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Views on Domestic Public Debt Management Policy

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## I. Introduction

In view of the growing size of the domestic public debt due to cumulated public sector deficits, domestic debt management has become a matter of concern for a number of countries. Domestic public debt management is defined as actions geared to achieve macroeconomic objectives by modifying the composition and structure of a given level of debt through the maturity, interest rate, and other characteristics of debt instruments, and the distribution of a given public debt among different debtholders. Given the level of domestic public debt, when part of the debt comes to maturity, policymakers need to decide on whether the debt will be amortized, consolidated, or renewed, and to choose between the issues of short- versus long-term bonds and tradable versus nontradable bonds. Also, policymakers need to consider the compatibility of debt management policy with monetary and fiscal policies for the achievement of chosen macroeconomic objectives.

Domestic public debt management policy has been treated only sporadically in the literature since the well-known debt management controversy of the mid-1950s that focused on whether public debt can be considered as net wealth. This debate, without doubt, is of interest, but the day-to-day domestic debt management and its coordination with monetary and fiscal policies call for a more systematic analysis. The literature related to the debt management controversy of the 1950s covered only the effects of the use of certain types of instruments to achieve selected domestic public debt management goals in a closed economy. 1/ No systematic analysis has been done on domestic public debt management and its effects on the external account in an open economy. 2/

This paper analyzes the macroeconomic effects of Domestic Public Debt Management Policy (PDMP) under a fixed exchange rate regime in both a closed and an open economy, and provides policy guidelines on debt management. In this paper, debt management focuses on the effects of a change in the composition and structure of a given level of domestic debt and not on the change in the level of debt. Moreover, the analysis is relevant for countries with sufficiently sophisticated financial markets, i.e., markets where the public debt is composed of more than one type of financial asset denominated in local currency. Hence, this study is not relevant for countries where public sector deficits have been financed

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1/ Two positions are recognizable: (a) supporters of an active Public Domestic Debt Management Policy (PDMP): H. Simons (1944), Development Economic Committee (1954), E. Rolph (1957), W. Smith (1958); (b) supporters of a neutral PDMP: M. Friedman (1959), T.C. Gaines (1962). For a very good summary of these positions, see W.E. Laird (1963). See also the recent descriptive OECD Survey on Government Debt Management, Volume 1 (1982) and Volume 2 (1983).

2/ Several authors have analyzed the achievement of portfolio equilibrium with traded and nontraded assets. See, for example, W. Branson (1972, 1975, 1976) and L. Girton and H. Henderson (1973).

only by the printing of money or contracting of foreign debt. Moreover, the focus of this study is on domestic debt management; external debt management is not addressed. 1/

The paper presents a comprehensive set of goals and instruments of domestic public debt management and describes the situation of conflicts or complementarities 2/ in their simultaneous achievement. Following the extensive literature on fiscal versus monetary policy under fixed exchange rates, the paper will address the question of whether or not domestic public debt management policy can achieve its own objectives regardless of the monetary policy goals or whether it should be a complementary instrument to monetary policy. For this purpose, this analysis will be conducted in both a small and large economy framework. The policy implications of the results of this analysis will be reviewed in the concluding section.

1. Sections of the paper

We will describe the approach and the main assumptions in the last part of Section I. The following Section II reviews the goals and instruments of PDMP in a closed economy and describes the possible conflicts among competitive objectives and among competitive instruments. Section III presents an analysis of the pursuit of PDMP in a small open economy under a fixed exchange rate system, while the analysis for a large open economy is presented in Section IV. The final section reviews the main results of this study and their implications for policy analysis.

2. The approach and the main assumptions of the paper

a. The approach

The analysis of this study is based on the portfolio theory. A portfolio is comprised of several assets which can be classified according to their respective degree of liquidity. The degree of liquidity can be defined as "the relation existing between the time which is necessary to exchange an asset against means of settlement which are accepted to

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1/ External debt instruments are generally defined as borrowed resources from nonresidents denominated in foreign currencies. Thus, one major difference between external debt management and domestic debt management is the choice of foreign currency denomination of the external debt instruments (exchange rate risk). However, a distinction is made in this paper between the internationally tradable and nontradable assets of different maturities denominated in local currency. A nontradable asset cannot be sold to a nonresident; it has no secondary market. For the purpose of this study we assume throughout the paper that public debt is only composed of assets denominated in local currency.

2/ A goal is said to be complementary to another goal when their simultaneous achievements are possible.

all and the net amount of these means which can be obtained." <sup>1/</sup> A portfolio can be typically represented by the assets shown below; the degree of liquidity of the assets increase from the left to the right-- money being considered as the most liquid asset because it is by itself a means of settlement.

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Real capital assets and private shares	Long-term private bonds	Long-term government bonds	Short-term government bonds	Quasi- money	Money
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The borderline between government bonds and money disappears when the central bank pursues a "rigid stabilization" of the prices of government bonds (see Section II.1(d)). In this case, a government bondholder can obtain the face value of his bonds at any point in time and government bonds become as liquid as money. Hence, government bonds should be included in the money supply. An important consequence of this assumption is that the central bank is totally dominated by the Treasury, and that monetary policy becomes an instrument of PDMP, geared to the financing of the public sector deficit. The inflationary impact of such a relation is obvious. Government bonds and money can be considered as homogenous assets, a portfolio holder will be indifferent between government bonds or money. However, in the absence of "rigid stabilization," government bonds are assumed to constitute a homogenous group of assets: all government bonds bear the same risk, which is the inflation rate; all government bonds are issued or guaranteed by one homogenous borrower--the government. <sup>2/</sup> Government bond yields are positively correlated. However, these bonds are not perfectly substitutable because of their differing degree of liquidity, a function of their average maturity and of their tradability.

Real and private financial assets share characteristics which are different from government bonds because private borrowers are different from one another; thus, the perception of risk by the lender will be different. The degree of liquidity of these assets is lower than that of government bonds because generally both the time which is necessary to exchange them against universally acceptable means of settlement is greater than for government bonds and the net amount received is lower. The risk attached to these assets is higher and results in higher interest rates

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<sup>1/</sup> Ball, R.J., "Inflation and the Theory of Money," Allen and Unwin (1964), pp. 170-74.

<sup>2/</sup> The different entities of the public sector can issue their own bonds with different characteristics, i.e., central government bonds versus municipal bonds. This paper does not analyze those particularities as all the public sector bonds are assumed to be guaranteed by the government. Government and other public entities' bonds are assumed to form a homogenous group compared to private sector bonds.

compared to government bonds. Thus, government bonds and money are more closely substitutable for one another, than with real and private financial assets.

By altering the structure and the composition of domestic public debt, PDMP will affect the optimal degree of liquidity of the debtholder's portfolio. This departure from a portfolio equilibrium will provoke a set of reactions of the debtholders, so as to re-establish their portfolio's optimal composition.

b. Assumptions

The following assumptions are raised throughout this paper.

(1) Increase of domestic public debt is equal to an increase in credit to the public sector by the banking sector and of public sector bonds outstanding, denominated in local currency. No issuance of debt denominated in foreign currency takes place.

