Financial Liberalization and the Dynamics of Inflation, Nominal Exchange Rate, and Terms of Trade

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ABSTRACT

The paper develops a short-run structural model of a small open financially repressed economy with current account convertibility. The analysis shows that the effect of financial liberalization on rate of inflation and the movements of the nominal exchange rate proves ambiguous, and hinges critically on the relative responsiveness of the credit-induced effects on aggregate demand and aggregate supply. This result provides a theoretical explanation to the widely available empirical evidence, indicating such an ambiguity.

Key Words: Financial Liberalization; Inflation; Exchange Rate; Terms of Trade; Small Open Economy

JEL Classification: E31, E44, E52, F41

1. INTRODUCTION

Empirical evidence provided in the studies of Karapatakis (1992), Gupta and Lensink (1996), Gupta (1997), Lensink and Hermes (1997), Caprio et al. (2001), and Gupta and Karapatakis (2007), all tend to indicate that the short-run effect of financial liberalization on inflation and exchange rate is ambiguous. This paper seeks to provide a theoretical explanation to the above mentioned ambiguity, based on a simple short-run structural model of a financially repressed economy. We show that the movements in the nominal exchange rate and inflation, following financial liberalization, depends critically on the relative responsiveness of the credit-induced effects on aggregate demand and aggregate supply, and, hence, the resulting ambiguity. As an aside, the model predicts that financial liberalization, in the context of the present model, will always deteriorate the terms of trade in the short-run.

At this juncture it is important to define what we mean by “Financial Repression”, and, hence, “Financial Liberalization”. Broadly speaking, financial repression implies the lack of depth of financial intermediation in financial markets. The financial systems in
most developing countries consist primarily of commercial banks, since markets for private bonds, equity, and commercial paper essentially do not exist, lacking the appropriate legal framework and information structure to support such functions. This financial structure emerges as governments impose restrictions designed to enable the government to not only exercise control over the intermediation process but, also to extract revenue for the financing of budget deficits, and to propagate capital formation at low interest rates. "Financial Liberalization", would, then, imply an increase in the controlled interest rate on deposits and lowering of the multiple reserve requirements.

Note, for obtaining our results, we consider a small open economy, operating under a floating exchange rate regime on the current account only, with one domestically produced good and one imported intermediate good. The price of the domestic good is endogenous, whilst the price of the imported intermediate good is exogenous. The importable good comes from world market at a perfectly elastic supply at the foreign currency price \( P^* \). Since \( P^* \) is parametrically given to the economy, we set it to unity for simplicity. The representative economy consists of two sectors – financial and real. The remaining of the paper is structured as follows: Section 2 lays out the economic environment and Section 3 solves the model and discusses the effects of financial liberalization on the movements of the endogenous variables. Section 4 concludes.

2. THE ECONOMIC ENVIRONMENT

The Financial Sector

The financial sector consists of three economic agents: the central bank, commercial banks, and the non-bank private sector that includes the households and the firms\(^1\). The central bank maintains internal and external stability by controlling the base money and credit availability in the economy. For this purpose, the central bank imposes reserve ratio requirements on bank deposits.

Equity markets do not exist and as a result, intermediation between savers and investors takes place through the organized banking system. Since commercial banks play an important role in the transmission of monetary policy, and solely supply credit to finance the firms' capital and intermediate good requirements, the structure of the banks' balance sheet deserves a detailed examination.

The commercial banks' major source of fund comes from the household deposits, which the banks deploy as loans to firms after setting aside the minimum level of required

\(^1\) Note that we exclude the Unorganized Money Market (UMM), a notable feature of the financial markets in any credit starved financially repressed economies. Based on the study of Nag and Mukhopadhyay (1998), the importance of UMM loans have been assumed away on the grounds of high cost to household of gathering information regarding the financial viability of the firms, the small size of asset at their disposal and their strong risk-aversion.
reserves. A typical commercial bank’s balance sheet can be formally expressed (in real terms) as:

\[ C + B + L' = D , \] (1)

where, \( C \) and \( B \) equal commercial banks’ holdings of currency and government bonds, and \( D \) equals the real volume of deposits, and \( L' \) equals the total real stock of loans outstanding. Furthermore, absent excess reserves, commercial bank’s liquid assets (i.e., \( C \) and \( B \)) meet the multiple reserve requirements, which cover a fixed proportion of deposits. Define \( q \) to equal the reserve ratio, then equation (1) becomes:

\[ qD + L' = D . \] (2)

