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Exchange Rate Regimes: Is the Bipolar View Correct?

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"…. the choice of appropriate exchange rate regime, which, for economies with access to international capital markets, increasingly means a move away from the middle ground of pegged but adjustable fixed exchange rates towards the two corner regimes of either flexible exchange rates or a fixed exchange rate supported, if necessary, by a commitment to give up altogether an independent monetary policy." Lawrence H. Summers (2000), p. 8.

"[I]ntermediate solutions are more likely to be appropriate for many countries than are corner solutions" – Jeffrey A. Frankel (1999), p. 30.

"Despite their heterogeneity, EMs [Emerging Market countries] tend to share a common characteristic – they appear to be reluctant to let their currencies fluctuate." Guillermo A. Calvo and Carmen M. Reinhart (2000), p. 5.

Each of the major international capital market-related crises since 1994 – Mexico, in 1994, Thailand, Indonesia and Korea in 1997, Russia and Brazil in 1998, and Argentina and Turkey in 2000 – has in some way involved a fixed or pegged exchange rate regime. At the same time, countries that did not have pegged rates – among them South Africa, Israel in 1998, Mexico in 1998, and Turkey in 1998 – avoided crises of the type that afflicted emerging market countries with pegged rates.

Little wonder, then, that policymakers involved in dealing with these crises have warned strongly against the use of pegged rates for countries open to international capital flows. That warning has tended to take the form of advice that intermediate policy

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regimes between hard pegs and floating are not sustainable. This is the bipolar or two-corner solution view, which is the subject of this lecture.

Figure 1 shows the change in the distribution of exchange rate arrangements among IMF members during the 1990s. The specification of exchange rate categories is taken from the IMF's *Annual Report 2000* (pp 141-143), with the assignment of countries to particular categories being based on the IMF staff's view of the *de facto* exchange rate arrangement in place on the relevant date.[2] The group described as "hard pegs" consists of economies with currency boards or those with no separate currency. The "intermediate" group consists of economies with conventional fixed pegs, crawling pegs, horizontal bands, and crawling bands. These will sometimes be referred to as *soft pegs*. The "floating" group consists of economies whose systems are described either as a managed float with no specified central rate, or as independently floating.

The proportion of intermediate arrangements in 1999 was significantly lower than it was in 1991, and there was a corresponding gain over the decade among the hard pegs on one side and more flexible arrangements on the other. Figure 1 provides evidence for the view that countries are moving away from the center. But the argument and its significance need to be refined.

I will argue that proponents of what is now known as the bipolar view – myself included – probably have exaggerated their point for dramatic effect. The right statement is that *for countries open to international capital flows*: (i) pegs are not sustainable unless they are very hard indeed; but (ii) that a wide variety of flexible rate arrangements are possible; and (iii) that it is to be expected that policy in most countries will not be indifferent to exchange rate movements. To put the point graphically, if exchange rate arrangements lie along a line connecting free floating on the left with currency boards,

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Teresa Ter-Minassian for their comments. Views expressed are those of the author, not necessarily of the International Monetary Fund.

[2] As is well known, the authorities' self-descriptions of exchange rate regimes provided in the IMF's *Exchange Arrangements and Exchange Restrictions* publication differ in some cases from the *de facto* arrangements. Several authors, including Ghosh *et al* (1997), Levy-Yeyati and Sturzenegger (2000), and

dollarization[3] or currency union on the right, the intent was not to remove everything but the corners, but rather to pronounce as unsustainable a segment of that line representing a variety of soft pegging exchange rate arrangements.

This formulation accommodates all three of the above positions.[4] For countries open to capital flows, it leaves open a wide range of arrangements running from free floating to a variety of crawling bands with wide ranges, and then very hard pegs sustained by a highly credible policy commitment, notably currency boards and the abandonment of a national currency, but also, exceptionally, less formal arrangements that have been demonstrated to be very hard, as in the Netherlands and Austria pre-EMU. For countries not as yet open to international capital flows, it includes the full gamut of exchange rate arrangements. And by noting that countries are likely to be concerned about the behavior of the exchange rate, it also makes room for the fear of floating argument.

The question that then arises is what is the characteristic of arrangements that are excluded. The answer is: exchange rate systems for countries open to international capital flows, in which the government is viewed as being committed to defending a particular value of the exchange rate, or a narrow range of exchange rates, but has not made the institutional commitments that both constrain and enable monetary policy to be devoted to the sole goal of defending the parity. In essence, the excluded arrangements are fixed, adjustable peg, and narrow band exchange rate systems.

I will start this lecture by focussing on the critical point, that for developed and emerging market countries, adjustable peg exchange rate systems have not proved to be viable for the long term, and should not be expected to be viable. I will then take up a set of other issues: the fear of floating argument, and monetary policy under floating rate

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Masson (2000) have wrestled with this difficulty. There is not as yet a historical time series of *de facto* exchange rate regimes corresponding to the information provided in the *Annual Report 2000*.

[3] I shall use the term dollarization to mean the adoption of a foreign currency as legal tender, and the essential abandonment of the use of a national currency. This could refer not only to the use of the dollar, but also for instance to the use of the euro, though the term euro-ization is not yet common.

regimes; the nature of the hard peg arrangements that may be expected to be viable; the use of the exchange rate as a nominal anchor in disinflation; the behavior of exchange rates among the big three; and what can be said about exchange rate arrangements for developing countries not open to international capital flows.

I. Exchange Rate Regimes for Developed and Emerging Market Countries

The fresh thinking about exchange rate regimes that has followed the crises of the last seven years centers on exchange rate systems for countries integrated or integrating into global capital markets. To examine changes in the exchange rate systems of these countries, we need to define them. Rather than start by trying to define a set of countries with capital mobility, I will draw on existing definitions of country groupings.

Two groups of countries can be considered as integrated or integrating into international capital markets: the advanced countries, and emerging market countries. For the advanced countries, I draw on the MSCI[5] list of "Developed Market" economies: this contains 22 economies, listed in Table 1.[6] The emerging market group is defined as the 33 economies contained in the union of the 17 economies that are in the EMBI+ index, and the 27 economies that are in the MSCI emerging markets index.[7] These are listed in Table 2. Tables 1 and 2 also list exchange rate arrangements in place at the end of 1999. [8]

Of the 22 developed market economies in Table 1, all of which have complete or nearly complete capital mobility, 10 are in EMU and are listed as having no separate

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[4] Mussa *et al* (2000) present a comprehensive and balanced analysis of exchange rate systems; see also Calvo and Reinhart (2000), Edwards (2000), Frankel (1999), and Summers (2000).

[5] Morgan Stanley Capital International. For further information on the MSCI list of countries, see Appendix I.

[6] The MSCI list of developed market economies excludes six that are included in the IMF listing of "Advanced Economies": Greece, Iceland, Israel, Korea, Luxembourg, and Taiwan POC. Except for Iceland and Luxembourg, these are included in the emerging market economies listed in Table 1.

[7] EMBI+ stands for Emerging Markets Bond Index Plus, which is from J.P. Morgan, and which tracks total returns for traded external debt instruments in the emerging markets. Appendix I reproduces MSCI's description of the criteria it uses in categorizing economies as emerging.

[8] The description for Taiwan POC, which is not listed in the original source, is provided by the author.

legal tender,[9] Hong Kong SAR has a currency board arrangement, Denmark is in the ERM and thus pegging within a band, and the remaining 10 have floating rates. Norway and Singapore are described as having managed floats, while the other 8 countries are described as "independently floating". *Thus, among the developed economies listed in Table 1, and depending on how the EMU countries are regarded, half the economies have established very hard pegs, and nearly half the countries float*.

A decade ago, Table 1 would have looked quite similar for the non-EMU countries, but the EMU countries would have been listed as having a horizontal band exchange rate arrangement – in other words, an adjustable peg. For a short time the United Kingdom would have been added to that group. Part of the belief in the non-robustness of adjustable pegs derives from the EMS crises of 1992 and 1993, and part of the empirical support for the view that countries will move away from that arrangement is based on the creation of the EMU. The adjustable peg system within the EMS was seen as a stepping stone towards the goal of monetary union, implying a considerable degree of political commitment on the part of the system's members. Even so, it was not possible to hold the adjustable pegs within the EMS after the rise in German interest rates necessitated by unification had imposed a domestically inappropriate monetary policy on the other EMS members.

