SHADOW BANKING IN INDIA

Sankar Prudhvi *, Mousumi Bhattacharya **

* Indian Institute of Management Shillong, Nongthymmai, Meghalaya, India
** Corresponding author, Indian Institute of Management Shillong, Nongthymmai, Meghalaya, India
Contact details: Indian Institute of Management Shillong, Mayurbhanj Complex, Nongthymmai, Shillong – 793 014, East Khasi Hills District, Meghalaya, India

Abstract

The NBFCs have been the proxies of shadow banking in India. The shadow banking channel is in its evolutionary phase in India. Hence the debate about the shadow banking channels is still on as far as India is concerned. The FSB (Financial Stability Board) in its report points out the various emerging trends and growth of the shadow banking channels in various countries including India. It is imperative to study the trends of shadow banking channels in India to understand the possible financial contagion effect of it on the formal banking systems. This paper studies the deposits accepted by and the loans advanced by the NBFCs from/to the households sector, the credit flow to the commercial sector from the non-banking channels to understand the broad trends. It further studies the difference in the net flow of resources to and from a particular type of NBFCs, to gain insights into the sources of funds with an objective to understand the interconnectedness of NBFCs and the formal banking channels. The paper makes an attempt to study the relationship between CRAR and GNPA to understand the financial performance with a specific reference to NBFC-MFIs (selected on a sample basis).

Keywords: NBFC, Shadow Banking, NBFC-MFIs

Authors’ individual contribution: Conceptualization - S.P. and M.B.; Methodology - S.P. and M.B.; Investigation - S.P. and M.B.; Resources - S.P. and M.B.; Writing - Original Draft - S.P.; Writing - Review & Editing - M.B.; Visualization - S.P.; Supervision - M.B.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

The banking sector has reshaped itself manifold over centuries by accommodating the people’s need for such banking and also addressing the greed that followed it. Inevitably these lead to a catch-22 situation on account of stringent regulations creating hindrances to the efficient working towards wide-spread credit access in the country. This hindrance served as a necessity for another invention namely the shadow banking channels, an alternative/secondary level of credit channels with lesser or no regulatory controls.

India also relied on such shadow banking institutions to expand credit penetration in the country. However, India’s sceptic regulators restricted the form and existence of such shadow banking channels in the country. Currently, NBFCs (non-banking financial companies) are considered to be the major proxies for shadow banking in India, though regulated by various regulators namely RBI, NHB, and SEBI (in case of listed entities).

These channels are dependent on banks for their fund requirements and other operational functions; and are thus interconnected with the formal banking systems. As a corporate strategy, the banks also chose to operate through NBFCs to circumvent the regulatory supervision of the regulators. The interconnectedness and interdependencies among banks and shadow banking channels increased the risks of contagion effect on Indian financial credit and liquidity systems, thus, creating a need to keep an eye on the structure and modus-operandi of these NBFCs. The evolving regulatory norms, absence of adequate information, evolving forms of shadow banking channels, etc., increases the complication of the job on hand.

The Financial Stability Board (FSB) estimates that the shadow banking assets, world-wide grew at the rate of 7.6% in 2016, the most recent year it has assessed. It also estimates that these channels are expected to grow at a faster pace and thus creating a need to have a close watch on the shadow banking systems. As evident from Figure 1, the percent share of total national financial assets of the OFI (other financial intermediaries) in India has been increasing over the years from 2004 to 2016.
This paper analyses the trends of shadow banking in India. It also analyses the relationship between two key factors namely CRAR and GNPA of Micro Finance Institution, a type of NBFC. The research work concerning the financial institutions of the Indian economy is concentrated mostly around the established formal financial channels namely banking. The research work in the shadow banking space in India is thus limited and is primarily focused on the financial performance and efficiencies of NBFCs. Various research papers have adopted different models for the same. On the other hand, the interconnectedness between the banking and NBFC channels has been increasing which in turn is creating a need to constantly monitor the effects of financial contagion. However, the study around the interconnectedness is still in its nascent stages. In the backdrop of the increasingly interconnected financial institutions, this paper attempts to study the growing trends of NBFCs in terms of share in incremental deposits and lending in India and also attempts to study the interrelation between CRAR and GNPA in case of MFIs.

