The Price of Deposit Liquidity: Banks versus Microfinance Institutions

Carolina Laureti and Ariane Szafarz

Using data from Bangladesh, this paper finds that the liquidity premium—the difference between the interest paid on illiquid and liquid savings accounts—is higher in commercial banks than in microfinance institutions. One possible interpretation lies in the higher prevalence of time-inconsistency among the poor. The observed difference in liquidity premia could be due to poor time-inconsistent agents willing to forgo interest on illiquid savings accounts in order to discipline their future selves.

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JEL codes: G21, D14, O16

CEB Working Paper N° 16/013
February 2016
The Price of Deposit Liquidity: 
Banks versus Microfinance Institutions

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January 2016
Forthcoming in Applied Economics Letters

Abstract
Using data from Bangladesh, this paper finds that the liquidity premium—the difference between the interest paid on illiquid and liquid savings accounts—is higher in commercial banks than in microfinance institutions. One possible interpretation lies in the higher prevalence of time-inconsistency among the poor. The observed difference in liquidity premia could be due to poor time-inconsistent agents willing to forgo interest on illiquid savings accounts in order to discipline their future selves.

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1. Introduction

Economic agents with time-inconsistent preferences are tempted to under-save and over-consume (O’Donoghue and Rabin, 1999). To enforce self-discipline, these agents can use illiquid deposits that have embedded commitment devices against early withdrawal (Laibson, 1997). Although the presence of time-inconsistent agents is well-established (DellaVigna, 2009), surprisingly little is known about their impact on deposit remuneration in general, and on the liquidity premium—the interest spread between illiquid and liquid deposits—in particular.

We use data from Bangladesh to explore how savers’ time-inconsistency affects the liquidity premium. Since time-inconsistency is unobservable, we rely on the literature concluding that time-inconsistent agents are found more frequently in poor populations than elsewhere. To explain the prevalence of time-inconsistency in poor populations, Bertrand et al. (2004) and Banerjee and Mullainathan (2010) emphasize that the poor constantly face stressful expenditure decisions involving harmful trade-offs and conflicts.

In addition, experimental evidence suggests that poor people are not only time-inconsistent; they are also aware of the fact. For example, households in Bangladesh accept negative returns on illiquid savings schemes proposed by informal deposit collectors (Rutherford, 2000). Lacking commitment savings products, Indian women bind themselves through microcredit contracts (Bauer et al., 2012). Overall, poverty damages the ability to exercise self-control, and the consequences of giving in to temptation are harsher for poor individuals than for wealthy ones (Bernheim et al., 2013). The next section exploits this evidence.

1 Interestingly, these findings are gender-sensitive. Dupas and Robinson (2013) find that most women actively take up the savings account offered by a village bank in Kenya while men do not. Possibly, women are more attracted to accessible commitment devices than men are because they are poorer than men on average, enjoy less autonomy in financial decision-making (Guérin, 2006), and are sometimes discriminated against by financial institutions (Agier and Szafarz, 2013).
2. The Liquidity Premium in Bangladesh

In Bangladesh, the banking sector is fully segmented: regular banks serve non-poor depositors while microfinance institutions (MFIs) offer savings accounts to the poor. Both take liquid and illiquid deposits. The no-maturity liquid deposits ("savings deposits") place no restrictions on withdrawals, deposits, or transfers. In contrast, illiquid deposits entail severe restrictions for cash inflows and/or outflows. Illiquid deposits are classified in two groups: recurring and term deposits. Recurring deposits are made up of regular payments, and withdrawals are forbidden prior to maturity or before a target balance has been reached. A term deposit consists of a single lump-sum payment with a fixed maturity. Term deposits are commonly offered to wealthy savers, and recurring deposits to the poor. In MFIs, recurring deposits are placed in so-called “contractual” savings accounts, which help poor people to accumulate money (Rutherford, 2000).

