Limiting Central Bank Credit to the Government

Theory and Practice

Carlo Cottarelli

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The following symbols have been used throughout this paper:

... to indicate that data are not available;

— to indicate that the figure is zero or less than half the final digit shown, or that the item does not exist;

– between years or months (e.g., 1991–92 or January–June) to indicate the years or months covered, including the beginning and ending years or months;

/ between years (e.g., 1991/92) to indicate a crop or fiscal (financial) year.

“Billion” means a thousand million.

Minor discrepancies between constituent figures and totals are due to rounding.

The term “country,” as used in this paper, does not in all cases refer to a territorial entity that is a state as understood by international law and practice; the term also covers some territorial entities that are not states, but for which statistical data are maintained and provided internationally on a separate and independent basis.

Preface

This paper was prepared by Carlo Cottarelli, Senior Economist in the Monetary and Exchange Affairs Department. It was initiated when Mr. Cottarelli was a member of the Fiscal Affairs Department and has greatly benefited from comments from William Alexander, Tomás Baliño, Francesco Caramazza, Isaias Coelho, Daniel Eduardo Duñas, Charles Enoch, Alain Ize, Alfred Kammer, Alexander Kyei, Pedro Martínez Méndez, Karim Nashashibi, Teresa Ter-Minassian, and the participants in seminars held at the Monetary and Exchange Affairs Department and at the Bank of Portugal; and from discussions with Patrick Downes, Curzio Giannini, and Manuel Guitián. The information presented in Appendix III has benefited from the cooperation of the relevant IMF country desks and of the central banks of many countries included in the sample. Elin Knotter of the External Relations Department edited the manuscript and coordinated production of the publication.

The views expressed in the paper, as well as any errors, are the sole responsibility of the author and should not be construed as those of the Executive Directors of the IMF or other members of the IMF staff.

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I Introduction

It is in this city of Khan-balik that the Great Khan has his mint; and it is so organized that you might well say that he has mastered the art of alchemy . . . [H]e has money made for him . . . out of the bark . . . of mulberry trees. . . . Of this money the Khan has such a quantity made that with it he could buy all the treasure in the world. With this currency he orders all payments to be made throughout every province, kingdom and region of his empire. And no one dares refuse it on pain of losing his life.

Marco Polo (1298)

Je veux que la Banque soit assez dans les mains du Gouvernement et n'y soit pas trop.

Napoleon Bonaparte (1806)¹

. . . as a matter of course, the ECBS [European Central Bank System] should not be allowed to extend credit to public authorities in the Community or in member states.

Hans Tietmeyer (1991)

As the above passages suggest, the view that central bank credit to the government should be formally limited, and that central banks should be largely independent of political power is, in a historical perspective, relatively new. The advantages arising from such independence—from a “divorce” between the central bank and the government (as the phenomenon is nicknamed in some countries (Epstein and Schor, 1986, and Tabellini, 1987)—were explicitly recognized only during the period between the First and the Second World Wars, when, following broad political changes and the end of the gold standard, the statutes of many European central banks had to be drafted or redrafted. Faced with the monetary consequences of deficit financing that had afflicted many countries during the First World War, the international financial community, in a series of conferences organized by the League of Nations, recognized that shielding central banks from politi-

cal influence and strictly controlling their credit to the government would favor price stability.² These principles were incorporated in the central banking laws drafted with the “technical assistance” of the League of Nations during the 1920s (namely, those of Austria, Bulgaria, Estonia, Greece, and Hungary), as part of the “conditionality” attached to loans supported by the League; they were extended later to the statutes of many other central banks, particularly in Europe.

As in the 1920s, the recent debate on central bank independence has also been spurred by major political events: first, the collapse of centrally planned economies, requiring the drafting of new central banking laws in all former communist countries to bring them into line with market economy principles; and, second, the decision of the members of the European Community (EC) to move more decisively toward a monetary and economic union, which not only required the drafting of the new European central banking statute but will also require substantive amendments to the central banking legislation of all EC countries. In both cases, the debate on central bank independence has focused on the issue of the formal constraints on central bank credit to the government.

This paper revisits this issue, primarily from a normative point of view. Although the paper makes frequent references to the existing constraints in industrial and developing countries, it focuses on how central bank credit to the government should be regulated. Section II reviews the arguments in favor of central bank independence and singles out the control of central bank credit to the government as a fundamental aspect of such independence. Section III discusses the features of an “ideal model” of the constraints on such credit to the government. This model seems to be appropriate in economies with a relatively developed financial system, in which the

¹The quotation is reported by von Bonin (1979), p. 48.

²The Brussels conference of September 24–October 8, 1920, and the Geneva conference of May 1922 were particularly important. See, for information on these conferences and on the activity of the League of Nations in this area, Ulrich (1931) and Kisch and Elkin (1932).

government has access to alternative forms of financing, and a relatively stable economic situation, characterized by contained fiscal deficits and without an interest premium on government paper. Section IV discusses how much the ideal model should be modified to take account of the many “imperfections” existing in most economies, and how, in practice, the constraints on central bank credit to the government should be regulated. Section V summarizes the conclusions. Three appendices complete the paper. Appendix I discusses the conditions under which borrowing from the central bank is attractive for the government. Appendix II examines to what extent the formal guarantees of central bank independence (including the constraints on its credit to the government) are empirically relevant. Appendix III presents factual information on how such credit to the government is regulated in a sample of 57 countries, including all major industrial countries and a random selection of other industrial and developing countries.

However, the paper does not cover all the possible topics concerning central bank credit to the government. One issue not fully explored is to what extent formal constraints can be replaced, or influenced, by the existence of informal agreements,

“tradition,” or other country-specific factors (such as its legal framework). Nevertheless, there is a strong presumption that these factors are important. The suggestions put forward in the paper should therefore be interpreted as broad guidelines to be adapted to the reality of the various economies on a case-by-case basis. A second unexplored issue is the relationship between the central bank and various levels of government. It is here implicitly assumed that, as recommended by Martínez Méndez (1993), the central bank should abstain from lending to levels of government that are not part of the central government.³ A third issue that is only partially discussed is coordination between the central bank and the government. As both institutions interact on the monetary and financial markets, cooperation is of course important, as long as it does not hamper the central bank’s independence (see Quintyn and McAuliffe, 1993).

³However, if some central bank credit to other government levels is allowed, the constraints discussed in Sections III and IV should refer to credit to all government levels and agencies, excluding the financial intermediaries owned by the government (see “Circumventing Formal Constraints” in Section IV).

II Inflation, Central Bank Independence, and Government Financing

Central bank independence of political power is usually advocated as a remedy against the alleged inflationary bias of governments.⁴ This bias is explained by two arguments (Cukierman, 1992). The first argument (the “revenue motive”) focuses on the risk of the government exploiting the central bank’s capacity to create “purchasing power” to finance expenditure that the government is unwilling to finance out of current or future taxation. Exploiting this capacity (the so-called seigniorage) is obviously attractive for private agents. As noted by Kisch and Elkin (1932), in the nineteenth century central banking laws mainly focused therefore on the danger that in managing monetary policy, private interest could prevail over public interest. Seigniorage may be attractive also for the government, because it may be more acceptable than explicit taxes and because it has important distributional effects that may be difficult to detect.

The second argument (the “unemployment motive”), with its antecedents in the literature on political cycles (see, with reference to central bank independence, Grove, 1952), focuses on the short-run trade-off between price stability and output and on the assumption that political forces in democratic societies are primarily motivated by short-term re-election targets and may therefore be tempted to trade price stability for temporary increases in output.

A possible solution to the presumed inflationary bias of governments has been found in attributing monetary policy responsibilities to an independent central bank—to an institution “insulated from political pressure and [having] . . . considerable discretion in the determination and operation of monetary policy” (Swinburne and Castello-Branco, 1991, p. 418). Although a discussion of central bank independence goes beyond the scope of this paper,⁵ it is

necessary to recall that such complete independence would probably not be an adequate tool against inflation. To be effective, this independence must at least be complemented by a clear mandate to reach price stability, and by the accountability of central bank managers for their action. This mandate and this accountability make central bank independence consistent with the rules of a democratic society.⁶

Introducing constraints on the amount of credit that the government can receive from the central bank has traditionally been considered an essential component of independence. The above discussion, however, highlights two points that will shape the suggestions presented below.

First, constraining such credit to the government is not sufficient, because the arguments on the inflationary bias of governments hold, to some extent, regardless of the source of base money creation. Indeed, the revenue motive operates even if central bank credit is granted to the private sector, as long as part of the seigniorage is transferred to the government (through central bank profits), or as long as there is an outstanding stock of government debt whose real value can be eroded by inflation (Ploeg, 1991). Similarly, the short-term trade-off between output and inflation holds for any monetary expansion, regardless of its origin. Consequently, a con-

government control. In principle, there seems to be no rationale for separating monetary and exchange policy responsibilities. However, even in countries that have attributed monetary policy responsibilities to an independent central bank, exchange rate policy is still under government control.

⁶See Swinburne and Castello-Branco (1991) for a more detailed discussion of these issues. Those who believe that the statutory definition of a mandate and of accountability rules are not sufficient to guarantee anti-inflationary policies have proposed alternative institutional solutions. Free banking, that is, replacing the central bank with many competing banks (see Dowd, 1989, for a recent restatement), has been considered an alternative solution by those who believe that independent central bankers not subject to market discipline would not faithfully pursue the mandated goal of price stability. A different, and for some aspects opposite, solution is the replacement of the central bank with a currency board, that is, an institution that only issues domestic currency in exchange for foreign currency at a fixed rate and on demand (see Liviatan, 1993).

⁴Unless otherwise indicated, the term “government” is used here to cover not only the executive but also the legislative power. The issue of whether central bank independence should be weakened for the latter is discussed in Section III.

⁵Nor will this paper discuss to what extent assigning monetary policy responsibilities to an independent central bank is consistent with maintaining exchange policy responsibilities under

straint on central bank credit to the government, even if it could be effectively enforced in isolation, would not necessarily shield the central bank from political pressures. Therefore, to be effective, it must be seen as a component of a set of rules guaranteeing central bank independence, including those affecting the central bank mandate; its financial independence; the composition, appointment, and duration in office of its managers; and the control on other policy instruments, such as the discount rate and reserve requirements.

Second, it is also clear that the constraints on central bank credit to the government, although unnecessary in principle if a clear mandate to pursue price stability exists, nevertheless play a special role among the institutional guarantees of central bank independence because, under specific but common conditions, receiving credit from the central bank may be more advantageous for the government than are other forms of monetary expansion. Not only does a monetary expansion through credit to the government not require the involvement of a "third party" (such as commercial banks), and can therefore be more easily realized, but more important, the budget may benefit more from an increase in central bank credit to the government than it does from an increase in such credit to the private sector. As discussed in Appendix I, this occurs when one of the following two conditions applies:

- The central bank grants credit to the government at below market rates and, at the same time, does not entirely transfer seigniorage to the government;⁷ and
- The government market interest rate is higher than the first-class private interest rate (that is, private and government paper are imperfect substitutes, possibly owing to the existence of a default risk premium on government paper). Therefore, the preference for borrowing from the central bank will

be greater in countries with weaker fiscal accounts, when the government is indeed likely to pay a premium over private paper (Cottarelli and Mecagni, 1990, and Alesina and others, 1992).⁸

In the light of the above discussion, the following sections will evolve around two principles. First, because of its presumed inflation bias, the involvement of the government in the decisions affecting all components of central bank credit should be minimized, and the separation between the government and the central bank should be enhanced. In this respect, as argued in Section III, some of the constraints on central bank credit to the government have importance not only *per se*, but also as a credibility-enhancing signal to the market of the central bank's independence, without which they would be irrelevant.

Second, a case for imposing tighter constraints on central bank credit to the government than those imposed on other forms of such credit exists whenever the government is likely to benefit more from the former than from the latter. It will be argued that this is indeed so in many countries (particularly in developing countries) in which these constraints can substantially reinforce the mandate to pursue price stability attributed to the central bank.

⁸An extreme (and admittedly simplified) example illustrating this point is that of a cash-constrained government that is unable to sell securities on the market (perhaps because of a very high default risk). Borrowing 100 currency units from the central bank would allow the government to raise expenditure by 100 units in the current year, whereas, even if all central bank profits were transferred to the budget, an equal growth of central bank credit to the private sector would loosen the cash constraint by only $i^p \cdot 100$ (i^p being the rate charged by the central bank on private sector credit). Of course, if the government could borrow from the market against the collateral of the transfer of central bank profits, its preference for central bank credit would disappear (as long as all central bank profits were transferred to the government). But this possibility is of more theoretical than practical interest. This example applies also to cases in which a government paper market does not exist (which is equivalent to an "infinitely high" premium), or is very limited, as in many developing countries. In these cases, borrowing from the central bank may be the only possibility of financing the fiscal deficit.

⁷The latter condition is very likely. Indeed, as noted by Klein and Neumann (1990), even when the law stipulates that central bank profits should be transferred to the government, a relatively large share of the seigniorage is usually retained by the central bank, for example, by inflating its costs.

III An Ideal Model

A good starting point for discussing the ideal constraints on central bank credit to the government is the “Maastricht model”—which the governments of the EC have proposed to regulate the relations between the European central bank and the national central banks, on the one side, and the (community, national, and local) EC governments, on the other. Such a model presents several of the features of an ideal model of the financial relations between the central bank and the government.

The Maastricht Model: General Features

Table 1 summarizes the constraints on central bank credit to the government included in the Maastricht Treaty. The following features stand out.⁹

- Central bank credit to the government is entirely discretionary, that is, the central bank cannot be forced to provide such credit;
- Only indirect credit (defined as the acquisition of government securities by the central bank from a third party) is permitted; direct credit (through overdraft facilities, advances or purchases of government paper on the primary market) is prohibited;
- Indirect credit is unconstrained;
- National parliaments (or any equivalent political entity at the EC level) have no direct involvement in monetary policy;
- Government deposits at the central bank are unconstrained;
- The central bank may act as government fiscal agent.

The rationale for the above provisions is discussed below.

⁹Most of these features arise from Article 104 of the treaty, whose paragraph 1 stipulates: “Overdraft facilities or any other type of credit facility with the ECB or with the central banks of the Member States (hereinafter referred to as “national central banks”) in favour of Community institutions or bodies, central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of Member States shall be prohibited, as shall the purchase directly from them by the ECB or national central banks of debt instruments.”

All Credit Is Discretionary

The attribution of full discretion in the control of central bank credit is essentially a matter of principle that cannot be justified purely as a measure to avoid excessive monetary creation. Indeed, although it is true that unlimited automatic access to central bank credit would put monetary policy in the government’s hands (Leone, 1991), relatively little and limited automatic access does not seem to be particularly harmful. The central bank could offset the undesired creation of base money by using other available instruments (for example, by selling government or central bank paper in the open market). Moreover, if the prohibition had been concerned purely with the effect on base money creation of such automatic access, changes in government deposits held at the central bank should also have been restricted as they have the same effect on liquidity as do changes in central bank credit (see Section III).

Two factors can explain the absolute prohibition of automatic access to central bank credit, whose inclusion in the Maastricht Treaty was considered important enough to require amendments to the central banking legislation of most EC member countries. First, endowing the central bank with what can be called an unlimited monopoly power (that is, full discretion) in the control of base money enhances its formal independence vis-à-vis the government. It is equivalent to a formal statement that the government should have no direct control of central bank money.¹⁰ Seen in this perspective, the prohibition,

¹⁰Grilli, Masciandaro, and Tabellini (1991) and Padoa-Schioppa and Saccomanni (1991) see discretionary control of monetary tools as a component of independence. Full discretion in the control of base money creation is one of the features of the Deutsche Bundesbank and appears to be highly valued: “The Bundesbank had no objections to the raising of the ceilings provided that the definition and declared purpose of these credits, which are provided to bridge short-term cash deficits, remained unchanged and that the Bundesbank, with regard to the granting of such credit, retained *full power of discretion*” (emphasis added) (Deutsche Bundesbank, 1986, p. 23, in referring to the increase introduced in 1967 in the ceiling on central bank credit to the Government in Germany).

Table 1. Constraints on Central Bank Credit to the Government as Embodied in Maastricht Treaty

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	Prohibited	Not applicable	—	—
Fixed-term loans and advances	Prohibited	—	—	—
Purchase of securities (primary market)	Prohibited	—	—	—
Purchase of securities (secondary market) (excluding repos)	Discretionary	Unconstrained	None	Unconstrained
Repurchase agreements (repos)	Discretionary	Unconstrained	None	Unconstrained
Government deposits at central bank	Discretionary ¹	Not applicable	None	Unconstrained

Source: Amendments to the European Economic Community treaty as agreed in the European Council at Maastricht, December 10, 1991.

¹According to article 21.2 of the protocol on the statute of the European Central Bank, the latter (as well as national central banks) may act as government fiscal agent, which usually is intended to include the holding of government deposits.

although of limited relevance when taken in isolation, can be important as part of a model of a central bank with a large amount of independence, a model guaranteed by a number of other provisions, including those on the central bank statutory objectives (article 2 of the statute of the European Central Bank), on its formal independence (article 7), and on the appointment of its management (articles 10–11).

Second, in countries with developed financial markets, the traditional rationale for automatic access to central bank credit no longer holds. Such access has traditionally been defended on the grounds that, without it, the elasticity of government debt and expenditure management would be seriously impaired (Ulrich, 1931). In principle, this argument is valid. The attempt to cover any liquidity shortfall purely by issuing treasury bills may be extremely costly for the government and may create turbulence in monetary and financial markets (Spaventa Commission, 1989). However, in practice, this argument must be judged against the degree of development of monetary and financial markets. The more developed these markets, the less the recourse to central bank credit is justified. First, large treasury bill issues can be absorbed by the market more easily. Second, short-term liquidity services can also be provided by commercial bank deposits and loans. The more organized and efficient bank and interbank markets are, the more easily commercial banks can accommodate the needs of a borrower as large as the government even in the short run.

Finally, there seems to be no valid reason why the principle of discretion should be sacrificed to increase the flexibility of government debt manage-

ment in countries in which that elasticity could be provided by alternative means.

Only Indirect Credit Is Permitted

The Maastricht Treaty not only bans any form of automatic access to central bank credit, it also prohibits any form of direct credit even if it is voluntary. The central bank can finance the government only indirectly, that is, by acquiring government securities from the market.¹¹

Indirect credit has the advantage of being securitized. This is an advantage (with respect to overdraft facilities or fixed-term loans) because marketable securities can be more easily sold at a later stage, thus making central bank operations more flexible. Indeed, in many countries (such as Italy, Portugal, and Hungary), the practice of extending credit through overdraft facilities has severely reduced the liquidity of central bank portfolios.