The objective and scope of this paper are:
- to study the NBFCs share in accepting the deposits from the households;
- to study the NBFCs share in advancing loans;
- to study the interdependencies between the banks and NBFCs;
- to study the inter-relationship between CRAR and GNPA of MFIs in India.

The rest of the paper is organised into multiple sections as follows. Section 2 presents various studies in the Shadow banking or NBFCs space, both in the context of India and other countries. Section 3 describes the methodology adopted for conducting this study. Section 4 presents an analysis of the trends in India’s NBFC channels. The analysis is broadly categorised and presented under the sub-heads: non-banking deposits, non-banking loans, and advances, net-flows to and from non-banking channels, flows of resources to the commercial sector, and interlinkage between banks and NBFCs. Section 5 presents the statistical analysis of the relationship between CRAR and GNPA of MFIs, the results of which are presented and interpreted in Section 6. Section 7 discusses the findings of the study and Section 8 concludes it.

2. LITERATURE REVIEW

Acharya, Khandwala, and Öncü (2013) studied the determinants of growth of non-deposit taking SI-NBFCs and the linkages between the banks and various NBFCs. The study reveals that such linkages are primarily concentrated in loans/asset financing. It documents that lending to NBFCs fluctuates with the priority sector lending of the banks, and is relatively higher for banks with a lower presence in non-urban areas. However, in the case of SBI (including its affiliates), the bank-NBFC linkage is almost negligible, which is consistent with the aforementioned findings of the study. The study further notes that, in India, the lending to NBFCs is considered as a substitute for direct lending in non-urban areas.

Maeno, Nishiguchi, Morinaga, and Matsushima (2014) have studied the impact of shadow banks in a financial system and the financial contagion in Japan by using asset network systemic risk (ANWSER). The study analysed representative topologies of an interbank loan network between the shadow banks and regulated banks to understand the interdependencies between them. The study finds that the contagion effect of the failure of shadow banks is evident in the entire financial system including that of banks.

Issac and Nalini (2014) studied the business trends of NBFCs in India which includes studying the deposits taken, loans advanced and the market borrowings made. The study suggests certain crucial measures for the NBFC sectors including the need for sound corporate governance standards and customer protection policies.

Thilakam and Saravanan (2014) in their paper used the CAMEL model to study the NBFCs in the State of Tamil Nadu. The study evaluated the soundness of thirty NBFC companies across the parameters of Capital, Asset, Management, Earnings, and Liquidity (CAMEL). The NBFCs are broadly categorized as government-owned, small, top, and all NBFCs for the analysis. The study revealed that the top NBFC companies exhibited better soundness compared to that of the other segments.

Yadav (2017) studied the performance, in terms of profits, of five NBFCs in India using ratio analysis. The key ratios adopted in the study are net profit ratio, return on investment, average annual growth rate, and compounded annual growth rate. The study points out that efficient NBFCs are a key to mitigate systemic risk and achieve financial stability.

Shanmuganandavadivel and Sasikala Devi (2018) studied the performance of NBFCs in the Indian context. The study is conducted based on the financial parameters from the aggregate balance sheets of NBFC, and other parameters like asset...
quality, capital adequacy, profitability, and exposure to sensitive sectors.

Akter and Islam (2018) have used CAMEL model to examine the financial strength of the NBFI. Apart from the CAMEL parameters, the study included 'sensitivity to market risk' as its sixth parameter. The study aimed to understand the performance of selected NBFI in Bangladesh in terms of key ratios.

Sinha (2018) in his study used F-test to analyze the financial performance of three selected NBFCs on three parameters namely net sales/net revenue from operations, profit/loss before tax, and profit after tax/profit or loss for the period.

Ahmad, Bhaskar, and Bhanumurthy (2019) studied the interconnectedness between banks and NBFCs, which showed an increasing trend in the connectedness post-2008. The study further analyzed the banks and NBFCs as systemic risk receiver (SRR) and systemic risk emitter (SRE) at 1% and 5% quantiles each. (Härdle, Wang, & Yu, 2016). The study suggested that the findings are consistent with the RBI’s systemic rankings for domestic banks and SI-NBFCs.

