1. Introduction

Borrowing by individuals for different purposes such as acquiring assets, consumption, purchasing consumer goods and for education are considered as household debt. Individuals borrow from banks, other financial institutions, relatives and friends (Box). While borrowing from banks and financial institutions can either be secured or unsecured, money borrowed from relatives and friends is generally unsecured. Borrowing helps households to improve their income or standard of living by allowing them to smoothen consumption/investment over time. Thus, borrowing for consumption as well as investment by the households can augment economic activity. However, household debt beyond a threshold level could be vulnerable for the financial system and the individual. For example, individuals can default on loans in case of income/job loss; individuals can default when the price of the asset they use as collateral decreases because they will be paying a higher loan relative to the market value; or individuals could spend a lower amount of money on goods and services. Harari (2017) pointed out that a high level of household debt could lead to a reduction in consumer spending other than posing risks to the financial system such as the sub-prime mortgage crisis in the U.S. in 2008.

Credit to households in India is provided by both banks and non-banking financial companies (NBFCs). However, the detailed time series data are available only on bank credit to the household sector which is called personal loans. The data on bank credit to household sector is available at monthly frequency from April 2007. Bank credit to households includes advances for consumer durables, housing loans, advances against fixed deposits, advances against shares and bonds, credit card outstanding, loans for education purpose, vehicle loans and other personal loans.
The comprehensive data on household debt in India is based on the All India Debt and Investment Survey conducted by the National Sample Survey Office (NSSO) at a frequency of every ten years. This survey provides data on household debt classified into institutional and non-institutional sources, different rates of interest, varying duration of loans, types of security and purposes of loan. It also provides separate data on outstanding debt for rural and urban households, state-wise, occupation-wise etc. As per the latest survey, the data is available for 2012. The survey was conducted for the whole of India covering a total 110,800 households (62,135 rural households and 48,665 urban households) in visit 1 and 108,421 households (61,650 rural households and 46,771 urban households) in visit 2, in 4,529 rural villages and in 3,507 urban blocks. As per the survey, the incidence of indebtedness i.e., the percentage of indebted households as of June 30, 2012 was 31.4% in rural households and 22.4% for urban households and their average amount of debt was Rs. 103,457 for rural households and Rs. 378,238 for urban households. The survey pointed out the significant role played by institutional agencies in providing credit with a moderate rate of interest (6% to 15%). The survey also observed that the percentage of outstanding cash debt at interest rate higher than 15% stood at 38.6% for rural households and 16.4% for urban households.


A cross-country comparison shows that India’s household debt as a percent of GDP is much lower than the average of all countries and also the average for emerging markets. It is also lower than other major economies in South-east Asia, viz., Malaysia and Thailand (Table 1). Further, the household debt to GDP ratio of India remained unchanged at 10.7% as against an increase recorded in Malaysia, Thailand and an average of emerging markets, over the period of 2008-2017.
Table 1: Household Debt to GDP ratio (%)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Emerging Markets</th>
<th>All Countries</th>
<th>Advanced Economies</th>
<th>India</th>
<th>Malaysia</th>
<th>Thailand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>22.9</td>
<td>66.8</td>
<td>82.9</td>
<td>10.7</td>
<td>50.7</td>
<td>44.2</td>
</tr>
<tr>
<td>2009</td>
<td>20.0</td>
<td>59.9</td>
<td>75.7</td>
<td>10.2</td>
<td>51.4</td>
<td>46.2</td>
</tr>
<tr>
<td>2010</td>
<td>25.7</td>
<td>63.8</td>
<td>79.8</td>
<td>9.2</td>
<td>58.6</td>
<td>50.0</td>
</tr>
<tr>
<td>2011</td>
<td>26.8</td>
<td>63.6</td>
<td>81.6</td>
<td>9.2</td>
<td>59.8</td>
<td>53.5</td>
</tr>
<tr>
<td>2012</td>
<td>26.1</td>
<td>58.4</td>
<td>75.6</td>
<td>8.9</td>
<td>61.2</td>
<td>60.2</td>
</tr>
<tr>
<td>2013</td>
<td>28.5</td>
<td>58.0</td>
<td>74.6</td>
<td>9.0</td>
<td>64.9</td>
<td>62.6</td>
</tr>
<tr>
<td>2014</td>
<td>30.0</td>
<td>58.6</td>
<td>75.5</td>
<td>9.0</td>
<td>68.0</td>
<td>66.6</td>
</tr>
<tr>
<td>2015</td>
<td>30.3</td>
<td>54.7</td>
<td>69.3</td>
<td>9.4</td>
<td>69.6</td>
<td>69.3</td>
</tr>
<tr>
<td>2016</td>
<td>34.3</td>
<td>60.0</td>
<td>75.2</td>
<td>10.2</td>
<td>70.7</td>
<td>70.5</td>
</tr>
<tr>
<td>2017</td>
<td>37.1</td>
<td>59.8</td>
<td>73.4</td>
<td>10.7</td>
<td>68.9</td>
<td>69.2</td>
</tr>
</tbody>
</table>