Indirect credit, when it takes the form of open market operations, that is, of regular transactions, on a voluntary basis, and possibly through auctions (rather than through bilateral transactions), typically occurs at market clearing rates. The market rate condition, although not sufficient to guarantee that the government is indifferent to borrowing either from the market or from the central bank (see Appendix I), is important. First, it reduces the advantage for the government of borrowing from the central bank. Second, it represents an additional formal statement of the separation between the central

¹¹Including outright open market operations, repurchase agreements, and the acquisition of government paper as collateral for the refinancing of the banking system.

bank and the government and puts private and government sectors on an equal footing in their access to financial markets. Third, and most important, if a large share of central bank assets bear lower than market rates, central bank revenues are squeezed possibly to the point of generating losses. Even if in principle all central bank profits had to be transferred to the government, in practice the collection by the central bank of sufficiently high revenues enhances its budgetary autonomy (for example, in determining its operating costs, such as central bank wages), and therefore its actual independence from government.¹² A central bank that has to rely on government transfers to balance its budget (even if these transfers are legally required) is certainly in a weaker negotiating position vis-à-vis the government.¹³

The above arguments do not, however, explain why intervention in the primary market for government paper is prohibited. As long as this intervention occurs through organized procedures (such as regular auctions), purchases on the primary and the secondary markets are equivalent. Therefore, this prohibition must, again, be justified as a matter of principle, that is, as an institutional signal of the separation between the central bank and the government. Whether this principle should be sacrificed on more pragmatic grounds depends on a host of factors. Allowing the central bank to intervene in the primary market for government paper, particularly in the treasury bill market, may have advantages. The treasury bill tender rate in many countries is a key market rate with a direct influence on bank deposit and loan rates, and the central bank may be interested in influencing it directly, particularly in countries in which secondary markets are not well developed. But there are also some drawbacks. For example, the treasury bill tender rate at specific maturities may be used as the reference rate for government floating rate bonds. Allowing the central bank to intervene in the tender may subject it to undue pressure from the government aimed at reducing the cost of servicing the debt by altering the term structure of interest rates (Italy is a case in point). In conclusion, whether the central bank should be al-

lowed to intervene in the primary market should be determined by the above advantages and drawbacks.

Indirect Credit to the Government Is Unconstrained

The choice of excluding indirect credit from the constraints can be justified because, in the countries admitted to stage III of economic and monetary union (EMU), not only will indirect credit occur at market rates, but government and private assets are likely to be close substitutes, and the interest rate paid on government and private securities will therefore be close.¹⁴

As shown in Appendix I, under the above conditions, whereas it remains true that the government benefits from a monetary expansion, the source of that expansion becomes irrelevant.¹⁵ Constraining credit to the government sector alone would therefore be irrelevant. The only meaningful constraint would be on total domestic credit of the central bank. Whether that credit should be constrained is of course an aspect of the never-ending "rules versus discretion" debate, discussion of which goes beyond the scope of this paper. Following their traditional approach to monetary policy, the EC members opted to avoid rules and to rely on discretion, although in the context of an independent central bank, which, of course, leaves the door open to some government pressure.¹⁶ However, in the conditions prevailing in countries similar to those admitted to stage III of EMU, the real issue is not whether credit to the government should be restrained, but whether total domestic assets of the central bank should be restrained.¹⁷

¹⁴Fiscal discipline is one of the requirements of stage III of EMU.

¹⁵If government and (first-class) private assets are *not* perfect substitutes, for example, for the existence of a default risk premium on government paper, a purchase of government paper in the open market by the central bank, even if implemented through standard auction procedures, will favor the government as it will reduce the market spread paid over private paper.

¹⁶The extent of actual central bank independence in performing open market operations is subject to much debate even in countries that recognize formal independence. See, with reference to the United States, Buchanan and Wagner (1977), Demopoulos, Katsimbris, and Miller (1987), and Mayer (1990). See Waller (1987) for a theoretical discussion.

¹⁷An additional consideration is that the conduct of monetary policy in the EC countries, as well as in other countries with developed financial systems, typically involves the acquisition of government paper. Therefore, restraining government credit would imply a substantial reduction of monetary policy flexibility. However, this is not an overriding problem as in principle open market operations could still occur through the purchase of private paper (for example, issued by banks). Moreover, a limited ceiling on credit to the government would still leave some room for open market operations in government paper.

¹²Clearly budgetary autonomy must be tempered by the principle of accountability, which must be applied not only to monetary policy decisions but also to central bank budgetary decisions. Budgetary profligacy at the central bank (such as excessively high wages) could eventually lead to public criticism, and to a loss of credibility and independence.

¹³As long as some central bank liabilities pay a zero or less than market rate (for example, currency or bank reserves), the central bank could charge the government below market rates without incurring any losses. However, seigniorage is likely to decline in the EC owing to the decline in inflation, the trend decline in the use of cash as a payment instrument, and the pressures to reduce the implicit taxation of reserve requirements.

In addition, to bolster central bank independence, the central banking law could set a formal constraint on the purpose of all open market operations—stating that they can be performed only “for reasons of monetary policy” (as in Austria), “to regulate the money market” (Germany), or “in execution of monetary and exchange rate policy” (Portugal). A stronger solution would be to prohibit the transfer of seigniorage to the government. Indeed, as shown in Appendix I, as long as credit occurs at true market rates (and there is no interest premium on government paper), such a prohibition would eliminate the above-mentioned revenue motive for putting pressure on the central bank. Even in this case, however, the central bank would not be completely isolated from government pressure aimed at exploiting the inflation-income trade-off (the unemployment motive), nor would it eliminate the revenue motive entirely in the presence of nonindexed government debt that could be eroded by inflation.

Parliament Is Not Directly Involved

The prohibition of direct credit to the government included in the Maastricht Treaty is absolute in the sense that it cannot be overruled by the EC or by national parliaments. Although the need for the central bank to be independent of the government is widely accepted, there is less consensus on whether it should also be independent of parliament, which is the ultimate holder of power (Grove, 1952, and Franzen, 1991).

The ultimate responsibility for policy decisions, including economic policy, certainly belongs to parliament. But the issue is whether parliamentary control of the central bank should be direct or indirect (that is, via the definition of its mandate and the accountability of its managers). Indirect control is more appropriate because the arguments in Section II in favor of central bank independence hold not only with respect to the government but also with respect to parliament, particularly in present-day democracies.¹⁸

Assigning to parliament the decision to determine the extent of central bank credit to the government may severely undermine monetary control, particu-

larly when this assignment is routine (for example, when the amount of credit to be extended each year is determined in the budget law, as in Indonesia). It is less worrisome when the parliament is only requested to intervene, in exceptional circumstances, to remove a constraint imposed by the law (as in Italy). However, the best possible option is for parliament to have no direct involvement.¹⁹

Government Deposits at the Central Bank Are Unconstrained

With respect to government deposits at the central bank, five issues are relevant. First, should the central bank be forbidden from receiving government deposits at all? Second, if government deposits at the central bank are allowed, should they be constrained? Third, should the central bank be the sole holder of government deposits? Fourth, should the constraint on central bank credit be defined in terms of net outstanding credit (credit minus deposits)? Fifth, should government deposits be remunerated?

On the first question, although prohibiting the central bank from receiving government deposits would enhance the separation between it and the government, such a prohibition would be inconsistent with the role of fiscal agent that the central bank is often asked to play and, for good reason, should continue to play (see below).

On the second question, the Maastricht Treaty has not introduced any constraint on government deposits at the central bank, which reflects the tradition prevailing in almost all EC countries. In principle, this may weaken monetary control, as running down government deposits at the central bank has the same liquidity effect of central bank borrowing. The government could, for example, accumulate liquidity through overfunding when market conditions are favorable and use this liquidity later to oppose a liquidity tightening by the central bank. Of course, the central bank could offset the liquidity created by running down government deposits, but there may be short-run problems if the initial stock of government deposits is large.

Some central banks have been given some control of government deposits. The Bank of Canada, for

¹⁸As argued by Holtfrerich (1988), on Germany: “The role of the German parliament has changed in the last century. In the constitutional monarchy until the end of World War I, parliament controlled and checked the fiscal behavior of the government and usually had a restraining influence on the government’s expenditures. In parliamentary republics, like the Germany of Weimar or Bonn, parliaments tend to be prodigal, especially before and with regard to elections. An autonomous central bank in a parliamentary republic is therefore as useful for checking the growth of fiscal expenditures as a parliament was in a monarchy. . . .” (p. 153).

¹⁹Of course, central bank independence is strengthened if the constraints on credit to the government are set by a *constitutional* law (or in an international treaty such as the Maastricht Treaty), which can be changed by parliament only with a qualified majority. This is true, for example, in Chile, in the Central and West African Monetary Unions, and in the Eastern Caribbean Monetary Area. However, the constraints set by *ordinary* laws, although removable by parliament with a simple majority, are far from irrelevant, as amending a central banking law is a more difficult political process than routinely authorizing additional credit based on an existing law.

example, can transfer government deposits from commercial banks to itself, and vice versa. In Germany government deposits can be held outside the Bundesbank only with its authorization. However, control of the allocation of government deposits (as in Canada and Germany) does not prevent the government from increasing liquidity by raising expenditure. To contain this possibility, the central bank and the Government in Belgium have recently agreed to introduce a ceiling (equal to BF 15 billion) on the amount of government deposits held at the central bank. Such a ceiling, expressed, for example, as a percentage of government revenue in the preceding year, would contain the maximum amount of liquidity that the government could create to finance its deficit.²⁰ As an alternative to a ceiling, the amount of deposits that the government is allowed to withdraw in each period (say, a month) could be limited to a level that the central bank can easily offset with market instruments.²¹

On the third question, the case for concentrating all government deposits at the central bank is argued, for example, by Kisch and Elkin (1932) in their classic book on central banks (pages 37–39), in which they refer to the danger that large movements in government deposits may destabilize local banks. However, this danger does not seem to be serious in industrial countries, where the interbank market is well organized. Therefore, there seems to be no overriding reason to prevent the government from keeping deposits with commercial banks (on the contrary, it may be necessary if a relatively low ceiling is set on government deposits held at the central bank). Indeed, in about 80 percent of the sample countries considered in Appendix III, the government is allowed to keep deposits outside the central bank (notable exceptions are France, Greece, Japan, and Switzerland).²²

On the fourth question, it is sometimes argued (for example, Martínez Méndez, 1993) that the con-

straints on central bank credit to the government should be imposed on a net basis, that is, be related to the net outstanding amount of central bank credit to the government minus government deposits at the central bank. This does not seem appropriate. Allowing the government to borrow from the central bank up to the outstanding amount of deposits would weaken the separation between government and central bank. Moreover, if government deposits are liquid, such a provision would not really benefit the government and would simply add an unnecessary complication to bookkeeping. Finally, it would allow the government to borrow from the central bank any arbitrarily large amount of money as long as a balancing deposit was created. It is not clear why the government should be given this possibility (which may tempt it to use the deposits created by borrowing).²³

On the fifth question, government deposits at the central bank are often unremunerated (including in Germany, Japan, and the United States), usually as a counterpart to the fact that the services of the central bank as fiscal agent, together with the credit granted, are also free of charge. However, as market conditions should apply to all financial relations between the government and the central bank, government deposits at the central bank should also bear market rates.

Central Bank May Act as Government Fiscal Agent

The Maastricht Treaty stipulates that the central bank may act as government fiscal agent but does not specify what is involved in this activity. It is usually intended to cover two tasks: first, receiving and making payments on behalf of the government as government cashier;²⁴ and, second, organizing and promoting the placement of government paper, as well as managing arrangements to handle government debt in book-entry form. Most central banks are involved in one or both activities.²⁵

In principle, acting as fiscal agent may be in conflict with the need to preserve central bank independence. For example, promoting the placement of government paper, interpreted broadly, may involve

²⁰With such a ceiling, the central bank could automatically use additional treasury liquidity to reduce the floating debt (as in the United Kingdom) or deposit it at commercial banks.

²¹A separate issue is whether the central bank should be given control over government deposits as an additional monetary policy tool, as in Germany or Canada. Quintyn and McAuliffe (1993) argue that this may be appropriate in countries in which other monetary control instruments are insufficient owing to limited financial market development.

²²On the other hand, concentrating all public sector deposits in a single account at the central bank may improve government liquidity management. The relevance of this factor will of course have to be assessed on a case-by-case basis, that is, by looking at the practical difficulties that the government might face in managing more than one bank account. What is certainly crucial to improve liquidity management is that only the treasury be allowed to keep deposits with financial institutions (including the central bank), so that the management of all liquidity sources is centralized.

²³In almost all the countries included in the sample in Appendix III the constraints on central bank credit to the government are defined in gross terms.

²⁴This role is distinguished from that of government treasurer, which is the agent (usually a section of the ministry of finance) in charge of issuing payment orders.

²⁵About 70 percent of central banks included in the sample in Appendix III act as government cashier, 80 percent promote the sale of government paper, and 60 percent perform both activities.

purchases of government paper only to stabilize its price. Consequently, it would be appropriate to define specifically the tasks that the central bank may perform as fiscal agent and to specify that these are secondary to the primary mandate of the central bank. More specifically, they must be consistent with the constraints set on central bank credit to the government. As far as prohibiting direct credit to the government is concerned, this prohibition implies that the central bank's obligation as government cashier to honor government payment orders holds only as long as the government account at the central bank is not overdrawn (see Section IV). If direct purchases on the primary market are prohibited, the central bank could acquire government paper directly from the government only on behalf of the government itself.²⁶ As to open market operations on secondary markets, it would be better to avoid a specific commitment for the central bank to stabilize government paper prices, as this commitment may conflict with monetary control.²⁷

Within the above boundaries, the role of the central bank as government fiscal agent should not interfere with its monetary policy tasks and could be permitted. The central bank is a public organization and, within the limits of its statutory mandate, it should cooperate with the government in all its activities. In many countries it has more expertise than government officials in dealing with monetary and financial markets, which justifies its role as manager of government debt issues. Moreover, the information it acquires as government fiscal agent (particularly concerning the timing of government inflows and outflows) may facilitate liquidity management.

According to many central banking statutes (including those of some independent central banks such as the Bundesbank and the Netherlands Bank), the services provided by the central bank as fiscal agent are not remunerated. This is a legacy of the past, and cost transparency requires some form of remuneration to be given for the services provided. The remuneration of these services, although not quantitatively crucial, would be immaterial only if central bank profits were transferred entirely to the

government (which is unusual) and the government was committed to cover all central bank losses (which is rare). The remuneration should cover the costs met by the central bank as fiscal agent, and, again, market prices (prices on similar services provided by the banking system) should in principle apply. If the law gives the central bank a monopoly in the provision of these services, the price cannot be decided by the central bank alone, as this would eliminate any incentive to provide the services efficiently, and must be agreed between the central bank and the government.

Summary of Recommendations

Based on the preceding discussion, Table 2 summarizes the main features of the ideal model, which centers on two guidelines. First, all allowed credit is discretionary. Second, only indirect credit is allowed. Both features are to be considered components of a central bank model characterized by a high degree of independence within a mandate to pursue price stability as the primary objective of monetary policy. Consideration could, however, be given to allowing the central bank to purchase government paper on the primary market, as long as the purchases are made at public auctions, with the central bank participating on an equal footing with other market agents.

A third feature, implicit in the previous two, is that all credit is securitized and at market rates, which guarantees the flexibility of central bank asset management and its profitability. An additional feature that is implicit in the first two is that the central bank should not provide credit guarantees on any component of public debt.

Fourth, and with reference to indirect credit, it has been argued that, for countries similar to those admitted to stage III of EMU, the real choice is not whether indirect credit should be constrained, but whether all domestic sources of base money creation should be constrained. In countries in which the overall guarantees of central bank independence appear sufficient, such a constraint is unnecessary. A formal statement that open market operations should be used only to achieve the targets of monetary policy may, however, be useful.

Fifth, parliamentary control over central bank credit to the government is discouraged (and highly discouraged if it is on a routine basis).

Sixth, although there are no overwhelming reasons to prohibit the central bank from receiving government deposits, the introduction of some constraint on government deposits at the central bank is recommended to enhance the short-run control of base money.

²⁶This role is played by the Bundesbank as head of the Federal Bond Consortium, the consortium of banks that intermediates the sale of securities issued by the German Government. As head of the consortium the Bundesbank takes up 20–25 percent of each government issue for later resale on the market. This arrangement is not inconsistent with prohibiting the direct purchase of government paper because the Government is credited the countervalue of the purchase only when the paper is actually sold by the Bundesbank on the market.

²⁷Intervention to smooth fluctuations of security prices may, of course, be required to maintain orderly conditions in the financial markets, but discretion should be left to the central bank on the amount and the timing of such intervention.

Table 2. Constraints on Central Bank Credit to the Government: Summary Recommendations for an Ideal Model

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	Prohibited	Not applicable	—	—
Fixed-term loans and advances	Prohibited	—	—	—
Purchase of securities (primary market)	Discretionary or Prohibited	—	—	—
Purchase of securities (secondary market) (excluding repos)	Discretionary	Unconstrained	None	Unconstrained
Repurchase agreements (repos)	Discretionary	Unconstrained	None	Unconstrained
Government deposits at central bank	Discretionary	Unconstrained	Expressed as percentage of government revenue in preceding year	Linked to rate paid on government short-term paper

Finally, the involvement of the central bank as fiscal agent of the government may be appropriate, although it is not considered strictly necessary in countries in which alternative financial intermedi-

aries could perform the same role. The services provided by the central bank, as well as the deposits kept by the government at the central bank, should be remunerated at market rates.

IV Formal Constraints in Practice

This section discusses how the recommendations described above should be modified to take account of the “imperfections” characterizing a number of economies. Although some of the situations discussed may be characteristic of developing countries, they are not necessarily present in all developing countries. Consequently, the recommendations presented in this section do not constitute an alternative “model” to the one discussed in Section III above. They should rather be applied selectively to modify specific aspects of the ideal model according to the features of each country.

Constraints on Direct Central Bank Credit and Financial Market Development

When, as in many developing countries, banking and financial markets are thin, inefficient, and lack flexibility, and, particularly, when no market for treasury bills or for any other government paper exists, some of the provisions of the ideal model for the direct financial relations between the government and the central bank may be inappropriate.

Without sufficiently well-organized government paper markets, prohibiting automatic access to direct central bank credit may excessively constrain government expenditure. Even temporary gaps between government revenues and expenditures may be seriously impeded. In some extreme cases, in which no market financing is possible, prohibiting direct credit from the central bank would leave fiscal policy no flexibility even in the short run. Of course, excessively restrictive rules can be counterproductive as they may be systematically circumvented, and, eventually, removed. Also, as argued in Section III, prohibiting even limited forms of automatic access to central bank credit is essentially a matter of principle, which, although relevant, could be temporarily sacrificed on pragmatic grounds. In conclusion, some limited access to direct central bank credit may be unavoidable.

Moreover, relatively weak banking structures may be helpless in dealing with a depositor as large

as the government. Therefore, setting tight ceilings on government deposits at the central bank may be inappropriate. The involvement of the central bank as government agent is probably also more crucial when financial intermediaries are not very sophisticated and the availability of trained personnel outside the central bank is limited.

Relaxing the constraints on direct central bank credit to the government should, however, be seen as a cost (in terms of formal central bank independence) caused by the underdevelopment of financial markets. Therefore, as these markets evolve, the constraints should be tightened (see below). Moreover, the temporary relaxation of the constraints should not impede the evolution of financial markets and should not excessively weaken central bank independence. To achieve this goal, two basic features of the ideal model should be retained.

