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Chapter VI

THE GLOBAL MONETARY ORDER AND THE INTERNATIONAL TRADING SYSTEM

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THE GLOBAL MONETARY ORDER AND THE INTERNATIONAL TRADING SYSTEM

A. Introduction

One of the most intriguing discussions over the past few decades concerns competition among nations. There is a widespread notion that, with the accelerated pace of globalization, countries now have to compete in similar ways as companies. According to one view, the wealth of a nation depends on its ability to effectively adjust to the challenges created by open markets for goods and capital. Accordingly, it is believed that, as economies with low labour standards and inferior capital stocks are emerging as competitors, those with high welfare standards and sophisticated capital endowments are coming under increasing pressure to adjust to changing global market conditions. In particular, it argues that the emergence of a huge pool of idle labour in China, India and other large developing countries threatens to fundamentally reduce the capital/labour ratio for the world as a whole. This in turn would favour the remuneration of capital and have a strong equilibrating effect on labour in rich and poor countries alike, which could lead to a new global equilibrium somewhere in the middle of high and low wage extremes.

At first glance, this premise, derived from a neoclassical model of the global labour market, seems to be confirmed by developments during the past decade, as wages in many high-wage developed countries have come under pressure and the share of labour in total income has been falling. However, there are many reasons for this pressure on wages. A major reason is the occurrence of mass unemployment, the causes of which can vary. One explanation could be excessively high wages, while others could be too little demand or misguided economic policies. A serious problem with the global labour market model referred to is that it is based on an analogy of competition among companies, but such competition cannot apply to countries, particularly countries with independent currencies. In the dynamic setting of a market economy, market forces tend to equalize the prices of goods and services. Thus companies have to accept the exogenously set prices of capital and/or intermediate goods as well as the going price for different labour skills. Therefore the success or failure of a company is determined by the specific value it can add to those goods and services and it competes mainly on the basis of differentiation of productivity.

While wages paid by individual companies tend to be uniform for similar qualifications and skills within a country, unit labour costs (i.e. the sum of wages paid to generate one unit of a product) can vary

among companies. Thus, productivity enhancement in a firm through innovation and new products reduces unit labour costs and gives that firm a competitive advantage. These pioneers are therefore able to offer their goods at lower prices or make higher profits per unit of output at given prices. As long as the prices of labour and other intermediary products are given, competitors adjust by implementing the same or a similar technology, or they are forced to quit the race through bankruptcy.

By contrast, in a country, greater average productivity does not necessarily increase the competitiveness of all producers in that country against the rest of the world. This is because there is a tendency for national advantages in productivity to be matched by higher nominal (and real) wages, so that unit labour costs (or the growth of those costs) will remain largely unchanged. However, even a country where productivity is growing much faster than wages and unit labour costs will not automatically increase its competitiveness and that of all its enterprises. In a world of national currencies and national monetary policies, a country supplying its goods to the world market at much lower prices than others will temporarily gain market shares and accumulate huge trade and current-account surpluses, but sooner or later it will come under pressure to adjust wages and prices, as expressed in foreign currency. If adjustments are not made through wage increases in the domestic currency, a revaluation of the currency will be needed.

On the other hand, a country's competitiveness has often been distorted by an upward deviation of the flexible nominal exchange rate from what would be warranted by economic fundamentals. Such a currency appreciation often reflects the impact of private short-term capital inflows that are attracted by positive interest rate and inflation differentials vis-à-vis other countries, and thus by macroeconomic conditions that might otherwise warrant a depreciation of the exchange rate. When such an interest rate and inflation differential narrows or disappears completely, or in a situation of crisis, there typically follows an overshooting

currency depreciation, which is again out of line with fundamentals, and thus compromises the efficiency of the international trading system.

While not all current-account disequilibria are the outcome of misaligned exchange rates, deviations of the real exchange rate from fundamentals, especially if persisting over long periods of time, have a major impact on the international competitiveness of producers, particularly manufacturers, and thus on the pattern of international trade and trade balances. The search for an appropriate system of exchange rate management that helps prevent trade distortions and instability in international financial relations is therefore central to the debate on the reform of global economic governance in the wake of the latest economic and financial crisis.

This chapter presents the rationale for a system of rules-based managed floating exchange rates against the background of recent experiences with the global imbalances that contributed to the build-up of the financial crisis. It also discusses problems for countries' international competitiveness arising from an overvalued exchange rate. The causes of overvaluation are typically either excessive short-term capital inflows that lead to an appreciation of a flexible nominal exchange rate, or significant differences in the evolution of unit labour costs in a context of fixed nominal exchange rates.

The chapter expands on an earlier treatment of this issue in *TDR 2009*, taking into account new developments, such as the crisis in the eurozone and the post-crisis surge of carry-trade flows to emerging market economies. It also discusses two alternative methodological approaches for the design of a currency regime based on rules that aim at achieving the following: (a) sufficient stability of the real exchange rate to enhance international trade and facilitate decision-making on fixed investment in the tradable sector; and (b) sufficient flexibility of the nominal exchange rate to accommodate differences in the development of interest rates across countries.

> **Overvaluation is typically caused by excessive short-term capital flows under flexible nominal exchange rates …**

> **… or by significant differences in unit labour costs in a context of fixed nominal exchange rates.**

In principle, such a rules-based regime of managed floating can be regarded as a dynamic version of the Bretton Woods system, which was based on harmonized inflation targets and discretionary adjustment of exchange rates when a country could not meet the inflation target of the anchor country. Distinct from the Bretton Woods system, the concept of rules-based managed floating aims at a nominal exchange rate path related to either purchasing power parity (PPP) or uncovered interest rate parity (UIP).

As long as consumer prices or unit labour costs (in the first approach) rise at different rates across countries, or there are differences in interest rates (in the alternative approach), the nominal exchange rate will be adjusted accordingly. Unlike the Bretton Woods system, this alternative system aims at avoiding fundamental balance-of-payments disequilibria through continuous rules-based adjustments. It allows, if necessary, discrete adjustments of the nominal exchange rate whenever an exceptional shock occurs.

B. New thinking on global economic governance

Following the outbreak of the financial crisis in 2008, the G-20 developed and developing countries took the lead in designing a coordinated international policy response. The G-20 also highlighted the need to assess the persistently large global current-account imbalances and the measures necessary for rebalancing, with a focus on addressing the issues of internal structural balances, fiscal policy and currency alignment. This implies some new thinking on multilateralism and economic interdependence. Indeed, the issue of exchange rate management has gained considerable attention in this policy debate.

It is generally acknowledged that "leaving currencies to the market" entails considerable risks for both the global financial system and the multilateral trading system. There is an obvious contradiction between the belief that market forces lead to economically desirable outcomes and the experience of wide exchange rate fluctuations and frequent currency misalignments that ignore the fundamental determinants of competitiveness. This was revealed yet again in early 2011, when Brazil, a major emerging market economy with a current-account deficit and relatively high (albeit historically low) inflation rates, had to fend off huge capital inflows that were causing an unsustainable appreciation of its currency.

Trade imbalances resulting from exchange rate misalignments are not a new phenomenon. In 1985, the market's inability to resolve long-standing trade imbalances between Germany, Japan and the United States was finally resolved by the historic Plaza Accord. After all other approaches had failed, coordinated intervention by the members of the G-5 led to a huge devaluation of the dollar. Today, there is an even greater need for coordination, but achieving it is more difficult, since, as a result of globalization, a much larger number of economies are involved, and therefore the magnitude of trade and capital flows is also much larger. In order to monitor global trade imbalances and progress towards achieving external sustainability as part of a mutual assessment process, the G-20 is proposing the development of technical guidelines to indicate when the overall scale of imbalances is moving away from what is deemed to be a sustainable position. Finding "a mechanism to facilitate timely

> Leaving currencies entirely to market forces entails considerable risks for both the global financial system and the multilateral trading system.

identification of large imbalances that require pre- ventive and corrective action" (G-20 Communiqué, 2010) is indeed crucial for world trade. Trade cannot work effectively to foster growth and reduce poverty if the global community fails to find such a mecha- nism. One suggestion has been to focus on the size of a country's current-account deficit or surplus, as a percent- age of gross domestic product. Other viewpoints favour look- ing at a range of indicators that contribute to imbalances, and identifying inconsistent fiscal, monetary and exchange rate policies. This renewed focus on multilateral cooperation to resolve long-standing imbalances, and concrete pro- posals for mechanisms to reduce global monetary and financial volatility, are timely. But it would be a mistake to use the current account as the indicator of choice for measuring the "sustainability" of large imbalances without considering the specific causes of those imbalances.

Furthermore, focusing on current-account imbalances alone requires consideration of all the circumstances under which exceptions might be tolerated. There are many reasons why the current account of a specific country may be in deficit or surplus at any given point in time. One reason is that the domestic economy may be growing faster than that of its main trading partners, causing imports to rise faster than exports (e.g. the United States during the 1990s). Or a country may be a major importer of a commodity, the price of which tends to rise repeatedly, thereby increasing the import bill without there being a paral- lel increase in export earnings (e.g. the group of low-income, food deficit countries). A third reason could be where a country experiences large increases in commodity export earnings but has a low absorptive capacity (e.g. Saudi Arabia). Finally, a country may serve as a hub for foreign firms to produce manufactures on a large scale, but, overall, its population may not have the earning capacity to consume a sufficient quantity of imports to equilibrate its exports (e.g. China). In all such cases, a short-term buffer of net capital inflows or outflows is needed to enable the smooth functioning of the international trading system. In other words, current-account imbalances per se are not indica- tive of a systemic problem that needs coordinated intervention. Rather, it is a loss of competi- tiveness at the national level which causes an unsustainable current-account deficit.

> Current-account imbalances per se are not indicative of a systemic problem that needs coordinated intervention …

An empirical analysis of the factors that have influenced current-account reversals in the past supports the contention that exchange rates play a central role in the rebalancing process. In *TDR 2008* it was shown that, rather than being driven by autono- mous savings and investment decisions of domestic and foreign agents, current-account reversals tend to be driven by external shocks on goods markets and financial markets. In particular, improvements in the current account have usually been accompanied by positive terms-of-trade shocks, a real exchange rate depreciation, or panic in the international capital markets followed by sudden stops in capital flows.

The following two sections discuss current exchange rate problems and the case for a system of rules-based managed floating from two angles. They point to the need for a comprehensive macroeco- nomic approach that focuses on the real exchange rate and its determinants, namely the key macroeconomic prices of nominal exchange rates, wages and interest rates. Section C illustrates the curse of undesired capital flows, with reference to the recent new surge of carry-trade flows to emerging markets. Section D then discusses the problems that arise when unit labour costs start drifting apart in a regime of inflexible nominal exchange rates, with special reference to the difficulties being experienced in the eurozone, which is an example of an extreme case of exchange rate fixing.