In addition to the liquidity ratio, commercial banks face interest rate regulations on loans and deposits. On the loan side, the monetary authority sets a uniform maximum lending rate that banks can charge on loans and the commercial banks face an infinitely inelastic supply of loans with respect to the lending rate. Solving equation (2) for \( L' \) gives

\[ L'_1 = (1-q)D, \] (3)

The supply of bank loans, therefore, depends on the exogenously determined liquidity ratio, and the real volume of household deposits. Converting the above into a log-linear form yields the following relationship:

\[ \ln L'_1 = \ln (1-q) + \ln D, \] (4)

Commercial banks supply the loans passively in response to the firm’s demand. With an exogenously determined liquidity ratio, the only decision that commercial banks make is the allocation of loans for two purposes: (a) to finance domestic capital investment and, (b) to finance the firms’ imported intermediate good requirements. Defining, \( \sigma L' \) and \((1-\sigma) L'\) as the stock of loans for fixed domestic investment and imported intermediate good requirements, the total volume of credit disaggregates as follows:

\[ L' = \sigma L' + (1-\sigma) L' . \] (5)

With no differences in the lending rate between the two types of credit, we assume that these shares depend exclusively on the discretion of the commercial banks.

For simplicity, loans for investment cover multi-periods with banks delivering \( T \) period loans to the firms, in the amount of \( L / T \) each time period.

To characterize the supply of loans completely, define the supply function for deposits. Note the markets for equities do not exist and government bonds pay a low nominal rate of interest in a financially repressed regime.\(^2\) In such an environment, households hold their wealth mainly in the form of broad money (i.e., currency and deposits). Currency

\(^2\) Banks must hold a fraction of their deposits as government bonds. Such reserve requirements simply generates forced demand for the government debt and help the government finance its expenditures at virtually zero cost.
pays a return equal to the negative of inflation rate, while deposits earn a real deposit rate, \( r_d \), which equals the difference between the central bank controlled nominal deposit rate, \( i_d \), and the exogenously determined expected rate of inflation, \( \pi_e \).

The deposit equation nearly captures Cagan's (1956) demand for inside money as follows:

\[
\ln D_t = a_0 + a_1 \ln Y_t + a_2 \ln(1 + r_d),
\]

where \( Y \) equals real income and \( r_d \) equals the average real deposit rate on demand, saving, and time deposits. The parameters \( a_1 (>0) \), and \( a_2 (>0) \) are the income and interest elasticities of the demand for deposits, and \( a_0 \) is a positive constant. Note that given the exogenously determined rate of inflation, a higher nominal interest rate on deposits causes the household to reallocate their portfolios in favor of bank deposits at the expense of currency. Since the loan supply function requires us to lay out the supply decision of the deposits, we isolated out the deposit equation as given above in (6).

**The Real Sector**

In the real sector, price changes instantaneously to maintain equilibrium. Full utilization of the existing capital stock, but with significant amounts of idle investment opportunities, characterizes the equilibrium. Since the credit market exhibits continuous disequilibrium, The interest rates on deposit fall well below the market determined level and, hence, discourage the households to hold deposits with the commercial banks. This, in turn, reduces credit availability for financing economic activity. As a result, continuous excess demand for loans exists. The credit market clears on the short side, in our case, the loan-supply side. This spill-over affects the real sector of the economy.

**Aggregate Supply**

The domestic economy completely specializes in the production of a composite good, an imperfect substitute for world output. Profit-maximizing firms exclusively produce domestic output.