First, all credit should be at market rates. This follows from the need to shield the central bank from the pressures of a weak profit position and to reduce (partially) the benefit accruing to the government from central bank credit. Of course, having the law state that credit should be “at market rates” may not be sufficient. If a market for treasury bills, albeit limited, is available, the law could specify that the credit is extended at the treasury bill rate (as in Mexico and Namibia).²⁸ If no true market rate exists, reference to a specific rate—the discount rate or a standard rate used by the central bank in its transactions with banks (as in Austria, Germany, Hungary, the Netherlands, and the West African Monetary Union)—seems appropriate. At a minimum, the law should explicitly attribute the responsibility for setting the rate to the central bank (as in Malaysia, the Central African Monetary Union, and the Eastern Caribbean Monetary Area). Letting the rate be decided by “mutual agreement” between the central bank and the government (as in Portugal and Greece) does not provide sufficient protection.

²⁸As already noted, even in this case, the government would benefit from central bank credit because the T-bill rate would be lower (and less volatile) than without such credit, and because part of the interest payments made to the central bank would be returned to the budget as transferred central bank profits.

Second, to the extent made possible by other considerations (see below), central bank credit to the government should be securitized, to increase monetary policy flexibility. As recalled above, the main advantage of securitization is that it provides the central bank with a stock of government paper that can be used later to perform open market operations. Such operations in government paper may be particularly important in countries with an initially weak financial structure, because they may help the creation of a government paper market, on which the deficit could be financed in nonmonetary form (Quintyn and McAuliffe, 1993). Therefore, granting credit through the purchase of securities (preferably short-term paper—with maturity not exceeding one year) should be preferred to overdraft facilities and fixed-term advances.

Once the possibility of some limited direct central bank credit to the government—at market rates and securitized—is admitted, a decision must be taken on (1) the precise form of the credit arrangement; (2) the frequency at which compliance with the constraint is checked; (3) the consequences of exceeding the ceiling; (4) the most appropriate way of expressing the ceiling (in nominal terms or as a percentage of some reference aggregate); (5) the quantitative amount of the ceiling; (6) whether the ceiling should be expressed in terms of flows or of stocks; (7) the extent of flexibility that the credit facility should have with respect to nominal income shocks; and (8) whether the arrangement is temporary or permanent.

Form of Credit Arrangement

The form of the credit arrangement must allow flexibility in management of government cash and debt. Extending credit through the purchase of securities, as recommended above, may appear inadequate, because purchases of government paper necessarily occur at discrete intervals, whereas liquidity requires continuous access to credit. The problem can be solved, however, by an arrangement in which the central bank periodically purchases government securities and deposits the counterpart in a current account in which all government revenues and expenditures would be centralized,²⁹ and which could not be overdrawn (see below). Chart 1 illustrates this mechanism.

At the beginning of each period, say, one year or one quarter, the central bank would purchase government securities for an amount equal or below the

Chart 1. Gross and Net Central Bank Credit to the Government

maximum set by law. Gross credit to the government would therefore show a step increase (upper panel of Chart 1).³⁰ At the same time, the government current account at the central bank would be credited with a corresponding amount. The current account would be gradually drawn down over the period, with daily fluctuations reflecting the random component of revenues and expenditures (middle panel). Net credit to the government (lower panel) would increase regularly, reflecting the step increase of gross credit and the gradual drawing down of government deposits. At the beginning of the next period a new purchase of government paper would occur, thus allowing a new expansion of net credit. As long as the interest rate on government deposits at the central bank is equal to the average interest rates on the stock of government paper held by the central bank, the government would actually pay interest only on the net outstanding amount of credit.

This mechanism implies that the government has

²⁹Centralizing all government revenue and expenditure in a single account at the central bank, as is done in Brazil and Spain, is recommended by Martínez Méndez (1993).

³⁰If the ceiling is set annually and the purchases are made quarterly, the allowed increase would have to be prorated, possibly taking seasonality into account.

relatively more flexibility at the beginning of each period when its deposit account has been fully “refueled.” An alternative to alleviate this problem would be to stipulate that the central bank should purchase the government securities only when government deposits fall below a minimum threshold (established taking into account the variance of government deposits) and for an amount that is only a fraction of the overall credit expansion allowed at the, say, annual level. Even in this case, to avoid delays in the issue of securities, the government may find it appropriate to issue at the beginning of each year securities covering the entire annual amount of the credit expansion allowed. These securities would, for example, be deposited at an account at the treasury department of the ministry of finance and would be purchased automatically by the central bank, at the prevailing market rates, whenever deposits were low, up to the maximum amount allowed for the year.³¹

Whether—to check compliance with the ceiling—government deposits should be netted out is debatable.³² As already argued in Section III, if government deposits are liquid, allowing the government to receive additional loans would not really improve government liquidity and would be an unnecessary complication. If government deposits are illiquid, the government would benefit from such a regulation but at a cost of some loss of control on liquidity. If, as is preferable, the government keeps at the central bank only the above-mentioned current account, which is necessarily liquid, the ceiling should be set in terms of gross credit, and the central bank should not be forced to purchase additional securities only because the government has a temporary excess of deposits. Indeed, imposing a constraint in gross terms is a strong incentive for the government against opening more than one account at the central bank.

Frequency of Compliance

How frequently should compliance with the credit ceiling be required? Two approaches are usual. First, compliance is required only periodically, for example, at month-end, quarter-end, or year-end. Unless the periodicity is very high, this solution

may leave the government too much flexibility. Indeed, even monthly checks have been considered excessively permissive (for example, in Italy; see Spaventa Commission, 1989).

Second, compliance with the ceiling is required continuously.³³ This case is the most customary, but it may not be the best solution if the main purpose of the credit facility is to provide cash elasticity to the government (rather than a stable source of financing). Suppose, for example, that no permanent source of financing was desired. Continuous compliance with a zero credit ceiling would then also prevent access even to temporary financing.³⁴

To solve this problem, within the mechanism described above, compliance with the no-overdraft-constraint on the government current account could be required only on the average of daily balances over a given period. This implies that an overdraft on a given date should be offset by a net deposit (that is, net of the security purchase made by the central bank at the beginning of the period) at some later or earlier date.³⁵ Of course, this approach is likely to work well only if the period over which the average is computed is not too long (certainly not exceeding one month) and if there is also a ceiling on the maximum amount of outstanding credit and on the duration of the overdraft (to avoid creating excessively large and/or prolonged imbalances that could not realistically be reabsorbed at a later stage).³⁶ A provision allowing for this kind of elasticity should, however, be introduced only if really needed. As argued in Section III, elasticity of cash management could be provided by other instruments, such as deposits and loans with commercial banks.

³³Many central bank laws stipulate that the ceiling can never be exceeded. In practice, this stipulation usually means that compliance is required daily when central bank accounts are closed. Less than daily breaching of the ceiling is not usually considered relevant.

³⁴The traditional solution to this problem has been to stipulate that the central bank can make only short-term (for example, three-month) advances to the government. This solution has not proved very effective as short-term advances are often routinely rolled over.

³⁵The ceiling on direct purchases of government securities would instead be monitored continuously.

³⁶This approach is followed in the Netherlands. One alternative, which is less stringent, is to introduce, in addition to a regular ceiling, a tighter ceiling that should not be exceeded on specific dates. For example, the Reichsbank statute introduced after the 1923 inflation stipulated that the amount of advances that the Reichsbank was authorized to grant to the government could never exceed 100 million Reichsmark and that no loan should be outstanding on July 15 of each year (Ulrich, 1931, p. 123). A similar, albeit more complex approach, is followed in Israel.

³¹A third possibility is that securitization occurs *ex post* (for example, at quarter-end or year-end, as is done in Angola). *Ex post* securitization leaves, of course, some uncertainty on the actual timing.

³²Government deposits not generated by the purchase of securities during the current period by the central bank are referred to here. If such purchases are the only source of government deposits, the ceiling expressed in terms of net credit would necessarily also be met in terms of gross credit.

Consequence of Exceeding the Ceiling

It may happen, particularly when the central bank acts as government fiscal agent (making payments and collecting revenues on the government current account), that the outstanding stock of central bank credit to the government, even when monitored daily, exceeds the formal ceiling. It is therefore useful to state clearly in the central banking law what the consequences are of infringing the ceiling. The most appropriate solution seems to be to force the central bank to suspend all payments made on behalf of the government until compliance with the ceiling is re-established (as stipulated, for example, in Italy). Such a provision avoids the danger that the ceiling is routinely infringed without incurring any legal consequences.

Reference Aggregate to Express the Ceiling

The ceiling can be expressed in three ways. First, in nominal terms; although this is common in low-inflation/low-growth industrial countries,³⁷ it may be inappropriate in developing countries, in which nominal GDP growth rates are usually higher. Second, it can be expressed as a behavioral rule, triggering a certain reaction by the central bank when certain events occur. The Philippines is, for example, such a case, where “in periods of inflation or as long as inflationary dangers exist” the central bank has to endeavor to reduce its security holdings (Article VI 96. of the Central Bank Act). This approach should be avoided as it does not set a clear ceiling on central bank credit.

The third approach is to define the ceiling as a percentage (henceforth the “reference percentage”) of some “reference aggregate.” To avoid abuse, the reference aggregate must be clearly and easily measurable, to avoid “tampering with the numbers”; this excludes macroeconomic variables such as nominal GDP, subject to large revisions by government agencies; it must not be directly controlled by the central bank, because if the constraint is to shield the central bank from political pressures, the reference aggregate cannot be a variable that the central bank controls; this excludes the use of other domestic sources of base money and, possibly, also of currency held by the nonbank public;³⁸ and it

must not be directly controlled by the government, unless its expansion causes a permanent reduction in the deficit; this excludes government expenditures (used, for example, in Bolivia, Israel, and Italy) and temporary revenue sources (such as privatization revenue) as well as central bank capital (usually controlled jointly by the central bank and the government).³⁹

In practice, two main aggregates, satisfying the above restrictions, are used. The first is the foreign component of base money, which is used in “quasi-currency boards” in which the total domestic component of base money cannot exceed a certain proportion of total base money (as in Argentina, the Eastern Caribbean Monetary Area, and, before the First World War, some European countries, including Germany). When the ceiling is binding, this solution shares all the costs and benefits of a currency board.⁴⁰

A more conventional approach is to express the ceiling as a percentage of government (recurrent) revenue. Revenue can of course be controlled by the government but the fact that its increase reduces the deficit is considered an adequate defense against abuse.⁴¹

Past revenue, either in the previous budget year (as in Austria, the Central African Monetary Area, the former Czechoslovakia, Morocco, and the Netherlands) or in the average of the previous two-three years (as in the Eastern Caribbean Currency Area, Egypt, and Namibia) should be preferred to budgeted revenue for the current year (as in Bulgaria, Canada, and Hungary). Not only can pro-

raise the amount of currency that the public willingly holds. Somewhat paradoxically, using currency as a reference aggregate may have some advantages when the currency/GDP ratio is unstable (see below).

³⁹It could be argued that setting the ceiling as a percentage α of expenditure does not create a serious macroeconomic problem, as long as α is relatively contained. To expand base money by αX (where X is expenditure), the government would still have to finance an amount equal to $(1-\alpha)X$ by raising taxes or selling securities. This argument, however, does not consider that an increase in base money by αX raises total bank credit, including the purchases of government securities by banks, by a multiple of αX (depending on the value of the money multiplier), which may further substantially reduce the problem of financing the additional expenditure.

⁴⁰See, for example, Liviatan (1993). If the stock of the foreign component of base money is used, a devaluation implies a potential increase in domestic base money creation, which may not be appropriate. To avoid this, the ceiling could be linked to the flow in the foreign component of base money.

⁴¹A ceiling in terms of revenue can indeed provide an additional incentive for the government to increase its tax effort. A more “academic” reason for using government revenue as a reference aggregate is that the optimal seigniorage theory prescribes that seigniorage should increase in line with other government revenue (Mankiw, 1987).

³⁷About 60 percent of the constraints on central bank credit in the industrial countries considered in Appendix III are expressed in fixed nominal terms.

³⁸Currency is not directly controlled by the central bank, but can be more easily influenced than other variables. For example, if the nonbank public holds in cash a fixed amount of total monetary holdings, an increase in the money supply would also

jected aggregates be more easily overestimated, but they are also affected by future inflation, which in turn depends, *ceteris paribus*, on government base money creation. A higher projected inflation would boost revenue and allow an expansion of credit to the government needed to validate higher inflation.

Quantitative Amount of the Ceiling

The choice of the quantitative amount of the ceiling (that is, of the reference percentage if the ceiling is expressed as a percentage of a reference aggregate) will have to be based on the potential contribution of the credit expansion allowed to base money creation, as this is the appropriate measure of the expansionary effect of the credit facility. The factors affecting this contribution can be highlighted by focusing on the common case in which the ceiling is expressed as a percentage of the tax revenue of the previous year, that is, when:

$$A = \alpha T_{-1} = \alpha Y_{-1}, \quad (1)$$

where A is the stock of allowed credit, T is tax revenue, Y is nominal GDP, t is the ratio between tax revenue and GDP, and α is the reference percentage. The change in allowed credit in a given year is then given by

$$\Delta A = \alpha \Delta T_{-1} = \alpha t \Delta Y_{-1}, \quad (2)$$

where Δ is the first difference operator.⁴² The contribution to base money growth, E , is given by the ratio between the above change and total base money in the previous period, which can be expressed as the sum of currency and bank reserves:

$$E = (\alpha t \Delta Y_{-1}) / (c Y_{-1} + k \Delta Y_{-1}), \quad (3)$$

where c is the cash/GDP ratio, k is the bank reserve/deposit ratio (comprising both excess and compulsory reserves), and d is the bank deposit/GDP ratio. By eliminating the term in Y_{-1} and calling g the nominal GDP growth rate, the above expressions can be written as

$$E = \alpha t g_{-1} / [(c + kd)(1 + g_{-1})] \quad (4)$$

and, solving for α :

$$\alpha = [E(c + kd)(1 + g_{-1})] / t g_{-1}. \quad (5)^{43}$$

⁴²Equation (2) is derived from equation (1) under the assumption that the tax rate t is constant in time and the ceiling is binding at the beginning of the period, that is, that the government has exhausted its borrowing facility. The actual allowed increase of credit will depend on the stock of credit at the beginning of the period. This feature, which pertains to any ceiling expressed in terms of stocks, may create some problems for monetary control (see below).

⁴³When the ceiling is expressed as a percentage of revenue in the current year the solution for E can be derived by multiplying

Equation (5) implies that, given the desired contribution to base money growth, E , the "reference percentage" α is increasing with the ratio between bank reserves and deposits (k) and between cash and deposits and GDP (c and d), and decreasing with the tax revenue/GDP ratio. In developing countries, in which the cash ratio and the excess reserves to GDP ratios are often high (owing to the underdevelopment of the payment system), reserve requirements are often kept relatively high, and the tax ratio low, the "reference ratio" can be relatively high without causing major monetary control problems.⁴⁴

As illustrated in Tables 3 and 4, the reference percentage, for given base money growth, and, conversely, the allowed contribution to base money growth, for given reference percentage, are extremely sensitive to changes in model parameters.⁴⁵

For example, Table 3 shows that, with a reserve coefficient equal to 5 percent and a revenue ratio of 15 percent, to achieve a contribution to base money growth of 3.5 percent,⁴⁶ the coefficient α should be 10.7 percent if the cash/GDP and deposit/GDP ratios are, respectively, 2 percent and 20 percent, but as high as 82 percent if the same ratios are 18 percent and 100 percent. Conversely, Table 4 shows that a reference parameter α of 20 percent implies a minimum (that is, when the ceiling is initially binding) contribution to base money growth ranging from 0.8 percent (when c is 18 percent, t is 15 percent, and k is 20 percent) to 11.4 percent (when c is 2 percent, t is 35 percent, and k is 5 percent).⁴⁷

The above example shows that recommendations on the appropriate level of the reference percentage must necessarily be made in light of the system

the right-hand side of equations (4) and (5), respectively, by $(1 + g)$ and $1/(1 + g)$.

⁴⁴Of course, a high reserve requirement remunerated at less than market rates imposes a large tax on the banking system, which may not be sustainable in the long run as it may lead to bank disintermediation.

⁴⁵The ranges covered by the cash and deposit to GDP ratios used in the tables (2–18 percent, and 20–100 percent, respectively) include, respectively, about 90 percent and 80 percent of a random sample of 55 industrial and developed countries. In the sample, the cash ratio in 1988 averaged 7.2 percent and the deposit ratio 39.8 percent. As to the "policy parameters" k and t , the values used in the tables are illustrative of countries with low, medium, and high reserve coefficients (5–10–20 percent) and low, medium, and high tax pressure (15–25–35 percent).

⁴⁶One can think of this value as corresponding to half of a nominal GDP growth of 7 percent (which is also used as a parameter in equation (4)), resulting from a "desirable" real growth of 4–5 percent, in the presence of a "moderate" inflation of 2–3 percent a year. The remaining 3.5 percent may be provided by other base money sources.

⁴⁷The range is computed for $d = 0.4$, as are all other figures reported in Table 4. If d is allowed to vary from 20–100 percent (as in Table 3), the contribution would range from 0.5–15.3 percent.

Table 3. Value of the Reference Percentage α
(Ceiling expressed in terms of stocks)¹

	t=15			k=5			t=35		
	d=20	d=60	d=100	d=20	d=60	d=100	d=20	d=60	d=100
c=2	10.7	17.8	25.0	6.4	10.7	15.0	4.6	7.6	10.7
c=6	25.0	32.1	39.2	15.0	19.3	23.5	10.7	13.8	16.8
c=12	46.4	53.5	60.6	27.8	32.1	36.4	19.9	22.9	26.0
c=18	67.8	74.9	82.0	40.7	44.9	49.2	29.0	32.1	35.2

	t=15			k=10			t=35		
	d=20	d=60	d=100	d=20	d=60	d=100	d=20	d=60	d=100
c=2	14.3	28.5	42.8	8.6	17.1	25.7	6.1	12.2	18.3
c=6	28.5	42.8	57.1	17.1	25.7	34.2	12.2	18.3	24.5
c=12	49.9	64.2	78.5	30.0	38.5	47.1	21.4	27.5	33.6
c=18	71.3	85.6	99.9	42.8	51.4	59.9	30.6	36.7	42.8

	t=15			k=20			t=35		
	d=20	d=60	d=100	d=20	d=60	d=100	d=20	d=60	d=100
c=2	21.4	49.9	78.5	12.8	30.0	47.1	9.2	21.4	33.6
c=6	35.7	64.2	92.7	21.4	38.5	55.6	15.3	27.5	39.7
c=12	57.1	85.6	114.1	34.2	51.4	68.5	24.5	36.7	48.9
c=18	78.5	107.0	135.5	47.1	64.2	81.3	33.6	45.9	58.1

¹ The figures refer to the value of the reference percentage α corresponding to a 3.5 percent expansion of the monetary base, for various values of the cash/GDP ratio (c), the deposit/GDP ratio (d), the bank reserve/deposit ratio (k), and the tax/GDP ratio (t), all expressed in percent. It is assumed that (1) the ceiling is expressed as a percentage α of tax revenue in the previous period; and (2) the nominal GDP growth rate is 7 percent.

parameters. Unfortunately, this may not be easy, particularly in a period of financial reform, when the system parameters can change rapidly. This difficulty cannot, however, be ignored (setting the reference percentage without even a rough estimate of the system parameters would not help). The problem of the instability of the system parameters would be reduced if currency was chosen as the reference percentage, as a decline in the currency/GDP ratio increasing the money multiplier would be partially offset by the decline in the ceiling. Thus, in countries in which the instability of the currency ratio is particularly high, using currency as the reference aggregate could be considered.

