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CAPITAL-ACCOUNT AND COUNTER-CYCLICAL PRUDENTIAL REGULATIONS IN DEVELOPING COUNTRIES

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The association between capital flows and economic activity has been a strong feature of the developing world and particularly of emerging markets during the past quarter century. This fact highlights the central role played by the mechanisms that transmit externally generated boom-bust cycles in capital markets to the developing world and the vulnerabilities they engender. The strength of business cycles in developing countries, and the high economic and social costs they generate, are thus related to the strong connections between domestic and international capital markets.

This implies that an essential objective of macroeconomic policy in developing countries is to reduce the intensity of capital-account cycles and their effects on domestic economic and social variables. This paper explores the role of two complementary policy tools in achieving these objectives: capital-account regulations and counter-cyclical prudential regulation of domestic financial intermediation. After a brief look in section I at the macroeconomics of boom-bust cycles, section II focuses on the possibility of directly affecting the source of the cycles through capital-account regulations. Section III considers the role of counter-cyclical regulations. The last section draws conclusions.

I. THE MACROECONOMICS OF BOOM-BUST CYCLES

Capital-account cycles in developing countries are characterized by the twin phenomena of volatility and contagion. The first is associated with significant changes in risk evaluation

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during booms and crises of what international market agents consider to be risky assets, which involve a shift from an "appetite for risk" (or, more properly, underestimation of risks) to a "flight to quality" (risk aversion). The second implies that, due to information asymmetries, developing countries are pooled together in risk categories that are viewed by market agents as being strongly correlated. Beyond any objective criteria that may underlie such views, this practice turns such correlations into a self-fulfilling prophecy.

Capital-account volatility is reflected in variations in the availability of financing, in the pro-cyclical pattern of spreads (narrowing during booms, widening during crises) and in the equally pro-cyclical variation of maturities (reduced availability of long-term financing during crises). Such cycles involve both short-term movements –such as the very intense movements observed during the Asian and, particularly, the Russian crises– but also, and perhaps primarily, *medium-term* fluctuations, as the two cycles experienced over the last three decades indicate: a boom in the 1970s followed by a debt crisis in a large part of the developing world, and another boom in the 1990s followed by a sharp reduction in net flows since the Asian crisis. Due to contagion, these cycles tend to affect all developing countries, although with some discrimination by the market reflecting the perceived level of risk of specific countries or groups of countries.

The main way in which the economic literature has explored the effects of external financial cycles on developing countries is by analysing the mechanisms through which vulnerability is built up during capital-account booms. This may lead to the endogenous unstable dynamics analysed by Minsky (1982) and Taylor (1998), among others, whereby the accumulation of risk will lead to a sudden reversal of flows and, eventually, a financial crisis. Alternatively, the accumulated vulnerability will be reflected in sensitivity to an exogenous shock –e.g., a contagion effect generated by a crisis in other developing countries or a downturn in financial markets in the industrialized world.

Thus, in addition to the effects of traditional trade shocks, new sources of vulnerability have arisen. These new sources of vulnerability are associated with the flow and balance-sheet effects of capital-account fluctuations on domestic financial and non-financial agents and with

the impact of such fluctuations on macroeconomic variables. Some of these effects are transmitted through public-sector accounts, but the dominant feature of the "new generation" of business cycles in developing countries is the sharp fluctuation in *private* spending and balance sheets. The macroeconomic effects will be amplified if the stance of macroeconomic policy is pro-cyclical, as it is actually expected to be by market agents. The credibility of macroeconomic authorities and domestic financial intermediaries play a key role throughout this process.

If the fiscal policy stance is pro-cyclical, temporary public-sector revenues and readily accessible external and domestic financing will induce an expansion of public-sector spending, which will be followed by an adjustment later on, when those conditions are no longer present. Furthermore, during the downswing, interest payments will follow an upward trend due to devaluation and to increased domestic interest rates and international spreads. This trend, together with downward pressure on public-sector revenues, will trigger a pro-cyclical cut in primary spending, which may, nonetheless, be insufficient to avoid a sudden jump in public-sector debt ratios.

The structure of public-sector debt plays a crucial role in this dynamic. In particular, if most of the public-sector debt is short-term, the necessary rollovers will considerably increase financing requirements during the crisis, thus undermining confidence in the capacity of government to service the debt. If the short-term debt is external, risk premiums will increase and the availability of financing may be curtailed. If it is domestic, there may be strong pressures on interest and exchange rates, as asset holders' high liquidity will facilitate the substitution of foreign assets for public-sector debt securities.

As in the past, exchange-rate fluctuations also play an important role in the business cycle, but their flow effects are now mixed, and even dominated, by the wealth effects that they have in economies with large net external liabilities. The capital gains generated by appreciation during the upswing helps to fuel the private spending boom, whereas the capital losses generated by depreciation have the opposite effect in the downturn. Furthermore, such gains induce additional net inflows when there are expectations of exchange-rate appreciation, and the opposite effect if depreciation is expected, thus endogenously reinforcing the capital-account

cycle. The income effects may have similar signs, at least in the short run, if the traditional conditions for the contractionary effects of devaluation (expansionary effects of appreciation) are met (Krugman and Taylor, 1978). Policy-induced overvaluation of the exchange rate, generated by anti-inflationary policies which anchor the price level to a fixed exchange rate, will accentuate these effects.

Domestic financial multipliers play an additional role through their effects on private spending and balance sheets. Indeed, the domestic financial sector is both a protagonist and a potential victim of the macroeconomics of boom-bust cycles. The external lending boom facilitates domestic credit expansion and private-sector spending during the upswing but, in turn, private-sector debt overhangs accumulated during the boom will subsequently trigger a deterioration in portfolios and a contraction in lending and spending during the downswing. At the same time, banks and other financial intermediaries have inherent weaknesses that make them particularly vulnerable to changes in market conditions, since they operate with high leverage ratios, can be affected by maturity mismatches between deposits and lending (which are essential to their economic role of transforming maturities) and are subject to market failures that affect the assessment of credit risk.

Market failures are associated with information asymmetries, adverse selection and (possibly) moral hazard, all of which distort risk assessments and the allocation of funds to investment (Stiglitz, 1994; Mishkin, 2001). Buoyant expectations and their effects on the value of assets and liabilities may lead market agents to underestimate risks during booms. Overestimation of credit quality increases the speed of credit growth. In many cases, under the pressure of increased competition, banks relax their standards of risk appraisal and make loans to borrowers with lower credit quality. This strategy is more frequent in the case of new participants in the market, since the older and larger institutions tend to retain the best-quality borrowers. Overall, a deterioration of banks' balance sheets results from the excessive risk-taking that characterizes lending booms, but it only becomes evident with a lag. Fernández de Lis et al. (2001) refer to “a strong positive impact of credit growth on problem loans with a lag of three years”.

Eventually, the risks that have built up are revealed in a rise in non-performing loans. In the absence of new capital, which is hard to raise when balances have deteriorated, banks are forced to cut lending even if borrowers are willing to pay higher interest rates. Protection provided by loan-loss provisions and capital may be insufficient to absorb the adverse shocks. The severity of the ensuing credit crunch will depend on the magnitude of the credit boom and its effects on credit quality, and may be exacerbated by the fragility of the balance sheets of non-financial firms. Even the best-run banks may find it difficult to manage a shock that severely affects their clients.

