V. Exchange rates and capital flows in industrial countries

Highlights

Two themes already evident in 1995 persisted in the foreign exchange market last year. The first was the strengthening of the US dollar, in two phases. In spite of continuing trade deficits, the dollar edged up for much of 1996 as market participants responded to its interest rate advantage, and the prospect of its increasing further. Then, towards the end of the year, the dollar rose sharply against the Deutsche mark and the Japanese yen as the US economic expansion demonstrated its vigour.

A firming of European currencies against the mark and the Swiss franc accompanied the rise of the dollar. This helped the Finnish markka to join and the Italian lira to rejoin the ERM in October and November respectively. Stronger European currencies and associated lower bond yields both anticipated and made more likely the introduction of the euro, the second theme of the period under review.

Market participants clearly expect the euro to be introduced: forward exchange rates point to exchange rate stability among a number of currencies judged most likely to join monetary union. Foreign exchange markets thereby stand to lose up to 10% of global transactions, and have begun to refocus on the rapidly growing business of trading emerging market currencies. Possible shifts in official reserve management with the introduction of the euro have preoccupied market commentators, but changes in private asset management and global liability management could well prove more significant. Even then, it is easy to overstate the effect of any such portfolio shifts on exchange rates. Differences in the vigour of growth in the major countries, and related differences in monetary policies, are likely to exert a greater influence on exchange rates.

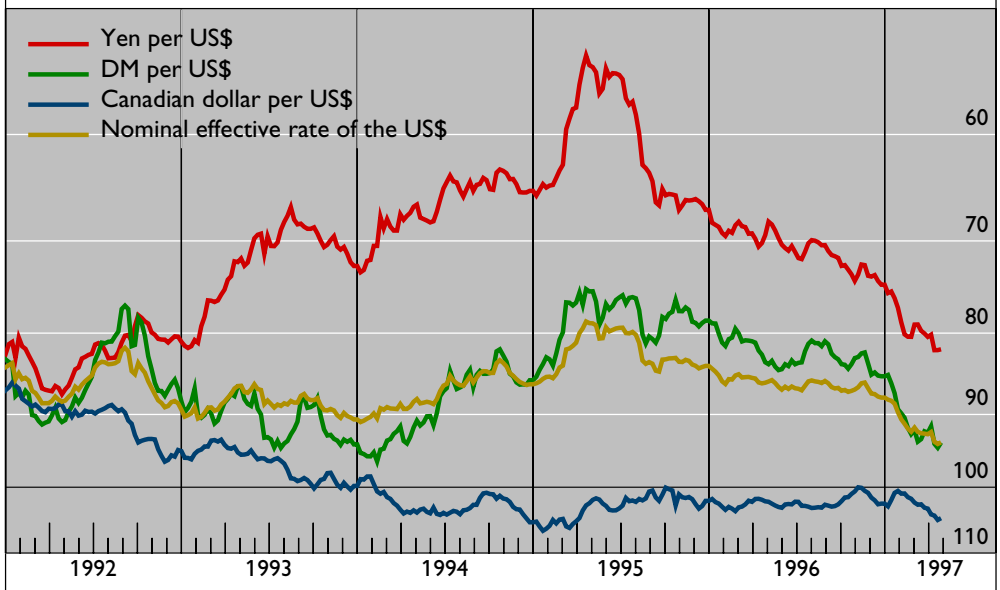
The ultimate international roles of the euro, the dollar and the yen will depend in part on their use as anchor currencies by third countries. The broadly based euro might well perform this role better than its predecessor currencies, but the dollar has the advantage of incumbency. The exchange rate policies of countries experiencing rapid growth will bear importantly on the future global role of the euro.

