V. Foreign exchange markets

Highlights

The persistent strength of the US dollar and the yen's weakness were salient features of foreign exchange markets in 2001 and early 2002. The euro tended to trade within a relatively narrow range against the dollar and remained roughly stable in nominal effective terms. In April and May 2002, however, the dollar lost substantial ground against both the euro and the yen.

As in previous years, the prospects for relative economic performance in the main economic areas, which underpinned portfolio and foreign direct investment (FDI) flows, appeared to be the principal force driving broad exchange rate movements between the main currencies. Monetary policy decisions and interest rate differentials also seemed to influence exchange rates, but mostly through their effect on growth expectations. This is in stark contrast to the 1980s and most of the 1990s, during which the dollar tended to appreciate when interest rate differentials widened in favour of the United States. The yen weakened as the Japanese financial sector appeared to become more vulnerable and the monetary authorities struggled to boost domestic demand with policy rates already at zero.

In other foreign exchange markets, the strength of the pound sterling and the Swiss franc persisted. This raised concerns for policymakers, as highlighted by the Swiss National Bank's decision to lower its policy rate in May this year. The Swedish krona weakened appreciably up to October 2001 before regaining strength against both the euro and the dollar. The Canadian dollar hit new all-time lows before recovering somewhat, while the Australian and New Zealand dollars rebounded against the background of strong domestic growth.

In emerging market countries, a number of currencies depreciated further against the US dollar in a context of slowing global demand. Nevertheless, most foreign exchange markets remained broadly calm. Although in the course of 2001 the Brazilian real and the South African rand were affected by the marked worsening of conditions in Argentina, once the crisis erupted in December further fallout was limited. In part, the limited spillover reflected the fact that a number of emerging market economies had been moving towards more exchange rate flexibility in recent years, including in several cases the adoption of inflation targets as the focus of monetary policy. While the role of the exchange rate as an explicit policy objective may have been reduced or eliminated, exchange rate considerations still play a significant role in policy formulation.

Dollar, yen and euro

Key developments

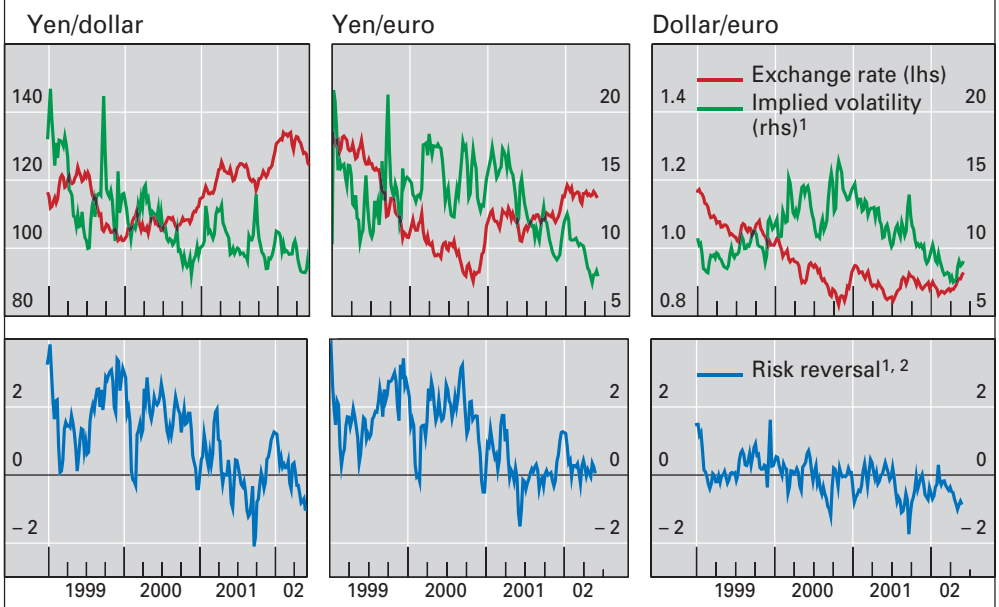
Dollar strength ...

The continuing strength of the dollar was a salient feature of foreign exchange markets during much of the period under review. Between January 2001 and March 2002, the dollar appreciated by 8% in nominal effective terms, to its highest level since autumn 1985. The events of 11 September put only very temporary downward pressure on the currency. In April and May 2002, however, there was some evidence that the dollar's strength was waning.

... yen weakness ...

In contrast to previous years, the weakness of the yen was another main theme in foreign exchange markets. In nominal effective terms, the yen lost about 8% between January 2001 and March 2002. While it had strengthened in 1999 and fluctuated in the range of ¥105–110 to the dollar during most of 2000, the yen depreciated markedly in 2001 and early 2002, reaching levels close to ¥135 (Graph V.1). The yen also depreciated against the euro, from ¥108 to ¥118. Information extracted from one-month yen/dollar options reveals a noticeable break in the pattern of market expectations about the yen between 2000 and 2001. In the course of 2000, traders' expectations of yen/dollar levels one month ahead were broadly stable (Graph V.2). The same was true of their assessment of the balance of risks between a much stronger and a much weaker yen. By March 2002 the mean of expected future yen/dollar rates had increased substantially, and market participants' view of the balance of risks had tilted towards a much weaker yen. In April and May 2002, however, the yen regained some ground. In addition, options prices indicated that the bias towards a weaker yen had diminished.

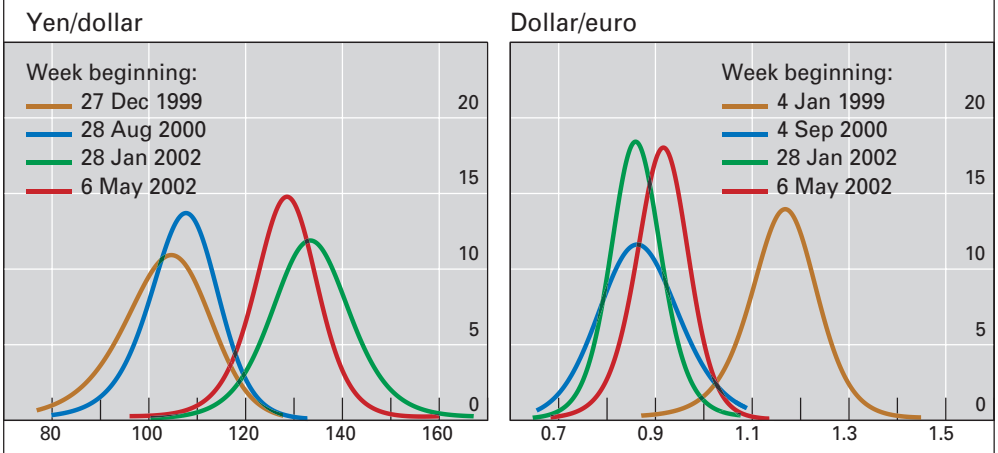
Exchange rates, implied volatilities and risk reversals of the dollar, yen and euro



[1] One-month, in percentages. [2] A positive value indicates a bias towards dollar strength in the left- and right-hand panels, and towards euro strength in the centre panel.

Sources: Dresdner Kleinwort Wasserstein Research; Reuters; BIS calculations. Graph V.1

Probability distributions of the dollar against the yen and euro[1]



[1] The calculation assumes risk neutrality and is based on weekly averages of daily estimated density functions for the periods shown.

Sources: JP Morgan; BIS calculations. Graph V.2

... and stability of the euro

The behaviour of the euro also changed substantially in 2001. In nominal effective terms, the euro gained some 6%. During most of its first two years of existence, the euro had depreciated steadily against both the dollar and the yen, as well as in nominal effective terms. In 2001 and the early part of 2002, by contrast, the euro remained fairly stable against the dollar, trading mostly in a range between $0.93 and $0.86. Against the yen, it appreciated by around 5%. Information extracted from options prices reveals that market participants' expectations of near-term dollar/euro rates have remained fairly constant since 2000 and, moreover, their variance has declined.