The composite good \((Q)\) is produced by three factors of production labor \((N)\), intermediate imported good \((R)\), and capital \((K)\) using a traditional Cobb-Douglas production structure:

\[
Q = A N^{b_1} R^{b_2} K^{b_3},
\]

where \( Q \) equals the real gross domestic output, \( A \) equals a positive constant (the technology parameter), and \( b_i \)'s \((i = 1, 2, \text{ and } 3)\) equal the partial elasticities of output with respect to labor, imported intermediate good, and capital, respectively.

Firms maximize profits \((\pi)\) subject to three constraints: (i) the production function, given by (7); (ii) the financial constraint given, by the credit availability to finance the
intermediate input requirements of the firm; and (iii) the constraint faced by the firms that emerges indirectly through the capital stock. Labor receives payment through retained earnings. Thus,

\[(e/P)R \leq (1-\sigma)L',\]  

(8)

where \(P\) equals the domestic price level and \(e\) equals the nominal exchange rate. Note that we set the foreign price level equal to unity. Also note that due to credit ceilings, the flow of loans available for investment purposes constrains each period’s investment, such that:

\[I_t \leq ((1-\sigma)L'/T).\]  

(9)

An increase in the current period’s investment credit increases aggregate demand through higher investment spending, but it only affects the future capital stock and, hence, the future supply. To incorporate the inherent lag that exists in the transmission of investment into productive capital, we define the capital evolution process as:

\[\bar{K}_t = (1-\delta)\bar{K}_{t-1} + I_{t-1},\]  

(10)

where \(\delta\) equals the rate of depreciation. Since investment credit takes one period to transform into productive capital, the amount of capital available to the firms is fixed. That is,

\[K_t = K_t.\]  

(11)

So the firm maximizes \(Z\) subject to equations (7), (8), and (11). Note further that equations (8) and (9) bind. Then profit equals:

\[\pi = PQ - (W)N - (1+r_t)eR - (1+r_t)^T P K,\]  

(12)

where \(W\) equals the nominal wage rate, \(r_t\) equals the real lending rate, and \(P\) equals the rental price of capital. Given the repressed financial structure, the only choice variable is \(N\). Profit maximizing entails marginal product of labor equal to real wage, that is in log-linear form:

\[\ln(W/P)_t = \ln A + \ln b_1 + (b_1 - 1)\ln N + b_2 \ln R + b_3 \ln K.\]  

(13)

Solving for \(\ln N\) gives the demand for labor. Rewriting (8) in logs and solving for \(R\) and substituting it along with equation (11) into equation (13) and then re-arranging terms produces:

\[\ln N = b_4 - b_5 \ln(W/P) - b_7 \ln(e/P) + b_9 \ln((1-\sigma)L') + b_8 \ln \bar{K},\]  

(14)

where

\[b_4 = (\ln A + \ln b_1)/(1-b_1) > 0,\]  

\[b_5 = 1/(1-b_1) > 0,\]  

\[b_7 = b_2/(1-b_1) > 0, \text{ and}\]  

\[b_8 = b_3/(1-b_1) > 0.\]
Note that the quantity of labor employed by the firm is demand-determined with the nominal wage rate exogenously determined by institutional factors.

Rewriting the production function in logs and using equation (14) generates the aggregate supply equation as follows:

$$\ln Q^* = b_{20} - b_{21} \ln(W / P) - b_{22} \ln(e / P) + b_{23} \ln((1 - \sigma) L^*) + b_{23} \ln K,$$

where

$$b_{20} = \ln(A + b_1 b_3) > 0,$$
$$b_{21} = b_1 b_6 > 0,$$
$$b_{22} = b_6 + b_7 > 0, \text{ and}$$
$$b_{23} = b_6 + b_7 > 0.$$

**Aggregate Demand**

Real aggregate demand for domestic output arises from two sources—domestic and foreign. Real domestic demand depends on real consumption, real government spending, and real investment or alternatively the flow of real bank credit to finance the investment in fixed capital, given that condition (9) binds. Foreign demand enters through real exports of goods and services. The country’s exports depend on the real exchange rate \((e/P)\).