> ... rather, it is a loss of competitiveness at the national level, which causes an unsustainable current- account deficit.

C. Destabilizing private capital flows: back to business as usual

1. Appetite for risk and carry-trade speculation

There has been a strong rally in private capital flows to emerging markets in 2010 following their sharp drop during the financial crisis and the global recession. These flows, driven mainly by private portfolio investments, have increased particularly rapidly in Asia, Central and Eastern Europe, Latin America and sub-Saharan Africa following their initial downturn when the financial crisis erupted. Such movements are attributed to international investors' increased appetite for risk as the global economic recovery – and especially that of emerging markets – progresses. But what is meant by appetite for risk? Moreover, are short-term investments in emerging markets riskier than those in developed economies, and if so, why? A closer look at the movements of short-term capital and the economic incentives that are driving them reveals that there is a deeper reason why investors are eager for a quick comeback.

Developing and emerging market economies expect international financial markets to channel steady and reliable capital flows to their economies, for investment in fixed capital and to finance temporary shortages of financial resources. However, what they get instead are volatile and unreliable inflows that are often harmful to their sustained economic development and hamper their ability to catch up with the more developed economies. Neither a flood of capital inflows at one point in time, nor a reversal of such flows at another reflect the real needs of countries to import capital or the true state of their macroeconomic fundamentals. This is why countries' central banks have increasingly tried to shelter their economies as much as possible against the negative impacts of such undesired and volatile capital flows. Direct intervention has become the most appropriate instrument to dampen the negative effects of this volatility. The huge stocks of foreign reserves that some major emerging countries have been piling up in the aftermath of the Asian crisis indicate that their currencies are under permanent pressure to appreciate. An appreciation would, of course, endanger their competitiveness on the world market and compromise whatever welfare effects a liberal multilateral trading system may generate.

The "appreciation wind" (IMF, 2010) that has become a common threat to many emerging market economies is driven by the more attractive rates of return on short-term financial assets in these economies.[1] There have been huge differentials in short-term nominal interest rates between emerging economies and developed economies for most of the time since the mid-1990s (chart 6.1).

Particularly remarkable has been the size and persistence of the interest rate differential between Japan and most emerging markets over the past 15 years. Interest rates in most Asian emerging markets fell significantly after the Asian financial crisis, and remained below 5 per cent and very close to those of the major developed economies. In the Latin American and Caribbean countries, particularly in Brazil, interest rates also fell, but were consistently higher than the Asian rates, at between 5 and 10 per cent.

With the aggressive monetary expansion in the United States after 2008, dollar interest rates fell to the level of Japan's. This has changed the relationship of the United States financial market with developing-country and emerging markets compared with the

Chart 6.1

SHORT-TERM INTEREST RATE DEVELOPMENTS, JANUARY 1996–FEBRUARY 2011
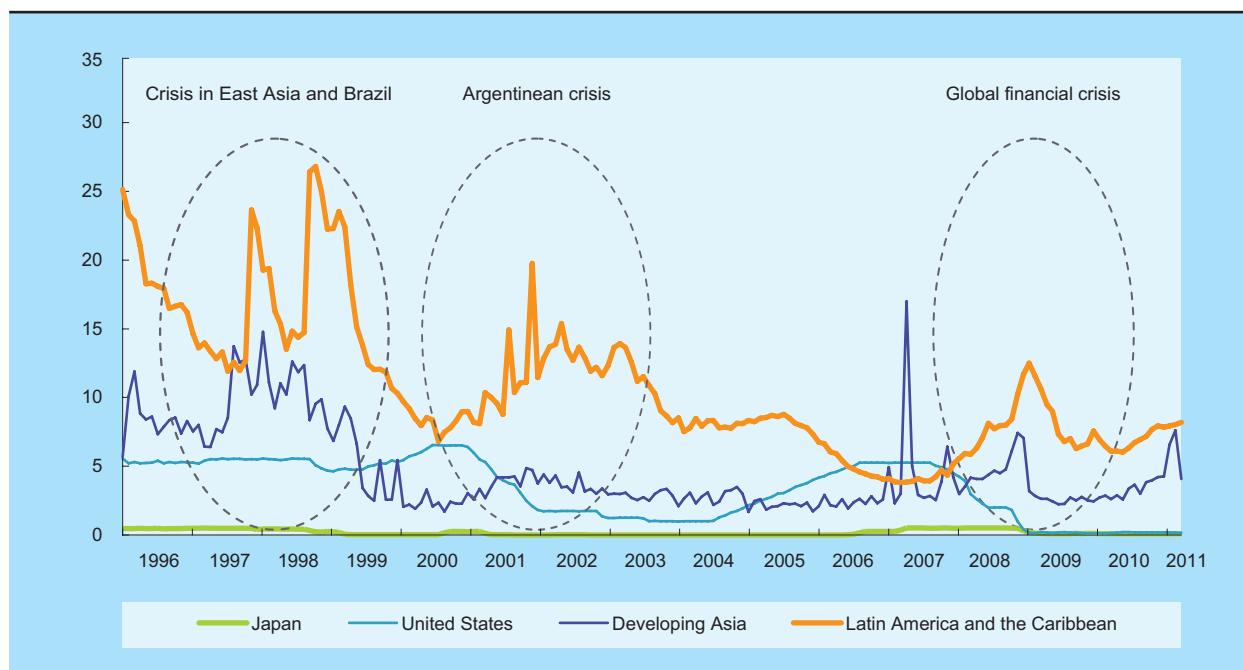
(Per cent)

Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics* database.
  Note: Regional interest rate aggregates are PPP-based GDP weighted using current PPP weights.

years before the crisis. In the past, the bulk of the carry trades, which exploit the differences in short-term interest rates, used the low-yielding Japanese yen as a funding currency, while the Swiss franc was used for targets in Eastern Europe. International operators, for example a hedge fund located in the United States or in a Caribbean State, would borrow money in Japan and deposit it in Brazil, South Africa, Turkey, or, before 2008, in Iceland. The widening interest rate differential between the United States and emerging market economies has induced a switch in the funding currencies from the yen to the dollar. It is worth noting that the United States Federal Reserve's attempt to put pressure on long-term rates (i.e. quantitative easing) is likely to have played a smaller role in this context, since carry-trade returns are essentially calculated on the basis of differentials in short-term interest rates.

According to traditional theory, the market determines exchange rates according to uncovered interest rate parity (UIP), whereby high interest rates are compensated for by an expectation of a currency depreciation, or according to purchasing power parity (PPP), whereby high inflation rates are associated with an expectation of a compensating currency depreciation. However, while observed interest rates have been closely associated with inflation rates (chart 6.2) and show significant differentials between countries, there is no evidence that exchange rates adjusted to these differentials in line with theoretical considerations.

The persistence of interest rate differentials also points to the absence of an endogenous mechanism for ensuring a convergence of interest rates across national money markets. Huge inflows of short-term money do not cause a fall in the domestic interest rate in the country receiving such inflows, and neither do they cause that rate to rise in the country from where they originate. This stability of short-term rates reflects monetary policy decisions by central banks to set and to hold the short-term interest rate at a level conducive to achieving national economic objectives.

Chart 6.2

**INFLATION AND SHORT-TERM INTEREST RATES IN EMERGING MARKET
AND TRANSITION ECONOMIES, JANUARY 1996–FEBRUARY 2011**
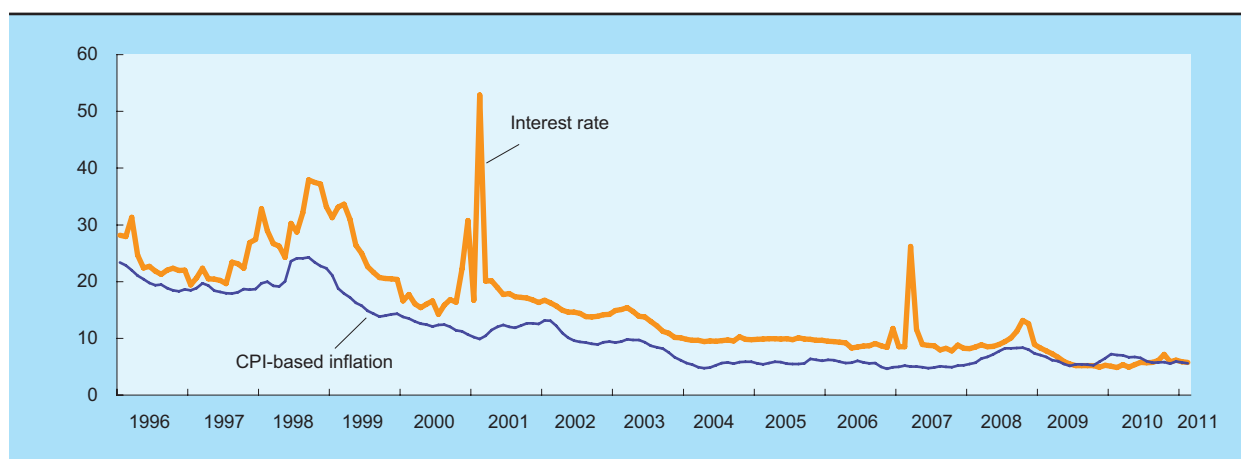
(Per cent)

Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics* database.
  Note: Emerging market and transition economies include Brazil, Chile, Colombia, the Czech Republic, Hungary, India, Indonesia, Malaysia, Mexico, the Philippines, Poland, Romania, Singapore, South Africa, Thailand and Turkey. Emerging market averages are PPP-based GDP weighted using 2005 weights.

In order for monetary policies to successfully support national economic objectives while avoiding external disequilibrium, an effective external adjustment mechanism is needed to help central banks cope with external shocks. At present, central banks try to deal with this problem unilaterally, through intervention in the foreign exchange market, leading to accumulation of reserves, or they may impose certain restrictions on private capital inflows or outflows.

Currency market intervention and reserve accumulation have been used systematically to counter the effects of volatile capital flows (chart 6.3). In the second quarter of 2007, for example, Brazil's central bank purchased dollars, corresponding in amount to almost the entire inflow of portfolio investments and other inflows during that period. South Africa's central bank intervened similarly when the rand started to appreciate sharply in late 2009 and early 2010.

Normally, central banks are not willing to reduce short-term interest rates aggressively to discourage these inflows. As a result, capital flows of the carry-trade type are resilient, and intervention in the foreign exchange market can soon become an uphill struggle. However, there would be less need to maintain high interest rates if other instruments of macroeconomic policy, especially an incomes policy, were employed more broadly, as discussed in *TDR 2010*. Indeed adopting such instruments would enlarge the macroeconomic policy space in general, and would avoid the risk of attracting large, destabilizing short-term capital flows each time inflationary pressures occurred.

The amounts involved in carry trade have been huge in recent years, and they have dominated most of the other determinants of overall capital flows. There may be statistical limitations to establishing the full amount of such movements, but their existence and domination is the only logical explanation for the fact that, despite massive interventions, exchange rates have been moved against the fundamentals repeatedly, with interruptions only during financial crises.