Short- and long-run perspectives

Desirable short-term effects of the strong dollar

From a short-run perspective, once US growth picked up again in the fourth quarter of 2001, the strength of the dollar appeared beneficial in helping to redistribute aggregate demand to economies that were growing more slowly. In particular, the weakening of the yen has supported external demand for Japanese products, boosted corporate profits and raised the yen value of foreign assets. On balance, however, the net effect on demand may have been comparatively small so far, given the modest size of the depreciation and the limited share of trade in the Japanese economy. While emerging market currencies, broadly speaking, tracked the dollar's movements against the yen or the euro less closely than in the past, the stronger dollar still raised concerns in many countries.

Some concerns from a long-term perspective

The United States emerged from the recent slowdown with a current account deficit of around 4% of GDP. The resulting further increase in US external liabilities raised once again the issue of the long-run sustainability of current exchange rate levels. This issue became more relevant last year for two additional reasons. First, net payments on the US international investment position, while still extremely small compared to US output, had steadily increased as a fraction of US exports, from 0.5% in 1998 to almost 2%

in 2001 (see Chapter II). Second, while external finance more than covered the US current account deficit, its composition changed in a way that might have made the dollar more vulnerable to sudden changes in investor sentiment. Between 2000 and 2001, the share of portfolio flows rose and that of FDI flows (mostly related to transatlantic merger and acquisition activity) fell sharply. The portion of the US deficit financed by official dollar reserves, increasingly invested in government-sponsored enterprises, remained roughly constant (Table V.1).

That said, it remains difficult to assess how current exchange rate levels compare to long-run equilibrium values. One approach to estimating these

Official foreign exchange reserves

	1998	1999	2000	2001	Amounts outstanding at end-2001
	in billions of US dollars				
	Changes, at current exchange rates				
Total	27.0	140.0	149.5	100.4	2,021.5
Industrial countries	–32.8	50.3	55.7	–0.4	775.5
United States	5.2	–3.8	–0.9	–2.3	29.0
Euro area	–32.9	–41.0	–8.5	–12.5	205.3
Japan	–4.7	74.5	69.5	40.5	387.7
Asia	62.8	79.0	52.5	76.0	770.5
China	5.1	9.7	10.9	46.6	212.2
Hong Kong SAR	–3.2	6.6	11.3	3.6	111.2
India	2.6	5.0	5.3	8.0	45.3
Indonesia	6.3	3.8	2.0	–1.2	27.0
Korea	32.3	21.7	22.2	6.6	102.5
Malaysia	4.7	4.9	–1.0	1.0	29.6
Philippines	2.0	4.0	–0.2	0.4	13.3
Singapore	3.5	1.9	3.4	–4.8	74.9
Taiwan, China	6.8	15.9	0.5	15.5	122.2
Thailand	2.7	5.4	–1.9	0.4	32.3
Latin America[1]	–9.7	–8.8	2.0	–0.1	135.7
Argentina	2.3	1.6	–1.7	–9.9	14.5
Brazil	–8.2	–7.8	–2.3	3.2	35.7
Chile	–1.9	–1.1	0.4	–0.5	13.9
Mexico	3.3	–0.5	4.2	9.2	44.4
Central and eastern Europe[2]	6.5	1.7	19.1	13.3	110.4
Other countries	0.2	17.8	19.8	18.8	236.2
	Changes, at constant exchange rates[3]				
Total	23.2	180.9	185.9	131.8	2,021.5
Dollar reserves	51.3	146.4	111.7	79.1	1,517.1
Non-dollar reserves	–28.1	34.5	74.2	52.7	504.4

[1] Countries shown plus Colombia, Peru and Venezuela. [2] Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia and Slovenia. [3] Partly estimated; valued at end-of-year exchange rates.

Sources: IMF; national data; BIS estimates. Table V.1

values focuses on differences in the prices of goods and services across countries, measured by estimates of purchasing power parity (PPP). A second approach estimates fundamental long-term equilibrium exchange rates (FEER), which are levels compatible with internal (savings/investment) and external (current account) equilibrium. Estimates of both PPP and FEER suggest that at current levels the dollar lies above, and the euro below, long-term equilibrium values. However, the magnitude of these estimated deviations varies substantially across empirical studies, ranging from 5 to 40%.

Factors driving exchange rate movements

The role of medium-term growth prospects

As in recent years, medium-term prospects in the main economic areas appear to have been an important driving force behind the broad movements in the major currencies. The persistent strength of the dollar suggests that market participants considered the comparative medium-term growth prospects for the United States to be resilient to the slowdown in the economy in the first three quarters of 2001. There were, however, two noteworthy developments in this relationship compared with preceding years.

The yen responded to cyclical factors once more

First, while economic conditions in Japan continued on the same subdued trend, the yen's response seems to have altered. Between late 1998 and the end of 2000, the yen had either appreciated or remained stable against the dollar in spite of the worsening cyclical situation in Japan. Thereafter, by contrast, the yen's weakness reflected more clearly the continuing negative economic outlook. The depreciation may have been related to the Bank of Japan's aggressive easing of monetary conditions during 2001 (see Chapter IV). It was also consistent with growing concerns about the condition of the Japanese financial system and market participants' apparent disappointment at the slow progress of structural reforms (see Chapter VI). Market participants' perception of changes in the attitude of the Japanese authorities towards the value of the yen may have had a temporary influence on the currency, particularly around the end of last year.

The euro's stability reflected greater similarity

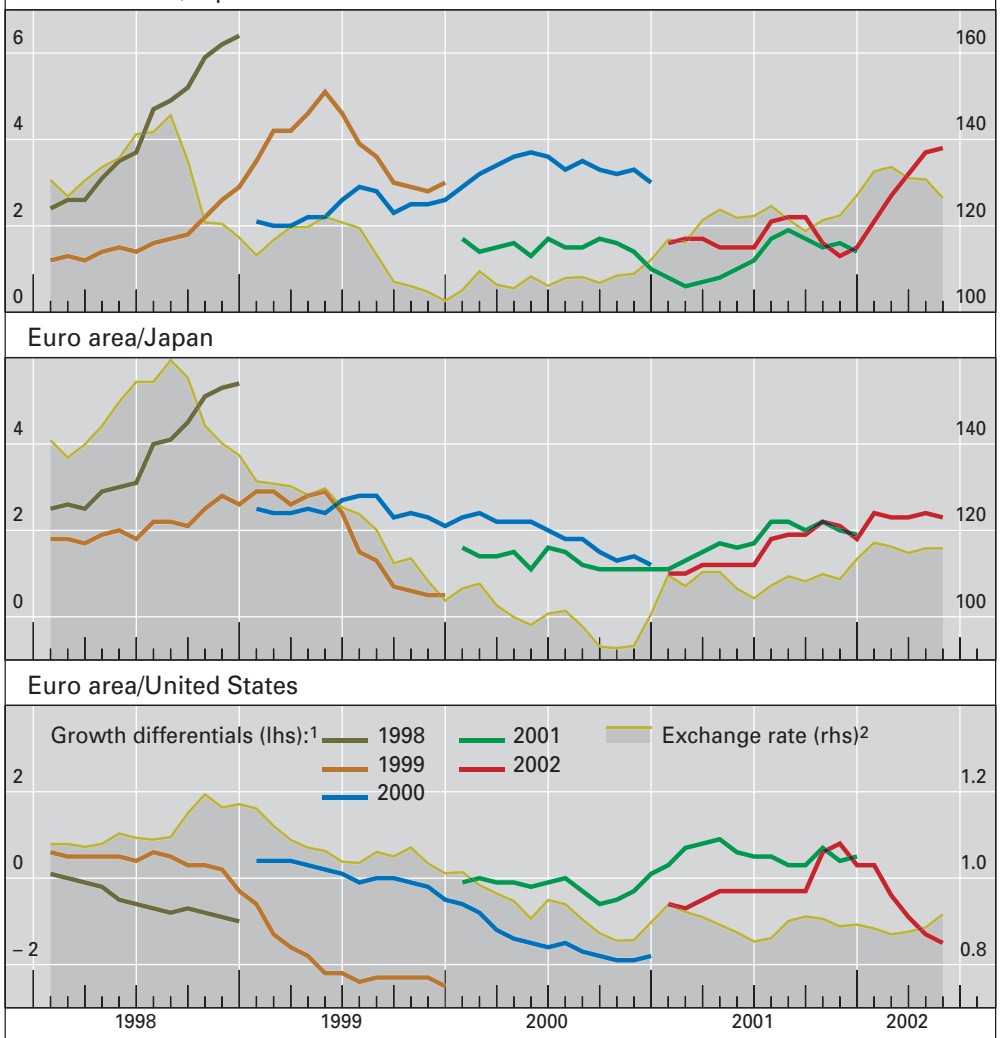
Second, the link between medium-term growth prospects and broad exchange rate movements continued to hold for the dollar/euro rate even as the underlying economic situation changed. In contrast to 1999 and 2000, when medium-term growth in the United States was expected to outpace that in the euro area, in 2001 market participants viewed the two economic areas as evolving more similarly. Consistent with this view, the dollar/euro rate fluctuated within a relatively narrow band.