Thus, the aggregate demand equation in log-linear form, taking a first-order Taylor approximation of \(Q^* = C + I + G + X\) around means, can be postulated as follows:

$$\ln Q^* = \lambda_0 \ln C_i + \lambda_1 \ln(\sigma L_i / T) + \lambda_2 \ln G_i + \lambda_3 \ln X_i,$$

where \(\lambda_i > 0\) \((i = 1, 2, 3, \text{and} 4)\) are the average shares of domestic consumption, domestic investment, domestic government spending, and exports in aggregate demand with \(\sum_{i=1}^4 \lambda_i = 1\). We postulate the following functions for consumption and export demand:

$$\ln C_i = \alpha_0 + \alpha_i \ln Y_i,$$
$$\ln X_i = \delta_0 + \delta_i \ln(e / P)_i,$$

where \(\alpha_0 > 0, 0 < \alpha_i < 1, \text{ and } \delta_0 > 0, \delta_i > 1\). Note that \(\delta_i > 1\) ensures that the Marshall-Lerner condition holds. As pointed out by Nag and Mukhopadhyay (1998), dependence of developing countries on imports of intermediate inputs and, the lack of growth of

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3 To simplify, we ignore foreign income as a determinant of the exports, only an exogenous variable, if included.
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exports due to structural rigidities, puts tremendous pressure on balance of payments of a small open economy, and ultimately leads to the adoption of a flexible exchange rate regime. In this paper, as in Nag and Mukhopadhyay (1998), we assume the exchange rate floats freely on current account. As governments in many developing countries impose capital controls to prevent volatility arising out of speculations, we completely ignore the capital account. The flexible exchange rate ensures instantaneous current account, and, hence, trade balance, following any policy changes that disturbs the open economy equilibrium.

Therefore, the balance of payment equilibrium requirement, using equations (8) and (18), equals the following:

$$\delta_0 + \delta_1 \ln(e/P)_t = \ln((1-\sigma)L'_t).$$  \hspace{1cm} (19)

To close the model, we define the relationship between real GDP ($Y$) and real gross output ($Q$). Given the import of the intermediate input, the real income $Y$ must differ from the gross output $Q$ by real factor imports. That is,

$$Y=Q-(e/P)R.$$  \hspace{1cm} (20)

A first-order Taylor approximation around the mean and using equation (8) produces the following log-linear form:

$$\ln Y = \theta_1 \ln Q - \theta_2 \ln((1-\sigma)L'_t),$$  \hspace{1cm} (21)

where $\theta_i's>0$ (i=1 and 2) equals the average share of real income and the intermediate input in gross output, respectively, with $\sum_{i=1}^{2} \theta_i = 1, \theta_1 > \theta_2$.

3. SOLUTION AND ANALYSIS OF THE MODEL

The model contains three structural equations and three identities. The aggregate supply, the aggregate demand, and the demand for deposits comprise the structural equations and the loan supply, the relationship between real GDP and real gross output, and the trade balance relationship form the three identities. The six equations determine the six endogenous variables: $\ln P$, $\ln Q$, $\ln Y$, $\ln e$, $\ln D$, and $\ln L'$. Since we analyze the movements of the inflation rate and the growth rates of the exchange rate and the terms of trade following financial liberalization, we solve for the reduced-form equations of the above three. The following eight steps led to the reduced-form equations to analyze the movements in the price level, the exchange rate, and the terms of trade.

(i) Substitute the relationship between GDP and gross output into the demand for deposits to eliminate $\ln Y$.

(ii) Substitute the resulting equation into the loan-supply equation to eliminate $\ln D$. 
(iii) Replace the consumption and export functions in the aggregate demand equation, and use the fact that trade balances.

(iv) Given the assumption regarding the parametric shares of credit and the term of maturity of investment credit, incorporate them into the intercepts of the model.

(v) Substitute the loan supply equation into the modified aggregate demand and aggregate supply equations to eliminate $\ln L'$.

