More on monetary policy in a small open economy
A credit view
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Abstract

When the representative bank’s backward-bending loan supply curve peaks at the profit- 
maximizing loan rate, credit rationing could exist as an equilibrium phenomenon and the 
equilibrium interest rate in the loan market is subject to upward rigidity. With the loan-market 
setting as micro-foundation for investment, this paper further develops a macro model of a 
small open economy under the regime of fixed exchange rates with perfect capital mobility 
in the bond market and imperfect asset substitutability between bonds and loans. In spite of 
whether there exists credit rationing, a change in money supply shifts the IS as well as LM 
curves; the credit-driven adjustment in transaction demand for money lessens the disequilibrium 
pressure on the money and foreign exchange markets so that the offset coefficient of open 
market operation is less than one. The stronger the credit channel is, the more legacy of 
monetary policy it can preserve as desired. In particular, monetary autonomy tends to be less 
impaired under the credit-rationing regime than under the market-clearing regime. © 1999 
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1. Introduction

It has been widely construed that, in a small open economy with international 
capital mobility and a fixed exchange rate, monetary policy is impotent in affecting 
the real output because money supply no longer plays the role of a nominal anchor.1 
In the orthodox money view, the interest rate is the only channel through which 
monetary policy, as well as any monetary shocks, affects the real sector of an economy. 
Because the interest rate channel of monetary policy is highly correlated with exchange

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rates, and because the monetary authority commits to the maintenance of the fixed exchange rate, the consequent foreign exchange intervention by the monetary authority using official reserves necessarily washes out any real effect of the monetary policy it has previously initiated.

On the other hand, following the traditional IS/LM model, the approach in the current literature on small open economies holds a lopsided view of bank liabilities and bank loans: banks have no active leverage to play with other than influencing interest rates via manipulating deposits (a money asset and the bank liability). Thus the role of bank loans escapes unnoticed, since bank loans are grouped together with other non-monetary assets such as bonds.

The credit view of monetary transmission mechanism, in contrast to the money view, provides a major theoretical underpinning of the effectiveness of monetary policy under fixed exchange rates. It rejects the notion that all non-monetary assets are perfect substitutes. According to the credit view, information asymmetries between borrowers and lenders in financial markets grant a particular role to banks in reducing information costs. Quite a number of firms are, in fact, bank dependent because of the risk-sharing, liquidity and information services that financial intermediation provides. Furthermore, according to the credit-view literature, an increase in the loan rate, ceteris paribus, raises the bank’s expected return by increasing interest payment when the borrower is solvent but lowers it by raising the probability of default; consequently, the bank’s loan supply curve is backward-bending and credit rationing may occur as an equilibrium phenomenon.2

Taking the loan market setting with asymmetric information as a micro-foundation for investment, this paper further develops a macro model of a small open economy under the regime of fixed exchange rates with perfect capital mobility in the bond market and imperfect asset substitutability between bonds and loans. As far as the credit view is concerned, this paper in spirit is close to Bernanke and Blinder (1988); both address the credit channel of monetary policy in a variant of the IS/LM model. They differ in several regards, however. Unlike Bernanke and Blinder, the model in this paper incorporates the possibility of equilibrium credit rationing while maintaining the assumption of imperfect substitutability of bank loans and bonds. Although credit rationing is not a necessary assumption for investigating the distinct role of credit, credit rationing does take place under some circumstances when customer-market credit becomes indispensable. With imperfect substitutability between bonds and bank loans, this paper nests both credit-rationed and credit-unrationed equilibrium regimes. Additionally, by placing the credit channel of monetary policy in a setting of a small open economy, this paper allows the possibility to explore the relevance of the monetary-policy-ineffectiveness proposition, which represents the main line of the current small-open-economy literature. Incorporating bank credit into the fixed exchange rate model leads to two fundamental changes. First, it extends the scope for monetary policy to affect the economy from the standard interest rate channel to the one including both the bank lending channel and balance-sheet channel as well; the latter two conduits are often independent of changes in interest rates. Second, and more importantly, monetary policy will no longer be deemed impotent since it can directly
shift the goods market as well as money market equilibrium schedules in such a way that the targeted real effect could be achieved while the fixed exchange rate is sustained. Accordingly, thanks to the credit availability channel, money in the fixed exchange rate model will not be completely endogenous.