The US dollar, the Deutsche mark and the Japanese yen

The strengthening of the dollar against the yen and the mark reflected current and prospective cyclical developments and the consequent expectations about monetary policy. The strength of the dollar contributed to keeping short-term exchange rate volatility low for much of 1996, although the question arises as to whether the growing use of new instruments in the foreign exchange market also

Selected currencies against the US dollar and its nominal effective exchange rate

Weekly averages, third week of February 1987 = 100 (semi-logarithmic, inverted scale)



Note: A decline indicates a dollar appreciation. Graph V.1

played a role. With major exchange rates trading within narrow ranges for much of the year, official intervention by the three largest countries was notably absent over the last nine months of 1996. Record growth of official reserves resulted instead from large-scale capital flows to Asia, Latin America and parts of Europe.

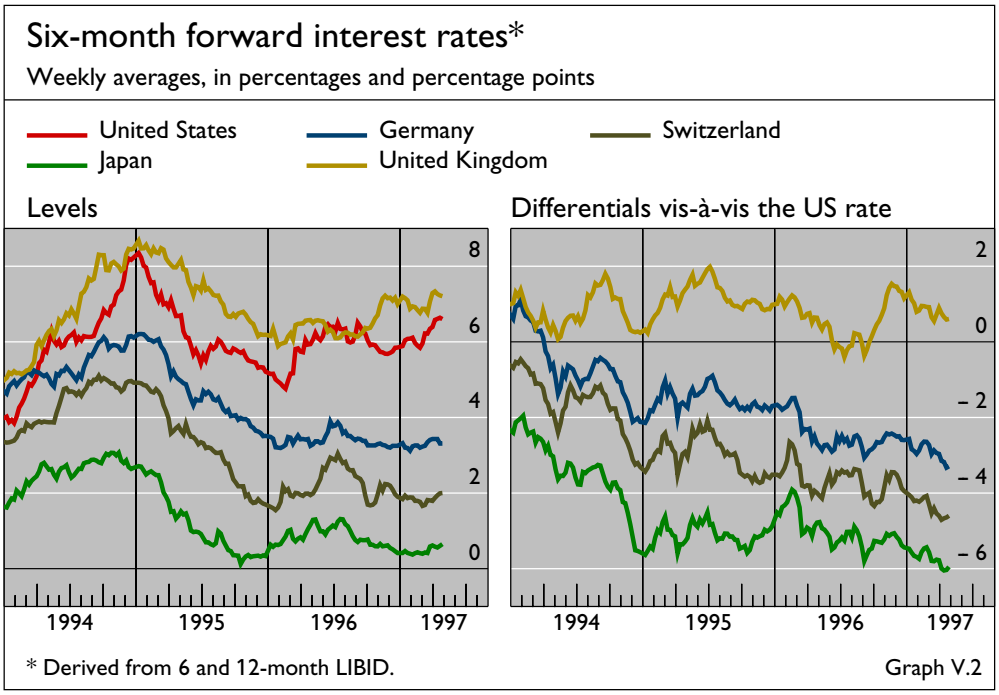
The dollar and business cycle developments

Differences in business cycle developments in the United States, Germany and Japan (see Chapter II) shaped expectations about the relative stance of monetary policy in the three countries. Opinion shifted back and forth for most of 1996 and then fixed late in the year on expectations of higher US policy rates to restrain a robust US economy and continuing low interest rates in Germany and Japan. The differential between forward rates (Graph V.2) expressed these views and provided the key to understanding the movements of the three currencies in the course of 1996.

Shifting monetary policy expectations leave the dollar trading within narrow ranges …

The dollar rose in the first half of 1996 in response to expectations of monetary easing in Germany owing to weak economic data, together with stable Japanese rates. Expectations of low Japanese rates changed only briefly at the end of April when the Bank of Japan suggested that higher rates would accompany a recovery, and did not react at all to the publication in June of exceptionally strong figures for first-quarter growth.

In the third quarter of 1996, the dollar responded to shifting expectations about US and German monetary policy and traded between DM 1.47 and 1.53. It also drifted above ¥110 amid weakening stock prices in Japan and further signs that the Japanese recovery might not sustain itself, which indicated continuing low interest rates. The fall in the US equity market on 16th July interrupted the dollar's rise with a 3 pfennig decline. Stock market investors seemed to react to



signs of rapid growth, which heightened fears that the Federal Reserve might need to raise interest rates sharply as in 1994. The fact that the dollar fell in tandem with the stock market, rather than rising with dollar interest rates, posed the broader question of the linkage of the dollar to US asset prices.