The above discussion leaves unanswered an important question to which there is no easy answer: What should be the optimal contribution of credit to the government to the total desired increase in base money?⁴⁸ Only limited guidance comes from the

literature on monetary control, which has mainly focused on total base money creation rather than on its composition (apart from the distinction between domestic and external sources). Certainly, contributions above 100 percent should be avoided, as they would imply a trend decline in credit to other sectors of the economy (or a trend increase in reserve requirement ratios). On the one hand, the contribution should be high enough to satisfy the government liquidity requirements; on the other, it should be low enough to provide an incentive for the development of a government paper market. One rule of thumb could be to keep unchanged the share of government over total central bank credit.⁴⁹ Thus, for example,

the crowding-out argument cannot be applied, because central bank credit is only a small percentage of total credit. Indeed, to have crowding-out, the increase of credit to the government must be accompanied by a rise in real interest rates. The latter, however, may be affected by total base money creation (and possibly only in the short run), but not by its composition.

⁴⁹This does not contradict the principle that the reference aggregate should not be total base money. Here, total base money enters the computation only in terms of initial stock. Its dynamics would still be irrelevant for determining the allowed growth of central bank credit to the government.

⁴⁸One difficulty is that the effects of changes in the composition of domestic base money creation depend on several assumptions on the behavior of the banking system (for example, to what extent the behavior of the banking system is affected by whether its reserves are borrowed or not). Also, in this context

Table 4. Contribution to Base Money Growth of Credit to the Government for Different Values of the Reference Percentage α
(Ceiling expressed in terms of stocks)¹

	k=5									k=10								
	$\alpha=5$ min	$\alpha=5$ max	$\alpha=10$ min	t=15 $\alpha=10$ max	$\alpha=20$ min	$\alpha=20$ max	$\alpha=5$ min	$\alpha=5$ max	$\alpha=10$ min	t=25 $\alpha=10$ max	$\alpha=20$ min	$\alpha=20$ max	$\alpha=5$ min	$\alpha=5$ max	$\alpha=10$ min	t=35 $\alpha=10$ max	$\alpha=20$ min	$\alpha=20$ max
c=2	1.2	18.7	2.5	37.5	4.9	75.0	2.0	31.3	4.1	62.5	8.2	125.0	2.9	43.8	5.7	87.5	11.4	175.0
c=6	0.6	9.4	1.2	18.8	2.5	37.5	1.0	15.6	2.0	31.3	4.1	62.5	1.4	21.9	2.9	43.8	5.7	87.5
c=12	0.4	5.4	0.7	10.7	1.4	21.4	0.6	8.9	1.2	17.9	2.3	35.7	0.8	12.5	1.6	25.0	3.3	50.0
c=18	0.2	3.8	0.5	7.5	1.0	15.0	0.4	6.3	0.8	12.5	1.6	25.0	0.6	8.8	1.1	17.5	2.3	35.0

	k=10									k=20								
	$\alpha=5$ min	$\alpha=5$ max	$\alpha=10$ min	t=15 $\alpha=10$ max	$\alpha=20$ min	$\alpha=20$ max	$\alpha=5$ min	$\alpha=5$ max	$\alpha=10$ min	t=25 $\alpha=10$ max	$\alpha=20$ min	$\alpha=20$ max	$\alpha=5$ min	$\alpha=5$ max	$\alpha=10$ min	t=35 $\alpha=10$ max	$\alpha=20$ min	$\alpha=20$ max
c=2	0.8	12.5	1.6	25.0	3.3	50.0	1.4	20.8	2.7	41.7	5.5	83.3	1.9	29.2	3.8	58.3	7.6	116.7
c=6	0.5	7.5	1.0	15.0	2.0	30.0	0.8	12.5	1.6	25.0	3.3	50.0	1.1	17.5	2.3	35.0	4.6	70.0
c=12	0.3	4.7	0.6	9.4	1.2	18.8	0.5	7.8	1.0	15.6	2.0	31.3	0.7	10.9	1.4	21.9	2.9	43.8
c=18	0.2	3.4	0.4	6.8	0.9	13.6	0.4	5.7	0.7	11.4	1.5	22.7	0.5	8.0	1.0	15.9	2.1	31.8

	k=20									k=25								
	$\alpha=5$ min	$\alpha=5$ max	$\alpha=10$ min	t=15 $\alpha=10$ max	$\alpha=20$ min	$\alpha=20$ max	$\alpha=5$ min	$\alpha=5$ max	$\alpha=10$ min	t=25 $\alpha=10$ max	$\alpha=20$ min	$\alpha=20$ max	$\alpha=5$ min	$\alpha=5$ max	$\alpha=10$ min	t=35 $\alpha=10$ max	$\alpha=20$ min	$\alpha=20$ max
c=2	0.5	7.5	1.0	15.0	2.0	30.0	0.8	12.5	1.6	25.0	3.3	50.0	1.1	17.5	2.3	35.0	4.6	70.0
c=6	0.4	5.4	0.7	10.7	1.4	21.4	0.6	8.9	1.2	17.9	2.3	35.7	0.8	12.5	1.6	25.0	3.3	50.0
c=12	0.2	3.8	0.5	7.5	1.0	15.0	0.4	6.3	0.8	12.5	1.6	25.0	0.6	8.8	1.1	17.5	2.3	35.0
c=18	0.2	2.9	0.4	5.8	0.8	11.5	0.3	4.8	0.6	9.6	1.3	19.2	0.4	6.7	0.9	13.5	1.8	26.9

¹The figures refer to the percentage growth of the monetary base corresponding to different values of the reference percentage α for various values of the cash/GDP ratio (c), the bank reserve/deposit ratio (k), and the tax/GDP ratio (t), all expressed in percent. It is assumed that (1) the ceiling is expressed as a percentage α of tax revenue of the previous period; (2) the nominal growth rate of GDP is 7 percent; and (3) the deposit/GDP ratio is 40 percent. The minimum (min) monetary base growth is computed under the assumption that the ceiling is binding at the beginning of the period; the maximum (max) monetary base growth is computed under the assumption that the initial stock of credit to the government is zero.

if the stock of central bank credit is equal to 50 percent of total central bank credit, and the optimal increase in base money is, say, 7 percent (as in the above example), the reference percentage could be set aimed at a contribution of central bank credit to the government to base money creation equal at most to 3.5 percent (or less if some indirect credit is expected to take place).⁵⁰

Flow Versus Stock Constraint

In most countries the ceiling on central bank credit is set in terms of stock, as in equation (1), for example, by stating that the stock of credit cannot exceed a certain percentage of revenue. Such a provision allows an excessive short-run variability of such credit to the government, whose growth in a single period would depend on what the government had done in previous periods.

The extent of the problem is highlighted in Table 4, in which the minimum and maximum contributions to monetary growth implicit in equation (1) are compared, the former computed as if the ceiling was binding at the beginning of the period, the latter computed as if no credit was outstanding initially. Consider, for example, the case of a country with medium reserve coefficient and tax pressure ($k = 10$ percent, $t = 25$ percent), and with cash and deposit ratios of 6 percent and 40 percent, respectively. A coefficient α of 10 percent would allow a *minimum* contribution to base money growth of 1.6 percent (which may be appropriate, or even low), but a *maximum* of 25 percent, which can be considered excessive in most circumstances. It is easy to show that in general the ratio between minimum and maximum growth is equal to $(1 + g)/g$, approximately 15 times for a GDP growth rate of 7 percent.⁵¹

This wide margin between minimum and maximum allowed growth makes the choice of the reference percentage more difficult. A percentage that can be considered low if the constraint is initially binding may be seen as too permissive if the constraint is not binding.

This problem is avoided if the ceiling is set in terms of flows—by stipulating that the change in central bank credit to the government cannot exceed a certain percentage of the change in tax revenue in

the previous year. In this case, equation (2) and equation (4) indicate both the maximum and the minimum allowed credit growth and contribution to base money growth.⁵²

Sensitivity to Nominal Income Shocks

One feature of equation (4) is that the contribution to base money growth increases with the growth rate of nominal GDP in the previous period. This may be considered undesirable if, owing to some shocks, the nominal GDP growth rate doubles, the government contribution to base money growth in the next period also doubles, thus potentially sustaining a new increase in nominal GDP.⁵³ Conversely, the ceiling declines whenever nominal GDP declines, for example, because of a serious recession. A decline in the stock of credit to the government in a recession may be inappropriate, however, and may not be respected.⁵⁴

An extreme solution, adopted in Peru, is to predetermine the maximum contribution to money growth of central bank credit to the government. A milder solution, adopted in Hungary, is to express the allowed change in the ceiling as a percentage of the level of government revenue in the previous period, that is:

$$\Delta A = \beta T_{-1} = \beta t Y_{-1}, \quad (6)$$

where β is the reference parameter. This implies

$$E = (\beta t Y_{-1}) / (c Y_{-1} + k d Y_{-1}) \quad (7)$$

$$E = \beta t / (c + k d) \quad (8)$$

$$\beta = [E(c + k d)] / t. \quad (9)$$

Equation (8) implies that the contribution to base money growth, although not fixed, depends only on the parameters of the system (as in equation (4)), but

⁵²Ceilings expressed in terms of flow are featured in the recent central banking laws of Argentina, Hungary, and Peru.

⁵³The system is stable, however, in the sense that an initial monetary expansion can never bring about an increase in nominal GDP high enough to allow an ever-increasing expansion of credit. More specifically, if it is assumed that $g = E$ (that is, that money velocity is constant and that credit to the government is the only source of base money), equation (4) becomes a first-order difference equation of the form:

$$g = f g_{-1} / (1 + g_{-1}),$$

where $f = \alpha t / (c + k d)$. Therefore, g increases if $f > 1 + g_{-1}$. This condition, even if initially holding, would eventually be reversed (as g increases), so that at a certain point g stops rising. However, it may happen that, purely as a result of an initial increase in the allowed government expansion, g increases for a number of years.

⁵⁴The problem would be mitigated, but not eliminated, if the reference aggregate was computed as a moving average.

⁵⁰This solution admittedly dodges the main issue, as it would be appropriate only if the initial composition of central bank credit was optimal. However, this solution could be followed if, from an empirical point of view, the initial composition of central bank credit appeared broadly satisfactory.

⁵¹The ratio between maximum and minimum contribution tends to one as the GDP growth rate increases, because the larger g is, the less relevant the initial condition becomes with respect to the increase in the ceiling owing to GDP growth.

Table 5. Value of the Reference Percentage β
(Ceiling expressed in terms of flows)¹

	$k=5$				$k=10$				$k=20$			
	$t=15$ $d=20$	$t=15$ $d=60$	$d=100$	$d=20$	$t=25$ $d=20$	$t=25$ $d=60$	$d=100$	$d=20$	$t=35$ $d=20$	$t=35$ $d=60$	$d=100$	$d=20$
$c=2$	0.7	1.2	1.6	0.4	0.7	1.0	1.3	0.3	0.5	0.7	0.9	1.1
$c=6$	1.6	2.1	2.6	1.0	1.3	1.5	2.1	0.7	0.9	1.5	1.7	2.3
$c=12$	3.0	3.5	4.0	1.8	2.1	2.4	2.9	1.3	1.5	1.9	2.1	2.7
$c=18$	4.4	4.9	5.4	2.7	2.9	3.2		1.9	2.1			
	$k=10$				$k=20$				$k=35$			
	$t=15$ $d=20$	$t=15$ $d=60$	$d=100$	$d=20$	$t=25$ $d=20$	$t=25$ $d=60$	$d=100$	$d=20$	$t=35$ $d=20$	$t=35$ $d=60$	$d=100$	$d=20$
$c=2$	0.9	1.9	2.8	0.6	1.1	1.7	1.7	0.4	0.8	1.2	1.6	1.2
$c=6$	1.9	2.8	3.7	1.1	1.7	2.2	2.5	0.8	1.2	1.8	2.2	2.6
$c=12$	3.3	4.2	5.1	2.0	2.5	3.1	3.4	1.4	1.8	2.4	2.8	3.2
$c=18$	4.7	5.6	6.5	2.8	3.4	3.9		2.0	2.4			
	$k=20$				$k=35$				$k=50$			
	$t=15$ $d=20$	$t=15$ $d=60$	$d=100$	$d=20$	$t=25$ $d=20$	$t=25$ $d=60$	$d=100$	$d=20$	$t=35$ $d=20$	$t=35$ $d=60$	$d=100$	$d=20$
$c=2$	1.4	3.3	5.1	0.8	2.0	3.1	3.1	0.6	1.4	2.2	2.6	3.2
$c=6$	2.3	4.2	6.1	1.4	2.5	3.6	4.5	1.0	1.8	2.4	2.8	3.8
$c=12$	3.7	5.6	7.5	2.2	3.4	4.5	5.3	1.6	2.4	3.0	3.4	4.2
$c=18$	5.1	7.0	8.9	3.1	4.2	5.3		2.2	3.0			

¹The figures refer to the value of the reference percentage β corresponding to a 3.5 percent expansion of the monetary base, for various values of the cash/GDP ratio (c), the deposit/GDP ratio (d), the bank reserve/deposit ratio (k), and the tax/GDP ratio (t), all expressed in percent. It is assumed that (1) the ceiling is expressed as a percentage β of tax revenue in the previous period; and (2) the nominal GDP growth rate is 7 percent.

not on the GDP growth rate. Of course, when the ceiling is expressed as in equation (6), the reference percentage must be sufficiently low. For comparison, Tables 5 and 6 report the reference percentage and the allowed contribution to base money growth that are relevant in this case.⁵⁵

Temporary Nature of the Direct Credit Facility

As monetary and financial markets evolve, the need for a direct credit facility at the central bank is reduced, which implies that the facility should be progressively tightened and eventually removed. This can be done in two ways. The milder way is to affirm in the law the temporary nature of the direct

credit facility, while postponing the choice of timetable for eliminating it until later. For example, the law could assign to a commission that included representatives of the central bank and the government the task of drawing up a timetable for eliminating the facility, or that of periodically revising the feasibility of a decline in the reference percentage.

A more binding alternative is to specify the path for the decline to zero (or, at least, for a reduction) of the reference percentage (set in terms of flows), over a number of years. This solution, adopted in Hungary, has the advantage of providing a clear incentive for the government to develop alternative sources of financing (for example, a government paper market).

Constraints on Indirect Central Bank Credit to the Government

As argued in Section III, setting a constraint on indirect credit is not justified if indirect credit consists of intervention in markets in which the central bank operates at market interest rates and the government does not have to pay a premium with re-

⁵⁵The link between Tables 4 and 6 is straightforward. The relation between α and β that would yield the same contribution to base money growth is given by

$$\beta = \alpha g_{-1} / (1 + g_{-1}).$$

Thus, for example, for a growth of the nominal reference variable of 7 percent, the seemingly low β coefficient of 3 percent (as in Hungary) corresponds to an α coefficient as high as 45.9 percent.

Table 6. Contribution to Base Money Growth for Different Values of the Reference Parameter β
(Ceiling expressed in terms of flows)¹

	$t=15$			$k=5$ $t=25$			$t=35$		
	$\beta=0.5$	$\beta=1.0$	$\beta=1.5$	$\beta=0.5$	$\beta=1.0$	$\beta=1.5$	$\beta=0.5$	$\beta=1.0$	$\beta=1.5$
$c=2$	1.9	3.8	5.6	3.1	6.3	9.4	4.4	8.8	13.1
$c=6$	0.9	1.9	2.8	1.6	3.1	4.7	2.2	4.4	6.6
$c=12$	0.5	1.1	1.6	0.9	1.8	2.7	1.3	2.5	3.8
$c=18$	0.4	0.8	1.1	0.6	1.3	1.9	0.9	1.8	2.6

	$t=15$			$k=10$ $t=25$			$t=35$		
	$\beta=0.5$	$\beta=1.0$	$\beta=1.5$	$\beta=0.5$	$\beta=1.0$	$\beta=1.5$	$\beta=0.5$	$\beta=1.0$	$\beta=1.5$
$c=2$	1.3	2.5	3.8	2.1	4.2	6.3	2.9	5.8	8.8
$c=6$	0.8	1.5	2.3	1.3	2.5	3.8	1.8	3.5	5.3
$c=12$	0.5	0.9	1.4	0.8	1.6	2.3	1.1	2.2	3.3
$c=18$	0.3	0.7	1.0	0.6	1.1	1.7	0.8	1.6	2.4

	$t=15$			$k=20$ $t=25$			$t=35$		
	$\beta=0.5$	$\beta=1.0$	$\beta=1.5$	$\beta=0.5$	$\beta=1.0$	$\beta=1.5$	$\beta=0.5$	$\beta=1.0$	$\beta=1.5$
$c=2$	0.8	1.5	2.2	1.3	2.5	3.8	1.8	3.5	5.3
$c=6$	0.5	1.1	1.6	0.9	1.8	2.7	1.3	2.5	3.8
$c=12$	0.4	0.8	1.1	0.6	1.3	1.9	0.9	1.8	2.6
$c=18$	0.3	0.6	0.9	0.5	1.0	1.4	0.7	1.3	2.0

¹The figures refer to the percentage growth of the monetary base corresponding to different values of the reference percentage β for various values of the cash/GDP ratio (c), the bank reserve/deposit ratio (k), and the tax/GDP ratio (t), all expressed in percent. It is assumed that (1) the ceiling is expressed as a percentage β of tax revenue of the previous period; (2) the nominal growth rate of GDP is 7 percent; and (3) the deposit/GDP ratio is 40 percent.

spect to the rate paid by the private sector. Under these conditions the government would not benefit more from central bank credit than from any other source of monetary expansion. The only real option would be to constrain such domestic credit.

The above conditions, however, are not met in many countries. First, indirect credit may take the form of bilateral purchases of government securities at below market rates, with the sole purpose of circumventing the ceiling on direct credit. Second, even if the central bank intervenes through market mechanisms, private and government securities may not be perfect substitutes. In these conditions a monetary expansion as a result of credit to the government is more convenient for the government than a monetary expansion as a result of credit to the private sector, as it lowers the premium paid over private sector paper (and/or it slackens the liquidity constraint imposed by the market). Hence the case for constraining also indirect credit to the government, even when a constraint on total credit to the central bank appears excessively restrictive.

Two serious drawbacks occur in restraining indirect credit. First, there is some obvious loss of mon-

etary policy flexibility, as in many countries government paper represents the most used "medium" for introducing base money into the system. Second, there is a danger that, despite the formal attribution to the central bank of discretionary control on indirect credit, setting a ceiling on the latter will imply that any amount of credit granted below the ceiling will be regarded as something due to the government, thus weakening central bank independence.