Section 2 presents the analytical structure of bank behavior and credit market. Section 3 explores how credit market conditions determine macroeconomic equilibrium in an open-economy IS/LM framework. Section 4 demonstrates the real impacts of monetary shocks through its credit channel. Section 5 concludes the paper.

2. Bank behavior and credit market

It has been well known that a banking firm has an inverse U-shaped supply curve of loans with a backward-bending portion due to the credit risk associated with adverse selection and moral hazard. The simple model of bank behavior presented below essentially modifies the pedagogical model in Christopher and Lewarne (1994) by extending the spectrum of bank investment into the portfolio selection between bonds and loans.

The representative banking firm is assumed to hold exactly the required amount of reserves and allocate all of its excess reserves between the two bank assets: bonds and loans. Thus, it chooses loans, \( l \), subject to its balance-sheet identity, to maximize its profits from lending

\[
\Pi = \theta(p)l\rho + b_br - dr - \frac{g}{2}l^2
\]

s.t. \( b_b + l = (1 - k)d \)

where \( p \) is the loan rate, \( \theta(p) \) is the probability of loan repayment, \( \gamma \) is the cost parameter of servicing loans, \( b_b \) denotes bonds held by the banking firm, \( r \) is the interest rate on bond, \( d \) represents total deposits, and \( k \) is the required reserve ratio for deposits. Here, the low-risk or risk-free interest rate on bond holding is assumed to be the same as the interest cost of taking in deposits. Thus, deposits and bonds are perfectly substitutable assets to depositors so that they pay the same per-dollar expected return. The key characteristic of the bank profit is the nature of dependence of the repayment probability on the loan rate. Following the existing standard literature on equilibrium credit rationing, an increase in the loan rate makes it more likely for borrowers to default; hence, the repayment probability is a decreasing function of the loan rate.\(^3\) The representative bank takes the flow of deposits as given when making its portfolio decisions. Substituting the balance-sheet identity into the bank’s objective function and maximizing with respect to \( l \) yields the banking firm’s loan supply curve:

\[
\begin{align*}
\frac{\partial \Pi}{\partial l} & = \theta(p)\rho - \gamma \frac{d}{2} \\
& = \theta(p)p - r \gamma
\end{align*}
\]

Several implications of the loan supply curve can be derived. First, the loan supply curve is backward bending. The co-movement of the loan rate and loan volume hinges on the elasticity of the odds of repayment with respect to the loan rate. Only when
the repayment probability is inelastic can exist the positive relationship between the loan rate and loan volume. To be specific, consider a linear repayment probability $\theta(\rho) = \phi - \psi \rho$, where $\phi$ is the autonomous repayment probability determined by non-interest factors such as the liquidity of balance sheet positions, $\psi$ measures the sensitivity of the repayment probability to the loan rate ($0 < \psi < \phi \leq 1$). Fig. 1 depicts the loan-repayment probability function. Facing the linear loan repayment probability function, the loan volume supplied increases with the loan rate until the loan rate achieves $\phi/2\psi$; after that, a higher loan rate actually reduces the loan volume. In Fig. 1, the loan rate at which the loan supply curve begins to bend backward points to the repayment probability halfway to its maximum in the possible range.

