

## Household credit, a stimulus to growth?

Recently, in India's context, credit to households has been under the radar. With overall personal loan growth rate far outpacing aggregate credit demand (currently overall personal loan growth on YoY basis is at 30.1% and aggregate credit demand run rate is at ~20%) and higher delinquency rates in certain products of household loans such as credit card and 'other personal loan' segments (small valued loans without collateral); red flags have been raised by the regulator. As a regulatory response the risk weights in respect of consumer credit exposure (except housing, vehicle and loans secured by gold) was increased by 25% points to 125%. In fact, consumer credit exposure of NBFCs for such segments have also attracted a higher capital charge. RBI's recent Financial Stability report has also expressed concerns about risks to consumer credit regarding risk profiling, declining standards of underwriting and rolling over of debt.

At the same time it is a well-known fact that growth in several developed countries has been fostered by consumerism that has been aided by leverage. Against this backdrop, it is interesting to see how overall household credit in India has grown compared to major peers. Is the pace of growth alarming relative to other markets? Have savings grown at the same pace as overall growth in credit? The response to these questions will give us some idea about the assets-liability mismatches of households. Towards the end, we have conducted an exercise to see whether the increase in household credit is contributing to stimulating private consumption demand.

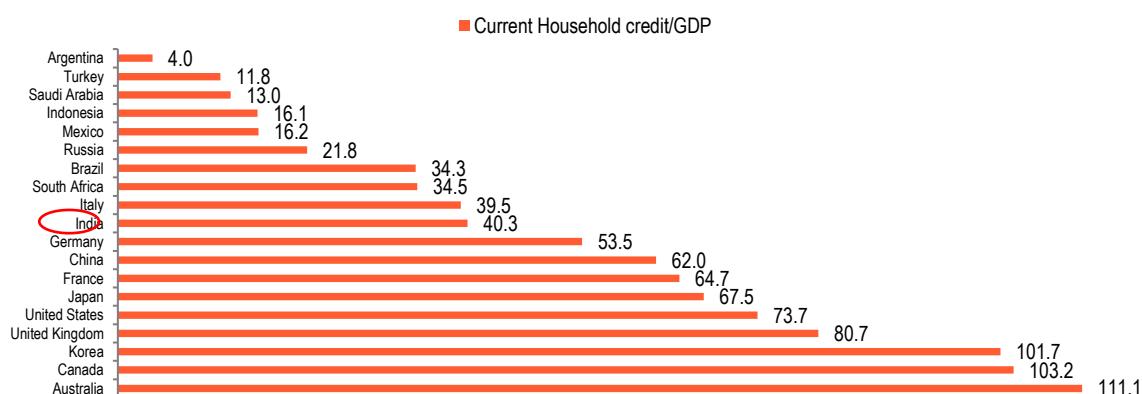
### **Key findings:**

- *India's credit to GDP ratio of household sector has been increasing at a steady pace.*
- *The ratio is higher compared to major EMs.*
- *In absolute terms as well, India's household credit figure is reflective of the fact that households have increased borrowing in tune with rising consumption demand.*
- *However, when compared to other advanced economies such as US, UK, the ratio of household credit to GDP in India still shows there is room for further increase.*
- *Savings on the other hand have shown some degree of moderation. This is true for India as well as other economies. Hence there is a gap between assets and liabilities portfolio of households.*
- *We have conducted an exercise where household consumption is regressed to household credit. The result of the exercise shows that over the years, credit has emerged as an important contributor in fueling private consumption demand across countries, which is positive for growth. It can hence be said that under the umbrella of prudent regulation quality consumer credit can actually be a driver of economic growth.*

## Section 1: Credit to GDP ratio of households:

Among major G20 economies, *India stands at 10<sup>th</sup> position in terms of household credit to GDP ratio.* An immediate conclusion is that logically economies with a larger size of GDP have a higher ratio. *India has a household credit to GDP ratio of 40.3%, which is lower than major advanced economies such as US with ratio of 73.7%, United Kingdom with ratio of 80.7%, Germany at 53.5% and Japan at 67.5%.*

