

# CHAPTER VII

## MATURITY TRANSFORMATION PRACTICES BY NBFCs IN KERALA

### 7.1 Introduction

Maturity transformation, an arrangement by which the investors to benefit from a mediator's special skills in making high-return investments while maintaining the efficiency to shift funds to alternatives if needed<sup>34</sup>, and liquidity transformation<sup>35</sup> are basic functions of commercial banks. By the accomplishment of these contemporary and fundamental functions, commercial banks mediate and meaningfully become part of financial development. By a meaningful financial intermediation, it is expected that, the whole participants- households, firms and Government- get maximum benefits<sup>36</sup>. Since banks are the genuine and traditionally entrusted mediators to do the above mentioned functions properly, the emergence and development of other mediators, especially without proper regulatory framework, generally be seen suspiciously and thus must be handled seriously. Global financial crisis brought chances of such intermediaries and sometimes called as shadow banks<sup>37</sup> which conduct maturity, credit and liquidity transformation without explicit access to central

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<sup>34</sup> See Yorulmazer (2014) and Berger & Bouwman (2009)

<sup>35</sup> Liquid assets are pooled together and invested in illiquid assets.

<sup>36</sup> Finance driven growth is majorly through total factor productivity growth and not through savings and physical capital accumulation (Levine, Loayza, & Beck, 2000)

<sup>37</sup> Financial intermediaries with liabilities and assets that resembles banks. For an overview, see McCulley (2007)

bank liquidity<sup>38</sup>. There is no doubt that, support of commercial banks is a presupposition to the development of these financial institutions<sup>39</sup> and thereby development. So the name 'shadow bank' is apt in this context<sup>40</sup>. Previous studies established some characteristics of shadow banks. Maturity transformation, financial leverage and regulatory opaqueness are the cataract elements of shadow banks. First question arises here is, whether these shadow banks are dangerous to our economy? Some scholars believe that, these intermediaries pose problem in specific situations only. Numerous studies are there to establish the idea and the characteristics. But these understandings confine to some developed regions because the crisis period was immensely exposed to such regions. Post crisis period was sufficiently exposed to India also. In India, we can term some NBFCs as shadow banks<sup>41</sup>. These financial intermediaries, contributing to financial deepening<sup>42</sup>, are sometimes systemically important on the ground of interconnectedness with commercial banks and thus require careful monitoring. Quantitatively, non deposit taking NBFCs which has asset of more than Rs 500 crores is categorised as

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<sup>38</sup> Pozsar, Adrian, Ashcraft, & Boesky (2013). Authors documented specialised financial institutions in the shadow banking system. They argued that these credit intermediaries played a quantitatively important role in the run-up to the financial crisis.

<sup>39</sup> Acharya, Khandwala, & Öncü (2013)

<sup>40</sup> In India, Non-deposit taking NBFCs with an asset size of Rs 500 crore and more were classified as systemically important non- deposit taking NBFCs (NBFCs-ND-SIs). Since 2007, the regulatory requirements for NBFCs-ND-SIs have been increasingly tightened in view of the growing importance of this segment and its inter-linkages with banks and other financial institutions (RBI, 2010).

<sup>41</sup> Sinha (2013)

<sup>42</sup> FSB (2015). Strong growth in shadow banking from a low base and this is particular in Emerging Market Economies (EMEs) like India with relatively less developed financial systems. The Board suggest careful monitoring to detect any increases in systemic risk factors. These systemic risk factors, according to the Board are, maturity and liquidity transformation, and leverage. These factors could arise from the rapid expansion of credit relative to GDP provided by the non-bank sector. Share of shadow banking assets of EMEs doubled from 6% in 2010 to 12% in 2014. In terms of GDP, shadow banking share in Ireland, UK, Switzerland, and the United States stood at 1190%, 147%, 90% and 82% of GDP, respectively. Size of shadow banking assets was below 10 % of GDP in Turkey, Argentina, Saudi Arabia, Russia, and Indonesia.

systemically important in India. Crisis and related developments compelled monetary authorities to regulate these NBFCs like the deposit taking NBFCs. These NBFCs frequently depend on the commercial banks for the working capital requirements. So the commercial banks are compelled to advance to these enterprises at low interest primarily on the grounds of immature regulatory norms. This reduces the funds of commercial banks which would otherwise have been used for productive advances directly to the industry or agriculture<sup>43</sup>. Again, it is alleged that these NBFCs advance to rather unproductive purposes. Productivity is proxied here with the short term nature of the advances<sup>44</sup>. So there is an urgent need to identify the maturity transformation practices of NBFCs.

## **7.2 Foundations**

Economic crisis and consequences offered a plot to seriously venture into the global shadow banking practices and management. Gorton & Metrick, (2010) suggest strict guidelines on collaterals and government-guaranteed insurance as success methods for regulating the shadow banking system. Sherpa (2013) suggest more better structural regulation of shadow financial institutions in India. But they have not provided all the details necessary for determining acceptable collateral and a benchmark for regulation. Contemporary scholars

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<sup>43</sup> But, it is found that indirect finance from banks through financial mediators is helpful to agricultural value chains in India. See, Kumar & Kattookaran, (2016)

<sup>44</sup> Liquidity risk, leverage risk, regulatory arbitrage and contagion risk are the four types of risks that may be emanated from the shadow banking in an economy. For an elaborate description, please see Green Paper Shadow Banking European Commission March 2012. We are grateful to Mr. Anand Sinha, Deputy Governor of the Reserve Bank of India, who annotated a better understanding of NBFCs in India.

