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Article

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Kredit und Kapital

Provided in Cooperation with:

Duncker & Humblot, Berlin

Suggested Citation: Lopez, Franklin (1984) : The Effect of Various Credit Controls on the Level of International Reserves, Kredit und Kapital, ISSN 0023-4591, Duncker & Humblot, Berlin, Vol. 17, Iss. 3, pp. 404-415,
<https://doi.org/10.3790/ccm.17.3.404>

This Version is available at:

<https://hdl.handle.net/10419/293001>

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The Effect of Various Credit Controls on the Level of International Reserves

By Franklin Lopez, New Orleans

The objective of this paper is to analyze and evaluate the effects of various types of monetary and credit policies on the level of international reserves. During the last decade, considerable attention has been given to the view that the flow of international reserves is essentially the result of adjustments in the money market.¹ This approach has been the theoretical basis for the policy recommendations of the International Monetary Fund.² Empirically, the validity of this view has been tested for several countries.³ However, the only policy instrument studied has been the domestic credit of the Central Bank. Many countries, especially LDC's, have resorted to more direct instruments of control. These instruments are designed to restrain the activity of particular sectors of the economy or to set "ceilings" on the amount of credit which banks may make available to the private or public sector of the economy. Another instrument is to require from importers to deposit, in advance, at a private or central bank a percentage of the value of the import. This policy is called Advanced Deposits on Imports.

Because these instruments of control have been designed to meet institutional requirements of particular countries there exist none or very few theoretical grounds for their utilization. The scope of this paper is to study these ad hoc instruments using the monetary approach to the balance of payments and to make qualitative assessments as to their appropriateness and effectiveness.

I. The Monetary Approach to the Balance of Payments

This approach states that in an open economy, under a regime of fixed exchange rates, there will be an inflow (outflow) of foreign reserves if there

¹ J. A. Frenkel and H. G. Johnson, *The Monetary Approach to the Balance of Payments* (Toronto University of Toronto Press, 1976).

² See *The Monetary Approach to the Balance of Payments* (Washington, D.C.: International Monetary Fund Publications, 1977).

³ B. H. Putnam and D. S. Wilford, *The Monetary Approach to International Adjustment* (New York: Praeger Publishers, 1978).

is an excess of demand (supply) for money. The mechanism by which the level of foreign reserves is affected when the supply of money exceeds the long-run demand for money is as follows:⁴

1. To the extent that the additional money is spent directly on foreign goods or foreign securities, the international reserve and the supply of money will be reduced.
2. To the extent that additional money can be spent on domestic goods, money national income will rise (either as a result of increase in real output or prices) and consequently imports will rise; the demand for cash balances may also increase due to a higher income. The price for real capital goods will also tend to rise which will reduce yields, hence inducing a larger demand for money.
3. To the extent that cash holders attempt to purchase domestic securities their price will rise reducing the domestic interest rate relative to the world's rate and thus inducing an inflow of capital. Lower yields will also lead to additional spending on real capital goods, as long as the marginal productivity of capital remains constant with similar consequences as under (2).
4. If the country maintains a fixed foreign exchange rate, the purchase of foreign goods and foreign assets will lead to a loss in foreign reserves. If, on the other hand, flexible rates are maintained, the outflow of funds and the increase in prices of domestic goods and domestic assets will lead to a depreciation of the domestic currency.

Since this scheme describes the process of adjustment to long-run equilibrium, it is not, by itself, sufficient for a full appraisal or a forecast for short-term economic processes. Furthermore, this approach explains the change in the overall balance through the trade balance or the capital balance or both. Hence, the monetary approach describes the ultimate effect on the balance of payments rather than with the channels which this effect occurs.

If it is accepted that economic activity is essentially dependent upon monetary activity, the ultimate objective of policy for economic stability is stabilization of the supply of money; that is, in order to conduct stabilization policies the monetary authorities must be able to exercise control over the liabilities of banks. These policies can be carried out by reaching and maintaining a "target" level of money stock, or credit which could be achieved by altering relative prices or rates of return on assets, or as it is done in many LDC's through "ceilings" on cash and demand deposits, or by setting a "ceiling" on credit; that is, by controlling the asset side of banks the liquidity of the system could be controlled as well.