(2) Debt illusion: debt repayment is not viewed as a future tax liability. This assumption is made for the sake of simplicity without affecting the outcome. This paper is only interested in the analysis of the macroeconomic effects of PDMP's intervention, defined as a change of the structure and composition for a given level of debt. If the assumption of debt illusion was to be released, then government bonds would not be considered as net wealth by the debtholders because debt repayment would be viewed as future tax liability, and the widely treated problem of intergeneration transfers of the service burden would have to be taken into account. But because the focus of this paper is the liquidity effect of a PDMP's intervention without changes in the level of debt, no wealth effect should be expected.

(3) Only money is more liquid than government bonds which are greater than any other asset except money.

(4) For a given amount of wealth, the debtholder has an optimal degree of desired liquidity in his portfolio. A departure from this optimum will lead to a set of actions aimed at re-establishing an optimum position.

(5) In an open economy, nontradable assets are considered as less liquid than tradable assets.

II. The Goals and Instruments of PDMP in a Closed Economy

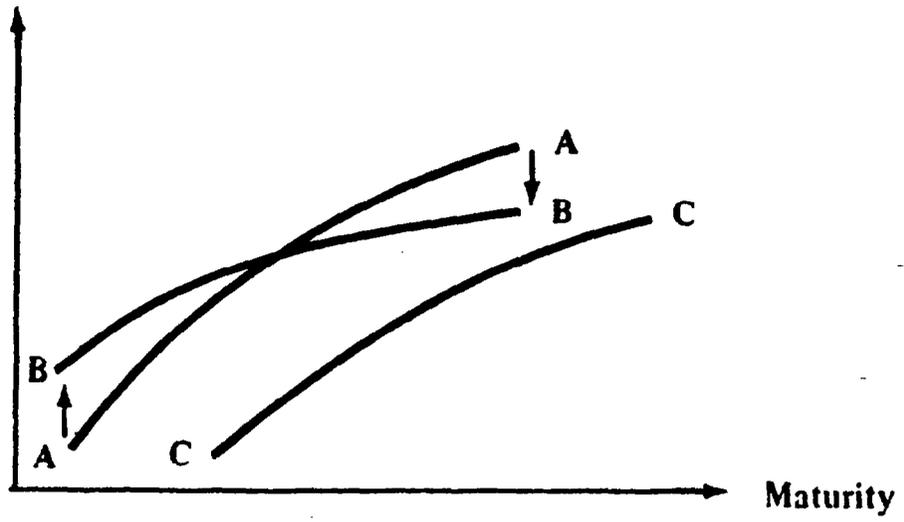
1. The goals of the PDMP in a closed economy <sup>1/</sup>

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<sup>1/</sup> A closed economy is defined as an economy which has no balance of payments, i.e., no transactions with the rest of the world.

CHART 1

Growth yield  
in per cent



a. Goal no. 1: shifting of the yield curve

This goal seeks to alter the maturity composition of government bonds, in order to vary the relationship between yields on bonds of different maturities throughout the entire financial system. <sup>1/</sup> Short-term rates are believed to exert special influences over short-term financial variables in the economy whereas longer-term rates are believed to influence domestic capital expenditures. Thus, the sale of short-term bonds and the purchase of long-term bonds by the government will modify relative yields as shown by the change in slope in the yield curve depicted in Chart 1 from AA to BB and provokes an expansionary effect by increasing investment. <sup>2/</sup> The achievement of shifting the yield curve is in conflict with the cost minimization goal. For example, the government might decide to increase short-term interest rates in a period of expansion so as to boost short-term demand and to reduce consumption. To achieve this goal, it will sell short-term bonds and buy long-term bonds; this action is contrary to the cost minimization which will require a sale of long-term bonds and a buy of short-term bonds.

b. Goal no. 2: the goal of liquidity

PDMP is complementary to monetary policy with regard to the preservation of the liquidity of the economy, namely the liquidity of the portfolio held by the debtholders, the implicit hypothesis being that the liquidity of different types of public debt securities is positively correlated to their maturities. The longer the maturity, the lower is its degree of liquidity. This goal should be pursued by PDMP in a situation of excess liquidity, or vice versa. Thus, PDMP, by changing the structure or the amount of the public debt, can ease the path toward an optimal degree of liquidity in the economy. For such a result, PDMP has to be coordinated with monetary policy.

c. Goal no. 3: minimization of the public debt service

This goal seeks to minimize the public debt service (i.e., amortization plus interest). Debt service varies with the changes in interest rates. It can either be financed by taxes or by new borrowings. To achieve such a goal, the government attempts to sell bonds at the highest value, while equalizing the marginal cost of the different bonds which are sold. Thus, the government shortens maturities--and increases liquidity--in periods of expansion and lengthens maturities--and reduces liquidity--in periods of recession because of the implicit assumption that long-term interest rates increase faster in periods of

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<sup>1/</sup> See Woolley, P.K. and Coates, J.H. (1974), page 8.

<sup>2/</sup> A proportional increase of both short-term and long-term debt outstanding that will not modify the overall maturity structure of the debt outstanding will result in a shift of the curve from AA to CC.

expansion than those of short-term interest rates. 1/ The achievement of the minimization of public debt service is in conflict with a counter-cyclical monetary policy, which tends to decrease overall liquidity in periods of expansion and to increase it in periods of recession.

d. Goal no. 4: stabilization of the price of public debt securities

The goal of stabilization of prices of public debt securities is pursued to increase the attractiveness of government bonds. 2/ Wide variations of bond prices discourage savers from reinvesting in government securities, because of increased risks, relative to a bank deposit. 3/ There are three ways to achieve this goal, and each indicates a particular relationship between the Treasury and the central bank.

(1) Rigid stabilization

In order to stabilize bond prices the Treasury is required to intervene strongly in the financial market by borrowing from the central bank. As a consequence, the Treasury controls the central bank which issues money on the Treasury's demand. The goals of monetary policy are secondary.

(2) The achievement of an orderly market for government securities

The achievement of this goal avoids partial disequilibrium in a given segment of the financial market, thereby precluding widespread sale of bonds. For example, when an abnormal fluctuation of security prices takes place, the Treasury will intervene to re-establish what it considers a normal trend. This intervention is less rigid than in case (1). It does not interfere with the fluctuations of prices resulting from the normal interplay of the supply and demand of securities. But owing to the difficulty of defining what is a normal compared to an abnormal trend, the Treasury and the central bank may have different views on this point that can lead to conflicts between the two institutions, and to a weak monetary policy.

(3) Short-term stabilization techniques

The Treasury can intervene in the market for short periods of time. For example, when government bonds are issued, the Treasury will

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1/ This is because of a higher expected level on the medium-term inflation and the expectation that long-term borrowings increase to finance long-term investments during periods of expansion.

2/ This instrument could also be used in developing countries to develop capital markets.