decline the allegation on the ill development of shadow banking regulation. There is significant efforts by authorities to regulate the shadow banking system but the progress in achieving the stability has been uneven (Adrian & Ashcraft, 2012). Shadow banking sector in Ireland is significant and it is with predominantly non-domestic risk exposures which necessitates the international nature of shadow banking and the need to share information across borders (Godfrey & Golden, 2012). The case of Ireland is worthwhile to refer here, as it is an economy which has more shadow banks assets than the commercial banks. Staff paper authored by Luttrell, Rosenblum, & Thies, (2012) explains the form and functioning of shadow banking system, its relation with systemic risk and financial crisis. They also explain the particular aspects that should be highlighted to benefit policymakers while regulating the financial markets. Authors cautiously point to the inherent risk (Interest rate risk) in maturity transformation. Increase in interest rate will benefit the depositors of a bank while it decrease the value of assets. Although hedging of interest rate is a tool to overcome the risk, by how much the system developed in Indian financial market is a serious issue.

Paligorova & Santos (2014) examined banks' reliance on short-term wholesale funding and its relation with the maturity of loans issued to non-financial corporations. They documented that those banks that rely more on short-term wholesale funding tend to shorten the maturity of their loans. So the borrowers turn to the bond market in order to compensate for shortening of the loan maturities. This will source a financial instability. Motivated from the efforts of

Paligorova & Santos (2014), the practices of NBFCs-ND-SI were evaluated by Kumar & Kattookaran (2016) and found that these NBFCs also try to shorten the maturity of loans in India. The emergence of such NBFCs was rationalised on the grounds of providing finance for long term assets<sup>45</sup>. Dependence of financial and non-financial firms on bond market will vigour the aggregate financial leverage in the market. So there is a chance for maturity transformation driven leverage and thus shadow banking<sup>46</sup>. Savers, attracted by the high rates, move to the debt market which ultimately affect the volume of deposits of commercial banks. The decreased number of depositors and volume will again create a weaker liability base of banks and increase the rollover risk.

NBFCs, deposit taking and non deposit taking- systemically important ones, heavily depends on the banking system (Karunagaran, 2011). In 2013, Acharya, Khandwala, & Öncü studied the growth of shadow banking system in India. They found that, during 2006-2011, bank lending forms an important source to NBFCs in India which fluctuated in accordance with priority sector lending by banks. Authors, who collected data of individual non deposit taking NBFCs from RBI, viewed these intermediaries as a substitute for direct lending in non-urban areas. They used an imbalanced panel dataset of 257 NBFCs and 2374 NBFC-Quarters. The above mentioned study is primarily concerned with the bank lending to systemically important NBFCs in India. It hardly points towards the metamorphing of the maturity of the sources and

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<sup>45</sup> Report on Trend and Progress of Banking in India 2008-09, RBI

<sup>46</sup> Volume of maturity transformation, financial leverage and regulatory opaqueness decides the shadow banking.

application of funds of those systemically important firms. Aubert, Haquin, Jackson, Killeen, & Weistroffer (2016) declined the possibility of full assessment of interconnectedness between the shadow banking and the banking system. The data limitations impeded that full assessment. Accordingly the authors used an entity-based approach and an activity-based approach when mapping the broad shadow banking system in the EU. The analysis primarily concerned with the examination of liquidity and maturity transformation, leverage, interconnectedness with the regular banking system and credit intermediation. The approach was, in the opinion of authors, most appropriate for the purpose of assessing shadow banking related risks within the EU financial system. The problem of specific measure of systemic risk of individual institutions, as reported by Tarashev, Borio, & Tsatsaronis (2009)<sup>47</sup>, still exist. There are regulatory limits at the individual bank's level to lend to NBFCs in India.

Since dependence of NBFCs on banks shrunked, we cannot properly term the current NBFCs as shadow banks. But maturity transformation and financial leverage are important elements still exist. These intermediaies turned alternatively to advantage of leverage and in turn to debt financing. Thus indirect sourcing turned to direct sourcing. Acharya, Khandwala, & Öncü (2013) focussed on the period from 2006 to 2011. The period witnessed a descending dependence on banks and attributed to crisis effects and priority

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<sup>47</sup> The tools, which consider the contribution of individual firms' systemic risk, will benefit to financial stability during the time of crisis and will calibrate the prudential requirements during the calm period.

sector lending practices of banks. Table 7.1 shows a framework of risk metrics for the shadow banking system.

**Table 7.1**  
**Framework of Risk Metrics for The Shadow Banking System<sup>48</sup>**

|   |   |
|---|---|
| <b>Maturity Transformation</b>                            | Short-term assets/Total assets<br>Long-term assets/ Total assets<br>Short-term liabilities/Short-term assets<br>Long-term assets/Short-term liabilities   |
| <b>Liquidity Transformation</b>                           | Non-liquid assets /Total assets<br>Short-term liabilities/Liquid assets<br>Short-term assets/Short-term liabilities<br>(Current ratio)<br>Liquidity mismatch: Liquid liabilities less liquid assets, as share of total assets |
| <b>Leverage</b>   | Leverage= Debt/Total assets<br>Leverage Multiplier= Total assets/Equity   |
| <b>Credit Intermediation</b>                              | Loans/Total assets<br>"Credit assets" /Total assets   |
| <b>Interconnectedness with the Regular Banking System</b> | Assets with credit institution counterparty/<br>Total assets  |

Note: Non-liquid assets means total assets less liquid assets, "Credit assets" means Loans and debt securities.  
Source: Aubert et al. (2016)

Harutyunyan et al. (2015) developed an alternative approach to estimate the size of the shadow banking system by using official data reported to the IMF and other sources. They further developed measures to capture nontraditional funding raised by traditional banks. They applied the new approach to 26 jurisdictions and analyzed the results over a period of twelve years. They compared the measures to that of developed by the Financial Stability Board (FSB).