3. METHODOLOGY

Considering the nature of operations of the shadow banking institutions, the availability of the data is in itself a constraint. The paper depends on secondary data for the research and is thus limited by any shortcomings in the data that has been used.

The research data for Section 4 is based on the periodical data available from the RBI database, ‘Database on Indian Economy (DBIE), RBI’s special issues, and reports including the report on trends/progress of banking in India, financial stability reports.

For the study presented in Section 5, four micro finance institutions (MFI) are considered, namely Credit Access Grameen Limited, Namra Finance Limited, Bharat Financial Inclusion Limited (formerly SKS Microfinance Limited), and Satin Credicare Network Limited. The four companies are listed MFIs registered with RBI. The MFIs are selected on a random basis, primarily considering the better availability of data for these companies. The CRAR and GNPA data of the companies, for the period from 2010-2011 to 2017-2018, are compiled from the information published in the annual reports. The panel unit root test and the ARDL tests are conducted for the four MFIs to study the relationship between CRAR and GNPA.

Alternatively, a bivariate regression can be used for the analysis. However, the ARDL model is used for this study to avoid the spurious regression problem. The ARDL representation allows the asymmetric choice of lag lengths to each variable, contrasting other methods of cointegration that need similar lag lengths for all variables. An additional feature of this model is that it estimates the u

4. TRENDS IN NBFC CHANNELS IN INDIA

4.1. Share of non-banking deposits in the change/alteration in financial assets of households

The major share of the incremental financial assets of the households is targeted towards banks, followed by life insurance fund, pension funds, and provident funds (see Figure 2). The banking channel has continued to attract higher deposits capturing more than 50% of the incremental financial assets. On the other hand, the non-banking channels i.e., the non-banking deposits, life insurance funds, provident, and pension funds are losing their share to bank deposits.
The non-banking deposits in absolute monetary terms and as a percentage of financial asset changes of the households are presented in Figure 3. The non-banking deposits grew in absolute monetary terms. However, its share in total incremental financial assets of households remained sluggish with less than 5% for almost two decades.

**Figure 3.** Share of non-banking deposits in the financial asset changes of the households

4.2. Share of bank and non-banking advances in the change/alteration in the financial liabilities of households

The share of loans and advances from banks and other FIs as a percentage of changes in financial assets is presented in Figure 4. The share of banking advances in the incremental financial liabilities of the households has started to decrease from the year 2011-2012, while the share of loans and advances (L&A) from other financial institutions continue to rise from the year 2010-2011. Loans and advances from other financial institutions include advances given by financial corporations and non-banking companies; and insurance corporations.

**Figure 4.** Share of banks and other financial institutions in the change in financial liabilities of households

4.3. Net-flows to/from the non-banking channels

The net inflow/(outflow) to/(from) non-banking channels which is computed as the difference between the non-banking deposits share in the incremental financial assets and the loans/advances from the other Financial Institutions (other than banks) share in the incremental financial liabilities of the households. The graphical representation of the same is presented in Figure 5, wherein it can be witnessed that the difference has widened from the year 2013-2014 and is skewed towards the loans and advances side. It means that the incremental loans advanced in much higher than the incremental deposits accepted from the Household segment.
4.4. Flows of resources to the commercial sector (CS)

The share of resources flow to the commercial sector in India from banks and non-banking sources are presented in Table 1 and the same is graphically presented in Figure 6.

<table>
<thead>
<tr>
<th>Year</th>
<th>From Banks</th>
<th>From non-banks (domestic sources)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-2009</td>
<td>45%</td>
<td>32%</td>
</tr>
<tr>
<td>2009-2010</td>
<td>40%</td>
<td>33%</td>
</tr>
<tr>
<td>2010-2011</td>
<td>56%</td>
<td>24%</td>
</tr>
<tr>
<td>2011-2012</td>
<td>55%</td>
<td>26%</td>
</tr>
<tr>
<td>2012-2013</td>
<td>49%</td>
<td>30%</td>
</tr>
<tr>
<td>2013-2014</td>
<td>56%</td>
<td>28%</td>
</tr>
<tr>
<td>2014-2015</td>
<td>44%</td>
<td>39%</td>
</tr>
<tr>
<td>2015-2016</td>
<td>33%</td>
<td>31%</td>
</tr>
<tr>
<td>2016-2017</td>
<td>34%</td>
<td>46%</td>
</tr>
<tr>
<td>2017-2018</td>
<td>44%</td>
<td>40%</td>
</tr>
</tbody>
</table>

Source: Authors’ own calculation based on available RBI reports (RBI, 2018a, 2018b, 2019a, 2019b, 2019c).