Carry trade is a classical example of trading behaviour that feeds on itself. In addition to the interest rate differential, investors are also gaining from the exchange rate appreciation they themselves generate, and this further fuels carry-trade speculation. The resulting overshooting of exchange rates, as experienced over the past decade in many emerging

Chart 6.3

**CHANGES IN EXCHANGE RATES AND RESERVES, AND NET PORTFOLIO
INVESTMENTS, THIRD QUARTER 2005–THIRD QUARTER 2010**
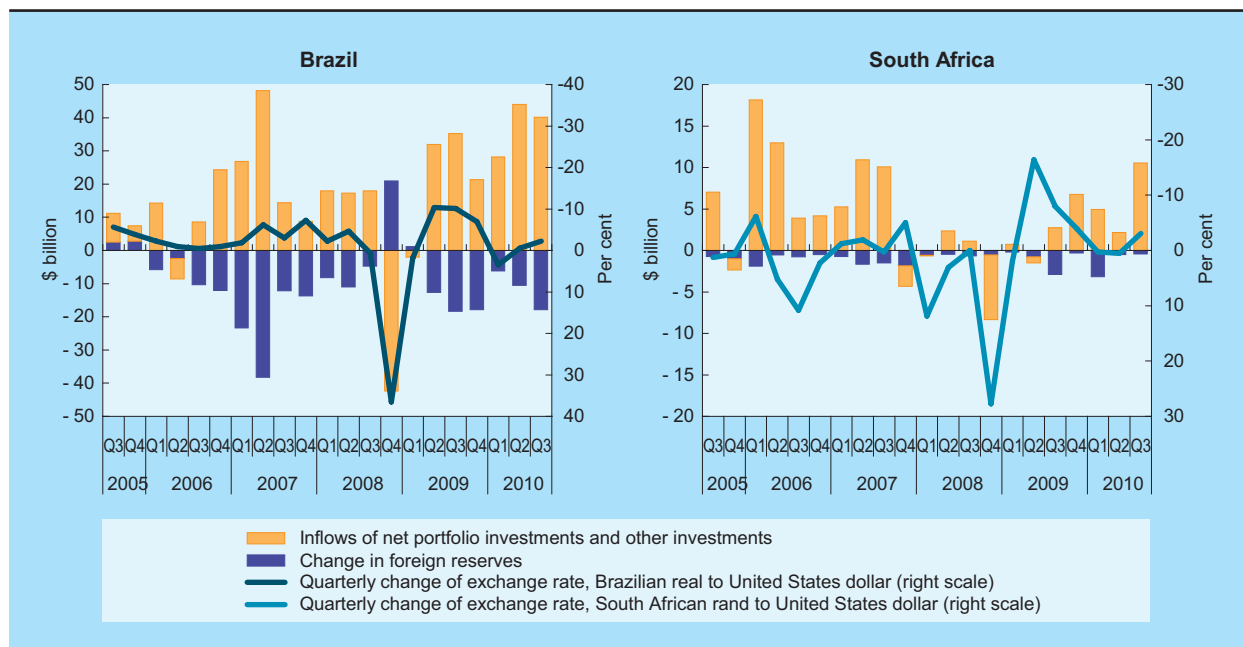
Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics* database.
  Note: A negative value of reserves means an increase in reserves (capital outflow). A positive value of the exchange rate change
       represents a depreciation of the currency.

Chart 6.4

**NET PRIVATE FINANCIAL FLOWS (EXCLUDING FDI):
EMERGING MARKET AND DEVELOPING ECONOMIES, 1990–2010**

(Billions of dollars)
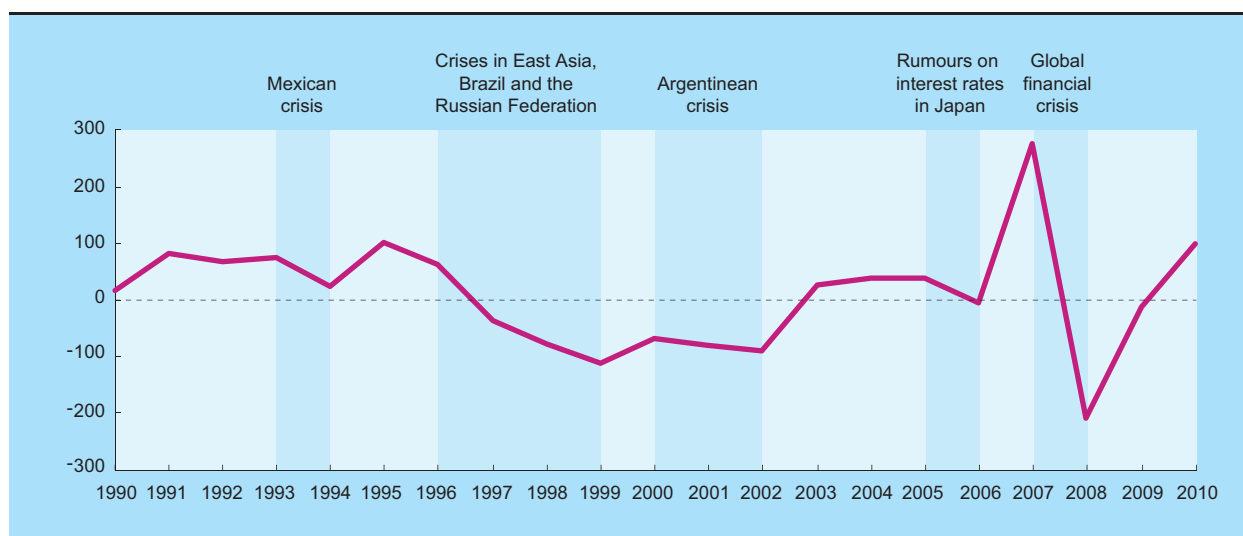
Source: UNCTAD secretariat calculations, based on IMF, *World Economic Outlook* database.

markets, is likely to have distorted trade much more than trade policy measures. It has also destabilized investment in fixed capital that is so imperative for sustained development.

With large, unstable flows in the short and medium term pointing to unsustainable outcomes in the long term, the occurrence of major shocks is just a matter of time. Over the past two decades, there have been five big shocks, with clear consequences for capital flows (chart 6.4). The first was the Mexican crisis in 1994, followed by the Asian, Russian and Brazilian crises of 1997, 1998 and 1999 respectively, and the Argentinean crisis in 2001. And in 2006, a minor crisis affected capital flows to emerging market economies as a result of rumours that Japan would increase its interest rate. Finally, the latest global crisis, sometimes referred to as the Great Recession, led to the biggest drop ever in capital flows to emerging market economies.

These shocks result in very volatile capital flows, because, in an environment where the exchange rate is moving against the fundamentals (the inflation rate or the interest rate), market participants are particularly exposed to the tail risk of their strategy. In such an environment, different events might provoke sudden reversals of flows, which are intensified by herd behaviour in the financial markets. Therefore, carry trade or investment in currencies is considered to be as risky as investment in other asset classes such as equities or commodity derivates. Whenever the evidence mounts that the bubble could soon burst, a small event suffices to start the stampede.

2. The Japanese yen and the United States dollar as funding currencies

Evidence of carry-trade activity in the spot markets is difficult to track, since detailed data on individual investors' positions and on funds that have been borrowed and deposited simply do not exist. However, in some futures markets, such as the one in the United States, market participants have to report their daily positions at the end of the trading day. This provides some indication of the net positions of non-commercial traders (pure financial traders) in currency futures markets in the United States (chart 6.5). In the chart, since data on direct

Australian dollar-Japanese yen currency futures are not available, both currencies are considered vis-à-vis the United States dollar. The bars show the number of contracts in the market, while net long positions represent the difference between long and short positions of the respective currencies vis-à-vis the United States dollar. Thus, a net long position in Australian dollars has a positive value, while a net short position has a negative value.

Overall, the data from this futures market in the United States provide clear evidence of massive yen-funded carry-trade activity from January 2005 to July 2007, a yen-funded carry-trade reversal as the global crisis unfolded from September 2008 to February 2009, and three alternating periods of net long positions in both funding and target currencies from November 2007 onwards. These periods of build-up and reversal of carry-trade positions add to the findings presented in *TDR 2008* and *TDR 2009*.

Additionally, since the third quarter of 2007 there have been net long positions in both funding and target currencies and increasing use of the United States dollar as a funding currency for carry-trade activities. This is confirmed by investors' expectations as reflected in the so-called carry-to-risk ratio, a popular *ex-ante* measure of carry-trade profitability. This ratio reflects the gains stemming from the interest rate differential adjusted by the risk of future exchange rate movements.[2] The higher the ratio, the higher is the *ex-ante* profitability of the carry-trade strategy. Until April 2008, the expected profitability of yen-funded carry trades was much higher than that of United States dollar-funded carry trades, and the carry-to-risk ratios diverged consistently (chart 6.6). However, as the financial crisis unfolded and the United States interest rate declined, the carry-to-risk ratios converged and carry trades funded in United States dollars were even perceived as being slightly more profitable than yen-funded carry trades.

This switch in the funding currencies of carry trade in futures markets shows that investors' carry-trade strategies in currency markets are driven mainly by their expectations of interest rate movements. It also suggests that the reduction of the short-term interest rates in the United States immediately after the beginning of the crisis was a much greater push factor for funding short-term capital flows in the United States than the two subsequent rounds of quantitative easing. However, the fact that more flows