The relationship between exchange rate movements and medium-term growth prospects is also evident from the behaviour of forecasts of one- to two-year growth, portfolio and FDI flows, and interest rate differentials.

Revisions of growth forecasts underpinned exchange rate movements

The depreciation of the yen against both the dollar and the euro over most of 2001 was in line with revisions in market participants' one- to two-year forecasts of growth differentials, which clearly favoured the United States and the euro area (Graph V.3). The relative stability of the dollar/euro rate appears to have been underpinned by a narrowing of expected growth differentials one to two years ahead across the two currency areas.

Growth forecast differentials between the three major economies



[1] In the top two panels, growth forecasts in the United States and the euro area respectively minus that in Japan; in the bottom panel, that in the euro area minus that in the United States. In percentage points. [2] Yen/dollar, yen/euro and dollar/euro rates respectively, at the time of the survey.

Sources: © Consensus Economics; national data; BIS calculations. Graph V.3

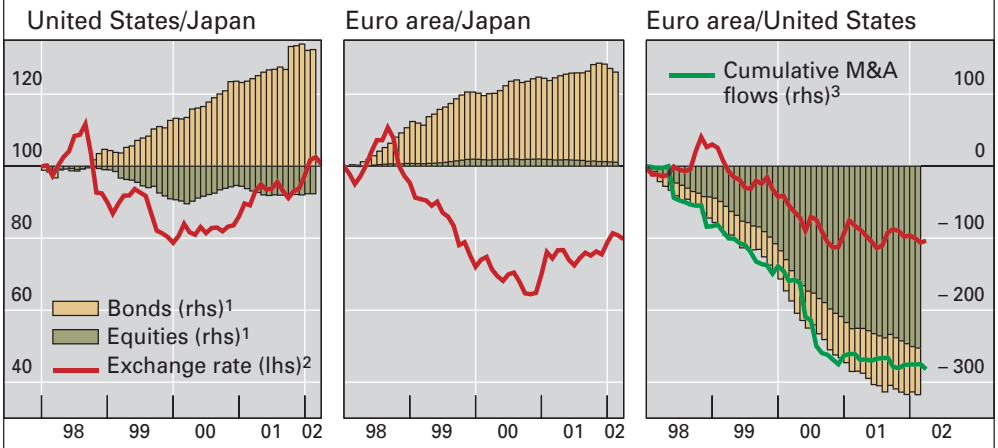
The role of portfolio flows ...

Medium-term growth prospects were also reflected in the dynamics of portfolio and FDI flows. These were mostly driven by cross-border merger and acquisition (M&A) activity, which also continued to be correlated with broad exchange rate trends. Portfolio flows in 2001, particularly in bonds, again favoured the United States and the euro area over Japan (Graph V.4). At the same time, the pace of net portfolio flows from the euro area to the United States slowed visibly in the course of the year. This development was consistent with the euro stabilising against the dollar after its previous negative trend.

... and M&A-related flows

Likewise, cross-border M&A activity, which in net terms had favoured the United States in 1999 and 2000, became more balanced in 2001 and early 2002 (Graph V.4). Statistical tests of the effect of transatlantic M&A deals on the dollar/euro rate suggest that traders reacted to M&A announcements,

Cumulative portfolio flows between the three major economies

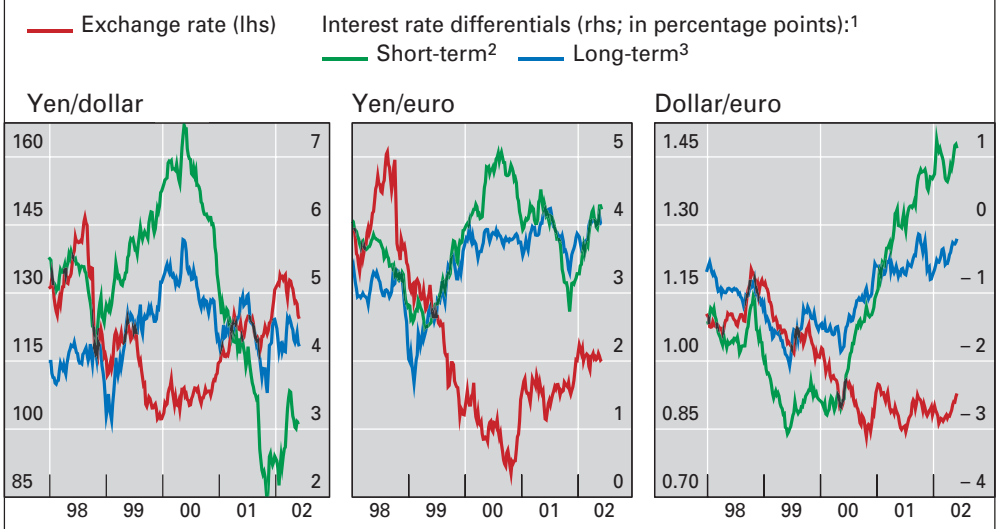


[1] Cumulative flows since January 1998, in billions of US dollars. A positive value indicates, in the left-hand panel, a net flow into the United States and, in the other panels, into the euro area. Data may include official transactions; for the centre panel, Japanese investors only. [2] Yen/dollar, yen/euro and dollar/euro; December 1997 = 100. [3] Cumulative net flows into the euro area since January 1998, in billions of US dollars. Observations are assigned to the announcement date of the deal.

Sources: Japanese Ministry of Finance; US Treasury; Bloomberg; national data. Graph V.4

arguably because they were seen as an indicator of the relative strength of growth prospects in the two economies involved. At the same time, the fact that transatlantic M&A flows became more balanced in the course of 2001 suggests an alternative interpretation. It could be that the strong inflows into the United States in the preceding years reflected a one-time adjustment of capital stocks related to European monetary union and a desire on the part of large European corporates to take on a global dimension.

Exchange rates and interest rate differentials



[1] In the left-hand and centre panels, calculated as US and euro area rates respectively minus Japanese rates; in the right-hand panel, euro area minus US rates. [2] Using forward interest rates derived from six- and 12-month Libid. [3] Using 10-year swap rates.