3/ One way to stabilize the government bonds market is also to limit the size of the fiscal deficit.

buy part of the issue to smooth over the adjustment and subsequently will sell these securities over a longer period of time. The same type of intervention is feasible during periods of renewal of the public debt. With this limited treasury intervention, the market forces are not affected, except on a temporary basis, and the Treasury does not interfere in the area of the central bank.

e. Goal no. 5: priority for public sector issues of securities

Because of the inelasticity of public sector financing needs with regard to certain public expenditures in certain countries, recourse to capital markets is important. To provide a means of financing government expenditures, priority can be given to public sector securities. Several techniques can be pursued to achieve this goal, namely as a calendar of security issues which will favor public sector securities, or the exemption of taxes on income from public sector securities. Such a priority imposed by the government is more a political choice than an economic one. This type of goal often creates rigidities in the economic system and misallocation of resources. In particular, the impact of crowding out of private investment becomes important. The question then becomes one of the comparison of the productivity of private versus public expenditures, and between current and capital expenditures. This goal is complementary to the goals of minimization of public sector debt ( $G_3$ ), stabilization of the price of public debt securities ( $G_4$ ), and priority for domestic issues ( $G_6$ ). 1/

f. Goal no. 6: priority for domestic issues

The achievement of this goal is complementary to the goal of priority for public sector issues and is only relevant in an open economy case. However, this goal is included to provide an exhaustive list of PDMP goals. This goal results in the limitation of the right of foreigners to issue securities in the domestic market. Thus, domestic savings will be invested in domestic bonds and, in particular, in government bonds. The techniques utilized for the achievement of this goal are the following:

- (1) prohibition of foreign issues in the domestic capital market;
- (2) prohibition of the issues of foreign securities in the domestic capital markets.

The pursuit of this goal leads to a misallocation of resources as in the case of Goal 5 (priority for public sector issues of securities), and, by nature, implies a restriction on capital movements.

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1/ A goal is said to be complementary to another goal when their simultaneous achievements are possible.

g. The conflicts among different goals in a closed economy framework

The six main goals of PDMP cannot be achieved simultaneously. Thus, a choice must be made among them. The following table summarizes the conflicts among different goals:

Table 1. Complementarity and Conflicts Between Goals

Goals	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	G <sub>5</sub>	G <sub>6</sub>
Shifting of the yield curve G <sub>1</sub>	--					
Liquidity changes G <sub>2</sub>	*	--				
Minimization of debt service G <sub>3</sub>	*	*	--			
Stabilization of the prices of public debt securities G <sub>4</sub>	*	*	x	--		
Priority for public sector issues of securities G <sub>5</sub>	*	*	x	x	--	
Priority for domestic issues G <sub>6</sub>	*	*	x	x	x	--

\* = Conflicts; x = complementarity.

As the above table shows, the PDMP goals can be divided in two groups; goals within each group are complementary while those between groups are in conflict: Group 1: shifting of yield issue (G<sub>1</sub>) and liquidity changes (G<sub>2</sub>). Group 2: minimization of debt service (G<sub>3</sub>), stabilization of the prices of public debt securities (G<sub>4</sub>), priority for public sector issues of securities (G<sub>5</sub>), and priority for domestic issues (G<sub>6</sub>).

As an example, let us analyze the situations of conflict and complementarity for goal no. 3 (minimization of debt service). Goal no. 3 is complementary to goals 4, 5, and 6, i.e., the treasury authorities might wish to replace long-term debt securities by short-term debt securities in periods of recession to benefit from lower long-term interest rates and thus to minimize the debt service burden (G<sub>3</sub>); simultaneously they can limit the issues of securities to only public sector securities (G<sub>5</sub>) and domestic securities (G<sub>6</sub>). If, at the same time, the monetary authorities pursued a policy of monetary expansion (goals G<sub>1</sub> or G<sub>2</sub>), a situation of conflict emerges between the Treasury

and the central bank. For example, the central bank might want to pursue  $G_2$  using open market instruments to increase the overall liquidity of the economy exchanging money for bonds, while the Treasury is consolidating its debt by exchanging long-term bonds for short-term bonds, thereby reducing liquidity. Thus, the treasury goal and the central bank goal cannot be achieved simultaneously, as the pursuance of the treasury goal reduces the effect of the open market operation of the central bank.

## 2. The instruments of PDMP in a closed economy

The basic instruments of PDMP are the exchange of money for short-term or long-term bonds and the exchange of short-term bonds for long-term bonds.

This section analyzes the macroeconomic effects of the exchange of short-term for long-term bonds. <sup>1/</sup> In addition to the general assumptions described in Section I.b (page 5), the following assumptions are made in this analysis: (a) the budget is in equilibrium before intervention (increase of domestic public sector debt outstanding is zero); and (b) all markets are in equilibrium before the intervention.

The exchange of short-term for long-term bonds can be used by the authorities for the achievement of minimization of the debt service (goal  $G_3$ ) in a period of expansion. The intervention of the Treasury results in a disequilibrium of the portfolio of debtholders because of the shortening of the average maturity of outstanding debt. To reach a new equilibrium, relative prices of short- and long-term bonds will have to change to eliminate the excess supply of short-term bonds and the excess demand for long-term bonds. In a closed economy framework, long-term bond prices will tend to rise and long-term interest rates will tend to decline, and vice versa for short-term bonds. This effect will last until the optimal degree of liquidity of debtholders' portfolio is re-established. During the adjustment process the demand for money decreased because of a higher opportunity cost of holding money resulting from a higher level of short-term interest rates. <sup>2/</sup>

In a fully employed economy, the adjustment to equilibrium will result in an increase of the price level because of the emergence of an excess supply of money. The results can be illustrated by the shift in the standard LM curve from  $L_1M_1$  to  $L_2M_2$  in the following diagram. The shift from  $L_1M_1$  to  $L_2M_2$  is not the result of an increase of the money supply by the authorities, but of a decrease of desired cash balances due to the increase in the short-term interest rate level. After the prices have risen in proportion to the excess of liquidity,

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<sup>1/</sup> The effects of the other instruments imply only small modifications in the framework of a closed economy and do not affect the concluding sections of this paper.

<sup>2/</sup> Short-term bonds are assumed to be a close substitute to money.

the previous equilibrium in point A will be re-established. <sup>1/</sup> However, point A in Chart 2 no longer represents a full equilibrium point once the new set of relative prices is achieved. The budget is not in equilibrium for two reasons: (a) the exchange of short-term for long-term bonds lowers the debt service because long-term interest rates are higher than short-term rates, and (b) the real debt service is lower because of the rise of the nominal price level. Assuming budget equilibrium before treasury intervention, the following equation reflects the budget:

$G + B = T$  where:  $T$  is a function of  $Y$  and  $B$ ;

$G$  represents government expenditures excluding interest payments;

$B$  represents the interest payments in nominal terms;

$Y$  represents nominal income;

$T$  represents the taxes and other sources of revenue which are a function of  $Y$  and  $B$ .

After the intervention of the Treasury, the surplus is equal to  $(1-T')$   $dB$  (where  $T'$  represents the marginal propensity to tax).

To understand the impact of such an intervention on aggregate demand, the management of the new budgetary surplus must be analyzed. Four cases are possible:

Case a: The government sterilizes (maintains) its surplus. If the government sterilizes its surplus, aggregate demand will decrease. For a long-term final equilibrium, the budget must be in equilibrium. Thus, real income must decrease until  $(1-T') dB = -T' (dY)$ .

Case b: The government decreases taxes offsetting the surplus. If  $(1-T') dB = T' (dY)$ , the budget is in equilibrium.

Case c: The government increases its expenditures by  $(1-T') dB$ . If  $(1-T') dB = dG$ , the budget is in equilibrium.

