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Nominal anchors and *macroeconomic* coordination *options in MERCOSUR*

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This study deals with the question of macroeconomic coordination in the context of MERCOSUR, analysing the contribution that different types of nominal anchors (monetary and exchange-rate) could make to the achievement of convergence of nominal indicators and sustained economic growth. The possible gains in terms of well-being associated with policy coordination are explored, in order to permit a rational evaluation of proposals for greater monetary coordination. An analysis is made of the problem of selecting the nominal anchor most suitable for serving as the basis for cooperative agreements, in an economy affected by real and monetary disturbances. In view of the structural differences that exist among the economies that make up MERCOSUR, it is concluded that a flexible form of macroeconomic coordination is needed in this regional bloc. Special attention is given, in the context of a centre-periphery monetary coordination model, to the problems of sustainability of an asymmetrical-type monetary coordination mechanism based on use of the exchange rate as a nominal anchor. A proposal is then set forth for a sustainable form of macroeconomic coordination under a flexible exchange-rate agreement based on a system of ranges of fluctuation backed up by nominal convergence criteria, structural reforms designed to make markets more flexible, and possible moderate controls on capital movements. The study ends with some considerations on the design of a strategy for the gradual abandonment by Argentina of the quasi currency board mechanism, in order to permit overall macroeconomic coordination in MERCOSUR.

I

Introduction

The consolidation of MERCOSUR as a viable economic integration project is increasingly highlighting the need to put into effect a well-designed programme of macro-economic coordination among the countries making up this regional bloc.¹ The Argentina economy, which was one of the most tightly closed economies in the world at the time of signing of the Treaty of Asunción, was the economy which subsequently registered the most significant progress in the process of opening up of trade to the exterior. A quick look at the details of this regional bloc's external trade shows that it still offers very large possibilities for intra-regional trade.² Although the smaller countries in MERCOSUR display heavy trade dependence on their larger partners, Argentina and Brazil have an explicit vocation for global trade.³ The present strategy of external openness, which seems to serve the interests of all the parties in the trade agreement, is based on two main elements.

Firstly, the extension of MERCOSUR to other Latin American countries (as for example through the signing of complementation agreements aimed at creating a free trade area in the Southern Cone of Latin America which will be in full operation in the course of the next decade),⁴ and secondly, the establishment of trade liberalization agreements with the European Union (like that signed in December 1995) and with the North American Free Trade Area (NAFTA) (developing the 4+1 Agreement signed with the United States in June 1991): that is to say, with groups of countries which represent MERCOSUR's main trading partners.

The establishment of the Customs Union on 1 January 1995 (whose list of exemptions left the capital goods, information technology and telecommunications sectors outside the common external tariff)⁵ and the advances made in the establishment of a basic system of legal rules for MERCOSUR mark the end of

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¹ The dynamism of MERCOSUR is evidenced by the fact that trade among the countries in this regional bloc doubled in less than four years after the signing of the Treaty of Asunción in March 1991. Thus, MERCOSUR intra-regional trade increased from US\$ 3,639 million in 1990 to almost US\$ 13 billion in 1995. From 1992 onward, Argentina became the second most important market for Brazil after the United States, absorbing almost 9% of Brazilian exports in 1995. In turn, Brazil is the main purchaser of Argentine manufactures and primary products of agricultural origin. In the period 1991-1995, Brazil built up a trade surplus of some US\$ 4.8 billion with the rest of its partners in MERCOSUR, in spite of the significant deficits registered with Argentina in 1991 and 1995.

² The degree of openness of the Argentine economy rose from only 7% in 1991 to over 17% in 1995. Over the same period, the degree of openness of Brazil remained steady at around 15%, that of Uruguay fluctuated between 40% and 45%, while Paraguay continued to be the most open economy in the group, with an average index of nearly 80%. Approximately 30% of the total trade of the MERCOSUR countries is with the European Union, 20% with North America, and 12% with East Asia. Intra-regional trade is still below 20%, while trade with the rest of the Latin American countries accounts for only 10% of the total.

³ Whereas in the case of Argentina this vocation is very recent and still not fully consolidated, Brazilian trade policy has been consciously guided by this principle for several decades past. At present,

Brazil directs around 30% of its exports to the European Union, while the United States absorbs a further 20-25% (the same as Latin America). Another important market is that of East Asia, to which Brazil directs between 15% and 20% of its total exports. This tradition may have favoured the interest in open regionalism that MERCOSUR seems to be displaying at present. In the case of Uruguay, almost 40% of its exports and 50% of its imports are with MERCOSUR, while Paraguay directs 45% of its exports to MERCOSUR and obtains 40% of its imports from its partners in that bloc.

⁴ This is the case, for example, of the agreements signed with Chile and Bolivia and the summit meeting held in the Argentine city of San Luis on 25 June 1996. The expanded MERCOSUR has an overall GDP of over US\$ 900 billion and a potential market of over 200 million consumers, which makes it one of the biggest trade and financial areas in the world. In the near future, similar agreements could be reached with other Latin American countries (with rates of integration that take account of each country's special features). These initiatives represent MERCOSUR's concrete contribution to the achievement of a hemispheric free trade area, as proposed at the Miami summit meeting in December 1994.

⁵ The goods subject to the common external tariff account for almost 85% of the total. Intra-regional trade in these goods is free of all tariff barriers. Capital goods are to converge towards a common external tariff of 14% by 1 January 2001 in the cases of Argentina and Brazil; Uruguay and Paraguay have five years longer to adapt their tariffs to the common external tariff by gradually increasing them. For the information technology and telecommunications sectors, the four countries are to establish a common external tariff of 16% by 1 January 2006. Finally, other goods such as sugar and textile products are subject to special trade regimes.

a first cycle in the process of incorporation of the member economies into the world market. The general objective of the next phase is the effective consolidation of the integration process, for which purpose it will be necessary to make great progress in i) deepening the process of external openness, ii) developing MERCOSUR as a strategic project aimed at changing production patterns and securing competitive linkages with the global economy (which will call for major progress in the coordination of microeconomic policies), and iii) effective and sustained coordination of macroeconomic policies. These three areas are clearly interdependent, so that failure in any one of them would impede achievement of the other objectives.

II

Gains in well-being through macroeconomic coordination

Without needing to resort to mercantilist theories (which do not take account of the negative externalities for the rest of the world when evaluating the effects of national policies on well-being, and which view international economic relations as a non-cooperative zero-sum game), there is nevertheless undoubtedly some economic justification for applying independent economic policies at the national level. Thus, in an economy fraught with nominal rigidities and uneven access to information, for example, the non-neutrality of short-term money makes an independent monetary policy an essential element of stabilization policies. Having acknowledged the possible existence of incentives for adopting non-cooperative forms of behaviour, however, it is necessary to consider in what circumstances macroeconomic cooperation would be desirable and at what level it should be carried out, and to identify the fundamental obstacles preventing cooperative agreement from being reached and maintained in time within a regional bloc which, like MERCOSUR, aims to become something more than a mere preferential agreement.

The economic justification for forming a true domestic market at the regional level lies fundamentally in the existence of public or collective goods—including the objectives of stabilization, income distribution and establishment of a suitable regulatory environ-

Microeconomic and macroeconomic policy coordination could be a powerful stimulus for growth in so far as it makes it easier to deepen the economic openness process and sustain it in time. The greater economic interdependence brought about by the preferential trade agreements will tend to strengthen the existence of significant externalities which will mean that independent decisions by each government in a large number of areas will be second-best solutions. Macroeconomic policy coordination would make it possible to avoid (or at least reduce) the distortions associated with the discretionary design by each country of its own monetary and fiscal policies for achieving independent national objectives in terms of domestic or external equilibrium.

ment—and the differences at the national level in the preferences regarding those goods (Whitman, 1977, p. 3). In this context, economic policy coordination would involve a significant change in national policies in response to a situation of international economic interdependence which makes the independent adoption of decisions by governments inefficient, because of the existence of externalities and international public goods.⁶ The fact that the exchange rate represents a link of contact between economies (as well as its specific nature of a shared instrument) could explain the importance assumed in practice by exchange agreements involving the creation or expansion of currency areas. Market integration—the formation of an internal market or the establishment of an integrated economy—is achieved when (leaving aside transport costs) each type of product or factor of production is sold at a single price. The gains in efficiency associated with an integrated economy increase in

⁶ See, in this respect, Crockett, 1989, p. 345. Peace, international cooperation, freedom to sail the seas, international courts of justice, the free-trade system, an international monetary system, the international financial system, and systems of weights and measures—including the keyboards and compatible operating systems of computers, mathematical theorems and reserve currencies—are everyday examples of international public goods.

proportion to the size of the internal market: from the point of view of international trade in goods and factors of production, the optimum economic area is the world, and any interference with the price formation mechanism (except for interventions aimed at eliminating market flaws) will represent a source of inefficiency in resource allocation. This result is not exactly reflected in the question of currency areas, however.⁷

Let us consider, by way of illustration, two countries whose monetary authorities try to minimize a loss function (defined conventionally in terms of objectives of inflation and unemployment) and are operating in the framework of a small open economy in which the prices of domestically produced goods are given in the short term. Explicit consideration of the well-being functions is necessary when the economic policy pursues more than one objective and when—as often happens—a given policy has positive effects on some objectives and negative effects on others. This conflict between objectives lies at the root of the problem of economic policy coordination.