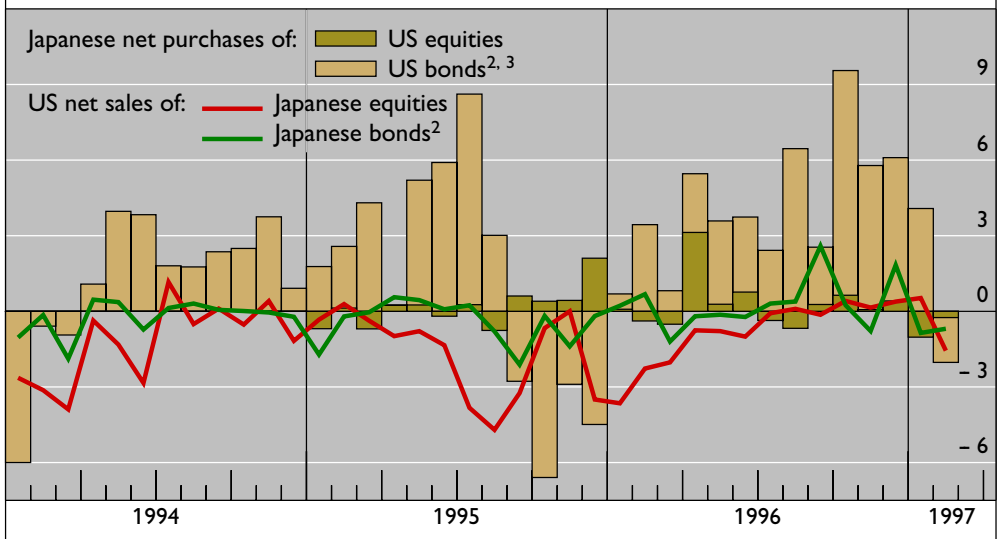
The dollar gained further against the yen in the last quarter of 1996 even though market participants' views shifted back towards a stable US monetary policy. Weak economic data and concerns about the soundness of the financial system in Japan reduced the likelihood of a near-term rise in interest rates. Moreover, as trade frictions with the United States remained unusually subdued and as Japanese government bond yields fell below 3%, Japanese investors came to regard the purchase of higher-yielding bonds overseas as entailing less risk (Graph V.3). The strong portfolio outflows from Japan were reinforced by a loss of interest by foreign investors in the Tokyo stock market. Even with the revival of Japanese institutional and household investment in foreign currency securities, however, cross-border transactions remain well below those of the boom year of 1989 (Table V.1).

… until the immediate prospect of higher US rates lifts the dollar at year-end

Towards year-end, changing views on the likelihood of monetary union and speculation that the Bundesbank might ease interest rates influenced the dollar/mark exchange rate. The dollar strengthened during a period of marked optimism about the prospects for monetary union in late November, when the lira rejoined the ERM, and early December. Moreover, at the turn of the year, expectations shifted once more in favour of a Federal Reserve tightening and the dollar rose further. This led the Group of Seven Finance Ministers in February 1997 to express their view that the major misalignment in exchange markets of 1995 had been corrected. By the time of their meeting, the dollar had gained 20% against the mark and 52% against the yen since its trough in spring 1995. The dollar continued to rise in late February and March, with the well-anticipated Federal Reserve tightening in late March exerting only a modest

Portfolio flows from Japan to the United States[1]

In billions of US dollars



[1] A positive (negative) sign indicates a net flow from (to) Japan. [2] Data may include official transactions. [3] 1994 data include US equities.

Sources: Japanese Ministry of Finance and US Treasury. Graph V.3

effect. In April, the dollar appreciated further as evidence confirmed a strong demand for labour and rising wage pressures in the United States, while unemployment remained high in Germany and tax increases threatened to slow demand in Japan.