Therefore, the need for a constraint on indirect credit should be evaluated on a case-by-case basis taking into account how far the economic environment differs from that characterizing the ideal model, the above possible drawbacks, and the strength of the central bank vis-à-vis the government.

If indirect credit is also constrained, a separate ceiling—distinct from that on direct credit and possibly less binding—seems appropriate for various reasons. First, indirect credit is likely to be less prone to political pressures than direct credit. Second, although the former should be discretionary, the latter is typically granted automatically. Third, if the ceil-

ing on central bank credit did not differentiate between direct and indirect credit, the government could offset with an increase in direct credit the effect of open market operation sales performed by the central bank, as these sales would automatically increase the margin on the direct credit line. Fourth, central bank transactions in government paper help a government paper market to develop, and its growth would lessen government pressure on the central bank.⁵⁶

A decision will also have to be taken on which forms of indirect credit should be included in the ceiling. For example, some central banking laws exclude from the ceiling the acquisition of government paper through instruments, such as repurchase agreements, whose rate is more likely to be "market clearing." A more restrictive solution (adopted, for example, in the Eastern Caribbean Currency Area, Peru, and Argentina) is to include in the ceiling the overall amount of government paper held by the central bank, regardless of how it was acquired.

The terms at which the government securities held by the central bank must be valued to check compliance with the ceiling also have to be determined. The most appropriate approach is to look at the cumulative purchases made by the central bank as this figure would correspond to the actual base money created. Thus, the legislation should stipulate that the cumulated purchases of government securities by the central bank could not exceed, in a given period, a certain amount (for example, a percentage of past revenue or change in revenue), all purchases being evaluated at the actual transaction prices (regardless of the nominal value of the securities and of changes in securities prices after the transaction has taken place). A less satisfactory but more practical solution would be to check the compliance on nominal values (as is done in Argentina), so that changes in the market value of government paper would not affect the room available for purchasing government paper. This solution, of course, works well only if purchases of government paper do not occur at prices too far from par.

A final remark refers to the temporary nature of a ceiling on indirect credit. As argued above, as the economic system evolves toward conditions similar to those of the ideal model, the constraints should also evolve. Taking this into account, the legislation could allow for a transition period in which the ceiling on direct credit is gradually lifted (and that on direct credit is progressively tightened). Again, the timetable for this process may be either set by law or, more flexibly, assigned to a commission.

⁵⁶The two ceilings on direct and indirect credit should of course be set consistently. For example, the ceiling on direct credit can be tighter if that on indirect credit is more relaxed.

Circumventing Formal Constraints

Treatment of formal constraints on central bank credit to the government would not be complete without mentioning circumvention. The most common form of circumvention of both the direct and the indirect credit ceiling is through intermediaries having access to central bank credit. These intermediaries, typically banks, borrow from the central bank and on-lend the counterpart to the government. This practice is particularly common in developing countries in which the government often owns a large share of the economy.⁵⁷

This kind of circumvention is difficult to eliminate. Bank intermediaries, even if controlled by the government, cannot be denied access to central bank credit.⁵⁸ But the problem is less relevant if the central bank operates through market instruments (such as credit auctions) in which the intermediary is asked to pay a market rate. A bank trying to secure a larger share of credit from the central bank to lend to the government will have to bid for higher prices, which, presumably, would be passed on to the government, thus making the operation less attractive.⁵⁹

Regulations can be tightened to eliminate some frequent loopholes. Two cases are relatively common in developing countries. First, in some countries (for example, Tanzania), the duties of the central bank include acting as a development finance institution, providing credit to some sectors of the economy, usually at a preferential rate. When these sectors include parastatal enterprises, the access of government to central bank credit is particularly direct. To enhance monetary control, the central bank should be freed from these responsibilities. Second, the central bank may be requested to provide an automatic rediscount facility to the banking sector to support government-directed lending to preferred sectors of the economy. In principle, this amounts to a fiscal transfer, and should be financed from the government budget, with no central bank involvement.

⁵⁷An example is given by the loans granted by the Central Bank of Peru to the government-controlled Banco de la Nación (Hamann, 1985). The mechanism, however, does not necessarily involve a bank. For example, in Senegal, a member the West African Monetary Union, the ceiling was circumvented by making state enterprises, which had access to central bank credit, responsible for some budgetary expenditures (Bhatia, 1985).

⁵⁸Even in the Maastricht Treaty, government-owned banks are explicitly excluded from the ban on central bank credit to government agencies (Art. 21.3 of the statute of the European Central Bank System).

⁵⁹This operation would not be very effective if the government could ask the intermediary to sustain its cost, or if a large share of central bank revenues was transferred to the government.

Foreign Exchange Borrowing and Central Bank Losses

Foreign loans are a major source of finance for developing countries with limited domestic financial markets. Since these loans have a monetary impact and therefore directly concern the central bank even when raised directly by the government, in some countries (such as Belgium) foreign borrowing by the treasury is subject to a joint decision by the ministry of finance and the central bank and, according to the law, must be consistent with the requirements of monetary and exchange rate policy. In Canada, the Government can borrow abroad only to add to foreign reserves. These arrangements are, however, relatively unusual. As the discipline provided by foreign financial markets is usually considered sufficient guarantee, in almost all countries foreign borrowing by the treasury is unconstrained. However, particularly in developing countries, it may be useful to stipulate that the central bank must at least be consulted before the government borrows abroad (as happens in Namibia).

In many developing countries, however, foreign borrowing, to either the enterprise or the government sector, is intermediated by the central bank. In this case, it would be preferable if the central bank acted as a pure intermediary, that is, if the loan were on-lent in foreign currency, thus shifting the entire cost of the operation, and its risk, to the final borrower. If this was so, and as long as the foreign loan to the central bank was outstanding, the loan to the government could be excluded from the credit ceiling. Of course, if, when the foreign loan comes to maturity, the government does not have the resources to pay back the matching central bank loan, the corresponding credit that the central bank may be forced to extend must be included in the ceiling. This situation is risky, however, because the central bank is responsible for paying back the foreign loan, and the government may not have the resources to meet its obligation toward the central bank and comply with the ceiling. It would therefore be better if the central bank did not act as an intermediary of foreign loans.⁶⁰ Of course, it could still make its expertise available to the government by acting as fiscal agent in their acquisition.

If the foreign loan is on-lent to the government in domestic currency, and the interest rate charged on the domestic credit does not cover its cost (including depreciation), the central bank faces losses. Two issues are at stake here. The first is the coverage of

the central bank losses. The government, as central bank shareholder, should certainly cover the losses incurred by the central bank, that is, the increase in the foreign debt of the central bank (expressed in domestic currency) should be matched by an increase in the credit of the central bank toward the government. The principle of central bank losses being covered by the government should be included in the legislation, as a further guarantee of central bank independence.⁶¹

The second issue is whether the increase in central bank credit to the government corresponding to central bank losses on foreign debt, as well as from any other sources, should be included under the ceiling (as suggested, for example, by Leone, 1991), or whether it should be excluded, as in most countries (Hungary, the Eastern Caribbean Currency Area, and Peru). Here, there seems to be a case for distinguishing between transfers covering ordinary losses, and those covering foreign exchange devaluation. The former should be included under the ceiling. Central bank losses of this kind are due to the fact that the interest payments on central bank liabilities exceed those received on central bank assets (which may include a large share of government credit extended at less than market rates).⁶² This imbalance increases base money and should be offset by a reduction of other credit granted to the government.

As to transfers to cover foreign exchange losses, there are three arguments in favor of their exclusion from the ceiling. First, since the increase in government credit owing to currency depreciation is not controlled by the government, the main rationale for the formal constraints (of avoiding political pressures on the central bank) is lacking. Second, such a form of credit does not involve any immediate cre-

⁶⁰Whether the legislation should force the government to cover *all* central bank losses, regardless of the source, is of course debatable. Such a provision may encourage the mismanagement of central bank resources, which would eventually undermine public support for its monetary policies. If the government is considered liable for any central bank losses, safeguards must be put in place to avoid budgetary excesses by central bank managers. These safeguards may include the publication and the review by a parliamentary committee of the central bank budget, some form of veto power by government representatives in the bodies in charge of the internal administration of the central bank, or auditing the budget by external public bodies.

⁶²A case in point is the low profit position of the Bank of Portugal in recent years. In 1990–91, with limited exchange rate depreciation, the Bank of Portugal had to face a large inflow of foreign capital (thus accumulating reserves yielding a low interest rate in foreign currency), whose monetary impact had to be sterilized by offering the banking system sufficiently high interest rates in escudos. However, the Bank of Portugal's profit and loss account was further weakened by the low yield of a large stock of nonsecuritized credit to the Government.

⁶⁰The case is similar to a credit guarantee provided by the central bank, which should also be avoided (see Section III). In none of the countries included in the sample in Appendix III does the central bank formally guarantee government debt.

ation of liquidity, as additional liquidity will be created only when foreign debt is actually paid back. Third, from a practical point of view, including the depreciation losses in the ceiling can make it unrealistically tight, particularly if the foreign debt/GDP ratio is high and a large depreciation is needed.

A possible solution would be to include the losses under the ceiling only when they are monetized (when foreign debt comes to maturity). For that purpose the government could set aside resources every year to absorb the decline in available central bank credit occurring when the foreign debt comes to maturity.

One last issue refers to the possibility of the government borrowing from the central bank against the collateral of gold or foreign assets.⁶³ This possibility (admitted, for example, in Austria) should be ruled out. Indeed, the inflationary effects of excessive central bank credit to the government are not affected by the existence of good collateral.⁶⁴

Formal Constraints and Macroeconomic Adjustment in Fund-Supported Programs

Developing countries are often affected by sharp macroeconomic disequilibria resulting in high inflation and foreign reserve losses. It could be argued that, in these conditions, the formal constraints on central bank credit to the government should be tighter than in other cases. This argument has some appeal. The introduction of new and tight legislation may signal a clear break from past macroeconomic policy mismanagement and hence help stabilize expectations. Argentina and Chile are good examples.

The argument, however, cannot be overstretched to the point of using the legal framework purely to reinforce short-term stabilization programs (such as Fund-supported programs). To acquire credibility, central banking legislation must provide a stable framework for the relations between the central bank and the government. Such a framework should not be changed frequently, or its credibility will be undermined. It should therefore be chosen on the basis of the desired long-run features of the relations between the central bank and the government (after taking into account the necessary transition period). Short-term stabilization programs may require the

imposition, in the short run, of much tighter conditions than those expected in the long run (for example, no credit is extended by the central bank to the government in one year, or that the stock of credit declines). As a counterpart to this tightness, stabilization program targets may be, and often are, revised, to take account of unanticipated developments. These frequent revisions could damage the credibility of central banking legislation. In conclusion, monitoring and enforcing stabilization programs require “performance criteria” rather than legislation.⁶⁵

Removing a Credit Facility at the Central Bank

If a government credit facility extended through overdrafts or fixed-term loans has to be eliminated, two issues are relevant. The first issue is what to do with the existing stock of government debt. The second is how should the government replace the credit facility at the central bank.

On the first issue, the outstanding stock of credit to the government has no direct effect on future inflation, which explains why many countries that have eliminated or tightened the possibility of granting central bank credit to the government did not have to deal with the stock issue.⁶⁶ But there are cases in which it may be convenient to revise the terms on the existing stock of credit, or even to plan its repayment.

First, if the outstanding stock of credit to the government is remunerated at below market rates, central bank profits are reduced and the central bank may even incur losses, which may imply a greater money creation and, perhaps more important, may substantially weaken central bank independence. Protecting central bank profits is therefore critical

⁶³For example, when the government is legally the owner of the foreign reserves of the country.

⁶⁴All this applies to the case of borrowing against the existing stock of gold or of reserves. The case in which the government borrows from abroad and asks for central bank credit using the foreign currency as collateral is not different from the sale of foreign currency to the central bank.

⁶⁵In IMF institutional vocabulary, performance criteria are quantitative targets whose attainment is requested to gain access to Fund resources.

⁶⁶In the last few years Argentina, Chile, Peru, and Venezuela enacted legislation prohibiting any form of direct central bank credit to the government. In none of these countries did the prohibition of monetary financing of the deficit involve any change in the terms of the outstanding stock of credit to the government, except for Argentina, and then only for the foreign exchange component: the entire stock of credit to the Government granted in foreign currency was canceled, but at the same time the Government acquired the foreign liabilities of the central bank. As that institution had always acted as a pure intermediary of foreign loans (the burden of the debt had always been sustained by the Government), the operation did not have any effect on the profit and loss accounts of the two institutions. As to the outstanding stock of credit in domestic currency, it was frozen at the level of the time the new legislation was enacted, and at the original interest rate.

and provides a rationale for raising the yield of the outstanding stock of central bank credit to the government to market levels, possibly gradually, to reduce the immediate impact on the budget.⁶⁷

Second, if the stock of central bank credit to the government is not securitized, the central bank may not have enough securities to conduct open market operations. If it cannot issue central bank paper, or if the sale of government paper by the central bank on the market seems to help government paper markets to develop, this may be a rationale for securitizing the debt.

Third, the removal from the central bank accounts of the remains of the past credit relations between government and central bank may enhance the latter's formal independence. This is the only rationale for actually requesting the government to pay back, possibly gradually, the entire stock of credit.⁶⁸

This repayment will have to be financed by ordinary revenue, or, if the stock of credit is large, by issuing bonds that could be sold on the domestic market (as in the settlement of the French Government debt toward the Banque de France during the 1920s) or on the foreign market (as recommended by Ulrich, 1931, on account of the ensuing increase in central bank foreign reserves), or to the central bank. These solutions differ in their immediate effect on base money. If the central bank credit is repaid out of government revenue or by selling bonds on the domestic market, the monetary base is reduced. To offset this, the central bank will have to grant more credit to the banking system or purchase government paper on the secondary market. If the reimbursement is financed by foreign borrowing or by selling bonds to the central bank, there is no direct effect on base money.⁶⁹

⁶⁷As already argued, the government is likely to suffer some loss even if central bank profits have to be formally retransferred to the government.

⁶⁸A decline in the stock of central bank credit to the government might also allow an expansion of credit to the private sector (the banking system), for given total base money. However, this would have monetary effects only if the banking system was sensitive to the mix between borrowed and unborrowed reserves.

⁶⁹The Maastricht Treaty does not clearly indicate what countries should do with their stocks of credit to the government

On the second issue, if the credit facility at the central bank did perform a substantive role in the management of government liquidity, some alternative instrument has to be found. The most obvious solution is for the government to set up a liquidity reserve, either at commercial banks or at the central bank. For example, the recent draft law on the reform of the overdraft facility in Italy authorizes the Government to issue securities amounting to about 2 percent of GDP to set up a deposit account at the central bank to be used exclusively as a liquidity buffer. Indeed, to guarantee that the deposit account is used purely for liquidity (and is not run down to finance a deficit), the draft law stipulates that its balance can fall below the initial level for no more than three months. This solution does not prevent the risk that the initial stock is reconstituted only temporarily (for example, for one day) just to comply with the constraint. A more binding solution would be to request the government to keep the stock of deposits constant at the initial level on the average of daily data (for example, on a three-month period).

outstanding at end-1993. Although a decision in this area is expected, many EC countries have already opted for the repayment of the outstanding stock of debt, but with widely divergent amortization periods. In Portugal, based on the 1993 budget bill, the stock of the overdraft credit outstanding at end-1992 has been converted to a 10-year loan, at rates gradually converging to market levels. In Italy, based on the current draft bill presented in Parliament, the outstanding stock of credit on the overdraft facility will be replaced by government bonds yielding an interest rate of 1 percent (equal to the current interest on the overdraft). The maturity and the other features (amortization schedule) of the bond issue will be set by government decree. In Spain, the draft bill presented in Parliament stipulates that the stock of overdraft credit will be amortized in 40 years, with repayments starting only after the fifth year. Meanwhile the credit will remain unremunerated. In all these countries the stock of central bank credit to the government is fairly large. However, countries in which the stock is modest have also adopted a relatively long amortization plan. The current reform project in France involves, for example, a 10-year repayment schedule. On the other hand, in Belgium, the outstanding credit was repaid during 1993. In some countries the problem does not even arise: in Ireland, the only substantial form of direct central bank credit to the Government was granted through the purchase of some special government bonds. As this credit is securitized, it already has an amortization schedule.

V Conclusions

This paper has discussed (1) why central bank credit to the government should be constrained; (2) what forms of such credit should be constrained; and (3) how those constraints should be implemented.

On the first point, the main rationale for constraining central bank credit to the government is the presumed inflationary bias of governments. Attributing monetary policy responsibilities to an independent central bank, subject to a legal mandate to pursue price stability and accountable for its actions, is a possible solution to this bias. The paper has also stressed that the government may benefit from any source of monetary creation, but since, depending on several factors, it may benefit more from receiving central bank credit than from receiving other sources of base money growth, there is a case for restraining central bank credit to the government, even when constraining total central bank domestic credit is deemed unnecessary. The paper has also contended that the arguments for central bank independence hold also with respect to parliament, whose control of the central bank should be exercised only *ex ante* through the choice of its mandate, and *ex post* through the accountability of its managers.

On the question of what should be constrained, the features of an ideal model were examined. This model is meant to fit the reality of countries with a developed financial system, in which the government has access to several sources of finance, central bank credit is granted through intervention in truly open markets, and government and first-class private assets are close substitutes. In such a model, direct central bank credit to the government could be eliminated to enhance both the credibility of the central bank and its formal independence without excessive costs in terms of government debt and liquidity management. All credit should be discretionary, securitized, and at market rates, which are the features of credit granted through open market operations on the secondary markets. Purchases of government paper on the primary market may also be banned to strengthen the formal separation between the government and the central bank, al-

though this ban is not strictly necessary and may involve some costs. On indirect credit, the paper has argued that in an ideal model such credit could be left unconstrained. The only meaningful constraint under the conditions characterizing the ideal model would be that on total domestic central bank credit and not on central bank credit to the government.

In practice, allowance has to be made for several imperfections. Without sufficiently developed financial markets, some form of limited direct automatic access to central bank credit may be necessary. At the same time, in countries in which the government is paying an interest premium over first-class private paper, indirect credit may have to be constrained even when overall domestic central bank credit is not. The same conclusion holds if indirect credit, artificially granted at below market rates, is likely to be used purely to circumvent the ceilings on direct credit. However, if indirect credit is constrained, the ceiling should be set separately from that on direct credit. Also, while deviations with respect to the ideal model are inevitable, such deviations should fade away as financial markets and economic conditions become closer to those characterizing the ideal model.

The relevance of the above factors in shaping the form of the constraints on central bank credit to the government is broadly consistent with the evidence on how the constraints are actually regulated in industrial and developing countries. In the former, in which the conditions are closer to those of the ideal model, direct credit is typically severely constrained, but indirect credit is entirely discretionary. Instead, in developing countries the tightness of the constraints is less differentiated across forms of credit (Appendix III).

The paper has also discussed the activity of the central bank as government agent and as holder of government deposits, concluding that its involvement in these activities, although admissible also in the ideal model, is more necessary when monetary and financial markets are undersized. In any case, the activity of the central bank as government agent, together with government deposits at the central bank, should be remunerated.