The accumulation of currency and maturity mismatches on the balance sheets of both financial and non-financial agents will be an additional source of vulnerability. Mismatches are associated with asymmetries in the financial development of industrialized and developing countries –i.e., the considerable "incompleteness" of markets in the latter (Ocampo, 2002a). In particular, domestic financial sectors in developing countries have a short-term bias. Domestically financed firms will thus have significant maturity mismatches on their balance sheets. Whereas small and medium-sized enterprises (SMEs) will be unable to avoid such mismatches, large corporations may compensate for them by borrowing in external markets, but firms operating in non-tradable sectors will then develop currency mismatches. A variable mix of maturity and currency mismatches will thus be a structural feature of non-financial firms' balance sheets in developing countries.

Domestic asset prices reinforce these cyclical dynamics. The rapid increase of asset prices during booms (particularly of stocks and real estate) stimulates credit growth. In turn, lending booms reinforce asset demand and thus asset price inflation. The resulting wealth effects intensify, in turn, the spending boom. This process is further reinforced by the greater liquidity that characterizes assets during periods of financial euphoria. However, this behaviour also increases the vulnerability of the financial system during the subsequent downswing, when debtors have difficulties serving their obligations and it becomes clear that the loans did not have adequate backing or that asset price deflation has reduced the value of collateral. Asset price deflation will be reinforced as debtors strive to cover their financial obligations and creditors seek to liquidate the assets received in payment for outstanding debts under conditions of

reduced asset liquidity. The negative wealth effect of decreasing asset prices contributes to the contraction of the economy and the credit crunch that follows in its wake.

Monetary policy will have limited degrees of freedom to smooth out the dynamics of boom-bust cycles under *all* exchange rate regimes. In a fixed exchange rate regime, reserve accumulation during the boom will fuel monetary expansion, which together with falling international spreads will lead to a reduction in domestic interest rates. Under a floating exchange rate, both can be avoided, but only by inducing exchange rate appreciation, which also has expansionary wealth effects. Intermediate regimes (including dirty floating) generate variable mixes of these effects. A contractionary monetary policy will induce, in all cases, endogenous incentives that amplify the capital surge. The typical instrument of a contractionary monetary policy, i.e., sterilized foreign-exchange reserve accumulation, also has large quasi-fiscal costs. The inducement to borrow abroad will also be reflected in additional currency mismatches in the portfolios of either financial or non-financial intermediaries. The opposite types of pressures arise during a downswing, thereby exposing the accumulated financial vulnerabilities. Under a fixed exchange regime or a dirty float, the increase in interest rates and the reduction in financing generated by contractionary monetary policy aimed at containing speculative attacks on the currency exert strong pressures on weak balance sheets, particularly on agents with significant maturity mismatches. In a floating exchange rate regime, strong pressure will be placed on agents with currency mismatches.

The frequency and intensity of financial crises is thus associated with the vulnerabilities generated by boom-bust cycles. In historical perspective, the frequency of "twin" external and domestic financial crises is indeed a striking feature of the period that started with the breakdown of Bretton Woods exchange rate arrangements in the early 1970s (IMF, 1998; Bordo et al., 2001). The most important policy implication of this is that developing country authorities need to focus their attention on crisis prevention, i.e., on managing booms, since in most cases crises are the inevitable result of poorly managed booms. Focusing attention on crisis prevention recognizes, moreover, an obvious fact: that the degrees of freedom of the authorities are greater during booms than during crises. The way crises are managed is not irrelevant, however. In particular, different policy mixes may have quite different effects on economic activity and

employment, as well as on the domestic financial system (ECLAC, 2002; Ffrench-Davis and Larraín, 2002; and Ocampo, 2002b).

II. CAPITAL-ACCOUNT REGULATIONS

1. The dual role of capital-account regulations

As we have seen, the accumulation of risks during booms will depend not only on the magnitude of private- and public-sector debts but also on the maturity and currency mismatches on the balance sheets. Capital-account regulations thus potentially have a dual role: as a macroeconomic policy tool which provides some room for counter-cyclical monetary policies that smooth out debt ratios and spending; and as a "liability policy" to improve private-sector external debt profiles. Complementary liability policies should also be adopted, particularly to improve public-sector debt profiles. The emphasis on *liability structures* rather than on national balance sheets recognizes the fact that, together with liquid assets (particularly, international reserves), they play an essential role when countries face liquidity constraints; other assets play a secondary role in this regard.

Viewed as a macroeconomic policy tool, capital-account regulations aim at the direct source of boom-bust cycles: unstable capital flows. If they are successful, they will provide some room to "lean against the wind" during periods of financial euphoria through the adoption of a contractionary monetary policy and/or reduced appreciation pressures. If effective, they will also reduce or eliminate the quasi-fiscal costs of sterilized foreign-exchange accumulation. During crises, they provide "breathing space" for expansionary monetary policies. In both cases, capital-account regulations improve the authorities' ability to mix additional degrees of monetary independence with a more active exchange rate policy.

Viewed as a liability policy, capital-account regulations recognize the fact that the market rewards sound external debt profiles (Rodrik and Velasco, 2000). This reflects the fact that, during times of uncertainty, the market responds to *gross* (rather than merely net) financing requirements, which means that the rollover of short-term liabilities is not financially neutral. Under these circumstances, a maturity profile that leans towards longer-term obligations will reduce domestic liquidity risks. This indicates that an essential component of economic policy

management during booms should be measures to improve the maturity structures of both the private and public sectors' external and domestic liabilities. On the equity side, foreign direct investment (FDI) should be preferred to portfolio flows, as the former has proved in practice to be less volatile than the latter. Both types of equity flows have the additional advantage that they allow all risks associated with the business cycle to be shared with foreign investors, and FDI may bring parallel benefits (access to technology and external markets). These benefits should be balanced against the generally higher costs of equity financing.

2. Innovations in capital-account regulations in the 1990s

A great innovation in this sphere during the 1990s was unquestionably the establishment of an unremunerated reserve requirement (URR) for foreign-currency liabilities in Chile and Colombia. The advantage of this system is that it created a simple, non-discretionary and *preventive* (prudential) price-based incentive that penalizes short-term foreign-currency liabilities more heavily. The corresponding levy has been significantly higher than the level that has been suggested for an international Tobin tax: about 3% in the Chilean system for one-year loans, and an average of 13.6% for one-year loans and 6.4% for three-year loans in Colombia in 1994-1998. As a result of a reduced supply of external financing since the Asian crisis, the system was phased out in both countries. Other capital-account regulations complemented reserve requirements, particularly one-year minimum stay requirements for portfolio capital (lifted in May 2000) and approval (subject to minimum requirements) for the issuance of ADRs and similar instruments in Chile, as well as direct regulation of portfolio flows in Colombia.

The effectiveness of reserve requirements has been subject to a great deal of controversy. [1]/ There is broad agreement on the fact that they were effective in reducing short-term debt flows and thus in improving or maintaining good external debt profiles. However, in contrast to this positive view of these regulations as a liability policy, there have been widespread controversies about their effectiveness as a macroeconomic policy tool. This

[1]/ For documents which support the effectiveness of these regulations in Chile, see Agosin (1998), Agosin and Ffrench-Davis (2001), Larraín et al. (2000), Le Fort and Lehman (2000) and Palma (2002). For a more mixed view, see Ariyoshi et al. (2000), De Gregorio et al. (2000), Laurens (2000) and Valdés-Prieto and Soto (1998). Similarly, for strong views on their positive effects in Colombia, see Ocampo and Tovar (1998 and 1999) and Villar and Rincón (2002), and for a more mixed view, Cárdenas and Barrera (1997) and Cárdenas and Steiner (2000).

question has been made more complex by the fact that neither country was free from the strong pressures generated by the external financing cycle that emerging economies faced during the 1990s, or from the effects of pro-cyclical macroeconomic policies (Ocampo, 2002b).