Sources: Bloomberg; national data; BIS calculations. Graph V.5

Repeating a pattern observed in 1999 and 2000, but in stark contrast to the 1980s and most of the 1990s, monetary policy decisions and interest rate differentials appeared to influence exchange rates mostly through their effect on growth expectations. Hence, reflecting a perception of more robust growth in the United States relative to Japan and the euro area, as discussed above, the dollar remained strong even against the background of a substantial narrowing of short-term interest rate differentials favouring the United States over Japan, and of a fall in US rates below euro area rates for the first time since the mid-1990s (Graph V.5). Similar patterns were observed for long-term interest rate differentials and exchange rates.

Interest rates and exchange rates remained decoupled

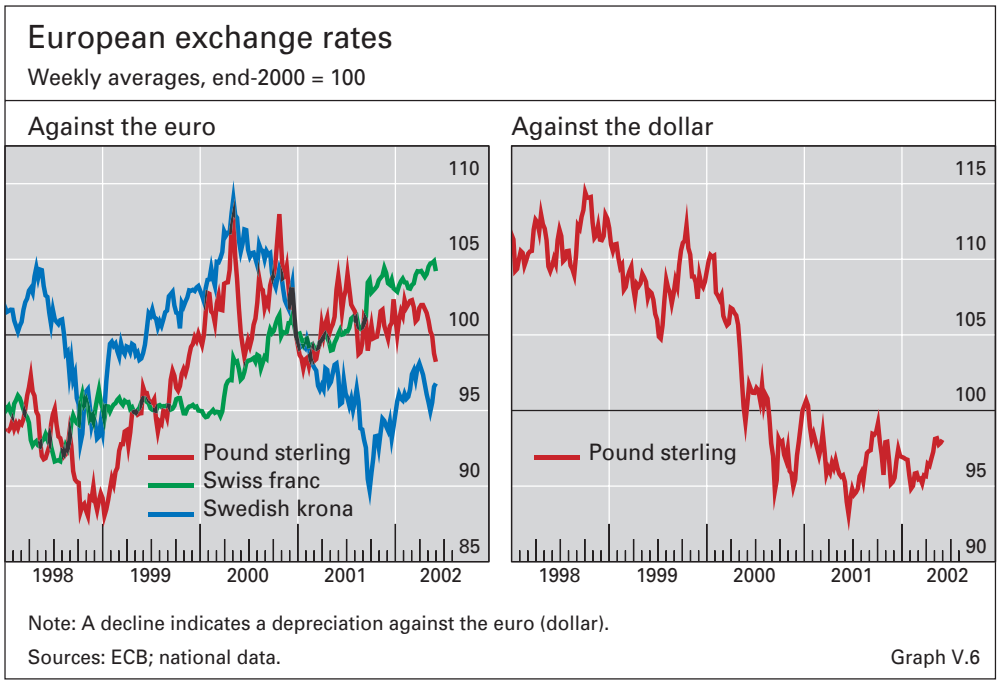
Developments in other foreign exchange markets

European currencies

During the period under review, the pound sterling tended to strengthen slightly against the euro, while it fluctuated between £0.67 and £0.71 against the dollar (Graph V.6). The pound's broad movements appeared to be consistent with growth forecast and productivity growth differentials between the United Kingdom on the one hand, and the United States and the euro area on the other. Discussion about UK entry into EMU in the near future did not seem to weigh on sterling. The continuing strength of the pound contributed, however, to an imbalance between the tradable and non-tradable sectors. This posed a challenge for UK policymakers when external conditions worsened in the course of 2001 (see Chapter IV).

Sterling and Swiss franc strength raised concerns for policymakers

The Swiss franc mostly trended higher against the euro. This represented a break with its very tight trading range against the euro during the first 18 months of EMU. It was also different from the pattern observed before EMU, when the Swiss franc tended to weaken against the Deutsche mark



Note: A decline indicates a depreciation against the euro (dollar).

Sources: ECB; national data.

Graph V.6

when the mark weakened against the dollar. However, in early 2002 the franc seemed to return to its earlier pattern. At times the Swiss currency appeared to benefit from safe haven flows. As in the United Kingdom, the strength of the currency raised concerns for the monetary authorities (see Chapter IV).

The krona's swings reflected various factors

The Swedish krona's behaviour changed markedly during the period under review, reflecting a variety of factors. Until September 2001, it continued to depreciate sharply against the euro and the dollar. The krona's weakness could be attributed to the downturn in the Nasdaq, given traders' focus on the dominance of the high-tech sector in Sweden, and, characteristically, to the increased uncertainty in global financial markets. An additional factor might have been the sizeable purchases of foreign assets by domestic investors. These came in the wake of changes to pension fund regulations in 2000 that had relaxed restrictions on foreign exchange exposures. Indirect evidence on this factor is provided by the 2001 Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity conducted by 48 central banks and monetary authorities. In contrast to most other countries, the survey showed a noticeable rise in foreign exchange market turnover in Sweden between April 1998 and April 2001. An acceleration of the fall in the krona induced the Riksbank to intervene in its support in June 2001. The krona rebounded in October 2001 against the background of a revival of confidence in global financial markets and improving economic conditions in Sweden. By April 2002 it had gained almost 10% against the euro.

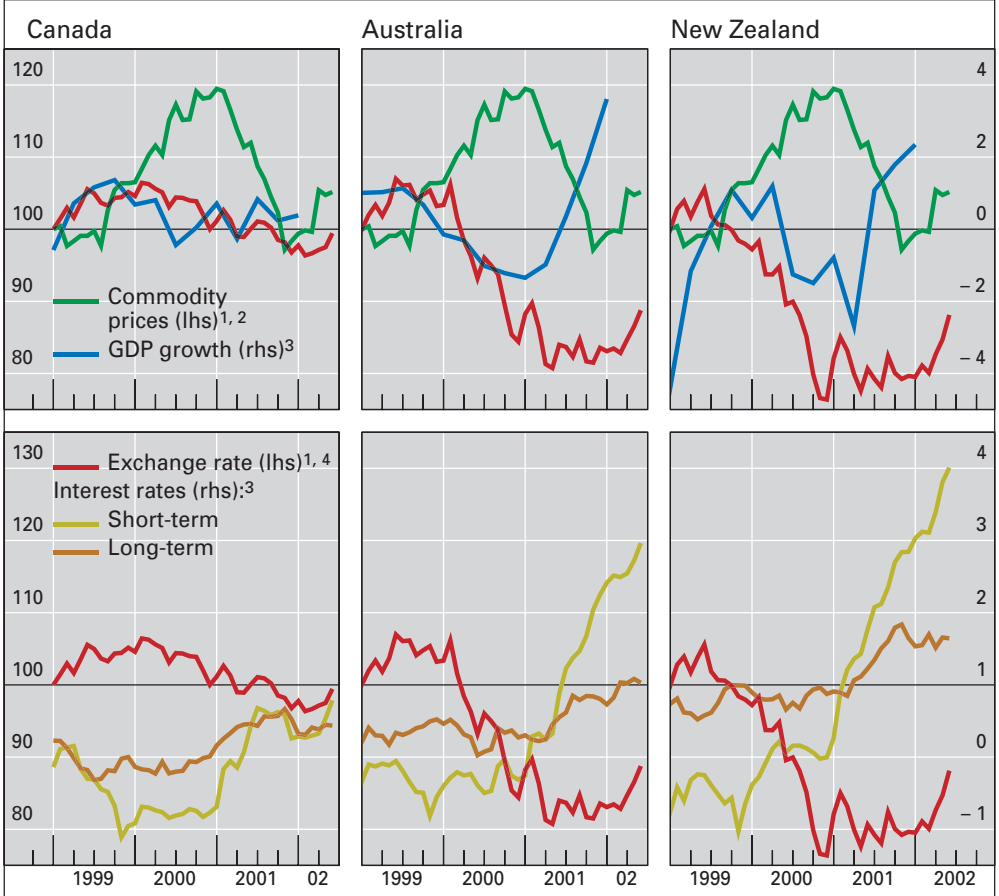
Currencies of other industrial countries

Different trends

The Australian and New Zealand dollars ended their depreciating trend against the US dollar in the context of a surge in domestic growth and more favourable interest rate differentials (Graph V.7). By contrast, the Canadian dollar continued to weaken during most of the period under review, and reached historical lows around C$ 1.62 to the US dollar in January 2002. In part this difference from the Australian and New Zealand dollars can be explained by more muted growth in Canada. The depreciation against the US dollar may also have reflected growing international diversification by Canadian asset managers following a relaxation of investment restrictions. As in Sweden, this shift may account at least in part for the otherwise unusual rise in domestic foreign exchange market turnover between 1998 and 2001, which is also evident from the 2001 triennial survey.