Figure 6 clearly shows that the credit from banking and non-banking sources to the commercial sector is offset by one another. That is, any increase in the credit from the banking channel has decreased the credit requirements from the non-banking channel and vice versa, keep the total banking and non-banking credit between the slabs of 80% and 90%. During the past decade from 2008-2009 to 2017-2018, the credit from the banking channel remained between the slabs of 40% and 60% whereas the credit from non-banking channels remained between the slabs of 30% and 50%. This has increased over the years. These higher net outflow gaps may indicate the additional sources of funds (apart from the non-banking deposits) plugged-in to increase loans advanced by the other financial institutions (i.e., non-banking channels).

The different sources of borrowings for the NBFCs-ND-SI (non-deposit taking, systematically important) are presented in Figure 7. Issue of debentures, commercial papers, etc. have been the forms of market borrowings by the NBFCs-ND-SI. The bank borrowings have been contributing around 20%-30% of the total sources of funds for these NBFCs.

4.5. The interlinkage between banks and NBFCs

While the non-banking deposits almost remained stagnant, the lending from non-banking channels...
The lower non-banking deposits are offset by the increasing bank credit allocations to the NBFCs and market borrowings. From Figure 7, it can be observed that the debentures and bank borrowings acted as alternative sources of funds for these NBFCs.

**Figure 7. Sources of borrowings of NBFCs-ND-SI**

![Graph showing sources of borrowings of NBFCs-ND-SI]

*Source: Authors’ calculation based on available RBI reports (RBI, 2018a, 2018b, 2019a, 2019b, 2019c).*

The proportion of Bank deposits and NRFC deposits, out of the total public deposits to bank and NBFCs are graphically represented in the form of a ‘stacked column chart’ in Figure 8.

**Figure 8. Share of public deposits to NBFCs and banks out of the aggregate**

![Graph showing share of public deposits to NBFCs and banks]

*Source: Authors’ calculation based on available RBI reports (RBI, 2018a, 2018b, 2019a, 2019b, 2019c).*

The share of the public deposits to NBFCs has declined gradually from 3.83% in 1997-1998 to 0.28% in 2017-2018. During these twenty years i.e., from 1997-1998 to 2017-2018, the public deposits to Scheduled Commercial Banks (SCBs) have grown at the CAGR of 15.89% pa and to NBFCs at a CAGR of 1.49% pa.

Though the share of public deposits to NBFCs has been decreasing, the Banks have been increasingly providing loans to NBFCs. The non-food bank credit helps us to understand the same. The non-food bank credit constitutes around 93% of the total bank credit from SCBs to the commercial sector (the other 7% is in the form of non-SLR investments). The banks have managed to increase the credit to NBFCs. The summary of sectoral deployment of non-food gross bank credit to NBFCs from 2011-2012 to 2017-2018, the period for which the data is available, is presented in Table 2.
Table 2. Outstanding non-food gross bank credit (as on last reporting Friday in March)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total non-food credit to services (in which the above credit to NBFCs is included).</td>
<td>233,221</td>
<td>260,257</td>
<td>293,773</td>
<td>311,744</td>
<td>352,742</td>
<td>391,032</td>
<td>496,393</td>
<td>641,208</td>
</tr>
<tr>
<td>Total non-food credit (i.e., towards agriculture &amp; allied activities, industry, services and personal loans).</td>
<td>10,22,960</td>
<td>11,51,886</td>
<td>13,37,451</td>
<td>14,13,097</td>
<td>15,41,067</td>
<td>18,02,237</td>
<td>20,50,472</td>
<td>24,15,609</td>
</tr>
<tr>
<td>Gross bank credit to NBFCs as a percentage of credit to Services sector.</td>
<td>23%</td>
<td>23%</td>
<td>22%</td>
<td>22%</td>
<td>23%</td>
<td>22%</td>
<td>24%</td>
<td>27%</td>
</tr>
<tr>
<td>Gross bank credit to NBFCs as a percentage of credit to total non-food credit.</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>6%</td>
<td>6%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Note: Above mentioned amounts are in Crore Indian Rupees.