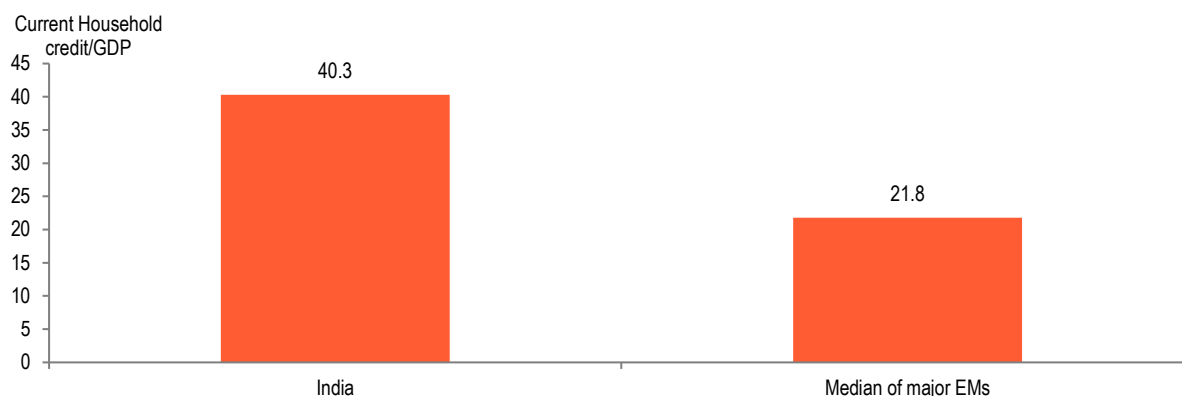
**Figure 1: Credit to GDP ratio of households of major economies**



Source: BIS, Bank of Baroda Research, Note: Data as of Jun-23, Credit from all sectors (from banks and other financial institutions) to Households & NPISHs at Market value, % of GDP, Adjusted for breaks.

*In comparison to major EMs however, India's ratio is impressive.* In pecking order it is only next to South Korea and China. Thus compared to the median level of credit to GDP ratio of households of EMs, India outperforms the others. In fact, India's ratio overtakes South Africa, Indonesia, Russia, amongst others reflecting thus a developed credit market.

**Figure 2: India's ratio stands out**



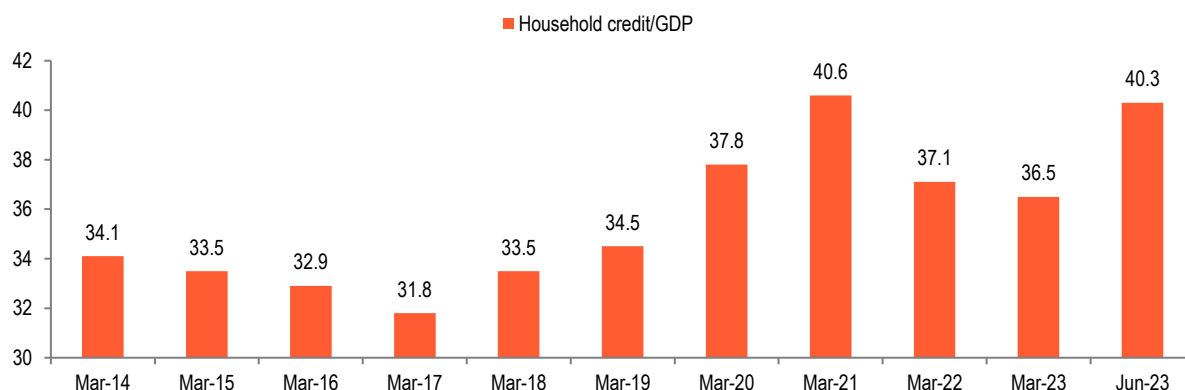
Source: BIS, Bank of Baroda Research, Note: Data as of Jun-23, Credit from all sectors (from banks and other financial institutions) to Households & NPISHs at Market value, % of GDP, Adjusted for breaks.

## Section 2: How India's household credit demand fared over the last few years?

India's ratio has picked up considerably compared to pre Covid times. One thing which stands in contrast to ordinary notion is the sudden surge in the ratio during Covid period. This is mostly driven by a lower GDP print thus driving the overall ratio higher. Thus it is more of statistical in nature. But

the current ratio has reached similar levels. This is more due to structural phenomenon such as pick up discretionary spending, favorable demographic and rising aspirations of middle class. From a ratio of 34.5% in Mar'19, it has risen to 40.3% in Jun'23.