Variation (2017-2008) 14.2 -7.0 -9.5 0.0 18.2 25.0

* Refers to ‘credit to households and non-profit institutions serving households’ as % of GDP (updated on December 3, 2017).

Source: Bank for International Settlements.

Against this backdrop, this paper examines the macroeconomic dimensions of household debt in India, using cointegration and the vector error correction model. Section 2 covers a brief review of literature whereas stylized facts about household credit in India are outlined in Section 3. Data, methodology and empirical results are presented in Section 4. Some concluding observations are provided in Section 5.

2. Review of Literature

The macroeconomic impact of household debt has been an area of interest among researchers. However, the issue of household debt emerged as an important research topic in the aftermath of the global financial crisis. Various aspects of household debt such as its relationship with macroeconomic variables, quality of bankruptcy law and the impact of debt on income inequality have been analysed by researchers in central banks and academics. A paper by Crawford and Faruqui (2012) analyzed household debt in Canada and observed that income growth and low interest supported increase in home-ownership rates and mortgage debt. Soh et al. (2017), examined the impact of different types of household credit on income growth and inequality in Malaysia and found that housing credit is positively associated with future income growth. However, they did not find such evidence with regard to consumption credit. Further, they observed that the accumulation of housing credit for existing borrowers may worsen income inequality.
Carr and Jaydev (2014), examining indebtedness among U.S. households based on the Panel Study of Income Dynamics data for 1999-2009, found that there is a positive link between debt growth and income growth. Further, they also found that the rate of increase in leverage was quicker among lower income households compared to other households. Coletta et al. (2015), studied determinants of household debt in a panel framework consisting of data for 33 countries for the period 1995-2013. They observed that the debt is greater in countries with higher per capita GDP and household wealth. They also found that a positive relationship exists between the quality of bankruptcy law and the level of household debt.

In the Indian context, a study by Badarinza et al. (2016) analyzed household balance sheets based on the All India Debt and Investment Survey (AIDIS) and observed that non-financial assets dominate Indian households’ wealth. Further, they also found that the differences among households in terms of share of non-financial assets in their balance sheet are associated with rural-urban divide, education, family composition, wealth and age. A strong substitution effect between gold and real estate in the household balance sheet was also observed by them. The Committee on Household Finance (Chairman - Prof. Tarun Ramadorai) constituted by the Reserve Bank of India submitted its report in 2017 and observed that besides dominance of physical assets in Indian household wealth; durable goods and gold comprised the largest fraction among young households while the largest share of wealth is held in land and housing as households approach retirement age. The committee opined that holding of assets and liabilities by Indian households cannot be explained by differences in the demographic characteristics, wealth, or income. The committee also observed that the properties of Indian household balance sheets are difficult to explain using a standard lifecycle portfolio choice model.

3. Household Credit in India - Stylized Facts

Household credit is an important part of credit portfolio of banks in India. The share of household credit in total non-food credit has increased in recent years (Chart 1). As at end-November 2017, household credit by banks accounts for around 25 % of the total non-food credit.

**Chart 1: Share of Major Sectors in Non-food Credit**
The long-term trend in bank credit reveals that there has been a slowdown in credit growth in the aftermath of the global financial crisis in mid-2009 (Chart 2). While all major sectors recorded credit slowdown during this period, the slowdown was more pronounced in the household sector. Contrary to this trend, household credit has picked up since then, and has grown steadily and outpaced overall credit growth in recent years. However, sectoral credit data shows that there is a divergence in credit growth across sectors during the previous three years. For example, credit to the industrial sector which has been decelerating gradually from the second half of 2010 became negative in 2017 due to various factors including a high level of non-performing assets (NPAs) and growth slowdown in the industrial sector. Credit to the services and agriculture sector has also been moderating generally, albeit with an intermittent uptick for a short period.