Substituting $\theta(\rho) = \phi - \psi \rho$ into Eq. (2) and differentiating Eq. (2) with respect to $r$, $\phi$, $\psi$, and $\gamma$ produces other results related to the responses of loan supply to parameters of servicing loans. An increase in the bond interest rate, $r$, ceteris paribus, makes bond-holding more attractive; accordingly, banks will reduce loans and hold more bonds. Another interpretation for the decrease of bank loans is based on the equivalence between the bond interest rate and the deposit rate: the higher the interest expenses of raising loanable funds by issuing deposits, the higher the economic cost of making loans. Next, banks tend to issue more loans when the autonomous repayment probability, $\phi$, is higher due to borrowers’ stronger liquidity-of-balance sheet positions, for example. In addition, the larger the sensitivity of the repayment probability to the loan interest rate, $\psi$, the more deteriorating the problem of adverse selection and moral hazard; thus it is more likely for credit rationing to occur. Finally, an increase
in the cost of servicing loans, $\gamma$, tends also to reduce loans as long as the expected return per dollar of loans exceeds the corresponding real opportunity cost.

With $\theta(\rho) = \phi - \psi \rho$, substituting Eq. (2) into Eq. (1) and applying the envelope theorem to the representative bank’s profit function specified in Eq. (1) generates the following marginal bank profit with respect to the loan rate:

$$\frac{d\Pi(\rho)}{d\rho} = \frac{1}{\gamma} \left[ 2\psi^2 \rho^3 - 3\psi \phi \rho^2 + (2\psi r + \phi^2) \rho - \phi r \right]$$

(3)

The bracket term on the RHS of Eq. (3) is a cubic expression but two of the three roots are degenerated solutions at which loans are zero respectively; thus, the only feasible root to Eq. (3) is $\rho^* = \phi / 2\psi$, at which the bank’s expected profits are maximized. Recall that the bank’s loan supply curve peaks exactly at the same loan rate as the profit-maximizing loan rate here. Therefore, the result provides insights for equilibrium credit rationing. Furthermore, the result for profit-maximizing loans also imply that the loan interest rate exceeds the bond interest rate such that $\rho > \sqrt{r/\psi} > r$, which captures the existence of risk premium of bank lending and therefore signifies the imperfect substitutability between loans and bonds.

Now we move from the representative bank to the aggregated banking system. The aggregated bank balance sheet identity is [Eq. (4)]:

$$B_b + L + R = D$$

(4)

where $B_b$ is the bonds held by banks, $D$ denotes deposits, and $L$ is the actual volume of loans. For simplicity, currency is abstracted from the model. The required reserve of the banking system, $R$, constitutes the monetary authority’s liabilities, or high-powered money ($H$), which are generated by its acquisition of bonds and foreign exchange. The monetary authority’s reserve identity is [Eq. (5)]:

$$B_a + F = H$$

(5)

where $B_a$ is the bonds held by the monetary authority, and $F$ is the central bank’s holding of net foreign assets. High-powered money in this simple framework is composed of exclusively the required reserves; money can be expressed by $H/k$.

Assuming that there are $n$ banks, aggregating over the representative bank’s supply of loans specified in Eq. (2) generates total supply of loans. A structural view of the aggregated balance sheet of banks suggests that if banks allocate a fraction of their disposable deposits (deposits not subject to the reserve requirement) into loans and the rest into bonds, the aggregate supply of loans is given by $\epsilon \cdot (1 - k) \cdot (H/k)$, where $\epsilon$ represents the ratio of loans to disposable deposits. Accordingly, the share of loans in the disposable deposits must characterize banks’ loan-making behavior and it is thus actually a function of the same set of variables that determine aggregate supply of loans.

$$L^S = \epsilon \cdot (\rho, r, \phi, \psi, \gamma, n) \cdot \frac{1 - k}{k} H$$

(6)
where the symbols underneath each of the arguments in \( e(\cdot) \) denote the signs of the partial derivatives associated with them. For simplicity, it is assumed that bank credit is the only debt instrument for firms to finance their investment; investment demand and demand for bank loans are taken to be equal. Therefore, the aggregate demand for loans is negatively related to the loan interest rate, and its standard linear form is:

\[
L^D = \alpha - \beta r
\]  