**Figure 3: India's household credit to GDP ratio has picked up**

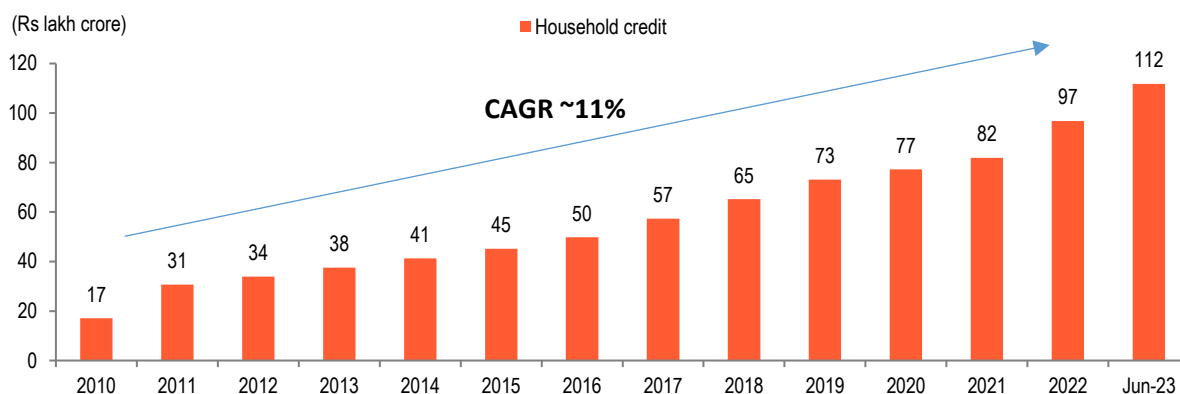


Source: BIS, Bank of Baroda Research, Note: Credit from all sectors (from banks and other financial institutions) to Households & NPISHs at Market value, % of GDP, Adjusted for breaks.

To analyze whether the ratio has outperformed or underperformed simply due to statistical effect of the denominator we focus on the actual growth of household credit demand, rather than only seeing the ratio where an inflated or deflated GDP plays a crucial role.

We have looked at the trend of 10 Year CAGR of household credit, both in US\$ terms as well as in terms of local currency unit, across different economies. *It is seen that for India the growth has been impressive. In US\$ terms, it ranks second amongst major G20 economies, whereas in local currency unit, it stands among the top 5. Thus improved regulation, easing financial conditions and a diverse credit market have contributed to such an enhanced pace of catch up for India.*

**Figure 4: How in absolute terms household credit of India performed**



Source: BIS, Bank of Baroda Research, Note: Credit from all sectors (from banks and other financial institutions) to Households & NPISHs.

**Table 1. How household credit demand has been across countries in US\$ and LCU terms**

Countries	CAGR-10 Years (LCU)	CAGR-10 Years (US\$)
China	16.6	15.4
India	11.0	6.6
Korea	7.3	5.6
United States	3.6	3.6
Mexico	7.9	3.6
Russia	12.8	3.5
Indonesia	8.4	3.4
France	4.3	2.1
Canada	5.1	1.9
Brazil	11.1	1.2
Germany	3.2	1.0
Australia	5.1	0.8
United Kingdom	2.9	-0.1
Italy	1.2	-1.0
Japan	2.2	-2.1
South Africa	4.8	-2.3
Turkey	19.0	-6.0