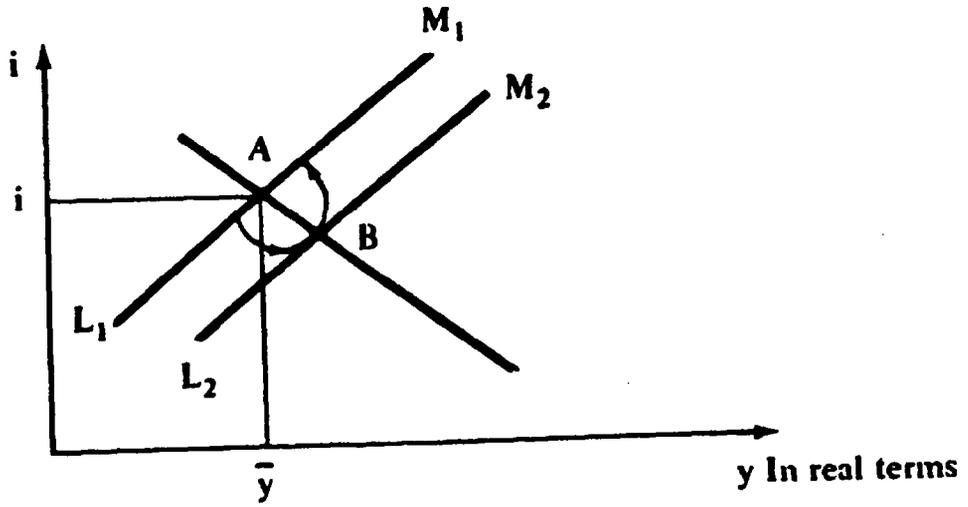
Case d: The government retires part of its debt by  $(1-T') dB$ . If the Government uses the surplus, making  $(1-T') dB = dD$  to decrease part of its debt, the effect is more complicated ( $D$  represents interest-bearing debt). Each reduction in debt implies by itself a new budget surplus. This process continues until the complete amortization of the debt occurs. But, with a reduction in the outstanding public debt, the excess demand for money will increase due to a change of the composition

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<sup>1/</sup> The dynamic factors which push the economy toward a new equilibrium after the intervention of the Treasury happen simultaneously. They are described here without prejudging of their timing.

CHART 2

Interest rate  
in real terms



of the portfolio of debtholders--the same amount of cash balances with fewer public bonds. This will result in a decrease in real income and in consumption until budget equilibrium is achieved. 1/

The utilization of PDMP instruments in a closed economy changes the demand for money and also results in a budget disequilibrium. Thus, the path of adjustment and the final equilibrium point will depend on the management of real cash balances by debtholders, on the fiscal policies of the government, and on monetary policy.

### 3. Conclusion

In a closed economy framework, domestic debt management policy goals can be divided into two groups: Group 1 includes shifting of the yield curve ( $G_2$ ) and liquidity changes ( $G_3$ ). Group 2 includes minimization of debt service ( $G_3$ ), stabilization of the prices of debt securities ( $G_4$ ), priority for public sector issues of securities ( $G_5$ ), and priority for domestic issues of securities ( $G_6$ ). While the goals within each group can be achieved simultaneously, the simultaneous achievement of all the goals included in the two groups is not possible with the pursuit of PDMP alone. The goals of the first group can be defined as "hybrid" domestic debt management goals as they are more closely linked to monetary policy. The goals of the second group can be defined as "pure" domestic debt management goals. The choice between the achievement of the goals of either one of these two groups will determine the extent to which the central bank authorities are independent from the treasury authorities in the conduct of monetary policy. For example, if the central bank intervenes through open market operations to stabilize the price of public sector bonds ( $G_5$ ), it becomes an instrument of PDMP and the control of the money supply becomes secondary. In contrast, if the Treasury tailors its policy to the market conditions, only the goal of minimization of debt service ( $G_3$ ) can be achieved while all the other goals of Group 2 cannot. In this case, PDMP and monetary policy are independent. If PDMP is geared to achieve the "hybrid" monetary goals (1 and 2), it becomes an instrument of monetary policy, and the "pure" goals included in Group 2 cannot be achieved. 2/ Several intermediary situations can be thought of, where goals will be ranked by order of importance and be achieved only to a certain degree. Hence, when the domestic debt outstanding is large, many conflicting situations may arise calling for coordinated PDMP and monetary policies.

In summary, the use of PDMP instruments will affect both the optimal degree of liquidity of bondholders' portfolio and the equilibrium of the budget through the interest structure of the bond market. Thus, the path of adjustment and the final equilibrium point will depend on

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1/ Consumption decreases because it is a function of wealth. This is true only with the assumption of debt illusion.

2/ Except for goal 5, stabilization of the prices of public sector securities through short-term stabilization techniques (Section II(d.3)).

the management of their portfolio by the debtholders, <sup>1/</sup> monetary policy, and on the management of the budget deficit (surplus) resulting from PDMP intervention.

### III. The Effects of PDMP in a Small Open Economy Under a Fixed Exchange Rate System

The assumptions underlying this section are: (a) debt illusion; (b) all markets are in equilibrium before any government intervention; (c) the size of the economy is small and thus, the level of prices and the yield on tradable assets are determined in the rest of the world, and hence, their relative prices; (d) full employment; and (e) international tradable assets of a given maturity denominated in local currency, and issued by two different countries are assumed to be substitutable.

To analyze the effects of PDMP in a small open economy it is useful to distinguish between the influences on the two main components of the balance of payments: the current account (trade account and service account) and the capital account. This breakdown is important because disequilibrium in either account has different effects on the debtholders' portfolio. When debt illusion prevails, a parallel can be made between the impact of a budget deficit and a current account surplus on the nongovernment sector of the economy, both entailing an increase in financial assets in the economy and thus in the portfolio of the debtholders. By contrast, an open market operation is comparable to a change in the structure of the capital account of the balance of payments because it entails no wealth effect and thus results only in an exchange of one financial asset for another. However, this exchange of assets may affect the optimal degree of portfolio liquidity. <sup>2/</sup>

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<sup>1/</sup> The higher the degree of substitution between money and government bonds, and between short-term and long-term government bonds, the lower the impact on the optimal degree of liquidity of bondholders' portfolio, and thus the less  $G_1$  and  $G_2$  are achievable. (The curve AA of figure 1 is horizontal.) This situation might occur when the treasury and central bank authorities pursue a rigid stabilization of the prices of public sector bonds.

<sup>2/</sup> If the debt illusion assumption is released, a budget deficit (surplus) is equivalent to an open market operation in a closed economy because they entail no wealth effects. However, their liquidity effects still remain because they affect the optimal degree of liquidity of bondholders' portfolio through the issue of securities. Each type of security has a different degree of liquidity which is tailored to its maturity.

When there is no debt illusion in an open economy a change in the structure of the capital account, an open market operation, and a budget deficit (surplus) are equivalent because they entail no wealth effect but only a liquidity effect on portfolio, depending on the type of debt issued. However, if an exchange of one type of debt for another results in a change in net external receipts of interest, net wealth will vary accordingly.