The 33 emerging market economies listed in Table 2 are grouped by exchange rate arrangement in Table 3. The largest group of countries (13) consists of those described as independently floating. Six of those countries (Indonesia, Korea, Thailand, Russia, Brazil and Mexico) became floaters after the major crises of the last decade, while Colombia joined the group in 1999. This is the set of transitions that has most influenced the view that soft pegs are not viable for sustained periods – and it includes many of the largest emerging market economies. Three economies are described as having managed floats. Thus, in terms of the categories used in this paper, half the emerging market group of countries has some form of floating rate arrangement. While

[9] In practice the national currencies will continue as legal tender within each country until the first half of 2002.

there is room for judgment over whether these countries should be listed in the "managed" or "independent" floating group, there should be no dispute that all 16 belong in one or other of those categories. Furthermore, there has during the last decade been a significant shift among these emerging market economies from various forms of pegged arrangements towards floating.

Of the remaining 17 countries listed in Table 3, at the end of 1999 three either had currency boards or no independent legal tender; Ecuador and Greece have subsequently joined this group, Ecuador (an independent floater in December 1999) by dollarizing and Greece by joining EMU. There were thus three very hard pegs at the end of 1999, and there are now five. Seven countries had fixed or adjustable pegs at the end of 1999. Turkey had just instituted a crawling peg regime, which it intends to broaden into a more flexible arrangement. Four (Hungary, Israel, Poland, and Venezuela) had crawling bands, which in the cases of both Israel and Poland have been widening over the years, to the point of considerable flexibility.

Looking back, Figure 2 (based on data in Tables 3 and 4) shows the change in the distribution of exchange rate arrangements among the 33 emerging market economies between 1991 and 1999. The number of intermediate arrangements has declined, and the number of floaters has risen.

Looking ahead from the end of 1999, Greece has joined EMU, and Hungary and Poland are likely to. Israel is likely to move to an independently floating rate regime; Turkey is scheduled to move in that direction too, with possible membership in EMU a more distant prospect. Thus within this group of emerging market countries, there has been and will be a shift away from intermediate, soft peg, regimes, towards both greater fixity and greater flexibility.

The asterisks in Table 3 indicate the 16 larger emerging market economies, with a weight of two percent or more in either the EMBI+ or MSCI emerging market index. Half of these larger emerging market economies are floaters. Three have hard pegs, a

number that by now has risen to four. Two have crawling bands. Only two of the countries in this group of larger emerging market economies have fixed pegs (China and Malaysia).

Figure 3 summarizes the change in the distribution of exchange rate arrangements for the developed and emerging market countries taken together. The middle has hollowed out, and the hard peg and floating categories have expanded. Almost all the expansion on the hard peg side results from the creation of EMU.

It is thus reasonable to say that economies open to international capital flows have been and are in the process of moving away from adjustable peg exchange rate systems, some towards harder pegs, more towards systems with greater exchange rate flexibility. But why? John Williamson (2000) suggests it is because of pressure from the IMF and U.S. Treasury. However, *the real reason is that soft peg systems have not proved viable over any lengthy period, especially for countries integrated or integrating into the international capital markets.* The fact that pegged exchange rates have a short life expectancy for any type of economy was emphasized by Obstfeld and Rogoff (1995). But the collapse of the Bretton Woods system, the repeated EMS crises in the eighties and in 1992 and 1993, and the emerging market crises of 1994-2000 drive home the lesson that this problem is especially intense for countries with open capital accounts.

In several countries, extensive damage has been caused by the collapses of pegged rate regimes that lasted for some time, and enjoyed some credibility. The belief that the exchange rate will not change removes the need to hedge, and reduces perceptions of the risk of borrowing in foreign currencies. This makes any crisis that does strike exceptionally damaging in its effects on banking systems, corporations, and government finances. In principle it should be possible to reduce the potential damage through prudential regulations that limit the open foreign exchange positions of banks, but it is harder to control corporate sector financing through such regulations, and it is in

any case probably unwise to reply to too great an extent on supervision to prevent transactions that would otherwise be highly profitable.[10]

The impossible trinity – of a fixed exchange rate, capital mobility, and a monetary policy dedicated to domestic goals – is surely the major part of the explanation for the non-viability of soft pegs. That leaves open two questions: first, the political economy question of why domestic monetary policy cannot in these cases credibly be directed solely towards maintenance of the fixed exchange rate; and second, the question of whether to use capital controls to limit capital mobility.

Despite exceptions, such as pre-EMU Netherlands' guilder peg to the Deutsche Mark, the general answer to the first question must be that if the option of changing the exchange rate is open to the political system, at a time when the short-run benefits of doing so appear to outweigh the costs, that option is likely to be chosen. Both foreign and domestic economic shocks (including delays or other policy mistakes) may move the equilibrium nominal exchange rate away from the official rate. If the official rate is overvalued, the defense typically requires higher interest rates and fiscal contraction to reduce the current account deficit. So long as the extent of the disequilibrium is small, and the requisite policy actions are taken in time, they can be expected to stabilize the situation. But if the disequilibrium has become large, either because policy was slow to react or because the country has been hit by a strong and long-lasting shock, the required policy actions may not be viable – either for political reasons or because of the damage they will inflict on the banking system or aggregate demand. Under those circumstances an attack on the exchange rate is likely to succeed.

Why not impose capital controls to protect the exchange rate from the effects of unwanted capital flows?[11] Among the sixteen larger emerging market economies identified in Table 4, China successfully maintained its pegged exchange rate through the Asian crisis with the assistance of capital controls, providing an important element of

[10] I return to a closely related point below in discussing the potential use of capital controls.
[11] This question is examined by Edwards (2000), Mussa *et al* (2000) and Williamson (2000); for more detailed discussion of experience with capital controls, see Ariyoshi *et al* (2000).

stability in the regional and global economies. Malaysia's imposition of capital controls and pegging of the exchange rate in September 1998 has attracted more attention, though evaluation of the effects of the controls has been difficult, since they were imposed after most of the turbulence of the first part of the Asian crisis was over, that is after most of the capital that wanted to leave had done so, and when regional exchange rates were beginning to appreciate.[12]

In discussing capital controls, I shall assume that countries will in the course of their development want to liberalize the capital account and integrate into global capital markets. This view is based in part on the fact that the most advanced economies all have open capital accounts; it is also based on the view that the potential benefits of integration into the global capital markets – including the benefits obtained by allowing foreign competition in the financial sector – outweigh the costs.[13]

It is necessary to distinguish between controls on outflows and controls on inflows. For controls on capital outflows to succeed, they need to be quite extensive. As a country develops, these controls are likely to become both more distorting and less effective. They also cannot prevent a devaluation if domestic policies are fundamentally inconsistent with maintenance of the exchange rate.

Where controls on capital outflows are reasonably effective, they would need to be removed gradually, at a time when the exchange rate is not under pressure,[14] and as the necessary infrastructure – in the form of strong and efficient domestic financial institutions and markets, a market-based monetary policy, an effective foreign exchange market, and the information base necessary for the markets to operate efficiently – is put in place. Unless the country intends to move to a hard peg, it would be desirable to begin allowing some flexibility of exchange rates as the controls are gradually eased.

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[12] See Kaplan and Rodrik (2000) for a relatively positive appraisal of the Malaysian controls.
[13] The argument is developed at greater length in Fischer (1998). The point has been much disputed, including by Jagdish Bhagwati (1998).
[14] The removal of controls on outflows sometimes results in a capital inflow, a result of either foreigners and/or domestic residents bringing capital into the country in light of the greater assurance it can be removed when desired.

Prudential controls that have a similar effect to some capital controls, for instance limits on the open foreign exchange positions that domestic institutions can take, would also be put in place as direct controls are removed.

Some countries have attempted to impose controls on outflows once a foreign exchange crisis is already under way. It is generally believed that this use of controls has been ineffective.[15] It has also to be considered that the imposition of controls for this purpose in a crisis is likely to have a longer-term effect on the country's access to international capital.

The IMF has cautiously supported the use of market-based capital inflow controls, Chilean style. These could be helpful for a country seeking to avoid the difficulties posed for domestic policy by capital inflows. The typical instance occurs when a country is trying to reduce inflation using an exchange rate anchor, and for anti-inflationary purposes needs interest rates higher than those implied by the sum of the foreign interest rate and the expected rate of currency depreciation. A tax on capital inflows can in principle help maintain a wedge between the two interest rates. In addition, by taxing short-term capital inflows more than longer-term inflows, capital inflow controls can also in principle influence the composition of inflows.

Evidence from the Chilean experience suggests that controls were for a time successful in allowing some monetary policy independence, and also in shifting the composition of capital inflows towards the long end. Empirical evidence presented by Edwards (2000) suggests that the Chilean controls lost their effectiveness after 1998. They have recently been removed.