However, judging from the solid evidence that exists with respect to the sensitivity of capital flows to interest rate spreads in both countries, it can be asserted that reserve requirements do influence the volume of capital flows at given interest rates. [2]/ This may reflect the fact that national firms' *access* to external funds is not independent from their maturities – i.e., that the substitution effect between short- and long-term finance is imperfect on the supply side– and/or that available mechanisms for evading or eluding regulations may be costly. [3]/ In any case, a significant part of the history of these regulations, particularly in Chile, was associated with the closing of regulatory loopholes. [4]/ Alternatively, the URR allows authorities to maintain higher domestic interest rates at a given level of capital inflows and, thus, of the money supply. Thus, in broader terms, the usefulness of reserve requirements as a macroeconomic policy tool will depend on *the ability to affect capital flows, domestic interest rates or both, with the particular combination subject to policy choice*. [5]/ To the extent that capital flows affect the supply of foreign exchange, exchange rates may also be affected. Given the multiple channels through which the URR can affect the economy, the effectiveness of these regulations can be best measured by a broad index of "monetary pressures" that includes capital inflows, domestic interest rates and exchange rates. This is the procedure used below.

[2]/ Indeed, evidence on the insensitivity of the volume of capital flows to capital-account regulations comes from econometric analysis in which URR is *not* included as a determinant of interest rate spreads but rather as an additional factor affecting capital flows. This may be seen as an inadequate econometric specification.

[3]/ Some of these mechanisms, such as the use of hedging, enable investors to cover some of the effects of these regulations, but in large part this is done by transferring risks (and, more specifically, the risk associated with longer-term financing) to other agents who would only be willing to assume them at an adequate reward. More generally, if there is no stable external demand for the domestic currency, hedging may be available only in limited quantities, a fact that affects the maturities and costs involved.

[4]/ In Brazil, some authors have argued that capital-account regulations, which included a mechanism similar to the URR (direct taxation of capital flows), were ineffective due to widespread loopholes associated with the existence of sophisticated domestic financial instruments (Ariyoshi et al. 2000; García and Valpassos, 2000). However, they provide no statistical evidence comparable to that which is available for Chile and Colombia.

[5]/ This is the very apt interpretation provided by Williamson (2000, ch. 4). Indeed, under this interpretation, the conflicting evidence on the Chilean system largely disappears.

In Colombia, where these regulations were modified more extensively over the 1990s, there is strong evidence that increases in reserve requirements reduced flows (Ocampo and Tovar, 1998 and 1999) or, alternatively, were effective in increasing domestic interest rates (Villar and Rincón, 2002). Similar evidence is available for Chile (see Larraín et al., 2000, and LeFort and Lehman, 2000, and for interest rate spreads, De Gregorio et al., 2000). The evidence of effects on exchange rates is more mixed, though this may reflect the difficulties inherent in exchange rate modeling (Williamson, 2000, ch. 4).

Some problems in the management of these regulations were associated with changes in the relevant policy parameters. The difficulties experienced in this connection by the two countries differed. In Chile, the basic problem was the variability of the rules pertaining to the exchange rate, since the lower limits of the exchange rate bands were changed on numerous occasions before the exchange rate was allowed to float in September 1999. During capital account booms, this gave rise to a "safe bet" for agents bringing in capital, since when the exchange rate neared the floor of the band (in pesos per dollar), the probability that the floor would be adjusted downward was high. In Colombia, the main problem was the frequency of the changes made in reserve requirements. Changes foreseen by the market sparked speculation, thereby diminishing the effectiveness of such measures for some time following the requirements' modification. It is interesting to note that in both countries reserve requirements were seen as a complement to, rather than as a substitute for, other macroeconomic policies, which were certainly superior in Chile. In particular, the expansionary and contractionary phases of monetary policy were much more marked in Colombia, and this country's fiscal position deteriorated throughout the decade.

Malaysia has also provided major innovations in the area of capital-account regulations in the 1990s. In January 1994, this country prohibited non-residents from buying a wide range of domestic short-term securities and established other limitations on short-term inflows; these restrictions were lifted later in the year. These measures also had a preventive focus, but were quantitative rather than price-based. They proved highly effective, indeed superior in terms of reducing capital flows and asset prices than the Chilean regulations (Palma, 2002). They also improved the country's debt profile (Rodrik and Velasco, 2000). However, after they were lifted,

a new wave of debt accumulation and asset price increases developed, though the debt profile was kept at more prudential levels than in other Asian countries that were hit by the crisis in 1997 (Kaplan and Rodrik, 2001; Palma, 2002).

An additional innovation came with the Asian crisis. In September 1998, Malaysia established strong restrictions on capital outflows. The main objective was the elimination of offshore trading of the local currency --i.e., the segmentation of its demand, to be accomplished by restricting its use to domestic operations by residents. Ringgit deposits abroad were made illegal, and it was determined that those held abroad by nationals had to be repatriated. Trade transactions had to be settled in foreign currency. It was also decided that ringgit deposits in the domestic financial system held by non-residents would not be convertible into a foreign currency for a year. In February 1999, this regulation was replaced by an exit levy on the principal, with a decreasing rate for investments held for a longer period and no tax on those held for more than a year. For new capital inflows, an exit tax on capital gains was established, with a higher rate for capital that stayed less than a year (30%; 10% otherwise). The exit tax was reduced to a flat 10% in September 1999; in January 2001 it was decided that it would henceforth apply only to portfolio flows held less than a year, and in May 2001 it was eliminated altogether.

Significant discussions have taken place on the effects of these controls. Kaplan and Rodrik (2001) have provided the strongest argument regarding the effectiveness of these regulations. [6]/ Drawing on previous studies, they show that these regulations were highly effective in rapidly closing the offshore ringgit market and in reversing financial market pressure, as reflected in the trends of foreign exchange reserves and of exchange and interest rates. The removal of financial uncertainties, together with the additional room provided for expansionary monetary and fiscal policies, led to a speedier recovery of economic activity, lower inflation and better employment and real wage performance than comparable IMF-type programmes during the Asian crisis. This is true even adjusting for the improved external environment characteristic of the time when Malaysian controls were imposed, and despite the

[6]/ See Ariyoshi et al. (2000), Ötker-Robe (2000) and Rajaraman (2001) for additional evidence on the effectiveness of these regulations.

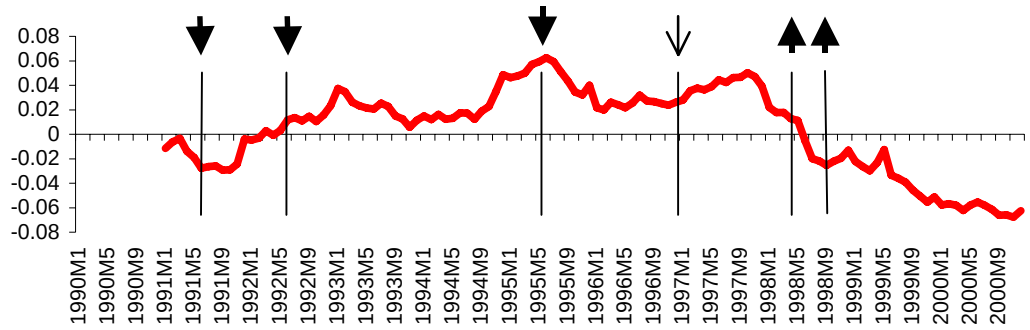
fact that the country did not receive large injections of capital; indeed, the initial reaction of external capital markets to the regulations was negative.