<sup>48</sup> Developed by European Systemic Risk Board (ESRB), Germany

### **7.3 Research Problem**

South India accounts for variant non banking intermediaries and is a place with multi sources of surplus money. The considerations on education and health potentials by the pioneer visionaries, especially in the form of reforms, strengthened the potentialities of human resources. The recognition of such empowerment, especially by the west, was in the form of rampant employment opportunities. The period after 1980 witnessed a high growth in the personal disposable income. Accordingly the length and breadth of financial intermediaries boomed in this state. Varied financial requirements of households and firms were to be met by variant financial intermediaries. So, the emergence and development of NBFCs are viewed as an igniting and sustaining element for agriculture and service sector. North of the state is abundantly equipped with superior quality commercial crops. Central Kerala is blessed with effective trading domain. Southern Kerala accounts and known for various industry as well as commercial crops. Commercial banking system is not fully equipped to satisfy various financial needs of the diversified people and industry in Kerala. So we can rationalise the functioning of NBFCs along with other collectives (for example, co-operative societies). Economic crisis (2007-08) compelled monetary authority to overview the functioning of NBFCs, especially non deposit taking and systemically important ones. There are 8 NBFCs-ND-SI in Kerala (RBI Classification). Among these NBFCs, some focuses on certain financial arrangements only. Kerala State Financial Enterprises (KSFE) owned by Kerala Government, which is focussing on chitty

business, is an example. Majority of the NBFCs-ND-SI concentrate on micro finance through gold loan. So there is a perceived recognition that, these NBFCs encourage and accumulate non productive loans. In fact, all short term and micro advances are not non productive. Further, such advances have the capability to offer relief to households, primarily by meeting the financial needs related to health and education. The core question to be answered here is whether the norms related with the capital adequacy of these NBFCs is quantitatively and qualitatively enough? Developed economies repeatedly confirm the possibility of shadow banking and overall characteristics of such mediators. Effort from the authorities and institutions, in the evaluation of maturity transformation of such NBFCs, is unaccountable as it is a more little one.

Previous chapter examined the contributions made by the banking sector towards the NBFCs-ND-SI in Kerala. Financial performance of NBFCs-ND-SI in Kerala is largely explainable by the conventional banking practices. In the rural banking sector, NBFCs play a complementary role. This means that NBFCs-ND-SI in Kerala shows the characteristics of a bank. Since maturity transformation is one of the most important functions of a bank, it is necessary to understand the style of maturity transformation of NBFCs-ND-SI. This chapter evaluates the maturity transformation practices of NBFCs-ND-SI in Kerala.

## 7.4 Empirical Strategy

Data has been sought from the annual reports of ND-SI-NBFCs in Kerala. Sample of two listed NBFCs-ND-SI considered for this purpose. Six years financial data from 2011-2012 to 2016-2017 is taken. To know the relative maturity period of assets and liabilities, a Maturity Transformation Ratio (MTR) is calculated. MTR of NBFCs is calculated as follows;

$$MTR = Avg\ Mat\ As / Avg\ Mat\ Lb$$

MTR = Maturity Transformation Ratio of NBFCs.

Total liabilities and advances for various maturities are extracted from the annual reports of NBFCs. Maturities (*Mat*) are ranging from 0 to 1 month to above five years. So the average maturity for each category of liability and advance is taken as the mid value of the maturity values and thus arrived at 0.5, 1.5, 2.5, 4.5, 9, 24, 48, 60 months. It is assumed that the liability or the advance for more than five years is generally of a 10 year tenure one and hence the average of 120 months- 60 is the average maturity for above 5 years. Corresponding amounts of liabilities (*Lb*) and assets (*As*) are multiplied with these average maturity periods (*Avg*) and totalled in order to get aggregate value of liability and assets. This value has then divided with the total liability/assets to calculate conventional statistical average maturity of respective liability /assets.  $X_1, X_2, X_3, \dots, X_n$  are the average maturities of individual liabilities and assets of NBFCs. Frequency of these maturities would be the

amount of Indian Rupees liabilities or assets ( $f$ ). Sum of the frequency would be  $N$ . Then Avg Mat As or Lb= $\sum f X/N$ .

Post crisis studies related with shadow banking in India, especially of Acharya, Khandwala, & Öncü (2013) and Karunagaran (2011) were related with the interconnectedness of shadow banks with banks and their period of consideration was till 2012. This chapter focusses on the evaluation of maturity transformation of NBFCs-ND-SI in Kerala for a period of 6 years from 2012 to 2017.

## **7.5 Measurement of Maturity Transformation**

For measuring the maturity transformation, the major activity of a financial intermediary, some empirical as well as institutional efforts has made.