According to the Bangladeshi Central Bank (www.bangladesh-bank.org), the country has 47 regulated banks. We collected saving conditions for 28 of them from their websites. The market for micro-savings in Bangladesh is made up of six large MFIs, which attract 83% of total domestic micro-savings (Microcredit Regulatory Authority, 2011), and a myriad small ones. We found interest-rate data on the websites of five MFIs, including three of the six largest ones. Surprisingly, Grameen Bank, the largest MFI in Bangladesh, gives only partial information on its website. Fortunately, other sources (Dowla and Alamgir, 2003; Rutherford et al., 2004) provide data on Grameen’s savings conditions. Overall, the five MFIs for which we managed to obtain complete data represent 64% of total micro-savings in Bangladesh.3

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2 Data collected in June 2012.

3 Admittedly, the sample could be subject to a selection bias since it is confined to institutions that publicize their savings conditions.
Tables 1a and 1b summarize the information we collected for banks and MFIs, respectively. For each financial institution, the tables give the following information: interest on liquid deposits, and minimum and maximum interest rates for recurring and term deposits.
respectively. With these two types of illiquid accounts, interest rates increase with maturity, so the tables feature intervals rather than single figures. Averages are computed by using interval midpoints. In each class of deposits, the interest rates vary across institutions, and there is no clear-cut distinction between banks and MFIs. In contrast, the average liquidity premiums are 6.4% for banks and 3.7% for MFIs. A t-test for equal means shows that the two groups of institutions offer significantly different liquidity premiums (p < 1%).

### Table 1b: Interest Rates on Deposits in Bangladeshi MFIs

<table>
<thead>
<tr>
<th></th>
<th>Interest rate on liquid deposits (%)</th>
<th>Interest rate on illiquid deposits (%)</th>
<th>Liquidity premium (%)</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grameen Bank</td>
<td>8.50</td>
<td>10.00-12.00 (r)</td>
<td>1.50</td>
<td>3.50</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.75-9.50 (t)</td>
<td></td>
<td>0.25</td>
<td>1.00</td>
</tr>
<tr>
<td>ASA</td>
<td>6.00</td>
<td>9.00-12.00 (r)</td>
<td>3.00</td>
<td>6.00</td>
<td></td>
</tr>
<tr>
<td>Buro</td>
<td>4.50</td>
<td>6.00-8.00 (t)</td>
<td>1.50</td>
<td>3.50</td>
<td></td>
</tr>
<tr>
<td>SafeSave</td>
<td>6.00</td>
<td>7.00-10.00 (r)</td>
<td>1.00</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>Jagorani Chakra Foundation</td>
<td>5.00</td>
<td>10.00-12.00 (r)</td>
<td>5.00</td>
<td>7.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>14.00 (t)</td>
<td></td>
<td>9.00</td>
<td>9.00</td>
</tr>
<tr>
<td>Average</td>
<td>6.00</td>
<td>8.40-10.80 (r)</td>
<td>3.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>11.38-11.75 (t)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Data retrieved in June 2012.

(r): Recurring deposit; (t): Term deposit.

To assess the preliminary findings from descriptive statistics, we run the following OLS regression:

\[
LP_i = \alpha + \beta \ MFI_i + \gamma X_i + \epsilon_i
\]  

(1)

where \(LP_i\) is the liquidity premium of institution \(i\); \(MFI\) is a dummy variable that takes value 1 if the institution is an MFI, and 0 otherwise; \(X_i\) is a vector of control variables, including total asset (in log),\(^4\) and dummy variables for ownership (private or public) and religious orientation (Islamic or non-Islamic). In our sample, banks and MFIs are both regulated. Banks

\[^4\] The data on total assets were retrieved as of December 31, 2011 for all institutions except: Rajshahi Krishi Unnayan Bank, Bangladesh Krishi Bank, SafeSave, Jagorani Chakra Foundation (as of June 30, 2011), and Buro and Grameen Bank (as of December 31, 2010).
are supervised by the Bangladeshi Central Bank, while MFI s are monitored by the Microcredit Regulatory Authority. The MFI s are all privately owned and conventional. Four banks are public institutions, meaning that the Government of Bangladesh holds at least 50% of the property rights; the remaining banks are privately owned. Four banks are Islamic or Sharia-based.5

Table 2 reports the results of the ordinary least squares (OLS) regressions as well as diagnostic statistics. It shows that, despite the limited sample size, the coefficient of the MFI dummy is always negative and significant at the 5% level (even at the 1% level in four out of six regressions). The relevance of the specifications is attested by significant F-test statistics. The Shapiro-Wilk and Breusch-Pagan test statistics indicate that the normality and homoscedasticity of the residuals cannot be rejected, respectively. For robustness and given the small sample size, the Appendix reports bootstrapped p-values, which broadly confirm the conclusions drawn from Table 2. Moreover, as far as robustness is concerned, specification (5) dominates specification (6).