In sum, controls on capital outflows can be used to help maintain a pegged exchange rate, given domestic policies consistent with maintenance of the exchange rate. However such controls tend to lose their effectiveness and efficiency over time. Capital inflow controls may for a time be useful in enabling a country to run an independent

[15] See Ariyoshi *et al* (2000), pp 18-29, and Edwards (1999), pp 68-71.

monetary policy when the exchange rate is softly pegged, and may influence the composition of capital inflows, but their long-term effectiveness to those ends is doubtful.

II. Fear of Floating

Calvo and Reinhart (2000) and others have emphasized that many countries that claim to have floating exchange rates do not allow the exchange rate to float freely, but rather deploy interest rate and intervention policy to affect its behavior. From this valid point they appear to draw two conclusions: first, that the claim that countries are moving away from adjustable peg exchange rate systems is incorrect; and second, that countries for good reasons hanker after fixed exchange rates, which they can best obtain through hard pegs.

It is hardly a surprise that most policymakers in most countries are concerned with the behavior of the nominal and the real exchange rates. Changes in the nominal exchange rate are likely to affect the inflation rate. Changes in the real exchange rate may have a powerful effect on the wealth of domestic citizens, and on the allocation of resources, which may have not only economic but also – especially in the case of appreciations – political effects.

Thus monetary policy in countries with floating exchange rate systems is likely to respond to movements of the exchange rate. While this is rarely if ever the case for the United States, it is more so among other G-7 countries, and for smaller emerging market economies. In Canada, the use of a monetary conditions index to guide monetary policy, based on movements in both the exchange rate and the interest rate, formalized the impact of exchange rate movements on monetary policy. In countries that pursue an inflation targeting approach to monetary policy, movements in the exchange rate will be taken into account in setting monetary policy, because the exchange rate affects price behavior. Floaters may also on occasion intervene in the exchange markets by buying or selling foreign exchange.

Once a country begins to float, it has to decide on the monetary policy it will follow. Many of the recent converts (several of whom were forcibly converted) have opted for inflation targeting, and that system seems to be working well, and has much to commend it. As already noted, in that framework exchange rate movements are automatically taken into account to the extent that they are expected to affect future inflation. This will generally produce a pattern of monetary tightening when the exchange rate depreciates, a response similar, but not necessarily of the same magnitude, to that which would be undertaken if the exchange rate were being targeted directly.

Why should monetary policy not target both the nominal exchange rate and the inflation rate? Certainly, the pressures on central banks at times when the real exchange rate is appreciated and the current account is in large deficit force it to confront this issue. The first answer must be that monetary policy fundamentally affects the nominal and not the real exchange rate, and that if any part of macroeconomic policy should take care of the current account, it is fiscal policy.

But there is an unresolved issue about whether monetary policy in a floating rate system should be used in the short run to try to affect the exchange rate. In many respects, the issue is similar to that of how monetary policy in an inflation targeting framework should respond to movements in output and unemployment. Although it has not received much empirical attention, there is almost certainly a short-run tradeoff between the real exchange rate and inflation, analogous to the Phillips curve.[16] This is not the place to pursue the issue, but just as answers have been developed to how to deal with the short-run Phillips curve in an inflation-targeting framework, so it remains necessary to answer the question of how in such a framework to deal with the short-run tradeoff between the real exchange rate and inflation.

[16] Cushman and Zha (1997) contain VARs from which the implied tradeoff can be calculated in the Canadian case. See also Calvo, Reinhart, and Végh (1995).

Beyond the use of interest rates, some countries intervene directly from time to time in the foreign exchange markets to try to stabilize the exchange rate. So long as they are not perceived as trying to defend a particular rate, such interventions can be useful. This is one of the remaining areas in which central bankers place considerable emphasis on the touch and feel of the market, and where systematic policy rules are not yet common; there is of course also controversy over whether intervention works at all – and even if it does, whether it is wise to use it. The Banco de Mexico has developed a method of more or less automatic intervention designed to reduce day to day movements in exchange rates, which could provide lessons in this area.

Recognizing the difficulty for an emerging market country of defending a narrow range of exchange rates, John Williamson (2000) proposes alternative regimes. He calls these BBC arrangements: basket, band, and crawl. He also recommends that countries if necessary allow the exchange rate to move temporarily outside the band, so that they do not provide speculators with one-way bets that lead to excessive reserve losses. In these circumstances, the band is serving as a weak nominal anchor for the exchange rate, but it is not at all clear why such a system is preferable to an inflation targeting framework. Possibly the band could be thought of as a supplement to an inflation targeting framework, but it would need to be demonstrated what if any benefits that brings. One possibility – which is not however very plausible – is that by committing weakly to some range of exchange rates, the authorities make it more likely that fiscal policy will be brought into play if the real exchange rate moves too far from equilibrium

III. Viable Hard Pegs

At the end of 1999, 45 of the IMF's then-182 members had hard peg exchange rate systems, either with no independent legal tender, or in a currency board. Except for the 11 countries in EMU, all of the 37 economies with no independent legal tender were small. But the exception of EMU is a very big one. Argentina and Hong Kong SAR are the biggest economies with currency boards. Since the end of 1999, Ecuador and El

Salvador have dollarized, so that over a quarter of the IMF's now 183 members have very hard pegs; the proportion in terms of GDP is similar.

At the end of 1990, EMU did not exist, and there were only three currency board economies. The appraisal of the performance of currency boards, once regarded as a historical curiosity, has undoubtedly changed, as a result of several factors: the tireless proselytizing by Steve Hanke and others[17], examination of their historical record, and their performance in a number of economies, including Hong Kong SAR and Argentina, but also the transition economies of Estonia, Lithuania, Bulgaria, and Bosnia-Herzegovina.

Ghosh, Gulde, and Wolf (2000, p. 270) provide a balanced summary:

> First, the historical track record of currency boards is sterling … Countries that did exit ... did so mainly for political, rather than economic reasons, and such exits were usually uneventful. … Second, modern currency boards have often been instituted to gain credibility following a period of high or hyperinflation, and in this regard have been remarkably successful. Countries with currency boards experienced lower inflation and higher (if more volatile) GDP growth compared to both floating regimes and simple pegs. … The GDP growth effect is significant, but may simply reflect a rebound from depressed levels. Third, … the successful introduction of a currency board … [is] … far from trivial … Moreover, there are thorny issues, as yet untested, regarding possible exits from a currency board …

The strength of the currency board arrangement, the virtual removal of the nominal exchange rate as a means of adjustment,[18] is also its principal weakness, for adjustment to an external or internal shock via differential inflation is slower than that via the nominal exchange rate. This difficulty is evident now in Argentina, but the adjustment *is* taking place as domestic prices and domestic costs decline relative to foreign prices and costs.

It is difficult to make a general *a priori* evaluation of the benefits and costs of the constraints imposed by the commitment to a currency board. The record shows that for a

[17] See for instance, Hanke and Schuler (1994).
[18] Note though that the CFA franc was successfully devalued in 1994.

country with a history of extreme monetary disorder, the introduction of a currency board is a means of obtaining credibility for monetary policy more rapidly and at lower cost than appears possible any other way. And for a country like Argentina, with a very long and unhappy inflationary history, the society may well be willing to sustain the occasional short-run costs of doing without the exchange rate as a means of adjustment, just as the memory of the German hyperinflation has colored German attitudes to inflation ever since.

The extensive discussion pre-EMU of how member countries would adjust to shocks emphasized wage and price flexibility, the mobility of factors of production, including labor and capital, and fiscal compensation. A currency board country is unlikely to have access to fiscal compensatory measures from abroad, and nor is its labor likely to be as mobile internationally as that in EMU will be – but we should not exaggerate the role of labor mobility as a means of short-run adjustment to shocks even in large national economies. For such a country, the emphasis then has to be on internal labor and capital mobility, and wage and price flexibility. Fiscal policy can play a counter-cyclical role provided the fiscal situation is strong enough in normal times for fiscal easing during a recession not to raise any questions about the long-term fiscal sustainability – hence the logic of the Maastricht criteria.

Policies to this end – to encourage internal factor mobility, wage and price flexibility, and fiscal prudence in normal times – are entirely possible, and can help ensure the sustainability of a currency board over time. Such policies are of course desirable in *any* economy,[19] but the need for them is greater if the exchange rate is not available as a tool of adjustment.

The absence of a lender-of-last resort in a currency board system is frequently cited as one of its major disadvantages. The circumstance envisaged by the classic argument for lender of last resort – a pure panic-based run on banks into currency – is rare. As

[19] This ignores the important question of whether downward wage or price inflexibility might not be desirable as a means of preventing real interest rates from becoming too high.

