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What does excess bank liquidity say about the loan market in Less Developed Countries?

Tarron Khemraj

Abstract

Evidence about developing countries' commercial banks' liquidity preference suggests the following about their loan markets: (i) the loan interest rate is a minimum mark-up rate; (ii) the loan market is characterized by oligopoly power; and (iii) indirect monetary policy, a cornerstone of financial liberalization, can only be effective at very high interest rates that are likely to be deflationary. The minimum rate is a mark-up over a foreign interest rate, marginal transaction costs and a risk premium. A calibration exercise demonstrates that the hypothesis of a minimum mark-up loan rate is consistent with the observed stylized facts.

JEL Classification: O10; O16; E52; G21; L13

Keywords: Excess bank liquidity, oligopoly banking, loan market, monetary policy

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Comments should be addressed by email to the author.

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What does excess bank liquidity say about the loan market in Less Developed Countries?

Tarron Khemraj

The financial liberalization hypothesis holds that allowing the market determination of real interest rates would mobilize savings and increase deposits (Fry, 1997a). Commercial banks—that are able to select good from bad borrowers, diversify risks, minimize transaction costs, etc—would then channel these savings to the best investors who earn the highest rate of return. Performing such roles of intermediation, banks not only increase the rate of capital accumulation but also increase productivity, thereby boosting the economy's steady-state growth (Bencivenga and Smith, 1991).

However, in many less developed countries, banks hold large quantities of excess liquidity—a large part of which is non-remunerative—in their asset portfolio (Saxegard, 2006; Khemraj, 2006; Fielding and Shorthand, 2005). For the remainder of this paper, excess liquidity is defined as total bank liquidity minus required bank liquidity. The required liquidity (or reserve) ratio is set by the central bank in the individual country. Excess liquidity is usually non-remunerated.

In spite of efforts to liberalize and modernize financial institutions, markets and instruments in LDCs, the banking sector is the most important source of financing in these economies and it is likely to continue to be that way indefinitely (Stiglitz, 1989; Singh, 1997). Therefore, the investment choice of banks can either retard finance's role in growth or augment that role. Hence, examining banks' liquidity preference in LDCs will emphasize important information regarding their behaviour in such economies.

This paper posits the hypothesis that banks in LDCs require a minimum rate of interest in the loan market before they make a specific loan. A bank must receive a minimum loan rate that compensates for risks, marginal transaction costs and the rate of return on a safe foreign asset before it makes a loan to a particular borrower. If the marginal borrower is unwilling to pay the minimum rate, then the banks accumulate non-remunerative excess liquidity[1]. This phenomenon is depicted by a liquidity preference curve that is flat at a relatively high loan rate. Therefore, non-remunerative excess liquidity and loans can become perfect substitutes at a very high rate of interest in the loan market. The paper will demonstrate that such behaviour is consistent with a loan market that is oligopolistic. Moreover, to present its case, the paper utilizes the industrial organization banking model of Klein (1971) and Freixas and Rochet (1999). The model will also be modified to suit the institutional characteristics of underdeveloped economies.

A key implication of this study for policy is the postulation that commercial banks set the loan rate exogenously via a mark-up over the marginal transaction costs and the exogenous safe rate of interest[2]. It there-

1 The obvious question would be why banks still hold unremunerated liquidity given that the foreign rate is the opportunity cost. There are likely to be several factors that preclude banks from doing so. The first is a shortage of foreign exchange in the domestic foreign currency market. This is a foreign currency constraint. The constraint can be unofficially maintained by the central bank when it accumulates international reserves by buying up US dollars in the local currency market. This behaviour was found in Khemraj (2006) in the Guyana case. A further research agenda would be to find out whether the foreign currency constraint is a key factor accounting for excess unremunerated liquidity in other developing countries. Explicit capital controls would be another reason why banks would demand the unremunerated liquidity.

2 The same argument can be made about the deposit market and market for government bonds and Treasury bills. That issue, however, is beyond the scope of this paper and is the subject of further research.

fore means that a liquidity shock emanating from the central bank will not elicit a response in the interest rate over the flat section of the banks' liquidity preference curve. This is important for LDCs that have been implementing indirect (or market-based) monetary policy as a means of influencing bank credit—and ultimately consumption and investment decisions—by managing excess reserves and/or a short-term interest rate[3].

Indirect monetary policy is often seen as a precondition for the adoption of inflation targeting—or at least a milder version of inflation targeting known as inflation targeting 'lite' (Stone, 2003)—in LDCs. Monetary policy shocks—characterized by shifts in the excess reserves supply curve through open market operations—are only likely to be effective at even higher loan rates (above the minimum rate at which the excess liquidity preference curve is horizontal) when the liquidity preference curve is downward sloping. High interest rates, however, can contribute to economic stagnation even after significant efforts have been made in liberalizing and developing financial systems in developing countries.

The paper is structured as follows. The next section presents the stylized facts that depict the liquidity preference curves in the eight countries. The following section develops a banking model that helps to explain the stylized facts. The model is used to make theoretical statements regarding banks' response to central bank monetary policy shocks. The penultimate section performs a calibration exercise to buttress the core proposition of the research. The fifth section concludes.

Stylized Facts

This section utilizes the technique of locally weighted polynomial regressions (LOESS) of degree one in order to extract bank liquidity preference curves for eight less developed countries[4]. The sample of countries is based on primarily two factors. Firstly, the country must be known to have a very liquid banking sector. Secondly, the relevant data for the analysis must be available over a long enough time period. The African countries chosen in this paper were also included in the sample of Saxegaard (2006). Egypt is also included because Fielding and Shorthand (2005) analyzed excess bank liquidity and political violence in that country. The Caribbean countries are all included in the work of Khemraj (2006).