Chart 6.5

**NET POSITIONS OF NON-COMMERCIAL TRADERS ON AUSTRALIAN DOLLAR
AND JAPANESE YEN FUTURES, JANUARY 2005–APRIL 2011**
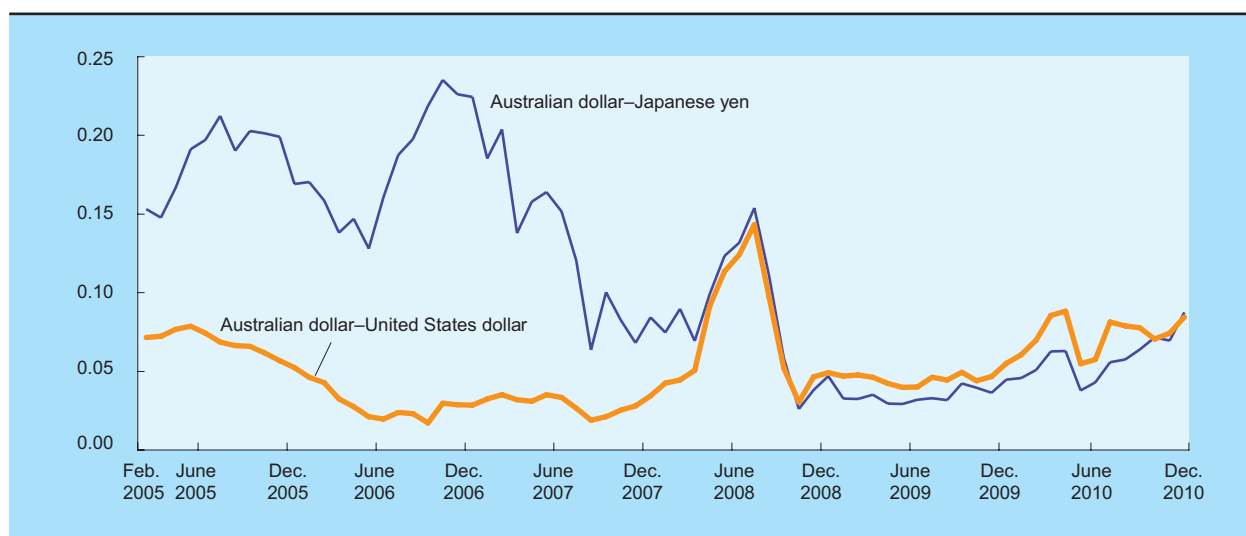
(Number of contracts, thousands)
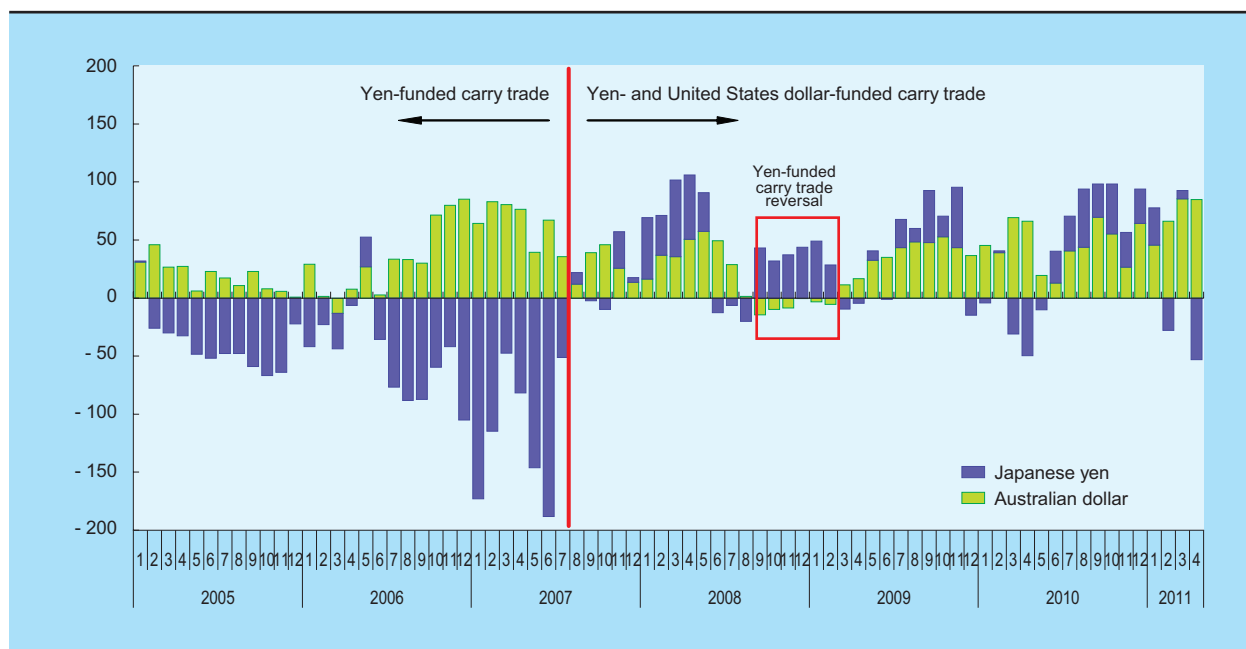
Source: UNCTAD secretariat calculations, based on Bloomberg; and United States Commodity Trading Futures Commission
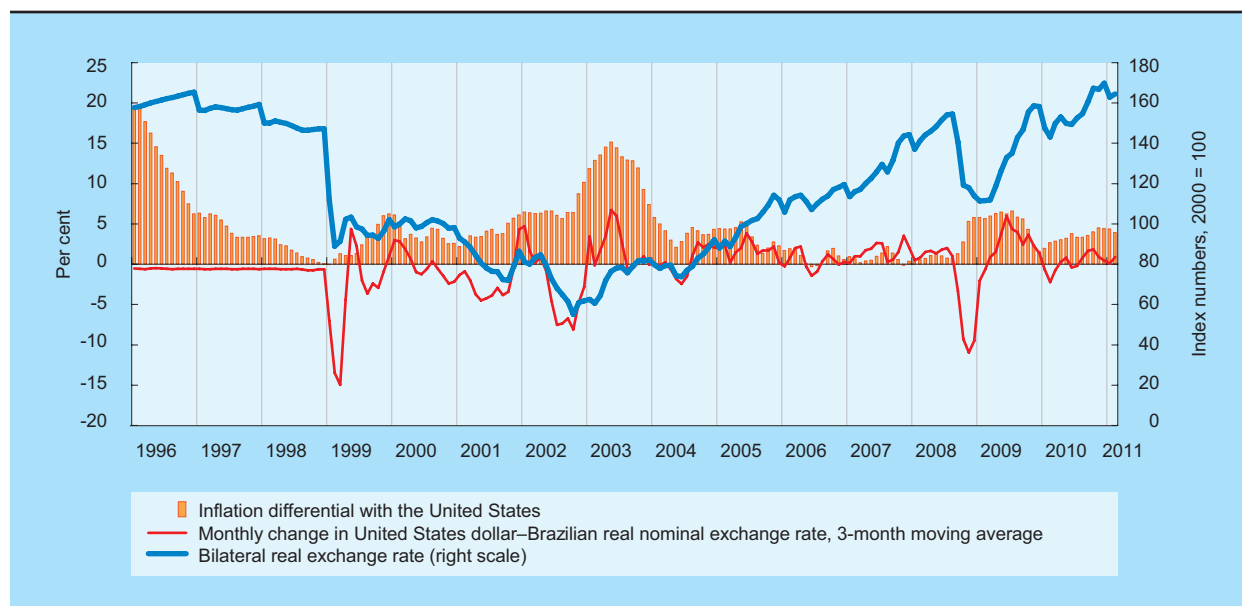database.

Chart 6.6

CARRY-TO-RISK RATIO, 2005–2010

(Percentage points)

Source: UNCTAD secretariat calculations, based on Bloomberg database.

Chart 6.7

**INFLATION DIFFERENTIAL AND NOMINAL AND REAL EXCHANGE RATES IN BRAZIL,
JANUARY 1996–FEBRUARY 2011**

Inflation differential with the United States
Monthly change in United States dollar–Brazilian real nominal exchange rate, 3-month moving average
Bilateral real exchange rate (right scale)

Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics* database.

not only originated in the United States but were also financed there, rather than originating there and being raised in Japan, have not changed the fundamental logic and the consequences of carry trade in currency markets.

3. The cost of leaning against the wind of appreciation

The cost of destabilizing capital flows can be devastating. During a period when carry-trade flows are building up in developing and emerging economies, the consequent currency appreciation in those countries places an enormous burden on their external trade. For example, during most of the period between August 2005 and August 2008, the Brazilian real appreciated in nominal terms (as indicated in chart 6.3, whenever the percentage change is above zero). This amounted to a cumulative appreciation (in nominal terms) vis-à-vis the dollar of more than 45 per cent. Considering that Brazil had higher inflation rates than the United States, during that entire period, the real exchange rate between Brazil and the United States appreciated by even more than 50 per cent (chart 6.7).

Once a crisis hits and there is a reversal of inflows, central banks try to defend the exchange rate of their currency against downward overshooting by applying restrictive monetary and fiscal policies. However such tightening – reminiscent of the procyclical policy response to the Asian crisis – has the effect of deepening the crisis or delaying economic recovery. During the Asian and Latin American crises, many countries experienced dramatic interest rate hikes. By contrast, in the United States, interest rates were cut to close to zero immediately after the dot-com crisis began in 2001 and again after the outbreak of the Great Recession in 2008 in order to stimulate the domestic economy (see chart 6.1 above).

IMF assistance, at times combined with swap agreements or direct financial assistance from the EU and the United States, has helped to ease the immediate pressure on the currencies and banking systems of troubled countries. But when the origin of the problem is speculation of the carry-trade type, the traditional IMF approach is inadequate.

Traditional assistance packages, combined with cuts in government spending, are unnecessary and tend to be counterproductive, while raising interest rates to avoid further devaluation is like the tail wagging the dog. Instead, what is needed for countries that have been exposed to carry-trade speculation is real currency devaluation in order to restore their international competitiveness. This should be accompanied by financial assistance to forestall a downward overshooting of the exchange rate. Such an overshooting would not only hamper their ability to check inflation and increase their foreign-currency-denominated debt, it would also unnecessarily distort international trade. The affected countries also need to adopt expansionary fiscal and monetary policies to avoid a recession, at least until the expansionary effects of the currency devaluation materialize, which could take time.

Trying to stop an overshooting devaluation is very costly if attempted unilaterally, but much less so if countries under pressure to devalue join forces with countries facing revaluation. Countries that are struggling to stem the tide of devaluation are in a weak position, as they have to intervene by mobilizing their foreign exchange reserves, which are always limited. If the countries with appreciating currencies engage in a symmetrical intervention to stop the downward overshooting, international speculation would not even attempt to challenge the intervention, because ample amounts of the appreciating currency would be available from the central bank that is issuing the currency.

Unless there is a fundamental rethinking of the exchange rate mechanism and of the design of assistance packages, the negative spillover effects of financial crises into the real economy will be much greater than need be. The use of capital controls, especially to prevent undesirable inflows, may not address the problem at its source, but it is a second-best option to dampen such effects.

D. Real exchange rate misalignment in the European Economic and Monetary Union

The previous section has discussed the problems arising from destabilizing capital flows, especially of the carry-trade type, in a system of flexible exchange rates and free mobility of capital. But there are other problems associated with insufficiently flexible nominal exchange rates in situations where they would need to be adjusted to reflect deviations in the development of macroeconomic fundamentals across countries. This is very clearly demonstrated by the ongoing crisis in the eurozone, where countries have adopted a common currency (i.e. the most extreme case of exchange rate fixing). In the past, other countries that maintained an inflexible exchange rate peg for too long experienced problems similar to those encountered by some eurozone countries today. However, when the real exchange rate had appreciated so much that a payments crisis occurred, those countries still had the possibility to adjust, albeit painfully, through a sharp devaluation of their nominal exchange rates – a possibility that eurozone countries do not have.