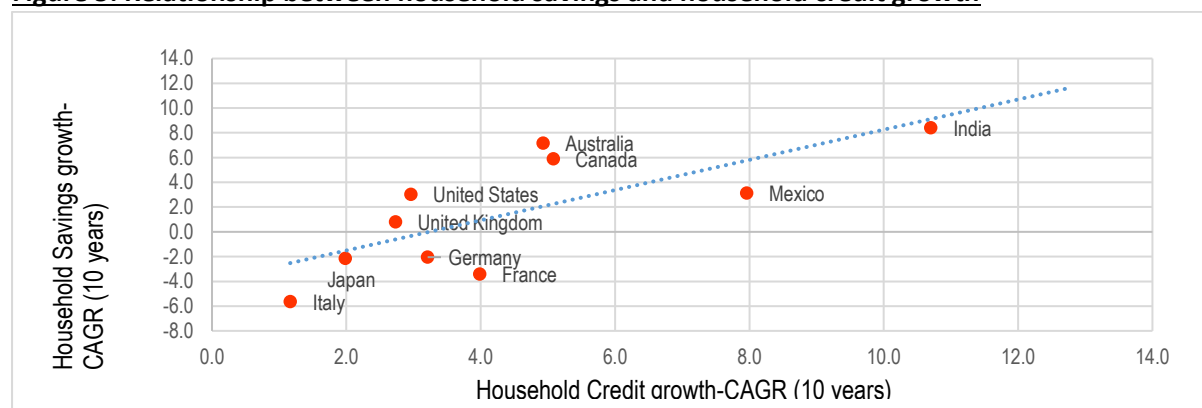
Source: BIS, Bank of Baroda Research, Note: Credit from all sectors (from banks and other financial institutions) to Households & NPISHs, LCU: local currency unit.

### Section 3: Savings aspect

The relationship between household savings and household credit can be examined next. *The 10 Year CAGR of household savings of major economies declined, while credit offtake by households has picked up pace.* Generally, the gradual run down of savings has resulted in increased borrowings. For India, the 10 year CAGR in gross household savings has been 8.4% with gross financial savings increasing by 10.8% and physical assets by 7.1%.

The figure below shows that for major economies such as Germany, France, Italy and Japan, savings of household have declined, whereas household borrowings have picked pace. *Notably, for most of the economies, the 10 Year CAGR of household borrowings is higher than the 10 Year CAGR of household savings, explaining the asset-liability gap of household.*

**Figure 5: Relationship between household savings and household credit growth**



Source: BIS, UNSTATS, Bank of Baroda Research, Note: Credit from all sectors (from banks and other financial institutions) to Households & NPISHs. Few countries opted out due to unavailability of household savings data, CAGR-10 Years (LCU).

#### Section 4. Relationship between household consumption and household credit:

Recently, in India's context there have lots of talks about the pace of growth in uncollateralized consumer credit, which has raised regulatory concerns, as highlighted earlier. Thus keeping this as a backdrop, we wanted to check whether pick-up in consumer credit is worrisome or not?

- In this exercise we wanted to look whether growth in household credit is fueling private consumption demand.
- The empirical data for 17 cross section units and across 10 time periods have been used.
- Here cross section units are countries and time periods run from 2010-2019.
- We have used all data sets in their local currency units at current prices, to evaluate the growth rate.
- To get a better clarity of how the household credit have evolved over time in giving consumption the desired push, we have segregated our data into 5 time periods. So the first set encounters time period 2010-2014 and the second one 2015-2019. We have opted out post Covid period as the results are spurious in nature due to discrepancy in data.

We regressed household consumption with explanatory variable as household credit. This is a limitation of our exercise of using fewer explanatory variables. However, we repeated the exercise including gross savings as another explanatory variable. The results in that case were not satisfactory. Theoretically, the fixed effect model has emerged as the appropriate choice of model confirming a **positive relationship between household consumption and household credit**. The results of Redundant Fixed effects test and Hausman test also confirms the superiority of fixed effect model over constant coefficient model and random effect model.

*[The test results are provided in the Appendix]*

The table below gives the coefficient of household credit in fixed effect model. The table indicates that the coefficient of household credit is 0.15 and the R-square (coefficient of determination) is 0.88. This was for the period 2010-2014. In the second quinquennium this coefficient improved marginally to 0.19 with the R-square being 0.94.

**Table 2: Coefficient of Household credit**

Fixed effect Model	Coefficient (2010-2014)	Coefficient (2015-2019)
C	5.98	4.32
Household Credit	<b>0.15</b>	<b>0.19</b>
R-square	0.88	0.94

*The conclusion drawn is that there is strong merit in growing household credit as it has positive effects on consumption and hence GDP growth. Given the higher ratios for the developed countries, there is plenty of scope to augment this segment of credit by banks. But also it is imperative that there are no disruptions in terms of asset quality as such shocks can push the system back. This is how the recent RBI move can be viewed as it brings in growth with discipline.*

## Appendix:

For panel data, we have three appropriate choice of models 1) Constant coefficient model which is the ordinary OLS ignoring the space and time dimensions of panel data set, 2) Fixed effect model where the heterogeneity of the cross sectional units have been accommodated by considering the intercept as a variable and uses dummy variables to account for differences among individuals with regard to the value of the intercept, 3) Random effect model , which does not use dummy variables to capture the presence of individual effect, but attach a randomness.