The dollar's cyclical role …

These broad exchange rate movements have tended to redistribute world demand towards economies experiencing weaker growth. They have certainly benefited Europe (see Chapter II) by boosting exports and supporting growth as governments moved to cut budget deficits before the launch of the single currency. The stronger dollar also helped to limit the risk of an overheating of the US economy. However, from a longer-term perspective, the question arises as to whether the current level of the dollar is consistent with fundamentals.

… and long-term fundamentals

Judged against its purchasing power the dollar remains undervalued (Table V.2): travellers still find goods and services cheaper in the United States than in Europe or Japan. Judged by the dynamics of the US international investment

Cross-border transactions in bonds and equities[1]

	1975	1980	1985	1989	1990	1991	1992	1993	1994	1995	1996
	as a percentage of GDP										
United States	4	9	35	101	89	96	107	129	131	135	164
Japan	2	8	62	156	119	92	72	78	60	65	84[2]
Germany	5	7	33	66	57	55	85	171	159	172	200
France		5	21	52	54	79	122	187	201	180	227[3]
Italy	1	1	4	18	27	60	92	192	207	253	468
Canada	3	10	27	55	64	81	113	153	212	194	258

[1] Gross purchases and sales of securities between residents and non-residents. [2] Based on settlement data. [3] January–September at an annual rate.

Source: National data. Table V.1

Estimates of the US dollar's purchasing power and fundamental equilibrium value

	Market rate[1] against the dollar	Purchasing power parity (PPP)		PPP adjusted for productivity	Fundamental equilibrium exchange rate	
		OECD[2]	Penn[3]	Goldman Sachs[4]	IIE	SBC[4]
Deutsche mark	1.70	2.05	2.12	1.51	1.45–1.50	1.42
Japanese yen	123	172	188	112	100	94

[1] On 9th May 1997. [2] 1996 average. [3] 1992. [4] Early 1997.

Sources: OECD, Penn World Tables 5.6, Goldman Sachs, John Williamson's April 1996 informal update of estimates in *Estimating equilibrium exchange rates*, Institute for International Economics (IIE), Washington, D.C. (September 1994) and Swiss Bank Corporation (SBC). Table V.2

position, the picture looks different. Fundamental equilibrium exchange rates are effective exchange rates compatible with current account imbalances that leave the ratio of external debt to output stable. Necessarily problematic estimates suggest that at market rates in May 1997 the dollar is somewhat overvalued against the mark and rather more so against the yen. While any widening of the US current account deficit could become evident only slowly, the $18 billion trade deficit in January indicated that the process may indeed have begun. The Japanese surplus seems already to have bottomed out in 1996.

Volatility and the dollar cycle

Low volatility owing to …

It is easier to explain the dollar's broad upswing since 1995 than the unusually narrow range of short-term variation of major exchange rates and cheap currency options (low implied volatility) during much of 1996 (Graph V.4). Major central banks, which saw no reason to intervene in such quiet markets, had occasion to ask whether low volatility was here to stay. Discussion centred on a new generation of options as a source of permanently lower volatility. However, the role of the dollar cycle in fostering what may prove to be only a temporary period of calm also deserves attention.