Each figure below plots bank liquidity (in local currency) against the loan rate. However, for three of the countries—Egypt, Uganda and Namibia—data on the level of excess bank liquidity is unavailable. However, bank liquidity is represented by total bank reserves (the summation of required and excess) taken from the *International Financial Statistics* (IFS). The loan rate series for each country was also sourced from the IFS. The level of excess liquidity for the other five countries comes directly from the respective central bank statistical report. In each case, the nominal interest rate is utilized[5].

3 Alexander, *et al*. (1995: 2) define direct versus indirect monetary policy instruments. Direct instruments set or limit prices (interest rates) or quantity (credit). The quantity-based direct instruments often place restrictions on commercial banks' balance sheet. Hence, they are associated with financial repression. Indirect instruments, in contrast, operate through the market by influencing the demand and supply conditions of commercial bank reserves.

4 The local regressions are extremely useful for deciphering underlying nonlinear relationships. The technique was first proposed by Cleveland (1979) and further developed by Cleveland and Devlin (1988). Only a subset of observations within a neighbourhood of the point to fit the curve is used. The regression is weighted so that observations further from the given data point are given less weight. The subset of data used in each weighted least squares fit is αN, where α = the smoothing parameter and N = number of data points. A higher parameter, α, gives a smoother fit. Throughout the exercise a smoothing parameter of 0.3 is used.

5 The nominal interest rate is used throughout the analysis. This is because the real interest rate does not change the conclusion since if inflation is important for the banks, they would want to get rid of all non-remunerative assets. This is clearly not the case since the data confirm that the banking sectors in these economies have always been liquid.

There are two clear tendencies in the figures: (i) the fitted liquidity preference curves tend to become flat[6]; and (ii) the flatness occurs at a relatively very high rate of interest. This means the elasticity of demand for bank excess liquidity is perfectly elastic (or approaches perfect elasticity) at a loan rate significantly above zero. Banks in these economies view loans and unproductive excess liquidity as perfect (or near perfect) substitutes at very high loan rates.

In the case of Guyana, the bank's liquidity preference curve becomes flat at approximately 16 per cent. This implies that a bank will not lend, on average, to the marginal borrower if that borrower cannot pay at least 16 per cent. The same can be said for Barbados where the curve becomes flat at around 8.5 per cent. In the case of Jamaica, commercial banks will not lend to the marginal borrower who wishes to pay a rate below 18 per cent. The marginal borrower in Uganda will find credit difficult to come by if he or she is unwilling to borrow at around 20 per cent. In Trinidad and Tobago the curve becomes flat at 10.5 per cent; while in Egypt the minimum rate seems to be approximately 13 per cent. The Bahamas has the lowest minimum loan rate at approximately 6 per cent.

Under a perfectly competitive loan market—an assumption that is implicitly made in the financial liberalization literature (see Arestis and Demetriades, 1999)—excess liquidity and bank loans should become substitutes at a zero loan rate. The fact that they are substitutes at a very high rate implies the banking sector in our selected economies (and very likely other underdeveloped economies also) is far from the case of competition. This paper makes the realistic assumption that the banking sector is oligopolistic and not competitive. As oligopolies, banks are able to mark-up the loan rate over an exogenous benchmark rate, transaction costs, and also take into consideration any risk of default associated with a specific borrower.

Figure 1.
Guyana: Bank liquidity and the loan rate (Quarterly data: 1988Q1—2006Q4)

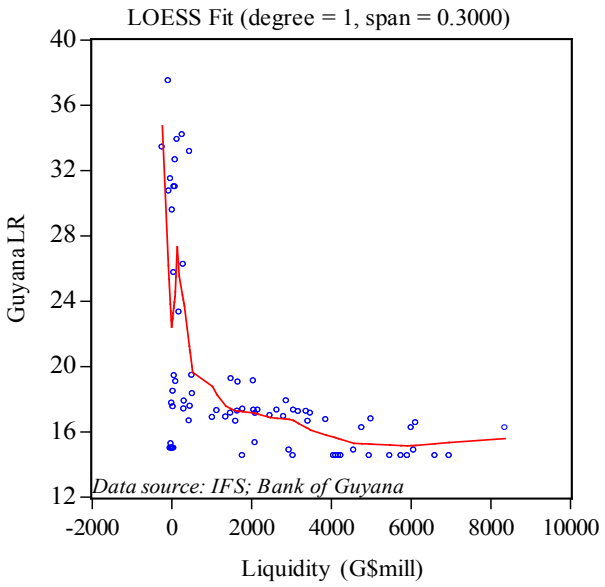
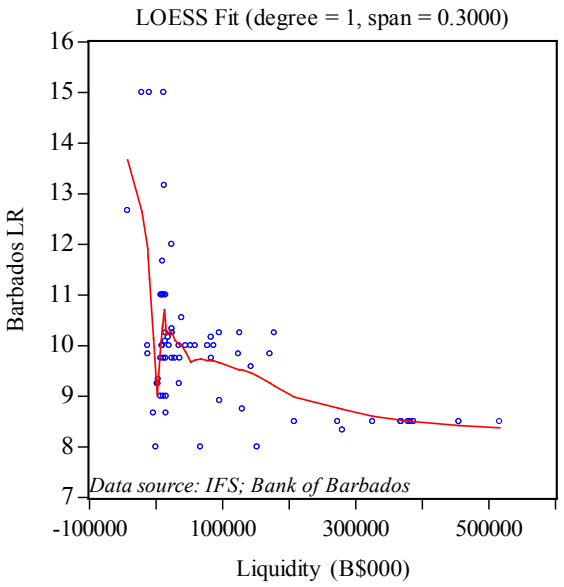


Figure 2.
Barbados: Bank liquidity and the loan rate (Quarterly data: 1990Q1—2006Q4)



6 It might be tempting to view the flat liquidity preference curves as indicative of a liquidity trap. However, that is not the case for two reasons: (i) the analysis uses the loan rate rather than the safe government bond/Treasury bill rate; and (ii) the curves tend to become flat at a very high rate of interest. There is a liquidity trap when money and bonds become perfect substitutes at zero bond/Treasury bill rate.

