<tr>
<td>Financial Asset</td>
<td>31,624</td>
<td>19,650</td>
<td>5,000</td>
<td>154,000</td>
</tr>
<tr>
<td>Age</td>
<td>53</td>
<td>4</td>
<td>38</td>
<td>61</td>
</tr>
<tr>
<td>Size of Household</td>
<td>3.1</td>
<td>0.3</td>
<td>2.1</td>
<td>4.1</td>
</tr>
<tr>
<td>Debt-service Ratio</td>
<td>0.2</td>
<td>0.1</td>
<td>-</td>
<td>0.4</td>
</tr>
<tr>
<td>Debt-to-Income</td>
<td>5.9</td>
<td>2.6</td>
<td>1.3</td>
<td>17.6</td>
</tr>
</tbody>
</table>

Sample: 2007-2017
Number of Observations: 456

### 3.3 Research Methodology

To clarify the relationship between household debt and consumption, this paper performs four types of investigations: (1) baseline model - proceeds to examine the impact of debt on consumption; (2) debt dynamic effect - explore how long the effect lasts; (3) debt endowment effect - investigate how the effect differ between low and high income group; (4) different time episodes analysis - identify the relationship in different time horizons; and, (5) variation in DSR analysis - seek to understand the income elasticity between households which experienced high DSR growth (quartile 3 and 4) versus one with low DSR growth (quartile 1 and 2).  

#### 3.3.1 Baseline Model

Despite the importance of understanding the nature of the relationship between the household balance sheet and consumption behavior, clear analysis is often difficult due to both endogeneity and heterogeneity concerns as well as limited data covering the entirety of household finance (both income and spending). For this study, we employ fixed-effect GMM with instrument variables. Thus, we are able to assess the impact of variables (household debt and consumption) that vary over time and counter both problems (endogeneity and heterogeneity). The fixed-effect model allows us to control for variables which cannot be observed or measured, for example, cultural factors or difference in provincial characteristics. Moreover, it also removes the effect of those time-invariant characteristics so that we can analyze the net effect of the predictors on the outcome variable. For our estimation, we apply GMM using deviation from mean, which minimizes certain norm of simple average of the moment conditions measured by the quadratic form below:

\[
\hat{\theta}_{GMM} = \arg \min_\theta \left( \frac{1}{N} \sum (\hat{y}_{it} - \hat{x}_{it}' \theta)^W \left( \frac{1}{N} \sum \hat{z}_{it} (\hat{y}_{it} - \hat{x}_{it}' \theta) \right) \right)
\]

where, \( \hat{x}_{it} = x_{it} - \bar{x}_i \), \( \hat{z}_{it} = z_{it} - \bar{z}_i \), \( \hat{y}_{it} = y_{it} - \bar{y}_i \) and \( W \) is a weighting matrix.

---

22 The DSR growth rate is on annual basis from 2011 to 2015. Households are separated into 4 quartiles by annual DSR growth rate.
The main assumption in the model is that lag terms of debt are correlated with debt in the current period, but are not correlated with consumption. The Sargan test was also performed to validate the overidentification of the specification.

### 3.3.2 Debt Dynamic Effect Model

Reviewing existing literature and general findings - Lombardi et al. (2017), IMF (2017), and Chudik et al. (2016) - all suggest there is a trade-off between the short-term benefits of rising household debt to growth and its medium-term costs to macroeconomic and financial stability. Hence, to clarify the dynamic relationship, lagged variables of debt are added to the equation.

### 3.3.3 Debt Endowment Effect Model

We next investigate the role of debt in explaining consumption in different income groups by applying the interaction term of debt and income in the following form. The quantitative analysis, therefore, offers important implications on whether low income group household experienced a larger degree of impact or not.

### 3.3.4 Different Episodes Analysis

To identify the relationship in different time episodes, we run the regression in two separate horizons of 2007-2011 and 2013-2017. With these simple regression coefficients, one can tell how the stylized relationship has changed before and after the onset of the global financial crisis.