Goodhart and Schoenmaker (1995) have shown, most often financial crises have a real basis, and take real resources to resolve. One way or another,[20] these resources come from the fiscal authority. The absence of a central bank capable of acting as lender of last resort can be compensated for by the creation, typically with fiscal resources, of a banking sector stabilization fund (as has been done in Bulgaria), by strengthening financial sector supervision and prudential controls, by allowing foreign banks to operate in the economy, and by lining up contingency credits for the banking system.

The discussion so far has implicitly centered on current account and goods and factor market adjustment. Those who strongly favor hard pegs, such as Calvo and Reinhart (2000) or Eichengreen and Hausmann (2000) tend to focus on the capital account, and on asset markets. Their argument is that with respect to the asset markets, a country obtains essentially no benefit – seigniorage aside – from exchange rate flexibility. Given this, they argue for going even beyond currency boards, to dollarization and perhaps in the longer run to wider currency unions. The doctrine of original sin, that emerging market countries cannot borrow abroad in their own currencies contributes to the argument.

It is clear that if a country intends never to use the exchange rate as a mechanism of adjustment, then retaining it is counter-productive, again seigniorage aside. Hence the argument for dollarization relative to a currency board must turn on an appraisal of the gains from dollarization that would be obtained in the capital markets, for example in the reduction in spreads and the strengthening of the financial system, versus seigniorage costs and the value of the option of changing the exchange rate *in extremis* by retaining a national currency. The balance of the argument would be tilted if a politically acceptable means could be found of transferring seigniorage to dollarizing countries; the Mack bill in the previous Congress would have done that, suggesting that at least in the case of the dollar, some means of transferring seigniorage from the use of the dollar could eventually become politically feasible. Such arrangements are in place in the Rand area.

[20] Even if resources are put into the financial system by the central bank, the real resource costs of such transfers will be reflected in a diminished stream of profits remitted from the central bank to the Treasury.

Within the last twelve months, both Ecuador and El Salvador have dollarized, but under very different circumstances. Ecuador's decision was essentially one of desparation;[21] El Salvador's was based on careful consideration. Although much work remains to be done (particularly in the banking sector) to ensure its longer-term success, the Ecuadorian case provides much food for thought about what it takes for dollarization to succeed, for it was implemented without many of what were thought of as the prerequisites for success, such as a strong banking system, being in place.

The conclusion is that hard peg systems are more attractive, particularly viewed from the asset markets, than had been thought some years ago. For a small economy, heavily dependent in its trade and capital account transactions on a particular large economy, it *may* well make sense to adopt the currency of that country, particularly if provision can be made for the transfer of seigniorage. While the requirements for the effective operation of such a system, in terms of the strength of the financial system and fiscal soundness, are demanding, meeting those requirements is good for the economy in any case. But even in these circumstances, careful consideration needs to be given to the nature of the shocks affecting the economy, for Canadian policymakers regard their country as benefitting from the shock-absorber role of the floating exchange rate with the U.S. dollar.

It is reasonable to believe, as EMU expands, and as other economies reconsider the costs and benefits of maintaining a national currency – and to be sure there are benefits, in terms of adjustment to current account shocks – that more countries will adopt very hard pegs, and that there will in the future be fewer national currencies.

IV. The Exchange Rate as a Nominal Anchor for Disinflation

The benefits and risks of using the exchange rate as a nominal anchor to disinflate from triple digit inflation, as well as the real dynamics associated with such stabilizations,

[21] See Fischer (2000) for an informal account.

have been extensively studied.[22] There are few instances in which a successful disinflation from triple digit inflation has taken place without the use of an exchange rate anchor – possibly a crawling peg, particularly in countries that have suffered from chronic monetary instability.

Unless the disinflating country adopts a hard peg, it has to consider the problem of an exit strategy[23] from its pegged arrangement. Of the eleven major exchange-rate based stabilizations since the late 1980s studied in Mussa *et al* (2000), four (Argentina, 1991; Estonia, 1992; Lithuania, 1994; and Bulgaria, 1997) entered currency boards and disinflated successfully. The other eight countries (and Israel, 1985 could be added to this sample) generally either undertook step devaluations, or introduced crawling bands, which in many cases have widened over time. The disinflations of three countries. (Mexico, 1994; Russia, 1998; and Brazil, 1999) ended in a currency crash, though in each case low inflation was preserved or rapidly regained.

The IMF's study of exit strategies (Eichengreen *et al* ,1998) showed that exit is best undertaken when the currency is strong, something which is quite likely to happen as the stabilization gains credibility, and capital inflows expand. This was the pattern for instance in Poland and Israel, where the band was widened as pressure for appreciation mounted. However the political economy of moving away from a peg, even in this case, is complicated: when the currency is strong, the authorities generally see no reason to move off the peg; when it is weak, they argue that devaluation or a widening of the band under pressure would be counterproductive. And the longer the peg continues, the more the dangers associated with soft pegs grow. In some cases in which disinflating countries' currencies crashed, the IMF had been pushing unsuccessfully for greater exchange rate flexibility.

The need to move away from a soft peg is one of the reasons an exit mechanism was built into the Turkish stabilization and reform program that began in December,

[22] For a summary, see Appendix III, pp 44-47 of Mussa *et al* (2000); see also Calvo and Végh (1999).
[23] See Eichengreen *et al*, 1998.

1999. The intention is that a band around the crawling peg will begin broadening in the middle of this year, and continue broadening through the end of 2002. The recent difficulties in Turkey relate more to banking sector problems, and the failure to undertake corrective fiscal actions when the current account widened, than to the design of the exchange rate arrangement, and corrective measures in both these regards have been agreed and are being implemented.

V. Big Three Exchange Rates

The remarkable instability of exchange rates among the major currencies is a perennial topic of concern and discussion. Movements in exchange rates among the big three can create difficulties for other countries, particularly for those that peg to a particular currency. Thus the exports of East Asian countries were adversely affected by the appreciation of the dollar that began in 1995, and the strengthening of the dollar was also a factor in the difficulties faced by Argentina and Turkey in 2000.

There have been frequent proposals for target zones among the three major currencies. If the target zones were to be narrow, monetary policy in each currency area would have to be dedicated to maintenance of the exchange rate commitment. Even if that were possible, it is clear that there is no political support for such commitments, nor is there a persuasive case for them. But given the extent of exchange rate movements among the major currencies, even wide target zones could be stabilizing.

In practice, something akin to such a system appears to operate, informally and loosely. When exchange rates get far out of line with fundamentals, two or three of the big three agree to intervene in the currency markets. This happened in mid-1995 when the yen-dollar exchange rate reached 80, implying a yen that was significantly appreciated relative to estimates of its equilibrium value, and in the fall of 2000, when the euro was significantly depreciated relative to its estimated equilibrium value.[24]

[24] For the IMF's methodology for estimating equilibrium exchange rates, see Isard and Faruqee (1998). These estimates come with a wide confidence interval, but from time to time discrepancies between actual and estimated equilibrium exchange rates can be clearly identified. Several private sector financial

This informal system differs from a formal target zone system in three important ways. First, there are no preannounced target zones, and so no commitment to intervene at any particular level of exchange rates. This removes the possibility of one-way bets for speculators, but of course also removes the certainty about future exchange rates that a credible target zone system would provide – if such a system were possible. Second, the informal system operates more through coordinated exchange market interventions than coordinated monetary policy actions. While exchange rate movements may influence interest rates in the big three, both through their implications for inflation, and probably more directly in the cases of the Bank of Japan and the ECB, coordinated interest rate changes with the sole purpose of affecting exchange rates do not appear to be on the current agenda. Third, such interventions are rare. All of which is to say that the system is indeed informal and loose. Nonetheless it provides some bounds on the extent to which exchange rates among the big three are likely to diverge from equilibrium.

VI. Exchange Rate Regimes for Other Countries

We have focused so far on exchange rate regimes for 55 developed and emerging market economies, which account for the bulk of global GDP, trade, and international capital flows. Tables 5 and 6 present data on the distribution of exchange rate arrangements among the other members of the IMF (as of end-1999 and end-1991, respectively), and Figure 4 shows the change in the distribution of these arrangements over the decade of the 1990s. The change is remarkably similar in appearance to that for the emerging market countries, shown in Figure 2: even among the countries not listed as emerging, there has been a shift towards hard pegs on one side, and more flexible exchange rate regimes on the other.

While there is a smaller percentage of floating rate countries in Figure 4 than in Figure 2, the percentage with soft pegs is actually smaller in Figure 4 than in Figure 2. That result

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institutions also estimate equilibrium exchange rates; see Edwards (2000) for discussion of the methodologies and the range of estimates provided by different sources.

is accounted for by the greater percentage of hard pegs among the smaller economies, which are represented in Figure 4, than among the emerging market countries represented in Figure 2.