Figure 3.
Jamaica: Bank liquidity and the loan rate (Quarterly data: 1990Q1—2006Q4)

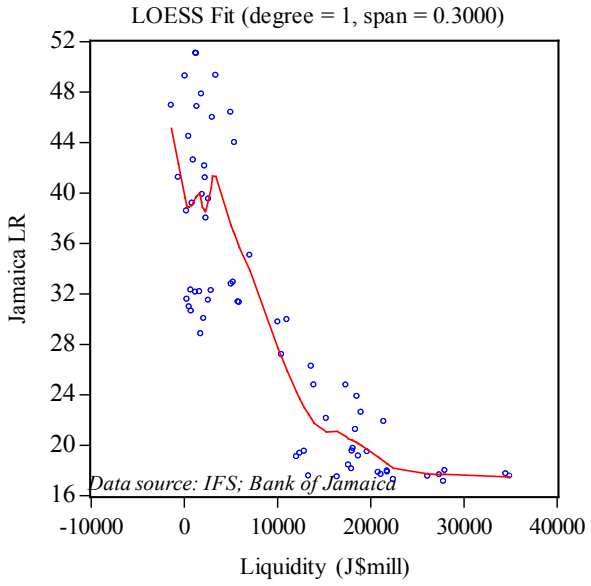


Figure 4.
Bahamas: Bank liquidity and the loan rate (Quarterly data: 1991Q1—2005Q4)

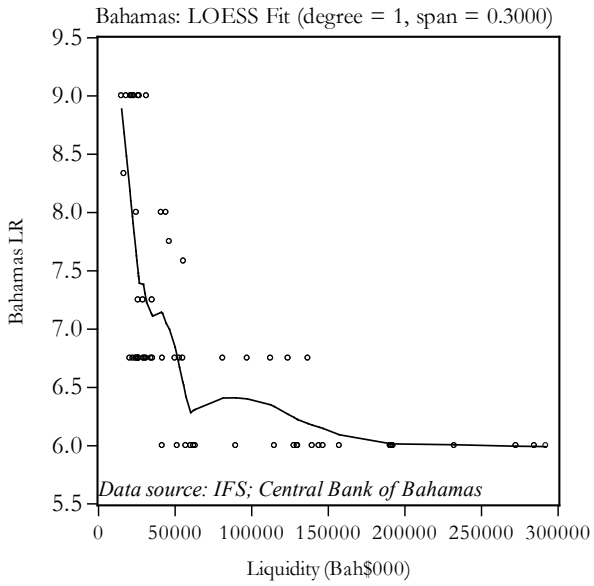


Figure 5.
Trinidad and Tobago: Bank liquidity and the loan rate (Quarterly data: 1995Q2—2006Q2)

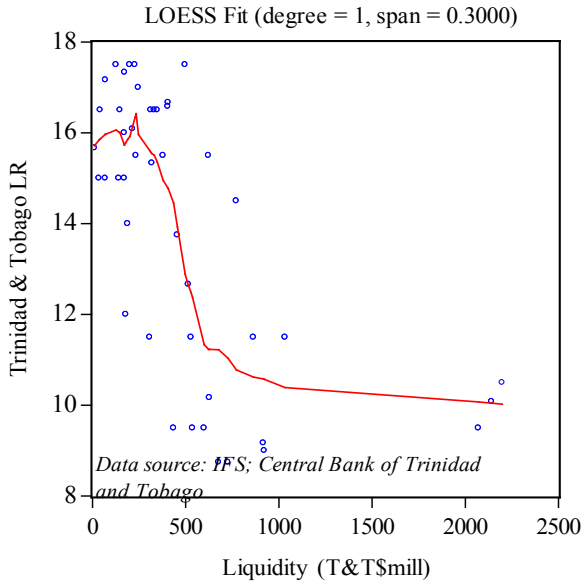


Figure 6.
Namibia: Bank liquidity and the loan rate (Quarterly data: 1991Q4—2006Q4)

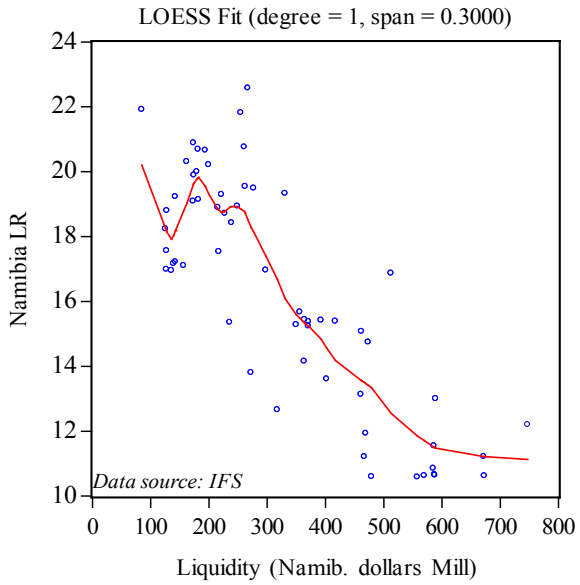


Figure 7.
Uganda: Bank liquidity and the loan rate (Quarterly data 1988Q1—2006Q3)