On the question of how controls should be regulated, the paper suggested (1) the form in which direct credit should be granted (preferring the purchase of government securities, coupled with the use of a deposit current account, to fixed-term advances or overdraft facilities); (2) the frequency of the compliance requirement (indicating that the no-overdraft rule could be applied on an average of weekly or monthly data); (3) the consequences of exceeding the ceiling (which should be formally stated); and (4) the choice of the reference aggregate to express the ceiling (preference should be given to past government revenue) and the choice of the reference percentage (established according to the desired contribution of the credit facility to base money growth, and thus taking into account some crucial parameter such as the currency/GDP ratio, the deposit/GDP ratio, the tax/GDP ratio, and the reserve requirement ratio). Moreover, the paper has recommended setting the ceiling in terms of flows rather than stocks and has discussed ways to reduce the sensitivity of the ceiling to shocks affecting nominal GDP.

Also discussed were the issue of circumvention of legal constraints, whose incentive can be somewhat reduced if the central bank acts through market instruments, and problems connected with foreign exchange borrowing (including the controversial issue of whether government transfers to cover foreign exchange losses should be subject to the ceiling). The paper has argued that the formal constraints on central bank credit to the government play a different role from those included in Fund-supported adjustment programs and has discussed issues related to the removal of existing credit facilities. Finally, it discussed some other aspects concerning the financial relationship between the central bank and the government, and particularly the regulation of government deposits at the central bank. Although there may be advantages to allowing the government to keep such deposits, rules should be introduced to avoid having the control of these deposits come into conflict with the monetary policy pursued by the central bank.

Appendix I Advantages of Borrowing from the Central Bank

This appendix addresses two issues. First, under what conditions borrowing from the central bank is more convenient for the government than borrowing from the market. Second, under what conditions the government may prefer a monetary expansion through credit to the government rather than through credit to the private sector.

Credit from the Central Bank Rather than from the Market

It is sometimes argued that as long as central bank credit is granted at market interest rates the government has no incentive to borrow from the central bank rather than from the market. It is shown here that this argument is valid only under very limited hypotheses.

Assume first that, owing to capital constraints or the flexibility of interest rates, domestic monetary policy is independent, and that the government has the alternative to finance expenditure by issuing bonds or by increasing the money supply by borrowing at the central bank. Under these conditions, central bank credit is preferable to issuing bonds, even if the government has to pay a market interest rate on that credit. This is true for several reasons.

First, consider the effect on the government budget of alternative financing sources. Let i^G and i^F be, respectively, the interest rates paid by the government on the market and on the central bank credit facility, and i^H the interest rate paid by the central bank on the monetary base. Let π be the share of seigniorage transferred from the central bank to the government.⁷⁰ Then, under the simplifying assumption that no taxes are paid on interest payments (or,

alternatively, that the tax rate on all interest payments is the same), the benefit for the government from receiving central bank credit rather than issuing bonds is

$$B = i^G - i^F + \pi(i^F - i^H).$$

The first term in the above expression is the saving of interest payments on bonds, the second is the interest payment made to the central bank, and the third is the share of seigniorage transferred to the government. Suppose that the law stipulates that central bank credit to the government must bear a market interest rate, that is, that $i^F = i^G$. Then the net benefit is

$$B = \pi(i^G - i^H),$$

which, unless all seigniorage is retained by the central bank ($\pi = 0$), is positive (as i^G is usually higher than i^H).⁷¹ Conceptually, as long as part of the seigniorage is transferred to the budget, the government benefits from a monetary expansion. Even when the law mandates the transfer of central bank profits to the government, π will not be equal to 1 (for example, as noted by Klein and Neumann, 1990, on account of central bank operating costs), but is likely to be substantially higher than zero.

Second, the market interest rate in the presence of a monetary expansion will, at least in the short run (until inflation expectations are adjusted), be lower than when government expenditure is financed by bonds. Therefore, the government benefits from a monetary expansion even if $\pi = 0$.

Third, highly indebted governments may have to pay a (default risk) interest premium with respect to the market rate paid by the private sector. In this case, a law stating that market rates must be paid on central bank credit to the government may leave room for abuse. The government could, for example, argue that the relevant market rate is the lower private sector rate. More important, the premium paid by the government over the private sector rate

⁷⁰Throughout this appendix, the "opportunity cost" concept of seigniorage is used (as in Gros, 1989, and Klein and Neumann, 1990), which looks at the interest rate saving arising from the central bank's ability to issue liabilities bearing a zero (for currency) or below market (for bank reserves) interest rate. The alternative concept of seigniorage (the purchase of goods made by issuing base money) is equivalent to the present value of the opportunity cost concept, under the assumption that no interest is paid on the monetary base.

⁷¹Recall that, even if bank reserves pay a market interest rate, cash bears a zero interest rate.

will be reduced by purchases of government paper by the central bank.⁷² An extreme, but revealing, case is when no government paper market exists or when nobody is willing to buy additional government paper (which is equivalent to an “infinitely high” interest premium). The benefit is in this case more “tangible”: central bank credit would allow the government to finance expenditure that could not otherwise be financed.

Fourth, as long as part of government debt is nonindexed, a monetary expansion, by raising inflation, improves the government net wealth even if it is granted at market rates.

Fifth, as recalled in Section II, the alleged inflationary bias of the government arises, not only from the “revenue motive,” but also from the “unemployment motive.” Even if the budget did not benefit from the monetary expansion, governments may still be interested in borrowing from the central bank to increase GDP growth.

Consider now the lack of monetary policy autonomy caused by free capital mobility and fixed exchange rates. The second, fourth, and fifth argument above are no longer applicable because an autonomous monetary expansion is no longer feasible. However, borrowing from the central bank may still be preferable. An increase in central bank credit to the government must in this case be offset by a decrease in such credit to the private sector. The net improvement in the government budget is, in this case, given by

$$B = i^G - i^F - \pi(i^P - i^F),$$

where i^P is the interest rate paid on central bank credit by the private sector (commercial banks), assumed to be equal on the market interest rate for primary private agents. The third term above is the decline in the seigniorage transferred to the government. If $\pi = 1$, the above expression becomes

$$B = i^G - i^P,$$

which, again, is positive if the government pays an interest premium on its debt.⁷³ If $\pi = 0$, the above expression becomes

$$B = i^G - i^F.$$

Apparently, in this case, there would be no benefit for the government if it has to pay a market rate on central bank credit (that is, if $i^F = i^G$). However, if the central bank shifts from private to government

paper, the premium paid by the government will be lower. Therefore, even in this case, the government would benefit from receiving more credit from the central bank.

In conclusion, even if the government is forced to pay a market rate to the central bank, it may still find it convenient to borrow from the central bank, rather than issuing bonds. Admittedly, the advantages are less relevant under free capital mobility and fixed exchange rates. Those conditions cannot be taken for granted, however, as the choice of fixing parities and liberalizing capital mobility can be reversed.⁷⁴ In this perspective, the institutional constraints on central bank credit to the government can be seen as conditions favoring the maintenance of fixed capital mobility and fixed exchange rates (because the government would benefit less from their abandonment if these constraints were in place).

Shifting Composition of Base Money Creation from Private Sector to Government

As argued in Section II, the government is likely to benefit more from a monetary expansion owing to credit to the government than from one owing to credit to the private sector. To illustrate this, consider an increase in government expenditure financed by central bank credit. The cost for the government is

$$C^F = i^F - \pi(i^F - i^H).$$

If the same expenditure is financed by issuing bonds, and, at the same time credit to the private sector is increased by the same amount, the cost for the government is

$$C^P = i^G - \pi(i^P - i^H).$$

The first alternative is better if $C^F < C^P$, when,

$$i^G - \pi i^P - i^F(1 - \pi) > 0.$$

As indicated in Table A1, whether this condition is satisfied depends on the relation between interest rates, and on the value of π . In the table, the sign “=” indicates that the two finance sources are equivalent, whereas “more” indicates that central bank credit to the government is more convenient. The first row of the table says that the government is indifferent with regard to the two procedures as long as all interest rates are equal ($i^G = i^F = i^P$)—the government does not pay an interest premium on the market and the central bank charges the market in-

⁷²In this case the government is better off because it shifts from a lender that is sensitive to the default risk (the market) to one that is not (the central bank).

⁷³The government may have to pay an interest premium (to offset the default risk) even under free capital mobility and fixed exchange rates.

⁷⁴Recall that in most countries, even when the central bank is independent, the decision on the exchange rate regime is attributed to the government.

Table A1. Does Central Bank Credit to the Government Reduce the Government Deficit More or Less Than Central Bank Credit to the Private Sector?

Hypotheses on Interest Rates	Hypothesis on the Distribution of Seigniorage		
	$\pi = 0$	$0 < \pi < 1$	$\pi = 1$
$i^G = i^P$			
$i^G = i^F$	=	=	=
$i^G > i^F$	more	more	=
$i^G > i^P$			
$i^G = i^F$	=	more	more
$i^G > i^F$	more	more	more

π = Share of seigniorage transferred to the government.

i^G = Interest rate paid by the government on the market.

i^F = Interest rate paid by the government on central bank credit.

i^P = Interest rate paid by the private sector on central bank credit (market rate).

terest rate. The last row of the table says that, as long as the government has to pay a premium on its market debt ($i^G > i^P$) and can borrow at a cheaper rate from the central bank ($i^F < i^G$), the government is always better off if it borrows from the central bank.⁷⁵ In all other cases, depending on the value of π , central bank credit to the government is more favorable or is equally favorable.⁷⁶

⁷⁵However, as noted above, the relevant market rate is the one that would prevail if the central bank had not shifted toward government paper. Thus the equal sign in the third entry of the second column of Table A1 is unlikely to hold, and thus the government would benefit from a shift from private to government assets in the portfolio of the central bank.

⁷⁶It is important to stress that the table results are derived under the assumption that the market interest rate on government paper cannot be lower than the rate paid on central bank credit to the private sector. This assumption seems to be reasonable if the governments concerned are facing budgetary problems, involving some default risk premiums.

Appendix II Relevance of Institutional Constraints

The issue of whether institutional constraints, including those on central bank credit, can be effective in preserving central bank independence has always been highly controversial (for example, Hawtrey, 1932). Clearly, institutional constraints can be circumvented or, if necessary, removed.⁷⁷ Moreover, regardless of the institutional setup, monetary policy is going to be affected by fiscal policy, the main constraint coming from the Sargent-Wallace “unpleasant arithmetics.”⁷⁸ But the issue is not whether institutional constraints are sufficient for independence; nor whether they are necessary. It is to what extent they can reinforce the central bank vis-à-vis the government and tilt the balance between monetary and fiscal authorities in favor of the former, forcing fiscal policy to adjust to the needs of monetary policy (Parkin, 1986).

This is clearly an empirical issue and is influenced by several factors (including the overall legal framework of a country).⁷⁹ Central bankers from

countries in which central banks are institutionally independent and inflation is low have often argued that formal rules are very important (Tietmeier, 1991, and Hoffmayer, 1992). Others, from countries in which the central bank is institutionally less independent, although not dismissing formal constraints as irrelevant, have argued that they are not essential (Rasminsky, 1966, and Venkitaramanan, 1992). Indeed, a number of countries with “institutionally dependent” central banks and good inflation performance can easily be named (Japan or Belgium).

More systematic empirical studies tend to support the hypothesis that institutional constraints have some bearing on inflation performance, at least at some stage of economic development. The most extensive study in this area, in terms of country coverage and institutional information used, is that of Cukierman, Webb, and Neyapti (1992), which concludes that (1) there is evidence that institutional independence affects inflation in industrial countries (and that the direction of causality moves from the former to the latter); (2) among institutional guarantees, those affecting central bank credit to the government are by far the most relevant; and (3) there is limited evidence that institutional independence is relevant in developing countries. These results are consistent with those reached by other studies, such as Bodart (1990), and Grilli, Masciandaro, and Tabellini (1991), the latter focusing only on developed countries.⁸⁰

⁷⁷One prominent example is the Reichsbank after the First World War. At the time, Reichsbank credit to the government was constrained by a provision stating that one-third of note circulation had to be covered by gold or foreign currency. As discussed by Holtfrerich (1988), this constraint was first modified to allow its circumvention, and finally removed. Credit to the government could in this way become uncontrolled and was one of the factors behind the 1923 hyperinflation. In May 1922, long before the worst phase of hyperinflation began, the Reichsbank was formally declared independent of government.

⁷⁸See Bank for International Settlements (1992) for a recent survey of the practical constraints set by fiscal policy on monetary policy in industrialized countries.

⁷⁹For example, in countries where “common law” rather than “Roman law” applies, the need for written guarantees of central bank independence may be reduced. An example is the recent central banking law approved in New Zealand, which has been unanimously heralded as guaranteeing central bank independence (see *The Economist*, February 2, 1991, p. 77), despite its lack of explicit constraints on central bank credit to the government. “Tradition” is also another important factor. For example, the alleged ban on any form of credit from the Federal Reserve to the U.S. Government is as much a matter of legal prohibitions as of tradition. Indeed, as documented in Appendix III, a 1933

law, never abrogated, would allow the President to authorize the granting of direct credit to the Treasury, “when foreign commerce is adversely affected.” This provision has never been applied.

⁸⁰The prototype of these studies is Bade and Parkin (1980), which however does not examine the role of institutional constraints on central bank credit to the government. Other related studies include Alesina and Summers (1990), who find evidence that central bank independence does not imply relevant costs in terms of output variability, and Parkin (1986), who finds that institutional independence may effectively constrain fiscal deficits. All these studies focus on industrial countries.

Appendix III Central Bank Credit to the Government in 57 Countries

This appendix presents some factual information on how formal constraints on central bank credit to the government are regulated in a sample of 57 countries. The sample includes all major industrial countries, as well as a sample of other industrial and developing countries, including all those grouped in the three currency unions (the West African Monetary Union, the Central African Monetary Union, and the Eastern Caribbean Currency Area).⁸¹ The available information for each of these countries/areas is presented in the individual country tables at the end of this appendix (whose exact content is described below). This information is not intended to describe completely how the formal constraints on central bank credit to the government are regulated throughout the world but to single out some relevant features of these constraints and, with the help of Tables A2 and A3, to compare them with some of the suggestions discussed in this paper.

Country Tables

The information presented in the country tables at the end of this appendix reflects the formal arrangements regulating central bank credit to the government (the latter defined as including extrabudgetary funds and local governments) that were in place on December 31, 1992. "Formal arrangement" is intended to cover any relevant provision included in the constitution (C), or in laws (L), government decrees (D), or formal agreements (A) between the central bank and the government (these codes are used in the second column of the tables to identify the source of the provision). Additional information referring to other constraints on central bank credit to the government that arise from other sources

(such as tradition and informal agreements), as well as other useful information, is reported in footnotes.

The first column of the tables reports the financial instruments for which information is provided. Four credit instruments are singled out: (1) Overdraft on current account refers to any line of credit granted by the central bank to the government without a specified maturity; (2) Fixed-term loans and advances refers to any nonsecuritized credit with fixed maturity; (3) Purchase of securities (primary market) refers to purchases made directly from the government; and (4) Purchase of securities (secondary market) refers to purchases from other agents. The tables do not distinguish between outright purchases and repurchase agreements (repos), because, with one exception (Hungary), repurchase agreements are always treated in the same way as outright purchases. (In Hungary, repos are not included in the ceiling applied to other forms of central bank credit.) The tables also provide information on the regulations affecting government deposits at the central bank.

The second column refers to the degree of control that the central bank has over the above instruments. For each of them, one of the following codes is used: M (mandatory), if the central bank is forced to provide credit to the government; D (discretionary), if the central bank is allowed to provide credit to the government on a voluntary basis; P (prohibited), if central bank credit to the government is prohibited. For government deposits at the central bank, the code M is used if the central bank is mandated to keep government deposits; D is used if it is allowed to receive deposits from the government; and P if government deposits at the central bank are prohibited.

The third column refers to the existence of constraints on the maturity of the corresponding instrument, whereas the fourth column refers to the existence of quantitative ceilings.

The fifth column refers to the constraints on the rate of interest on the corresponding instrument. The term "market rates" is used if there is a formal requirement that the credit is extended at market rates.

⁸¹The classification of countries into industrial and developing is the one used in the International Monetary Fund's *International Financial Statistics*. Based on this classification, the sample comprises 16 industrial countries and 41 developing countries.

Table A2. Regulation of Central Bank Credit to the Government for Different Types of Credit
(Percentage composition)

	Industrial Countries	Developing Countries	Total
Overdraft facility			
Prohibited	43.8	56.1	52.6
Constrained	43.8	36.6	38.6
Unconstrained	12.4	7.3	8.8
Total	100.0	100.0	100.0
Fixed-term loans and advances			
Prohibited	43.8	22.0	28.1
Constrained (discretionary)	25.0	70.7	57.9
Constrained (mandatory)	—	2.4	1.8
Unconstrained (discretionary)	18.8	4.9	8.8
Unconstrained (mandatory)	12.4	—	3.4
Total	100.0	100.0	100.0
Purchase of government paper (primary market)			
Prohibited	25.0	19.5	21.1
Constrained (discretionary)	6.2	58.6	43.9
Constrained (mandatory)	6.2	2.4	3.5
Unconstrained (discretionary)	56.4	19.5	29.8
Unconstrained (mandatory)	6.2	—	1.7
Total	100.0	100.0	100.0
Purchase of government paper (secondary market)			
Prohibited	—	19.5	14.0
Constrained (discretionary)	—	26.8	19.3
Unconstrained (discretionary)	100.0	53.7	66.7
Total	100.0	100.0	100.0

Summary Tables

This section summarizes the information detailed in Tables A2 and A3 concerning (1) the tightness of the constraints on different types of central bank credit to the government; and (2) the form in which the credit constraints are expressed.

On the first aspect, Table A2 summarizes how the four main types of central bank credit to the government (overdraft facilities, fixed-term loans and advances, purchases of government paper on the primary market, and purchases of government paper on the secondary market) are regulated. More specifically, the table indicates what is the percentage of countries in which each form of credit is prohibited, constrained, or left unconstrained (and whether credit is discretionary or mandatory). The breakdown between discretionary and mandatory is not presented for overdraft facilities (for which, regardless of the law, once the credit facility is opened, the government can borrow at its will up to the existing ceiling), nor for the purchase of government paper on the secondary market (as in all countries this

operation is left to the discretion of the central bank). Also, in computing the percentages, the countries belonging to a monetary union are counted as individual countries.

This information is provided separately for industrial and developing countries, and for the total. However, as recalled in Section IV, the distinction between industrial and developing countries is not necessarily the most relevant, nor should the latter be identified with countries in which all the deviations from the ideal model discussed in Section III apply. With this caveat, Table A2 highlights some patterns, corroborating the suggestions presented in this paper.

One clear pattern is that for all countries the constraints imposed on central bank credit are more binding for “more direct” forms of credit. Overdraft facilities are prohibited in 53 percent of the countries, but only 28 percent of the countries prohibit fixed-term loans, and only 21 percent prohibit the purchase of government paper on the primary market. Finally, purchases on the secondary market are prohibited by only 14 percent of the sample coun-

tries. When they are allowed, the more direct forms of credit are more likely to be constrained. Instead, in two-thirds of the sample countries the purchase of government paper on the secondary market is left entirely unconstrained.