With regard to exchange rate arrangements for the non-emerging market developing economies, Mussa *et al* (2000) state: "Reflecting wide differences in levels of economic and financial development and in other aspects of their economic situations, no single exchange rate regime is most appropriate for all such countries, and the regime that is appropriate for a particular country may change over time.[25] Because of their limited involvement with modern global financial markets, some form of exchange rate peg or band or highly managed float is generally more viable and more appropriate for them than for most of the emerging market countries. Even this conclusion, however, leaves a wide range of possible regimes—for a diverse range of developing and transition countries." (p.31)

They add that "IMF advice to members ... reflects this ambiguity and diversity. Consistent with the Articles of Agreement, the IMF generally respects the member's choice exchange rate regime and advises on policies needed to support that choice."

There is nonetheless room for further research on the characteristics of exchange rate systems and accompanying financial sector structural policies most suited to particular types of countries that are not yet integrated into the global financial system, taking into account the likelihood that as the country develops, it will want to open up its capital account.

VII. Summary

Drawing the lecture together:

[25] At this point the authors note that this is the conclusion reached by Frankel (1999).

1. There has in the last decade been a hollowing out of the middle of the distribution of exchange rate regimes, with the share of both hard pegs and floating gaining at the expense of soft pegs. This is true not only for economies active in international capital markets, but among all countries. And a look ahead suggests this trend will continue, certainly among the emerging market countries.
2. The main reason for this change, among countries with open capital accounts, is that soft pegs are crisis-prone and not viable over long periods. This is primarily due to the logic of the impossible trinity.
3. The move away from the center is towards currency boards, dollarization, or currency unions on the hard peg side, and towards a variety of floating rate arrangements, including managed floating, on the other.
4. As exchange rate flexibility increases, a country needs to determine the basis for its monetary policy. The record of inflation targeting has been a good one in this regard.
5. The choice between a hard peg and floating depends in part on the characteristics of the economy, and in part on its inflationary history. The choice of a hard peg makes sense for countries with a long history of monetary instability, and/or for a country closely integrated in both its capital and current account transactions with another or a group of other economies. Even in the latter case, though, the nature of the shocks affecting the economy needs to be taken into account, as the Canadian example shows.
6. The argument for dollarization relative to a currency board turns on an appraisal of the gains from dollarization that would be obtained in the capital markets, versus seigniorage costs and the value of retaining the option of changing the exchange rate *in extremis* by retaining a national currency.
7. An exchange rate peg can and has been successfully used to disinflate from high inflation, without a crisis, but it is important to exit from the peg during the process. That is most easily done under pressure to appreciate.
8. When misalignments among big three currencies become extremely large, the authorities tend to intervene to try to move exchange rates in the direction of equilibrium. The system is extremely loose and informal, and there are no commitments to particular numerical ranges of exchange rates, as there would be in a formal target zone system.

9. A wide variety of exchange rate systems is in use among non-emerging market developing economies, with the percentage of hard pegs among these economies being larger than it is among the emerging market countries. Even among these economies, there was during the 1990s a movement away from soft pegs.

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Table 1. Developed Market Economies (as of December 31, 1999)

Euro Area		Other	
	Exchange Arrangement		Exchange Arrangement
Austria	NS	Australia	IF
Belgium	NS	Canada	IF
Finland	NS	Denmark	HB
France	NS	Hong Kong SAR	CBA
Germany	NS	Japan	IF
Ireland	NS	New Zealand	IF
Italy	NS	Norway	MF
Netherlands	NS	Singapore	MF
Portugal	NS	Sweden	IF
Spain	NS	Switzerland	IF
		United Kingdom	IF
		United States	IF

Source: IMF, *Annual Report 2000*
Note: Economies listed in the MSCI Developed Markets index.

Key:
NS = Arrangements with no separate legal tender
CBA = Currency board
FP = Other conventional fixed pegs
HB = Pegged rate in horizontal band
CP = Crawling peg
CB = Rates within crawling bands
MF = Managed float with no pre-announced exchange rate path
IF = Independently floating

Table 2. Emerging Market Economies (as of December 31, 1999)

Africa		Asia	
	Exchange Arrangement		Exchange Arrangement
Morocco	FP	China	FP
Nigeria	MF	India	IF
South Africa	IF	Indonesia	IF
		Korea	IF
		Malaysia	FP
		Pakistan	FP
		Philippines	IF
		Sri Lanka	CB
		Taiwan POC*	MF
		Thailand	IF
Europe & Middle East		**Latin America**	
	Exchange Arrangement		Exchange Arrangement
Bulgaria	CBA	Argentina	CBA
Czech Republic	MF	Brazil	IF
Egypt	FP	Chile	IF
Greece	HB	Colombia	IF
Hungary	CB	Ecuador	IF/NS
Israel	CB	Mexico	IF
Jordan	FP	Panama	NS
Poland	CB	Peru	IF
Qatar	FP	Venezuela	CB
Russia	IF		
Turkey	CP		

Source: IMF, *Annual Report 2000*
Note: Economies listed either and/or in the MSCI Emerging Markets and EMBI+ indices.

Key:
NS = Arrangements with no separate legal tender
CBA = Currency board
FP = Other conventional fixed pegs
HB = Pegged rate in horizontal band
CP = Crawling peg
CB = Rates within crawling bands
MF = Managed float with no pre-announced exchange rate path
IF = Independently floating

Table 3. Emerging Market Countries Grouped by Exchange Rate Arrangement (December 31, 1999)

Exchange Rate Regime (Number of Countries)	Countries
NS/CBA (3) (*3)	*Argentina, *Bulgaria, *Panama
FP (7) (*2)	*China, Egypt, Jordan, *Malaysia, Morocco, Pakistan, Qatar
HB (1) (*1)	*Greece
CP (1)	Turkey
CB (5) (*2)	Hungary, *Israel, Poland, Sri Lanka, *Venezuela
MF (3) (*1)	Czech Republic, Nigeria, *Taiwan POC
IF (13) (*7)	*Brazil, *Chile, Colombia, Ecuador, *India, Indonesia, *Korea, *Mexico, Peru, *Philippines, Russia, *South Africa, Thailand

Source: IMF, *Annual Report 2000*
Note: * indicates country whose weight in either the EMBI+ or MSCI index is 2% or greater. Numbers in parenthesis indicate number of countries in each group; asterisked numbers are self-explanatory.

Key:
NS = Arrangements with no separate legal tender
CBA = Currency board
FP = Other conventional fixed pegs
HB = Pegged rate in horizontal band
CP = Crawling peg
CB = Rates within crawling bands
MF = Managed float with no pre-announced exchange rate path
IF = Independently floating

Table 4. Emerging Market Countries Grouped by Exchange Rate Arrangement (December 31, 1991)

Exchange Rate Regime (Number of Countries)	Countries
NS/CBA (2) (*2)	*Argentina, *Panama
FP (9) (*2)	*China, Czechoslovakia, Egypt, Hungary, Jordan, Morocco, Qatar, Russia, Thailand
HB (3) (*3)	*India, *Israel, *Malaysia
CP (6) (*2)	*Brazil, Ecuador, *Greece, Indonesia, Poland, Sri Lanka
CB (3) (*2)	*Chile, Colombia, *Mexico,
MF (8) (*5)	*Korea, Nigeria, Pakistan, *Philippines, *South Africa, *Taiwan POC, Turkey, *Venezuela
IF (2) (*1)	*Bulgaria, Peru

Source: IMF
Note: * indicates country whose weight in either the EMBI+ or MSCI index is 2% or greater. Numbers in parenthesis indicate number of countries in each group; asterisked numbers are self-explanatory.