Figure 1 provides a simple way to view the effectiveness of capital-account regulations in the three countries. Based on similar indicators used in the literature, it calculates an index of expansionary monetary pressures. Since a capital surge generates expansionary effects through three different channels –the accumulation of international reserves, an appreciation of the exchange rate and a reduction in interest rates– the index weights the trends of these three indicators by their standard deviation during the period analysed. A simple inspection of the graph indicates that Malaysian controls were extremely effective, both in reversing the strong expansionary effect of capital surges in 1994 and in stopping the strong contractionary effects generated by capital outflows in 1998. The price-based capital-account regulations of Chile and Colombia had weaker effects, particularly in the first case. Indeed, the introduction of such regulations in Chile in June 1991 and their strengthening in May 1992 was not accompanied by a reversal of the expansionary trend; [7]/ those instituted in July 1995 had a more discernible effect. In Colombia, which used price-based regulations more aggressively, the effects were stronger. In particular, the movement in the index of expansionary pressures is more closely tied to changes in capital-account regulations in 1993-1997. In both countries the capital account turned contractionary in 1998, with the reduction in the URR having only a negligible effect on this trend.

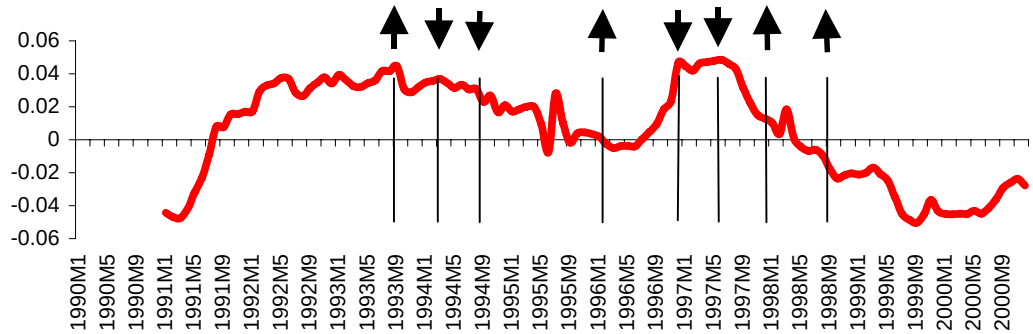
[7]/ The level of the URR may account for this result. Valdés-Prieto and Soto (1998) find evidence of a "threshold effect", which would explain why these regulations were only effective in reducing capital flows in 1995-1996. It must be emphasized that this does not imply a better evaluation of the overall macroeconomic policy package of 1995-1996 vs. 1991-1992. Agosin and Ffrench-Davis (2001) have argued that, on broader grounds, macroeconomic management in the earlier part of the 1990s was more appropriate.

Figure 1
Index of Expansionary Monetary Pressures

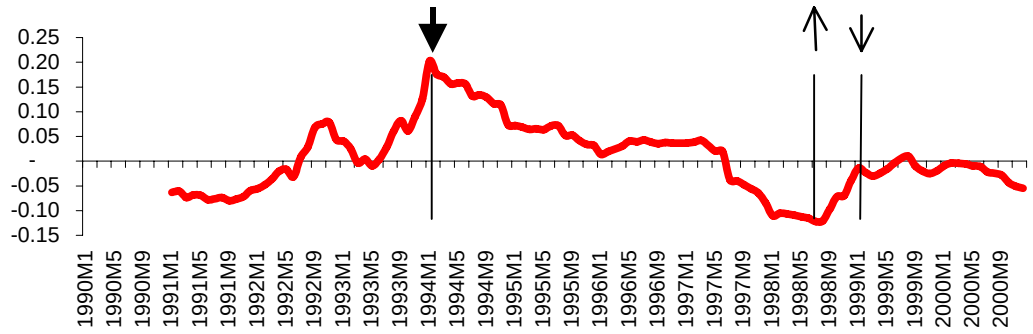
A. Chile



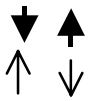
B. Colombia



C. Malaysia



Source: Author estimates based on IMF data.



Imposition or relaxation of restrictions on capital inflows, respectively (the direction of the arrows indicates expected effect on the index)

Imposition or relaxation of restrictions on capital outflows, respectively

Index = aR+be-ci

R = International reserves corrected by log trend

e = Twelve-month variation of the real exchange rate

i = Real deposit interest rate

a, b, c = Standard deviation of R, e and I, respectively

Overall, innovative experiments with capital-account regulations in the 1990s indicate that they served as useful instruments, both for improving debt profiles and for improving the exchange rate/monetary stance tradeoff. However, the macroeconomic effects depended on the strength of the regulation and were, in any case, temporary, operating as "speed bumps" rather than as permanent restrictions, to use Palma's (2002) expression. The basic advantages of the price-based instrument used by Chile and Colombia are its simplicity, non-discretionary character and, as we will see in the following section, neutral effect on corporate borrowing decisions. The more quantitative-type Malaysian systems had stronger short-term macroeconomic effects.

In any case, it must be emphasized that these systems were designed for countries that chose to be *integrated* into international capital markets. In fact, in the case of Colombia, the transition from the old type of exchange controls to price-based capital-account regulations was, in effect, a liberalization of the capital account, as reflected in the increased sensitivity of capital flows to interest arbitrage incentives (Ocampo and Tovar, 1998). [8]/

Traditional exchange controls and capital-account regulations may thus be superior if the policy objective is to significantly reduce domestic macroeconomic sensitivity to international capital flows. The Indian evidence provides an alternative successful experience in this regard. Despite the slow and cautious liberalization that has taken place in India since the early 1990s, this country still largely relies on quantitative restrictions on flows: overall quantitative ceilings, minimum maturities for external borrowing and end-use restrictions (most of which have been liberalized in recent years), together with the prohibition of borrowing in foreign currencies by non-corporate residents; direct regulations (including, in some instances, explicit approval) of portfolio flows in the case of non-residents, as well as of ADRs and investments abroad by domestic corporations; some sectoral restrictions on FDI; and minimum maturities and interest rate regulations on deposits by non-resident Indians (Reddy, 2001; Habermeier, 2000;

[8]/ This is captured in other studies (Cárdenas and Steiner, 2000) through the use of a dummy variable for the period during which the URR was in place, and has been interpreted (inaccurately, according to the alternative view presented in the text) as evidence against the effectiveness of regulations.

Rajaraman, 2001; Nayyar, 2002). In any case, it must be underscored that, despite the reduced sensitivity to the Asian crisis and the increased macroeconomic autonomy that this system has allowed, India has not been entirely detached from external financing cycles.

In contrast to the successful experiences previously analysed, crisis-driven quantitative controls generate serious credibility issues and may be ineffective, as a strong administrative capacity is essential for any capital account regime to be effective. This implies that a tradition of regulation may be necessary, and that *permanent* regulatory regimes that are tightened or loosened through the cycle may be superior to the alternation of different (even opposite) capital account regimes. In broader terms, this means that it is essential to maintain the autonomy to impose capital-account regulations and thus the freedom to re-impose controls if necessary (Ocampo, 2002a and 2002b; Rajaraman, 2001; Reddy, 2001). This is indeed a corollary of the incomplete nature of international financial governance (Ocampo, 2002a) and a basic lesson of the Malaysian experience. Also, traditional quantitative capital-account regulations and direct approval of sensitive flows (external portfolio flows, issuance of ADRs and investment abroad by residents) can make perfect sense, if they are sufficiently well managed to avoid loopholes, high administrative costs and, particularly, corruption. Indeed, simple quantitative restrictions that rule out certain forms of indebtedness (e.g., short-term foreign borrowing, except trade credit lines, or borrowing in foreign currency by residents operating in non-tradable sectors) are also preventive in character and easier to administer than price-based controls (Ariyoshi et al., 2000). These restrictions are more attractive and effective when domestic financial development is limited, but they may, in turn, become obstacles to financial development. This may, indeed, be viewed as one of the basic costs of capital-account regulation. More broadly, there may be inherent tradeoffs between domestic financial deepening and capital-account volatility (due, in part, to the dismantling of capital controls). We will explore some aspects of these tradeoffs in the following section.