But the above pattern is much more evident for the group of industrial countries. About 44 percent of industrial countries prohibit both overdraft facilities and fixed-term advances. However, only one-fourth of the industrial countries prohibit the direct purchase of government paper from the government, and none prohibit the purchase on the secondary market.⁸² This is consistent with the view, discussed in Section III, that credit granted through open market operations (in both the primary and the secondary market) in countries in which government and private securities are substitutes can be left unconstrained.

The share of developing countries prohibiting overdraft facilities is also high (56 percent). However, contrary to industrial countries, other forms of credit are not distinguished: about 20 percent of developing countries prohibit all other forms of credit, including purchases on the secondary market. Moreover, the percentage of developing countries that leave such purchases unconstrained is relatively low (54 percent). Thus, the form in which credit is granted in developing countries seems to be less relevant than in industrial countries. Indeed, among developing countries, it is more common to find polar cases in which either all credit to the government is unconstrained (India and Indonesia), or all credit is constrained (Chile and Argentina). The less marked differentiation between different forms of credit has been explained in Section IV by two factors. First, excessively tightening direct central bank credit in countries in which financial markets are not well developed would be too costly for the government.⁸³ On the other hand, it may be necessary to constrain also indirect credit, which may be as appealing to the government as direct credit. Thus, for both direct and indirect credits, there is a tendency to introduce some form of intermediate constraint.

⁸²Within the operations allowed, the more direct forms of credit are more frequently constrained. In 80 percent of industrial countries, overdraft facilities, when allowed, are constrained (and with fairly tight ceilings; see below).

⁸³Some of the developing countries included in the sample have a very sophisticated financial structure. In some (Chile and Argentina), automatic access to central bank credit has indeed been prohibited.

Table A3. Alternative Ways of Expressing Constraint on Central Bank Credit to the Government

	Industrial Countries	Developing Countries	Total
Fixed in nominal terms	58.3	—	13.2
In percentage of current revenue	8.2	29.3	24.6
In percentage of past revenue	16.7	41.4	35.8
In percentage of current expenditure	16.7	7.3	9.4
Fixed growth rate	—	4.9	3.8
Other	—	17.1	13.2
Total	100.0	100.0	100.0

Table A2 also shows that, at least in principle, discretionary intervention prevails in both industrial and developing countries. Of course, the actual use of the discretion formally attributed to the central bank will depend on a host of factors, some of which have been discussed in the paper.

On the issue of the form in which the constraint is expressed, Table A3 shows that the most frequently used reference aggregate is past revenue (36 percent), followed by current revenue (25 percent).⁸⁴ The use of revenue as a reference aggregate (supported by the discussion in Section IV) dominates other alternatives in developing countries. However, almost 60 percent of the constraints imposed in industrial countries are set in nominal terms (and at fairly low levels).⁸⁵ On the contrary, no developing country uses this form of constraint.

Finally, there are still some countries in which government expenditure in the current year is used as a reference aggregate, despite the shortcomings of this solution.

⁸⁴The table refers to the percentage composition of all existing constraints. If two different types of constraints are in place in a country, they are counted separately.

⁸⁵For example, the ceiling on fixed-term loans to the Federal Government in Germany amounts to less than 1 percent of its 1991 revenue. In the same year, the ceiling on the government overdraft at the central bank in France was equivalent to 0.7 percent of government revenue, and to less than 0.1 percent in the Netherlands.

Country Tables

Argentina

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	P(L)	—	—	—
Purchase of securities (primary market)	D(L)	Unconstrained		Purchases must be at market prices
Purchase of securities (secondary market)	D(L)	Unconstrained	¹	Purchases must be at market prices
Government deposits at central bank	D(L)	Unconstrained	None	Unconstrained

Source: Carta Orgánica del Banco Central (Ley 24.144; October 1992).

¹The overall holdings of government securities in nominal terms cannot increase by more than 10 percent a year. Moreover, the stock of government securities held by the central bank cannot exceed one-third of the monetary base.

Australia

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	D(A) ¹	Not applicable	¹	Market rate ¹
Fixed-term loans and advances	P(A)	—	—	—
Purchase of securities (primary market)	D(L)	Unconstrained	None	Unconstrained ²
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L) ³	Unconstrained	None	Market rate

Sources: Reserve Bank Act No. 4, 1959 of April 23, 1959, and following amendments, and Commonwealth Inscribed Stock Act (1911).

¹The Reserve Bank Act obliges the Bank to act as the Commonwealth's banker and financial agent insofar as the Commonwealth requires it to do so. Details of these banking arrangements are formally agreed between the Bank and the Department of Finance.

²The interest on the securities purchased directly from the Government is a weighted average of the interest on the securities sold to the public.

³The Audit Act (1901) allows the Commonwealth to keep deposits with any bank. In practice, Commonwealth cash balances are held almost exclusively with the Reserve Bank.

Austria

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	P(L) ¹	—	—	—
Purchase of securities (primary market)	M(L)	Short-term	5 percent of the Federal Republic's gross annual tax receipts ²	Discount rate
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	D(L) ³	Unconstrained	None	Zero

Sources: Statute of the Austrian National Bank and National Bank Law, No. 184/1955, as amended by Federal Laws Nos. 200/1967 and 276/1969.

¹Unless the countervalue in gold or foreign assets is provided.

²According to latest published provisional budget results.

³The Government is allowed to keep deposits outside the central bank.

Belgium¹

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	M(L)	Not applicable	BF 15 billion to the state plus BF 5 billion to the Securities Regulation Fund ²	Rate on current account advances
Fixed-term loans and advances	P(L)	—	—	—
Purchase of securities (primary market)	P(L) ³	—	—	—
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained ⁴
Government deposits at central bank	M(L) ⁵	Unconstrained	None ⁶	Unconstrained ⁷

Sources: Organic Law and Statute of the National Bank of Belgium. Agreement between the Minister of Finance and the National Bank dated January 22, 1991, and Agreement between the National Bank and the Securities Regulation Fund dated January 23, 1991.

¹As for all other countries, the table refers to the situation at end-1992. In March 1993, the Belgian Parliament approved a draft bill prohibiting the granting of direct credit to public authorities (including the direct purchase of securities).

²The Securities Regulation Fund (Fonds des Rentes) is a public institution in charge of regulating the secondary market for ordinary government bonds. The reported ceilings on the overdraft were lowered on January 29, 1991.

³The only exception is the acquisition of government securities up to an amount corresponding to the National Bank's capital reserves and depreciation accounts.

⁴In practice at market rates.

⁵The Government is allowed to keep deposits outside the central bank.

⁶Under the new regime (see footnote 1), the central bank and the Government have agreed to introduce a ceiling on government deposits at the central bank.

⁷At present the interest rate is zero. Under the new regime (see footnote 1), market rates will apply.

Bolivia

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	D(L)	Not applicable	Unconstrained	Unconstrained
Fixed-term loans and advances	D(L)	—	10 percent of government expenditure, plus any amount included in the annual monetary program ¹	Unconstrained
Purchase of securities (primary market)	D(L)	Unconstrained	None	Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L)	Unconstrained	None	Unconstrained

Source: Ley Orgánica del Banco Central de Bolivia (Decree Law No. 14791).

¹The 10 percent ceiling refers to the credit granted to cover temporary deficits. This credit cannot exceed 90 days and must be repaid by the end of the fiscal year. In addition, the central bank can grant credit based on the monetary program (*programa monetario*) prepared by the central bank every year.

Brazil

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(C)	Not applicable	—	—
Fixed-term loans and advances	P(C)	—	—	—
Purchase of securities (primary market)	D(C)	Unconstrained	None	Unconstrained
Purchase of securities (secondary market)	D(C)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(C)	Unconstrained	None	Daily reference rate on central bank credit

Source: 1988 Constitution.

Bulgaria

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	D(L)	Less than three months, but repayable not later than the end of the year	5 percent of annual revenue of state budget ¹	Unconstrained
Purchase of securities (primary market)	D(L) ²	Unconstrained	None	Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L)	Unconstrained	None	Unconstrained

Source: Law on the Bulgarian National Bank, June 6, 1991.

¹In addition, the amount of outstanding credit shall not exceed the paid-in statutory fund and the reserve funds.

²Direct purchases are allowed only as part of a public emission.

Canada

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L) ¹	Not applicable	—	—
Fixed-term loans and advances	D(L)	Three months after the end of the fiscal year	33 percent and 25 percent of estimated revenue, respectively, to central and provincial governments ²	Market rates
Purchase of securities (primary market)	D(L)	Unconstrained	None	Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	D(A) ³	Unconstrained	None	Zero

Sources: Bank of Canada Act (R.S., 1985, c.B-2, amended by R.S., 1985, c. 18); Financial Administration Act.

¹Granting credit to the Government through an overdraft facility is not listed among the operations that the Bank of Canada is authorized to perform.

²The last time the Bank of Canada made an advance to the Federal Government was in 1961. The Bank of Canada has made an advance to a provincial government on only one occasion (in 1936).

³The Government holds deposits both at the central bank and at commercial banks, but the central bank can control their distribution.

Central African Monetary Area¹

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	D(L)	Less than 12 months	The total amount of credit to the Government cannot exceed 20 percent of revenue in the preceding year ²	Discount rates determined by the board of directors of the bank
Fixed-term loans and advances	D(L)	³	As above	As above
Purchase of securities (primary market)	D(L)	³	As above	As above
Purchase of securities (secondary market)	D(L) ⁴	Less than six months	None	Unconstrained
Government deposits at central bank	M(L) ⁵	Unconstrained	None	Below the discount rate

Source: Articles of the Bank of Central African States, approved in November 1972.

¹Comprises Cameroon, the Central African Republic, Chad, the Congo, Equatorial Guinea, and Gabon.

²The 20 percent ceiling applies to all forms of credit including the discount of government paper from the banking system. The ceiling has sometimes been exceeded. It was exceeded, for example, in 1990 when the ceiling was reduced on account of falling revenue. A penalty rate of 1 percent above the discount rate was applied, and a timetable for absorbing the overruns was defined. The ceiling includes not only the government paper actually discounted at the central bank, but also the bonds held by the banking system that are potentially discountable.

³Without organized markets for government paper, these items include the purchase from banks of public securities with a maturity of one year or less and the discount of public securities with a maturity of 10 years or less to finance development projects.

⁴Practically no open market operations take place. However, based on Article 17 of the Bank statute, the Bank could in principle buy government paper in the secondary market as long as this is not effected for the benefit of the treasuries.

⁵The governments can keep deposits outside the central bank.

Chile

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(C) ¹	Not applicable	—	—
Fixed-term loans and advances	P(C) ¹	—	—	—
Purchase of securities (primary market)	P(C) ¹	—	—	—
Purchase of securities (secondary market)	P(C) ¹	—	—	—
Government deposits at central bank	M(L) ²	Unconstrained	None	To be determined exclusively by central bank

Sources: 1979 Constitution and 1989 Central Bank Law (Law No. 18840 published on October 10, 1989).

¹Except in case of war, when the central bank may grant credit to the Government.

²The Government can also keep deposits in other banks.

Czech Republic

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	P(L)	—	—	—
Purchase of securities (primary market)	D(L)	Less than three months	5 percent of revenue of the previous year	Unconstrained
Purchase of securities (secondary market)	D(L)	Less than one year	None	Unconstrained
Government deposits at central bank	M(L) ¹	Unconstrained	None	Unconstrained

Source: Act on the Czech National Bank of December 17, 1992.

¹The Government can decide to keep its deposits at other banks.

Eastern Caribbean Currency Area¹

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	D(L)	Temporary advances to meet seasonal needs at conditions decided by central bank	5 percent of average annual recurrent revenue over the three preceding financial years	Conditions to be decided by central bank
Purchase of securities (primary market)	D(L) ²	Less than 91 days for treasury bills; less than 15 years for other securities	The holding of treasury bills of any government can never exceed 10 percent of the estimated recurrent revenue ³	As above
Purchase of securities (secondary market)	D(L) ²	As above	For the current year; the holding of other securities can never exceed 15 percent of the currency and other demand liabilities of central bank ³	Unconstrained
Government deposits at central bank	M(L)	Unconstrained	None	Conditions are to be agreed between the central bank and the participating governments

Source: Eastern Caribbean Central Bank Agreement of July 5, 1983.

¹Comprises Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines.

²Only publicly issued securities can be purchased.

³The above ceilings include the bills acquired as collateral for advances to banks. The foreign assets of the central bank must be at least equal to 50 percent of currency and other demand liabilities. The ceilings do not include the non-interest-bearing, nonnegotiable securities that the governments have to transfer to the central bank to cover any excess of currency and demand liabilities over foreign and domestic assets.

Egypt

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	D(L)	End of fiscal year	10 percent of average public revenue during the preceding three years ¹	Fixed by agreement between the Government and the bank according to money and credit prevailing conditions
Purchase of securities (primary market)	D(L)	Unconstrained	None	Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L) ²	Unconstrained	None	2 percentage points below the three-month treasury bill rate

Sources: 1957 Central Bank Law and its amendments.

¹According to the Central Bank Law, the bank can advance loans to the Government that must be repaid within 12 months. In practice, at the beginning of each fiscal year the bank extends a line of credit for an overdraft that has to be repaid by the end of the fiscal year. This is done by selling bonds to the banking system. However, the central bank has an obligation to buy them back from banks at face value at any time. In addition, the exchange losses or gains of the Government are debited or credited to a special account monthly, not included in the above ceilings. This account is also securitized by the end of the fiscal year along with the overdraft account and is interest free.

²The Government can also keep deposits with commercial banks.

France

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	M(L) ¹	Not applicable	F 20.5 billion plus the revaluation of the foreign reserves held by the Foreign Exchange Stabilization Fund ²	Zero
Fixed-term loans and advances	P(L)	—	—	—
Purchase of securities (primary market)	P(L)	—	—	—
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L) ³	Unconstrained	None	"Taux des appels d'offres" ⁴

Source: Agreement of September 17, 1973, approved by Law of December 21, 1973.

¹The maximum amount of mandatory credit is subject to an agreement between the Ministry of Economics and Finance and the Governor with the authorization of the General Council of the Banque de France and approval of Parliament (Law of January 3, 1973). The current agreement was signed on September 17, 1973.

²The reason for this provision is that, as explained by Eizenga (1990), "Any losses suffered by the Fund are borne by, and any profits made by it accrue to, the Government. In order to offset the financial consequences for the Government's cash position [of the foreign exchange gains or losses], the ceiling applicable to the Bank lending to the Government is raised by an amount equal to the losses suffered by the Fund or lowered by an amount equal to the profits. If the ceiling is increased the additional permissible lending is free of interest; if the ceiling is lowered, the reduction in permissible lending is deducted from the amount available for non-interest-bearing lending." The ceiling is revised twice a year (in January and July).

³The Government is not allowed to keep deposits outside the central bank.

⁴This is the lowest of the intervention rates of the Banque de France.

Germany

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	D(L)	Up to three months	DM 10.5 billion ¹	Lombard rate
Purchase of securities (primary market)	P(L)	—	—	—
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Market rates
Government deposits at central bank	M(L) ²	Unconstrained	None	Zero

Sources: Deutsche Bundesbank Act of July 26, 1957, and later amendments.

¹Including treasury bills outstanding that the Bundesbank bought or promised to buy. Out of the total, DM 7.3 billion can be granted to the Federal Government and its special funds (federal railways, federal post office, etc.), and DM 3.3 billion to Länder governments (the latter ceiling increases according to the size of the population).

²According to Article 17 of the Bundesbank Act, the central government, the Länder governments, and some government agencies are obliged to deposit their funds at the central bank. However, the Länder governments have been granted an exemption by the central bank to deposit their funds at other banks; moreover, to influence the money market, the Bundesbank Act enables the Bundesbank, acting in conjunction with the public authorities, to shift public funds temporarily to commercial banks.

Greece

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	D(L)	Not applicable	For 1993 the balance cannot exceed the amount outstanding at the end of 1992 by more than 5 percent of the increment of budgeted government expenditures in 1993. As of 1994 no overdraft facility will be allowed	1.5 percent for the amount exceeding Dr 100 million
Fixed-term loans and advances	D(L)	Unconstrained	None	To be agreed between the Bank of Greece and the Government (10 percent in the latest agreement)
Purchase of securities (primary market)	D(L)	Unconstrained	It cannot exceed an upper limit set by the General Council of the Bank (currently Dr 250 billion)	Unconstrained
Purchase of securities (secondary market)	D(L) ¹	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L)	Not applicable	None	Zero

Sources: Presidential decree of August 21/22, 1931, regarding code of provisions concerning the Bank of Greece, and later amendments. The most recent amendments concerning central bank credit to the Government were enacted with Law 1266 of 1982 and Law 2076 of 1992.

¹Purchases of securities on the secondary market are not used in practice; repurchase agreements have been used infrequently.

Hungary

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	D(L)	Unconstrained	The total stock of credit cannot increase by more than 3 percent of planned revenue ¹	Basic interest rate ²
Purchase of securities (primary market)	D(L)	Unconstrained		Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained		Unconstrained
Government deposits at central bank	M(A) ³	Unconstrained	None	40 percent of the basic rate ⁴

Source: Central Bank Law (Law LX of 1991).

¹Excluding privatization revenue. The limits will be operational only in 1995. No limit was set for 1992. The limits for 1993 and 1994 are 5 percent and 4 percent, respectively. The ceiling applies to the total stock of loans and securities, excluding those acquired through repurchase agreements.

²According to Article 19, section 4 of the Central Bank Law, the interest rate "shall be guided by the basic interest rate." This is the main posted rate of the National Bank of Hungary. In recent budget laws, the rate on new credit has been set at the same level of the basic rate. However, this rate applies only to new credit. The stock of long-term state debt held by the National Bank of Hungary pays an interest of 40 percent of the basic rate.

³The central government has to keep all its deposits at the central bank. However, the so-called central budgetary institutions, which in Hungary intermediate a large share of central government expenditure, are allowed to keep deposits outside the central bank.

⁴Based on a bilateral agreement between the National Bank of Hungary and the Ministry of Finance, confirmed, for 1993, in the 1993 budget law.

India

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	D(L) ¹	Three months or less	None	Unconstrained
Purchase of securities (primary market)	D(L)	Unconstrained	None	Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L) ²	Unconstrained	None	Zero

Sources: Reserve Bank of India Act, 1934, with amendments.

¹Advances can be made to central and state governments. In addition, securitized loans not exceeding 90 days can be made to local authorities.

²The central government can keep deposits outside the central bank only in places where the central bank does not operate. The central bank may also collect deposits from state governments.

Indonesia

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	M(L) ¹	Not applicable	Determined in the state budget approved by the House of Representatives ²	3 percent ³
Fixed-term loans and advances	P(L) ⁴	—	—	—
Purchase of securities (primary market)	D(L)	Unconstrained	None	Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L) ⁵	Unconstrained	None	Unconstrained

Source: Central Bank Law (Act No. 13 of 1968).

¹The credit on the current account must be collateralized by treasury notes.