Between early 2000 and late 2001, the traditional positive correlation between the Australian, Canadian and New Zealand dollars and commodity prices failed to hold, possibly reflecting the increasing focus in foreign exchange markets on domestic growth. In 2000, the three currencies had weakened to historical (or close to historical) lows even as commodity prices had risen substantially. Similarly, in the first three quarters of 2001, the sharp drop in commodity prices against the background of falling global demand did not draw the Australian and New Zealand dollars any lower, though the Canadian dollar did continue its earlier weakening trend.

Commodity prices, growth and interest rate differentials and exchange rates



[1] December 1998 = 100. [2] Bridge/Commodity Research Bureau (CRB) Futures Price Index. [3] Differentials vis-à-vis the United States, in percentage points. [4] Against the US dollar; a decline indicates a US dollar appreciation.

Sources: Datastream; national data. Graph V.7

Emerging market currencies

Three salient features

The three principal features of foreign exchange markets in emerging market economies during the period under review were the collapse of the Argentine peso around the turn of the year, the lack of significant contagion from the crisis in Argentina to other currency markets, and the sizeable movements exhibited by some other currencies, including the Brazilian real, the Chilean peso, the South African rand and the Turkish lira.

The crisis in Argentina was foreshadowed by a prolonged period of pressure on the peso and the domestic financial system, and erupted violently in late December 2001 (see Chapter III). Argentina's decade-old convertibility regime ended on 6 January 2002 in the context of a serious economic and political crisis. The peso was floated on 11 February, and by end-May it was trading at around 3.50 pesos to the US dollar, more than 70% lower than before devaluation (Graph V.8).

Limited spillover from the Argentine crisis ...

Although there were episodes of spillover to other foreign exchange markets, these were short-lived and limited in scope. Following the

Exchange rates in emerging markets[1]

Weekly averages, end-2000 = 100

Note: A decline indicates a dollar (euro) appreciation.

[1] Against the US dollar (for the currencies in the bottom left-hand panel, against the euro). [2] Twelve-month forward rate.

Sources: ECB; Bloomberg; Datastream. Graph V.8

unsuccessful government debt auction in Argentina in July 2001, selling pressure hit the Chilean peso, the rand, the real and the Turkish lira. The real and the Chilean peso, which had depreciated over most of 2001, touched all-time lows, prompting the central banks to undertake several rounds of intervention. However, both currencies recovered around the year-end and weakened only for a few days after the collapse of the Argentine peso. The Mexican peso showed very brief signs of weakness in early 2001 but otherwise posted a strong performance for most of the time. The decline of the rand, which was driven mainly by domestic factors and international investors' concerns about political instability in neighbouring Zimbabwe, accelerated when conditions in Argentina deteriorated in July. Nonetheless, the currency recovered from all-time lows in late 2001 at the very time the Argentine crisis was becoming acute. There was no notable contagion in Asia.

... for several possible reasons

There are several possible reasons why the immediate fallout from the Argentine devaluation in other emerging market countries was so limited. First, in recent years there has been a broad trend in these countries towards more flexible exchange rate policies (see below). Currencies have tended to float more freely and new monetary policy frameworks have been adopted to anchor inflation. This trend has arguably improved the resilience of foreign exchange markets. Second, the Argentine crisis had long been anticipated by market participants. Third, the lower risk tolerance that had characterised foreign exchange markets since 1998 may have been reflected in a contraction of leveraged speculative positions against emerging market currencies. Banks' proprietary trading seems to have generally declined and large, highly leveraged players such as hedge funds appear to have mostly withdrawn from foreign exchange markets following the turbulence of 1998. This is suggested by the substantial reduction in turnover in traditional foreign exchange markets between April 1998 and April 2001 revealed by the 2001 triennial survey. Finally, international investors have seemingly improved their ability to discriminate among emerging markets (see Chapter VI).

Exchange rate management practices in emerging market countries

More flexibility but the exchange rate remains important

A number of emerging market economies have been moving towards more exchange rate flexibility in recent years. Accordingly, the exchange rate has tended to play a less important role as an anchor for monetary policy. This has gone hand in hand with a trend towards the adoption of more explicit inflation objectives, with an increasing number of countries now using or aspiring to use fully fledged inflation targeting regimes. Before the Asian crisis in 1997–98, three emerging market countries, accounting for less than 1% of world GDP, had adopted inflation targeting. By May 2002, the number of inflation targeters among emerging market countries had risen to 12, producing 8% of world GDP. While the role of the exchange rate as a nominal anchor or an *explicit* policy objective has been reduced or eliminated, the exchange rate is still very relevant for policy. Against this background, the following section discusses the evolution of exchange rate management practices in the light of exchange rate developments over the last few years.

Evolution of exchange rate management practices

Two indicators suggest that there has been a broad trend towards greater exchange rate flexibility in emerging market economies since the Asian crisis. First, the volatility of exchange rates vis-à-vis their main reference currency (mostly the US dollar) has tended to be somewhat higher in absolute terms, as well as compared to the volatility of domestic short-term interest rates (Table V.2). The increases in exchange rate volatility of the Philippine peso, the Thai baht and the Brazilian real are noteworthy examples. Second, the volatility of bilateral dollar exchange rates has risen faster than that of nominal effective exchange rates. This indicates that while the dollar's role in Asia and Latin America and that of the euro in central Europe remain important, policy emphasis may have shifted from bilateral to effective exchange rates.

Exchange rate and interest rate volatility[1]

	Exchange rate volatility				Interest rate volatility[2]		Ratio[3]	
	Bilateral[4]		Effective[5]		1995–96	Jul 1999–Apr 2002	1995–96	Jul 1999–Apr 2002
	1995–96	Jul 1999–Apr 2002	1995–96	Jul 1999–Apr 2002				
Hong Kong SAR	0.3	0.1	4.1	3.8	16.0	28.0	0.02	0.00
Indonesia	1.8	18.7	5.2	18.6	2.7	11.9	0.68	1.58
Korea	3.1	5.9	4.5	6.2	18.3	11.9	0.17	0.50
Philippines	2.1	7.6	4.4	7.8	49.5	38.1	0.04	0.20
Singapore	2.5	3.5	3.1	3.6	68.5	51.5	0.04	0.07
Taiwan, China	3.2	3.2	3.6	4.1	33.7	12.4	0.10	0.26
Thailand	1.3	5.3	…	…	32.6	41.5	0.04	0.13
Argentina	0.1	31.3	2.5	31.6	42.8	121.6	0.00	0.26
Brazil	4.4	10.2	6.1	10.5	50.4	7.4	0.09	1.37
Chile	4.7	6.7	…	…	14.2	111.7	0.33	0.06
Mexico	15.6	6.1	16.8	6.4	55.8	32.2	0.28	0.19
Czech Republic	12.5	17.5	3.3	4.1	13.2	7.3	0.95	2.39
Hungary	13.5	17.4	7.4	4.7	10.3	8.8	1.30	1.97
Poland	9.8	16.0	5.8	8.7	12.4	15.2	0.78	1.05
South Africa	6.4	11.3	…	…	8.4	8.4	0.76	1.35
United States	–	–	4.5	4.3	5.8	19.3	–	–
Japan	9.4	8.2	8.2	8.5	49.7	92.4	0.19	0.09
Euro area	6.8	9.1	3.5	6.6	8.6	13.6	0.79	0.67
United Kingdom	5.8	6.4	4.4	5.0	7.8	9.6	0.74	0.67
Canada	3.8	4.2	3.9	4.2	67.2	37.3	0.06	0.11
Sweden	6.9	8.8	5.7	5.0	10.9	12.0	0.63	0.73
Switzerland	9.6	8.9	4.9	3.5	32.9	36.8	0.29	0.24
New Zealand	4.5	9.4	3.7	7.5	10.9	8.9	0.41	1.06