In a world of absolutely fixed exchange rates, or in a single currency area, a lasting deviation of changes in prices and unit labour costs in one country from those of its main trading partners creates unsustainable external deficits and threatens the survival of the currency arrangement. From this perspective, the crisis in the common European currency was foreseeable. Since the end of the 1990s, Germany, the largest economy of the eurozone and the main trading partner of its other members, has engaged in a vigorous

Chart 6.8

UNIT LABOUR COSTS AND GDP DEFLATOR IN EMU, 1999–2010

(Index numbers, 1999 = 100)

A. Unit labour costs **B. GDP deflator**

Legend: EMU — EMU (excluding Germany) — Germany
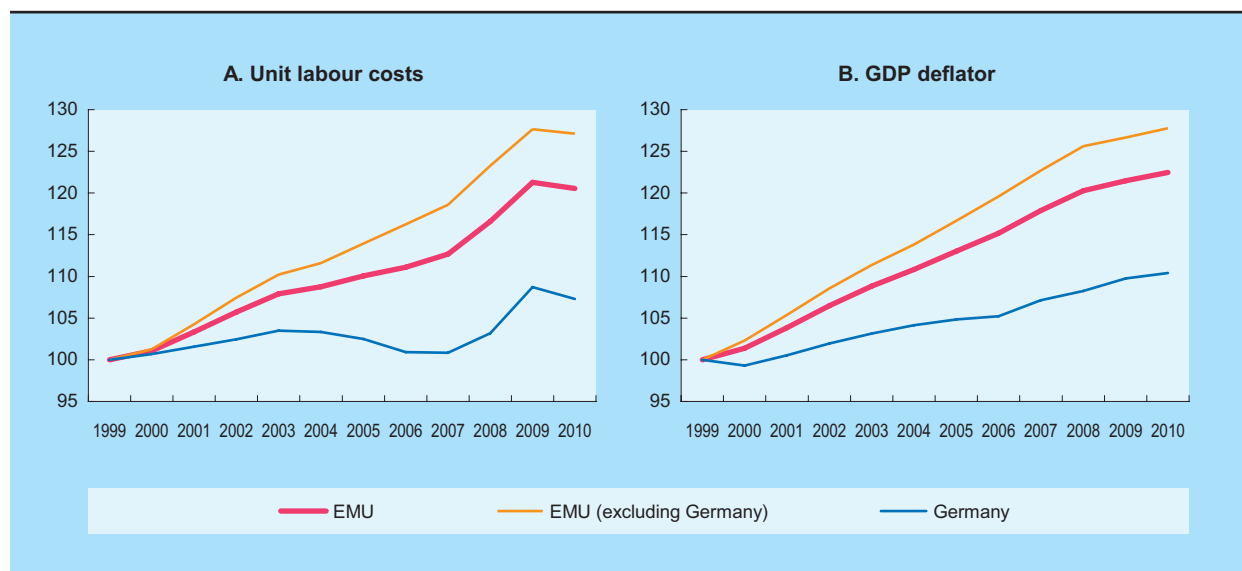
Source: UNCTAD secretariat calculations, based on *EC-AMECO* database.
Note: EMU comprises: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.

attempt to tackle its persistently high unemployment. Traditionally, nominal wage increases in Germany had been moderate, and in line with the objective of maintaining a low but positive inflation rate of about 2 per cent. But real wages (nominal wages divided by inflation) had risen mostly in line with productivity (GDP divided by the number of hours worked). The new approach – inspired by neoclassical employment theory – sought to reduce unemployment by keeping unit labour costs from rising. This policy shift in Germany coincided with the start of the European Economic and Monetary Union (EMU). German unit labour costs – the most important determinant of prices and competitiveness – barely rose after the start of EMU (chart 6.8), resulting in a dramatic divergence of movements in unit labour costs among EMU members.

In most of the eurozone countries of Southern Europe, nominal wage growth exceeded national productivity growth and the commonly agreed inflation target of 2 per cent by a rather stable margin. France remained in the middle, with nominal wages growing perfectly in line with the national productivity

path and the inflation target of 2 per cent. However, the dynamics of such a "small" annual divergence become dramatic when it is repeated every year for over 10 years or more. Thus, at the end of the first decade of EMU the cost and price gap between Germany and the Southern European eurozone members amounted to about 25 per cent, and between Germany and France to 15 per cent. In other words, Germany's real exchange rate had depreciated quite significantly despite the absence of national currencies.

The divergent growth of unit labour costs was reflected in similar price differentials. Whereas the EMU as a whole achieved its inflation target of 2 per cent almost perfectly, there were wide variations among the member countries (chart 6.8). Again, France was by far the best performer, aligning its inflation rate perfectly with the European target, whereas Germany undershot and the eurozone countries of Southern Europe overshot the target by a wide margin. Therefore, the expectation that the European Single Market would lead to an equalization of prices through the free movement of goods, capital and labour has not been fulfilled. The accumulated gaps

Chart 6.9

**CURRENT-ACCOUNT BALANCES
IN EMU, 1991–2010**

(Per cent of GDP)
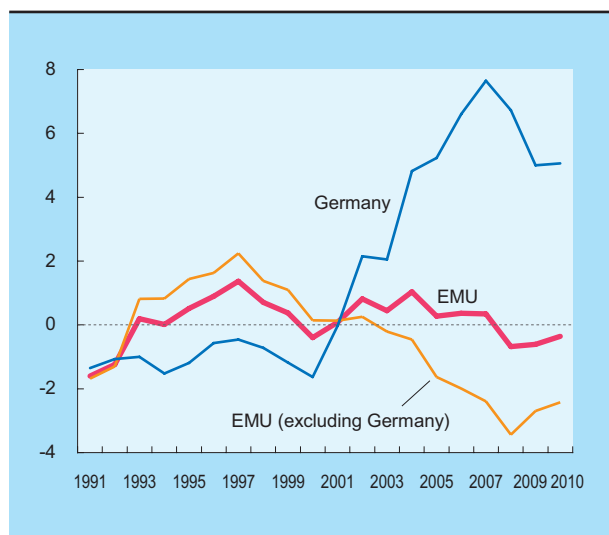
Source: UNCTAD secretariat calculations, based on *EC-AMECO*
database.
Note: For member countries in EMU, see note to chart 6.8.

give Germany a significant absolute advantage in international trade and an absolute disadvantage to the other countries. A comparable product, which in 1999 was sold at the same price in the European and global markets, could be sold by Germany in 2010, on average – compared with the other countries in EMU – at a price 25 per cent lower than a decade before, without affecting the profit margin.

The significance of the huge price and cost difference accumulated over the past decade is shown by the fact that it had an enormous and cumulative impact on trade flows. With Germany undercutting the other countries by an increasing margin, its exports flourished and its imports slowed down. Meanwhile, France and the eurozone countries of Southern Europe developed widening trade and current-account deficits. While trade was reasonably balanced over many years up to the start of the currency union, the latter marks the beginning of a sustained period of rising imbalances (chart 6.9). Even after the shock of the financial crisis and its devastating effects on global trade, this trend remains unchanged: Germany's current-account surplus rose again in 2010 and is heading for a new record in 2011.

The deep recession following the crisis and the austerity programmes subsequently introduced by the deficit countries tend to reduce the deficits. However, unless these countries are able to improve their overall competitiveness, there is a rather low probability of a quick recovery precisely because of the austerity programmes and the drastic cuts in public spending. Moreover, any revival of domestic demand will rapidly increase their current-account deficits once more.

From a longer term perspective, it is clear that, without the possibility of exchange rate adjustments, countries have to converge permanently towards a common inflation target. The huge gap in competitiveness has to be closed because otherwise the country with a dramatically overvalued currency will inevitably face mounting doubts about its ability to repay its debt. Any net repayment of external debt requires a current-account surplus in the debtor country and a deficit on the creditor country. To achieve this, a cooperative approach, or at least benign neglect by the surplus countries, is indispensable (Keynes, 1919).

Countries with an unsustainable external deficit and external debt cannot go bankrupt or disappear like failed companies; they have to find ways to cope with a situation where nearly all their companies are at an absolute disadvantage against their competitors in other countries. The least costly solution would be to reduce the cost of production (i.e. mainly nominal wages) exclusively in those parts of the economy that are exposed to international competition. But this is not possible when no distinction is made in wage setting between exporting and non-exporting firms, and when most firms produce for export as well as for the domestic market. Only a depreciation of the currency would reduce wages – expressed in foreign currency – when it is needed. In this way, domestic demand would be hit less than if there was a general fall in wages, but imports would become more expensive and would tend to be replaced by domestically produced goods, while exports would become cheaper on the external market.[3]

Therefore, in EMU and similar arrangements where it is not possible to make adjustments in the nominal exchange rate, the situation is particularly complicated, because a deficit country does not have the option to devalue its nominal exchange rate. The only solution is a devaluation of the real exchange rate through a wage reduction by the country concerned relative to the wages in the competing countries that have undervalued real exchange rates. If this process

has to rely exclusively on an overall wage reduction in the deficit countries it will have major negative effects on domestic demand. For example, if the eurozone countries of Southern Europe try to regain their competitiveness vis-à-vis Germany inside the EMU, their unit labour costs will have to undercut the inflation target of the union for quite some time or to a large extent. The effect for the EMU as a whole would clearly be deflationary and pose a threat to recovery, in particular if such policies are implemented in an environment where demand remains weak (see also chapter I). The process of labour cost convergence could be facilitated, and undesirable deflationary effects for the EMU as a whole avoided, if Germany's unit labour costs were to rise faster than the EMU inflation target during the period of adjustment.

The EMU experience offers lessons not only for countries within the union, but also for other countries, especially developing and emerging market economies. It shows that in order to avoid misalignments of the real exchange rate, which would have a number of negative effects, including on the international competitiveness of producers, on domestic investment in productive capacity, and thus on the entire process of industrial diversification and upgrading, it may be advisable for these countries to avoid excessively rigid exchange rate arrangements. At the same time, they should not leave the determination of their nominal exchange rate to market forces, which are frequently dominated by speculative capital movements that can generate excessive volatility.

E. Rules-based managed floating as a possible solution[4]

1. Flexibility of the nominal exchange rate

The current financial crisis has amply demonstrated the vulnerability of developing and emerging market economies that are exposed to sudden reversals of capital inflows. What is needed to contain such speculative flows and reduce their damaging impact on global economic stability is strengthened international cooperation in macroeconomic and financial policies as well as a new framework for exchange rate management. As discussed in *TDR 2009*, a system that helps prevent large movements and misalignments of the real exchange rates would promote greater stability of the conditions under which international trade is conducted and decisions on investments in real productive capacity are taken. Rules-based managed floating targeting a stable real exchange rate would serve this purpose and at the same time reduce the incentives for carry-trade speculation.