Certain types of regulations on *current*-account transactions (export surrender requirements or the obligation to channel trade transactions through certain approved intermediaries) and an effective segmentation of the market for financial instruments denominated in the domestic currency may be essential to guarantee the effectiveness of

regulations. This implies a need to avoid or strongly regulate the internationalization of the domestic currency, as well as a highly conservative approach to domestic financial dollarization (Reddy, 2001). These are, in fact, common features of the four case studies considered above and, in the case of Malaysia, achieving this objective involved dismantling the offshore market for the domestic currency.

It should be emphasized again that capital-account regulations should always be seen as an instrument that, by providing additional degrees of freedom to the authorities, facilitates the adoption of sensible counter-cyclical macroeconomic policies. Thus, it can never be a substitute for them.

3. Complementary liability policies

Prudential regulation and supervision can, in part, be substituted for capital-account regulations. Indeed, the distinction between capital controls and prudential regulations affecting cross-border flows is not clear cut. In particular, higher liquidity (or reserve) requirements for the financial system's foreign-currency liabilities can be established, and domestic lending to firms operating in non-tradables sectors that have substantial foreign-currency liabilities can be discouraged through more stringent regulatory provisions.

The main problem with these options is that they only indirectly affect the foreign-currency liabilities of *non*-financial agents and, indeed, may encourage them to borrow directly abroad. Accordingly, they need to be supplemented with other regulations, including rules on the types of firms that can borrow abroad and prudential ratios with which they must comply; restrictions on the terms of corporate debts that can be contracted abroad (minimum maturities and maximum spreads); public disclosure of the short-term external liabilities of firms; regulations requiring rating agencies to give special weight to this factor; and tax provisions applying to foreign-currency liabilities (e.g., no or only partial deductions for interest payments on international loans). [9]/ Some of the most important regulations of this type concern external borrowing by firms operating in non-tradables sectors. A simple rule that should be

[9]/ For an analysis of these issues, see World Bank (1999, p. 151), and Stiglitz and Bhattacharya (2000).

considered is the strict prohibition of foreign borrowing by non-financial firms without income in foreign currency or restrictions on the maturities (only long term) or end use (only investment) of such borrowing.

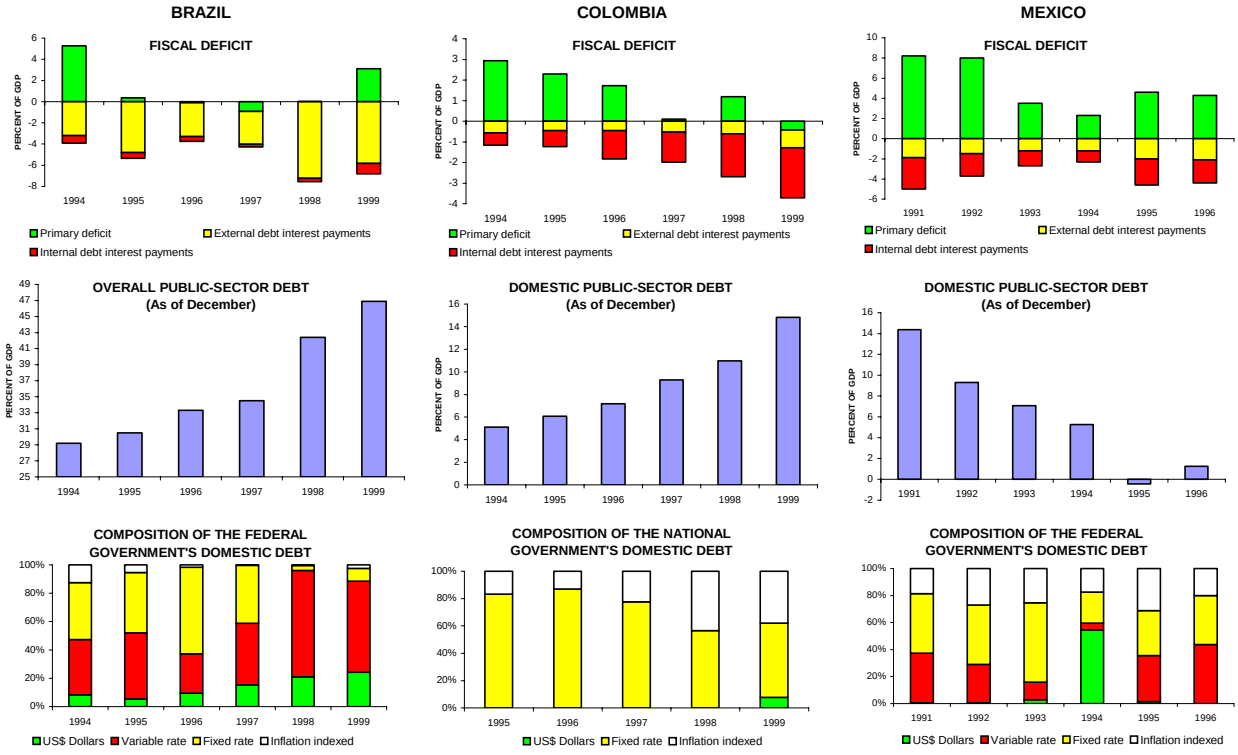
Price-based capital-account regulations may thus be a superior alternative and may be simpler to administer than an equivalent system based on prudential regulations plus additional policies aimed at non-financial firms. Among their virtues, vis-à-vis prudential regulation and supervision, we should also include the fact that they are price-based (some prudential regulations, such as prohibitions on certain types of operations, are not), non-discretionary (whereas prudential supervision tends to be discretionary in its operation) and neutral in terms of the choice made by corporations between foreign-currency-denominated borrowing in the domestic market vs. the international market. Indeed, equivalent practices are used by private agents, such as the selling fees imposed by mutual funds on investments held for a short period, in order to discourage short-term holdings (J. P. Morgan, 1998, p. 23).

In the case of the public sector, specific legal limits and regulations are required. The direct approval of borrowing and the establishment of minimum maturities and maximum spreads by the Ministry of Finance or the central bank may be the best liability policy. Provisions of this sort should cover the central administration as well as autonomous public-sector agencies and sub–national governments (ECLAC, 1998, ch. VIII). Such regulations should apply to both external and domestic public-sector liabilities. The most straightforward reason for this is that residents holding short-term public-sector securities have, in periods of external or domestic financial instability, other options besides rolling over the public sector debt, including capital flight. This is even clearer if foreigners are allowed to purchase domestic public-sector securities.