Indeed, as demonstrated by the existing literature on markets in disequilibrium, the loan market may or may not be at the market-clearing equilibrium depending on the relative magnitude of \( L^S \) and \( L^D \). Nevertheless, unlike the school camp of disequilibrium economics, the loan quantity traded in the market is not uniformly characterized by the minimum of demand and supply sides. Instead, loan rationing arises in an unrestricted market setting flawed only by plausible information asymmetries; the loan rate can always freely adjust to a level consistent with market forces driven by the profit-maximization incentives. Therefore, credit rationing could exist at the profit-maximizing loan rate, \( \rho^* = \phi/2\psi \), and sustains as an equilibrium phenomenon; excess demand fails to drive the loan rate upward because the associated credit risk would reduce banks’ profits. However, if at the same loan rate there is an excess supply, the loan interest rate will adjust downward to clear the loan market since holding excess reserves does not add to profits at all.

Consider the demand for and supply of loans specified in Eq. (6) and Eq. (7), respectively, the equilibrium interest rate in the loan market is given by [Eq. (8)]:

\[
\rho = \begin{cases} 
\frac{\phi}{2\psi}, & \text{if } L^D \geq L^S \text{ at } \frac{\phi}{2\psi}; \\
\min(\rho_1, \rho_2), & \text{if } L^D < L^S \text{ at } \frac{\phi}{2\psi}. 
\end{cases}
\]  

where \( \rho_1 \) and \( \rho_2 \) are the two roots of the quadratic equation given by \( L^D = L^S \). Recall that \( \rho^* = \phi/2\psi \) is the loan rate that corresponds to the maximum loan quantity. So, if excess supply exists at \( \rho^* \), \( L^D \) must cross \( L^S \) once at a loan rate below \( \rho^* \) and once at a loan rate above \( \rho^* \). Since \( \rho^* \) is the profit-maximizing loan rate, the bank has no incentive to raise the loan rate to any level above \( \rho^* \); credit is rationed at equilibrium. On the other hand, the profit-maximizing loan rate is not attainable if there is excess supply at \( \rho^* \), since the bank cannot force the firms to borrow in excess of the amount that maximizes their profits. It follows that if a bank cannot maximize its profit at \( \rho^* \) due to deficient demand, the best attainable outcome for the bank is to allow a downward adjustment in the loan rate until the loan market clears. Therefore, the loan quantity traded is at the market-clearing equilibrium level if the market interest rate of loans is below the banks’ desired level, \( \rho^* \); otherwise, it would be supply determined at the profit-maximizing loan rate.

3. Macroeconomic equilibrium

Assuming that investment is completely dependent on the availability of bank credit, investment demand, \( I(r) \), is equivalent to the demand for loans, \( L^D \). Also,
based on the analytical results in the preceding section, there is an implicit positive relationship between the interest rates on loans and bonds, which can be explicitly expressed as \( r = \lambda(r) \). Hence, if loan demand is not rationed, we have \( I(p) = L^0[\lambda(r)] \), with \( \lambda' = L^0[\lambda'] < 0 \); however, with credit rationing, investment demand is totally determined by the aggregate supply of loans.

### 3.1. The case of credit rationing

With credit rationing, the effective investment demand and the quantity of loans traded are given by \( L^s \) specified in Eq. (6). Grouping Eq. (6) with the standard equilibrium conditions of the goods market and the money market yields the following simple macroeconomic model:

\[
Y = C(Y) + L^s + X(Y, eP^f) \tag{9}
\]

\[
B_s + F = kl(Y, r^f) \tag{10}
\]

where the domestic price level is normalized as unity since price rigidity applies to the short-run macroeconomic model. Besides the derivatives property of \( L^s \) stipulated in Eq. (6), the other relevant derivatives in the above model satisfy the following conditions: \( C^0 > 0, X^0 < 0, I^0 > 0, \) and \( I^0 < 0 \). Eq. (9) is the private-sector-only IS equation with the presence of the loan market in an open economy, where \( C(\cdot) \) is consumption function, \( L^s(\cdot) \) is in fact implicitly a rationed investment function, \( X(\cdot) \) is net export function, \( e \) is the domestic currency price of foreign exchange, and \( P^f \) is the foreign price level.