### **7.5.1 Past Efforts**

Godfrey & Golden (2012) defined maturity transformation as the extent to which longer term assets (debt securities of over one year and long-term loans) are funded by short- liabilities (shares/units in issue for open-end funds, short-term loans and derivatives). Berger & Bouwman, (2009) used *EARNVOL*, which is measured as the standard deviation of the bank's return on assets over the previous twelve (minimum: eight) quarters. Bank's credit risk is a key risk of banks. *CREDITRISK* is calculated as a bank's Basel I risk-weighted assets and off-balance sheet activities divided by Gross Total Assets (*GTA*). Another risk measure is the *z*-score, which indicates a bank's distance from default.

*ZSCORE* is measured as a bank's return on assets plus the equity capital/*GTA* ratio divided by the standard deviation of the return on assets. A higher z-score indicates that a bank is more stable. The inclusion of risk measures helps to isolate the role of capital in supporting the liquidity creation function of banks from the role of capital in supporting banks' function as risk transformers<sup>49</sup>. Oliver, Ruano, & Fumás (2013) measured the maturity of the wholesale finance for the banks that got funds from the markets by using the weighted maturity of wholesale financing (variable duration) and by the net position of banks in the interbank market.

### **7.5.2 Findings**

Figure 7.1 and 7.2 shows the amount of liabilities and assets respectively for different maturity period of NBFCs-ND-SI in Kerala. Majority of the liability of NBFCs-ND-SI is with maturity 6 months to one year and more than one year. Liabilities with shorter maturity constitute a marginal share of total. In contrast, maturity of assets majorly pegs around 0 to 1 month, 1 to 2 months, 2 to 3 months, 3 to 6 months and 6 months to 1 year. This clearly indicates the maturity shortening efforts of NBFCs-ND-SI. The maturity transformation process may be well understood from the average maturity periods of assets and liabilities of NBFCs. Calculation of average maturity period of liabilities and assets is shown in Table 7.2.

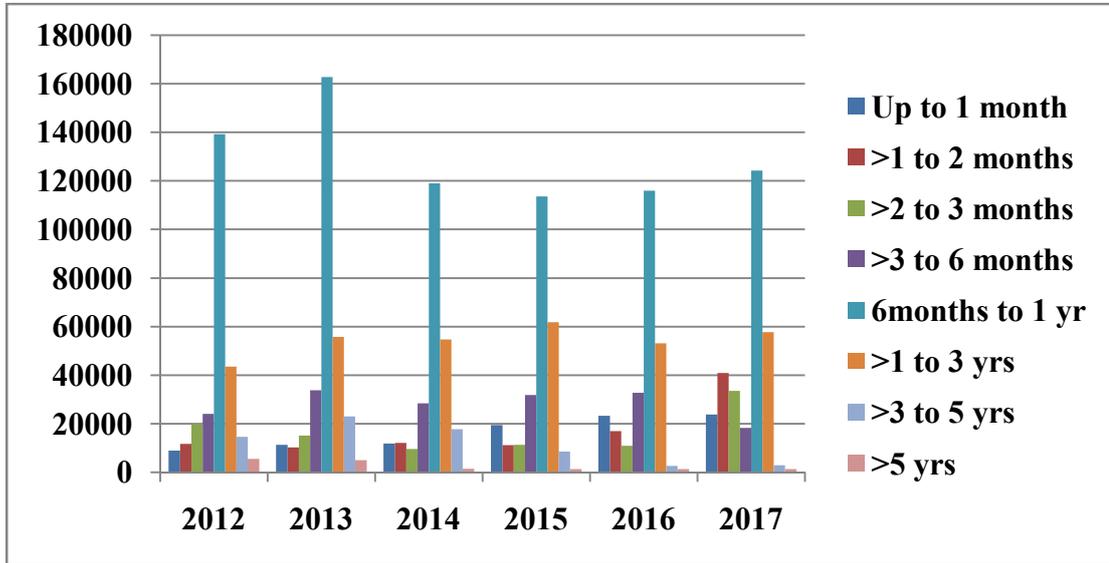
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<sup>49</sup> Brockman and Turtle (2003); Acharya, Bharath, and Srinivasan (2007); John, Litov, and Yeung (2008); and Kadan and Swinkels (2008).