Thus, when gross borrowing requirements are high, the interest rate will have to increase to make debt rollovers attractive. Higher interest rates are also immediately reflected in the budget deficit, thereby rapidly changing the trend in the public-sector debt, as happened in Brazil prior to the 1999 crisis. In addition, rollovers may be viable only if risks of devaluation or future interest rate hikes can be passed on to the government, which generates additional sources of destabilization. Mexico's widely publicized move in 1994 to replace peso-denominated securities (Treasury

Certificates, or Cetes) with dollar-denominated bonds (Tesobonos), which was one of the crucial factors in the crisis that hit the country late in that year, was no doubt facilitated by the short-term profile of Cetes (Sachs, Tornell and Velasco, 1996; Ros, 2001). The short-term structure of Brazil's debt is also the reason why, after late 1997, fixed-interest bonds were swiftly replaced by variable-rate and dollar-denominated securities, which cancelled out the improvements that had been made in the public debt structure in previous years. It is important to emphasize that, despite its fiscal deterioration, no substitution of a similar magnitude was observed in Colombia during the 1998-1999 crisis; this country's tradition of issuing public-sector securities with a minimum one-year maturity is a significant part of the explanation (see figure 2).

Figure 2
FISCAL DEFICIT AND PUBLIC DEBT



Source: Central Bank of Brazil, IDEA and Ministry of Finance of Colombia, Secretary of Finance and Public Credit of Mexico, Bank of Mexico.

Thus, a sound maturity profile for the *domestic* public-sector debt is an essential complement to a sound public and private external debt profile in reducing the degree of vulnerability to capital-account shocks. Furthermore, on strictly prudential grounds, external borrowing by the public sector generates currency mismatches (except for public-sector firms

operating in tradables sectors) and should thus be avoided. However, this principle should not be translated into simple prohibitions for two different reasons.

The first one is macroeconomic in character. To the extent that external private capital flows are pro-cyclical, it is reasonable for the public sector to follow a counter-cyclical debt structure strategy. This means that, during capital-account surges, it should reduce borrowing requirements and adopt a liability policy aimed at substituting domestic for external liabilities. The opposite is true during periods of reduced private flows. Indeed, under those conditions, the public sector may be one of the best net suppliers of foreign exchange, thanks to its better access to external credit, including credit from multilateral financial institutions. Such external borrowing may also be helpful in maintaining a better external debt profile and avoiding private borrowing abroad at excessively high spreads during crises.

The second reason relates to the depth of domestic bond markets, which determines the ability to issue longer-term domestic debt securities. This attribute includes the existence of secondary markets and active agents (market makers) that provide liquidity for these securities. In the absence of these pre-conditions, the government faces a serious tradeoff between maturity and currency mismatches, a tradeoff that is typical of all domestic agents producing non-tradable goods and services. Indeed, a domestic market for public-sector debt securities with an excessive short-term bias can be extremely destabilizing during a crisis. It may thus make sense to prefer a debt mix that includes an important component of external liabilities, despite the associated currency mismatch. In the long run, the objective of the authorities should be to deepen the domestic capital markets. Indeed, due to the lower risk levels and the greater homogeneity of the securities it issues, the central government has a vital function to perform in the development of longer-term primary and secondary markets for domestic securities, including the creation of benchmarks for private-sector instruments.

The development of such markets will not eliminate the need for an active external liability policy, however, as deeper capital markets are also more attractive to volatile portfolio flows. Unfortunately, the tradeoffs are not simple in this regard, as international institutional investors may help to develop domestic capital markets. Thus, the authorities must choose

between less volatile external capital flows and the development of deeper, liquid domestic capital markets. The Chilean decision to eliminate the one-year minimum maturity for portfolio flows in May 2000, as well as the Colombian decision in 1996 to allow foreign investment funds to participate in the domestic market for public-sector securities, may be understood as a choice for the second of these options at the cost of additional capital-account volatility. Similar tradeoffs may be faced in relation to the development of deep domestic private-sector stock and bond markets.

III. THE ROLE OF COUNTER-CYCLICAL PRUDENTIAL REGULATIONS

1. Micro and macroeconomic dimensions of prudential policies

As we saw in Section I, the origins of problems that erupt during financial crises are associated both with excessive risk-taking during booms, as reflected in a rapid increase in lending, and with maturity and currency mismatches on financial and non-financial agents' balance sheets. In many countries, these problems are related to inadequate risk analysis by financial agents, as well as weak prudential regulation and supervision of domestic financial systems. The combination of these factors becomes explosive under conditions of financial liberalization in the midst of a boom in external financing. The underestimation of risks, characteristic of environments of economic optimism, is then combined with inadequate practices for evaluating risks, both by private agents and by supervisory agencies.

This underscores just how important the sequencing of financial liberalization processes is. This became evident during the first wave of financial crises that hit Latin America in the early 1980s (see, for example, Díaz-Alejandro, 1988, ch. 17) but was broadly ignored in later episodes of financial liberalization in the developing world. Since the Asian crisis, it has finally become a mainstream idea. Indeed, it is now widely recognized that financial liberalization should take place within a suitable institutional setting, which includes strong prudential regulation and supervision. Such regulation should ensure, first of all, the solvency of financial institutions by establishing appropriate capital adequacy ratios relative to the risk assumed by lending institutions, strict write-offs of questionable portfolios and appropriate standards of risk diversification. Properly regulated and supervised financial systems are structurally superior in

terms of risk management, since they create incentives for financial intermediaries to avoid assuming unmanageable risks.

To the extent that the sources of the financial risks that agents assume have a *macroeconomic* origin, the traditional microeconomic focus of prudential regulation and supervision must be complemented with regulations that take into account such macroeconomic factors. This is particularly true in developing countries, where the dynamics associated with boom-bust cycles in external financing are particularly intense. Due attention should thus be paid to the links between domestic and external financing, the links among these two factors, asset prices and economic activity, and the links between domestic financial risks and variations in interest and exchange rates.

The basic problem in this regard is the inability of individual financial intermediaries to internalize the collective risks assumed during boom periods, which are essentially of a macroeconomic character and entail, therefore, coordination problems that exceed the possibilities of any one agent. Moreover, risk assessment and traditional regulatory tools, including Basle standards, have a pro-cyclical bias in the way they operate. Indeed, in a system in which loan-loss provisions are tied to loan delinquency, precautionary regulatory signals are ineffective during booms, and thus do not hamper credit growth. On the other hand, the sharp increase in loan delinquency during crises does reduce financial institutions' capital and, hence, their lending capacity. This, in conjunction with the greater subjectively perceived level of risk, triggers the "credit squeeze" that characterizes such periods, thereby further reinforcing the downswing in economic activity and asset prices and, thus, the quality of the portfolios of financial intermediaries.[10]/

Indeed, the sudden introduction of strong regulatory standards during crises may worsen a credit squeeze. Thus, although authorities must adopt clearly defined rules to restore confidence during a financial crisis, the application of stronger standards should be gradual. In order to avoid moral hazard problems, authorities must never bail out the owners of financial

[10]/ For recent analyses of these issues and policy options for managing them, see BIS (2001), ch. VII; Borio et al. (2001), Clerc et al. (2001), and Turner (2002).

institutions by guaranteeing that their losses are written off up to their net worth if regulators have to intervene in those institutions.

In order to take into account the macroeconomic factors affecting risks, instruments need to be designed that will introduce a counter-cyclical element into prudential regulation and supervision. In this regard, the major instrument is undoubtedly forward-looking provisions. Such provisions should be estimated when loans are *disbursed* on the basis of *expected* or *latent* losses, taking into account the full business cycle, rather than on the basis of loan delinquency or short-term expectations of future loan losses, which are highly pro-cyclical. This means, in fact, that provisioning should approach the criteria traditionally followed by the insurance industry (where provisions are made when the insurance policy is issued) rather than the banking industry. This practice may help to smooth out the cycle by increasing provisions or reserves during capital-account surges, thus helping to reduce the credit crunch that takes place during busts.