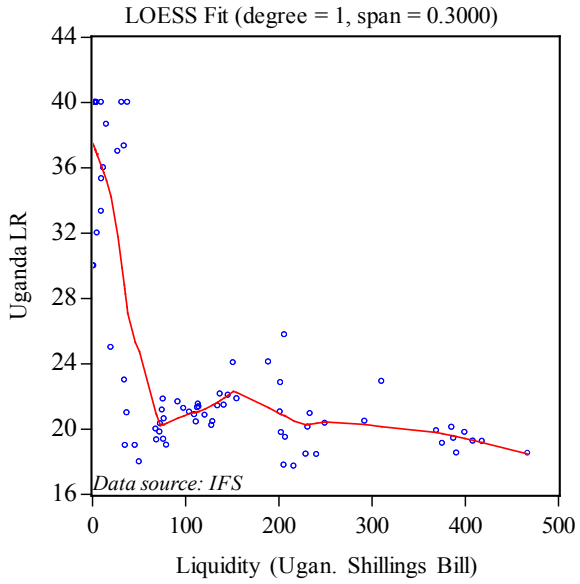
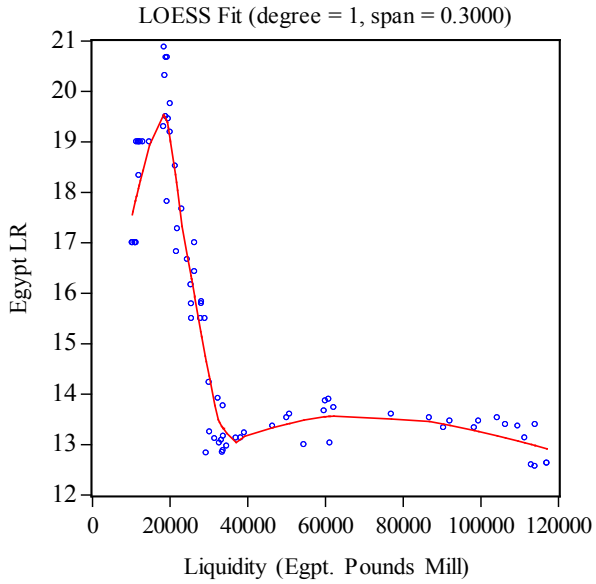


Figure 8.
Egypt: Bank liquidity and the loan rate (Quarterly data: 1988Q1—2006Q3)



Oligopoly Banking and Monetary Policy

This section of the paper has two objectives: (i) to present an oligopoly banking model from which the minimum loan rate can be derived; and (ii) to use the model to demonstrate to what extent indirect monetary policy shocks can influence the interest rate in the loan market.

Banks are assumed to possess market power in the loan market and the government Treasury bill market. The monopoly banking model was first introduced by Klein (1971) and later applied to a liquidity management model under uncertainty by Prisman, Slovin and Sushka (1986). However, an important difference between the model in this paper and earlier banking models is the fact that the government bond (or Treasury bill) market is not perfectly competitive as was originally postulated by Klein (1971), Slovin and Sushka (1983), Prisman, Slovin and Sushka (1986), and Freixas and Rochet (1999). While the government security market is likely to be highly developed and liquid in the advanced economies—hence the individual bank accepts this rate as given—it is not the case in LDCs where few institutional investors, mainly banks, dominate the purchase of Treasury bills. Therefore, the individual bank faces an upward sloping Treasury bill supply curve, thus making the bank an oligopsonist. If the Treasury bill market is uncompetitive, then the Treasury bill yield cannot be used as the exogenous reference rate which pins down the domestic term structure (as was the case in the papers cited immediately above). The discount rate is another candidate rate that can serve as the exogenous reference rate since it is clearly exogenous and under the control of the central bank. However, given the persistence of excess liquidity, this rate has not been very useful to signal monetary policy stance since banks seldom borrow reserves from the central bank.

As noted earlier, a key aspect of financial liberalization is the development of the money market in which the "independent" central bank will implement indirect monetary policy (IMF/World Bank, 2001; Fry, 1997b, chapter 6). To achieve this objective a primary market is developed for government Treasury

bills, which a central bank can use to pursue open market operations[7]. In some countries such as Jamaica (see Peart, 1995) the central bank creates its own open market instrument. However, in most cases the Treasury bill auction system is the principal way of controlling bank excess reserves. Steps are then taken to develop the secondary market for Treasury bills and the inter-bank market for excess bank reserves.

In light of the very open nature of the economies under study (and LDCs in general), bank managers must always be mindful, subject to suitable adjustments for real exchange rate risks, of the prevailing rate of interest on foreign assets (which can be represented by the US Treasury bill rate or the LIBOR). Bank managers need to compare the international rate (adjusted for real exchange rate movements) with the prevailing domestic Treasury bill rate and the loan rate (also adjusted for domestic risk scenarios and transaction costs).

The non-bank public must also consider the international safe rate and exchange rate movements when making investment decisions particularly in domestic deposit accounts. Banks will lose deposits and market share if the deposit rate becomes too low vis-à-vis the risk adjusted foreign rate. The existence of such an arbitrage mechanism in an unregulated open economy provides for a link between the asset and liability sides (of the bank's balance sheet) in a banking model even though domestic financial markets are subjected to market power. Therefore, the foreign interest rate, which is clearly exogenous to the domestic economy, can be used as the exogenous reference rate in the modelling exercise. Hence, the model is applied in an open economy environment, thereby accounting for another important difference between the approach of this paper and the traditional banking model that is mainly presented in a closed economy setting.