The International Monetary Fund has followed and maintained the hypothesis that the appropriate instrument for balance of payments and exchange

⁴ R. R. Rhomberg, "Money, Income, and the Foreign Balance," *The Monetary Approach to the Balance of Payments*, IMF (Washington, D.C., 1977), pp. 163 - 184.

rate stability is control of the supply of money⁵ and that the monetary authorities can attain its objectives either directly by controlling the asset side of private banks, or indirectly by controlling the asset side of private banks, or indirectly by controlling the uses and sources of funds of the Central Bank to which they have access. Based on this analysis staff members of the IMF have developed several theoretical as well as empirical models. However, very little can be found in the literature in regard to these two types of instruments: a) direct control private banks' assets or b) control of Central Bank's funds as to which is the most effective instrument of control.

The following section studies several of these instruments and their effects on the balance of payments. The discussion is based on the balance sheet of the banking institutions and the interrelations of its components.⁶

II. Uses and Sources of Funds

The balance sheets of the Central Bank and Private Banks can be summarized as follows:

<i>Central Bank</i>	
<i>Assets</i>	<i>Liabilities</i>
International Reserves: Gold and Currency	Private Bank Reserves* Government Deposits Private Sector Deposits
Credit to: Private Banks** Private Sector Government	
<i>Private Banks</i>	
<i>Assets</i>	<i>Liabilities</i>
Private Bank Reserves* Foreign Assets Credit to Private Sector	Demand Deposits Time and Saving Deposits Deposits in Foreign Currency

⁵ *M. Guitian*, "Credit Versus Money as an Instrument of Control," IMF: The Monetary Approach, op. cit.

⁶ See "Alternative Forms of Monetary Ceilings for Stabilization Purposes," by *G. S. Dorrance* and *W. H. White* in IMF Staff Papers, 9 (November, 1962), pp. 317 - 322.

Securities: Government	Borrowing: from Private Sector from Central Bank**
Stock in Nonbanking concerns other to Private Sector	Capital and Reserves Unclassified Liabilities
Other Assets: Fixed Assets Nonclassified Cash Items in the process of Collection	

* ** Offsetting Entries.

III. Effectiveness of Controls Through Central Bank Funds

The Central Bank can control high powered money by limiting the issues of currency or by changing reserve requirements. It can also alter its balance sheet by requiring importers to deposit funds at the Central Bank. On the liability side, it can exercise control over the credit granted to the public and private sector through open market operations, rediscounts, or simply by granting or denying loans.

Central Bank Credit. Suppose the Central Bank attempts to create a balance of payments surplus by contracting credit by 100 units of currency. Assume the currency deposit ratio is constant and the reserve requirements are 50%. The contraction in credit can also be carried out by calling in loans made to private banks, or by a reduction in credit to the private sector.

It is argued that this channel of policy will affect expenditures faster than with an open market operation where the capital and financial markets operation are undeveloped and the availability of credit is more important than the cost of credit.⁷

Initially, the contraction of credit will result in a decrease of 100 units in private bank reserves and, because of the multiplier of 2, demand deposits will decrease by 200 units and private banks credit will decrease by 100.

Banks could also lower the rate paid on time and saving deposits or on other liabilities. The reduction on the liability side, notwithstanding type, occurs because the contraction in central bank credit results in a reduction of bank reserves.

⁷ W. L. Silber, "Monetary Channels and the Relative Importance of Money Supply and Bank Portfolios," *Journal of Finance*, 24 (March, 1969), pp. 81 - 87.

<i>Central Bank</i>		<i>Private Bank</i>	
Credit - 100	Bank Reserves - 100	Bank Reserves - 100	Demand Deposits - 200
Foreign Reserves + 100	Bank Reserves + 100	Bank Reserves + 100	Demand Deposits + 200
		Credit + 100	

Asset holders (nonbanking units) now have an excess demand for money; however, the reduction in bank credit may increase domestic interest rates and the excess demand for money may not be as high as first believed. There seems to be a strong belief that in LDC's the interest rate effect is negligible; that is, the income elasticity is much higher than the interest rate elasticity of the demand for money.⁸ In this case expenditures will be reduced and the trade balance will improve in order to return to the desired level of money.