In order to simplify the exposition, let us assume that there is perfect symmetry between the structures of the two countries, that capital mobility is perfect, and that the expectations regarding exchange-rate variation are static, while the fiscal variables are rigid in the short term, so that the repercussions of economic policies on the other country take place exclusively through variations in the level of the exchange rate. The Appendix at the end of this article describes the structure of the economy—equations [A.1] to [A.6]—and develops the essential features of the model.⁸ Let us also assume now that the two countries are affected by a similar price disturbance which causes their infla-

tion rates to increase by the same amount. Within the context of our model, monetary policy can only influence the rate of inflation through the exchange rate, so that this instrument becomes the intermediate objective of anti-inflation policy in both countries. The non-cooperative Cournot-Nash solution is determined on the assumption that the monetary authorities of each country take the monetary policy decisions aimed at minimizing their loss function—described in equation [A.12]—on the supposition that the monetary policy of the other country is given (i.e., treating the money stock of the other country as a parameter).

The non-cooperative game must necessarily be settled with excessive monetary contraction in both countries. The main results are described in expressions [A.15] to [A.19]. Both monetary authorities compete to enhance their anti-inflation reputation (and the credibility of their monetary policy) by implementing contractionary monetary policies. But the monetary contraction does not succeed in modifying the short-term equilibrium rate of inflation of either country, since the Central Banks of both of them try to modify the same nominal variable in opposite directions, each offsetting the initial achievements of their rival through their intervention. The lack of coordination of monetary policies has negative real consequences for both countries: the policy of competitive currency appreciations will end up in an increase in real interest rates and a drop in production below the desired level in each country.⁹

These real costs can be avoided through a cooperative agreement between the two monetary authorities. The cooperative result is equivalent to that achieved when a joint monetary committee solves the problem of global optimization described in equation

⁷ The theory of optimum currency areas suggests that, in proportion as the size of the currency area increases, so too do the gains deriving from exchange stability, although at a decreasing rate. At the same time, expanding the currency area increases the probability that there will be a larger number of asymmetrical disturbances and, consequently, the probability that losses of well-being will be increasingly frequent. Consequently, the optimum currency area is not the world: it is therefore possible to put forward an economic justification for the maintenance of a certain degree of what has wrongly been called—making ill use of a jargon with manifestly mercantilist overtones—monetary sovereignty.

⁸ The studies by Hamada (1976 and 1979) are the basic reference material for analysis of the coordination problems that arise in the framework of different exchange-rate regimes. For an excellent introduction to the general problems of macroeconomic coordination, with application to the case of MERCOSUR, see the studies by Heyman and Navajas (1992) and Ferrer and Lavagna (1992).

⁹ In order to simplify the exposition, in the Appendix we refrain from analysing the solution corresponding to the Stackelberg-Nash non-cooperative equilibrium. The Stackelberg-Nash solution means that the rate of variation of the exchange rate is different from zero, so that the interest rate arbitrage condition ($i=i^*$) must be revised and the model solved under the new conditions. In this case, the leader uses the information available on the other country (materialized in his reaction function) in order to over-expand m , since he knows (in the light of the information provided by the reaction function of the follower) that the authorities of the other country will attempt to appreciate their currency through monetary contraction. Thus, the behaviour of the government which exercises the leadership position could make it possible to limit the global contraction suffered in the Cournot-Nash equilibrium.

[A.20]. In view of the conflict between the objectives of the two countries, the monetary committee will refrain from using the exchange rate as an intermediate objective of their anti-inflation policy. In effect, the resulting equilibrium means that the governments agree to accept the initial inflation rate and concentrate their efforts on reducing the variation in production around the full employment equilibrium (equations [A.21] and [A.22]), since in this case $m = m^* = q = q^* = p_0$. In the context of this static (single-period) game, the well-being achieved under the cooperative equilibrium is clearly greater than that obtained in the case of the Cournot-Nash equilibrium: the rate of inflation is similar in both cases, but the deviation of production is minimized (equal to zero) in the cooperative solution. In contrast, the non-cooperative Cournot-Nash equilibrium means that $m = m^* < q = q^* = p_0$, opening up the possibility of a gradual reduction in the inflation rate of the monetary area (if the adjustment costs are accepted).¹⁰

The initial cooperative agreement does not suffice of itself to change the structure of the economy (by making wages more flexible and reducing the degree

of wage indexing) enough to facilitate the process of reduction of inflation. If the monetary authorities persist in their desire to reduce the rate of inflation of both countries over time, it would be necessary to supplement the cooperative agreement—within the context of an essentially dynamic game—with additional nominal convergence criteria, since in our model the cooperation takes the form of an express agreement to maintain the initial inflation rate. It must also be borne in mind that nominal convergence is a necessary but not of itself sufficient condition for attaining real convergence. Macroeconomic coordination must therefore be strengthened by the application of structural reforms aimed at making markets more flexible (especially in the services sector and the labour market). In the final analysis, a satisfactory monetary agreement cannot be defined solely in terms of rules governing the exchange rate: the instruments used for maintaining the exchange commitment have repercussions both on the well-being of each country and on the stability of the system. Consequently, mere fixing of the exchange rate does not solve the general problem of the external effects.¹¹

III

Macroeconomic coordination formulas

When authorities decide to cooperate by modifying their economic policies in a mutually beneficial manner in the light of the interdependence which exists between them, they must first of all agree how far the cooperation will extend. Absolute coordination would cover all levels of macroeconomic policy (including final objectives and the monetary, fiscal and other instruments available to each government). Coordina-

tion must necessarily be based on the establishment of commitments for future economic policy actions, which leads us to pose two unavoidable questions: i) do governments have so much capacity to enter into un-

¹⁰ This reduction in inflation depends on factors which are not specified in the simplified model but basically link the reduction in the product with the reduction in inflation rates. In order to analyse this question briefly, let us consider an expansion of the structure of the model by the incorporation of a price equation $p = w$, obtained on the assumption that companies determine their prices by establishing a margin over their mean variable costs, and a wage equation, $w = \delta q + \phi y$ (where w represents the growth rate of wages, the parameter δ reflects the degree of wage indexing, and the parameter ϕ reflects the degree of wage flexibility of the economy). By substituting the wage equation in the price equation, we obtain the following expression, $p = \delta q + \phi y$, so that, in a dynamic context, temporary reduction of the product makes possible a decline in inflation in the long term.

¹¹ In similar conceptual environments Krugman (1990) and McKibbin and Sachs (1991) show that the comparison between cooperative and non-cooperative equilibrium, in terms of the resulting long-term gains in well-being, depends essentially on the objectives of governments and of those fixing wages, as well as the interactions between the two. Following the same line, Oudiz and Sachs (1986) point out that, in general, international coordination is less desirable in dynamic models than in static single-period models. These authors give an example which shows that cooperation may also be preferable in a dynamic context, because it makes it possible to eliminate the inconsistency over time which is typical of monetary policies in a non-cooperative regime, but this result is achieved on the assumption that the authorities have absolute capacity for entering into undertakings regarding future policy actions. The relative efficiency of non-cooperative solutions compared with the imposition of nominal convergence criteria aimed at controlling inflation within the context of a cooperative solution promoted by an exchange-rate agreement is an ambiguous question which depends on the conceptual context in which the analysis is carried out.

dertakings that they can guarantee consistent behaviour over time?, and ii) do governments have sufficient control capacity to modify the instruments used when this is necessary for preserving the cooperative agreement? The answer is obviously negative in both cases (even in an economic and monetary union, in view of the difficulties in coordinating fiscal policies). Consequently, macroeconomic coordination must necessarily be only partial, limited generally to aspects regarding the relative positions of the countries. This helps to explain the importance usually given to the balance of payments and the exchange rate in the theory and practice of such coordination.