Source: Authors’ own calculation based on available RBI reports (RBI, 2018a, 2018b, 2019a, 2019b, 2019c).

Table 2 reveals that the bank credit to NBFCs has approximately increased by 3 times for 7 years from 2011-2012 to 2018-2019 presented above. During this period, the credit to NBFCs grew at a CAGR of 16% pa. The share of bank’s credit to NBFCs has increased from the year 2016-2017 after remaining almost stable for the years 2011-2012, 2012-2013, 2013-2014, 2014-2015, and 2015-2016. This trend needs to be monitored closely as RBI has undertaken to commit itself to streamline its norms for NBFCs. For instance, the RBI’s norms with respect to:

- allowing risk weighing exposures to all NBFCs (excluding CICs) to be as per the ratings assigned by the rating agencies (similar to that of corporates under the existing regulations) from the existing flat risk-weight of 100%;
- co-originating of loans between banks and NBFCs (vide its notification dated 22.09.2018);
- The norms are expected to boost the credit access of NBFCs from banks.

The broad range of year-on-year growth rates of select financial items namely loans and advances, borrowings, borrowings from banks, of around 16,000 to 23,000 Non-Government Non-Banking Financial and Investment (NG-NB-F&I) Companies between 2012-2013 and 2017-2018 is presented in Table 3 below.

Table 3. The range of year-on-year growth rates between the period 2012-2013 and 2017-2018 of selected financial items of NG-NB-F&I companies

<table>
<thead>
<tr>
<th>Financial item</th>
<th>Range of y-o-y growth rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loans and advances</td>
<td>14%-23%</td>
</tr>
<tr>
<td>Borrowings</td>
<td>12%-23%</td>
</tr>
<tr>
<td>Borrowings from banks</td>
<td>10%-20%</td>
</tr>
</tbody>
</table>

Source: Authors’ own calculation based on available RBI reports (RBI, 2018a, 2018b, 2019a, 2019b, 2019c).

Thus, the borrowings from the banks to the NBFCs have been increasing to meet the increasing lending needs of NBFCs.

5. RELATIONSHIP BETWEEN CRAR AND GNPA

To understand the relationship of capital to risk (weighted) assets ratio (CRAR) and gross non-performing assets (GNPA) of micro finance institutions (MFI), the panel unit root test and the ARDL tests are conducted for four MFIs namely: Credit Access Grameen Limited, Namra Finance Limited, Bharat Financial Inclusion Limited (formerly SKS Microfinance Limited), and Satin Credicare Network Limited.

The CRAR and GNPA represent the capital stability and non-performance assets of the companies. The data of GNPA and CRAR of the four companies for the period from 2010-2011 to 2017-2018 is studied for the analysis.

A bivariate model is employed, and the panel sort of the equation is given below:

\[ Y_{it} = \alpha_i + \beta_t x_{it} + \epsilon_{it} \]  

(1)

The \( i \) in equation (1) signifies individually the four companies.

5.1. Stationarity test in a panel framework

A panel unit root test is carried out to observe the presence of any unit root in the present data. Unit root causes some volatility which cannot be observed accurately by regression models: Levin, Lin, and Chu test (2002), ADF-Fisher Chi-square test, P-Fisher Chi-square test.

These are some basic tests for unit root identification wherein the hypothesis is:

- The null hypothesis (H0): The data series is not stationary (has unit root).
- Hypothesis 1 (H1): The data series is stationary (has no unit root).