To analyze the effects of PDMP in an economy, the financial assets are classified as follows:

(1) International tradable bonds:  $A_1, A_1^*, A_2, A_2^*$

$A_1$  : Short-term bonds issued domestically

$A_1^*$  : Short-term bonds issued by the rest of the world

$A_2$  : Long-term bonds issued domestically

$A_2^*$  : Long-term bonds issued by the rest of the world

(b) Nontradable bonds:  $C, C^*$

$C$  : Nontradable bonds issued domestically

$C^*$  : Nontradable bonds issued by the rest of the world

(c) Money:  $M, M^*$

$M$  : Money issued domestically

$M^*$  : Money issued by the rest of the world

(d) The interest rates:  $i_{A_1}, i_{A_1}^*, i_{A_2}, i_{A_2}^*, i_C, i_{C^*}$

$i_{A_1}$  : Short-term interest rate on  $A_1$

$i_{A_1}^*$  : Short-term interest rate on  $A_1^*$

$i_{A_2}$  : Long-term interest rate on  $A_2$

$i_{A_2}^*$  : Long-term interest rate on  $A_2^*$

$i_C$  : Interest rate on  $C$

$i_{C^*}$  : Interest rate on  $C^*$

(e) Price level:

$P$  : Domestic price level

$P^*$  : Price level in the rest of the world

1. Effects of an exchange of money for international tradable assets

One of the goals of the Treasury is to achieve the minimization of public debt service, or the amortization of its debt. The exchange of money for international tradable assets denominated in local currency

in a small open economy results in an increase of its money supply equal to  $\Delta M' = \Delta A_1$ . This increase results in excess liquidity and in disequilibrium in the debtholders' portfolio. Actual cash balances are greater than the desired cash balances. The debtholders will buy foreign assets in an amount and of a degree of liquidity equal to the domestic assets bought previously by the Treasury to re-establish the previous optimal degree of liquidity in their portfolio. This results in an outflow of capital equal to  $\Delta M$ , and a decrease in international reserves equal to  $\Delta M$ . <sup>1/</sup> When the optimal degree of liquidity is achieved, the outflow of capital ceases, the capital account returns to the position prevailing before the treasury intervention, and the money supply is equal to that prevailing prior to the intervention. However, the path toward adjustment is not completed because the exchange of assets between the small open economy and the rest of the world also results in higher receipts in investment income in the service account because of increased interest income received on foreign assets acquired by the domestic economy. Also, this exchange creates a budget surplus due to the decrease in debt service resulting from the exchange of money for interest-bearing bonds. Moreover, initially the size of the budget surplus is the same as that of the current account surplus.

The path of adjustment toward full equilibrium will depend on the management of the budget surplus by the government. The government has four possibilities: (a) to sterilize (maintain) the surplus; (b) to increase its expenditures; (c) to decrease the outstanding taxes; and (d) to amortize its debt.

a. Sterilization of the budget surplus

If the government sterilizes its surplus, then the amount sterilized is equivalent to the surplus of investment income in the services account. Thus, the economy reaches a quasi-equilibrium. <sup>2/</sup>

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<sup>1/</sup> \* \*  
The yield of  $A_1$  and  $A_1$  or of  $A_2$  and  $A_2$  are by assumption equal. Thus, the supply of money becomes an endogenous variable, which is a function of the effective size of the economy. A further assumption that must be added at this stage for the sake of simplicity is that the foreign reserves are not interest-bearing reserves; thus, only the full impact of an exchange of money for interest-bearing is analyzed. If this last assumption is dropped, then only the differential between the interest-bearing reserves and the interest-bearing bonds which was used in the intervention needs to be taken into account to calculate the net increase (loss) of the investment income item in both the budget and the external current account.

<sup>2/</sup> For the definition of quasi-equilibrium, see Swoboda, A.K., "Policy Conflicts, Inconsistent Goals, and the Coordination of Economic Policies," The Economics of Common Currencies, Allen and Unwin, London, 1973. For example, a quasi-equilibrium exists when the size of the budget surplus is the same as that of the current account surplus.

b. Increase in government expenditures

The government might use its budgetary surplus to finance new expenditures:  $\Delta G = i_A(-\Delta A)$ . This policy results in an increase of aggregate demand and thus in a trade deficit. Equilibrium in the overall balance of payments will be reached when the trade deficit will be equal to the surplus of investment income. With the balance of payments in equilibrium, full equilibrium of the economy is achieved.

c. Decrease in the level of taxation

The government might decrease the level of taxation. This decrease will be equivalent to the budgetary surplus:  $-\Delta T(Y) = i_A(-\Delta A)$ . A full equilibrium will be achieved, with no current account surplus.

d. Amortization of the public debt

The government might amortize its debt by exchanging the money acquired through its budget surplus for interest-bearing bonds. This results in a decrease in the size of the portfolio of debtholders and an increase in its liquidity. The size of the portfolio decreases because interest-bearing bonds are amortized without an increase in the money supply; liquidity increases because money is exchanged for public sector securities. Hence, the ratio of public sector securities to money decreases. To re-establish the previous portfolio equilibrium, the debtholders will buy foreign securities in an amount and of a liquidity equal to the portion of the debt amortized by the government. This will result in a capital account deficit. The private sector will decrease its consumption to acquire a desired level of cash balances, a part of which will be satisfied through the surplus of the investment income account. The exchange of money for tradable bonds due to the amortization of the public debt results in foreign securities replacing public sector securities. This result is possible because of a surplus on the trade and investment income accounts, and a deficit on the capital account. The final equilibrium will be reached when the budget is in surplus due to the elimination of the debt service. This budget surplus will be equivalent to a surplus of the investment income account. The trade account will be in equilibrium as well as the portfolio of the private sector. Thus, the final equilibrium is a quasi-equilibrium because the budget is not in equilibrium, but its surplus is matched by an equivalent surplus of the investment income account. During this period the reduction in government debt is matched by the increase in foreign debt held by the private sector.

2. Conclusion

The analysis of the use of instruments of domestic debt management in a small open economy shows that the pursuance of internal goals cannot be achieved without external disequilibrium. The use of PDMP instruments by the Treasury will lead to a set of reactions by debtholders aiming at re-establishing the portfolio equilibrium which prevailed

before the intervention. By doing so, debtholders will exchange an equal amount of foreign for domestic debt with the same characteristics and degree of liquidity that the Treasury, in its intervention, has either amortized, consolidated, or exchanged. These reactions will lead to a temporary capital account disequilibrium, and a permanent 1/ change of the investment income item of the external current account. The final path toward equilibrium, after the intervention of the Treasury, will depend on the management by the Treasury of the budget disequilibrium resulting from a change in the level of interest payments on debt.

From this analysis of the use of instruments, the possibilities for the achievement of the internal goals of domestic public debt management in a small open economy can also be described.

a. Shifting of the yield curve

In a closed economy, this goal can be realized in three ways: by changing the amount of the debt, by changing its structure, or both simultaneously. This goal can be achieved only temporarily in a small open economy by controlling capital flows.

The policy of exchanging one type of asset for another results in a balance of payments disequilibrium and thus in a variation of foreign reserves. Hence, this goal is most efficiently assigned to the achievement of external equilibrium. PDMP and monetary policy therefore have to be coordinated.

b. The goal of liquidity

The purpose of this goal is to preserve the real purchasing power of money. The PDMP is, in this case, complementary to monetary policy and in a small open economy both should be oriented toward the achievement of external equilibrium, as money is an exogenous variable.

c. Minimization of the debt service

This is the only goal which can be achieved for a small open economy. This can be done not only by reducing the volume of interest-bearing public debt, but also by the exchange of nontradable assets for other assets. 2/ However, the achievement of this goal results in a disequilibrium in the balance of payments and thus in a change in the level of reserves. In this case, monetary policy and PDMP must be coordinated in order to be effective in the achievement of external equilibrium.