Unlike the Bretton Woods system and the similar pre-euro European Monetary System (EMS), the proposed system should be designed to prevent the build-up of large imbalances instead of correcting them after they have emerged. Both Bretton Woods and EMS were based on the idea that the member countries, in principle, would be able to achieve similar inflation targets, and that exchange rate changes would be necessary only in exceptional circumstances. By contrast, an approach aimed at stable real exchange rates while allowing for, and under certain circumstances requiring, changes in the nominal exchange rate, would not assume that countries pursue the same objectives in terms of inflation. Each country could decide autonomously on the acceptable or desirable level of inflation, but in order to prevent undesirable effects of inflation differentials on international trade and current-account balances, any emerging price and cost differentials would immediately be compensated by commensurate adjustments of the nominal exchange rate.

The exchange rate is a key variable in the conduct of both international trade and international financial transactions. Thus a system of rules-based managed floating could be built on either of the two following principles: adjustments of nominal exchange rates according to changes in purchasing power parity (PPP); or adjustments of nominal exchange rates according to uncovered interest rate parity (UIP). In the first case, the real exchange rate would be maintained by adjusting nominal exchange rates to inflation (or unit labour cost) differentials. The effect on the real exchange rate of higher inflation in one country would then be offset by a devaluation of the nominal exchange rate. In the second case, adjustments would follow the emergence of interest rate differentials between countries. As a result, the incentive for speculative capital flows in the form of significant differences between short-term interest rates, and the impact of such flows on the nominal exchange rate, would largely disappear. The real exchange rate would remain stable in both cases if inflation differentials were reflected exactly in the interest rate differentials. The first principle addresses more directly the need to avoid imbalances in trade flows, while the second is more directly related to avoiding imbalances in financial flows. However, both approaches tend to lead to a similar outcome, since differentials in official interest rates largely reflect differences in the rate of inflation, which itself is very closely correlated to changes in unit labour costs.

At least three important technical problems need to be addressed in order to implement either scheme. One is the determination of the level and range of nominal exchange rates as a starting point of this mechanism. Determining the appropriate "initial equilibrium exchange rate" will require a detailed investigation into the absolute purchasing power of all currencies. The second problem is the choice of the right indicator to measure the relevant exchange rate. In some cases there may be large differences between price and cost indicators. The third problem is the way the rules would be implemented by central banks. While the first problem is not tackled here, the following sections discuss possible solutions to the second and third problems.

Rules-based managed floating targeting a stable real exchange rate would help create stable conditions for international trade …

2. Towards greater stability of the real exchange rate

If the domestic prices increase, for whatever reason, the real exchange rate will appreciate because domestic goods become more expensive than foreign goods. Since a country trades not only with one but many trading partners, the real *effective* exchange rate (REER) may be the more relevant variable, since it measures the price levels of all the main trading partners, and is calculated by using the weighted average of a basket of currencies. The REER measures the overall competitiveness of a country vis-à-vis these trading partners, and a real effective appreciation implies a loss of competitiveness of the country.[5]

There can be significant differences in the measurement of the REER, depending on whether it is calculated on the basis of changes in the consumer price index (CPI) or on changes in unit labour costs (ULC). Over the longer term, ULCs (i.e. the sum of wages paid to generate one unit of a product) are the main domestic determinant of the rate of inflation (Flassbeck and Spiecker, 2007: 66–70). Chart 6.10 shows these two indicators for the four largest economies using 1995 (a year with low trade imbalances among the G-20) as the base year for the PPP path. On both counts, the REERs of Japan and Germany indicate a significant increase in competitiveness compared with the base year. Despite the persistent surpluses of these two economies and the recent nominal appreciation of the Japanese yen, their real exchange rates did not significantly appreciate in the subsequent years. On the other hand, the dollar appreciated sharply in real terms between 1995 and 2001, together with high and further rising current-account deficits. Although competitiveness in the United States has been steadily recovering since then, the 1995 level of the REER was again reached only in 2008. For all three countries the two measures move more or less in tandem, indicating that urgent policy action is required to reduce imbalances by realigning nominal exchange rates with domestic costs.

By contrast, in China the CPI-based REER has remained reasonably constant since the end of the

Chart 6.10

**EVOLUTION OF CPI- AND ULC-BASED REAL EFFECTIVE EXCHANGE
RATES, SELECTED COUNTRIES, 1991–2010**

(Index numbers, 1995 = 100)
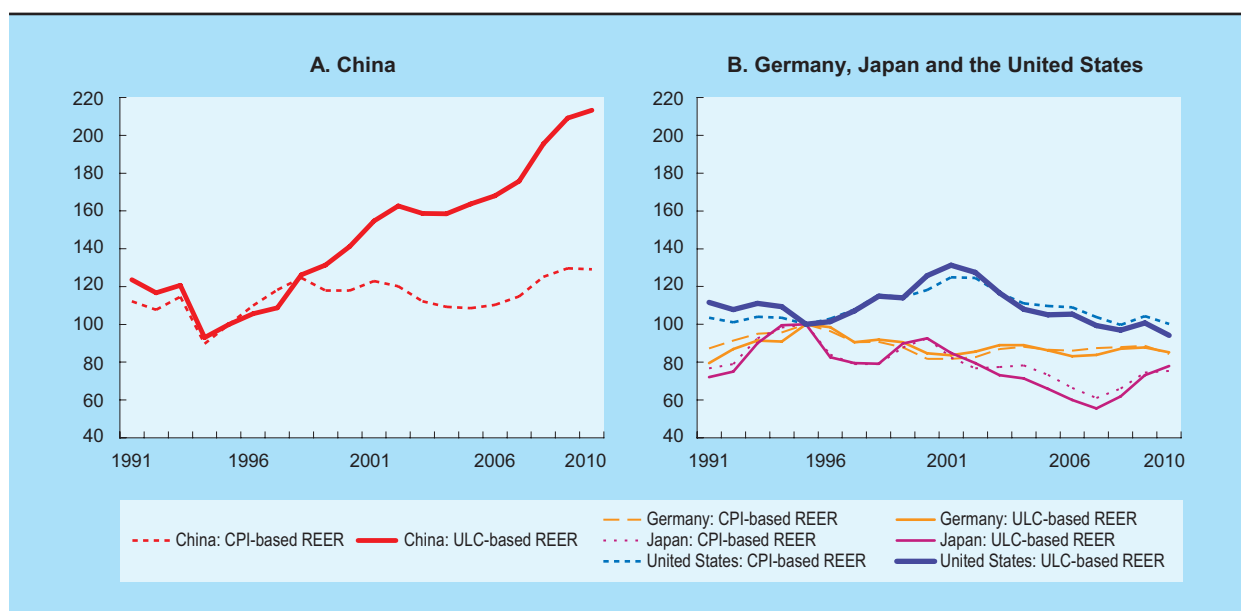
Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics* database; and Economist Intelligence Unit.

1990s, but the ULC-based REER has appreciated sharply since 1994. It rose consistently and strongly between 2000 and 2010, indicating an overall loss of competitiveness of this economy by about 40 per cent during this period. While the data used for this exercise do not cover the entire Chinese labour force, there are strong indications that wages in the Chinese economy have risen rapidly in recent years (ILO, 2010). An important indication of this trend of strongly rising nominal and real wages is the booming private domestic consumption.

Thus, on the basis of the ULC-based REER over several years, a rise in China's current account has coincided with a loss of international competitiveness of its producers. This can be explained by the particularities of China's economic development over the past two decades: China is the only large economy where foreign enterprises dominate exports and imports. Affiliates of foreign firms account for more than

… It would also facilitate decisions on investments in real productive capacity and reduce the incentives for carry-trade speculation.

60 per cent of all Chinese exports, and most of them use advanced technologies, incorporating high labour productivity and combining it with low absolute wages. This combination results in extraordinarily high profit margins and allows companies to conquer global markets by means of lower costs and prices.

Even if nominal and real wages and the ULC have been rising strongly in China over the past 10 years, the profit margins remain large enough for foreign producers to keep prices low in order to preserve market shares. This advantage of foreign investors will recede only slowly, as the process of catching up will take many years, or even decades, given the original low level of wages and low domestic capital stock in China compared with the most developed economies.

Contrary to what has been suggested by a number of prominent economists (see, for example, Bergsten, 2010), China cannot be accused of unfair

behaviour in international trade on the grounds that it has been keeping its nominal exchange rate fixed. What matters for competition in international trade is not the nominal exchange rate, but the REER and how it changes, because it is the latter measure that should be used to estimate the impact of domestic costs on trade flows and imbalances. Even if some uncertainty concerning the accuracy of the data is taken into account, China has undoubtedly experienced a significant real currency appreciation in recent years, since nominal wages and real wages have been rising much faster vis-à-vis productivity than in other major economies.

Since China serves as a hub of manufacturing production, employing the most advanced technology available globally, the ULC-based REER is the most reliable indicator of the country's competitiveness. If labour costs increase sharply in relation to productivity, as has occurred in China, competitiveness falls vis-à-vis producers in countries where the increase in labour costs has been lower. If, at the same time, the REER based on a price index remains unchanged, the economic situation of producers nevertheless deteriorates, because they accept falling profit margins to maintain their trade volumes. In this case, the ULC-based REER indicates the true outcome, whereas the CPI-based REER is misleading.

3. Exchange rate adjustment according to uncovered interest rate parity

Instead of targeting the real exchange rate by referring to a PPP path, rules-based managed floating could also refer to the size of an interest rate differential also referred to as the UIP. Under this approach the nominal exchange rate would be regularly adjusted according to the difference between the domestic interest rate and the interest rate of a reference currency.

In order to prevent short-term speculative carry trade, the UIP should be based on the short-term money market rate (ideally for one month, as it is more stable than the overnight rate), which is typically closely linked to the policy rate determined by central banks. From a technical perspective, a UIP rule is easier to implement than a PPP rule. Data on interest rates are available on a daily basis, whereas data on inflation or unit labour costs are normally published with a time lag of about a month.

In the short term the outcomes from applying one rule or the other can differ markedly, especially if the short-term interest rate is used as the main macroeconomic policy instrument of a central bank. In other words, if the exchange rate is targeted along a PPP path, there can still be some scope for carry-trade profits. In that case it may be necessary to complement the managed floating with capital controls. On the other hand, a UIP path can lead to short-term PPP deviations. Such deviations will be smaller when incomes policy measures are part of the macroeconomic tool kit in the fight against inflation (*TDR 2010,* chapter V, section C). However, compared with the large short- and medium-term exchange rate swings under the current regime of flexible exchange rates, any temporary deviations of this kind would appear to be of relatively minor importance.[6]

In principle, the UIP rule may be regarded as an implicit PPP rule. However, in cases where domestic inflation, and thus the domestic policy rate, is very high, devaluation resulting from managed floating following the UIP rule would lead to a rapid rise in import prices, and thus additionally fuel inflation. In this case, applying the PPP rule based on the unit labour cost might be the more appropriate solution.