**Chart 2: Credit Growth across Sectors**

The healthy growth of household credit is driven largely by housing loans. Bank credit to the household sector in India is dominated by housing loans which account for more than 50% followed by other personal loans accounting for 25% (Chart 3). Among others, vehicle loans comprise around 10% of the bank credit to households.
The growth of household credit by banks has been varying across its components (Chart 4). While growth in housing loans, personal loans and credit card has been relatively stable at around 15%, 25% and more than 25% respectively, consumer loan and vehicle loan growth remained volatile. On the other hand, the growth in education loans recorded a gradual decline during the last 10 years. The high growth of housing loans could be attributable partially to incentives provided by the government such as income tax benefit for principal and interest amount, and interest subvention for housing loans of small amounts. In 2015, the government launched a scheme called ‘Housing for All by 2022’ under which the government provides an interest subsidy on housing loans availed by beneficiaries. The Reserve Bank of India has been rationalizing the prudential measures with respect to individual housing loans from time to time (Table 2). For example, in June 2017, the Reserve Bank of India rationalized risk weights, the standard asset provisioning rate and loan-to-value (LTV) ratio for individual housing loans, as a countercyclical measure.
4. Data and Empirical Results

The study analyses both quarterly and annual data on household debt. The quarterly data on bank credit to household sector used in the study is from April 2007 to September 2017 (2007Q2:2017Q3- a total of 42 observations). The analysis is based on data on outstanding bank credit to household sector (used as a proxy of household debt) and 10-year G-sec yield (a proxy for interest rate) sourced from the Reserve Bank of India, real gross value added (GVA)/gross domestic product (GDP) of base year 2011-12² sourced from the Ministry of Statistics and Programme Implementation, equity price index i.e., BSE Sensex (1978-79=100) sourced from the Bombay Stock Exchange and Consumer Price Index-Industrial Workers (CPI-IW Base year 2001) sourced from the Labour Bureau, Government of India. The analysis has also been done based on annual data for 31 years from 1986-87 to 2016-17. The data included in the annual exercise pertains to changes in households’ financial liabilities

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2. GDP factor cost at 2004-05 prices spliced with GVA at basic price of 2011-12 in order to make a consistent series of 2011-12 base.
There is a presence of seasonality in the quarterly data of GVA/GDP emanating from the pattern of slack and busy season of industrial production and agricultural production which is typically divided into kharif and rabi season. Similarly, there appears to be a seasonality in the data of household credit and private final consumption expenditure. Accordingly, the quarterly data on GVA/GDP, household credit and private final consumption expenditure is seasonally adjusted.

The long-run relationship between household debt and macroeconomic variables is examined estimating the Johansen cointegration test and vector error correction model. As a first step toward this method, all the variables used in this study are checked for stationarity both in levels and in the first difference. The Augmented Dickey Fuller (ADF) test and Phillips Perron test were deployed to obtain evidence on stationarity. The results of these tests revealed that the variables used in this study were non-stationary at level but stationary in first difference (Table 3).

Table 3: Results of Unit Root Test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Phillips Perron Test</th>
<th>ADF Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>First Difference</td>
</tr>
<tr>
<td>Quarterly 2007Q2:2017Q3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lrhhd_sa</td>
<td>2.45</td>
<td>-3.55*</td>
</tr>
<tr>
<td>lrgdp_sa</td>
<td>-1.62</td>
<td>-7.00*</td>
</tr>
<tr>
<td>rate</td>
<td>-2.24</td>
<td>-7.49*</td>
</tr>
<tr>
<td>lequity</td>
<td>-1.14</td>
<td>-4.00*</td>
</tr>
<tr>
<td>lpfce_sa</td>
<td>-1.03</td>
<td>-11.94*</td>
</tr>
<tr>
<td>Annual 1987-2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lrchhl</td>
<td>-0.22</td>
<td>-7.74*</td>
</tr>
<tr>
<td>lrgdp</td>
<td>3.03</td>
<td>-4.49*</td>
</tr>
<tr>
<td>rate</td>
<td>-0.98</td>
<td>-3.44**</td>
</tr>
<tr>
<td>lequity</td>
<td>-1.60</td>
<td>-5.40*</td>
</tr>
</tbody>
</table>

Note: * and ** indicates that the variable is stationary or I(0) at 1 % and 5 % level of significance, respectively. Quarterly data are seasonally adjusted (except 10 year G-sec yield and equity prices). Automatic lag selection based on SIC criteria.