Key:
NS = Arrangements with no separate legal tender
CBA = Currency board
FP = Other conventional fixed pegs
HB = Pegged rate in horizontal band
CP = Crawling peg
CB = Rates within crawling bands
MF = Managed float with no pre-announced exchange rate path
IF = Independently floating

Table 5. All Other Countries Grouped by Exchange Rate Arrangements (as of December 31, 1999)

Exchange Rate Regime (Number of countries)	Countries
NS/CBA (31)	Antigua and Barbuda, Benin, Bosnia and Herzegovina, Brunei Darussalam, Burkina Faso, Cameroon, Central African Rep., Chad, Congo (Rep. of), Côte d'Ivoire, Djibouti, Dominica, Equatorial Guinea, Estonia, Gabon, Grenada, Guinea-Bissau, Kiribati, Lithuania, Luxembourg, Mali, Marshall Islands, Micronesia, Niger, Palau, San Marino, Senegal, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Togo
FP (38)	Aruba, Bahamas, Bahrain, Bangladesh, Barbados, Belize, Bhutan, Botswana, Cape Verde, Comoros, El Salvador, Fiji, Iran, Iraq, Kuwait, Latvia, Lebanon, Lesotho, Macedonia FYR, Maldives, Malta, Myanmar, Namibia, Nepal, Netherlands Antilles, Oman, Samoa, Saudi Arabia, Seychelles, Solomon Islands, Swaziland, Syrian Arab Republic, Tonga, Trinidad and Tobago, Turkmenistan, United Arab Emirates, Vanuatu, Zimbabwe
HB (4)	Cyprus, Iceland, Libya, Vietnam
CP (4)	Bolivia, Costa Rica, Nicaragua, Tunisia
CB (2)	Honduras, Uruguay
MF (23)	Algeria, Azerbaijan, Belarus, Burundi, Cambodia, Croatia, Dominican Rep., Ethiopia, Guatemala, Jamaica, Kenya, Kyrgyz Republic, Lao PDR, Malawi, Mauritania, Paraguay, Romania, Slovak Rep., Slovenia, Suriname, Tajikistan, Ukraine, Uzbekistan
IF (29)	Afghanistan, Albania, Angola, Armenia, Congo (Dem. Rep.), Eritrea, Gambia, Georgia, Ghana, Guinea, Guyana, Haiti, Kazakhstan, Liberia, Madagascar, Mauritius, Moldova, Mongolia, Mozambique, Papua New Guinea, Rwanda, São Tome and Príncipe, Sierra Leone, Somalia, Sudan, Tanzania, Uganda, Yemen, Zambia

Source: IMF, *Annual Report 2000*
Key:
NS = Arrangements with no separate legal tender
CBA = Currency board
FP = Other conventional fixed pegs
HB = Pegged rate in horizontal band
CP = Crawling peg
CB = Rates within crawling bands
MF = Managed float with no pre-announced exchange rate path
IF = Independently floating

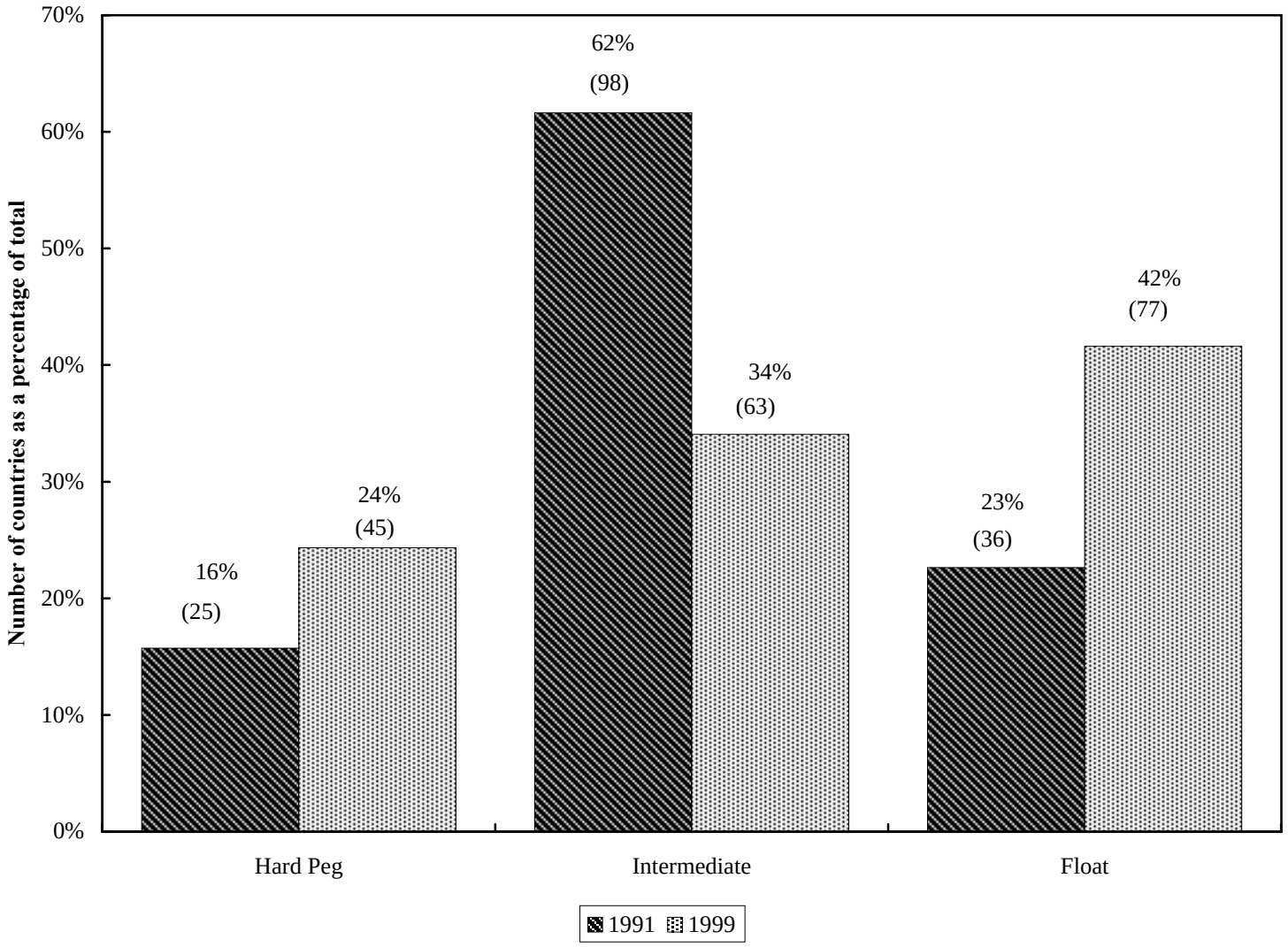
Table 6. All Other Countries Grouped by Exchange Rate Arrangements (as of December 31, 1991)

Exchange Rate Regime (Number of countries)	Countries
NS/CBA (22)	Antigua and Barbuda, Benin, Burkina Faso, Cameroon, Central African Rep., Chad, Congo (Rep. of), Côte d'Ivoire, Djibouti, Dominica, Equatorial Guinea, Gabon, Grenada, Kiribati, Mali, Namibia, Niger, Senegal, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Togo
FP (51)	Albania, Algeria, Angola, Bahamas, Bahrain, Bangladesh, Barbados, Belize, Bhutan, Botswana, Burundi, Cape Verde, Comoros, Cyprus, El Salvador, Ethiopia, Fiji, Iran, Iraq, Kenya, Kuwait, Lesotho, Liberia, Madagascar, Malawi, Malta, Mauritius, Mongolia, Myanmar, Nepal, Nicaragua, Oman, Papua New Guinea, Rwanda, Saudi Arabia, Seychelles, Solomon Islands, Sudan, Suriname, Swaziland, Syrian Arab Republic, Tanzania, Tonga, Trinidad and Tobago, Uganda, United Arab Emirates, Vanuatu, W. Samoa, Yemen, Yugoslavia, Zimbabwe
HB (3)	Iceland, Libyan Arab R., Luxemburg
CP (8)	Bolivia, Costa Rica, Guinea Bissau, Honduras, São Tome and Príncipe, Somalia, Tunisia, Uruguay
MF (9)	Guatemala, Guinea, Lao PDR, Maldives, Mauritania, Mozambique, Romania, Vietnam, Zambia
IF (11)	Afghanistan, Dominican Republic, The Gambia, Ghana, Guyana, Haiti, Jamaica, Lebanon, Paraguay, Sierra Leone, Zaire

Source: IMF.