### 3.3.5 Variation in DSR Analysis

Lastly, we seek to investigate the effect between provinces with high DSR growth and one with low DSR growth. We sub-divide 76 provinces into 4 groups based on their increase in DSR. We hypothesize that districts with a larger leveraging degree experienced a slower consumption growth.

### 3.4 The Effects of Household Debt on Total Consumption

Our empirical results suggest 5 major findings. Firstly, household leveraging play an important part in explaining consumption (Model I, Table 3.2). The coefficient on debt increase is positive and statistically significant at 0.01 level. It implies that holding income growth and other variables constant, an increase in debt by 10 percentage point lead to an increase in total consumption by 0.3%. The coefficient on contemporary income is also large and statistically significant.

Secondly, lag variables are added to derive the longer-term coefficients of the relationship between household debt and total spending (Model II, Table 3.2). It is also clear that a positive debt effect can be observed in the short-run, but high indebtedness could possibly become a constraint for consumption and economic recovery in the medium- to long-term, which is consistent with other studies. For instance, Mian et al. (2012) found that a weakness in household balance sheet caused a fall in the household savings rate and subsequently, more volatility in private consumption.

Thirdly, the effect varies between households with different income endowment (Model III, Table 3.2). The impact is found to be more prevalent for lower-income households. In other words, debt elasticity of the rich is lower than the poor, whereas, income elasticity is higher, and vice-versa. This is perhaps consistent with Chucherd (2006), which suggests that the positive debt effect can
possibly be due to the fact that Thai households, especially the lower-income groups, face liquidity constraints due to the relatively less-developed financial market. Thus, the rising debt level could help smoothen their desired level of consumption.

Table 3.2: Fixed-effect Regression

<table>
<thead>
<tr>
<th></th>
<th>Model I</th>
<th>Model II</th>
<th>Model III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln (Debt)</td>
<td>0.03***</td>
<td>0.03**</td>
<td>0.43***</td>
</tr>
<tr>
<td>Ln (Income)</td>
<td>0.77***</td>
<td>0.74***</td>
<td>1.19***</td>
</tr>
<tr>
<td>Ln (Financial Asset)</td>
<td>0.02**</td>
<td>0.02***</td>
<td>0.02***</td>
</tr>
<tr>
<td>Ln (Debt) (-1)</td>
<td>0.03**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln (Debt) (-2)</td>
<td>0.05***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln (Debt) (-3)</td>
<td>-0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln (Debt) x Ln(Income)</td>
<td></td>
<td>-0.04**</td>
<td></td>
</tr>
<tr>
<td>Observation</td>
<td>456</td>
<td>228</td>
<td>455</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.86</td>
<td>0.65</td>
<td>0.86</td>
</tr>
<tr>
<td>Sargan Stat</td>
<td>0.99</td>
<td>0.76</td>
<td>0.40</td>
</tr>
</tbody>
</table>

Note: *, **, *** indicate the coefficients are significant at 10, 5, and 1 percent significance levels respectively. Source: NSO, Staff’s estimate.

Fourthly, the magnitude of the debt effect in 2007-2011, and 2013-2017 were 0.06 and 0.03 respectively (Table 3.3). The predicted coefficient of debt on consumption has slightly declined in the last 5 years, suggesting the incremental change in the debt level has played little role in determining consumption. In the prior period, household may have ramped up spending beyond the actual movement in income and wealth, and then consumed during the recovery as household debt started to slow.

Table 3.3: Magnitude of Debt Effect Across Horizon, 2007-201

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln (Debt)</td>
<td>0.03***</td>
<td>0.04***</td>
<td>0.06***</td>
<td>0.03***</td>
</tr>
<tr>
<td>Ln (Income)</td>
<td>0.77****</td>
<td>0.76***</td>
<td>0.73***</td>
<td>0.79***</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.86</td>
<td>0.83</td>
<td>0.76</td>
<td>0.60</td>
</tr>
</tbody>
</table>

Finally, by subdividing households into 4 quartiles by DSR growth, households in the 4th quartile (with highest DSR growth) experienced a larger decline in spending during 2007 to 2017. For instance, an income growth of 10% yields an average consumption growth of only 7.2%. On the opposite side, for households in the 1st quartile (with lowest DSR growth), a 10% rise in income yields an average consumption growth of 8.6%. The results are pretty much the same as Muthitacharoen et al. (2014), which suggest that the overstretched balance sheets of households started to cripple consumption as households become more financially constrained.
In sum, household debt boosts consumption in the short-run mostly within 2-4 years and an increase in debt by 10% leads to an average consumption growth of 0.3%. On the contrary, the trend seems to reverse in the medium- to longer-run. We also find that the impact to consumption varies across income groups, and different time episodes.