Eq. (10) represents the monetary version of the open-economy LM equation (or the balance-of-payments equation). \( r^f \) is the foreign interest rate on bonds, which equals to \( r \) by perfect capital mobility in the bond market, and \( I(\cdot) \) is the demand for money, increasing in income and decreasing in the interest rate.

There are three endogenous variables when credit rationing exists in the loan market: income \( Y \), loan quantity \( L \), and the international reserve component in the monetary base \( F \). They are determined simultaneously by three equations: Eqs. (6), (9), and (10).

### 3.2. The case of non credit rationing

In the regime in which loans are not rationed, both the loan quantity and the loan interest rate are endogenous variables in addition to income and the international reserves of the central bank. The general equilibrium system consists of the loan supply equation Eq. (6), the monetary version of the balance-of-payments equation Eq. (10) and two other basic equations below:

\[
Y = C(Y) + (\alpha - \beta p) + X(Y, eP^f) \tag{11}
\]

\[
\alpha - \beta p = \epsilon (p, r, \phi, \psi, \gamma, n) \frac{1 - k}{k} (B_s + F) \tag{12}
\]

Eq. (11) is the standard IS equation; unlike the credit-rationing counterpart Eq. (9), the interest rates play a role in the determination of income. In Eq. (12), its LHS is
the demand for loans, and the RHS the supply of loans. Eqs. (6), (10), (11), and (12) implicitly determine the equilibrium values of $Y$, $L$, $p$, and $F$. Like in the rationing model, although money is partly endogenous due to perfect capital mobility in the bond market and the commitment to the fixed exchange rate, money endogeneity is not complete because of the credit channel of monetary transmission mechanism and money; thus, it is not completely neutral either. Changes in money supply serve to shift not only the LM curve but also the IS curve so that the responsive change in money does not totally wash out the real effect generated by the initiative change in money. Therefore, the credit channel rescues monetary policy from the charge of impotency.

4. Comparative statics

The present section examines the responses of the equilibrium income, loan quantity, the loan interest rate, and the international reserve component of the monetary base to a monetary shock initiated through, say, open market operation conducted by the monetary authority. These impacts vary with whether credit is rationed.

Consider the credit-rationing model first. Differentiating Eqs. (6), (9), and (10) with respect to $L^s$, $Y$, $F$, and $B_a$ produces the following results:

$$\frac{dL^s}{dB_a} = \epsilon \frac{1 - k}{k} > 0$$  \hspace{1cm} (13)

$$\frac{dY}{dB_a} = \frac{\epsilon}{1 - C' - X'} > 0$$  \hspace{1cm} (14)

$$\frac{dF}{dB_a} = klY \frac{1 - k}{1 - C' - X'} - 1 < 0$$  \hspace{1cm} (15)

The result in Eq. (15) is derived, for the given foreign interest rate, from the differential version of Eq. (10):

$$\frac{dF}{k} = l_r dY - \frac{dB_a}{k}$$  \hspace{1cm} (16)

Under the fixed exchange rate system, changes in the official international reserves mirror the status of the balance of payments. Starting from the open market purchase on the part of the monetary authority, money supply (bank deposits) increases multiply through the money multiplier $1/k$ as high powered money $B_a$ increases. Banks usually tend to make more loans due to an expanded volume of deposits, and more loans relax the credit constraint facing the economy so that income rises, as measured in Eqs. (13) and (14). Finally, transaction demand for money also increases as a result of higher income, but the generated money demand via the credit channel this way is less than the initial increase in money supply credit, that is, the money creation made by the central bank outpaces the growth of money demand. The resulting excess
supply of money must be spent on the purchase of foreign goods or financial assets. As domestic residents exchange their domestic money for foreign money, the central bank loses international reserves and the money account of the balance of payment moves into a deficit ($dF < 0$). The consequent money contraction will sustain until the disequilibrium in the money market disappears and the balance of payments is back to equilibrium at the foreign interest rate, $r_f$.