[1] Calculated as the standard deviation over the periods indicated of annualised weekly percentage changes. [2] Of three-month (for Brazil, overnight) rates. [3] Of bilateral exchange rate volatility to interest rate volatility. [4] Against the US dollar (for the Czech Republic, Hungary and Poland, against the euro). [5] Trade-weighted.

Sources: National data; BIS calculations. Table V.2

Nevertheless, even though exchange rates have become more volatile, they continue to play a key role for policy in emerging market countries. This is evident from the fact that exchange rate volatility in recent years has remained low in absolute terms, as well as relative to the volatility of the main currency pairs (Table V.2).

Why exchange rates matter

Emerging markets are vulnerable for four main reasons

There are various reasons why the exchange rate might be of concern to policymakers, especially in emerging market countries. While its impact on prices through trade and expectations may be the most direct concern, other considerations include its effects on an economy's external competitiveness, financial stability and the functioning of foreign exchange markets.

Exchange rate fluctuations can affect inflation

Exchange rates can influence inflation through the prices of traded final goods and imported intermediate goods, and through their impact on inflation expectations. Compared to industrial countries, emerging market

economies appear more vulnerable to the impact of exchange rate fluctuations on inflation to the extent that they are more open and have a history of higher inflation.

Even across emerging market countries, differences in vulnerability can be significant. There is some evidence that exchange rate pass-through has tended in the past to be stronger in Latin America than in Asia (Table V.3). While many factors, including the social, economic and political structures of a country, obviously affect the correlation of inflation and exchange rate movements, inflation history merits particular attention. Exchange rate movements tend to have a larger impact on prices in Latin American countries with a past experience of high inflation, and where expectations play an important role. By contrast, East Asian countries tend to have a track record of low inflation and comparatively low pass-through.

While pass-through has been declining ...

There have, however, been indications of a decrease in exchange rate pass-through among both industrial and emerging market countries in recent years. An obvious example is the modest rise in Brazilian inflation following the devaluation of the real in early 1999. Possible reasons include moderated wage and price expectations resulting from credible stability-oriented policies, improved domestic competitive conditions following structural reforms and the greater integration of emerging market economies into the global economy. These developments are consistent with evidence that in recent years inflation history seems to have

Openness, pass-through, inflation and central banks' foreign assets

	Openness[1]	Pass-through[2]		Inflation[3]	Central banks' foreign assets[4]	
		One quarter	One year		As a % of total assets	As a % of monetary base
Brazil	14.0	0.08	0.39	868.6	27.7	103.0
Chile	45.6	0.17	0.35	11.8	56.6	60.2
Mexico	42.1	0.09	0.27	20.4	69.2	140.9
Indonesia	47.0	0.10	0.41	14.5	47.9	224.0
Korea	55.5	0.06	0.10	5.7	88.1	434.4
Thailand	73.6	0.04	0.12	5.0	72.4	240.4
Czech Republic	88.9	–0.08	0.16	14.7	88.0	104.0
Hungary	87.8	0.18	0.48	22.3	66.1	243.7
Poland	38.5	–0.06	0.08	84.8	81.3	166.7
Israel	49.2	0.25	0.28	11.3	88.2	125.9
South Africa	36.4	0.02	0.13	9.9	79.8	183.0
Australia	30.1	0.03	0.10	2.5	68.6	116.8
Canada	56.2	0.00	0.11	2.2	57.5	122.4
New Zealand	45.6	0.05	0.27	2.1	66.8	291.3
Sweden	54.1	0.02	0.03	3.3	69.6	147.5
United Kingdom	41.6	–0.01	0.02	3.7	22.5	19.2

[1] Trade as a percentage of GDP; average 1990–99. [2] 1979–2000. [3] Average annual percentage changes in consumer prices over the period 1990–99. [4] At end-December 2001 (for Mexico and Israel, end-November 2001).

Sources: E U Choudhri and D S Hakura, "Exchange rate pass-through to domestic prices: does the inflationary environment matter?", *IMF Working Paper 01/194*, December 2001; Datastream; national data; BIS calculations. Table V.3

... it remains a concern

mattered less. Nonetheless, a broad decline in pass-through should not be a reason for complacency, as exchange rate movements remain an important factor influencing prices. The significant declines of the rand and the real in 2001 were accompanied by a noticeable rise in inflation. Moreover, in Turkey and Argentina inflation soared after the collapse of the domestic currency.

Changes in external competitiveness are also a problem ...

Adverse trends in the exchange rate could also affect an economy's external competitiveness, which could impinge in turn on the external balance, growth and, in the longer run, incentives for investment. This issue is particularly relevant in emerging market countries to the extent that they tend to be relatively open. For example, the rapid decline of the yen in late 2000 and 2001 raised considerable concerns about competitiveness in Korea, since its exports have a sectoral profile similar to that of Japanese exports.

... as are financial instability ...

Experience strongly indicates that extended periods of real appreciation/overvaluation may also weigh on financial stability, especially in emerging market countries. The exchange rate can influence financial stability through different channels. First, the appreciating trend of the domestic currency in real terms may go hand in hand with large capital inflows, rapid credit expansion and unsustainable increases in asset prices. The resulting overextension of the domestic financial system can make the economy highly vulnerable to a slowdown or reversal of those flows. Second, an excessively rigid exchange rate regime may contribute to protracted weakness of the economy as well as the build-up of external indebtedness and financial vulnerabilities more generally, especially in the presence of negative external influences such as adverse terms-of-trade developments. Finally, and importantly, in either case balance sheet foreign currency mismatches can greatly magnify the fragility of the economy in the event of sharp nominal exchange rate adjustments and raise the likelihood of a crisis. If the banking system has a mismatched position, the dangers posed to bank solvency are obvious. But there are equally great risks when mismatches are present in the balance sheets of bank customers themselves. Such risks can be compounded by broader deficiencies in the financial infrastructure, such as a weak prudential framework, inadequate risk management and insufficient capital strength. Various elements of this story can be found in all the financial crises in emerging market countries in recent years, from East Asia to Argentina.

... and foreign exchange market functioning and development

In emerging market countries with small foreign exchange markets, high exchange rate volatility may contribute to disorderly and illiquid market conditions, characterised by "gapping" and wide bid-ask spreads. Illiquid foreign exchange markets may also suffer from the absence of two-way risk. As a consequence, expectations may generate market dynamics that tend to exaggerate exchange rate movements. In the longer term, disorder may impede market development.