**Figure 7.1**

**Maturities of Liabilities of Select NBFCs-ND-SI**

**(Amount in Rs Million)**

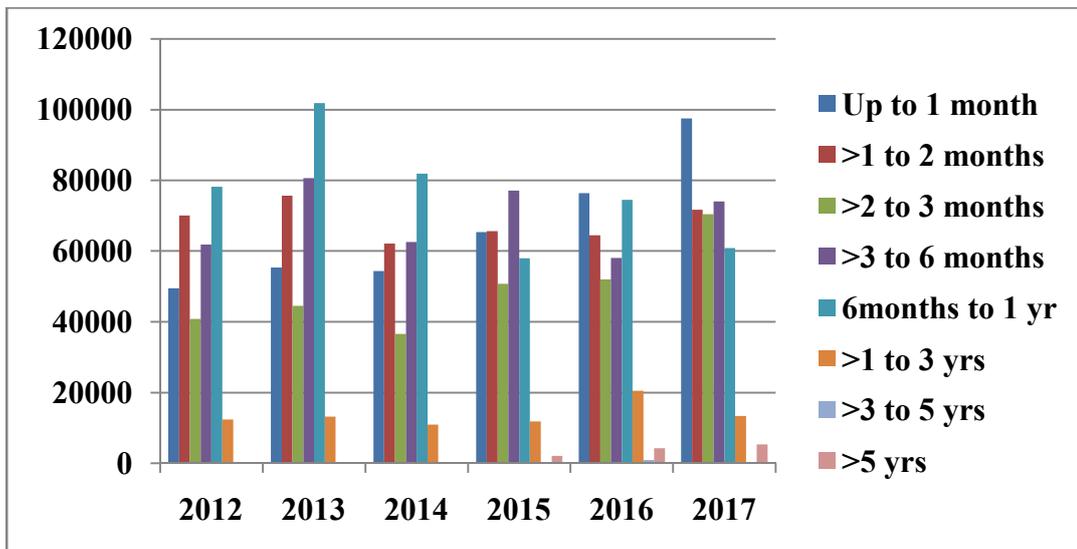


Source: Annual Reports of NBFCs for various years

**Figure 7.2**

**Maturities of Assets of Select NBFCs-ND-SI**

**(Amount in Rs Million)**



Source: Annual Reports of NBFCs for various years

**Table 7.2**

**Calculation of Average Maturity of Liabilities and Assets of Select**

**NBFCs-ND-SI**

|                         | Liabilities |           |                | Assets   |          |                |
|-------------------------|-------------|-----------|----------------|----------|----------|----------------|
| 2012                    | Maturity    | Amount    | Total          | Maturity | Amount   | Total          |
|                         | 0.5         | 9001.31   | 4500.655       | 0.5      | 49453.16 | 24726.58       |
|                         | 1.5         | 11702.62  | 17553.93       | 1.5      | 70047.63 | 105071.4       |
|                         | 2.5         | 19820.82  | 49552.05       | 2.5      | 40784.82 | 101962.1       |
|                         | 4.5         | 24059.81  | 108269.1       | 4.5      | 61881.17 | 278465.3       |
|                         | 9           | 139261.26 | 1253351        | 9        | 78197.92 | 703781.3       |
|                         | 24          | 43484.05  | 1043617        | 24       | 12389.87 | 297356.9       |
|                         | 48          | 14537.6   | 697804.8       | 48       | 0        | 0              |
|                         | 60          | 5513.6    | 330816         | 60       | 175      | 10500          |
| <b>Total</b>            | 150         | 267381.07 | 3505465        | 150      | 312929.6 | 1521864        |
| <b>Average Maturity</b> |             |           | <b>13.1104</b> |          |          | <b>4.86328</b> |
| 2013                    | Maturity    | Amount    | Total          | Maturity | Amount   | Total          |
|                         | 0.5         | 11359.65  | 5679.825       | 0.5      | 55375.53 | 27687.77       |
|                         | 1.5         | 10250.59  | 15375.89       | 1.5      | 75633.3  | 113450         |
|                         | 2.5         | 15153.51  | 37883.78       | 2.5      | 44472.4  | 111181         |
|                         | 4.5         | 33816.4   | 152173.8       | 4.5      | 80587.8  | 362645.1       |
|                         | 9           | 162793.67 | 1465143        | 9        | 101840.3 | 916562.5       |
|                         | 24          | 55804.08  | 1339298        | 24       | 13193.4  | 316641.6       |
|                         | 48          | 23075.18  | 1107609        | 48       | 0        | 0              |
|                         | 60          | 4956.57   | 297394.2       | 60       | 125      | 7500           |
| <b>Total</b>            | 150         | 317209.65 | 4420557        | 150      | 371227.7 | 1855668        |
| <b>Average Maturity</b> |             |           | <b>13.9358</b> |          |          | <b>4.99873</b> |
| 2014                    | Maturity    | Amount    | Total          | Maturity | Amount   | Total          |
|                         | 0.5         | 11856.21  | 5928.105       | 0.5      | 54365.59 | 27182.8        |
|                         | 1.5         | 12031.92  | 18047.88       | 1.5      | 62088.35 | 93132.53       |
|                         | 2.5         | 9547.69   | 23869.23       | 2.5      | 36577.89 | 91444.73       |
|                         | 4.5         | 28406.09  | 127827.4       | 4.5      | 62559.1  | 281516         |
|                         | 9           | 118935.62 | 1070421        | 9        | 81915.98 | 737243.8       |
|                         | 24          | 54739.55  | 1313749        | 24       | 10952.23 | 262853.5       |
|                         | 48          | 17732.86  | 851177.3       | 48       | 50       | 2400           |
|                         | 60          | 1419.6    | 85176          | 60       | 210.29   | 12617.4        |
| <b>Total</b>            | 150         | 254669.54 | 3496196        | 150      | 308719.4 | 1508391        |
| <b>Average Maturity</b> |             |           | <b>13.7284</b> |          |          | <b>4.88596</b> |
| 2015                    | Maturity    | Amount    | Total          | Maturity | Amount   | Total          |
|                         | 0.5         | 19508.477 | 9754.239       | 0.5      | 65332.7  | 32666.35       |
|                         | 1.5         | 11184.7   | 16777.05       | 1.5      | 65600.38 | 98400.57       |
|                         | 2.5         | 11324.177 | 28310.44       | 2.5      | 50787.46 | 126968.6       |
|                         | 4.5         | 31880.336 | 143461.5       | 4.5      | 77072.54 | 346826.4       |
|                         | 9           | 113558.49 | 1022026        | 9        | 57965.78 | 521692         |
|                         | 24          | 61807.452 | 1483379        | 24       | 11796.94 | 283126.4       |
|                         | 48          | 8606.572  | 413115.5       | 48       | 308.1    | 14788.8        |
|                         | 60          | 1374.742  | 82484.52       | 60       | 2093.814 | 125628.8       |
| <b>Total</b>            | 150         | 259244.94 | 3199308        | 150      | 330957.7 | 1550098        |