Examining Eq. (15) suggests that the credit channel per se plays a role to preserve the legacy of monetary policy. The increase in money demand generated from the credit-driven income expansion lessens the adjustment burden fallen upon the official international reserves so that the absolute value of offset coefficient is less than one and monetary control is not completely lost. Without considering the credit channel, however, the endogeneous change in foreign reserves completely offset the initial change in the credit brought about by the central bank’s open market operations; the traditional result is obtained. The economics reasoning suggests that the first term on the RHS of Eq. (15) is a positive fraction, and a large credit multiplier, $\epsilon \cdot (1 - k)/k$, serves to reduce the magnitude of the offset coefficient given by Eq. (15). Hence, the stronger the credit channel is, the more legacy of monetary policy can be reserved.

Fig. 2 summarizes the analytical results through a four-quadrant diagram. Quadrant I depicts IS-LM-BP curves in the traditional general equilibrium framework, with the initial credit-rationing equilibrium as shown in Quadrant III, and Quadrant II depicts the linearized implicit function $\rho = \lambda(r)$. Consider an expansionary monetary policy...
initiated by the open market purchase. The LM curve shifts rightward initially to the position of the dashed line, causing the IS curve to shift in the same direction through the credit channel. This is reflected in Quadrant III by the downward shift of the aggregate loan supply curve, with the loan interest rate remaining at the profit-maximizing equilibrium level. Due to the tight credit market, the resulting increase in loans directly translates into the corresponding increase in income at the full scale, as depicted in Quadrant IV. The increased money demand mitigates the excess-supply pressure on the money account of the balance of payments, but still entails a reduction of official international reserves held by the central bank to restore the equilibrium in the money market and foreign exchange market. As a result, although the LM curve shifts backward away from its initial post-shock position as given by the dashed line, it does not shift all the way back to $LM_0$; instead, $LM^{CR}$ meets $IS^{CR}$ at $Y^{CR}$ under the circumstances.

Now let us turn to the situation in which there is no credit rationing. Differentiating Eqs. (6), (10), (11), and (12) with respect to $L$, $Y$, $r$, $F$, and $B_a$ generates the following comparative static results:

$$\frac{dL}{dB_a} = \epsilon \frac{1 - k}{k} \left( 1 - \frac{1}{1 + \frac{\beta}{1 - k \frac{He'_{e'}}{H}}} \right) > 0$$

(17)

$$\frac{dY}{dB_a} = \frac{\beta}{1 - C' - X'} \frac{\epsilon}{k} \frac{1 - k}{1 - k \frac{He'_{e'}}{H}} > 0$$

(18)

$$\frac{dp}{dB_a} = -\frac{\epsilon}{k} \frac{1 - k}{1 - k \frac{He'_{e'}}{H}} < 0$$

(19)

$$\frac{dF}{dB_a} = kl_y \frac{\beta}{1 - C' - X'} \frac{\epsilon}{k} \frac{1 - k}{1 - k \frac{He'_{e'}}{H}} - 1 < 0$$

(20)

In the absence of credit rationing, the credit channel operates through its impact on the loan interest rate. In fact, if the loan rate did not adjust or the loan traded in the market did not respond to the adjustment in the loan rate, that is, $\epsilon_{e'} = 0$, then all the comparative static results above would be reduced to those in the case of credit rationing; the full-scale impact of money-caused loan expansion would pass through
to income directly. With the downward loan rate adjustment, however, the desired loan volume supplied; thus the actual loan quantity traded are lower at the market-clearing equilibrium than in the presence of credit rationing, which can be observed by comparing Eq. (17) with Eq. (13). Accordingly, as reflected in the comparison between Eq. (18) and Eq. (14), income expansion is dampened by the decrease in the loans supplied, which, in turn, is depressed by the loan rate.