Two pieces of indirect evidence suggest that in most emerging market countries, foreign exchange markets have typically been less liquid than in industrial countries. First, while foreign exchange markets in emerging

Foreign exchange market liquidity		
	Turnover[1]/GDP	Bid-ask spread as a percentage of the midrate
	2001 Q1	April 2001
Brazil	2.0	0.045
Chile	8.2	0.034
Mexico	3.8	0.052
Indonesia	1.0	0.407
Korea	4.7	0.125
Thailand	3.2	0.067
Czech Republic	6.7	0.058
Hungary	0.9	0.060
Poland	8.0	0.149
Israel	1.7	0.094
South Africa	17.1	0.069
Australia	19.1	0.048
Canada	9.2	0.024
New Zealand	14.4	0.085
Sweden	16.7	0.026
United Kingdom	22.2	0.037

[1] Average daily turnover in April 2001 of local currency against all other currencies, net of local inter-dealer double-counting.

Sources: Bloomberg; national data; BIS. Table V.4

economies grew rapidly in the 1990s, in most cases they remain relatively small (Table V.4). A notable exception is South Africa, where turnover as a fraction of output is comparable to that of industrial countries. Second, bid-ask spreads among emerging markets are less uniform and in general wider than those in industrial economies, suggesting a higher susceptibility to a sudden withdrawal of liquidity.

Policy responses in emerging market countries

Concern over the exchange rate poses possible policy dilemmas

In deciding how to respond to unwelcome exchange rate developments, tensions among different policy objectives can arise. This potential for policy dilemmas may become especially apparent in inflation targeting regimes. This is because one of the objectives, namely inflation, is clearly identified and the tool of monetary policy has been specifically assigned to its achievement. In general, there is a range of instruments at the policymaker's disposal. Alongside monetary policy, official intervention is a possible alternative means of dealing with exchange rate problems. In particular circumstances, capital controls have also been considered a viable option, although their use has costs and limitations.

The experience of several fully fledged or aspiring inflation targeting countries in the last two years illustrates how the flexible use of policy instruments can help counter the impact of exchange rate movements, while allowing the inflation targeting objective to be pursued at the same time. Nonetheless, the line between responding to the exchange rate within the

bounds of inflation targeting, and managing the exchange rate as a goal per se, can be quite thin at times. The onus is on the policymaker to explain to the public the difference, if any, between the two types of actions and the rationale for the policy decisions actually taken.

Monetary policy

Monetary policy responded to exchange rate related inflationary ...

A change in the stance of monetary policy is typically the principal means for responding to inflationary concerns associated with exchange rate movements. For example, when inflation in Brazil began to go above target around March 2001, coinciding with accelerated depreciation and rising volatility, the central bank reversed its previous monetary easing (Graph V.9). It raised interest rates aggressively and maintained this tight stance until early 2002. Monetary policy responses to the inflationary threat associated with episodes of currency weakness were also observed in South Africa in late 2000 and early 2002, Israel in early 2002 and Indonesia in 2000. In Poland, the general trend of the zloty to appreciate coincided with a decline in inflation to below the targeted range in 2001. This prompted the central bank to ease policy over most of the year.

... and sometimes other, non-inflationary concerns

Monetary policy was changed in some cases even when the inflation target was not under immediate threat from exchange rate changes, with other exchange rate considerations seemingly playing a role. For example, the Czech National Bank resumed policy easing in early 2001 against the backdrop of slowing growth, a still strong koruna and a wide trade deficit. It did so even though inflation had already risen back into the target range. In Thailand, after the baht regained strength in the second half of 2001, the central bank began to lower interest rates at year-end amid concerns over weak export demand and growth. In early 2002, monetary policy was eased further, among other things to facilitate adjustments in the exchange rate that would not hamper exporters. In these cases, the policymaker's attention to factors other than inflation was communicated to the public through, for example, the official statement accompanying each policy decision, the published minutes of the policy meeting or an inflation report.

Choice of policy rate may affect the amount of room for manoeuvre

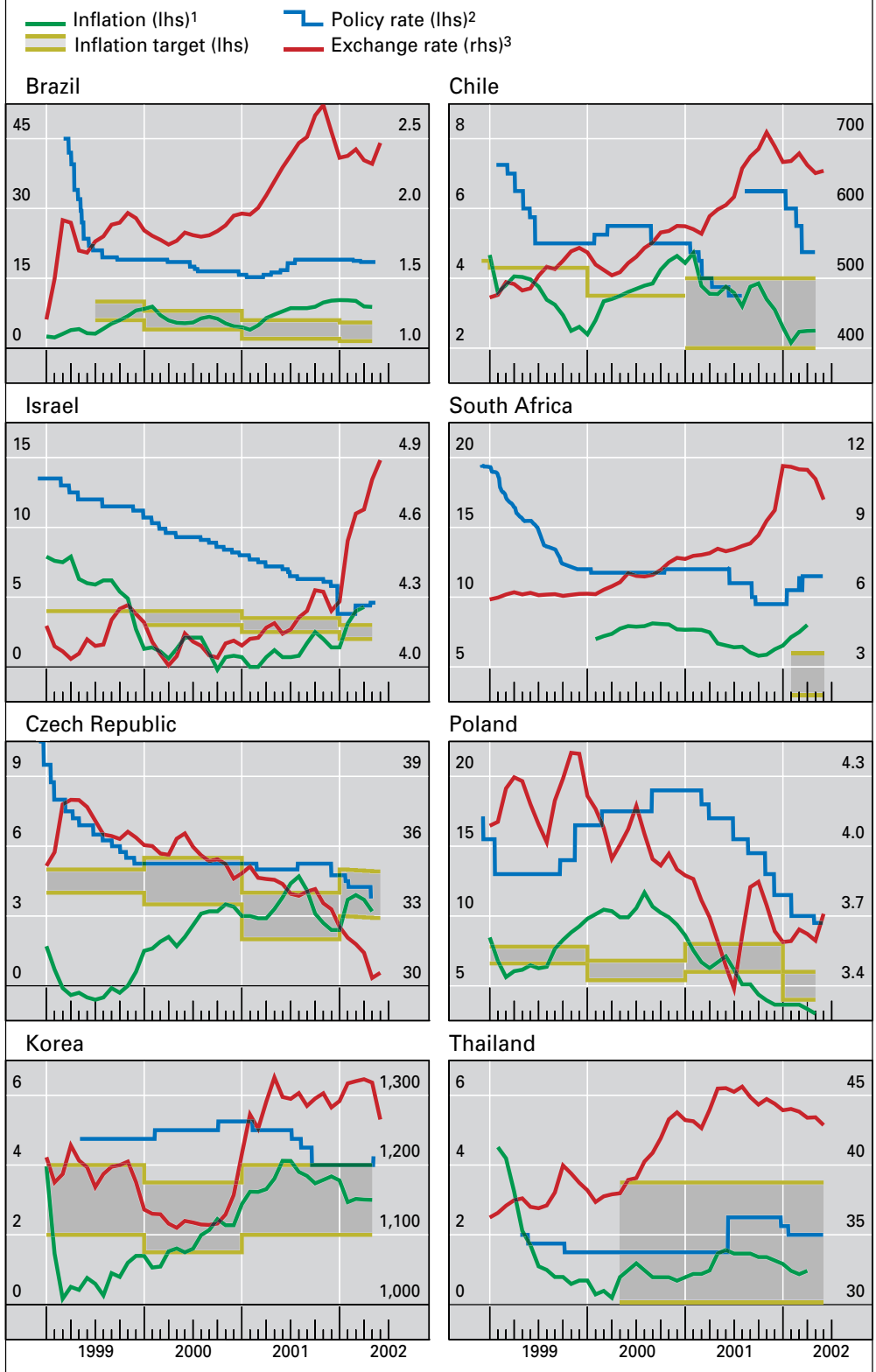
The operational framework of monetary policy has implications for the central bank's room for manoeuvre in the face of adverse exchange rate movements. If a longer-term money market interest rate is used as the key policy rate (as, for example, in the Czech Republic, Poland and Thailand), there is relatively more freedom to permit the overnight rate to fluctuate in response to short-run speculative exchange rate pressures. However, if the policy rate is an overnight rate (as, for example, in Brazil, Chile and Korea), it may be difficult to allow the market rate to deviate persistently from the policy rate target without being perceived as veering from the declared policy stance.