If there is international mobility of capital, the increase in domestic interest rates will induce an inflow of foreign funds. These foreign funds can be exchanged at the Central Bank for domestic money and equilibrium in the money market is restored when the nominal money stock equals the demand for money. To the extent that the demand for money may not respond to the changes in interest rates, that is, if the money market returns to its original position, there will be an inflow of foreign reserves equal to the initial reduction in central bank credit. To the extent that banks may lower the interest rate paid on deposits and/or other liabilities and the reduction in credit raises the interest rate on loans, there may be a reduction in the demand for money, and the inflow of foreign reserves will not be a one-to-one relationship to the reduction in central bank credit.

Reserve Requirements. If the central bank changes reserve requirements, private banks are faced with a similar situation as in the previous case. The inflow of foreign reserves will depend upon the desired level of money balances and the new reserve requirement ratio.

*Advanced Deposits on Imports.*⁹ This policy tool required importers to make a deposit at a commercial bank, which in turn transfers the funds to

⁸ P. M. Keller, "Controlling Fluctuations in Credit," IMF Staff Papers, 24 (March, 1977), pp. 128 - 153.

the central bank, in domestic or foreign currency, as a percentage of the value of imports. The amount deposited can vary from a small percentage to several times the value of the import. The percentage is usually tied to the “essentiality” of the imported goods. The period of retention of the deposit can vary from a few days to several months.

The principal objective of this tool is to discourage imports by increasing their cost. But it is also an instrument of monetary policy to the extent that during the retention period liquidity is absorbed.

As an instrument of monetary policy, advanced deposit requirements affect current private sector expenditures, and the supply of loanable funds by banks. If bank credit is not available to build up advanced deposits, the needed funds must come from the working capital of the private sector. The accumulation of these deposits will have, apart from their price effect, a contractive effect on income and aggregate demand.

If advanced deposits are lodged solely with commercial banks, and no reserve requirements are applied, the banks could lend the money by a mere bookkeeping operation and no effect can be expected on the economy except for the profits (presumably small) that banks earn on the loan. If banks had excess reserves they could lend the importers the necessary funds. The effect on current expenditures will be negligible in this case. Future loans expansion will be reduced. If, however, banks had no excess reserves there will be a contraction of credit and a reduction in aggregate demand, as in the case when importers utilize their own funds.

The accumulation of advanced deposits will effectively reduce current aggregate demand if banks cannot either finance these deposits or strict credit constraints are prevalent. If banks have excess reserves the reduction will be felt in subsequent periods. However, if the monetary authorities do not sterilize these funds or if the central government has access to these funds and uses them no restrictive monetary effect can be expected.

Finally, it must be mentioned that the effect of advanced deposits is temporary. It operates only during the period of retention; when deposits are withdrawn the effect is expansionary. To the extent that these deposits reduce the domestic monetary base, the effect on the balance of payment is equivalent to a reduction in currency, an increase in reserve requirements, or a reduction of credit granted by the Central Bank.

⁹ The advantages and possible drawbacks of this instrument are discussed in *E. A. Birnbaum*, “Advanced Deposit Requirements for Imports,” *IMF Staff Papers*, 7 (November, 1960), pp. 115 - 125.

The International Monetary Fund used the monetary framework in designing financial programs to assist developing countries in their efforts to achieve balance of payments equilibrium. These financial programs recommended “control over domestic credit and quantitative conditions” (“credit ceilings”) under which the member country would continue to have access to the Fund’s resources made available in a stand-by arrangement.¹⁰ The effectiveness of credit ceilings is discussed in the following section.

IV. Ceilings on Private Banks’ Assets as an Instrument of Control

Because an expansion of banks’ assets results in an expansion of banks’ liabilities, and hence in the liquidity and financial assets of the rest of the community, a limit on the total assets or on some of them will limit liquidity and consequently will limit spending. Many LDC’s attempt to control aggregate demand by limiting the expansion liquidity through “ceilings” over banks assets in total or individually.

On Total Assets. Consider the case when the monetary authorities set a limit on the size of banks’ total assets. If the central bank issues new currency or grants credit to a nonbanking firm (a farmer, for example), these funds could be deposited at a bank. The private banking system will have an increase in liabilities as well as in reserves, but because of the “ceilings” banks will have to sell assets back to the nonbanking sector. In such a case there are no repercussions for the balance of payments unless the nonbanking sector exchanges the asset for a foreign asset at the Central Bank. A reduction in currency or Central Bank Credit will result in the purchase of an asset by banks and the level of foreign reserves will not be affected.