**The results of Constant coefficient model shows a positive direction between household consumption with household credit.** The T statistic is significant at 1% level of significance. But looking at the Durbin Watson statistic value there is a further need to re-establish whether constant coefficient model is ideal for this panel data set or not. Thus, we run the fixed effect across cross section units, since ours is a panel data.

**The t statistic of the coefficients of fixed effect model also turns out be statistically significant at 1% level of significance. Here also a positive relationship is established between household consumption and household credit. The Redundant Fixed effects test immediately established superiority of fixed effect model over constant coefficient with both cross section F and Cross-section Chi-square values being statistically significant at 1% level of significance.**

Next, we run the Random effect model and gets the desired results. Here also directionally and looking at the t statistic and the corresponding p value, this model seems ideal. However, we have to further check that whether Random effect model is suitable or not. To establish among fixed effect and Random effect model, which one is better; we have performed the Hausman test. The results of which establish that **fixed effect model is better as the Chi square value is statistically significant at 1% level of significance.**

The same exercise is repeated for time periods 2015-19 with the same cross section units. Here also we repeat the same tests and **find Fixed effect model to be the appropriate model.** The results are shown below:

### Results for time period: 2010-14

Constant coefficient Model	Coefficient	Std. Error	t-Statistic	Prob.
C	3.70	0.47	7.8	0
Household Credit	0.37	0.03	12.7	0
R-squared	0.66	-	-	-
Prob(F-statistic)	0	-	-	-

Fixed effect Model	Coefficient	Std. Error	t-Statistic	Prob.
C	5.98	0.40	15.0	0
Household Credit	0.15	0.03	5.0	0
R-squared	0.88	-	-	-
Prob(F-statistic)	0	-	-	-

<b>Redundant Fixed Effects Tests: Test cross-section fixed effects</b>	<b>Statistic</b>	<b>d.f.</b>	<b>Prob.</b>
Cross-section F	7.4	(16,67)	<b>0</b>
Cross-section Chi-square	86.2	16.0	<b>0</b>

<b>Random effect Model</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
C	4.34	0.42	10.4	<b>0.0</b>
Household Credit	<b>0.31</b>	0.02	13.4	<b>0.0</b>
R-squared	<b>0.55</b>	-	-	-
Durbin-Watson stat	1.80			
Prob(F-statistic)	0	-	-	-

<b>Hausman Test</b>	<b>Chi-Sq. Statistic</b>	<b>Chi-Sq. d.f.</b>	<b>Prob.</b>
Cross-section random	63.6	1	<b>0</b>

### Results for time period: 2015-19

<b>Constant coefficient Model</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
C	2.12	0.49	4.4	<b>0</b>
Household Credit	<b>0.51</b>	0.06	8.9	<b>0</b>
R-squared	<b>0.49</b>	-	-	-
Durbin-Watson stat	0.40			
Prob(F-statistic)	0	-	-	-

<b>Fixed effect Model</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
C	4.32	0.28	15.2	<b>0</b>
Household Credit	<b>0.19</b>	0.04	4.8	<b>0</b>
R-squared	0.94	-	-	-
Prob(F-statistic)	0	-	-	-

<b>Redundant Fixed Effects Tests: Test cross-section fixed effects</b>	<b>Statistic</b>	<b>d.f.</b>	<b>Prob.</b>
Cross-section F	32.3	(16,67)	<b>0</b>
Cross-section Chi-square	184.0	16.0	<b>0</b>

Random effect Model	Coefficient	Std. Error	t-Statistic	Prob.
C	4.08	0.64	6.4	0
Household Credit	0.22	0.04	5.9	0
R-squared	0.27	-	-	-
Durbin-Watson stat	1.64			
Prob(F-statistic)	0	-	-	-

Hausman Test	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	11.0	1	0

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