Finally, the comparison centers on the degree by which the real legacy or impact of monetary policy can be reserved in the small open economy under the fixed exchange rate system. Following the previous analysis, the relatively moderate increase in income has less power in inducing an increase in transaction demand for money, and thus a weaker capacity in restoring the disequilibrium in both the money and foreign exchange markets. The central bank has to sell more official international reserves in the foreign exchange market to meet the excess supply in the money market. Alternatively, comparing Eq. (20) with Eq. (15) suggests that when there is no credit rationing, an increase of given amount in the central bank credit entails a decrease of larger amount in the official international reserves held by the central bank; the magnitude of the offset coefficient becomes larger. Therefore, monetary autonomy tends to be more impaired under a market-clearing credit regime than under a credit-rationing regime.

As before, Quadrant III of Fig. 2 depicts the credit market equilibrium. To simplify the graphical illustration, let the first-best loan rate $\phi / 2\psi$ be the initial market-clearing equilibrium loan rate, $r_{NCR}$. Responding to an increase in money supply, the loan supply expands and the excess supply exerts downward pressures on the loan rate. The loan market rate moves along the downward-sloping loan demand curve to a new equilibrium level, $r_{NCR1}$, which is less than $r_{NCR0}$. The resulting equilibrium loan quantity is also below its counterpart in the presence of credit rationing. Accordingly, the real impact of monetary shock on income is weaker as $LM_{NCR}$ intersects $IS_{NCR1}$ at the income level $Y_{NCR1}$, which is below $Y_{CR1}$ as well.

5. Concluding remarks

Beginning with an analysis of the micro-foundation of credit and credit rationing, this paper has demonstrated that the credit channel plays a role to preserve the legacy of monetary policy even under a regime of fixed exchange rates with perfect international capital mobility. This is because credit-dependent investment serves to transmit a monetary shock into changes in real income and thus transaction demand for money, and therefore to share the adjustment burden which would otherwise completely fall upon the official international reserves. That is, the offset coefficient becomes less than one when the credit channel is taken into account, since any expansion of the domestic assets of the monetary authority gives rise to only a partially offsetting capital outflow, leaving the stock of money increased and implying a retention of monetary autonomy. The degree of monetary autonomy that can be retained depends on the magnitude of the credit multiplier. These conclusions do not rest on whether or not the commercial loan market is subject to credit rationing.
For a given monetary shock, due to the upward rigidity of the optimal loan rate, the loan market with credit rationing generates more loans for the loan-dependent economy than the market without credit rationing. The resulting expansion in income has more power to restore the disequilibrium in both the money and foreign exchange markets; it appears, therefore, that monetary autonomy tends to be less impaired under the credit-rationing regime than under a market-clearing regime.

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Notes

1. This line of analysis can be traced back to Fleming (1962) and Mundell (1963).
2. In their influential paper, Stiglitz and Weiss (1981) provides information-based analysis of equilibrium credit rationing. Blinder and Stiglitz (1983) further argues that monetary policy works through bank credit for there are no close substitutes for it, at least as far as most medium and small firms with relatively high risk are concerned. For a comprehensive review of the credit-view literature, see Kashyap and Stein (1993).
3. As shown by Stiglitz and Weiss (1981) and others, the loan rate an intermediary charges may have both an adverse selection effect and a moral hazard effect on the riskiness of the pool of loans. Raising the loan rate shifts the mix of borrowers toward riskier firms and their projects financed by the loans, thus reducing the lender’s expected return. As a result, the intermediary may maximize its expected profits by setting an interest rate at a level that results in an excess demand for bank credit.
4. More generally, the demand side of the loan market is influenced by the interest rates on the two credit instruments, loans and bonds, as well as aggregate income, see Bernanke and Blinder (1988).
5. For the studies on disequilibrium markets under price rigidity, see Barro and Grossman (1971) and Muellbauer and Portes (1978).
6. Some studies have provided the evidence for a certain degree of monetary autonomy under fixed exchange rates. For example, Cumby and Obstfeld (1983) and Rennhack and Mondino (1988) find that structural estimates of offset coefficients are less than one. Also, using Granger causality tests for a number of countries, Montiel (1989) and Dowla and Chowdhury (1991) respectively produce the finding that some domestic financial aggregates like money and credit Granger-cause domestic real output.

References