… the dollar trend …

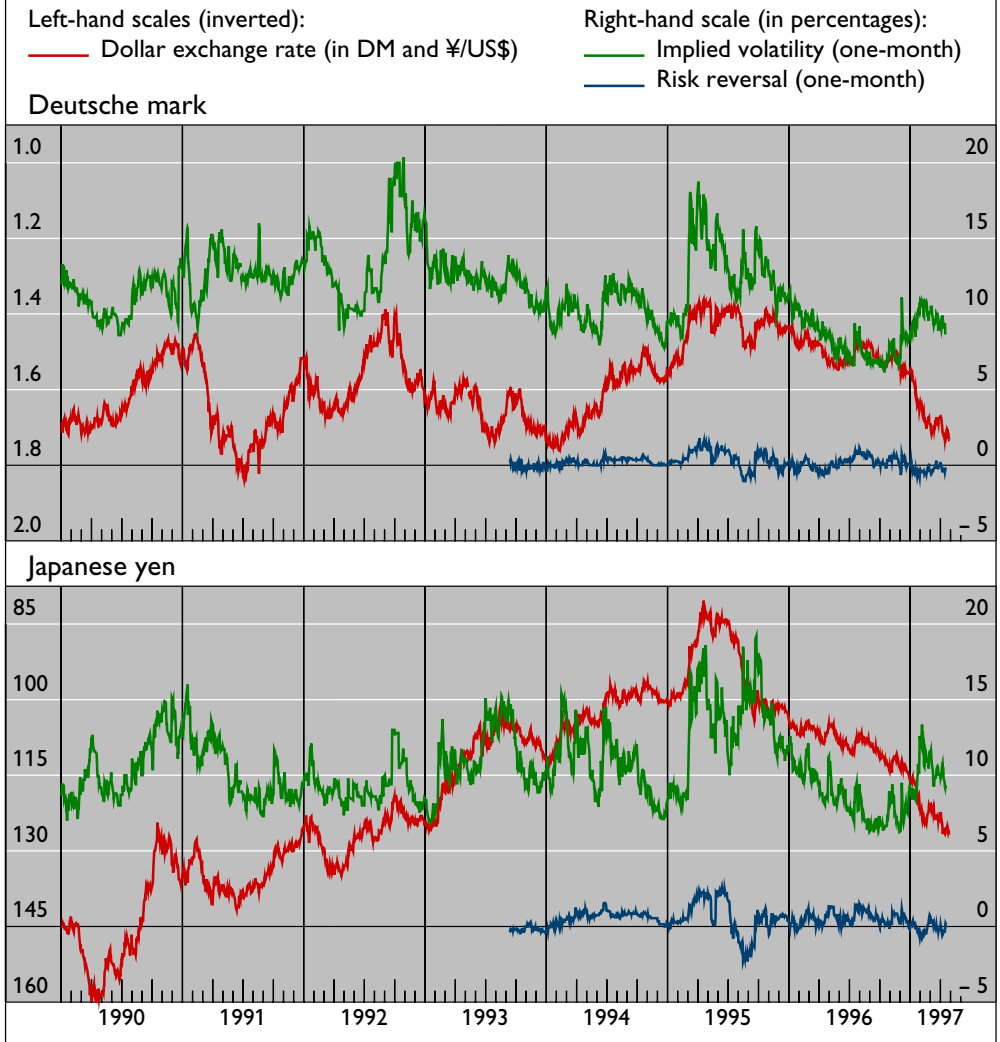
The dollar's rising trend may explain some of its low volatility in 1996. Since the United States has accumulated a net external debt and continues to run a current account deficit, global investors and international traders have a net long position in dollars. The pressure to hedge against a falling dollar leads to more expensive options (higher implied volatility) than the parallel but weaker pressure to hedge against a rising dollar. Thus the dollar's sharp rise at the turn of the year did not take implied volatility above its average levels.

The episode of dollar weakness in mid-July suggested a connection between global financial wealth and the price of dollar options. As the US and other equity markets fell, and with them the dollar, market participants bid up implied volatility (widening the probability distribution) and attached more weight to the possibility of the dollar's sinking further (fattening the left-hand tail of the distribution; see Graph V.5).