The fact that the macroeconomic coordination is only partial means that some objectives are fixed independently (discretionally, or in line with domestic rules) and that some instruments will remain outside the negotiations. In practice, however, the degrees of freedom enjoyed by the authorities may be much less than the relativity of the agreements might suggest. Intertemporal restrictions create indissoluble links between monetary and fiscal policies, so that it is often necessary to establish a minimum degree of fiscal coordination (through convergence programmes that limit budget deficits, for example) in order to make the monetary coordination effective. Furthermore, the crucial problem of the consistency of policies over time suggests the need to supplement cooperation with broad institutional reforms in order to ensure the sustainability of the agreements.¹²

Inevitably, cooperation agreements take place in a climate of uncertainty. In these circumstances, the gains in well-being expected from the agreement may turn out to be losses of well-being when the programme has been executed, thus weakening the incentives for the governments to cooperate. This uncertainty stems from the existence of errors of information and from outside disturbances which affect the system, but there is also uncertainty with respect to the quality of the models used for the analysis, the real preferences (objectives and priorities) of the authorities, and the sustainability of the agreements. Macroeconomic coordination may be particularly beneficial in conditions of uncertainty (it

may reduce policy errors) if the cooperation makes it possible to internalize the effects and spread the risks among the participating countries instead of encouraging them to shift these problems to competitors.¹³

In its minimum expression, policy coordination means the exchange of information between the parties; the next level consists of negotiating the type of rules that the authorities undertake to follow; and finally, the authorities can adopt an agreement involving all aspects of common policy. Whatever the level of cooperation, in a dynamic context it is essential to put the reputation of the authorities on a sound basis in order to give the agreements credibility. The strategy adopted for placing the reputation on such a basis determines the effects of the policy on the level of well-being: the model in the previous section provides an example of how non-cooperative actions by each government to improve their reputation through the common instrument (the exchange rate) may end up by producing a net loss of well-being. This is probably one of the results most clearly established in the literature on macroeconomic coordination. Such coordination is often based on the selection of at least one intermediate target variable whose regulation will permit control of the final objectives (represented by goals in the areas of inflation and growth). In this context, it would be appropriate to define a nominal anchor as a nominal variable which the government decides to convert into the intermediate objective of the policy. Naturally, the prime condition for the policy to be effective is that it shall be aimed at the achievement of objectives which are within its reach. If the government (whether acting independently or within the context of a cooperative agreement) seeks to fix a real variable (such as the unemployment rate, the interest rate or the real exchange rate) at a level out of keeping with the market, it will not only fail to achieve its objectives but will inevitably lead the economy into a vicious circle which will end in an inflationary spiral.

The role of nominal anchor may be played either by monetary variables or by the exchange rate.¹⁴ The use of a monetary anchor means that monetary policy

¹² For example, a country could make the obligation to maintain a balanced budget part of the Constitution, prohibiting the monetization of deficits in any circumstances and giving the Central Bank an independent status which makes it totally impervious to monetary policy decisions on budget imbalances.

¹³ Empirical estimates of the gains in well-being from macroeconomic coordination vary widely because of differences in the reference models, in the objective functions used and in the assumptions on the credibility of policies. For a recent analysis of the literature on this question, see Currie, 1993.

¹⁴ For a more detailed analysis of the role of the exchange rate as a nominal anchor, see the studies by Giovannini (1988), Quirk (1996) and Rodríguez Prada (1996).

fixes the price of a good or group of goods in terms of the country's currency (the most notable example of this is the Gold Standard), or, alternatively, that the intermediate objective of the monetary policy is the rate of change of a nominal value (the price level, a particular monetary aggregate, or nominal income). There are also many varieties of the use of the ex-

change rate as a nominal anchor: the monetary authorities can fix the level or rate of variation of the price of a country's currency in terms of a foreign reference currency, or they can establish a range of fluctuation around a fixed central parity, or they can intervene more or less frequently in currency markets to control the evolution of the exchange rate.¹⁵

IV

Selection of the nominal anchor

Selection of the nominal anchor which is to serve as the basis for macroeconomic coordination is a very complex process affected by such factors as the transparency of the nominal variable selected, the monetary authorities' capacity to control it, or the stability of the ratio between real income and the nominal variable which is to act as an intermediate objective. The nature of the disturbances affecting the system is also of crucial importance for determining the relatively optimum nature of a cooperative agreement. Adjusting an economy affected by a real disturbance of an asymmetrical nature requires a change in the relative prices of the goods and factors of the country with respect to the rest of the world, whatever the exchange-rate regime in force. If the structure of the economy gives rise to the non-neutrality of short-term money, making the nominal exchange rate more flexible will allow the necessary adjustments to take place more rapidly and with lower adjustment costs. If, in contrast, the disturbances are mostly of a nominal nature (for example, intense financial disturbances which cause erratic shifts in the demand for money), then flexibility of the nominal

exchange rate will give rise to excessive and unnecessary adjustments in relative prices, with potentially serious real adjustment costs.¹⁶

Exchange-rate flexibility will be desirable when asymmetrical real disturbances, whether transitory or permanent, predominate in each country. Asynchronous changes in the economic cycle are a good example of asymmetrical real disturbances of a transitory nature. Let us suppose, for example, that Brazil suffers a serious recession. The reduction in the level of production will give rise to an excess supply of money (as a result of the decline in demand for real balances) which will bring down interest rates, giving rise to an interest rate differential which is unfavourable to Brazil and will cause an incipient flow of capital abroad. If it were not tied by the exchange rate, the Real would go down enough to give rise to expectations of appreciation strong enough to restore arbitrage in international financial markets. Over time, the depreciation of the Real would have an automatic stabilizing function on the economy, by stimulating the production of tradeable goods and increasing aggregate demand through the growth of net exports.

Even if the asymmetrical real disturbance were of a permanent nature, the adjustment in the exchange rate could bring great benefits. Let us suppose, for example, that the Brazilian economy suffers from a structural crisis reflected in a decline in the industrial backbone on which the country has pinned its faith. Once again, with constant monetary rules, the gradual reduction in competitiveness would eventually bring about a reduction in real interest rates which would be

¹⁵ On the other hand, the balance of payments can take the place of the exchange rate as the intermediate objective of economic policy, and the conflict between objectives may surge up again violently in a fixed-exchange-rate regime. Thus, for example, if each country has its own independent objective for the current account balance, the fixed-exchange-rate system would be bound—in the absence of sufficient fiscal or monetary correction—to suffer continual deflationary pressures, without achieving the individual objectives of attaining a current account surplus. In an alternative scenario, in which the countries are indifferent to the effects of their policies on their current account balances, they would tend to implement fiscal or monetary policies which would be too expansionary and would result in excessive current deficits.

¹⁶ These results were obtained from a simple extrapolation (to the case of an open economy) of the classic study by Poole, 1970.

reflected in a decline in the opportunity cost of investments and in long-term indebtedness. The resulting interest rate differential would be a first incentive for a shift in international investment towards Brazil which would relieve the burden of the efforts to carry out the necessary industrial retooling.

In such an adverse situation of industrial crisis, however, perhaps more would be needed than the cheapening of credit in order to stimulate investment. It would also be necessary to generate a decline in the relative price of real Brazilian assets (especially capital goods, real estate and land) sufficiently great to attract the necessary foreign direct investment. It may be asked whether, in such a context, exchange-rate flexibility could make a useful contribution. With fixed exchange rates, the adjustment in relative prices would necessarily have to be effected through a drop in the nominal prices of these real assets. A significant reduction in the national currency value of real Brazilian assets, however, would bring down the value of the guarantees backing the credit provided by the financial system, thus endangering the solvency of financial institutions and, if the crisis were sufficiently serious, giving rise to intervention by the Central Bank as lender of last resort.

The depreciation of the Real would greatly facilitate the adjustment in these circumstances, since the necessary reduction in real terms in the prices of assets would be achieved largely through adjustment of the exchange rate. After this depreciation, the dollar prices of Brazilian assets would suffer a relatively severe fall, but their value in Reales would remain practically unchanged. In contrast, with a fixed exchange rate Brazil would need to resort to drastic deflation to bring about the same decline in the dollar prices of its assets. The foregoing analysis assumes that in the short term the purchasing power parity hypothesis is not satisfied, so that the variations in the nominal exchange rate are reflected, at least for several months, in the real ex-

change rate. In a situation of economic recession, this is usually the case.¹⁷

At the same time, it must be borne in mind that, as the experience of Argentina shows (even in countries starting out from a situation of hyperinflation and affected by a high degree of dollarization), fixing the exchange rate does not immediately bring with it the fixing of the general price index.¹⁸ Even if the country succeeds in bringing inflation back to stable rates perfectly comparable with those existing in industrialized countries within a period of two or three years, the real appreciation in the currency can quickly give rise to big deficits on the external accounts.¹⁹ In fact, the use of an exchange anchor in a context of free capital movements can give rise to quite intensive episodes of inflation. This phenomenon is due to the difficulty of applying an effective policy of sterilization of reserves in order to offset the expansionary effect exerted on the monetary figures by the capital flows attracted by the more stable environment created by the greater credibility of monetary policy. Sterilization of the reserves means increasing interest rates, which will give a fresh impulse to the inflow of capital, thus making monetary control more difficult.²⁰

¹⁷ The nominal and real depreciations undergone, for example, by the pound sterling, the lira and the peseta after the crisis in the European Monetary System (EMS) in September 1992 are eloquent examples in this respect, especially bearing in mind that the downward convergence of inflation rates (especially in the non-tradeable goods sector) speeded up precisely after the devaluations.