(vi) Impose the goods market equilibrium to obtain the reduced-form solution for $\ln P$, which, upon taking first differences, yields the reduced form inflation equation, given by equation (22). Note that a ‘$g$’ before the variable indicates growth rate, while a ‘$\Delta$’ indicates change.

\[
(gP_t) = \Omega_1(gG_t) - \Omega_2 \Delta q_t + \Omega_3 \Delta r_{dr} + \Omega_4 (gW_t) + \Omega_5 (gK_t),
\]

where

\[
\Omega_1 = \frac{a_1 b_{22} \theta_1 + \delta_1 \left[ 1 + a_1 (-b_{22} \theta_1 + \theta_2) \right]}{b_{21} \delta_1 \left[ 1 - \alpha_1 \theta_1 \lambda_0 + a_1 \left( \theta_2 - \theta_1 \left( \lambda_2 + \lambda_4 \right) \right) \right]} > 0
\]

\[
\Omega_2 = \frac{b_{22} (-1 + \delta_1) (-1 + \alpha_1 \theta_1 \lambda_0) + \delta_1 \left( - (\alpha_1 \theta_2 \lambda_0) + \lambda_2 + \lambda_4 \right)}{b_{21} \delta_1 \left[ 1 - \alpha_1 \theta_1 \lambda_0 + a_1 \left( \theta_2 - \theta_1 \left( \lambda_2 + \lambda_4 \right) \right) \right]}
\]

\[
\Omega_3 = \frac{a_2 b_{22} (-1 + \delta_1) (-1 + \alpha_1 \theta_1 \lambda_0) + \delta_1 \left[ - (\alpha_1 \theta_2 \lambda_0) + \lambda_2 + \lambda_4 \right]}{b_{21} \delta_1 \left[ 1 - \alpha_1 \theta_1 \lambda_0 + a_1 \left( \theta_2 - \theta_1 \left( \lambda_2 + \lambda_4 \right) \right) \right]}
\]

\[
\Omega_4 = 1
\]

\[
\Omega_5 = -\left( \frac{b_{23}}{b_{21}} \right) < 0
\]

(vii) Use the balance of trade equilibrium condition and substitute the solutions for $\ln P$ and $\ln Q$ (imposing the equilibrium condition of the real sector) to obtain the reduced-form solution for $\ln e$, which, upon taking first differences, yields the reduced form equation for the growth rate of the nominal exchange rate, given by equation (23).

\[
(gR_t) = \Psi_1 (gG_t) - \Psi_2 \Delta q_t + \Psi_3 \Delta r_{dr} + \Psi_4 (gW_t) + \Psi_5 (gK_t)
\]

where

\[
\Psi_1 = \frac{a_1 (b_{21} - b_{22}) \theta_1 + \delta_1 \left[ 1 + a_1 (b_{22} \theta_1 - \theta_2) \right]}{b_{21} \delta_1 \left[ 1 - \alpha_1 \theta_1 \lambda_0 + a_1 \left( \theta_2 - \theta_1 \left( \lambda_2 + \lambda_4 \right) \right) \right]} > 0
\]
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\[
\Psi_2 = \frac{-\left(b_{21}(-1+\alpha_1 \lambda_0)\right)-b_{22}(-1+\lambda_i)(-1+\alpha_1 \lambda_0)-\delta_i(-\alpha_2 \lambda_0+\lambda_2+\lambda_4)}{b_{21} \delta_1 \left[1-\alpha_1 \lambda_0+a_i \left(\theta_2-\theta_1 \lambda_2+\lambda_4\right)\right]} \tag{?)
\]

\[
\Psi_3 = \frac{-\left(a_2 \left[b_{21}(-1+\alpha_1 \lambda_0)+b_{22}(-1+\lambda_i)(-1+\alpha_1 \lambda_0)+\delta_i(-\alpha_2 \lambda_0+\lambda_2+\lambda_4)\right]\right)}{b_{21} \delta_1 \left[1-\alpha_1 \lambda_0+a_i \left(\theta_2-\theta_1 \lambda_2+\lambda_4\right)\right]} \tag{?)
\]

\[\Psi_4 \downarrow -1\]

\[\Psi_5 = \frac{b_{31}}{b_{21}} > 0\]