4. Policy Implementation

The BOT has been aware of the household debt situation which might create a problem of debt overhang, the major obstacle to the household consumption and economic growth. Although Thai households have started to adjust their financial positions, which results in the deleveraging of household debt to GDP ratio for seven consecutive quarters, assuring smooth deleveraging process is crucial. The policies that have been implemented can be divided into 2 groups: comprehensive measures on household debt cycle and macroprudential policies.

4.1 Comprehensive Measures on Household Debt Cycle

The household debt cycle can be segregated into 3 phases: pre-debt, at-debt-issue, and in-debt. The BOT aims to tackle the debt problem at every phase by taking both holistic and granular approaches in formulating appropriate policies.

With respect to the pre-debt phase, financial literacy is vital. Financial literacy is an abstract concept which reflects financial knowledge, the behavior and attitudes necessary for making sound financial decisions and promoting good financial health. Households need to understand how to manage their personal finance effectively in order to have a sustainable financial position, ranging from the knowledge on types of loans to balance sheet management. The BOT has set up the so-called Financial Consumer Protection Center (FCC) since January 2012 with aims to systemically enhance its financial consumer protection mandate, particularly for promoting financial literacy for the Thai people. This would prevent the risk of household over-indebtedness and loan default by strengthening the very foundation – household financial literacy.

In the at-debt-issue phase, responsible lending is an important principle for financial institutions that the BOT has been promoting via its microprudential supervision. The financial institutions need to clearly explain details on any financial product they are proposing to customers, including the
risks customers need to face. Moreover, the financial institutions need to assess customers’ financial position thoroughly. In so doing, the customer will be granted a credit limit suitable for his financial health and which would enable him to repay his debt in the future.23

Lastly, during the in-debt phase, if any eligible household enters into a situation of financial distress and could not repay a debt after more than 90 days, i.e., having obtained the NPL status, they may seek assistance from the “Debt Clinic”, which is a collaboration between the BOT, Association of International Bank (AIB), Thai Bankers’ Association, as well as Sukhumvit Asset Management (SAM). The Debt Clinic, established since June 2017, provides a debt relief program24 with the principle of sustainable resolution. For the participants in the Debt Clinic, financial literacy is an important part to ensure the success and sustainability of the debt restructuring program and to prevent moral hazards which may occur in the eligible households.

4.2 Macroprudential Policies

The use of macroprudential policies has long been used in the Thai financial sector. Over the past decade, the BOT, as the country’s financial stability safeguard, has implemented various macroprudential measures. It uses the measures to mainly tackle the household debt problem and to contain risk build-ups in specific sectors, e.g., housing market and consumer credit, by using the Loan-to-value (LTV) and Loan-to-income (LTI) measures, respectively.

Since 2003, a variety of LTV measures targeted at the housing market have been implemented with different degree of constraints (Table 4.2.1). From a strict ceiling on the LTV ratio to greater risk weights on high LTV mortgages with variation on the types of property and the property value, the measures were found to be effective in moderating housing credit growth as mentioned by Pongsaparn et al.(2017).