¹⁸ In Argentina, cumulative inflation during the two years following the introduction of the Convertibility Plan (from April 1991 to May 1993), as measured by the consumer price index, increased by 46%, while in Brazil, in the two years following the introduction of the Plano Real (from July 1994 to June 1996), the cumulative increase in consumer prices was around 55%. For a brief analysis of the problems associated with stabilization after hyperinflation, with abundant references to Latin America, see Heyman (1992).

¹⁹ For example, in 1996 Brazil had a trade deficit of some US\$ 5.5 billion (an unprecedented figure), while its current account deficit was over US\$ 24 billion (3.3% of GDP). Projections made at the beginning of 1997 estimated that in that year the trade deficit would be brought down to around US\$ 8 billion.

²⁰ By way of illustration, Estonia suffered from a transitory increase in the rate of inflation shortly after a drastic monetary reform (after leaving the rouble area and changing its Central Bank into a quasi currency board), and Egypt suffered from heavy inflationary pressures after the Gulf War.

V

Forms of macroeconomic coordination which could be applied in MERCOSUR

The economies making up MERCOSUR are too different from each other to make it feasible to practice strict coordination of their macroeconomic policies (the problem would be even greater in the case of a MERCOSUR expanded to include Chile and Bolivia). The optimum dimension of a regional bloc is that which ensures the optimum provision of public and collective goods, including the objectives of stabilization, income distribution and the legal and institutional environment (Cooper, 1976). Any project for coordinating economic policies in MERCOSUR must take account of the structural and institutional features of the regional bloc. The existence of unequal features which it would be very difficult to reverse in the short term (such as market size, level of industrialization, degree of openness, per capita income, degree of dollarization, etc.) prompts an instinctive rejection of excessively homogeneous solutions.²¹

Borrowing the Ricardian distinction between domestic trade and foreign trade (perfect mobility of factors within each country and total absence of such mobility between countries), Mundell (1961) showed that in an optimum monetary area the existence of a high degree of mobility of the factors of production (or the existence of sufficient wage flexibility) takes the place of exchange-rate variations as an adjustment instrument. The discontinuity in the degree of mobility of labour (not explained by Ricardo or by Mundell) could be partly attributed to language and cultural differences between societies (as well as to transport costs). In MERCOSUR, which is still at only an incipient phase of integration, the necessary intra-regional mobility of the factors of production is still very limited. Moreover, the degree of openness, average size and degree of diversification of the MERCOSUR economies

does not allow occasional use of the exchange rate to be ruled out for restoring lost competitiveness.²²

If the internal disturbances suffered by the regional bloc are relatively small compared with the external ones, the optimum policy would be to: i) promote the separation of risks by trying to isolate the region from the outside world through the application of trade barriers and exchange controls, and ii) strengthen the domestic market by adopting a common currency for the regional bloc. If the internal and external disturbances are of a similar magnitude but are not very closely correlated, the optimum policy would be to spread the risks through the economic and monetary integration of both sides. Finally, if the disturbances affecting the different regions of the monetary area have similar effects, the appropriate monetary policy would be the same in each region and nothing would be gained through greater flexibility of exchange rates. Many of the disturbances are specific (idiosyncratic) to each country, however, and even those of common origin will generally have asymmetrical effects because they affect different economic structures. If the disturbances are mostly of an asymmetrical nature, fixing exchange rates would mean making what would probably be a very great sacrifice by failing to apply a potentially beneficial monetary policy.²³ All in all, the

²¹ In Argentina, over half the deposits in the financial system are denominated in dollars. Dollarization is difficult to reverse and seems to increase even in a context of apparent nominal convergence (a good example is the case of Bolivia, which has a degree of dollarization of the financial system of nearly 90% after more than a decade of macroeconomic stability).

²² As the degree of openness increases, flexibility of the exchange rate becomes less effective as a means of adjusting the current account balance to real disturbances in demand, since the variations in the nominal exchange rate will be transferred more rapidly to the prices of goods, thus limiting the adjustment of the real exchange rate (McKinnon, 1963). On the other hand, a high degree of diversification makes it less necessary to adjust the exchange rate to absorb specific disturbances in a sector of production (Kenen, 1969).

²³ Feldstein (1992), for example, has criticized the objective of European monetary union, claiming that the present European Union is not an optimum monetary area because the mobility of labour is only limited and the existence of asymmetrical disturbances continues to make exchange-rate adjustment necessary. For a different point of view which is radically in favour of monetary union, see Buiter (1995), who considers that the degree of real convergence is irrelevant for monetary union in as much as market rigidities (for example, wage rigidities) cannot be relieved by exchange-rate flexibility or monetary independence.

differences in the underlying economic structures of the countries making up MERCOSUR increase the probability that idiosyncratic disturbances will prevail and that disturbances will have asymmetrical effects even if they are of common origin.

In the specific case of MERCOSUR, the disturbances are asymmetrically distributed and the rates of adjustment vary from one country to another, making necessary occasional modification of the exchange-rate to reduce the cost of the adjustment process. Bayoumi and Eichengreen (1994) have shown that the exchange-rate tensions between Argentina and Brazil reflect the existence of differential demand disturbances and that the speed of adjustment of the production system to the disturbances is lower in the Brazilian economy, so that a monetary policy aimed specifically at stabilizing the bilateral exchange rate would tend to aggravate the costs of the adjustment. This result is further confirmed by the fact that disturbances of supply are only feebly correlated among the MERCOSUR countries (especially in the case of Uruguay and Paraguay).²⁴ Moreover, the supply disturbances in the case of Argentina and Chile are inversely correlated with those of the United States. This result makes it even more difficult to justify the long-term maintenance of a fixed exchange rate between the peso and the dollar and suggests the desirability of introducing a relatively more flexible exchange-rate system.

The establishment of an exchange-rate range represents an alternative (and provides an exit strategy in the context of a cooperative agreement) to the use of the exchange rate as a nominal anchor. A mechanism with predetermined ranges of fluctuation represents a non-linear compromise between a system of fixed exchange rates and a system of flexible rates. Basically, it consists of an exchange-rate regime which

makes it possible to take advantage of the leeway provided by freely fluctuating exchange rates, without sacrificing the monetary policy coordination provided by a system of fixed exchange rates.²⁵ In these models, the anticipation that there will be defensive interventions when the exchange rate hits the limits of the range gives rise to substantial non-linearities which are reflected in the curve of the typical trajectory – an S-shaped curve – followed by the exchange rate within the range. The essential feature is the stabilizing nature of the system (so that changes in the fundamental macroeconomic variables have less effect on the exchange rate in a system of ranges of variation than in a system of fully flexible rates).

The difficulties in calculating the equilibrium exchange rate themselves represent an additional argument in favour of a system of ranges of fluctuation. The central parity can be periodically revised with the aim of avoiding prolonged departure from the long-term equilibrium exchange rate.²⁶ If the agents have full confidence in the government's capacity to keep the exchange rate within the range, this type of exchange-rate mechanism has clear stabilizing properties. In a situation of uncertainty, however, when the probability that there may be a realignment exceeds a certain level, the stabilizing properties of the range are abruptly changed and the mechanism of ranges of fluctuation becomes intrinsically unstable, encouraging speculative attacks. Generally speaking, in a climate of uncertainty an increase in the frequency of exchange-rate realignments and in the width of the range increases the risks run by speculators and consequently helps to restore the credibility of the exchange-rate mechanism.

²⁴ The same study shows that NAFTA does not display suitable conditions for unification of the exchange rate either, since there is a significant inverse correlation between the supply disturbances of the United States and those of Canada and Mexico. Furthermore, the demand disturbances affecting the United States and Mexico display a strong negative correlation, whereas the correlation between the United States and Canada is very slightly positive.

²⁵ The seminal model developed by Krugman (1988) showed in a very elegant manner the way this exchange-rate system could stabilize the nominal exchange rate within a given range, thereby rationalizing the use of exchange-rate mechanisms such as that employed in the European Monetary System. This model is based on a simple monetary model for determining the exchange rate which involves a number of extremely restrictive assumptions: complete flexibility of prices; perfect credibility of the range; defence of the range through infinitesimal marginal interventions, and a specification of the macroeconomic bases which is excessively simple, but technically useful for finding an explicit solution to the model.

²⁶ Williamson and Miller (1987) coined the term "target zone" to denote a mechanism of ranges of fluctuation defined around the real exchange rate which they considered should serve as the basis for macroeconomic coordination among the countries of the Group of Seven.