Equation 1 is the representative bank's profit function that is assumed to be concave in loans to the private sector (L); domestic government securities (G); and deposits (D). The i subscript attached to each variable signals the quantity of the respective variable held by the representative bank. Other key variables include r_L = the average loan rate; r_D = average deposit rate; r_F = rate of interest on the international security (the LIBOR for instance); $c_i(L)$ = transaction and monitoring costs associated with making loans to private agents; ρ = the proportion of borrowers (where $0 \leq \rho \leq 1$) who are likely to default on their loans; and ψ = the probability (where $0 \leq \psi \leq 1$) that the government will fail to meet its debt obligations . The latter probability, for instance, is a function of the debt-GDP ratio or some other measure of debt sustainability. The bank's balance sheet identity in which zD = required reserves (where z = ratio of total excess and required liquidity) is given by the identity equation 2.

$$\Pi_i = (1-\rho) r_L(L) L_i + (1-\psi) r_G(G) G_i + r_F F_i - r_D(D) D_i - c_i(L) \tag{1}$$

$$zD_i + G_i + F_i + L_i = D_i \tag{2}$$

After solving the balance sheet constraint for F_i and substituting into equation 2, the profit function (equation 3) is derived.

$$\Pi_i = [(1-\rho) r_L(L) - r_F] L_i + [(1-\psi) r_G(G) - r_F] G_i - [r_D(D) - r_F(1-z)] D_i - c_i(L) \tag{3}$$

$$L = L_i + \sum_{i \neq j} L_j \; ; G = G_i + \sum_{i \neq j} G_j \; ; D = D_i + \sum_{i \neq j} D_j \tag{3a}$$

7 See Alexander, *et al.* (1995) for a detailed description of the various indirect monetary policy instruments that are available to policy makers.

Following Freixas and Rochet (1999), the paper assumes a Cournot oligopoly. In the Cournot equilibrium the *i*th bank maximizes profit by taking the volume of loans, Treasury bills, and deposits of other banks as given. In other words, for the *i*th bank, (L_i^*, G_i^*, D_i^*), solves equation 3. Equation (3a) denotes the aggregate quantity of loans, Treasury bills and deposits demanded, respectively, by the entire banking sector.

The loan market

It is now possible to derive a pricing equation for the representative bank in the loan market. Equation 4 is the first order condition after maximizing the profit function with respect to L_i. The market demand curve the bank faces is downward sloping thus giving the elasticity of demand expression in equation (4c) in which ε_L denotes the elasticity of demand. Bank *i* accounts for the fraction s_i^L out of the industry's total quantity of loans (4b). The expression $r_L'(L)$ represents the first derivative of the loan rate with respect to *L*. As demonstrated by (4a) it is simply the inverse of $L'(r_L)$.

$$\frac{d\Pi_i}{dL_i} = (1-\rho)r_L(L) + (1-\rho)r_L'(L)L_i - r_F - c_i'(L) = 0 \tag{4}$$

$$r_L'(L) = 1 \tag{4a}$$

$$s_i^L = L_i / L \tag{4b}$$

$$\varepsilon_L = r_L \cdot L'(r_L) / L \tag{4c}$$

Upon substituting 4a, 4b and 4c into the first order condition, equation 5 is obtained. The equation shows that the loan rate is a mark-up over the foreign rate and the marginal cost of transacting, $c_i'(L)$. The mark-up is dependent on the market elasticity of demand and the share of the individual bank's demand for loan out of the total for the industry. As $s_i^L \to 1$ there is the case of a monopoly and the mark-up is highest, while as $s_i^L \to 0$ one bank has an infinitesimal share of the market; the equilibrium approaches the competitive state in which the mark-up approaches zero. The bank also increases the mark-up rate once the perceived probability of default increases (that is $\rho \to 1$).

$$r_L\left(1 + \frac{s_i^L}{\varepsilon_L}\right) = [r_F + c_i'(L)]/(1-\rho) \tag{5}$$

This equation helps to explain the existence of a minimum loan rate, at which point excess liquidity and private loans become perfect substitutes; hence, it explains the flattening of the empirical liquidity preference curve that was observed in the last section. Since the bank possesses the ability to choose a minimum rate, it will simply accumulate excess liquidity when the marginal borrower cannot pay the desired minimum loan rate. In other words, the bank accumulates excess liquidity because the marginal benefit from the additional unit of loan is less than the marginal cost of that same unit of loan. The minimum rate also implies that the removal of financial repression[8] will result in very high loan rates as banks behave more like theoretical oligopolies. High loan rates, especially after the liberalization of financial systems, have been observed in many developing countries (see Chirwa and Mlachila, 2004).

8 Fry (1982) explains the main forms of financial repression as nominal interest rate ceilings for deposit and loan rates, directed credit to particular industries, and the expropriation by government of seigniorage by the use of high cash and liquid asset requirements and obligatory holding of government securities.

Treasury bill market

As noted earlier the commercial banks do not take the domestic Treasury bill rate as given. With only a few large institutional purchasers of government securities, it is reasonable to assume that buyers do exert influence over the Treasury bill rate when they place bids for the security. In other words, banks face an upward sloping supply curve rather than a flat curve as is typically assumed in the literature. It is also a reasonable assumption to make since banks usually demand excess liquid assets over the stipulated statutory secondary liquidity ratio. Banks do find these assets desirable (hence the excess amounts) since they can collude and control the rate at which they bid for Treasury bills. Therefore, the Treasury bill rate can also be derived as a mark-up over the international rate.

$$\frac{d\Pi_i}{dG_i} = (1-\psi) r_G(G) + (1-\psi) r'_G(G) G_i - r_F = 0 \qquad (6)$$

Maximizing the profit function with respect to G_i gives the first order condition in equation 6. Substitute 6a, 6b and 6c into equation 6 to obtain the new pricing equation 7. The equation postulates that the minimum Treasury bill rate at which a bank will bid for the security is denoted by a mark-up over the exogenous foreign rate and market-specific risk. The minimum mark-up rate increases as $s_i^G \to 1$ (where s_i^G is the share of total outstanding bills bought by bank *i*). The minimum rate also increases as$\psi \to 1$, hence the bank will bid at a higher rate once the likelihood of a government default increases. This result is also consistent with the notion that a market Treasury bill rate that is below the minimum stipulated by the mark-up rule will result in the bank accumulating excess reserves passively[9]. However, this issue is beyond the scope of this paper and is left to further research. Another issue that is not taken up in this paper is the derivation of the deposit rate.