|                         |                 |                 |                |                 |               |                |
|-------------------------|-----------------|-----------------|----------------|-----------------|---------------|----------------|
| <b>Average Maturity</b> |                 |                 | <b>12.3409</b> |                 |               | <b>4.68367</b> |
| <b>2016</b>             | <b>Maturity</b> | <b>Amount</b>   | <b>Total</b>   | <b>Maturity</b> | <b>Amount</b> | <b>Total</b>   |
|                         | 0.5             | 23262.454       | 11631.23       | 0.5             | 76401.4       | 38200.7        |
|                         | 1.5             | 17006.733       | 25510.1        | 1.5             | 64437.93      | 96656.9        |
|                         | 2.5             | 10877.207       | 27193.02       | 2.5             | 51980.16      | 129950.4       |
|                         | 4.5             | 32768.825       | 147459.7       | 4.5             | 58042.44      | 261191         |
|                         | 9               | 115958.31       | 1043625        | 9               | 74494.26      | 670448.4       |
|                         | 24              | 53058.031       | 1273393        | 24              | 20534.23      | 492821.6       |
|                         | 48              | 2581.427        | 123908.5       | 48              | 914.2         | 43881.6        |
|                         | 60              | 1371.977        | 82318.62       | 60              | 4265.038      | 255902.3       |
| <b>Total</b>            | <b>150</b>      | <b>256885</b>   | <b>2735039</b> | <b>150</b>      | <b>351070</b> | <b>1989053</b> |
| <b>Average Maturity</b> |                 |                 | <b>10.6469</b> |                 |               | <b>5.66569</b> |
| <b>2017</b>             | <b>Maturity</b> | <b>Amount</b>   | <b>Total</b>   | <b>Maturity</b> | <b>Amount</b> | <b>Total</b>   |
|                         | 0.5             | 23763.453       | 11881.73       | 0.5             | 97497.14      | 48748.57       |
|                         | 1.5             | 40938.896       | 61408.34       | 1.5             | 71735.85      | 107603.8       |
|                         | 2.5             | 33571.985       | 83929.96       | 2.5             | 70467.6       | 176169         |
|                         | 4.5             | 18273.01        | 82228.55       | 4.5             | 74018.03      | 333081.2       |
|                         | 9               | 124202.83       | 1117825        | 9               | 60842.69      | 547584.2       |
|                         | 24              | 57680.712       | 1384337        | 24              | 13366.3       | 320791.2       |
|                         | 48              | 2873.869        | 137945.7       | 48              | 407.7651      | 19572.72       |
|                         | 60              | 1286.641        | 77198.46       | 60              | 5292.689      | 317561.3       |
| <b>Total</b>            | <b>150</b>      | <b>302591.4</b> | <b>2956755</b> | <b>150</b>      | <b>393628</b> | <b>1871112</b> |
| <b>Average Maturity</b> |                 |                 | <b>9.77145</b> |                 |               | <b>4.7535</b>  |

Source: Annual Reports of Various NBFCs. Amount in million Indian Rupees and maturity in months.

Table 7.3 shows MTR of NBFCs-ND-SI in Kerala

**Table 7.3**  
**Average Maturity of Advance/Average Maturity of External Liability of NBFCs-ND-SI**

| <b>Year</b> | <b>Maturity of Advance</b> | <b>Maturity of Liability</b> | <b>Ratio</b> |
|-------------|----------------------------|------------------------------|--------------|
| <b>2012</b> | 4.86                       | 13.11                        | 0.37         |
| <b>2013</b> | 5.00                       | 13.94                        | 0.36         |
| <b>2014</b> | 4.89                       | 13.73                        | 0.36         |
| <b>2015</b> | 4.68                       | 12.34                        | 0.38         |
| <b>2016</b> | 5.67                       | 10.65                        | 0.53         |
| <b>2017</b> | 4.75                       | 9.77                         | 0.49         |