VI

A centre-periphery monetary coordination model

As may be deduced from the analysis made in the previous section, even a summary examination of the characteristics of MERCOSUR is enough to reject out of hand the idea of basing macroeconomic coordination among that bloc's member countries on a strict system of fixed exchange rates. It must be acknowledged, however, that institutional factors heighten the role of the U.S. dollar in all the MERCOSUR economies, and especially in Argentina, where the April 1991 Convertibility Act (Law No. 23.928) turned the Central Bank into a quasi currency board (which backs the monetary base with convertible currencies and accepts unrestricted convertibility of the national currency with the external reference currency) and fixed an exchange rate of one peso per U.S. dollar.²⁷ At the same time, the fears of the repercussions of a change of system on the financial markets has given rise to the perception in broad sectors of Argentine society that the costs of abandoning the convertibility system would be very high. As Brazil has also adopted for some time past an inflation reduction policy based on the use of the exchange rate as a nominal anchor,²⁸ it would be interesting to look at the basic properties (and limitations) of a macroeconomic coordination mechanism using a centre-periphery monetary coordi-

nation model based on the dollar. The model also helps to rationalize the customary perception that the peripheral countries are natural followers.

The conventional argument justifying the use of an exchange-rate anchor is that the monetary institutions of what we will call the periphery lack the necessary anti-inflation reputation, thus obliging the government to "borrow" an external monetary anchor by fixing the exchange rate in terms of it. In fact, however, fixing the exchange rate in an environment marked by high capital mobility deprives the monetary authorities of the periphery of the capacity to follow an independent monetary policy, so that they automatically "inherit" the monetary policy of the centre. The model used here is centered exclusively on the monetary sector. The variables corresponding to the centre are shown with an asterisk and the equations of both countries have a symmetrical structure (the equations corresponding to the centre are omitted to begin with in order to simplify the notation). The following equations describe the monetary market of the periphery:²⁹

$$M = -n i + \mu \quad [1]$$

$$M = CI + R \quad [2]$$

$$CI = D - f \cdot R, \quad 0 \leq f \leq 1 \quad [3]$$

²⁷ For recent economic analyses of the functioning of quasi currency boards which take account of the Argentine experience, see the studies by Connolly (1995), Judy (1995), Williamson (1995), Zarazaga (1995) and Rodríguez Prada (1994, 1995 and 1996).

²⁸ Since the introduction of the Plano Real, Brazil has also been using an exchange rate range implicitly based on the dollar. The second phase of the Brazilian monetary reform programme (preceded by the application of a fiscal adjustment policy) consisted of the introduction in March 1994 of a Real Unit of Value (URV, in Portuguese) pegged to the dollar, to serve as a unit of account and reference for all contracts; its objective was to radically reduce inertial inflation in an economy which, thanks to massive indexation, had got used to living with hyperinflation without resorting to dollarization. On 1 July 1995 the URV acquired the properties of a unit of account, means of payment and value deposit, becoming the Real and thus completing the monetary reform process. For a recent assessment of the Plano Real, see Sachs and Zini (1996).

²⁹ The demand for money – equation [1] – depends on the interest rate i and (with unit elasticity) an exogenous disturbance μ of the velocity. To simplify matters, let us suppose that the elasticity of money demand with respect to the interest rate is the same in both countries ($n = n^*$). Equation [2] shows the composition of the money stock M , made up of domestic credit CI and the foreign exchange reserves R . Maintaining monetary control may require the sterilization of the reserves: the Central Bank may sterilize the effect (on the money stock) of its intervention in the foreign exchange markets by simultaneously intervening in the domestic money market. Thus, for example, at the same time that they purchase foreign currency on the foreign exchange market, the monetary authorities may carry out an open-market operation consisting of the sale of bonds in order to reduce domestic credit. Equation [3] reflects the sterilization rule followed by the monetary authorities: D is the autonomous (exogenous) component of domestic credit, while the parameter f is the coefficient of sterilization.

In conditions of perfect capital mobility, the condition for interest rate arbitrage (portfolio equilibrium) is

$$i = i^* + \lambda \quad [4]$$

where λ represents the existence of an exogenous disturbance affecting the portfolio preferences of wealth-holders. In order to close the model, it is necessary to specify the rule governing intervention in the foreign exchange market:

$$\theta = R/(R - R^*) \quad 0 \leq \theta \leq 1 \quad [5]$$

The solution of the model gives the following equations, in reduced form:

$$\begin{aligned} M &= (1 - \varepsilon)D + \varepsilon \cdot D^* + \varepsilon \cdot \omega \\ M^* &= (1 - \varepsilon)D + \varepsilon \cdot D^* - (1 - \varepsilon) \omega \\ i &= \rho + \varepsilon \cdot \lambda \\ i^* &= \rho - (1 - \varepsilon) \lambda \end{aligned}$$

where

$$\begin{aligned} \omega &= [(\mu - \mu^*) \cdot n \cdot \lambda] \\ \rho &= -(1/n)[(1 - \varepsilon)(D - \mu) + \varepsilon(D^* - \mu^*)] \\ \varepsilon &= \theta(1 - f)/[\theta(1 - f) + (1 - \theta)(1 - f^*)] \end{aligned}$$

The centre exercises the effective leadership of the system either by carrying out complete sterilization of the reserves in order to control its money supply (in which case $f^* = 1$ and $\theta > 0$, so that $M^* = D^*$) or, alternatively, by refraining from intervening in the foreign exchange market (in which case $\theta = 1$ and $f < 1$). This asymmetrical behaviour means that:³⁰

$$\begin{aligned} \varepsilon &= 1 \\ i &= -(1/n)(D^* - \mu^*) + \lambda \\ i^* &= -(1/n)(D^* - \mu^*) \end{aligned}$$

³⁰ In the case of a symmetrical system, $f = f^* < 1$, $\theta = 1/2$ and $\varepsilon = \theta = 1/2$. In a symmetrical system, each Central Bank has a domestic objective (such as the interest rate) and an external objective (such as the exchange rate or the level of the reserves). Both countries coordinate their monetary policies, so that the stock of money of the monetary area is not affected by the disturbances $\{\mu, \mu^*, \lambda\}$ that afflict the economy.

Consequently, the interest rates in the centre are affected exclusively by the conditions of its own money market, so that international portfolio disturbances (produced by changes in risk premiums or expectations of variations in the exchange rate) are reflected exclusively in the interest rates of the periphery, which has to bear the entire burden of the costs of the adjustment process. The inherent asymmetry of this monetary coordination mechanism creates insuperable difficulties for ensuring the long-term survival of the agreement.

So far, we have assumed that the central motive of the periphery for using an exchange rate anchor is its attempt to "import credibility" from the centre. Exactly the same result is obtained if the centre is directly characterized as the issuer of the reserve currency. The behaviour of the periphery could be due, however, to the existence of strict constraints on financing a balance of payments deficit. In order to illustrate this case, let us assume now that –for example, as a result of real disturbances affecting the periphery– there is a skewed (asymmetrical) distribution of portfolio disturbances which shifts preferences towards the currency of the centre: if we reinterpret μ and μ^* as real disturbances (for example, a fiscal disturbance) which affect the demand for money, then $\lambda = \lambda(\mu)$ and $\lambda'(\mu) = \partial \lambda / \partial \mu > 0$. The effect of an increase in μ on the reserves of the periphery is equal to

$$\partial R / \partial \mu = [\varepsilon / (1 - f)] \cdot [1 - n (\partial \lambda / \partial \mu)] \quad [6]$$

Expansion of demand would give rise to an incipient increase in domestic interest rates which stimulates the inflow of capital and leads to a rise in the reserves (this explains the first term of the above expression). At the same time, the increase induced in λ raises the yield of assets denominated in the currency of the centre, causing an outflow of capital and a fall in the reserves (this explains the second term of equation 6). If the second effect exceeds that of the first, so that $\partial \lambda / \partial \mu > 1/n$, the net effect will be a reduction in the reserves. In this case, since $\varepsilon / (1 - f) = \theta / [\theta(1 - f) + (1 - \theta)(1 - f^*)]$, equation [6] also shows that, for a given intervention rule, $\theta > 0$, an attempt by the periphery to sterilize the reduction in reserves (by an increase in domestic credit) would increase the rate of decline of the reserves. The reduction in the reserves is minimized by making $f = 0$. Consequently, in the presence of sufficiently strong asymmetrical disturbances and limited reserves, the periphery will tend to behave as a natural follower. This behaviour does not, however,

guarantee the convergence of the economic cycles of the centre and the periphery, thus introducing further complications for the sustainability of this model.³¹

A further very important problem concerns the difficulties in equitably sharing the adjustment costs of a selective devaluation on the periphery when there are structural imbalances or differences among the peripheral countries. This problem would arise, for example, if there was a real disturbance in the centre which was

serious, but not serious enough to justify a devaluation in the periphery as a whole. In the absence of fiscal mechanisms which make it possible to compensate the countries with the biggest adjustment costs, it would be very difficult to coordinate the devaluation, and this would impede the necessary adjustment in the exchange rate and create favourable conditions for a real appreciation which would make the cooperative agreement unsustainable.³²

VII

A proposed form of macroeconomic coordination in MERCOSUR

The clear bid for stability which has guided economic policy in MERCOSUR in recent years is already producing a certain degree of coordination which could greatly facilitate an exchange rate agreement in the current circumstances. Thus, before the application of the Plano Real by Brazil, the main problem for macroeconomic coordination was the different rates of macroeconomic stabilization within the regional bloc. The fact that it has been necessary in the immediate past to use the exchange rate as a nominal anchor cannot obscure the fact that the MERCOSUR economies are faced with the need to make far-reaching structural changes which could be facilitated by a sufficient degree of exchange rate flexibility. At the same time, there can be no doubt that excessive exchange rate fluctuation could harm trade and investment, thus weakening the construction of the MERCOSUR internal market and jeopardizing the sustainability of the process of greater openness. The adoption of a well-designed and internally consistent exchange rate agreement, based on a system of ranges of variation of the exchange rate, could make possible the effective,

flexible and sustainable coordination of the MERCOSUR countries' macroeconomic policies.³³ Macroeconomic coordination should simultaneously forestall the possibility of prolonged departures of the real exchange rate from its long-term equilibrium value and the danger that the exchange rate might be used arbitrarily to obtain advantages for one country at the expense of its partners (for example, by adopting policies of competitive disinflation or devaluation).