Table 4.2.1: Loan-to-value Measures

<table>
<thead>
<tr>
<th>Year</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>Imposing a 70% LTV limit on high-value residential properties (≥ 10 million THB)</td>
</tr>
<tr>
<td>2009</td>
<td><strong>High-value mortgages (≥ 10 million THB):</strong> Increasing LTV limit for high-value mortgage from 70 to 80% and imposing higher risk-weighted capital charge of 75% for loans with LTV greater than 80%, otherwise risk-weighted capital charge of 35%</td>
</tr>
<tr>
<td>2011</td>
<td><strong>High-rise property (&lt; 10 million THB):</strong> Imposing risk-weighted capital charge of 75% for loans with LTV greater than 90%, otherwise risk-weighted capital charge of 35%</td>
</tr>
<tr>
<td>2013</td>
<td><strong>Low-rise property (&lt; 10 million THB):</strong> Imposing risk-weighted capital charge of 75% for loans with LTV greater than 95%, otherwise risk-weighted capital charge of 35%</td>
</tr>
</tbody>
</table>

Source: Bank of Thailand.

23. This is in line with the macroprudential measures on credit card and personal loan discussed in Section 4.2
24. The debt relief program is eligible for any individual who 1) has permanent income 2) is not exceeded 65 years old at the time of entering the program 3) has the NPL status of credit card or personal loans (before 1 May 2017) with more than 2 banks participating in the program 4) has the outstanding amount of all loans not exceeding 2 million THB and 5) is not sued or under litigation.
In addition, Thailand also has macroprudential measures on credit cards and personal loans in the form of LTI (the value of loans is capped at certain level) and the minimum monthly payment (Table 4.2.2). With its characteristics of easy-to-access, such loans may weaken the financial well-being of people which may lead to over-indebtedness and loan default, especially of low-income earners. The BOT, therefore, revised regulations on credit cards and personal loans such as granting a credit line based on the level of income to ensure that the amount of debt does not to exceed their ability to repay, especially in the segment that is vulnerable to over-indebtedness. Regarding the latest measures in 2017, it is to target the lower-income segment and the credit line will apply only to new consumers applying for credit cards and personal loans from the effective date of the notification onwards.25

### Table 4.2.2: Credit Card and Personal Loan Measures

<table>
<thead>
<tr>
<th>Year</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td><strong>Credit card measure:</strong> Increasing the minimum monthly payment from 5% to 10%; setting a minimum income for credit card holders to at least 15,000 THB per month; setting a combined credit line limit for every credit card provider to no greater than five times the average monthly income; and requiring the cancellation of a credit card after three months of nonpayment on an outstanding balance.</td>
</tr>
<tr>
<td>2005</td>
<td><strong>Personal loan measure:</strong> Setting overall credit limits to no greater than five times the average monthly income.</td>
</tr>
<tr>
<td>2017</td>
<td><strong>Credit card measure:</strong> Lowering a credit line limit for credit card holders with monthly income lower than 50,000 THB per month – from 5 to 1.5 times the average monthly income times (if card holders’ monthly income is less than 30,000 THB per month) and to 3 times (if card holders’ monthly income is between 30,000 – 50,000 THB per month).</td>
</tr>
<tr>
<td>2017</td>
<td><strong>Personal loan measure:</strong> Lowering a credit line limit for personal loan borrowers with monthly income lower than 30,000 THB per month – to 1.5 times the average monthly income with restrictions on the number of personal loan providers not to exceed three companies.</td>
</tr>
</tbody>
</table>

Source: Bank of Thailand.

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25. In this case, the effective date is from 1 September 2017 onwards.
5. Conclusion

Thai household debt has been in the spotlight since it was ranked among the top and fastest rising in the region. The situation, however, has somewhat alleviated, as a gradual deleveraging has taken place for seven consecutive quarters. Nonetheless, Thai households remain vulnerable due to the high level of household debt and weakening prospect of debt serviceability.

The relationship between household debt and private consumption also confirms that a rise in the household debt-to-GDP ratio is associated with an increase in private consumption, in the short-term, although the relationship is reversed in the medium- to long-term.

Therefore, the current deleveraging process which is taking place in a gradual and measured manner would mitigate the risk of economic recession and yield long-run benefits. The resultant adjustments of households would alleviate financial vulnerabilities and strengthen their balance sheets. In order to support the smooth deleveraging process, Thai policy makers have implemented comprehensive measures for household debt management, including macroprudential policy in complement with microprudential supervision.
References