$$r'_G(G) = 1 / G'(r_G) \qquad (6a)$$

$$s_i^G = \qquad (6b)$$

$$\varepsilon_G = r_G \cdot G'(r_G) / G \qquad (6c)$$

$$r_G\left(1 + \frac{s_i^G}{\varepsilon_G}\right) = r_F / (1-\psi) \qquad (7)$$

Indirect monetary policy and the loan market

It is interesting to see the extent to which indirect monetary policy can influence the loan rate when banks use a mark-up pricing rule to determine both the loan rate and the rate of interest on the government security. The main task of indirect monetary policy in LDCs is the management of excess bank reserves through some form of open market operations using government Treasury bills, which the central bank holds as asset. The following arguments, however, are equally valid when the central bank invents its own open market instrument as in Jamaica.

So far, the paper has argued that excess liquidity is a structural phenomenon rooted in the oligopoly nature of banking. The task ahead is to now derive a theoretical equation to show the extent to which open market operations would influence the loan rate and hence bank credit and the real side of the economy. In particular, the objective is to analyze the effect on r_L when the central bank manages bank liquidity by vary-

9 The evidence of horizontal liquidity preference curves when the domestic Treasury bill rate is used is not included in this paper given the focus on the loan market. This is more the issue of the money market.

ing the quantity of *G*. *G* is the policy variable; hence it is exogenous. The loan rate (r_L) is the endogenous variable in the model. An increase in the sale of Treasury bills (*G*) is indicative of monetary tightening and a concomitant increase in r_G (that is: $r'_G(G) > 0$); the opposite occurs when the sale of *G* declines.

It is possible to combine equations 5 and 7, which both have the common term r_F, to form equation 8. Taking the derivative dr_L / dG will produce the impact equation 9. The loan rate is affected positively by a monetary contraction (increased sales of *G*) and negatively by a monetary expansion (decrease sales of *G*). However, the pass-through effect is weakened given the oligopolistic nature of the loan market. As $s_i^L \to 1$ the effect gets smaller; while it gets stronger as $s_i^G \to 0$, which in turn implies that as banks bid up the government security rate the loan rate will also rise to maintain the positive correlation between asset returns. Note, however, that at the point where the liquidity preference curve is flat (that is $dr_L / dG = 0$) indirect monetary policy will have no impact on interest rate and real economy.

$$r_L \frac{(1+\frac{s_i^L}{\varepsilon_L})(1-\rho)}{(1+\frac{s_i^G}{\varepsilon_G})(1-\psi)} - \frac{c'(L)}{(1+\frac{s_i^G}{\varepsilon_G})(1-\psi)} - r_G(G) = 0 \tag{8}$$

$$\frac{dr_L}{dG} = \frac{r'_G(G)(1+\frac{s_i^G}{\varepsilon_G})(1-\psi)}{(1+\frac{s_i^L}{\varepsilon_L})(1-\rho)} \geq 0 \tag{9}$$

Quasi-Calibration Exercise

An exercise in calibration—in the context of this paper—would involve obtaining estimates for transaction costs and choosing values (or obtaining estimates) for the probability of default, bank concentration and elasticity of demand (given the foreign interest rate) in order to replicate the flat bank liquidity preference curves given by the stylized facts. This interpretation of calibration is in keeping with the outline given by Cooley (1996).

However, for the purpose of this paper arbitrary values will not be chosen for the parameters of equation 7. Instead, excess liquidity of the respective country is plotted against the exogenous foreign interest rate. If there is flattening of the liquidity preference curve—when non-remunerative excess liquidity is graphed against the foreign rate—then there is evidence to suggest that equation 7 is a valid representation of the behaviour of the loan market in the economies under study. Since values are not chosen for the model parameters, the term quasi-calibration is used rather than the conventional interpretation given by Cooley (1996) and by Hanson and Heckman (1996). The LOESS method is again utilized to fit the quasi-calibrated liquidity preference curves from non-linear scatter plots.

The other methodological issue concerns the relevant interest rate that must be used in the analysis. Two candidates are available: (i) the US three-month Treasury bill rate; and (ii) the three-month London Interbank Offered Rate (LIBOR). The US three-month Treasury bill rate could only replicate the flat liquidity preference curve for Guyana, The Bahamas and Barbados. However, the three-month LIBOR generates remarkably similar results of perfectly elastic (or nearly perfectly elastic) bank liquidity preference curves for each country.

The results are plausible since commercial banks in LDCs hold foreign assets in the form of deposits in foreign counterpart banks in an advanced economy. Hence, such investments are likely to be a lot more sensitive to the international money market rate (the LIBOR), which is used to price many money market instruments around the world. Only the results using the LIBOR are presented in this paper. The quasi-calibrated results are found in figures 9 to 16.

Figure 9.
Guyana: Excess liquidity and the LIBOR (Quarterly data: 1988Q1—2006Q4)

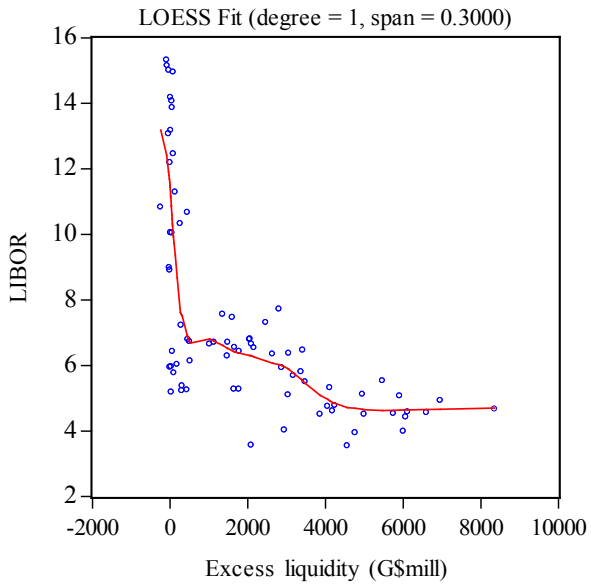


Figure 10.
Barbados: Excess liquidity and the LIBOR (Quarterly data: 1990Q1—2006Q4)