In my opinion, an exchange-rate agreement organized on the bases set forth below would make it possible to define a monetary system which is comparatively satisfactory for the whole area and could also give Argentina the cover needed to find a non-traumatic way out of the quasi currency board system while preserving the achievements made in terms of price stability:

i) Firstly, Argentina and Brazil would agree to take part, within a reasonable length of time, in an exchange rate and intervention mechanism based on the establishment of a range of fluctuation about a central parity, and would also undertake to defend it actively. The exchange rate for each currency would be freely determined, within the range, on the foreign

³¹ For example, the fact that the economic cycles of Hong Kong (whose monetary system is based on a currency board mechanism, with an exchange rate linked to the U.S. dollar) and the United States are not synchronous created serious difficulties for Hong Kong in the 1989-1992 period. The fall in United States interest rates took place at a time when the economy of Hong Kong was expanding strongly. Inflationary pressures and the fall in nominal interest rates led to negative real interest rates. The resulting shift of portfolios—from debt paper to stocks and real assets—led in 1993 to an increase of 116% in share prices and 70% in real estate prices.

³² Buiter, Corsetti and Pesenti (1995) show that in such a situation the global loss of well-being would be partly relieved by returning to a Nash equilibrium.

³³ The problems relating to ways of securing the greater flexibility of the quasi currency board system needed for the implementation of this exchange rate agreement are briefly analysed in the following section.

exchange market.³⁴ In addition, temporary increases in the range could be negotiated in special circumstances, in order to discourage speculative attacks on the currencies in the system. Suitable financial mechanisms would gradually be promoted for facilitating joint intervention in foreign exchange markets. The Argentine-Brazilian exchange rate agreement would be open for the voluntary participation of Paraguay, Uruguay, and countries in the MERCOSUR regional environment that have preferential relations with that bloc, such as Bolivia and Chile. The participation of other countries would initially be on the basis of exchange-rate ranges of different widths, until nominal convergence of the different economies makes it possible to unify the exchange rate mechanism.

ii) The central parity of each currency, with respect to which the ranges of variation are fixed, would be calculated daily on the basis of a basket of currencies that reflects the overall characteristics of the regional bloc's international trade, consisting tentatively of the U.S. dollar (40%), the Euro (40%) and the Yen (20%). The central parity of each currency with respect to the reference basket could be periodically modified in order to avoid prolonged departures from the long-term equilibrium real exchange rate.

iii) Realignments of parities would be effected subject to the prior agreement of a supranational monetary committee made up largely of truly independent experts but partly also of representatives of the Central Banks of the MERCOSUR countries; this committee would be responsible for preventing undue use of devaluations by the member countries. Within the context of a target zone, regulation of real balances by discreet interventions within the limits of the established ranges (together with rules on the realignment of nominal exchange rates) could be very useful for supplementing infinitesimal marginal interventions to defend the ranges. The powers

of the joint monetary committee should therefore include the capacity to promote interventions within the established ranges and, above all, to promote changes in member countries' exchange rates if it comes to the conclusion that their central parity is not in keeping with the basic macroeconomic values. This procedure would make it possible to enhance the credibility of exchange policy and reduce the danger of speculative attacks aimed at correcting the exchange rate's deviation from its long-term equilibrium level. In the course of time, the agreement could be supplemented with a system of transfers to provide a compensation mechanism for achieving more equitable distribution of the adjustment costs involved in a selective devaluation.

iv) The relatively broad width of the permissible range of fluctuation and the exchange rate agreement's orientation towards the maintenance in the medium term of the real equilibrium exchange rate deprive the exchange rate of its capacity to act as a nominal anchor. Consequently, in order for the exchange rate mechanism to be consistent with the control of inflation within MERCOSUR, it would be necessary first of all to supplement the exchange rate agreement with nominal convergence standards (especially in fiscal matters) which would ensure the maintenance of price stability and budgetary discipline (with strict limits on Central Bank loans to their governments and on the monetization of public deficits). Next, it would be necessary to carry out the urgent structural reforms needed to make markets more flexible (especially in the case of services and some subsectors of the labour market) and prevent the reintroduction of means of indexing contracts. If the convergence standards are not fulfilled within a reasonable time and the structural reforms are not carried out in sufficient depth, countries could yield to the temptation to resort to competitive disinflation policies, which would mean the abandonment of the cooperative agreement.

v) The biggest difficulties standing in the way of greater trade openness of the developing countries in the current situation of financial globalization stem from the risks associated with unlimited financial openness. With regard to the possibilities of achieving effective macroeconomic coordination, there can be no doubt that convergence in policy execution and orientation has been increasingly hindered by the globalization and growing sophistication of financial markets. Although freedom of international capital movements decisively aids proper resource allocation at the world level, the potential instability of capital

³⁴ In order for this exchange rate commitment to be sustainable, the governments must comply with two basic rules of behaviour: i) they must refrain from defending any exchange rate which is clearly out of line with the equilibrium rate, and ii) they must refrain from any realignments of parities which exceed the limits of the ranges. In view of the foregoing, the width of the range (around the central parity) should not be less than 10%. In the case of the EMS, for example, the expansion of the range of fluctuation in August 1993 from $\pm 2.25\%$ to $\pm 1.5\%$ went a long way towards restoring the credibility of the EMS and put an end to speculative attacks on the weakest currencies in the System. For an analysis of the main problems concerning the proper functioning of a system of target zones, see Williamson (1993).

flows can cause grave distortions in the financial systems of developing countries and lead to excessive fluctuations in exchange rates and monetary variables. Moderate restrictions on capital movements can effectively help to stabilize the exchange rate within the established range of variation, because capital controls strengthen the weight of expectations in determining

the exchange rate, thereby increasing the stabilizing capacity of the range.³⁵ The recent experience of various developing countries (such as Chile, Colombia and Malaysia) shows that systematic but gradual financial openness eliminates unnecessary risks associated with speculative capital whose contribution to economic growth is only marginal.³⁶

VIII

Final considerations

The use of excessively rigid nominal anchors results in serious and inevitable inconsistencies between the aims of monetary policy and the evolution of the basic macroeconomic variables. Furthermore, the recurrent replacement of one nominal anchor with another shows that when a government adopts a nominal anchor whose stabilization is left to monetary policy, the defence of that nominal variable is not really the main objective of economic policy.³⁷ Sometimes, however, the sustained application of a monetary rule ceases to be an example of governmental virtue (in the sense of the continuity of policies in time) and becomes instead an example of stubborn persistence in error.³⁸ Notwithstanding the undoubted achievements of MERCOSUR in matters of price stability, and while fully acknowledging the services rendered to the anchoring of ex-

pectations by monetary and exchange rate schemes which were necessarily rigid when they were first applied, the time now seems to have come for a transition to more flexible coordination mechanisms which preserve the macroeconomic equilibria but at the same time favour the sustained growth of the area as a whole.