On Specific Sectors. The most widely used instruments is to set a limit on the credit granted by banks to the private sector or to specific sectors within the private sector. The issue to be analyzed is to what extent the monetary authorities can control the level of foreign reserves by setting specific ceilings on bank credit.

Assuming that the money market is initially in equilibrium and reserve requirements equal 50%, consider that the monetary authorities want to increase the level of foreign reserves by lowering the “ceiling” on the credit private banks grant to businesses or individuals by 100 currency units. One option for banks is to call in loans, in this case demand deposits will fall by 100 units, because of the 50% units in excess reserves. The following table

¹⁰ R. R. Rhomberg and R. H. Heller, “Introductory Survey,” *The Monetary Approach* . . . IMF Publications, op. cit., p. 7.

illustrates the change in assets and liabilities of the private banking system when the “ceiling” on credit is reduced by 100 units.

<i>Private Banks</i>	
Credit - 100	Demand Deposits - 100
Required Reserves - 50	
Excess Reserves + 50	

A second option for banks is to lower the rates paid on time and savings deposits (as illustrated in the next table) to reduce their level and thus minimize the gains in excess reserves since reserves requirements on time and savings deposits are usually lower. In the table, reserve requirements on other liabilities are assumed to be zero.

<i>Private Banks</i>	
Credit - 100	Other Liabilities - 100

There seems to be a consensus among IMF staff authors¹¹ that because asset holders suffer a reduction in the supply of domestic financial assets, asset holders will attempt to return to their original position by selling foreign assets to the central bank. If they do so, banks liabilities will increase accordingly as will bank reserves and foreign reserves at the central bank, as illustrated in the next table.

<i>Central Bank</i>		<i>Private Banks</i>	
Foreign Reserves + 100	Bank Reserves + 100	Bank Reserves + 100	Demand Deposits + 100

¹¹ See G. S. Dorrance and W. H. White, op. cit., pp. 324 - 328, and M. Guitian, op. cit., pp. 231 - 234.

The net result of these transactions is depicted in the following table.

<i>Central Bank</i>		<i>Private Banks</i>	
Foreign Reserves + 100	Bank Reserves + 100	Credit - 100	
		Bank Reserves (Excess Reserves) + 100	

However, this result rests on one or a combination of three assumptions: First, marginal reserve requirements must be 100%. Second, private banks are willing to accept any level of excess reserves, i.e., private banks maintain their original level of foreign and domestic assets.¹² Third, neither banks nor asset holders respond to rates of return; the composition of assets in their portfolio depends upon availability of that particular asset rather than on its cost.

The first assumption is plausible from an institutional point of view. The other two are extremely strong, even in a less developed economy the very nature of banks depends upon the rates of return on their assets. Therefore, banks will not remain inactive and will attempt to reach their optimal composition of portfolio by purchasing foreign assets and other assets.

1. Consider the case in which the ceiling on credit extends to domestic borrowers only. The excess reserves that banks now have can be used to purchase foreign assets from the Central Bank in which case there will be a loss in foreign reserves, if foreign assets at private banks are not considered part of the country's reserves. This transaction can be described as follows:

<i>Central Bank</i>		<i>Private Banks</i>	
Foreign Reserves - 100	Bank Reserves	Foreign Assets + 100	
		Excess Reserves + 100	

¹² This assumption is acknowledged but subsequently ignored in the model developed by V. Argy, "Monetary Variables and the Balance of Payments," in IMF:

A second alternative for banks is to lend abroad. Foreigners, as recipients of these funds, may either spend on domestic goods or purchase foreign currency from the central bank. To the extent (e.g., 50%) that funds are spent on domestic commodities, private banks will gain demand deposits (or other liabilities), excess reserves will be reduced and there will be no change on the level of foreign reserves as illustrated in the next table.

<i>Private Banks</i>	
Credit to Foreigners + 50	Demand Deposits + 50
Excess Reserves - 25	
Required Reserves + 25	

To the extent (the other 50%) that foreigners can exchange the domestic money for foreign assets at the central bank there will be a reduction in international reserves.

<i>Central Bank</i>		<i>Private Banks</i>	
Foreign Reserves - 50	Bank Reserves - 50	Credit to Foreigners + 50	Bank Reserves - 50

2. If the reduction in the “ceiling” on credit is limited only to some domestic assets, banks will distribute the excess reserves to the unconstrained assets. To the extent that some foreign assets will be acquired from the Central Bank, as shown in the previous case, there will be a loss in reserves. However, the impact will not be as large in the previous case.