(viii) Use equations (22) and (23) to obtain the reduced-form solution for the growth rate of terms of trade, given by equation (24). Note that the terms of trade \((Z)\) equals \((P/e)\). From the point of view of the consumer, \(Z\) represents the relative price of foreign and domestic goods on which aggregate demand will depend. From the point of view of the country as a whole, however, \(Z\) represents the amount of imports obtained for one unit of exports. Therefore, an increase in \(Z\) implies that more imports come for every unit of exports or less exports per unit of imports.

\[(g T_t) = \Phi_1 (g G_t) - \Phi_2 \Delta q_t + \Phi_3 \Delta r_{dt}, \tag{24}\]

where

\[
\Phi_1 = \frac{-\left(a_1 \lambda_0 \lambda_3\right)}{\delta_1 \left[1-\alpha_1 \lambda_0+a_i \left(\theta_2-\theta_1 \lambda_2+\lambda_4\right)\right]} < 0
\]

\[
\Phi_2 = \frac{-1+\alpha_1 \lambda_0 \lambda_3}{\delta_1 \left[1-\alpha_1 \lambda_0+a_i \left(\theta_2-\theta_1 \lambda_2+\lambda_4\right)\right]} < 0
\]

\[
\Phi_3 = \frac{a_2 (-1+\alpha_1 \lambda_0)}{\delta_1 \left[1-\alpha_1 \lambda_0+a_i \left(\theta_2-\theta_1 \lambda_2+\lambda_4\right)\right]} < 0
\]

We now examine the short-run effects of financial liberalization, characterized by an increase in the nominal interest rate on deposits and lower reserve requirements, on inflation and the exchange rate. Since we assume an exogenously determined expected rate of inflation, an increase in the nominal interest rate on deposits exactly mirrors the increase in the real deposit rate. Further, we assume that the interest rate on bank loans rises simultaneously to maintain the profitability of the commercial banks\(^4\). The interest rates, however, do not increase to the level that eliminates the excess demand for credit.

\(^4\) Note that changes in the lending rate produce no effect on the outstanding volume of loans, but merely changes the premium on the rationed loans obtained by some privileged borrowers.
Within this framework, the short-run effects of a change in the deposit rate on inflation depends on the sign of

\[ \Omega_3 = \frac{a_2 b_{22} (-1+\delta_1)(-1+\alpha_1 \theta_1 \lambda_0)+\delta_1 (-\alpha_1 \theta_2 \lambda_0)+\lambda_2+\lambda_4)}{b_{21} \delta_1 \left(1-\alpha_1 \theta_1 \lambda_0+a_1 \theta_2-\theta_1 (\lambda_2+\lambda_4)\right)} \]  

\[ = \frac{a_2 (\alpha_1 \theta_2 \lambda_0-\lambda_2-\lambda_4)}{-1+\alpha_1 \theta_1 \lambda_0+a_1 \theta_2 (\lambda_2+\lambda_4)} \]  

On the one hand, an increase in the interest rate on deposit rate leads to lower inflation because it exerts an indirect effect on the aggregate supply through higher loans available to finance the intermediate input requirement and, thus, shifts the aggregate supply curve to the right. The effect on the price level corresponding to this movement of the aggregate supply curve is reflected by the following term:

\[ \frac{-a_2 b_{22} (-1+\delta_1) \left(a_1 b_{22} \theta_1 + \delta_1 \left[1+a_1 (-b_{22} \theta_1 + \theta_2)\right]\right)}{b_{21} \delta_1 \left(-a_1 b_{22} \theta_1 + \delta_1 \left[-1+\alpha_1 (b_{22} \theta_1 - \theta_2)\right]\right) \left[1+a_1 \theta_2\right]} > 0 \]