… and new option market participants

Generally low implied volatility in 1996 may also have reflected the increased popularity with investors of a new generation of options, called range or binary

Dollar exchange rates, implied volatilities and risk reversals



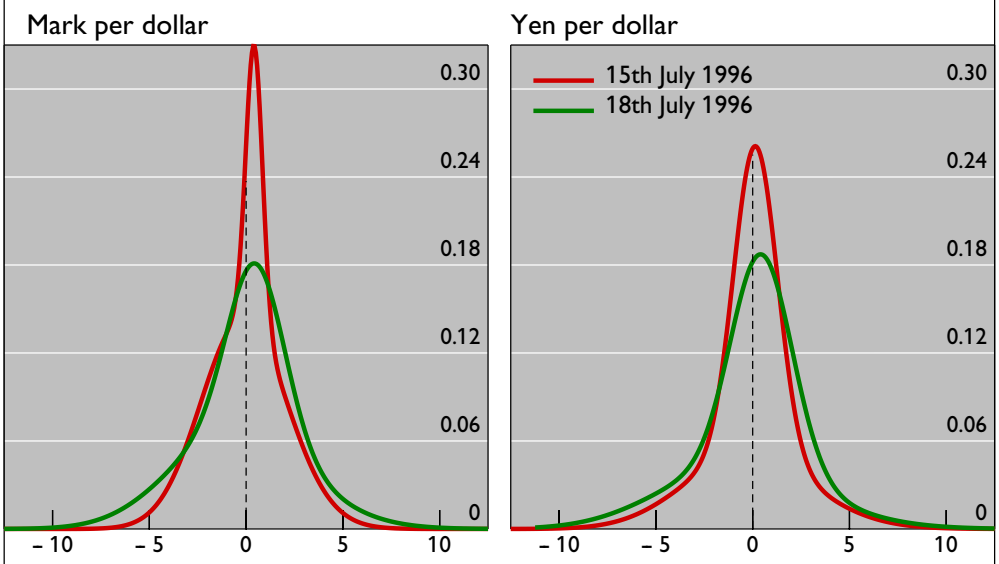
Note: Regression analysis shows that, for the period 1992 to date, implied volatility (IV) is related to weekly percentage changes in the spot exchange rate, when the dollar is appreciating (ΔXR^+) or depreciating (ΔXR^-), according to the equations: $IV_t = 0.60 + 0.92IV_{t-1} + 0.30\Delta XR_t^+ - 0.54\Delta XR_t^-$ against the mark, and $IV_t = 1.07 + 0.86IV_{t-1} + 0.50\Delta XR_t^+ - 0.69\Delta XR_t^-$ against the yen.

Sources: National Westminster Bank Plc and BIS. Graph V.4

options. Before the advent of such options, an investor taking the view that an exchange rate would be stable could sell puts and calls around the current rate. This strategy generally implied an *unlimited* downside risk from large exchange rate movements; consequently, few speculators would enter into such trades, and then only for short-term contracts. But with the new generation of options, investors unwilling to lose more than a certain amount can easily bet on stable exchange rates, even for horizons as long as a year. Range options allow an investor to pay a *certain* amount upfront, to be forfeited in the event of an exchange rate moving *outside* a given range, in exchange for receiving an attractive multiple in the event of the rate remaining *inside* the same range.

In the global financial markets of 1996, characterised by high liquidity and a pervasive pursuit of higher yields, these new instruments offered yet another way to boost returns. Fixed payments allowed new investor groups to enter the

Probability distributions of the dollar



Note: Percentage deviation from the one-month forward rate, assuming risk neutrality; positive values indicate dollar appreciation. Vertical line drawn at the centre of the distribution (forward rate).

Sources: National Westminster Bank Plc, BIS and BIS calculations. Graph V.5

currency volatility market. Even fixed income investors with low tolerance for losses, as well as investment funds and firms, took such positions. An illustration was a Swiss franc investment sold to retail clients that paid zero interest (an opportunity loss) if the franc/dollar exchange rate strayed outside a specified range, but an above-market rate of interest (the attractive multiple) if it stayed inside.

Range options may also have contributed to the decline in exchange rate volatility last year. Market-makers taking the other side of these transactions hedged them by selling plain vanilla options and also by buying the dollar low and selling it high in the spot market. These two hedging strategies tended to add to the downward momentum of implied volatility and to pin spot rates within ranges. Of course, as perceptions of the strength of the US economy hardened towards the end of the year, the new options neither prevented the dollar from rising nor kept volatility from returning to normal levels.