lrhhd_sa: natural logarithm of seasonally adjusted real household credit
lrgdp_sa: natural logarithm of seasonally adjusted real gross domestic product/gross value added
rate: Weighted average 10-year G-sec yield
lequity: natural logarithm of BSE Sensex
lpfce_sa: natural logarithm of seasonally adjusted real private final consumption expenditure
lrchhl: natural logarithm of real flow (change) of households’ financial liabilities
In view of the evidence of non-stationary processes, we proceed to the cointegration analysis to examine the relationship between household debt, GDP and interest rate in the long-run which were non-stationary at level form. Accordingly, cointegration among these variables was examined using the Johansen cointegration test (Table 4). The results show a cointegrating relationship between household debt, GDP and interest rate. This cointegrating relationship also holds when the variable representing equity prices is added. Further, the cointegrating relationship between changes in household liabilities, GDP and interest rate was also observed when the Johansen cointegration test was performed based on annual data. However, the long-run cointegrating relationship expected between private final consumption expenditure and household debt was not evident.

### Table 4: Results of Johansen Cointegration Tests

<table>
<thead>
<tr>
<th>Variables</th>
<th>Trace Statistics</th>
<th>0.05 Critical Value</th>
<th>Prob.**</th>
<th>Max-Eigen Statistics</th>
<th>0.05 Critical Value</th>
<th>Prob.**</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>lrhhd_sa, lrgdp_sa, rate (Quarterly)</td>
<td>82.56</td>
<td>35.19</td>
<td>0.00</td>
<td>44.55</td>
<td>22.30</td>
<td>0.00</td>
<td>Cointegrated*</td>
</tr>
<tr>
<td>lrhhd_sa, lrgdp_sa, rate, lequity (Quarterly)</td>
<td>55.23</td>
<td>47.85</td>
<td>0.00</td>
<td>29.95</td>
<td>27.58</td>
<td>0.02</td>
<td>Cointegrated*</td>
</tr>
<tr>
<td>lrchhl, lrgdp, rate (Annual)</td>
<td>33.47</td>
<td>29.79</td>
<td>0.02</td>
<td>24.68</td>
<td>21.13</td>
<td>0.02</td>
<td>Cointegrated*</td>
</tr>
<tr>
<td>lpfce_sa, lrhhd_sa (Quarterly)</td>
<td>8.22</td>
<td>15.49</td>
<td>0.44</td>
<td>8.22</td>
<td>14.26</td>
<td>0.36</td>
<td>Not cointegrated</td>
</tr>
</tbody>
</table>

*Both trace test and max-eigenvalue tests indicate cointegrating equation(s) at the 0.05 level of significance. Lag selection is based on AIC criteria.

lrhhd_sa: natural logarithm of seasonally adjusted real household credit  
lrgdp_sa: natural logarithm of seasonally adjusted real gross domestic product/gross value added  
rate: Weighted average 10-year G-sec yield  
lequity: natural logarithm of BSE Sensex  
lpfce_sa: natural logarithm of seasonally adjusted real private final consumption expenditure  
lrchhl: natural logarithm of real flow (change) of households’ financial liabilities

As discussed above, the empirical method used is the cointegration analysis and vector error correction model. After testing for stationarity and cointegration, the relationship between household debt and its determinants viz., GVA/GDP, interest rate and equity prices is analysed by estimating the vector error correction model (equation 1 and equation 2)\. The results show the expected signs of coefficient in both the equations. For example, household debt is found to be positively related to GDP. A one percent increase in GDP leads to 0.84% increase in household debt (equation 1). In order to obtain evidence on the direction of causality between household debt and GDP, the granger causality test based on quarterly data was carried out which revealed unidirectional causality running

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from GDP to household debt. On the other hand, a negative relationship between interest rate and the level of household debt is also on the expected lines. However, the impact of increase in interest rate on household debt is relatively smaller i.e., a one percent increase in interest rate leads to 0.11% decline in household debt.

\[ Log(\text{rhhd\_sa}) = -3.77 + 0.84\log(\text{rgdp\_sa}) - 0.11\text{rate} \ldots..(1) \]

\( (9.53) \quad (-6.70) \)

\[ \text{Error correction term: -0.19} \]

\( (-2.95) \)

(Note: Figures in the bracket are t-values)

Variables definition:
- \( \text{rhhd\_sa} \): seasonally adjusted real household credit;
- \( \text{rate} \): Weighted average 10-year G-sec yield
- \( \text{rgdp\_sa} \): seasonally adjusted real gross domestic product/gross value added

Similar results were observed when the impact of interest rate and GDP on changes in household liabilities was analysed based on annual data for the period 1987 to 2017.4.