It must be emphasized, in any case, that any regulatory approach has clear limits and costs that cannot be overlooked. Prudential regulation involves some non-price signals, and prudential supervision is full of information problems and is a discretionary activity susceptible to abuse. Some classic objectives of prudential regulation, such as risk diversification, may be difficult to attain when macroeconomic issues are at the root of the difficulties. In particular, experience indicates that even well regulated systems are subject to periodic episodes of euphoria, when risks are underestimated, as the experience of many industrialized countries indicates. The recent crisis in Argentina is a specific case in which a system of prudential regulations that was considered to be one of the best in the developing world, working within the framework of a financial sector characterized by the large-scale presence of multinational banks, has clearly failed to avert the effects of major macroeconomic shocks on the domestic financial system. Moreover, being able to separate cyclical from long-term trends is always an elusive task, as any process that involves learning will always generate path-dependent mechanisms in which short- and long-term dynamics are interconnected. Learning processes include those associated with the formation of expectations of future macroeconomic events, a particularly difficult task in developing economies facing substantial shocks (Heyman, 2000).

Moreover, many regulatory practices aimed at correcting risky practices on the part of financial intermediaries shift the underlying risks to non-financial agents, thus generating indirect risks that are expressed in credit risks. The net effect of regulation on banks' vulnerabilities is thus partial, as the literature on “migration of risks” indicates. Thus, regulatory standards establishing lower risk ratings for short-term credits and reducing mismatches between the maturities of bank deposits and lending will reduce direct banking risks, but will also reinforce the short-term bias in lending. Maturity mismatches are thus displaced to non-financial agents. Indeed, in this case, a net positive effect of this type of regulation may be associated with an inadequate supply of long-term financing and reduced fixed capital investment. Also, prudential regulations forbidding banks from holding currency mismatches in their portfolios will reduce their direct risk, but may encourage non-financial agents to borrow directly abroad. The risks assumed by corporations, particularly those operating in non-tradables sectors, will eventually be translated into credit risk by domestic financial institutions that are also their creditors.

For the same reason, stronger regulation will result in higher spreads in domestic financial intermediation, particularly if it results in more stringent domestic vis-à-vis international regulatory practices, which is a likely outcome given the stronger volatility characteristic of developing countries. Higher spreads will generate incentives for corporation with direct access to international capital markets to borrow abroad, thus increasing the likelihood of currency mismatches in the portfolios of these agents. They may also result in a suboptimal supply of financing for small- and medium-sized enterprises, or an excessively short-term bias in the supply of credit for such firms. In all these cases, the reduced direct vulnerability of the domestic financial sector will have as a corollary the maturity and currency mismatches of non-financial agents (as well as suboptimal fixed capital investment), which, in any case, may become credit risks for domestic financial agents during the downturn.

The differentiation between systematic and nonsystematic risks that is typical in portfolio risk analysis is particularly relevant in this regard. The former depends on the correlation of the price fluctuations of each particular asset with prices for the entire market and arises from

exposure to common factors (e.g., economic policy or the business cycle). Nonsystematic risks depend, on the contrary, on individual characteristics of each stock and may be reduced by diversification. Whereas this second type of risk can be reduced by adequate regulation aimed at improving microeconomic risk management, the first cannot, and indeed, in the face of systematic risks, the use of common risk management techniques can actually result in greater macroeconomic volatility (Persaud, 2000). Thus, to a large extent, macroeconomic risks, which are systematic in character, can only be shifted to other market agents within a specific economy and are only authentically diversified when external economic agents are willing to assume them. Nonetheless, counter-cyclical prudential policies can help to reduce the collective risks that agents may assume during periods of euphoria. They can also help to generate improved incentives for financial agents that behave pro-cyclically (those exposed to industries with high systematic risks).

In any case, as in the case of capital controls, improved prudential regulation, including the introduction of strong counter-cyclical components that take into account the macroeconomics of boom-bust cycles, is a complement but not a substitute for appropriate counter-cyclical macroeconomic policies.

2. The choice of instruments for protection against credit risk

Under generally accepted accounting principles, provisions should cover *expected losses*, though of an uncertain magnitude, and are thus registered as expenses, while reserves apply to *unexpected losses* and are part of capital. These principles also imply that banks should charge an interest premium for expected risk while stockholders should cover unexpected risks. Accounting practices also differentiate between *general* and *specific* provisions. In most countries, calculation of specific provisions is done on an individual basis for commercial loans and on a pooled basis for retail loans. General provisions are estimated on the basis of pools of loans, or the total portfolio. In some countries, they are treated as *reserves* and, as such, as capital, while in others they are subtracted from assets. Under traditional accounting methods, specific provisions are made shortly before or even after a loan becomes delinquent. In this sense, a system based wholly on this type of provision will not reflect the true credit risk of the loan portfolio and, as indicated above, will be inherently pro-cyclical. The rules related to

general provisions and reserves are usually more flexible and allow for more forward-looking approaches in the appraisal of risk.

In some countries, authorities (governments or central banks) take a restrictive approach and establish statutory rules that determine the level of provisions. In others, the system varies from a strict formula to statistical approaches, which use historical data, information on peer groups and more explicit internal risk models. Several OECD countries allow the constitution of forward-looking provisions based on past experience and the expectation of future events. However, most of them are oriented towards the short term, using a one-year horizon to measure risk.

The best-known exception to this rule is Spain, which in December 1999 issued regulations requiring counter-cyclical provisions calculated by statistical methods. The main feature of this approach is the estimation of "latent risk" based on past experience over a period long enough to cover at least one entire business cycle. This generates a dynamic in which provisions build up during economic expansions and are drawn upon during downturns (Poveda, 2000; Fernández de Lis et al., 2001). The major innovation of this system is its explicit recognition that risks are incurred when credits are approved and disbursed, not when they come due.

More particularly, under this scheme, "statistical" or actuarial provisions for "latent" risks must be estimated for homogenous categories of credit according to the possible loss that a typical asset (loans, guarantees, interbank or fixed income portfolio investments) in each category is expected to involve, estimated on the basis of a full business cycle. Either the internal risk management model of the financial institution or the standard model proposed by Banco de España can be used for that purpose. The latter establishes six categories, with annual provisioning ratios that range from 0% to 1.5%. These "statistical provisions" must be accumulated in a fund, together with special provisions (traditional provisions for non-performing assets or performing assets of borrowers in financial difficulties) and recoveries of non-performing assets. [11]/ The fund can be used to cover loan losses, thus in effect entirely

[11]/ Additionally, general provisions equivalent to 0%, 0.5% and 1.0% of three classes of assets are required.

substituting for special provisions if resources are available in adequate amounts. If this is so, provisions actually follow the credit cycle.

Although the accumulation and drawing down of the fund made up by statistical and specific provisions has a counter-cyclical dynamic, this only reflects the cyclical pattern of bank lending. In this regard, the system is, strictly speaking, "cycle-neutral" rather than counter-cyclical, but it is certainly superior to the traditional pro-cyclical provisioning for loan losses or forward-looking provisioning based on short time horizons.

Therefore, a system such as this should be complemented by strictly counter-cyclical "prudential provisions", decreed by the regulatory authority for the financial system a whole, or by the supervisory authority for special financial institutions, on the basis of objective criteria. These criteria could include the growth rate of credit, the bias in lending towards sectors characterized by systematic risks or the growth of foreign-currency denominated loans to non-tradables sectors. Voluntary prudential provisions can also be encouraged. In both cases, it is essential that tax deductibility be granted to provisions. Indeed, accounting and taxation rules contribute to failures in risk assessment because, in general, they make it necessary to register events that have already occurred.