The Monetary Approach, op. cit. That commercial banks can convert domestic assets into foreign assets when commercial bank’s domestic credit is tightening is mentioned briefly by *W. L. H. Day*, “Domestic Credit and Money Ceilings Under Alternative Exchange Rate Regimes,” in *IMF Staff Paper* 26 (3), September, 1979, p. 499.

3. Consider that the ceiling on credit is on some domestic assets, on foreign assets, and on credit to foreigners. Banks will simply acquire other domestic assets and there will be no effect on the balance of payments.

Therefore, given that the initial lowering of the credit ceiling leads to a reduction in bank liabilities and nonbank asset holders return to their original position by selling foreign assets to the central bank, the subsequent attempts by banks to reduce their holdings of excess reserves may offset the gains in international reserves. However, this assumes that demand for assets (demand deposits or other bank liabilities) by nonbanking units is constant or not influenced by rates of return. If rates of return matter, non-bank asset holders may not want to go back to their original position. Assuming the extreme position that holders are not willing to sell foreign assets and accept the supply of assets given by banks, the effect of a lower credit ceiling is as follows.

<i>Private Banks</i>	
Credit - 100	Demand Deposits - 100
Required Reserves - 50	
Excess Reserves + 50	

Again, banks will have excess reserves and, as discussed previously, they will attempt to reduce them and in the process foreign reserves will actually be reduced. However, the reduction in liquidity will have a deflationary effect on the economy and the change in aggregate demand will have effects on the balance of payments, beyond the portfolio adjustments which we have discussed here.

In conclusion, the important difference between central bank credit and central ceilings on banks' assets is that the former draws reserves from banks which must reduce credit with the consequent deflationary effect. The latter instrument leaves banks with excess reserves. To the extent that those reserves will be exchanged for foreign assets (directly or indirectly) at the Central Bank this policy is inappropriate. To the extent that some of those excess reserves will be used to acquire domestic assets the deflationary effect will not be as powerful as the one obtained by using central bank credit as the

instrument. In fact, since the allocation of portfolio by business and individuals may lead to results opposite to those intended by the monetary authorities, the net results with respect to foreign reserves can only be determined empirically.

Zusammenfassung

Die Wirkung verschiedenartiger Kreditkontrollen auf das Niveau der internationalen Reserven

In diesem Aufsatz werden die Wirkungen unterschiedlicher Arten der Geld- und Kreditpolitik auf das Niveau internationaler Reserven analysiert und bewertet. Als Instrumente zur Kontrolle und Stabilisierung ihrer Zahlungsbilanz verwenden die meisten weniger entwickelten Länder Plafonds für die vom Bankensystem gewährten Kredite sowie Vorauszahlungen für Importe. Dieser Aufsatz zeigt, daß für die Kontrolle der internationalen Reserven inländische Kreditkontrolle seitens der Zentralbank (einschließlich des Instruments der Vorauszahlungen für Importe) wirksamer ist als das Plafondieren der Kreditgewährung privater Geschäftsbanken.

Summary

The Effect of Various Credit Controls on the Level of International Reserves

The objective of this paper is to analyze and evaluate the effects of various types of monetary and credit policies on the level of international reserves. Most Less Developed Countries use ceilings on credit granted by the Banking System and Advanced Deposits on Imports as instruments to control and stabilize the Balance of Payments. This paper shows that domestic credit control (Advanced Deposits on Imports included) by the Central Bank is more effective than setting ceilings on Private Banks Credit for controlling the flow of Foreign Reserves.

Résumé

L'effet des différents contrôles de crédit sur le niveau des réserves internationales

Cet article a pour objectif d'analyser et d'évaluer les effets de différents types de politiques monétaires et de crédit sur le niveau des réserves internationales. La plupart des pays en voie de développement ont recours aux plafonds de crédit octroyés par le système bancaire et aux taxes élevées sur les importations, comme instruments de contrôle et de stabilisation de la balance des paiements. Cet article montre que les mesures nationales de contrôle de crédit (y compris les taxes nationales sur les importations) prises par la Banque Centrale sont plus efficaces que les plafonds fixés pour les crédits, accordés par les banques privées en vue de contrôler le flux des réserves étrangères.