The last objective of the exchange rate agreement described in the previous section is the formulation of a coordination mechanism which will permit the gradual abandonment by the MERCOSUR economies of the use of the exchange rate as a nominal anchor, with the aim of avoiding excessive real currency appreciations (or devaluations) which are not justified by the basic macroeconomic variables and jeopardize the consolidation of a true regional-scale internal market. At present, the main difficulties standing in the way of effective macroeconomic coordination in MERCOSUR are raised by Argentina, because of the two typical

³⁵ Within a simple monetary model of ranges of variation, it can be shown very simply how restrictions on capital movements help to strengthen stabilization of the exchange rate within the range. At any given point in time, the exchange rate depends in that case on the fundamental variables (summarized by variable x) and the expected rate of variation of the exchange rate. The exchange rate may be interpreted as the discounted present value of future levels of the fundamental variables. With perfect capital mobility, we have the following expression (using the same notation as in the Appendix):

$$S_t = \frac{1}{n} E_t \int_t^{\infty} x_{\tau} \cdot e^{-\left(\frac{1}{n}\right)(\tau-t)} d\tau$$

where $x = m + v$ when $v = -m^* - h(y - y^*)$ expresses the relevant velocity of money for this economy. By differentiating this equation with respect to time (t), we obtain the expression governing the behaviour of the exchange rate: $\dot{s} = x + n \cdot E [ds/dt]$. With imperfect capital mobility, the arbitrage condition for the interest rate is: $\kappa (i - i^*) = E(ds/dt)$, where $0 \leq \kappa \leq 1$ (without capital mobility, $\kappa = 0$; with perfect capital mobility, $\kappa = 1$). In this case, the exchange rate will be determined by the equation $\dot{s} = x + (n/\kappa) \cdot E [ds/dt]$.

³⁶ The application of legislation similar to that of Chile in MERCOSUR as a whole would mean that in order to procure international finance (through loans or capital issues) it would be necessary first of all to obtain the authorization of the respective member country's Central Bank and pay a 4% tax. In addition, it would be necessary to make a non-interest-bearing deposit equal to 30% of the amount of finance obtained for one year in the Central Bank, or, alternatively, pay the Central Bank interest at the rate of 4% over LIBOR for one year on 30% of the loan (even if the loan was for less than one year).

³⁷ The literature on balance of payments crises and speculative attacks is based on this idea. See, for example, Flood and Mussa (1994).

³⁸ As Kindleberger (1988, pp. 201 and 207) asserts in an excellent study, "most rules need exceptions in difficult situations an attitude of passive conformity with the spirit of the rules is one part of (economic) responsibility, but the capacity to take action to apply and adapt the rules to new circumstances is the other – and most active – part of that responsibility".

features of the functioning of a quasi currency board system: its incapacity to act as a lender of last resort, and the procyclical bias it gives to the real economy.

With respect to the first of these points, it is essential that Central Banks should be able to act as lenders of last resort in order to ensure that macroeconomic coordination can survive the vicissitudes of a financial crisis (especially in view of the relative weakness of the Argentine and Brazilian banking systems). If a quasi currency board operates "according to the rules", however, it cannot carry out this essential function of a Central Bank, because any departure from the convertibility rule would lead to a rapid loss of credibility. Indeed, in crisis situations quasi currency boards tend to become the debtors of last resort of the system.

Secondly, the essentially procyclical nature of this mechanism, while heightening social demands for macroeconomic coordination in order to help alleviate the economic cycle, deprives the currency board of the capacity to do away with the undesirable intermittent "stop and go" effects that have traditionally been typical of the evolution of developing economies. Major changes in the Argentine monetary sys-

tem might not seem appropriate at a time when economic recovery seems just around the corner ("we've got problems, but we're on the right track", to paraphrase the words of President Carlos Menem) and abundant foreign investments are once again being offered to the emerging economies,³⁹ but it must be borne in mind that it would be very difficult to do away with this mechanism in the climate of uncertainty that usually accompanies recessionary phases, because it is then that defence of the nominal anchor becomes an absolute policy priority.

With regard to the strategy that could be adopted for abandoning this mechanism in the case of Argentina, it seems reasonable to advocate an orderly transition which preserves certain elements of the present quasi currency board in order to minimize the repercussions of the change of system on the financial markets but nevertheless permits the Central Bank to act as a lender of last resort and to manage the exchange rate in line with the exchange rate agreement. The precedent of Singapore (which, it would appear, is also being followed in the recent evolution of Hong Kong) might be a useful example in this respect.⁴⁰

(Original: Spanish)

³⁹ The Argentine economy registered an average real growth rate of 7.7% per year over the 1991-1994 period but then underwent a severe deflationary adjustment which led to a negative growth rate of the product of -4.4% in 1995, with a spectacular increase in unemployment (to three times its historical levels) which is being palliated with infinitesimal levels of social welfare benefits. In 1996 there was a moderate recovery (the GDP grew by close to 4%), but this had hardly any positive effects on unemployment. At the same time, the rate of saving in Argentina was around 15% of GDP: below the Latin American average of 18% and far below the rates attained in Chile (nearly 28%) and East Asia (33%).

⁴⁰ See, for example, Osband and Villanueva (1993) and Schwartz (1993). The Singapore monetary authority, after abandoning the fixed exchange rate system, has gradually recovered the essential powers of a Central Bank (capacity to effect open market operations, to sterilize reserves, etc.), while continuing to back 100% of the monetary base with the country's foreign reserves.

Appendix

The relative advantages of macroeconomic coordination may be analysed in summary form on the basis of a simple two-country logarithmic-linear model. The equations corresponding to country A are perfectly symmetrical with those of country B (as reflected in the existence of similar structural parameters). The following equations describe the structure of the economy:

$$m - p = h y - n i \quad [\text{A.1}]$$

$$y = \delta e - \sigma i + \mu \quad [\text{A.2}]$$

$$i = i^* \quad [\text{A.3}]$$

$$e = s + p^* - p \quad [\text{A.4}]$$

$$q = \alpha p + (1 - \alpha)(s + p^*) \quad [\text{A.5}]$$

$$p = p^* = p_0 > 0 \quad [\text{A.6}]$$

The variables and parameters of the model are defined below (the variables of country B are distinguished by an asterisk, and all the variables, with the exception of interest rates, are expressed as percentage deviations from their long-term equilibrium levels or, alternatively, as rates of variation):

- m = money stock
- p = price index of domestic production
- p_0 = initial price disturbance
- y = real income
- i = nominal interest rate level
- s = nominal exchange rate
- e = real exchange rate
- μ = fiscal disturbance
- q = consumer price index
- h = income elasticity of demand for money
- n = half-elasticity of demand for money with respect to interest rate
- δ = elasticity of demand for goods with respect to real exchange rate
- σ = half-elasticity of demand for goods with respect to interest rate
- α = weight of domestic production in consumer price index.

Equation [A.1] represents the money market equilibrium. Equation [A.2] is the equilibrium condition in the market for goods and services. Equation [A.3] represents the arbitrage condition for interest rates, assuming static expectations. Equation [A.4] defines the (logarithm of the) real exchange rate. Equation [A.5] shows the percentage change in the consumer

price index as a function of the rates of change of the price of imported products and the price of domestic production. Equation [A.6] introduces the assumption that the rate of change of the goods produced in each country is given (and, for reasons of symmetry, is the same in both countries).

The structural equations [A.1] to [A.6] for both countries can be solved to give reduced equations for $\{y, q\}$ as a function of the two policy variables $\{m, m^*\}$ and the symmetrical and exogenous price disturbance (p_0). By simple manipulation of terms we obtain the following expressions:

$$y = am - bm^* - (a - b)p_0 \quad [\text{A.7}]$$

$$y^* = am^* - bm - (a - b)p_0 \quad [\text{A.8}]$$

$$s = (1/2\delta h)(m - m^*) \quad [\text{A.9}]$$

$$q = p_0 + \gamma (m - m^*) \quad [\text{A.10}]$$

$$q^* = p_0 - \gamma (m - m^*) \quad [\text{A.11}]$$

where

$$b = \frac{n}{2h(n + h\sigma)} > 0, \quad a = \frac{n + 2h\sigma}{2h(n + h\sigma)} > 0,$$

$$a - b = \frac{\sigma}{n + h\sigma} > 0, \quad \gamma = \frac{1 - \alpha}{2h\sigma} > 0$$

Each government attempts to minimize the deviation of production and inflation from the desired equilibrium levels (normalized to zero). The existence of fiscal rigidities means that $\mu = 0$ in equation [A.2], so that monetary policy is the only policy instrument. The loss function in the case of country A is:

$$\pi = y^2 + \beta q^2 \quad [\text{A.12}]$$

where the parameter β reflects the relative importance attached by the government to q .⁴¹

Let us first consider the non-cooperative Cournot-Nash equilibrium. The reaction function in the case of country A is:

⁴¹ The loss function is assumed to be symmetrical for both increases and decreases in the variables $\{y, q\}$, so that changes in these variables in either direction cause disutilities. In order to simplify the exposition, we will assume that the loss functions of both countries are perfectly symmetrical (so that $\beta = \beta^*$) and stable over time.

$$m = Am^* + Bp_0 \quad [A.13]$$

$$A = \frac{ab + \beta\gamma^2}{a^2 + \beta\gamma^2} < 1, \text{ since } a > b,$$

where

$$B = \frac{A(a-b) - \beta\gamma}{a^2 + \beta\gamma^2} > 0, \text{ if } \frac{a(a-b)}{\gamma} > \beta.$$

Likewise, by symmetry, we obtain the reaction function of country B:

$$m^* = Am + Bp_0 \quad [A.14]$$

The Cournot-Nash equilibrium is reached at the point of intersection of the reaction functions, and we thus see that:

$$m = m^* \quad [A.15]$$

Substituting the above expression in the reaction function of country A (equation [A.13]), we obtain the Cournot-Nash equilibrium condition as a function of the structural parameters of the model and of p_0 :

$$m = m^* = \frac{a(a-b) - \beta\gamma}{a(a-b)} p_0 \quad [A.16]$$

Likewise, substituting equation [A.15] in equations [A.7] to [A.11], and taking account of equation [A.16], we arrive at the conclusion that in the equilibrium situation:

$$s = 0 \quad [A.17]$$

$$q = q^* = p_0 \quad [A.18]$$

$$y = y^* = (-\beta\gamma/a)p_0 < 0 \quad [A.19]$$

Consequently, in response to the initial price disturbance (p_0) the monetary policy of both countries is excessively contractive, by increasing interest rates and reducing production below the desired level in each country. It should be noted that the degree of monetary contraction in this non-cooperative equilibrium depends on the relative weight of inflation in the loss function. If this is relatively high (so that $a(a-b)/\gamma < \beta$, and, hence, $m = m^* < s = 0 < p_0$), the reduction in the levels of production will also be greater. In contrast, we see that when $a(a-b)/\gamma > \beta$, then $p_0 > m = m^* > s = 0$.