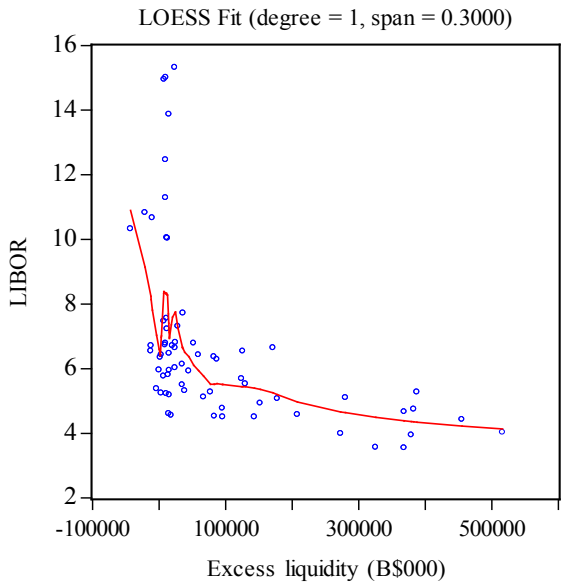


Figure 11.
Bahamas: excess liquidity and the LIBOR (Quarterly data: 1991Q1—2005Q4)

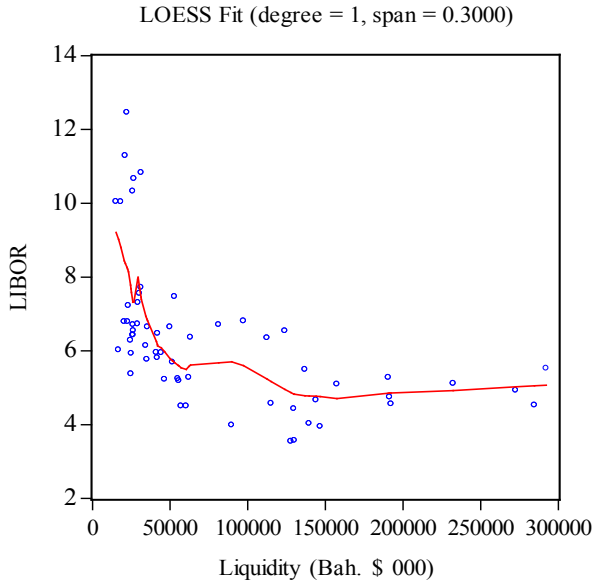


Figure 12.
Trinidad and Tobago: excess liquidity and the LIBOR (Quarterly data: 1995Q2—2006Q2)

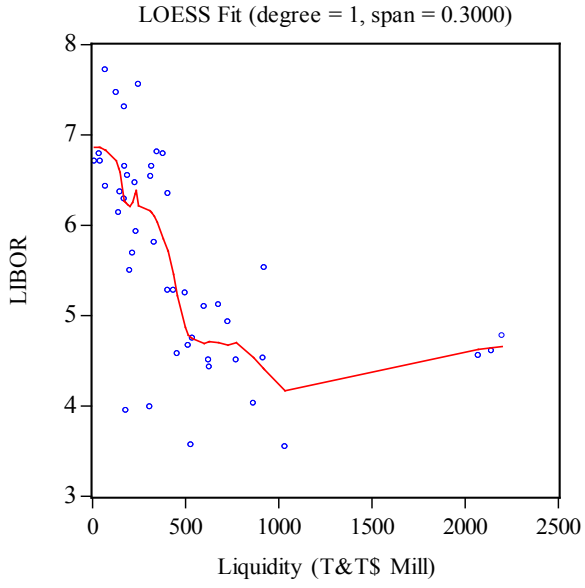


Figure 13.
Jamaica: Excess liquidity and the LIBOR (Quarterly data: 1990Q1—2006Q4)

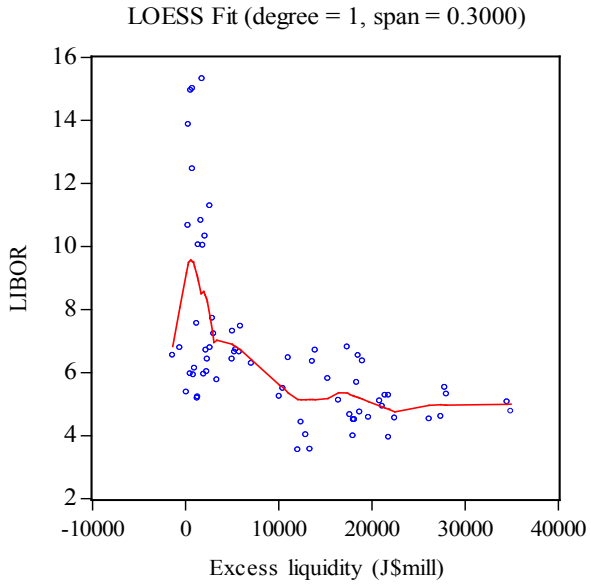


Figure 14.
Namibia: Excess liquidity the LIBOR (Quarterly data: 1991Q4—2006Q4)