For the euro-dollar exchange rate over the past 12 years, the differences are almost negligible (chart 6.11A). For other currencies, especially those of emerging markets, the differences are larger. The choice should therefore depend on the specific circumstances of each country. Nevertheless, for a country like Brazil the application of both rules would have avoided the sharp, unjustified real appreciation (chart 6.11B).

Chart 6.11

**EXCHANGE RATES OF SELECTED CURRENCIES:
ACTUAL VALUES AND SIMULATED PPP AND UIP PATHS**
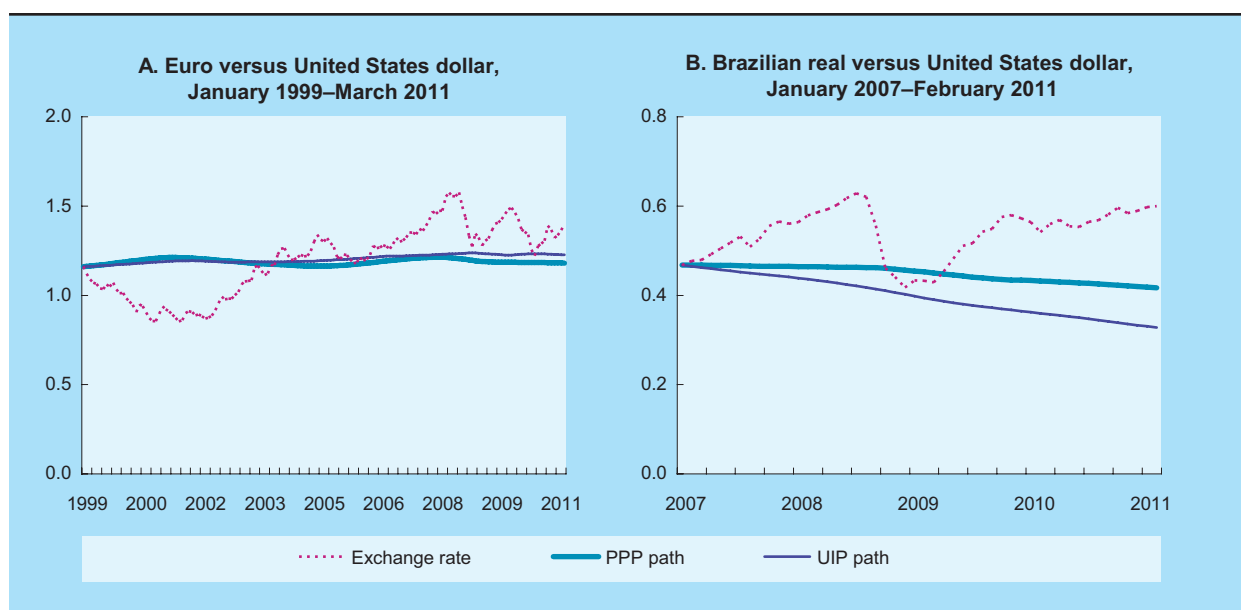
Source: UNCTAD calculations, based on Bloomberg; and IMF, *International Financial Statistics* database.

F. Limitations and effectiveness of managed floating

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1. Effectiveness of intervention in foreign exchange markets

Either approach to rules-based managed floating as outlined in the previous section implies regular intervention by central banks in the foreign exchange market. An important question, therefore, is whether such intervention is feasible in view of the huge amount of transactions on today's currency markets. It has been argued that foreign exchange market interventions are not effective, and that targeting the exchange rate is not possible. This is because of the high mobility of capital and because attempts at sterilization may prove futile in view of the huge size of international capital flows. A central bank attempting to target the exchange rate through intervention in the foreign exchange market would, sooner or later, lose control over the domestic money supply (Lee, 1997: 3).

The assertion that foreign exchange market interventions are ineffective suffers from a major methodological weakness, namely proving the counterfactual, which would require a generally accepted theory of exchange rate determination in a regime of fully flexible rates. But such a theory is simply not available. Moreover, the concrete objectives of central banks are not announced publicly and are likely to change over time, which makes it difficult to assess empirically whether interventions have delivered on the intended goal. Ineffectiveness would imply that major additional sales or purchases of an asset have no effects on its market price. This would only

Box 6.1

SLOVENIA – A CASE OF SUCCESSFUL MANAGED FLOATING

A little known example of the successful application of a strategy of managed floating is the one adopted by Slovenia (see Bohnec and Košak, 2007) before it joined the euro area. In its annual report of 2003, the Bank of Slovenia described its strategy as follows: "The Bank of Slovenia managed the euro/tolar exchange rate in accordance with the principle of uncovered interest parity, taking account of past inflation and inflationary expectations, policy interest rates of the ECB and the implicit risk premium. At the same time it aimed at maintaining the level of real interest rates, reducing inflation and at the convergence of nominal interest rates to qualify for EMU membership" (Bank of Slovenia, 2003: 23).

For many years the euro exchange rate vis-à-vis the Slovenian tolar followed a very stable UIP path (chart), being identical to the UIP path between January 1999 and the end of 2001. Thereafter, it followed a slightly flatter, but still very stable trend. From January 2004 onwards, a stable exchange rate vis-à-vis the euro was targeted, as the tolar became a member of the European Exchange Rate Mechanism II.

SLOVENIAN TOLAR–EURO EXCHANGE RATE: ACTUAL VALUES AND SIMULATED PPP AND UIP PATHS, JANUARY 1999–DECEMBER 2006
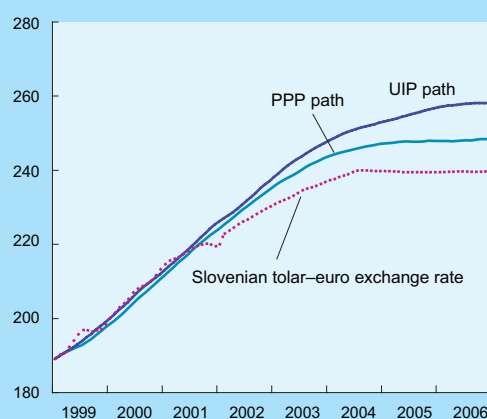
Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics* database.

be plausible if central bank intervention triggered a change in the demand or supply of that asset by other market participants, by an amount that would exactly offset the sales or purchases by the central bank. But as central bank interventions are normally carried out secretly, systematic compensating responses by market participants are impossible.

The potential for effective interventions depends on their direction: a central bank trying to stop a depreciation of its currency is much less likely to succeed than one that is trying to stop an appreciation. To counter a depreciation tendency, a central bank has to buy its own currency on the foreign exchange market by selling foreign currency. In the present system, the scope for an intervention of this kind is limited by the amount of foreign exchange reserves accumulated over the past. Financial market participants are of course aware of this constraint, and thus may often speculate successfully against the central bank. By contrast, a central bank which aims at preventing an appreciation of its currency buys foreign currency by selling domestic currency. As there are no limits to the supply of domestic currency, there are no quantitative barriers to such intervention, so that market participants will be discouraged from speculating persistently against this form of intervention.[7] Hence, developing and emerging market economies should target real exchange rates in a way that prevents overvaluation (see box 6.1).

2. The scope and cost of sterilization of foreign exchange market intervention

Another argument against a policy of foreign exchange market intervention concerns the potential cost of sterilization (Lee 1997:5; Bénassy-Quéré and Pisani-Ferry 2011: 30). Under normal conditions, the largest positions on the asset side of a central

Box 6.2

STERILIZED INTERVENTION AND THE BALANCE SHEET OF THE CHINESE CENTRAL BANK

The balance sheet of the People's Bank of China reflects a situation in which the central bank aims at sterilizing the liquidity effect of foreign exchange market intervention on the domestic banking system by attracting bank deposits and by issuing sterilization bonds.

SIMPLIFIED BALANCE SHEET OF THE PEOPLE'S BANK OF CHINA, DECEMBER 2010

(Billions of yuan)

Assets		Liabilities	
Foreign assets	21 542	Short-term bonds	4 050
Claims on other depository corporations	949	Monetary base	18 531
Other domestic assets	3 437	Other liabilities	3 347
Total	**25 928**	**Total**	**25 928**

Source: Balance sheet of the Monetary Authority of the People's Bank of China, Survey and Statistical database, available at: http://www.pbc.gov.cn/publish/html/2010s04.htm.

On the assets side, foreign exchange reserves account for 83 per cent of the total, while credits to depository institutions constitute only 4 per cent of the central bank's assets. On the liabilities side, 16 per cent of total liabilities are bonds. China's central bank relies heavily on minimum reserve requirements for the sterilization of foreign exchange market intervention, which explains the high share of the monetary base in total assets. Since April 2011, a record minimum reserve rate of 20 per cent is required. From the perspective of the central bank, sterilization through minimum reserves may have the advantage of avoiding interest payments to the banks. However, non-interest-bearing minimum reserves constitute an implicit tax on credit intermediation via banks, which creates a strong incentive to channel funds outside the regular banking system. This can be avoided if, as in China and a number of other countries, minimum reserves are interest-bearing (for China, see Geiger, 2008).

bank's balance sheet are refinancing credits for the domestic banking system and domestic government bonds. A central bank that buys foreign assets for a given amount has to reduce these refinancing credits by the same amount if it wants to avoid an impact of the intervention on the monetary base. On the other hand, refinancing credits for the domestic banking system are short term and can be easily adjusted, and the stock of domestic government bonds held by the central bank can be reduced at very short notice through open-market sales.

Even if upward pressure on the exchange rate is so strong that it requires a scale of intervention that exceeds the sum of refinancing credits and other domestic assets held by the central bank, the bank could still continue sterilizing the liquidity effect

of foreign exchange market intervention by issuing short-term notes. Alternatively, it could offer banks the possibility to deposit the excess liquidity in an interest-bearing central bank account. In principle, both instruments could be applied without quantitative limits. The domestic banking system would thereby switch from a net-debtor to a net-creditor position vis-à-vis the central bank (see the example of the central bank of China in box 6.2). As a result, the policy rate with which the central bank controls the domestic money market rate would no longer be the rate for its refinancing operations; it would be the rate for the deposit facility or the yield that it offers for its short-term notes.

The costs of sterilized interventions are determined by interest costs and the valuation losses

or gains from a central bank's foreign exchange reserves. The interest-related costs are determined by the reduced revenue from interest as a result of lower refinancing credits, plus eventual interest payments to be made by the central bank for a deposit facility or for sterilization bonds, minus interest revenue that is generated by the foreign assets acquired by the intervention. If the domestic policy rate is higher than the foreign short-term rate, the central bank indeed incurs an interest rate loss from the sterilized intervention. However, the total costs of sterilized interventions are also determined by the value of the net foreign assets. If the exchange rate is targeted along a UIP or PPP path and the domestic interest rate is higher than the foreign rate, the value of the foreign assets increases with the appreciation of the foreign currency. Thus the interest-related costs of sterilized intervention for the central bank are offset by a revaluation gain.