A small economy confronts a given interest rate structure of the rest of the world without considering the effects of its own PDMP on

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1/ Permanent is understood as the length of maturity of the debt securities exchanged.

2/ Nontradable assets are not substitutable for tradable assets; hence, the PDMP can affect their yield curve.

these rates as these rates will not be affected. The only problem for a small open economy is the impact of its PDMP on the size of its external debt and on the level of its reserves. The constraint on the PDMP is therefore the level of indebtedness and national creditworthiness.

d. Stabilization of the value  
of the public debt bonds

This goal facilitates the sale of bond issues, public debt consolidation, and public debt conversion. However, in a small open economy this goal cannot be achieved in the long run; it results only in a disequilibrium in the balance of payments and in a change in the volume of external public debt. In a small open economy, the only stabilization achievable through PDMP is short-term stabilization which can be pursued by the central bank to facilitate debt management. To the extent PDMP in this context seeks to achieve long-term stabilization, the actual effect of this policy is likely to be destabilizing.

e. Priority for public sector  
issue of securities

The public authorities, through regulations, act as financial intermediaries in the allocation of limited financial resources by giving priority to the public sector. This goal results in the displacement of private saving toward the public sector; it is achieved at the cost of distorting the capital market. Nonetheless, an increase in borrowing by the public sector will result in an increase in capital flows from abroad.

In summary, the effects of domestic debt management policy in a small open economy differ substantially from those in a closed economy. In a closed economy, PDMP can be directed toward the achievement of internal goals, namely liquidity, interest rate levels, and eventually the level of prices and economic activity; in a small open economy, this is not the case. On the contrary, PDMP in a small open economy can only be directed toward the achievement of external goals, i.e., the desired level of foreign reserves and the structure of the balance of payments, i.e., the structure of the current and capital accounts. Thus, PDMP in a small open economy can only be considered as a complement and not as a substitute to monetary policy. The main constraints on domestic debt management policy are the levels of foreign reserves and the capacity of servicing domestic public bonds held by nonresidents.

#### IV. The Effects of the PDMP in a Large Economy Under a Fixed Exchange Rate System

To analyze the effects of domestic debt management in an economy with a large effective size, 1/ a two-country model developed by Lance Girton and Dale Henderson with slight modifications will be used. 2/

The specific assumptions for this case are: (a) all markets are in equilibrium before a PDMP action; (b) the effective sizes of the countries are large; (c) fixed exchange rate. 3/ In this section only the use of internationally tradable assets (ITA) for money is discussed. 4/

##### 1. The effects of an exchange of internationally tradable assets (ITA) for money

For purposes of this section, W is defined as the country where a PDMP action will be taken, and country Z (the rest of the world) is assumed to take an active policy other than to adjust the resulting budgetary

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1/ Large effective size means that the economy can affect the yield curve of the rest of the world, and that its money supply is subject to the control of the monetary authorities.

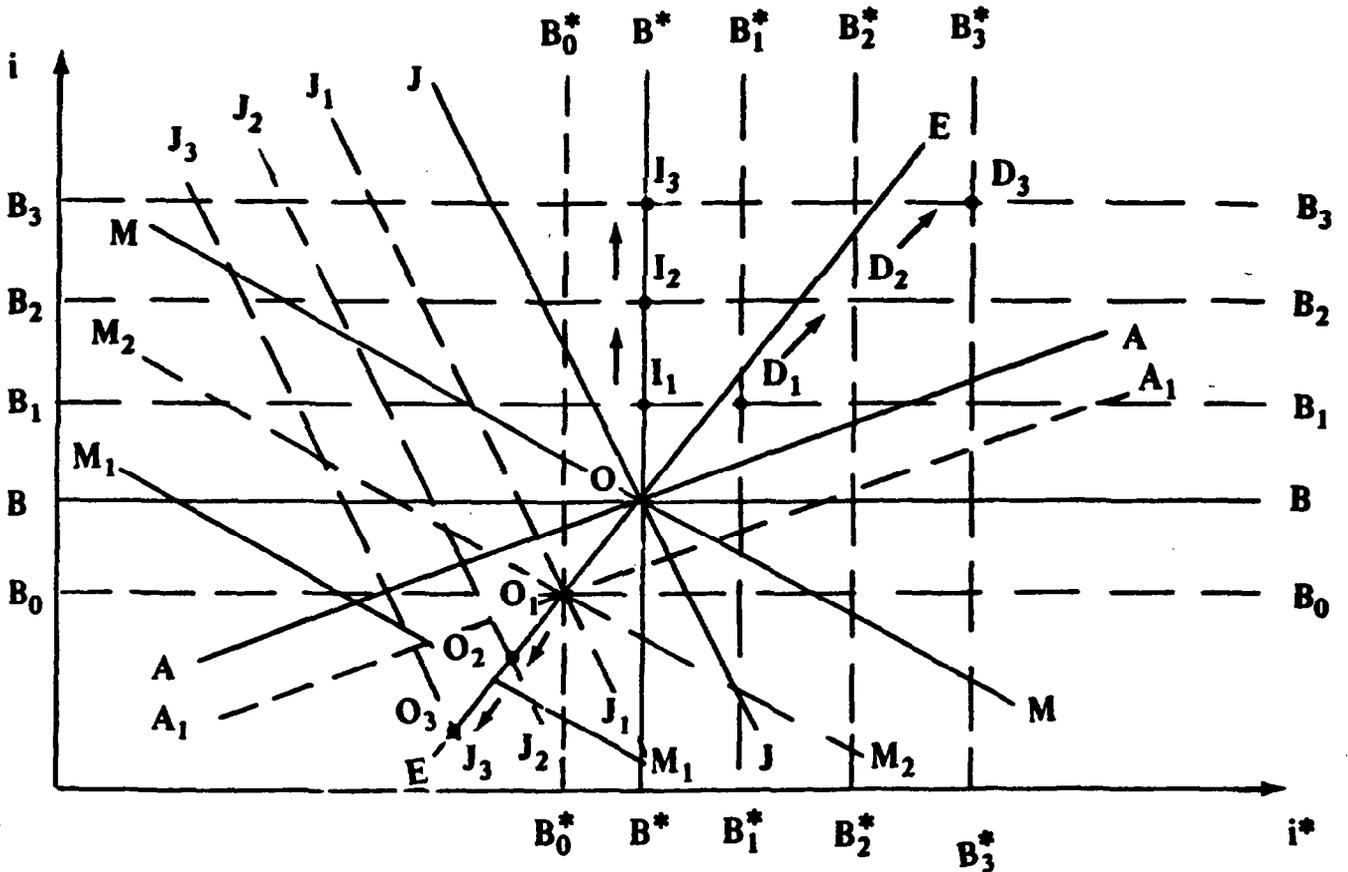
2/ Girton, L., and Henderson, D., "A Two-Country Model of Financial Capital Movements as Stock Adjustments with Emphasis on the Effect on Central Bank Policy," Board of Governors of the Federal Reserve System, D.C. (1975). Their model focuses upon the short-run portfolio balancing of wealth behavior. The size of wealth holders' portfolios are fixed and a detailed analysis is made of the stock shift component of capital flows. Hence, the part of changes in desired assets holdings due to growth in the size of the portfolio with interest rates and other variables held constant, generally described as the continuing flow effects, is not analyzed. The authors trace out the implications of the portfolio balance approach to economies which loom large in the world economy. The models deal explicitly with two countries which taken together constitute the world economy. Hence, an important feature which distinguishes this model of the small country case is that interest rates are jointly determined with desired assets holdings instead of being taken as exogenous. In their portfolio balance model, a change in some aspects of the economic environment disturbs an existing equilibrium and sets in motion changes in interest rates, flows of financial capital between countries and changes in reserves of central banks. These changes persist until wealth holders in both countries have attained a new equilibrium position in which they hold desired quantities of all financial assets. To analyze the effects of the PDMP, we will slightly transform this approach by adding two new curves BB and B\*B\* which are the locus of points where respectively the budget of W and Z are in equilibrium.