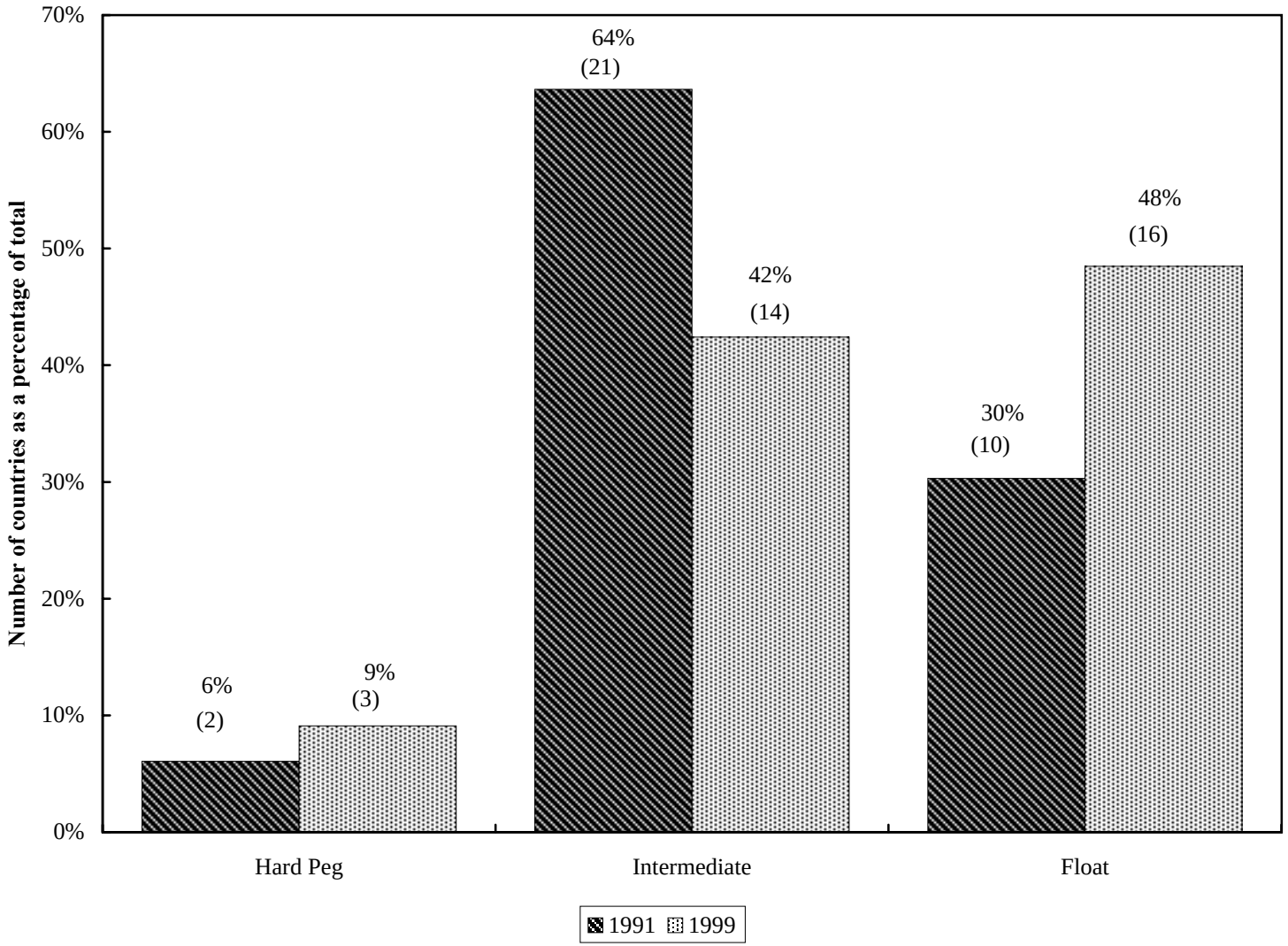
Key:
NS = Arrangements with no separate legal tender
CBA = Currency board
FP = Other conventional fixed pegs
HB = Pegged rate in horizontal band
CP = Crawling peg
CB = Rates within crawling bands
MF = Managed float with no pre-announced exchange rate path
IF = Independently floating

Figure 1. All Countries: Exchange Rate Regimes, 1991 and 1999



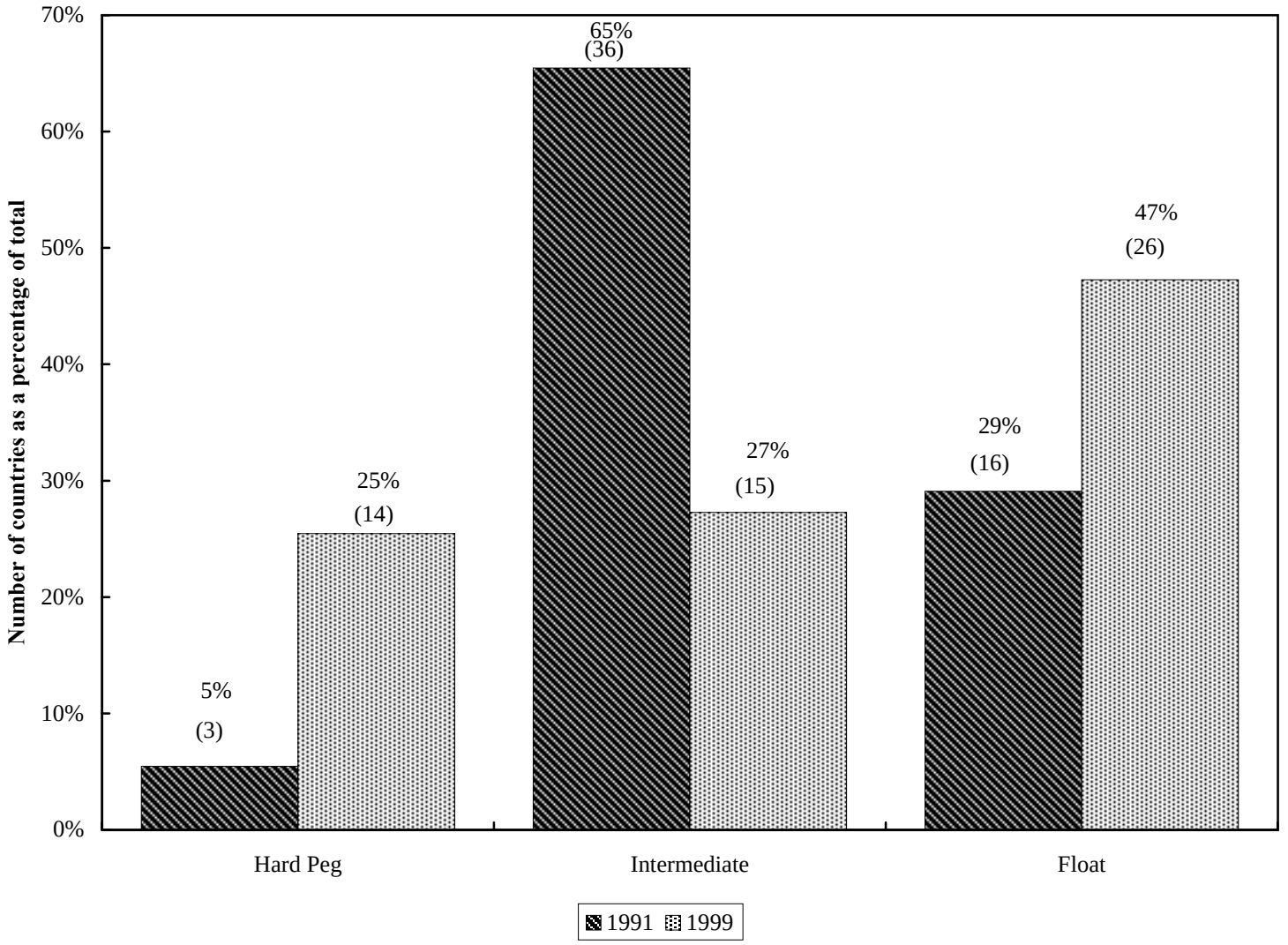
Source: IMF
Note: The number of countries is in parenthesis.