The foregoing analysis indicates that an appropriate policy for managing the macroeconomic effects of boom-bust cycles in developing countries should involve a mix of: (a) forward-looking provisions for latent risks, to be made when credit is granted so that financial intermediaries will have to take into account the risks they incur throughout the whole business cycle; and (b) more discrete counter-cyclical prudential provisions based on a series of objective criteria. Specific provisions should be managed together with forward-looking provisions, as in the Spanish system. As we will see in the following sections, these provisions should be supplemented by regulations in other areas. Reserves or general provisions play a less clear role and in fact are not distinguishable from the role of capital in covering unexpected losses.

A system of provisions such as this is certainly superior to the possible use of capital adequacy ratios to manage the effects of business cycles. Instead, capital adequacy requirements should focus on long-term solvency criteria rather than on cyclical performance. Insofar as developing countries are likely to face more macroeconomic volatility, there may be an argument for requiring higher capital/asset ratios (see additional arguments below), but there is none for requiring that capital adequacy requirements should not be, as such, counter-cyclical.

In any case, it should also be borne in mind, once again, that stricter standards in developing countries for the management of macroeconomic risks –in terms of provisions, capital or other variables– increase the costs of financial intermediation, thereby reducing international competitiveness and creating arbitrage incentives to use international financial intermediation as an alternative. Also, prudential policies are certainly not a substitute for the risks that pro-cyclical macroeconomic policies may generate.

3. Prudential treatment of currency and maturity risks, and volatile asset prices

Experience indicates that currency and maturity mismatches are essential aspects of financial crises in developing countries. Prudential regulation should thus establish strict rules to prevent currency mismatches (including those associated with hedging and related operations) and to reduce imbalances between the maturities of assets and liabilities of financial intermediaries. In addition, liquidity regulations should be established to manage such imbalances.

The strict prohibition of currency mismatches in the portfolios of financial intermediaries is the best rule. Authorities should, additionally, closely monitor the intermediation of short-term external credits. As we have seen, currency risk of non-financial firms, particularly those operating in non-tradables sectors, may eventually turn into credit risk for banks. [12]/ This fact points up the need for better monitoring of the currency risks of these firms and, probably, for specific regulations on lending to firms in non-tradables sectors with substantial liabilities in foreign currency. In particular, regulations can be used to establish more stringent provisions and/or risk weighting for those operations, or a strict prohibition on lending in foreign

[12]/ For an analysis of the risks associated with non-tradables sectors, see Rojas-Suárez (2001).

currencies to non-financial firms with no income in those currencies; capital account regulations would have to establish complementary norms for direct borrowing abroad by these firms (see above).

In addition, prudential regulation needs to ensure adequate levels of liquidity for financial intermediaries so that they can handle the mismatch between the average maturities of assets and liabilities inherent in the financial system's essential function of transforming maturities, which generates risks associated with volatility in deposits and/or interest rates. This underscores the fact that liquidity and solvency problems are far more closely interrelated than traditionally assumed, particularly in the face of macroeconomic shocks. Reserve requirements, which are strictly an instrument of monetary policy, provide liquidity in many countries, but their declining importance makes it necessary to find new tools. Moreover, their traditional structure is not geared to the specific objective of ensuring financial intermediaries' liquidity in the face of the inherent maturity mismatches they hold in their portfolios. An important innovation in this area was the Argentine system created in 1995, which set liquidity requirements based on the residual maturity of financial institutions' liabilities (i.e., the number of days remaining before reaching maturity). [13]/ These liquidity requirements –or a system of reserve requirements with similar characteristics– have the additional advantage that they offer a direct incentive to the financial system to maintain an appropriate liability structure. The quality of the assets with which liquidity requirements are met is obviously a crucial factor. In this regard, it must be pointed out that allowing such assets to be invested in public-sector bonds was an essential weakness of the Argentine system, as it increased the vulnerability of the financial system to public-sector debt restructuring, a risk that materialized in 2001.

The valuation of assets used as collateral for loans also presents problems when those assets exhibit price volatility because, in many cases, ex-ante assessments may be significantly higher than ex-post prices. Limits on loan-to-value ratios and rules to adjust the values of collateral for cyclical price variations should be adopted. One approach in this direction is the "mortgage lending value", a valuation procedure applied in some European countries, which

[13]/ Banco Central de la República Argentina (1995), pp. 11-12.

reflects long-term market trends in real estate prices based on past experience (European Central Bank, 2000).

The proposal for a new Basle accord attempts to align risk weights with the evaluations of external credit rating agencies. Unfortunately, this would introduce an additional pro-cyclical bias, given the pro-cyclical pattern of credit ratings (Reisen, 2002). The high concentration of the rating industry is an additional argument against adopting this recommendation. Moreover, it would be difficult to apply this practice in developing countries due to the absence of adequate credit ratings for most firms.

IV. CONCLUSIONS

This paper has explored the complementary use of two instruments to manage capital-account volatility in developing countries: capital-account regulations and counter-cyclical prudential regulation of domestic financial intermediaries. These instruments should be seen as a complement to counter-cyclical macroeconomic policies and, certainly, neither of them can nullify the risks that pro-cyclical macroeconomic policies may generate.

Overall, innovative experiences with capital-account regulations in the 1990s indicate that they can provide useful instruments in terms of both improving debt profiles and facilitating the adoption of (possibly temporary) counter-cyclical macroeconomic policies. The main advantages of the price-based unremunerated reserve requirement pioneered by Chile and Colombia are its simplicity, non-discretionary character and neutral effect on corporate borrowing decisions. The more quantitative-type Malaysian system has been shown to have stronger short-term macroeconomic effects. Traditional quantitative exchange controls may be superior if the objective of macroeconomic policy is to significantly reduce domestic macroeconomic sensitivity to international capital flows.

Prudential regulation and supervision can, in part, be substituted for these direct regulations on the capital account. The main problem with these options is that they have, at best, indirect effects on the foreign-currency liabilities of non-financial agents and may encourage them to borrow directly abroad. Accordingly, they need to be supplemented with

other disincentives for external borrowing by those firms. Unremunerated reserve requirements may thus be a superior alternative and may be simpler to administer. In the case of the public sector, direct regulation of external borrowing should be combined with a strategy aimed at developing domestic bond markets.

Prudential regulation and supervision should take into account not only the microeconomic risks, but also the macroeconomic risks associated with boom-bust cycles. In particular, instruments need to be designed that will introduce a counter-cyclical element into prudential regulation and supervision. More specifically, we argue for a regulatory approach that involves a mix of: (a) forward-looking provisions for latent risks, with provisions to be made when credit is granted on the basis of the credit risks that are expected throughout the full business cycle (this is the approach adopted by the Spanish authorities); and (b) more discrete counter-cyclical prudential provisions, to be applied by the regulatory authority to the financial system a whole, or by the supervisory authority for special financial institutions, on the basis of objective criteria (e.g., the growth rate of credit, or the growth of credit for specific, risky activities). Capital adequacy requirements should focus on long-term solvency criteria and should not be, as such, counter-cyclical, but it may be advisable for countries facing strong cyclical fluctuations to establish higher capital/asset ratios.

A system of counter-cyclical prudential regulation and supervision should be complemented by regulations in other areas. In particular, prudential regulation should establish strict rules to prevent currency mismatches (including those incurred by firms operating in non-tradables sectors when borrowing in foreign currency), liquidity requirements and limits on loan-to-collateral-value ratios or rules on the valuation of collateral designed to reflect long-term market trends in asset prices.

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