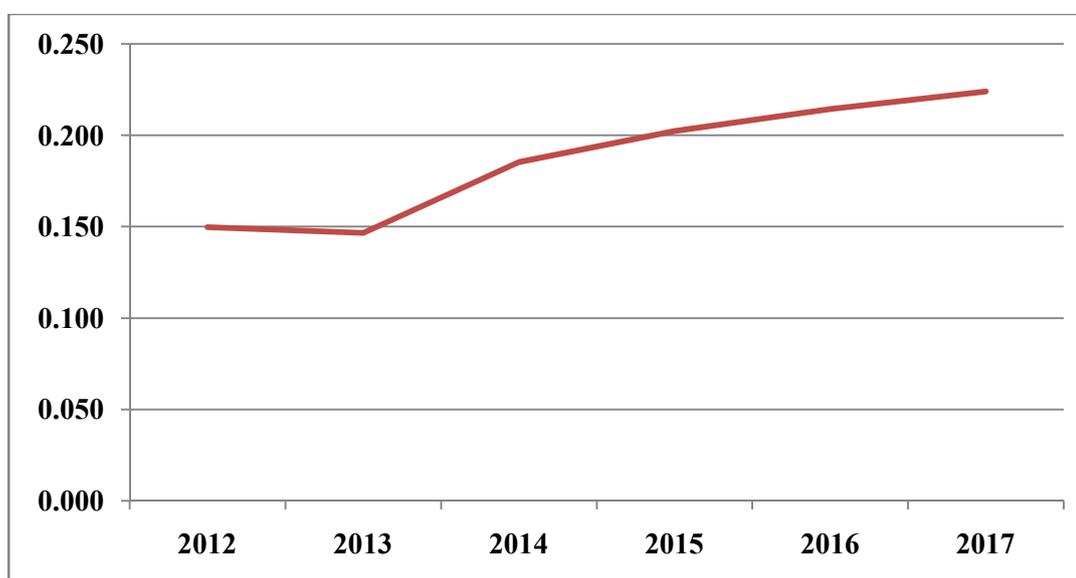
Source: Annual report of NBFCs for Various Years. Maturity of advance and liabilities are in months.

Since the average maturity of advance is shorter than that of liability, there is maturity shortening. It is perceived that, these types of NBFCs are equipped and specialised to provide short term finance. The maturity shortening process by these NBFCs may destroy the spirit of meaningful financial intermediation.

Short term financial requirements of households and firms are met with long term sources. Most of these short term requirements are incapable to produce income generating fixed assets. If some working capital requirements are met with these advances, the net benefit would be nullified by the loss made to creditors of the NBFCs. Although NBFCs' dependence on banks diminished, they are being benefitted by the direct sourcing from the public in the form of debt. This contributed to the growth of shareholders' funds by way of leverage (Figure 7.3). So, these types of NBFCs show capillarity towards investments and act as an intermediary to invest not to finance. Urgent supervision is needed in this area.

**Figure 7.3**

**Shareholders' Funds/Total Assets of Select NBFCs-ND-SI**



Source: Annual Reports of NBFCs for various years

### 7.5.3 Sub Sample Analysis

Since there are only two firms that constitute the sample, it would be better to include a sub sample analysis of maturity transformation ratio. Table 7.4 shows average maturity of assets and liabilities and MTR of individual NBFCs-ND-SI.

**Table 7.4**  
**Average Maturity of Assets and Liabilities and MTR of Individual NBFCs-ND-SI**

| Year | Firm I |           |             | Firm II |           |             |
|------|--------|-----------|-------------|---------|-----------|-------------|
|      | Assets | Liability | MTR         | Assets  | Liability | MTR         |
| 2012 | 4.70   | 5.92      | <b>0.79</b> | 4.94    | 15.86     | <b>0.31</b> |
| 2013 | 5.49   | 7.22      | <b>0.76</b> | 4.80    | 16.13     | <b>0.30</b> |
| 2014 | 5.10   | 7.84      | <b>0.65</b> | 4.80    | 15.70     | <b>0.31</b> |
| 2015 | 4.22   | 5.43      | <b>0.78</b> | 4.88    | 14.89     | <b>0.33</b> |
| 2016 | 4.75   | 4.89      | <b>0.97</b> | 6.06    | 13.12     | <b>0.46</b> |
| 2017 | 3.71   | 7.39      | <b>0.50</b> | 5.21    | 10.80     | <b>0.48</b> |

Source: Annual Reports of NBFCs for various years. Maturity of assets and liabilities are in months.  
MTR= Maturity Transformation Ratio

These two NBFCs shorten the maturity by way of using liability with long maturity and assets with short maturity. The shortening intensity is more in the case of second firm. These firms, on average, use liabilities with maturity of more than one year to advance short term purposes. Technically, more debt funds are being used by the second firm to advance short term assets. The relevance of MTR is highly vests with the amount (magnitude) of liability used and assets created. Thus relative share of both long term and short term assets and liabilities will strengthen the practical relevance of MTR.

**Table 7.5****Relative Magnitude of Liability and Advance of Select NBFCs-ND-SI**

| Year     | LTB   | STB    | LTA   | STA    | MLT  | MST  | MLT/MST | LTA/STA | LTB/STB |
|----------|-------|--------|-------|--------|------|------|---------|---------|---------|
| 2012 Mar | 75927 | 221155 | 1962  | 320649 | 0.03 | 1.45 | 0.02    | 0.01    | 0.34    |
| 2012 Sep | 78889 | 239562 | 1759  | 344340 | 0.02 | 1.44 | 0.02    | 0.01    | 0.33    |
| 2013 Mar | 99299 | 255526 | 3078  | 370793 | 0.03 | 1.45 | 0.02    | 0.01    | 0.39    |
| 2013 Sep | 92853 | 233707 | 2915  | 343948 | 0.03 | 1.47 | 0.02    | 0.01    | 0.40    |
| 2014 Mar | 95293 | 197910 | 2979  | 306667 | 0.03 | 1.55 | 0.02    | 0.01    | 0.48    |
| 2014 Sep | 98882 | 191543 | 3165  | 309706 | 0.03 | 1.62 | 0.02    | 0.01    | 0.52    |
| 2015 Mar | 96717 | 206005 | 4421  | 335068 | 0.05 | 1.63 | 0.03    | 0.01    | 0.47    |
| 2015 Sep | 84962 | 241186 | 5911  | 353130 | 0.07 | 1.46 | 0.05    | 0.02    | 0.35    |
| 2016 Mar | 81269 | 227463 | 8659  | 356690 | 0.11 | 1.57 | 0.07    | 0.02    | 0.36    |
| 2016 Sep | 82783 | 282306 | 11847 | 415633 | 0.14 | 1.47 | 0.10    | 0.03    | 0.29    |
| 2017 Mar | 69695 | 261486 | 6684  | 391414 | 0.10 | 1.50 | 0.06    | 0.02    | 0.27    |

Source: Quarterly Reports of NBFCs. Note: Amounts in million rupees.