Foreign exchange intervention

Response with other policy tools such as ...

Official intervention can be used as reinforcement or as an alternative when an immediate change in monetary policy is deemed unjustified. Intervention tackles concerns related to the exchange rate directly and can

Inflation targets, policy rates and exchange rates



[1] For South Africa, CPI-X (CPI excluding mortgage interest cost); for the Czech Republic, headline inflation (prior to 2002, net inflation); for Korea, core CPI (prior to 2000, headline CPI); for Thailand, core CPI; for all others, headline CPI. [2] For Brazil, Selic target rate; for Chile, nominal overnight target rate (prior to August 2001, real rate); for Israel, base rate; for South Africa, repo rate; for the Czech Republic, two-week repo rate; for Poland, 28-day repo rate; for Korea, overnight call target rate; for Thailand, 14-day repo target rate. [3] Domestic currency per US dollar; for the Czech Republic and Poland, against the euro; monthly averages.

Sources: Bloomberg; national data. Graph V.9

signal the policymaker's opinion on the source of the problem. Both verbal and sterilised interventions have been actively used in recent years by inflation targeting emerging market economies, as well as some of their industrial economy counterparts, such as Australia and Sweden. These interventions were thought to complement their inflation targeting strategy or to address specific problems. While there is also the possibility of unsterilised intervention, this in effect amounts to a change in monetary policy implemented in the foreign exchange market. As such, it does not increase the room for manoeuvre for central banks.

... verbal intervention ...

Verbal intervention can be used to communicate the policymaker's assessment of the situation and to signal policy intentions. For example, in the light of the koruna's persistent strength in recent years, the Czech central bank has been public about its readiness to consider the option of intervention. The preannouncements of intervention operations in Brazil and Chile in 2001 can also be interpreted as a type of verbal intervention.

... and sterilised intervention ...

Known or perceived sterilised intervention can similarly provide an indication of the policymaker's opinion on the current and prospective stance of monetary policy. For example, since inflation was deemed broadly on track, overt intervention was used instead of interest rate changes in the Czech Republic in 2000 to counter the koruna's strength. Similar actions were taken in Chile in 2001 in response to the peso's rapid decline. In both cases, interventions appeared to reiterate the perceived appropriateness of the current monetary policy stance and to underscore the concern about exchange rate developments. In contrast, the series of dollar sales launched in Brazil in 2001 served to avoid excessive monetary tightening, as slowing growth and the threat of a rising debt interest burden made still further increases in interest rates an unattractive option. The timing of the official purchases of dollars in Thailand in late 2001 seemed to foreshadow the subsequent rate cuts.

There may be reasons to believe that certain of the channels through which sterilised intervention could have an impact may work more effectively in emerging markets than for actively traded major currencies. Intervention may exert a direct influence on the exchange rate as it alters the relative supply of domestic and foreign currency assets. This *portfolio effect* could be comparatively more important in emerging markets, especially in East Asia, where central banks' foreign reserves are large relative to the turnover in the local foreign exchange markets and the domestic money stock (see Table V.3). Furthermore, by stepping in as a market-maker, the central bank may help restrain self-reinforcing market dynamics and restore a sense of two-way risk. This *liquidity effect* may be especially pertinent in emerging markets with thinner trading. The efforts of the Brazilian and Chilean central banks to supply dollar bonds, as well as reserves, to facilitate market functioning during 2001 can be regarded in this light.

... but forward market intervention used less

As regards the specific market segment in which official intervention is carried out, there seems to have been a change in recent years. In the past, some central banks resorted to forward market and off-balance sheet interventions. Despite the advantage of having no upfront balance

sheet constraint on their magnitudes, forward operations appear to have declined in use. In part this reflects the substantial losses incurred on forward positions during the currency crises of the 1990s, as well as the greater emphasis placed recently on accountability and transparency. South Africa's current efforts to close out the positions on its forward book are a case in point.

Balancing the benefits and costs

Notwithstanding its usefulness as an alternative policy tool, intervention's benefits should be balanced against its possible limitations and costs. Intervention may not always be effective in influencing the exchange rate. Moreover, a possible cost is that excessive suppression of volatility could deter the growth of private market-making capacity. An analogy is the domestic interbank market, where less frequent market presence of central banks to smooth interest rate volatility is considered to be conducive to market development. Another potential cost is that, to the extent that intervention is seen as revealing the objectives and preferences of the policymaker, there is a risk that the message may be misinterpreted. This could in turn undermine the effectiveness of policy actions. An effort to communicate to the public the official attitude and approach towards intervention may be beneficial in this regard. For example, in the light of its experience with intervention in 2001, the Swedish central bank issued a formal document in early 2002 to clarify its procedures with regard to foreign exchange intervention.

Capital controls

Capital controls remain a policy option in some cases ...

While often assumed away in the discussion of exchange rate and monetary regimes, the introduction or tightening of capital controls is in practice still considered a viable policy option by a number of emerging market economies. Recent experience has shown that in some cases capital controls, if properly designed and applied, can be useful in supporting the implementation of other policies or protecting the economy against the destabilising aspects of capital flows.

Chile's unremunerated reserve requirement on capital inflows in the 1990s is one example. By reducing the effect of a tight monetary policy on the exchange rate, the requirement helped to reconcile the conflicting demands of the economy's internal and external objectives. It worked against exchange rate volatility by discouraging short-term inflows in favour of longer-term investments. It is considered to have made a positive contribution in the economy's transition to exchange rate flexibility and full capital account liberalisation.

The imposition of controls on capital outflows in Malaysia in 1998 was accompanied by the introduction of an exchange rate peg. However, capital controls have also been used elsewhere in the context of flexible exchange rate regimes during episodes of adverse exchange rate developments. For instance, besides resorting to intervention (and interest rate increases in the case of Indonesia), Indonesia and Thailand sought to impede short selling by tightening offshore access to their respective currencies against the backdrop of depreciation pressures in 2000. Thailand subsequently eased some of the restrictions in early 2002, as the baht regained strength.

Controls have also been deployed as a last resort policy option when the use of both monetary policy and official intervention is somehow constrained. For example, in response to an acceleration of the rand's depreciation, the South African authorities tightened the enforcement of exchange controls in late 2001. At that time, inflationary pressures did not yet appear sufficiently great to warrant monetary tightening while intervention was not an option owing to the low levels of foreign exchange reserves and the commitment to draw down the forward book.

... but also have their limitations

As with official intervention, the use of capital controls has its costs and limitations. Effective enforcement tends to be administratively costly. Restrictions may fail to discriminate between desirable investment and less beneficial flows, and negative investor sentiment towards capital controls may further limit the economy's access to the international capital markets. Intrusive measures can hamper financial development and are by no means a substitute for making progress in reforms at both the macro and micro levels.

Exchange rate concerns will remain ...

To conclude, most of the emerging market countries under review are still in the relatively early stages of adjusting to an environment of greater exchange rate flexibility. Owing to structural characteristics and the need to recover from recent crises in some cases, their economies tend to be more vulnerable to the inflationary, growth and financial consequences of exchange rate fluctuations than are their industrial country counterparts. Thus, at least in the near term, exchange rate movements are likely to continue to be a comparatively more significant factor affecting policy. Effective communication of policy intentions with respect to the role of the exchange rate will be crucial for the credibility of the policy regimes. In the longer run, however, efforts to reduce some of the inherent vulnerabilities, such as underdeveloped foreign exchange markets, should lessen concerns about exchange rate fluctuations.

... but could be diminished by reducing inherent vulnerabilities