From the investment point of view, the return on equities are often compared with the return from investment in real estate. Therefore, the movement in equity prices can impact the level of real estate investment particularly housing, and thus the level of household debt. For example, an investor can either invest his money in stock market or he/she can invest his/her funds in housing by borrowing some money from banks. A study by Jorda et al. (2017) argued that investor returns on housing and equity may differ due to differences in transaction costs, taxes, liquidity and financial structure of the investment claim. Kim (2014) identified stock prices as one of the reasons for an increase in household debt coupled with GDP, interest rate and housing price. In view of this phenomenon, the equity prices are included in the estimation (equation 2). With the inclusion of equity price, the relationship of household debt with GDP and interest rate in terms of signs of coefficient remained unchanged. However, the impact of GDP on household debt cannot be compared with the estimation without equity prices on grounds of low t-value even though the coefficient of GDP shows positive sign. On the other hand, the impact of interest rate on household debt was higher as compared to the estimation without equity prices. As expected, the equity prices are found to be negatively associated with the level of household debt. A one percent increase in equity price leads to a decline in household debt by 0.72%.

4. Results based annual data from 1987 to 2017

\[ Log(\text{rchhl}) = -6.04 + 0.85\log(\text{rgdp}) - 0.11\text{rate} \ldots..(3) \]

\( (6.55) \quad (-3.60) \)

\[ \text{Error correction term: -0.57} \]

\( (-3.67) \)

(Note: Figures in the bracket are t-values)

Variables definition:
- \( \text{rchhl} \): real flow (change) of households financial liabilities;
- \( \text{rate} \): Weighted average 10-year G-sec yield
- \( \text{rgdp} \): real gross domestic product/gross value added
Household Debt in SEACEN Economies

The SEACEN Centre Macroeconomic Dimensions of India’s Household Debt

\[
\text{Log (rhhd\_sa)} = 5.83 + 0.59 \times \text{log(rgdp\_sa)} - 0.17 \times \text{rate} - 0.72 \times \text{log(equity)} \ldots \ldots (2)
\]

\[
\begin{align*}
(1.63) & & (-2.76) & & (2.68) \\
\text{Error correction term: 0.05} & & & & (5.41)
\end{align*}
\]

(Note: Figures in the bracket are t-values)

Variables definition:
- \text{rhhd\_sa}: seasonally adjusted real household credit;
- \text{rate}: Weighted average 10-year G-sec yield
- \text{rgdp\_sa}: seasonally adjusted real gross domestic product/gross value added
- \text{equity}: equity price index (BSE Sensex)

The Committee on Household Finance (2017) pointed out that in India, the average household holds 77% of its total assets in the form of real estate and 5% in the form of financial assets. This indicates that the asset portfolio of Indian households is dominated by the real estate. The trend in the house price index compiled by the Reserve Bank of India and the equity price index i.e., BSE is shown in Chart 5a and 5b. As depicted in Chart 5a, frequent ups and downs in the equity price index reflects its sensitivity to economic and financial market development in both the domestic as well as global economy. On the other hand, the house price index generally shows a gradual increase over a period of time. Further, a comparison of the cumulative increase in both these indices over a period of around six years (2011Q2 to 2017 Q2) shows that the increase in house prices was higher than that of equity prices.

**Chart 5a: House Price Index vis-a-vis Equity Price Index**
5. Concluding Observations

The study has examined various dimensions of the household credit of banks in India which includes the growth rate of household credit vis-à-vis other sectors, macroprudential regulations by the Reserve Bank of India, government initiatives for housing loans and the behavior of the components of bank credit to the household sector. It also compares the return on housing and equity prices by comparing both the indices. The study observed that bank credit to the household sector grew at a higher rate than the overall bank credit, dominated by housing loans. It also observed that over the years, house prices recorded a steady increase and outpaced equity prices, implying more return on investment in housing as an asset. Empirical evidence revealed the robust income elasticity of household credit. However, the role of interest rate in influencing household credit was somewhat muted. As expected, there has been evidence of a negative relationship between household debt and equity prices. With regard to the role of household debt in influencing private final consumption expenditure, this study could not find any such evidence. These findings are based on bank credit to households and may not be the same when the credit extended by non-banking financial companies are taken into consideration. From the sustainability perspective, even though the household debt to GDP ratio of India has been rising over the past three years, it is much lower than other countries in South-east Asia. Further, low interest rates, improved financial savings and proactive macroprudential regulations provide an additional impetus for ensuring the sustainability of household debt going forward.
References