In the cooperative equilibrium, the joint monetary committee resolves the following programme:

$$\text{Min. } (\pi + \pi^*) = (y^2 + \beta q^2) + (y^{*2} + \beta q^{*2}), \quad [A.20]$$

$$[m, m^*]$$

subject to:

$$m = m^*$$

$$q = q^* = p_0$$

$$y = y^* = (a-b)(m-p_0)$$

The solution obtained is as follows:

$$m = m^* = p_0 \quad [A.21]$$

$$y = y^* = 0 \quad [A.22]$$

Bibliography

- Bayoumi, T. and B. Eichengreen (1994): One money or many? Analyzing the prospects for monetary unification in various parts of the world, *Princeton Studies in International Finance*, No. 76, Princeton, NJ, Princeton University Press.
- Buiter, W. H. (1995): *Macroeconomic Policy During a Transition to Monetary Union*, Discussion Paper No. 261, London, Centre for Economic Performance.
- Buiter, W. H., G. Corsetti and P. Pesenti (1995): *A Center-Periphery Model of Monetary Coordination and Exchange Rate Crisis*, Discussion Paper No. 246, London, Centre for Economic Performance.
- Connolly, M. B. (1995): The uses of a currency board: Argentina: April 1, 1991 to the present, *Note Economiche*, vol. 24, No. 3, Siena, Italy, Banca Monte dei Paschi di Siena.
- Cooper, R. N. (1976): Worldwide regional integration: is there an optimal size of the integrated area?, *Economic Policy in an Interdependent World. Essays in World Economics*, Cambridge, MA, MIT Press.
- Crockett, A. (1989): The role of international institutions in surveillance and policy coordination, in R. C. Bryant and others (eds.), *Macroeconomic Policies in an Interdependent World*, Washington, D. C., International Monetary Fund (IMF).
- Currie, D. (1993): International cooperation in monetary policy: Has it a future?, *The Economic Journal*, vol. 103, No. 416, London, The Royal Economic Society.

- Feldstein, M. (1992): The case against EMU, *The Economist*, vol. 323, No. 7763, London, 13 June.
- Ferrer, A. and R. Lavagna (1992): Mercosur y coordinación de políticas económicas, in M. Bekerman (ed.), *Mercosur. La oportunidad y el desafío*, Buenos Aires, Editorial Legasa.
- Flood, R. and M. Mussa (1994): *Issues concerning nominal anchors for monetary policy*, NBER Working Paper No. 4850, Cambridge, MA, National Bureau of Economic Research, Inc. (NBER).
- Giovannini, A. (1988): *How do fixed-exchange-rate regimes work: The evidence from the gold standard, Bretton Woods and the EMS*, NBER Working Paper No. 2766, Cambridge, MA, NBER.
- Hamada, K. (1976): A strategic analysis of monetary interdependence, *Journal of Political Economy*, vol. 84, No. 4, Chicago, University of Chicago Press, August.
- (1979): Macroeconomic strategy and coordination under alternative exchange rates, in R. Dornbusch and J. A. Frenkel (eds.), *International Economic Policy: Theory and Evidence*, Baltimore, Johns Hopkins University Press.
- Heyman D. (1992): Notes on very high inflation and stabilization, in A. Vercelli and N. Dimitri (eds.), *Macroeconomics. A Survey of Research Strategies*, Oxford, U.K., Oxford University Press.
- Heyman, D. and F. Navajas (1992): *Coordinación de políticas macroeconómicas. Aspectos conceptuales vinculados con el Mercosur*, Documento de trabajo No. 45, LC/BUE/L.127, Buenos Aires, ECLAC Office in Buenos Aires.
- Judy, R. W. (1995): *Currency Boards: An Idea Whose Time has Come?*, Washington, D. C., International Center for Private Enterprise (ICPE).
- Kenen, P. B. (1969): The theory of optimum currency areas: An eclectic view, in R. A. Mundell and A. K. Swoboda (eds.), *Monetary Problems of the International Economy*, Chicago, IL, University of Chicago Press.
- Kindleberger, Ch. P. (1988): Economic Responsibility, in Ch. P. Kindleberger (ed.), *The International Economic Order. Essays on Financial Crisis and International Public Goods*, Cambridge, MA, MIT Press.
- Krugman, P. R. (1988): *Target zones and exchange rate dynamics*, NBER Working Paper No. 2481, Cambridge, MA, NBER, January.
- (1990): Policy problems of a monetary union, in P. De Grauwe and L. Papademos (eds.): *The European Monetary System in the 1990's*, London, Centre for European Policy Studies/Bank of Greece.
- McKibbin, W. J. and J. D. Sachs (1991): *Global Linkages. Macroeconomic Interdependence and Cooperation in the World Economy*, Washington, D. C., The Brookings Institution.
- McKinnon, R. I. (1963): Optimum currency areas. *The American Economic Review*, vol. 53, No. 4, Los Angeles, CA, The American Economic Association.
- Mundell, R. A. (1961): A theory of optimum currency areas. *The American Economic Review*, vol. 51, No. 4, Los Angeles, CA, The American Economic Association.
- Osband, K. and D. Villanueva (1993): *Independent Currency Authorities. An Analytic Primer*, IMF Staff Papers, vol. 40, No. 1, Washington, D. C., IMF.
- Oudiz, G. and J. Sachs (1986): International policy coordination in dynamic models, in W. Buiter and R. Marston (eds.): *International Economic Policy Coordination*, Cambridge, U. K., Cambridge University Press.
- Poole, W. (1970): Optimal choice of monetary policy instruments in a simple stochastic macro model, *Quarterly Journal of Economics*, vol. 84, No. 2, Cambridge, MA, Harvard University, May.
- Quirk, P. J. (1996): *Exchange Rate Regimes as Inflation Anchors*, Washington, D. C., George Washington University, Institute of Brazilian Business and Public Management Issues.
- Rodríguez Prada, G. (1994): La programación económico-financiera en un sistema de *currency board*, *Textos de economía*, vol. 5, No. 1, Florianópolis, Brazil, Universidade Federal de Santa Catarina.
- (1995): La economía de los *currency boards*: pasado y presente, *Economistas*, No. 63, Madrid, Colegio de Economistas de Madrid.
- (1996): El tipo de cambio como ancla nominal, *currency boards* y dolarización, in G. Rodríguez Prada (ed.), *La macroeconomía de los mercados emergentes*, Alcalá de Henares, Ediciones de la Universidad de Alcalá.
- Sachs, J. and A. A. Zini (1996): Brazilian inflation and the Plano Real, *The World Economy*, vol. 19, No. 1, Oxford, U. K.
- Schwartz, A. J. (1993): Currency boards: their past, present and possible future role, *Carnegie Rochester Papers on Public Policy*, vol. 39, Amsterdam, North-Holland Publishing Company.
- Williamson, J. (1993): Exchange rate management, *The Economic Journal*, vol. 103, No. 416, Cambridge, U. K., The Royal Economic Society.
- (1995): *What Role for Currency Boards?*, Washington, D. C., Institute for International Economics (IIE).
- Williamson, J. and M. H. Miller (1987): Targets and Indicators: A Blueprint for the International Coordination of Economic Policy. *Policy Analysis in International Economics*, No. 22, Washington, D. C., IIE.
- Whitman, M. N. (1977): Sustaining the International Economic System, *Essays in International Finance*, No. 121, Princeton, NJ, Princeton University.
- Zarazaga, C. E. (1995): Can currency boards prevent devaluations and financial meltdowns? *The Southwest Economy*, No. 4, Dallas, TX, Federal Reserve Bank of Dallas.