LTB= Total Long Term Borrowings (Long Term Borrowings+ Other Long Term Liabilities), STB= Total Short Term Borrowings (Short Term Borrowings+ Trade Payables and Other Current Liabilities), LTA= Long Term Advances (Long Term Advances + Non Current Assets), STA= Total Short Term Advances (Short Term Advances+ Other Current Assets), MLT= LTA/LTB, MST= STA/STB.

MLT is an indicator of the efficiency at which long term assets are financed by the financial intermediaries with long term borrowings. The recent period, starting from 2015, is showing an improvement in MLT. A high MLT is seen at the end of 2016. From policy perspective, this ratio is a good representative for justifying NBFCs-ND-SI. More long term advance using less long term borrowing will results in fixed capital formation. In this sense, the NBFCs-ND-SI in Kerala is poorly performing. Average MLT for the observed period is 0.06. This means that a mere 6 paise is advanced for long term assets from a 1 rupee long term borrowing.

MST, short term advances out of short term borrowings, may vary due to various reasons. But the numerical figure which represent the ratio must be less than or equal to 1. If it is less than one, it means that some part of the short term borrowings is used for long term finance. Thus financing firms will get high returns from long term advances using short term borrowings. It is

expected that short term borrowings is less costly. If it is so, the spread will be high enough to attract mass into the business of such financial intermediation. The further equilibrium due to adjustment in spread is generally determined by the efficiency of the financial sector; more specifically it depends on the number and efficiency of other financial intermediaries. If the ratio is equal to one, it means that same amount of short term borrowings is used for short term advance. Here, since the ratio is more than one, some amount of short term advances are provided with long term sources. Average MST is 1.51. This means that finance firms advance short term loans about one and half times of short term borrowings. Thus, roughly, one third of the short term advances is sourced from costly long term borrowings. The cost of long term borrowings must be met by the short term borrowers. This affects the economy in two ways; there may be a resultant shortage of fixed capital formation, and an existence of costly intermediation.

#### **7.5.4 Major Findings and Implications**

Interconnectedness of NBFCs with other financial intermediaries generates some systemic problems. Non Deposit Taking Systemically Important Non Banking Finance Companies (NBFCs-ND-SI) heavily depends on banks as well as on direct debt from the public. One of the cardinal elements of shadow banking is maturity transformation. These NBFCs actively participate in the function of maturity transformation. This is a limited framework, which tries to induct the whole behaviour of non deposit taking systemically important

NBFCs with very limited data and a short observation period. But, apart from the statistical negligence, the results points to some important revelations.

The increase in the MTR of NBFCs is, technically, due to the following reasons;

1. Increase in the maturity of liability
2. Decrease in the maturity of advances
3. Both of the above

The MTR of NBFCs increased from 0.37 in 2012 to 0.49 in 2017. Since the decisions regarding the quantity and frequency of finance are solely the discretion of NBFCs, it seems that, banks cannot propel the transformation process and the ratio. Here we have to depend on the performance of sample and statistical results and accordingly, commercial banks in Kerala play significant role in this transformation. Empirical data recognise the irrational indirect finance by banks through these shadow banks. The indirect finance by banks is irrational on the grounds of the ill consideration of commercial banks on the usage of indirect advance. So, banks must cautiously recognise the indirect non productive transformation of maturity.

A poor MLT does not entertain the existence of NBFCs-ND-SI in Kerala. Bulk of the long term funds are channelised towards short term and medium term advances, which are unproductive in nature. MST is more than 1. This means that economic performance of NBFCs-ND-SI in Kerala is poor.

Then, how can the banks limit the process? Priority Sector Lending, especially to weaker sections, will narrow the effects of such transformation. Loans and advances to weaker sections by banks will strengthen the ratio. It may be assumed that, the empowerment by way of bank advance will refine the MTR of NBFCs. In short, direct advance to weaker sections by banks will make the ratio a strong one. A strong ratio will lead to healthy intermediation and thereby financial development. Thus there must be an optimum ratio. There is a fair scope for further research on this optimum and or ideal ratio.

The Maturity Transformation Ratio is not supporting a healthy meaningful intermediation in Kerala economy. Since these NBFCs have a large number of branches in India, this destructive mediation will spread to all states and this will be further worsened by the systemic importance. So, this study supports that shadow banking is a process primarily driven by banks.

At academic level, this result strengthens the theories of financial intermediation, especially the views concerned with parallel financial mediation. Empirical evidence of shadow banking, especially from this emerging market economy, will surely activate the widening discipline. Practitioners in the industry must care the long term sustainability of the economy and for this purpose; they must consider the effective transformation by their own mediation. Industry must be ready to account the volume of transformation, both individually and collectively. Government shall prudentially redesign the CRAR for this type of NBFCs. Surveillance is necessary on the quantity of debt of NBFCs.

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