5.2. Pooled mean group ARDL model

The autoregressive distributed lag (ARDL) model permits both the intercepts and slopes to differ across companies taken in the study. ARDL can identify the short and long-run behavior contrary to stationary panel estimations. We estimate the nexus between CRAR and GNPA for the four companies using the pooled mean group ARDL model that takes care of the matter of short-run heterogeneity as well as long-run homogeneity of the estimated coefficients. The ARDL model of Pesaran, Shin, and
Smith (1999) allows the intercepts, short-run coefficients, and cointegrating terms to vary across cross-sections. The following equation is examined in the study:

$$\Delta \text{CRAR}_{t,t-1} = \phi_i ECT_{t,t-1} + \sum_{j=0}^{q-1} \Delta \text{GNPA}_{t,j} \beta_{ij} + \sum_{j=1}^{n-1} \lambda_{ij} \Delta \text{CRAR}_{t,t-j} + e_{i,t} \ldots$$  \hspace{1cm} (2)

where $ECT_{t,t-1} = y_{t-1} - X_{t-1}$ the long-run coefficient is $\theta_i$, the adjustment coefficient is $\phi_i$, and $p$ and $q$ are the lag lengths. For notational convenience, we assume the regressors have the same number of lags in each cross-section, but this assumption is strictly not required during estimation.

6. RESULTS AND INTERPRETATION

6.1. Stationarity test

The unit root test of both the variables was done at levels and first difference form. CRAR is stationary at a level according to three tests where the null hypothesis of non-stationarity ($H_0$) at a 1 percent level of statistical significance is rejected. GNPA shows mixed results where in the two tests the null hypothesis of non-stationarity ($H_0$) at a 1 percent level of statistical significance is rejected and in the other two tests, the null hypothesis of non-stationarity ($H_0$) at 1 percent level of statistical significance cannot be rejected. Due to the mixed results, we use the ARDL model in panel form.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Variable</th>
<th>Lag</th>
<th>Stats</th>
<th>Decision</th>
<th>Variable</th>
<th>Lag</th>
<th>Stats</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levin, Lin, and Chu test</td>
<td>CRAR</td>
<td>1</td>
<td>-5.68963 (0.0000)</td>
<td>stationary</td>
<td>D(CRAR)</td>
<td>0</td>
<td>-3.50861 (0.0002)</td>
<td>stationary</td>
</tr>
<tr>
<td>Null: Presence of unit root (UR)</td>
<td>GNPA</td>
<td>1</td>
<td>1.33995 (0.0009)</td>
<td>non-stationary</td>
<td>D(GNPA)</td>
<td>0</td>
<td>4.82737 (0.0000)</td>
<td>stationary</td>
</tr>
<tr>
<td>Pesaran, Shin, and Smith (1999)</td>
<td>CRAR</td>
<td>1</td>
<td>-1.43676 (0.0754)</td>
<td>stationary</td>
<td>D(CRAR)</td>
<td>0</td>
<td>-0.66361 (0.2535)</td>
<td>non-stationary</td>
</tr>
<tr>
<td>Null: Presence of UR</td>
<td>GNPA</td>
<td>1</td>
<td>1.36708 (0.0143)</td>
<td>non-stationary</td>
<td>D(GNPA)</td>
<td>0</td>
<td>-0.08483 (0.4662)</td>
<td>non-stationary</td>
</tr>
<tr>
<td>Fisher Chi-square -ADF</td>
<td>CRAR</td>
<td>1</td>
<td>17.3206 (0.0026)</td>
<td>stationary</td>
<td>D(CRAR)</td>
<td>0</td>
<td>11.1193 (0.0030)</td>
<td>non-stationary</td>
</tr>
<tr>
<td>Null: Presence of UR</td>
<td>GNPA</td>
<td>1</td>
<td>4.97939 (0.7298)</td>
<td>non-stationary</td>
<td>D(GNPA)</td>
<td>0</td>
<td>13.8576 (0.0856)</td>
<td>stationary</td>
</tr>
<tr>
<td>Fisher Chi-square-PP</td>
<td>CRAR</td>
<td>1</td>
<td>11.1061 (0.0153)</td>
<td>non-stationary</td>
<td>D(CRAR)</td>
<td>0</td>
<td>13.2471 (0.0545)</td>
<td>stationary</td>
</tr>
<tr>
<td>Null: Presence of UR</td>
<td>GNPA</td>
<td>1</td>
<td>5.36845 (0.7176)</td>
<td>non-stationary</td>
<td>D(GNPA)</td>
<td>0</td>
<td>13.7130 (0.0894)</td>
<td>stationary</td>
</tr>
</tbody>
</table>

Note: Probability values are in brackets.