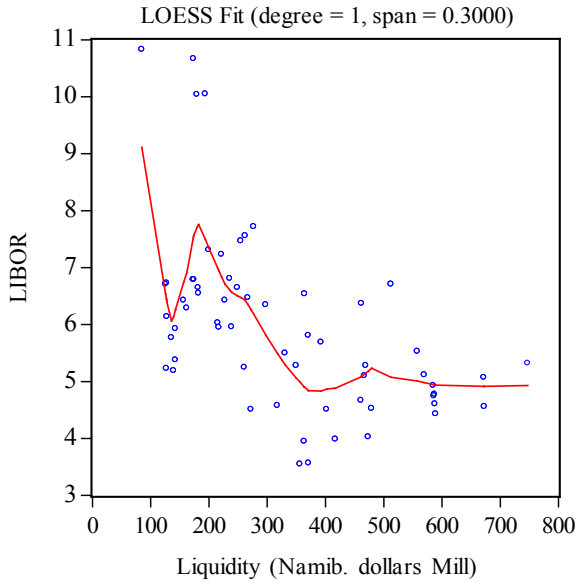


Figure 15.
Uganda: Excess liquidity the LIBOR (Quarterly data: 1988Q1—2006Q3)

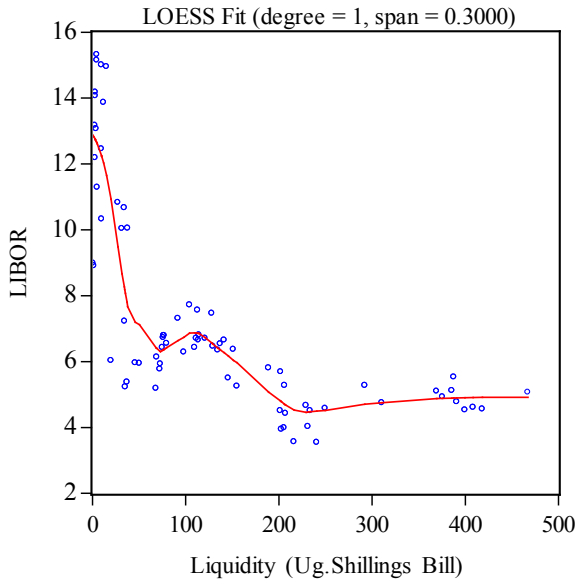
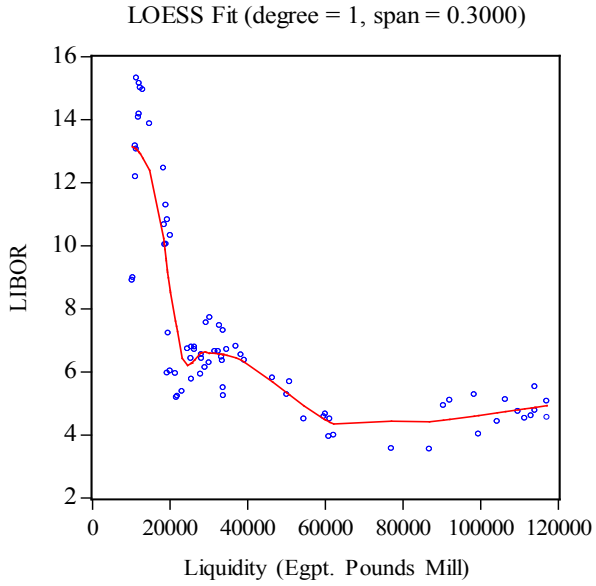


Figure 16.
Egypt: Excess liquidity the LIBOR (Quarterly data: 1988Q1—2006Q3)



Conclusion

The paper argued that the phenomenon of excess bank liquidity gives important insights as to the nature of the loan market in LDCs. Commercial banks require a minimum mark-up interest rate in the loan market before they lend to the marginal borrower. Such an interest rate stems from the oligopoly power banks possess in that market.

The paper also highlighted an important theoretical issue as it relates to the application of the theory of the banking firm to underdeveloped economies. It was noted that the banking model has to be modified to take into consideration the unique institutional characteristic of no exogenous domestic rate of interest that can serve as the benchmark rate as is the case in the advanced economies. Interest rates are determined by oligopolistic interactions. Consequently, a suitable foreign interest rate has to serve as the exogenous rate in any modelling exercise. Therefore, by introducing the foreign interest rate the paper pitches the banking model in an open economy context.

Two important policy implications result from the finding of the perfectly elastic liquidity preference curves. The first being the very high loan rate that is likely to occur after the loan market is liberalized. This follows from the fact that private oligopoly banks are free to set the loan rate at any level they might desire. As argued earlier, banks will mark-up the loan rate to compensate for marginal transaction costs, risks and the rate of interest on the safe external security.

The second policy implication is the ineffectiveness of indirect monetary policy over the flat range of the liquidity preference curve. As highlighted by the stylized facts, the downward sloping portion of the curves occurs at very high loan rates. Therefore, reserve shocks (that is shifts in the reserve supply curve owing to open market operations) emanating from the central bank can only have desirable effects on the loan rate (and hence alter consumption and investment decisions) when that rate is very high. This is because over the flat range of the liquidity preference curve commercial banks set interest rates exogenously of liquidity shocks emanating from the central bank. The high loan rate, moreover, is detrimental to output and employment creation in economies where the banking sector account for most business external financing. Society and the policy makers, and the foreigners who advise the domestic policy makers, will have to decide whether indirect monetary policy is so important that it is worth the cost of persistent strangulation of domestic private investments in productive activities.

Two important issues that are the focus of future research projects have been omitted from this paper. The first one is the implications of persistent excess liquidity for money market development (and the operation of these markets) in LDCs. The second has to do with why banks operating in liberalized economies such as Guyana, Uganda and Jamaica, for instance, have been seemingly unwilling to invest all non-remunerative excess reserves in a safe foreign asset? Hence, what does excess liquidity say about the operation of the foreign exchange market in liberalized LDCs?

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