Table 2 reveals that, all else equal, the microfinance liquidity premium is around 2.5 basis points below that of banks. Possibly, the difference stems from the pool of depositors with whom the two types of institutions work. In line with the theory linking time-inconsistency to poverty, MFI s would attract a larger share of time-inconsistent depositors than would mainstream banks. As a result, they would also collect a larger amount in illiquid deposits, and therefore be less exposed to the risk of bank run.

5 All Islamic banks are private.
Table 2: Liquidity Premium

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFI</td>
<td>-0.0271***</td>
<td>-0.0250***</td>
<td>-0.0292***</td>
<td>-0.0263***</td>
<td>-0.0248***</td>
<td>-0.0212***</td>
</tr>
<tr>
<td></td>
<td>(0.0072)</td>
<td>(0.0094)</td>
<td>(0.0070)</td>
<td>(0.0091)</td>
<td>(0.0069)</td>
<td>(0.0091)</td>
</tr>
<tr>
<td>Total asset (takas, in log)</td>
<td>0.0008</td>
<td>0.0011</td>
<td>0.0014</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0023)</td>
<td>(0.0022)</td>
<td>(0.0022)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public bank</td>
<td>-0.0147*</td>
<td>-0.0150*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0077)</td>
<td>(0.0078)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Islamic bank</td>
<td>0.0159**</td>
<td>0.0165**</td>
<td>0.0159**</td>
<td>0.0165**</td>
<td>0.0159**</td>
<td>0.0165**</td>
</tr>
<tr>
<td></td>
<td>(0.0076)</td>
<td>(0.0078)</td>
<td>(0.0076)</td>
<td>(0.0078)</td>
<td>(0.0076)</td>
<td>(0.0078)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.0638***</td>
<td>0.0432</td>
<td>0.0659***</td>
<td>0.0377</td>
<td>0.0616***</td>
<td>0.0266</td>
</tr>
<tr>
<td></td>
<td>(0.0028)</td>
<td>(0.0580)</td>
<td>(0.0029)</td>
<td>(0.0556)</td>
<td>(0.0029)</td>
<td>(0.0554)</td>
</tr>
<tr>
<td>Observations</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Adj R-squared</td>
<td>0.2904</td>
<td>0.2699</td>
<td>0.346</td>
<td>0.3294</td>
<td>0.3601</td>
<td>0.347</td>
</tr>
<tr>
<td>F-test</td>
<td>14.10***</td>
<td>6.91***</td>
<td>9.47***</td>
<td>6.24***</td>
<td>10.00***</td>
<td>6.67***</td>
</tr>
<tr>
<td>Shapiro-Wilk test</td>
<td>-0.528</td>
<td>-0.262</td>
<td>-0.689</td>
<td>-0.04</td>
<td>-1.428</td>
<td>-1.014</td>
</tr>
<tr>
<td>Breusch-Pagan test</td>
<td>1.49</td>
<td>1.53</td>
<td>2.51</td>
<td>2.33</td>
<td>2.16</td>
<td>2.41</td>
</tr>
</tbody>
</table>

Note: Table 2 reports the results of OLS regressions. In all specifications, the dependent variable is the average liquidity premium (i.e., average between minimum liquidity premium and maximum liquidity premium). The MFI dummy variable indicates whether the institution is an MFI. In columns (2) to (6), we add control variables: total asset (in log), ownership and religious orientation. In columns (3) and (4), the reference modality is “private bank”; in columns (5) and (6), it is “conventional bank.” Standard errors appear in parentheses. Level of significance: ***p<0.01, ** p<0.05, *p<0.1. All financial figures are in takas. 80 takas = about 1 US dollar.