Figure 2. Emerging Markets Countries: Exchange Rate Regimes, 1991 and 1999



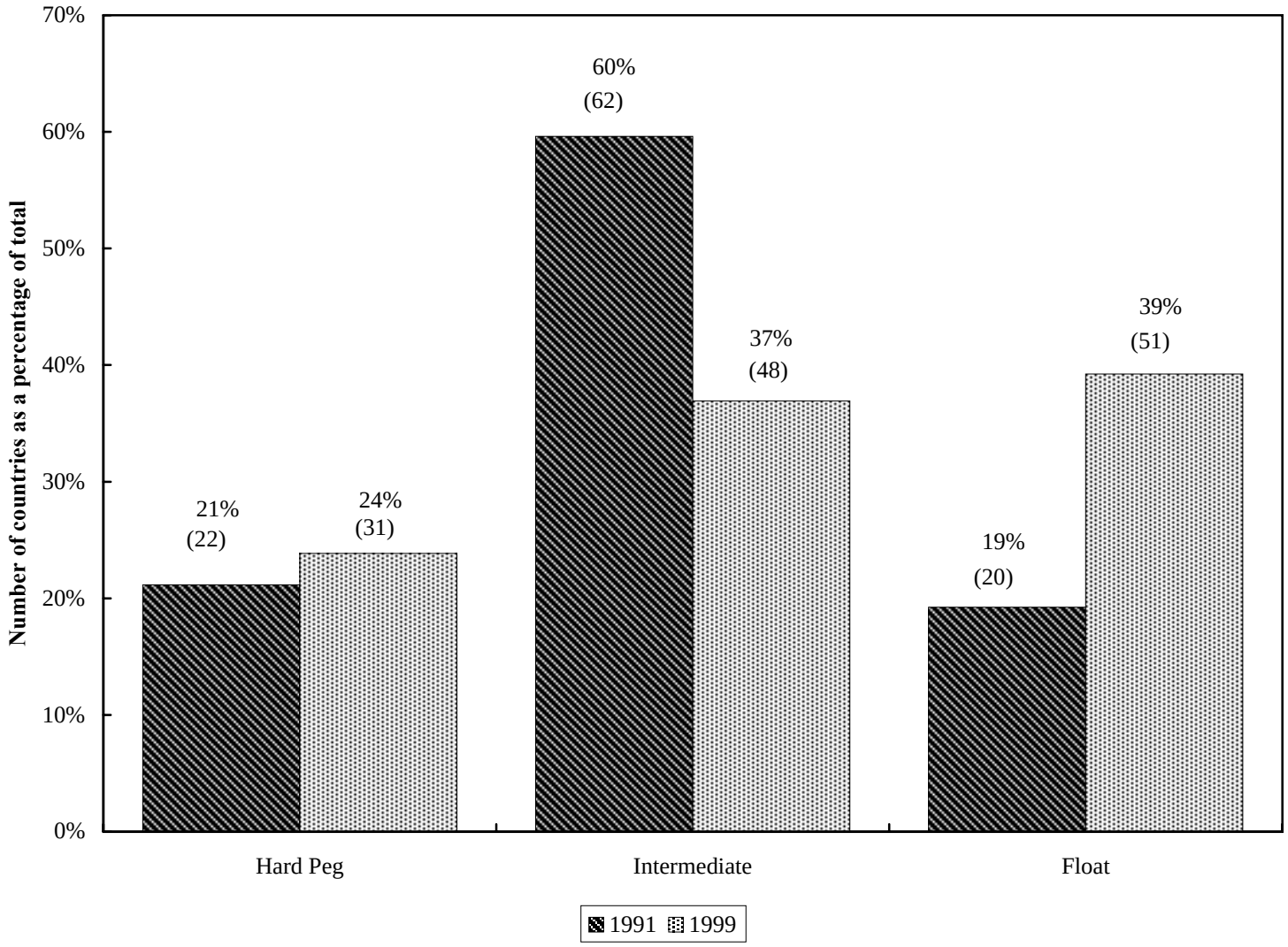
Source: IMF
Note: The number of countries is in parenthesis.

Figure 3. Developed and Emerging Markets Countries: Exchange Rate Regimes, 1991 and 1999



Source: IMF
Note: The number of countries is in parenthesis.

Figure 4. All Other Countries: Exchange Rate Regimes, 1991 and 1999



Source: IMF
Note: The number of countries is in parenthesis.

MORGAN STANLEY CAPITAL INTERNATIONAL INDICES

Individual MSCI country indices are aggregated into regional indices (e.g., MSCI Europe) and composite indices (e.g., MSCI Emerging Markets). Market capitalization weighting and a consistent 60% target inclusion of each market help ensure that each country's weight in the regional and composite indices is proportional to its weight in the total universe. Exhibit 19 below shows the various designations used to classify the MSCI family of indices.

DEFINITION OF TERMS FOR MSCI INDICES

Developed:	A country, regional, or composite index comprising developed markets only e.g., USA, Europe, EAFE (all regional indices are considered developed unless designated EM or EMF)
Emerging:	A country, regional, or composite index comprising emerging markets only e.g., Brazil, EM Eastern Europe, EMF
All Country:	A regional or composite index consisting of developed and emerging markets e.g., AC Europe AC Far East Free ex Japan, AC World Index
Free:	An index that includes constituents as available to non-domestic investors (all MSCI indices are considered Free unless a non—Free version also exists)
Non-Free:	An index that includes constituents as available to domestic investors only (label not used in index names)
Industry:	An index of companies aggregated by one of 38 primary industries
Sector:	An index of companies aggregated by one of eight economic sectors
Hedged:	An index hedged to the US dollar to eliminate foreign exchange effects
GDP-weighted:	A regional or composite index where individual countries are weighted by their GDP (as opposed to market capitalization)
Standard:	An index that aims to capture 60% of the total universe of stocks in each county
Value:	The top 50% market cap of Standard indices as ranked by ascending P/BV
Growth:	The bottom 50% market cap of Standard indices as ranked by ascending P/BV
Small Cap:	An index that aims to capture 40% of the Small Cap universe (companies with USD200—800 million market cap in each country); (for Developed Markets only)
Extended:	An index that aims to capture 70% of the total universe of stocks in each country (for Developed Markets only)

MSCI country indices span the range of equity markets around the world—developed and emerging. The designation of a market as either developed or emerging arises from several factors, the most common of which is GDP per capita. Markets develop as economic growth accelerates, companies begin to raise capital in the public markets, trading mechanisms are set in place, regulations are liberalized, and investor interest grows. While the MSCI World Index of 23 developed markets started from 1969, as more equity markets have evolved, MSCI expanded its universe of countries to include emerging markets in 1988. These emerging markets share some or all of the following criteria:

- Gross Domestic Product (GDP) per capita substantially below the average for developed economies. This is consistent with the World Bank's classification criteria. As shown in Exhibit 20 (opposite

page), the average emerging market covered by MSCI has a 1996 GDP per capita of USD 3,944, in contrast to USD 25,311 for the developed markets covered by MSCI. GDP figures must be approached with caution, however, because they can be distorted by inflation and exchange rates;

- In emerging markets, government regulation limiting or banning foreign ownership in industries and companies is substantially greater than in developed markets. For example, Taiwan has among the highest GDP per capita in the emerging markets and is strictly regulated. In fact, when looking at GDP per capita alone, Taiwan appears to be a developed market. However, the government restrictions, as well as several of the following factors, make it a better fit with the emerging markets;

- An inadequate (either too lax or overzealous) regulatory environment and/or less sophisticated back office operations, including clearing and settlement capabilities;

- Restrictions on repatriation of initial capital, dividends, interest, and/or capital gains. For example, capital invested in the Chilean equity market must remain in that country for a minimum of one year, regardless of when the equity positions were liquidated;

- Greater perceived investment risk than in the developed markets;

- A general perception by the investment community that the country should be considered emerging. An interesting example is Israel, where many characteristics could argue for the inclusion of Israel in the developed markets indices. The majority of our clients, however, are more comfortable with the classification of Israel as an emerging market. This, combined with Israel's ranking along other criteria such as political risk, has resulted in the decision to include Israel as an emerging market.

Maintaining a consistent methodology with both the developed and emerging markets is crucial in the calculation of combined emerging and developed indices i.e., the All Country series of regional indices.

APPENDIX I

SEPARATING DEVELOPED AND EMERGING MARKETS

1996 GDP Per Capita

MSCI EMERGING MARKETS	USD
Argentina	8,376
Brazil	4,453
Chile [2]	4,166
China [2]	610
Colombia [2]	2,002
Czech Republic	4,625
Egypt	1,057
Greece [2]	8,211
Hungary	4,186
India [2]	342
Indonesia [2]	981
Israel	16,719
Jordan [2]	1,168
Korea	10,612
Malaysia	3,889
Mexico	3,521
Pakistan [2]	462
Peru	2,443
Philippines [2]	1,023
Poland	3,227
Russia	2,400
South Africa [2]	3,175
Sri Lanka [2]	688
Taiwan	12,778
Thailand [2]	2,687
Turkey	2,859
Venezuela [2]	3,027
Average	**3,944**

MSCI DEVELOPED MARKETS [1]	USD
Australia	21,976
Austria	26,197
Belgium	25,686
Canada1	19,421
Denmark	32,832
Finland	24,135
France	26,296
Germany	28,256
Hong Kong	24,119
Ireland	20,411
Italy	21,350
Japan	34,413
Netherlands	24,833
New Zealand	18,735
Norway	36,194
Portugal [2]	9,767
Singapore	31,684
Spain	14,566
Sweden	28,221
Switzerland	38,638
United Kingdom	21,507
USA	27,614
Average	**25,311**

Source: World Bank (except Taiwan: from Brokers Reports)

[1] Includes Portugal as of November 28, 1997.

[2] 1995 GDP (latest available data)