On the other hand, a higher real deposit rate increases the rate of inflation through a positive credit-induced effect on the aggregate demand. The higher interest rate causes a reallocation in the household’s portfolio in favor of deposits and, hence, enhances the bank credit available to finance investment requirement and hence causes the aggregate supply curve to shift to the right. The positive term:

\[ \frac{a_2 \left[a_1 b_{22} \theta_1 + \delta_1 \left[1+a_1 (-b_{22} \theta_1 + \theta_2)\right]\right] \left(a_1 \alpha_2 \lambda_0 - \lambda_2 - \lambda_4\right)}{b_{21} \delta_1 \left[1+a_1 \theta_2\right] \left[-1+a_1 \theta_1 \lambda_0 + a_1 \theta_2 + \theta_1 \lambda_2 + \lambda_4\right]} > 0 \]

captures the effect on the price level corresponding to the movement of the aggregate demand curve. The effect of interest rate deregulation on inflation depends on which of the two terms dominates. The final result critically hinges on the interest elasticity of demand for deposits and, more importantly, on the loan elasticity of aggregate demand and aggregate supply, embedded in the terms. The effect of changes in reserve requirements on the inflation rate proves understandably ambiguous for exactly the same reasons.

An increase in interest rate on deposits enhances the import of intermediate inputs and drives the trade balance into deficit. Since the movement in price level remains uncertain following such a change, however, the movement in the exchange rate, to ensure equilibrium in the current account, also remains uncertain. Note that an increase
in the interest rate on deposits or a reduction in the reserve requirement enhance the availability of loans for the import of intermediate inputs and results in a balance of trade deficit. The real exchange rate must rise to maintain the current account balance. This implies a unambiguous deterioration of the terms of trade. The movement in the nominal exchange rate, however, depends on whether the supply-side or the demand-side effects dominate. If the former (latter) effect dominates, the price level falls (increases), nominal exchange rate falls (rises) as well, but less (more) than proportionately so that the real exchange rate increases in the new equilibrium. The more-than (less-than) proportionate movements in the nominal exchange rate following a financial liberalization policy materialize in the coefficients in equation (23). It is easy to show that the coefficients of the growth rate of the government spending and the changes in the interest rate on deposits and reserve requirements in equation (23) contain the corresponding terms in the reduced-form equation of the rate of inflation and a positive term in each case. Hence, observing that financial liberalization deteriorates the terms of trade, from equation (24), proves unsurprising. Some empirical evidence of which has also been outlined in Caprio et al. (2001).

4. CONCLUSIONS AND AREAS OF FURTHER RESEARCH

Recent empirical evidences tend to indicate that the short-run effect of financial liberalization on inflation and exchange rate is ambiguous. This paper seeks to provide a theoretical explanation to the above mentioned ambiguity, based on a simple short-run structural model of a financially repressed economy. The short-run model indicates that financial liberalization, through an increase in the administered interest rate on deposits and a lower reserve requirement, leads to ambiguous effects on the inflation and nominal exchange rates in the short-run, since, the final effect depends on the relative responsiveness of the credit-induced effects of financial deregulation on aggregate demand and aggregate supply.

The current analysis can, however, be extended to incorporate the capital account, since firms in the developing economies do have access to foreign loans. The model can also be enriched to consider the long-run implications of the financial liberalization policy, by endogenizing expectation formulations. Nag (2000) notes that the short-run and long-run effects of financial liberalization can differ extensively, when one accounts for expectations formation. Hence, the short-run response of the economy to policy changes may not provide a reliable indicator for formulating policies oriented toward macroeconomic reform and, thus, long-run consideration of the existing model becomes pivotal. In many developing countries, the monetary authorities impose differential interest rates on loans with different maturities to carry out “priority sector lending.” In such a scenario, one must endogenize the loan shares and examine the effectiveness of credit policies and the associated implications of financial liberalization. Moreover, the UMM in the developing
world proves highly competitive and, in fact, often provides a major source of financing capital for firms. The current model completely ignores the role of the UMM, suggesting that the curb markets mostly provide loans to finance consumption and small-scale investment (see, for example, Owen and Solis-Fallas (1989), Christensen (1993), Kan (2000), Nag (2000), and Mohieldin and Wright (2000)). Incorporating the role of the curb markets, in the above analysis, might also be interesting.

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