6.2. Pooled mean group ARDL

The long-run and short-run estimates using the pooled mean group ARDL model is presented in Table 5 below. GNPA has a long-term relationship with CRAR. The GNPA certainly influences CRAR in the short term. The coefficient of lagged error correction term is significant at a 5% level of significance and is negative as per our a priori expectation indicating the speed of adjustment towards long-run equilibrium when the system is exposed to a small shock. Error correction coefficient reveals that the short-run deviations in GNPA from long-run equilibrium are adjusted by 79% every year for CRAR.

<table>
<thead>
<tr>
<th>Dependent variable: CRAR</th>
<th>Regressor</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term estimates</td>
<td>GNPA</td>
<td>0.86486**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.116244)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[7.472349]</td>
</tr>
<tr>
<td>Short-run estimates</td>
<td>D(GNPA)</td>
<td>3.476810**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.507282)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[2.3060676]</td>
</tr>
<tr>
<td></td>
<td>ECT_{t,1}</td>
<td>-0.793105**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.313692)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[-2.528294]</td>
</tr>
</tbody>
</table>

Note: () and [ ] represents standard error and t statistic respectively, *** and ** represents statistical significance at 1% and 5% level respectively. The Akaike Information Criterion (AIC) criterion is used to determine the optimal lag.

7. FINDINGS AND DISCUSSION

The shadow banking in India is still unfolding. The Households are the key segment of the economy in terms of channelizing their savings into the financial credit system through various channels like banking channels, life-insurance funds, pension funds, and other non-banking channels. The share of the non-banking channels in the incremental financial assets of the households, which are the deposits (inflows) to these channels, is decreasing over a period of time. However, the banking channel has been successful in gaining a higher share in the incremental financial assets of the Households. On the incremental financial liabilities side of the
households, the non-banking channels have been able to gain a higher share. The difference between the incremental inflows (from financial assets) and incremental outflows (from financial liabilities) of the households are analysed, to note that the difference widened during the recent years. The difference is skewed indicating that the loans provided by NBFCs in the incremental liabilities of Households are higher than their share in the incremental assets of the households.

On the commercial sector front, the credit from banking and non-banking channels has been within the range of 80% to 90% during the period from 2008-2009 to 2017-2018. The credit from banking and non-banking channels to the commercial sector is offset by each other. The asset liability mismatches of the NBFCs are widely met by the market borrowings and borrowings from banks. The bank borrowings by the NBFCs have been increasing. This creates the interdependencies between the banks and NBFCs, leading to the financial contagion effect in case of any unforeseen failures. Hence it is important to ensure that the shadow banking channels aka NBFCs are monitored for their strong financial performance.

In an extension of the same, to understand the financial stability and performance of the NBFCs (MFI), the relationship between the GNPA and CRAR is studied. Based on the analysis of the MFI, it can be said that GNPA and CRAR have a long-term relationship and should be closely monitored to ensure the financial stability of the MFI. Due consideration should be given to the CRAR and GNPA of the NBFCs to ensure they remain stable and that the risks of their failure are minimised with proper monitoring.

8. CONCLUSION AND IMPLICATIONS

While the shadow banking is an increasing reality, the opportunity lies in leveraging these channels to achieve India’s financial penetration goals. The interconnectedness of the NBFC sector with other sectors has its own set of rewards and risks associated. The savings, investments, earnings, and losses of the households, commercial entities, and the banks are thus dependent on the financial stability of the NBFC channels. The more stable the NBFCs, the better for the economy. The ability to estimate the extent of interconnectedness among various banking and non-banking channels helps in effectively checking the effects of financial contagion in adverse situations. The estimation of such interconnectedness, both at aggregate and individual levels, calls for further research. The other forms of shadow banking channels should also be included in the future study and are primarily affected by the availability of data. As mentioned, this study is limited by the availability of data and inherits any inconsistencies in the secondary data used for the research. The analysis with respect to CRAR and GNPA is limited by the choice of companies and also the sample size.

REFERENCES