Assuming that the central bank had no foreign assets before the sterilized intervention, and that, consequently, the exchange rate is adjusted in line with the uncovered interest rate parity, the revaluation gains of the foreign assets compensate for the losses stemming from the difference between the interest earned on foreign exchange holdings and the cost of interest payments to domestic banks on sterilization instruments. However, there may be some costs for the economy as a whole, because, as with the value of the central bank's foreign assets, the domestic currency value of the private and public foreign debt of the country will also increase. The net effect then depends on whether the economy as whole is a net foreign debtor or a net foreign creditor. As long as a country has a high net foreign debt, it might therefore be more cautious about pursuing this strategy.

In any case, even if there are some costs involved in applying a system of managed floating based on PPP/UIP rules, these are likely to be largely outweighed by the macroeconomic gains from greater stability and predictability of the exchange rate obtained as a result of greater international competitiveness of domestic producers, more stable conditions for investment in real productive capacity, and thus faster GDP growth.

G. International cooperation on exchange rate management

Rules-based managed floating can be practiced as a unilateral exchange rate strategy, or, with much larger scope for intervention, through bilateral agreements or as a key element of regional monetary cooperation. However, the greatest benefit for international financial stability would result if the rules for managed floating were applied at the multilateral level, as part of global financial governance.

When adopted as a unilateral approach, the strategy of managed floating offers individual countries protection against the threat of carry-trade in situations where the domestic interest rate is higher than the interest rate of the country of the reference currency. This is because it considerably reduces or completely removes the risk-free profit potential of carry-trades. Thus an appreciation of the nominal and real exchange rates and its negative effects on the competiveness of the tradable sector of an economy can be avoided. It also removes the incentive for domestic debtors to incur their debt in foreign currency, when this is not indispensable for lack of foreign exchange from export earnings. The Asian crisis, but also the experiences of Iceland and some East European countries over the past decade, show the high risks associated with household and enterprise debt that is denominated in foreign currency. However, unilateral rules-based managed floating faces the constraint of limited foreign exchange reserves if pressure for depreciation arises,

as discussed above. This constraint can only be overcome by cooperation between central banks. If two central banks involved in a bilateral exchange rate determination are willing to cooperate, one of them is always in a stronger position than the other because it is able to intervene with its own currency.

Bilaterally managed floating allows two countries almost perfect control over their bilateral exchange rate. As revaluation pressure on one currency is always mirrored by depreciation pressure on the other, the two countries are able to defend their bilateral parity without the reserve-related limitation of the unilateral case (symmetrical intervention). In other words, the two countries would no longer fall prey to a speculative attack against their bilateral parity. Clearly, for such a bilateral solution to work without friction, the countries should pursue relatively similar macroeconomic policies.

In a regional approach to managed floating, a group of countries could agree on a common exchange rate policy based on the rules for managed floating discussed in this chapter. They could agree on a matrix of bilateral exchange rate parities, which would be modified continuously according to PPP and/or UIP rules. The European Monetary System preceding the introduction of the euro could be considered a de facto managed floating system where the adjustments were made in a discrete way, with the German central bank intervening in favour of weaker currencies in the system, and where ample short-term intervention credits were available. A similar rules-based managed floating system could be a central component of regional monetary cooperation in parts of Asia and Latin America.

An international approach to managed floating could be established in the form of a multiple hub and spoke system. Major currencies (i.e. the dollar, euro, renminbi, yen, pound sterling) could form a mutual network of bilateral exchange rate paths based on PPP and/or UIP with a commitment to bilateral intervention when necessary. The remaining countries could choose one of the hubs as the reference currency and organize, in collaboration with the central bank of a "hub" currency country, a bilateral nominal exchange rate path. This would, of course, require a commitment by the central banks of the "hub" currency country to intervene in favour of the weaker currency countries in case of a strong devaluation pressure on the latter.

> If a currency appreciation due to speculative capital flows could be prevented, it would significantly reduce the risk of a speculative attack that could lead to depreciation pressure.

In any case, if the system could prevent a currency appreciation due to speculative capital flows, the risk of a speculative attack that could subsequently lead to depreciation pressure would be much smaller. This would also reduce the need for central banks to accumulate foreign exchange reserves as a precautionary measure as well as the need for symmetrical intervention. Nevertheless, should a depreciation pressure arise, the use of capital controls as a supplementary measure is another line of defense. Predictable exchange rates are at least as important for the functioning of the international trading system as abiding by multilaterally agreed rules for trade policy.

H. Economic policy and the role of intervention

It is clear from what has been discussed in this chapter that it is possible to create a rules-based global monetary system. Such a system would:

- Be conducive to a fair international trading system,
- Create a level playing field for companies,
- Avoid the adverse effects of competition among countries,
- Enlarge policy space for national monetary policies, and
- Minimize the frictions stemming from short-term capital flows.

A system grounded in consistent intervention by the monetary authorities based on internationally agreed rules would help sovereign States open up their economies and mutually benefit from a greater exchange of goods and services.

A well-functioning currency system is crucial because it is the valve that regulates the pressure in all parts of the system, preventing any increase in pressure in certain parts that would endanger the survival of the whole system. There is ample proof that, left to its own devices, the market is unable to set exchange rates that reflect the fundamentals of the countries wishing to exchange goods and services. International economic policy-making has often assumed that it is mainly real shocks that need to be absorbed by the international system. However, after several decades of experience, it has become abundantly clear that monetary shocks, in particular in a system of flexible exchange rates, are much more important and could be dangerous if not managed collectively. The divergence of nominal values between economies has become a much more frequent feature of the globalized economy than real divergence.

Sovereign States, some with independent central banks, may not easily be convinced to agree to the necessary monetary cooperation. This is why the main and urgent task of the international community is to find a non-partisan rule that defines the values of currencies against each other. In the current non-system, individual countries can find only temporary and pragmatic solutions to their problems of over- or undervaluation. One of them is intervention – even on a daily basis – in the currency markets; another is capital controls or taxing inflows of hot money. These measures are perfectly justified when the prevailing belief continues to be that the market is able to set the right exchange rates. However, they do not solve the most urgent issue, that of applying the "categorical imperative" of international exchange, which would require finding the international value of the currency of one country that all its trading partners could accept.

In this chapter two rules are recommended for that purpose, which are somewhat complementary. The PPP rule, based on inflation differentials, aims at ensuring a level playing field for international trade and the prevention of shocks due to the loss of competitiveness for a country as a whole. The UIP rule aims at preventing interest rate differentials and thereby minimizing short-term capital flows that use these differentials to speculate with currencies and that often have the effect of driving the value of the currency in the wrong direction (i.e. away from fundamentals) over prolonged periods of time. Whereas PPP could be called the "categorical imperative" because it directly neutralizes nominal shocks arising from inflation differentials and creates a level playing field on the monetary side of the economy, UIP is more pragmatic and can be applied for much shorter periods of time. The latter is of some significance in

a world of high frequency financial trading, where market participants act in seconds to exploit price differences. In such a situation, with the UIP approach central banks can apply computer programs to steer the exchange rate with similar rapidity as the market participants so as to remove the incentive for this kind of destabilizing speculation. The PPP approach, where the fundamental data (the inflation differentials) are normally available only on a monthly basis, can be considered as the overarching medium-term rule that has to be re-established if the exchange rates based on UIP go astray due to extraordinary monetary policy actions.

While the concrete terms for such a scheme need to be discussed further, agreement could be reached on the principle. Those who reject it, for instance on the grounds that governments cannot know the correct value of a currency better than the markets, should consider the performance of financial markets and acknowledge that these markets have failed. The reason for this failure is easy to understand. Acknowledging it does not undermine the idea of the superiority of the market in finding prices in individual markets in general, but there is an important difference between financial markets and normal markets for goods and services. This difference is about information (as discussed in chapter V). Prices on goods markets are determined on the basis of bits of information that are individually available to many independent producers and consumers (for example, the atomistic market of Hayek (1949)). In financial markets there is not much individual information based on preferences; rather those markets are characterized by permanent guessing about the behaviour of all the other market participants. All market participants have more or less the same set of general information about the overall economy or a special market, but as a result,

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the market is very much determined by expectations of what others will do. Such herd behaviour is a general and persistent feature of these markets, and does exactly the opposite of what is expected from an atomistic market as described by Hayek. The processing of independent individual information is replaced by guessing and eventually betting on the most probable market outcome based on the generally shared and always incomplete information about future developments. There is no reason to believe that governments or central banks cannot play this game as successfully as market participants.

As far as the currency market is concerned, governments and their respective central banks generate the most important information themselves, namely about inflation rates and interest rates. As short-term interest rates are directly set by central banks with the aim of achieving a given inflation target, it would be absurd to argue that the market knows better than two central banks what the right relative price is between their two currencies. In the same efficient way as they can set national targets and use their instruments to achieve them, the central banks can also determine the price between the two currencies. Clearly, the price they could regularly agree upon will be the UIP- or the PPP-based price.

Hence, intervention by governments and central banks in financial markets should not be seen as an exception to the rule of free markets, but rather, as a means of making the market function more efficiently. Experience has shown that by leaving the most important macroeconomic prices (e.g. the exchange rate, the interest rate and the wage rate) entirely to market forces, there is a high probability of strong destabilizing effects, which will eventually require even more far-reaching government intervention. ■

Notes

1 Many developing countries are not receiving such short-term flows, and are therefore less susceptible to appreciation pressure, despite their higher interest rates. This is because, given the high transaction costs in these countries, there would have to be a very large interest rate differential to make the transaction profitable. Those high costs are due to the lack of an adequate financial infrastructure that enables or facilitates short-term financial placements, or because market participants may be concerned about the safety of such investments in some of the countries.

2 The ratio is defined as the three-month interest rate differential between the target and funding currency divided by the one-month implied volatility of the bilateral exchange rate.

3 In any case, real wages fall across the board in the depreciating country to the extent that inflation tends to rise with higher import prices.

4 This section benefits from a background paper by Bofinger, 2011.

5 In this analysis, references to real exchange rates refer to real effective exchange rates.

6 Over the medium term, the difference between the two approaches is not significant. Taking the case of two countries, for the sake of simplicity, it can be assumed that in both countries the policy interest rate (i) is determined according to the following Taylor rule: $i = r + \pi + 0.5\,(\pi - \pi^T) + 0.5\,y$. If both countries use the same rule, and assuming that over the medium term the output gap (y) and the inflation gap (i.e. the difference between the actual inflation rate (π) and the inflation target (π^T)) are zero, and that the real interest rate (r) is identical, the differences between the nominal interest rates and the inflation rates are identical.

7 As the central bank can create the liabilities with which it acquires foreign reserves *ex nihilo*, it is not correct to say that sterilized interventions "divert savings that could be harnessed for more productive uses" (Bénassy-Quéré and Pisani-Ferry, 2011: 31; see also *TDR 2009*, chapter IV, box 4.2).

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