However, commercial banks and MFIs differ in several ways other than the proportion of time-consistent agents. First, the market powers of banks and MFIs may differ. A higher market power could explain why MFIs exhibit a lower liquidity premium than banks do. Interestingly, our descriptive statistics show that banks and MFIs pay similar interest rates on liquid deposits, so that the difference in liquidity premia comes from illiquid interest rates. This observation is consistent with the theory stating that poor people are willing to forgo interest on liquid accounts in exchange for a disciplining device taking the form of illiquid deposit. Another argument against the market-power explanation is that, according to Table 2, Islamic banks tend to have higher liquidity premia than non-Islamic banks, whereas according to Weill (2011) they exhibit no significant difference in terms of market power.
Second, differences in contract terms, such as the maturity of illiquid deposits, may play a role. Third, MFIs differ from commercial banks not only in the population they serve, but also in their strategic choices. Conning and Morduch (2011) mention that the government and socially-oriented investors have a strong influence on MFI decision making. Undeniably, the impacts of contract terms and stakeholders’ strategic decisions on the liquidity premium deserve further analysis. Capturing such impacts would however require access to detailed data, which are unavailable publicly.

3. Conclusion

Evidence from non-banking firms shows that time-inconsistent agents have a sizeable impact on prices (DellaVigna and Malmendier, 2004). But in banking, evidence is lacking. Our exploratory results suggest that the liquidity premium varies with the clientele targeted by the financial institution (the poor v. the non-poor). This may indicate a significant link between savers’ time-inconsistency and the liquidity premium. However, market power and contract terms can also tell part of the story.

Regarding the external validity of our results, we contend that the lessons to be learned from Bangladesh are also relevant for many other developing—and even developed—countries. In Bangladesh, the penetration of foreign banks is high (Clarke et al., 2003) and banks in general enjoy significant market power (Assefa et al., 2013), like in many jurisdictions worldwide (Claessens and Laeven, 2004).6

Further work is needed not only to robustify our initial findings, but also to derive practical recommendations in terms of banking regulation and monitoring. This is a matter of considerable importance nowadays.

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6 In theory, since illiquid savings protect a bank against liquidity shortages and since competitive markets reward deposits at their marginal benefit, the liquidity premium in a competitive market should be unaffected by the demand side. In contrast, if a bank enjoys market power, it can exploit the savers’ reservation prices, and the liquidity premium would depend negatively on the proportion of time-inconsistent agents among the savers (Laureti and Szafarz, 2014).
Acknowledgements

The authors thank Ilan Tojerow and Stéphanie Collet for helpful discussions. They are grateful to Alexandra van Marcke de Lummen who provided efficient research assistance. Carolina Laureti acknowledges the financial support of ARC research grant AUWB-2010-10/15-UMONS-4 from the Université de Mons (UMONS) and of Fonds de Recherche Scientifique – FNRS.

References


Appendix

Table A1 reports bootstrapped p-values for the impact of the *MFI* dummy variable. These p-values are obtained by generating 1,000 samples (with replacement) from the original dataset. We use three different techniques: (a) standard bootstrap, (b) stratified bootstrap, where the MFIs and banks are resampled independently, (c) wild bootstrap, which resamples from (transformed) residuals. The wild bootstrap technique is especially recommended when the standard errors are heteroskedastic (Flachaire, 2005; Davidson and MacKinnon, 1999). Except for Eq. (6), the generated p-values suggest that the results given in Table 2 are robust. In this respect, specification (5) is probably more suitable than (6), for which Table 2 features two non-significant coefficients.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Bootstrap (with case resampling)</td>
<td>0.005</td>
<td>0.089</td>
<td>0.003</td>
<td>0.066</td>
<td>0.010</td>
<td>0.185</td>
</tr>
<tr>
<td>(b) Bootstrap with stratified sampling</td>
<td>0.002</td>
<td>0.041</td>
<td>0.001</td>
<td>0.028</td>
<td>0.004</td>
<td>0.105</td>
</tr>
<tr>
<td>(c) Wild bootstrap</td>
<td>0.044</td>
<td>0.128</td>
<td>0.038</td>
<td>0.112</td>
<td>0.046</td>
<td>0.210</td>
</tr>
</tbody>
</table>

*Note:* The *MFI* dummy variable takes value 1 if the institution is an MFI, and 0 otherwise. The columns—(1) to (6)—refer to the corresponding regressions in Table 2.