3/ The effects of other instruments imply only small modifications and do not change the policy conclusions.

4/ See also the assumptions made throughout the paper on pp. 5 and 6.

### CHART 3

#### Effects of an Exchange of International Tradable Assets for Money



disequilibrium (Chart 3) describes the effects of a PDMP action in country W. The notations used are:

- M : money supply in W
- J : money supply in Z
- E : international tradable assets issued in Z,  $i$  ; interest rate of E
- A : international tradable assets issued in W,  $i^*$ ; interest rate of A

The four curves in Chart 3 represent the locus of points where different combinations of interest rates ( $i$  and  $i^*$ ) in W and Z result in the equilibrium of supply and demand of the four financial assets (money and internationally tradable assets in both countries).

MM represents the combinations of  $i$  and  $i^*$  where equilibrium between demand and supply of money are equal in country W prevails. The slope of this curve is negative because an increase of either  $i$  or  $i^*$  reduces the demand for money in W; in order to equilibrate the demand and supply of money,  $i$  and  $i^*$  will vary inversely.

JJ represents the locus of points where the money market is in equilibrium in country Z. This curve is steeper than the MM curve because the demand for money in Z is assumed to be more interest elastic in relation to  $i$  than to  $i^*$ .

AA represents the locus of points of equilibrium between the demand and supply for internationally tradable assets issued in country W are equal. This curve is positively sloped because a decrease of  $i$  results in an excess supply of internationally tradable assets in W. Because the internationally tradable assets are substitutes,  $i^*$  must decrease in order to eliminate the excess supply.

EE represents the locus of points where the supply and demand of internationally tradable assets issued in country Z are in equilibrium. This curve is steeper than AA, because the  $i$  elasticity of the demand for international tradable assets in Z is greater than the  $i^*$  elasticity.

BB and  $B^*B^*$  are the locus of points where the budget in W and Z are in equilibrium, respectively. BB is perfectly inelastic to  $i^*$  because a deficit (surplus) of the budget can only be the result of an increase (decrease) in the debt service, which will not depend on foreign interest rates; the same is true for  $B^*B^*$  and  $i$ .

A buying of international tradable assets in country W will increase the money supply in W (MM shift toward  $M_1M_1$ ) and reduce the interest rate on these assets (AA shift toward  $A_1A_1$ ). After this intervention, the private sector in W will face a portfolio disequilibrium and the

actual level of cash balances held by the private sector will be greater than the desired level. To reinstate equilibrium in its portfolio, the private sector will purchase internationally tradable assets in country Z. These purchases will result in a capital account deficit in country W. In country Z the supply of money will increase (JJ shift to  $J_1J_1$ ) and  $i^*$  will decrease.

In Chart 3 the initial effects of the government intervention will be a shift of MM toward  $M_1 M_1$ , and a shift of AA toward  $A_1 A_1$ . To achieve portfolio equilibrium, the private sector in country W will buy internationally tradable assets in country Z resulting in an upward shift of  $M_1 M_1$  toward  $M_2 M_2$ . Thus, purchase of internationally tradable assets in country Z by the private sector in country W will result in an increase of money supply in Z, leading to a shift downward of the JJ curve toward  $J_1J_1$ . Due to the unchanged supply of internationally tradable assets issued in country Z, the EE curve does not shift.

At this stage equilibrium moves to a new point  $O_1$  where all the curves intersect.  $O_1$  is characterized by a combination of  $i$  and  $i^*$ , at a lower level than in  $O$ . The locus of all possible values of  $O_1$  depends on the relative effective size of countries W and Z. The greater the effective size of country W relative to country Z, the greater the decrease of  $i$  relative to  $i^*$ . But  $O_1$  in Chart 4 is situated on the left of  $B^*B^*$  and  $BB$ , which in other words means that the budgets in both countries are in surplus. The budget surplus in country W is greater than in country Z because it results from both the decrease of  $i$  and of the outstanding debt in country W. Thus,  $BB$  shifts to the left to  $B_0B_0$  because of the decrease of the debt outstanding.

The exchange of money for international tradable assets in country W has resulted in a surplus in country W's investment income account and in a deficit in Z's.  $O_1$  is not a point of equilibrium. To determine the path of adjustment of the economy toward equilibrium, the management of the budget surplus in both countries must be analyzed.

a. Sterilization of the budget surplus in countries W and Z

The PDMP intervention has resulted in surpluses in both the budget and investment income account in country W and a budget surplus and investment income account deficit in country Z. If the budget surplus in W and Z are sterilized, a full equilibrium cannot be achieved.

b. Increase of public expenditures in countries W and Z

To achieve budget equilibrium, countries W and Z might increase expenditures. The curve  $B_1B_1$  will shift toward  $B_0B_0$  and  $B^*B^*$  toward  $B_0^*B_0^*$ . This budgetary policy will result in a surplus of the trade balance in country Z and a deficit in country W, equivalent to the investment income account disequilibrium, resulting from the ensuing capital flows.

c. Amortization of the debt in countries W and Z

The governments in countries W and Z might amortize their debt with the financial means provided by the budget surplus. This amortization results in a reduction in the private sector's portfolio and an increase of the demand for money in both countries because of the decrease of  $i$  and  $i^*$ . The curve BB shifts to the left and the curve  $B^*B^*$  shifts to the right simultaneously.  $D_1, D_2, D_3$  are the new intersection points of BB and  $B^*B^*$ . Also, curve AA shifts to the right and EE to the left. The intersection points of BB and  $B^*B^*$  and of AA and EE move in opposite directions as amortization occurs. 1/ A nonequilibrium situation is achieved.

Two possible policies might be pursued to achieve a full equilibrium.

(1) An increase in the money supply (which is, in fact, equivalent to a monetization of the debt) coupled with an increase in public expenditures in countries W and Z. This increase in public expenditures results in a budget equilibrium in both W and Z. The full equilibrium points will be achieved in both countries represented by the points  $O_1, O_2, O_3$ .

(2) Open market sales in W and open market purchases in Z will achieve full equilibrium in both countries represented by the points  $D_1, D_2, D_3$ .

These two policies have opposite effects on the interest rate level, and are an example of the desirable coordination between monetary, PDM, and budgetary policies. This coordination is necessary for the achievement of full equilibrium in both countries.