²According to Article 35 of Act No. 130 of 1968, "The Bank will grant credit on current account to the Government in order to support the Treasury when necessary as determined in the State Budget."

³The rate can, however, be modified by the Monetary Council of the Bank "in accordance with the developments of the situation."

⁴Advances or loans to the Government other than those on the current account are not listed among the operations that the central bank can perform.

⁵With some exceptions, the Government is not allowed to keep deposits outside the central bank. The exceptions are some overnight deposits related to tax collection and some deposits held in certain government banks to finance expenditure in areas where the central bank does not have branches.

Ireland

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	D(L)	Not applicable	None	Unconstrained
Fixed-term loans and advances	D(L)	Unconstrained	None	Unconstrained
Purchase of securities (primary market)	D(L)	Unconstrained	None	Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	D(L) ¹	Unconstrained	None	Unconstrained

Source: 1989 Central Bank Law.

¹The central bank can also keep deposits at commercial banks.

Israel

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	M(L) ¹	Advances must be repaid by the end of the financial year	1.6 percent of budgeted expenditure except in two quarters in each financial year when the ceiling is raised to 3.2 percent ^{2,3}	Unconstrained
Purchase of securities (primary market)	M(L) ¹	Unconstrained	The excess of expenditure in foreign currency over revenue in foreign currency	Unconstrained
Purchase of securities (secondary market)	D(L) ⁴	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L)	Unconstrained	None	Unconstrained

Source: Bank of Israel Law No. 5714-1954, as amended in August 1985.

¹ According to the law, the Bank of Israel may make advances to the Government *at the Government's request*.

² In addition, the stock of central bank credit to the Government outstanding when the new Central Bank Law was introduced can be refinanced by a loan whose maturity and interest rate are to be fixed by agreement between the Minister of Finance and the Governor. In this respect, it was agreed that, taking interest payments into account, the nominal stock of loans would remain constant in nominal terms.

³ The choice of the quarters is at the option of the Government. The 1.6 percent ceiling, however, cannot be exceeded for more than 30 days.

⁴ Purchases and sales on the market can involve only securities bearing a fixed interest rate.

Italy

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	M(L)	Not applicable	14 percent of budgeted expenditure	1 percent
Fixed-term loans and advances	M(L) ¹	¹	None	¹
Purchase of securities (primary market)	D(L)	Unconstrained	None	Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L)	Unconstrained	None	Unconstrained

Sources: 1936 Statute of the Bank of Italy (Royal Decree of June 11, 1936, No. 1067) and 1947 amendment (Decree Law of December 24, 1947, No. 1490, and Decree Law of May 7, 1948, No. 544).

¹ Fixed-term loans must be authorized by Parliament, which also decides the terms under which loans are granted. This happened only once since the 1947 stabilization, in 1983.

Japan

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	P(L)	—	—	—
Purchase of securities (primary market)	D(L) ¹	Short-term ¹	None	Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L) ²	Unconstrained	None	Zero

Sources: Finance Law, Bank of Japan Law, Accounting Law.

¹The Finance Law prohibits the underwriting of government bonds, except for special reasons and with the authorization of the Diet. Under this provision the central bank is allowed to underwrite government bonds, refinancing those coming to maturity that had previously been purchased from the private sector. Although no prohibition exists on underwriting the so-called financing bills (issued by the Government for short-term financing), purchases of these bills are limited to the balances unsold after public offerings.

²The Ministry of Finance cannot hold deposits at commercial banks. However, the Foreign Exchange Fund Special Account is allowed to keep deposits with commercial banks under the name of the Minister of Finance.

Malaysia

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	D(L)	Not applicable	None	Determined by central bank
Fixed-term loans and advances	D(L)	Advances must be repaid within three months after the end of the fiscal year	12.5 percent of government revenue in the current year	Determined by central bank
Purchase of securities (primary market)	D(L) ¹	30 years	None	Unconstrained
Purchase of securities (secondary market)	D(L) ¹	30 years	None	Unconstrained
Government deposits at central bank	M(L)	Unconstrained	None	Unconstrained

Source: 1958 Central Bank of Malaysia Ordinance.

¹Although purchases of treasury bills are unconstrained, the central bank can purchase securities only if they have been publicly offered for sale or form part of an issue that is being made to the public.

Mexico

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	M(L)	Not applicable	1 percent of budgeted revenue for the current year ¹	Equal to the treasury bill rate of the latest auction
Fixed-term loans and advances	P(L)	—	—	—
Purchase of securities (primary market)	P(L) ²	—	—	—
Purchase of securities (secondary market)	D(L)	Unconstrained	Set by central bank at the beginning of the year ³	Unconstrained
Government deposits at central bank	M(L) ⁴	Unconstrained	Unconstrained	Equal to the treasury bill rate of the latest auction

Source: 1985 Central Bank Law (Ley Orgánica del Banco de México), published on December 31, 1984.

¹However, this ceiling can be exceeded if the difference between revenues and expenditures increases substantially because of "extraordinary circumstances."

²Direct purchases from the Government are allowed only if the counterpart is frozen in deposits at the central bank.

³By the end of January the central bank has to set a ceiling on total domestic financing to be provided during the year to the Government and the banking system. This ceiling, which does not include the financing through the overdraft facility, has to be set taking into account the overall macroeconomic objectives. Purchases under this ceiling have been classified as "discretionary" (first column) because the ceiling is formally set by the central bank. The ceiling does not include the purchase of government paper directly from the Government for monetary purposes (for resale on the market to mop up liquidity), whose counterpart is frozen in deposits at the central bank (see footnote 2).

⁴The Government can keep deposits outside the central bank.

Morocco

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L) ^{1,2}	Not applicable	—	—
Fixed-term loans and advances	D(L) ¹	240 days during the same calendar year	10 percent of ordinary budget revenue of the previous year	Unconstrained
Purchase of securities (primary market)	P(L) ²	—	—	—
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L)	Unconstrained	None	Unconstrained

Source: Law No. 1-61-258 of December 30, 1962.

¹The advances are granted in the form of overdraft facilities.

²No financial assistance other than that specified by the law can be granted except by an agreement between the state and the bank.

Namibia

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	D(L)	Up to six months	The total amount of advances to the Government and of government securities held by the central bank cannot exceed 25 percent of the Government's average ordinary revenue for the three preceding financial years ²	Related to the current treasury bill rate
Purchase of securities (primary market)	P(L) ¹	—		
Purchase of securities (secondary market)	D(L)	Unconstrained	—	Unconstrained
Government deposits at central bank	M(L) ³	Unconstrained	None	Unconstrained

Source: Bank of Namibia Act (Act 8 of 1990).

¹The bank can buy only securities that "formed part of a public issue" (Article 46 of the Bank of Namibia Act).

²Including the government securities discounted from banks. The ceiling, however, does not include the transfer of nonnegotiable securities from the Government for recapitalization owing to central bank losses (and, separately, for foreign exchange losses when accumulated reserves are not sufficient). In "exceptional circumstances" the Minister of Finance can call on the bank to allow the total ceiling to be raised to 35 percent.

³The Government can keep deposits also with other banks.

Netherlands

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	M(L)	Not applicable	f. 150 million	Zero
Fixed-term loans and advances	D(A) ¹	Unconstrained	3 percent of budgetary revenue of the preceding year	Discount rate on bills of exchange
Purchase of securities (primary market)				
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L) ²	Unconstrained	None	Zero

Sources: Netherlands Bank Act of April 23, 1948, as last amended by act of October 30, 1985.

¹Based on a skeleton agreement concluded in 1975, and last amended in 1984, annual finance arrangements have been renewed every year since 1979. The loans are extended through the purchase of treasury bills. The 3 percent ceiling cannot be exceeded at any point. However, the average holding of treasury bills during the year cannot exceed one-third of the maximum ceiling. The average use of this facility in 1992 was f. 1,816.5 million with a maximum drawing of f. 5,750 million. In addition to the Central Government, two other government bodies have access to central bank credit: the Social Security Bank (up to f. 1 billion, but on average not more than f. 40 million per quarter) and the City of Amsterdam (up to f. 22.5 million, but on average not more than f. 7.5 million per quarter). As indicated in a memorandum to Parliament in the summer of 1992, all the above credit facilities will have to be eliminated to comply with Article 104 of the Maastricht Treaty.

²The Government can keep deposits outside the central bank but it does so only to a limited extent.

Peru

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	P(L)	—	—	—
Purchase of securities (primary market)	P(L) ¹	—	—	—
Purchase of securities (secondary market)	D(L)	Unconstrained	The increase in the stock of government bonds cannot exceed in one year 5 percent of the stock of monetary base at the end of the previous year.	Unconstrained
Government deposits at central bank	D(L) ²	Unconstrained	None	Unconstrained

Source: Ley Orgánica del Banco Central de Reserva del Perú, published on December 30, 1992.

¹Excluding the government bonds transferred from the Government to the central bank to cover its losses.

²The Central Bank Law does not prohibit government deposits at the central bank. However, in Peru the role of government agent, including the holding of government deposits, is performed by the Banco de la Nación.

Philippines

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(A)	Not applicable	—	—
Fixed-term loans and advances	D(L)	Advances must be repaid before the end of the first quarter following the end of the fiscal year	20 percent of average revenue of the last three preceding fiscal years	Determined by the monetary authorities ¹
Purchase of securities (primary market)	P(L)	—	—	—
Purchase of securities (secondary market)	D(L)	Unconstrained	Central bank has to refrain from open market purchases in periods of inflation or as long as inflationary dangers exist	Unconstrained ²
Government deposits at central bank	M(L) ³	Unconstrained	None	Unconstrained ²

Sources: Central Bank Act (Republic Act No. 265 as amended by P.D. No. 72 and No. 1007 and No. 1282, P.D. Dig No. 67 and P.D. No. 1771 and No. 1827).

¹Since 1984 the rates are based on treasury bill rates.

²Generally at market rates.

³The Government is allowed to keep deposits with government-owned banks.

Portugal

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L) ¹	Not applicable	—	—
Fixed-term loans and advances	P(L)	—	—	—
Purchase of securities (primary market)	D(L)	Short term ²	None	Terms must be agreed between the Finance Ministry and the Bank
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(A) ³	Unconstrained	None	Unconstrained

Sources: Lei Orgânica of the Bank of Portugal (Decree-Law No. 337/90 of October 30, 1990) and amendments introduced with the 1992 budget law.

¹To comply with the Maastricht Treaty, the 1992 budget law abolished the automatic access to overdraft facility with the central bank (which was free of interest). The outstanding stock of credit has been replaced by a 10-year loan at below-market rates, gradually converging to market rates. Based on a specific protocol in the Maastricht Treaty, the Autonomous Regions of Azores and Madeira will be allowed to maintain the current overdraft facility, but Portugal is committed to remove this facility as soon as possible.

²Only the underwriting of treasury bills, whose maturity in Portugal does not exceed 12 months, is allowed.

³The law allows the Bank of Portugal to take demand deposits from the state. However, following a bilateral agreement with the Government, the Bank of Portugal is mandated to keep some government deposits. The Government is allowed to keep deposits outside the central bank.

Romania

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	D(L)	Not exceeding December 31	10 percent of total budget revenue and twice the sum of capital and reserve fund	Zero
Purchase of securities (primary market)	P(L) ¹	—	—	—
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L) ²	Unconstrained	None	Zero

Source: Law concerning the Statute of the National Bank of Romania, promulgated on March 29, 1991.

¹The direct purchase of securities from the Government is not listed among the operations that the central bank can implement.

²The Government is allowed to keep deposits outside the central bank.

Slovak Republic

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	P(L)	—	—	—
Purchase of securities (primary market)	D(L)	Less than three months	5 percent of revenue of the previous year	Unconstrained
Purchase of securities (secondary market)	D(L)	Less than one year	None	Unconstrained
Government deposits at central bank	M(L) ¹	Unconstrained	None	Unconstrained

Source: Act on the National Bank of Slovakia of November 18, 1992.

¹The Government can decide to keep its deposits at other banks.

Spain¹

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	M(L) ²	Not applicable	Fixed in nominal terms at Ptas 1156 billion ³	Zero
Fixed-term loans and advances	M(L) ⁴	Regulated by law ⁴	None	Regulated by law ⁴
Purchase of securities (primary market)	D(L)	Unconstrained	None	Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L) ^{2,5}	Unconstrained	None	Zero

Sources: Decree Law 18/1962 on the nationalization of the Bank of Spain; 1987 Budget Law (Ley de Presupuestos Generales des Estado); Law 1091/1988 (Ley General Presupuestaria); and 1990 Budget Law.

¹Based on a bill recently presented to Parliament, all forms of direct credit to the Government would be prohibited.

²The Bank of Spain acts as government cashier. With the exception reported below, all payments and receipts are registered in a current account that can be overdrawn. The exception is an account used for debt service payments, which is traditionally kept in balance but which, in principle, could also be overdrawn. The latter account is not subject to a ceiling.

³The ceiling must be met only at year-end.

⁴Fixed-term loans must be authorized by law.

⁵The Government can keep deposits outside the central bank only in exceptional circumstances. Deposits, however, are not maintained in separate accounts but flow into the current account, which may show positive balances.

Switzerland

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	D(A) ¹	One day ²	Sw F 1 billion	Lombard rate ³
Purchase of securities (primary market)	D(L) ¹	Unconstrained	None	Unconstrained
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(A) ⁴	Below two years	None	Sight deposits: overnight rate up to Sw F 500 million; no remuneration for further deposits. Time deposits: money market rates

Source: Swiss National Bank Law.

¹The Swiss National Bank Law mentions only that the government current account cannot be overdrawn. In theory, the Swiss National Bank could provide unlimited credit to the Government by purchasing government securities or by granting Lombard rate credit based on collateral in the form of government securities. In practice, central bank credit to the Government is an insignificant phenomenon in Switzerland.

²The existing Lombard facility, based on a bilateral agreement, aims at providing overnight liquidity to the Government. In practice, Lombard credit to the Government is insignificant (one overnight credit in 1991 and two in 1992).

³The Lombard rate is equal to the average of overnight money market rates of the previous two days plus 200 basis points.

⁴All government deposits with maturity below two years must be kept at the central bank.

Turkey

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	M(L) ¹	Not applicable	15 percent of current year's general budget expenditure ¹	To be decided between the Ministry of Finance and the bank ²
Fixed-term loans and advances	D(L) ³	Nine months or less ³	To be decided by the board of the bank	To be decided by the board of the bank
Purchase of securities (primary market)	D(L)	Between 3 and 12 months	As above	Unconstrained
Purchase of securities (secondary market)	D(L)	Below one year	As above ⁴	Unconstrained
Government deposits at central bank	M(L) ⁵	Unconstrained	None	Zero

Source: Central Bank Law (Law No. 1211 of January 19, 1970).

¹The proportion of the overdraft to be utilized is decided jointly by the Ministry of Finance and the bank. In addition to this ceiling the state recognizes as its own debt the foreign exchange losses on foreign loans (devaluation account). No interest is paid on this account.

²The current interest rate is 4 percent.

³Credit to state enterprises. Credit is extended through the discount of bills.

⁴The total amount of open market operations (or both private and public securities) cannot exceed five times the total of the bank's capital and reserve funds.

⁵The Government can keep deposits outside the central bank, but only in places where the central bank does not have branches.

United Kingdom

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	D ¹	Not applicable	None	Market rate
Fixed-term loans and advances	D ¹	Unconstrained	None	Market rate
Purchase of securities (primary market)	M ²	Unconstrained	None	Unconstrained ³
Purchase of securities (secondary market)	D	Unconstrained	None	Unconstrained ³
Government deposits at central bank	M ^{1,4}	Unconstrained	None	Market rate

Sources: Various bills, bilateral agreements, and "tradition."

¹There are two main current accounts: the Consolidated Fund (for current expenditure and revenue) and the National Loan Fund (for debt management operations). To ensure that the accounts are not overdrawn, the Bank of England grants short-term advances (ways and means advances). This procedure is not legally required but it is traditionally implemented whenever needed. Surplus funds are used to reduce short-term debt. Once the debt is extinguished, further funds are placed on deposit.

²Government paper is routinely purchased by the Bank of England for subsequent sale to the market. Purchases are mandatory as long as the Bank underwrites gilt issues.

³Money market rates apply by tradition.

⁴The Government is allowed to keep deposits at commercial banks.

United States

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L) ¹	Not applicable	—	—
Fixed-term loans and advances	P(L) ¹	—	—	—
Purchase of securities (primary market)	P(L) ²	—	—	—
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Unconstrained
Government deposits at central bank	M(L) ³	Unconstrained	None	Zero

Sources: Federal Reserve Act (1913) and its amendments.

¹These operations are not explicitly prohibited, but they are not listed as operations that the central bank can implement.

²The prohibition of direct purchases applies to obligations that are direct obligations of the United States. Federal Reserve Banks are, however, allowed to buy direct from the issuer obligations with maturity not exceeding six months issued in anticipation of the collection of taxes or in anticipation of the receipt of assured revenues by local authorities (including states), based on the rules prescribed by the Federal Reserve. Moreover, based on the act of May 12, 1933, restated and recodified by act of September 13, 1982 (96 Stat. 993), 31 U.S.C. No. 5301, the President, when foreign commerce is adversely affected, may direct the Secretary of the Treasury to make an agreement with the Federal Reserve, under which Federal Reserve Banks are permitted to buy direct and to hold \$3 billion of government obligations.

³The Treasury may keep deposits at commercial banks as well.

Venezuela

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	P(L)	Not applicable	—	—
Fixed-term loans and advances	P(L)	—	—	—
Purchase of securities (primary market)	P(L)	—	—	—
Purchase of securities (secondary market)	D(L)	Unconstrained	None	Market rates
Government deposits at central bank	M(L)	Unconstrained	None	To be agreed with the Government

Source: Ley de Reforma Parcial de la Ley del Banco Central de Venezuela, published on December 4, 1992.

West African Monetary Union¹

Instrument	Degree of Control	Allowed Maturity	Quantitative Ceiling	Interest Rate
Overdraft on current account	D(L)	Not applicable	The total amount of credit to the Government cannot exceed 20 percent of revenue in the preceding year ²	Discount rate
Fixed-term loans and advances	D(L)	³	As above	Discount rate
Purchase of securities (primary market)	D(L) ³	³	As above	Discount rate
Purchase of securities (secondary market)	P(L) ⁴	—	—	—
Government deposits at central bank	M(L)	Unconstrained	None	Below the discount rate

Source: Charter of the Central Bank of West African States.

¹Comprises Benin, Burkina Faso, Côte d'Ivoire, Mali, Niger, Senegal, and Togo.

²The 20 percent ceiling applies to all forms of credit including the discount of government paper from the banking system. This ceiling is computed net of the deposits held by the Government with the central bank.

³In the absence of organized markets and/or government paper, these items include the purchase from banks of public securities with a maturity of one year or less and the discount of public securities with a maturity of 10 years or less to finance development.

⁴The prohibition is not explicit. Article 10 of the central bank statute gives the central bank the possibility to acquire credits to the Governments of the union. However, the list of credit operations of the central bank toward the Governments, detailed in Articles 13–15, does not include the purchase of securities.

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