2. Conclusion

The analysis of the use of instruments to pursue selective domestic debt management goals in a large economy leads us to different conclusions than in a small open economy. In a large open economy, domestic debt management policy can effectively influence economic variables such as the interest rate structure, the level of liquidity and the structure of the debtholders' portfolio. The larger the size of the economy, the more likely the achievement of its PDMP goals and the same type of conflicts arise in their simultaneous achievement as in a closed economy framework. Also the larger the size of the economy, the more its domestic debt management policy will serve as a constraint for the rest of the world.

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1/ If the amortization of the debt was pursued only in country W, then the new points of intersection will be  $I_1, I_2, I_3$  for BB and  $B^*B^*$ .

This is illustrated by the constraint imposed by domestic debt management in the United States on the rest of the world. <sup>1/</sup>

The path toward equilibrium in a large open economy depends on how the budget disequilibrium is managed after a PDMP intervention. This section has been devoted to analyzing the different paths of adjustment which arise in a world consisting of two large open economies which decide to amortize their debt. There are two possibilities for the achievement of full equilibrium: either to pursue a restrictive monetary policy, with no change in fiscal policy, or to pursue an easy monetary policy together with an expansionary fiscal policy. The effects of the two policies on both the interest rates and the money supply are totally different. In the first case, the money supply decreases in both countries and the interest rate level increases, while in the second case money supply increases and the interest rate level decreases. Thus, a harmonization of PDMP and the other macroeconomic policies between the two large open economies is desirable so as to correct important disequilibrium or to speed up the process of adjustment.

With a flexible exchange rate regime, the analysis will be somewhat different than with a fixed exchange rate regime. As we have seen, each debt management action by affecting the debtholders' optimal portfolio liquidity will provoke a set of reactions aimed at re-establishing the previous portfolio composition. By doing so, the debtholders will exchange bonds issued domestically with bonds issues in the rest of the world with the same characteristics. These exchanges will affect directly the exchange rate and thus the current transactions of the balance of payments. The impact of a PDMP action on the exchange rate will depend on the relative size of the economy, i.e., the smaller the size the higher will be the impact on the exchange rate. Thus, the analysis of a change in the composition of domestic public debt will have to be broader to include its effect on the exchange rate, on the supply of exports and on the demand of imports of goods and services. Accordingly, the path toward equilibrium after a PDMP action will have to be somewhat modified. In addition, under a flexible exchange rate regime, variables such as the currency composition of the debtholders' portfolio and their anticipation of exchange rate movements will have to be taken into account.

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<sup>1/</sup> This conclusion is also relevant for countries which are part of a monetary union. The members of a monetary union lose their independence in the conduct of monetary policy because of the existence of only one central bank; they might, however, conduct their own debt management policy. However, the small economy member, with a relatively smaller domestic debt, will have to take into account as a macroeconomic policy constraint the domestic debt management of the larger economy member. In a federation type of union, the different states will have to take into account in the conduct of their own domestic debt management policy, the direction and the objectives of the federal government domestic debt management policy.

## V. Summary and Conclusions

As described in earlier sections, debt management policy goals can be divided into two groups: Group 1 includes shifting of the yield curve ( $G_1$ ) and liquidity changes ( $G_2$ ). Group 2 includes minimization of debt service ( $G_3$ ), stabilization of the prices of debt securities ( $G_4$ ), priority for public sector issues of securities ( $G_5$ ), and priority for domestic issues of securities ( $G_6$ ). The goals of the first group can be viewed as "hybrid" goals because of their monetary policy nature, while the goals of the second group can be viewed as "pure" domestic debt management goals. When the "hybrid" goals are pursued, domestic debt management becomes an instrument of monetary policy and the "pure" goals included in Group 2 cannot be achieved. The "hybrid" goals are pursued regardless of their effects on debt service or on the securing of sources of financing for the public sector. On the contrary, if the "pure" goals are pursued both the "hybrid" goals and the monetary goals become secondary; monetary policy becomes an instrument of PDMP. The more the domestic debt outstanding is important, the more conflicting situations appear, calling for coordinated PDMP and monetary policy to correct an emerging imbalance or to speed up the process of adjustment.

This paper has systematically described the effects of debt management on the external accounts and on the budget. The analysis has shown that the use of domestic debt management instruments, by affecting debtholders' optimal portfolio liquidity, will provoke a set of reactions aimed at re-establishing the previous optimal portfolio composition. The reactions in turn will affect the investment income, the external current account, and the structure of the external capital account. Moreover, the analysis has shown that the final equilibrium path will depend on how policymakers will manage the budget disequilibrium caused by the use of debt management instruments. For example, if the PDMP intervention has resulted in a surplus of the budget, the government can choose to maintain the budget surplus, increase public expenditures, or decrease public revenues by the amount of the surplus, or amortize the debt by the same amount. Each of these policies will lead to a different final equilibrium situation.

While in the framework of a closed or a large economy the goals in each group can be achieved simultaneously, the simultaneous achievement of all the goals included in the two groups is not possible by the pursuit of PDMP. The analysis of the use of debt management instruments has shown that the more a large economy is able to affect permanently the liquidity and the interest rate structure of the rest of the world, the

more it can behave like a closed economy, with regard to the achievement of debt management goals. 1/

The impact of PDMP in the case of a small open economy with a fixed exchange rate system free of capital restrictions is different, in that the pursuance of internal goals of debt management cannot be achieved without external disequilibrium. The use of debt management instruments by the Treasury will cause debtholders to act to re-establish the optimal degree of portfolio liquidity which prevailed before the intervention. In order to do so, the debtholders will exchange foreign for domestic debt (with the same characteristics, maturity, and thus the same degree of liquidity) in an amount equal to that which the Treasury, in its intervention, has amortized, consolidated, or exchanged. However, the size of the economy is so small that the effects of this exchange on the interest rate structure and the liquidity of the rest of the world are *insignificant*. Thus, in contrast to a closed economy where public debt management is directed toward internal goals, a small open economy should tailor its debt management to the market conditions and use it to achieve external goals, i.e., the level of desired foreign reserves and external debt and the structure of the capital account. In summary, debt management in a small open economy, like most of the member countries in the Fund, is a complement and not a substitute to monetary policy.

This paper has shown the limitations and the possibilities of domestic debt management policy to pursue the achievement of its goals in closed, small, and large open economy frameworks. In all cases, a ranking of these objectives has to be made by the policymakers and because debt management policy affects the optimal degree of liquidity of bondholders' portfolio, it is essential that a coordination with monetary policy take place to correct an emerging imbalance or to speed up the process of adjustment. While in closed and large economy cases debt management can be geared toward the achievement of internal goals, it is not the case for a small open economy where it should be geared toward external goals.

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1/ This statement is valid if the rest of the world remains passive. The rest of the world remains passive when it has no active domestic debt management policy or when its policy is tailored to the market conditions. If the rest of the world has an active domestic debt management policy, then the achievement of PDMP goals in a large economy depends on the relative size of the other economies. If the world is comprised of two large size economies, a situation of conflicts will be inevitable between the debt management of the two economies under a system of fixed exchange rates and free of capital restrictions; a coordination between the macroeconomic policies of the two countries would therefore be needed.

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