Reserve developments and current account financing

Record reserve growth despite limited intervention by major central banks

Official foreign exchange reserves grew by a record amount of almost $200 billion (at constant exchange rates) in 1996 (Table V.3), despite the fact that the German and US monetary authorities undertook no intervention in the foreign exchange markets during the year, nor indeed during the first quarter of 1997. The Bank of Japan, after showing a $21 billion increase in reserves in the first quarter of 1996 from intervention and interest receipts, does not seem to have intervened in the next 12 months. The $14 billion increase in Japanese reserves over the last nine months of 1996 appears to represent mainly the flow of earnings on a stock of foreign exchange reserves that reached $207 billion by the end of the year. Most of the growth in official reserves took place in other parts of Asia, notably China, and in Latin America. In Europe, Spain and Italy also built up

Official foreign exchange reserves

	1993	1994	1995	1996	Amounts outstanding at end-1996
	in billions of US dollars				
	Changes, at current exchange rates				
Total	110.9	151.8	199.4	169.5	1,517.8
Industrial countries	32.0	60.9	80.1	72.9	707.0
Asian NIEs[1]	20.5	30.3	21.3	15.6	261.6
Other countries	58.4	60.6	98.0	81.0	549.2
	Changes, at constant exchange rates[2]				
Total	115.7	111.6	181.8	196.5	1,517.8
Dollar reserves held:	73.9	91.8	156.1	145.8	1,041.5
In the United States[3]	66.4	38.3	106.0	122.0	712.1
With banks outside the US[4]	0.6	30.0	–15.4	19.2	126.2
Unallocated	6.9	23.5	65.5	4.6	203.2
Non-dollar reserves	41.8	19.8	25.7	50.7	476.3
of which held with banks[4]	*6.2*	*1.8*	*7.7*	*8.0*	*122.1*

[1] Hong Kong, Korea, Singapore and Taiwan. [2] Partly estimated; valued at end-of-year exchange rates. The residual has been allocated on the basis of known reserves. [3] Excludes foreign military sales prepayments and the current value of zero coupon bonds issued to the governments of Argentina, Mexico and Venezuela as collateral for their Brady bonds. [4] Deposits by official monetary institutions with banks reporting to the BIS.

Sources: IMF, national data and BIS. Table V.3

reserves substantially as foreign investors bought peseta and lira bonds and the Bank of Spain and the Bank of Italy intervened to buy dollars or marks.

US official inflows result from capital flows to emerging markets

The United States financed most of its current account deficit in 1996 with official inflows. Although this had also been the case in 1987 and 1995, the underlying process at work differed last year. In 1987 and 1995 the dollar suffered from the unwillingness of private foreign investors to accept the dollars flowing from the US current account deficit at prevailing exchange rates and interest rates; the dollar's weakness against major currencies led Group of Ten authorities to intervene in its support. In 1996, by contrast, the dollar rose against major currencies and a pervasive search for yield in world financial markets (see Chapters III, VI and VII) led to strong capital flows to emerging markets. Since many of these countries link their currencies to the dollar, the resulting foreign exchange intervention led to increases in reserves, which were generally invested in US Treasury securities and other liquid dollar instruments.

As for the recycling of Japan's current account surplus, private outflows predominated in 1996. Given domestic bond yields below 3%, and with trade disputes muted along with the associated risks of a stronger yen, Japanese institutional investors and households alike bought higher-coupon US ($45 billion), UK ($10 billion), Canadian ($4 billion) and Australian ($3 billion) bonds.

European currencies and the Canadian dollar

Last year's Annual Report highlighted a pattern of exchange rate linkages that relates the direction of European exchange rate changes to movements in the

dollar/mark rate. This pattern can be explained by trade links, the comovement of cyclical fluctuations and international portfolio bias.

Exchange rate links

The relationship with the dollar/mark rate reflects …

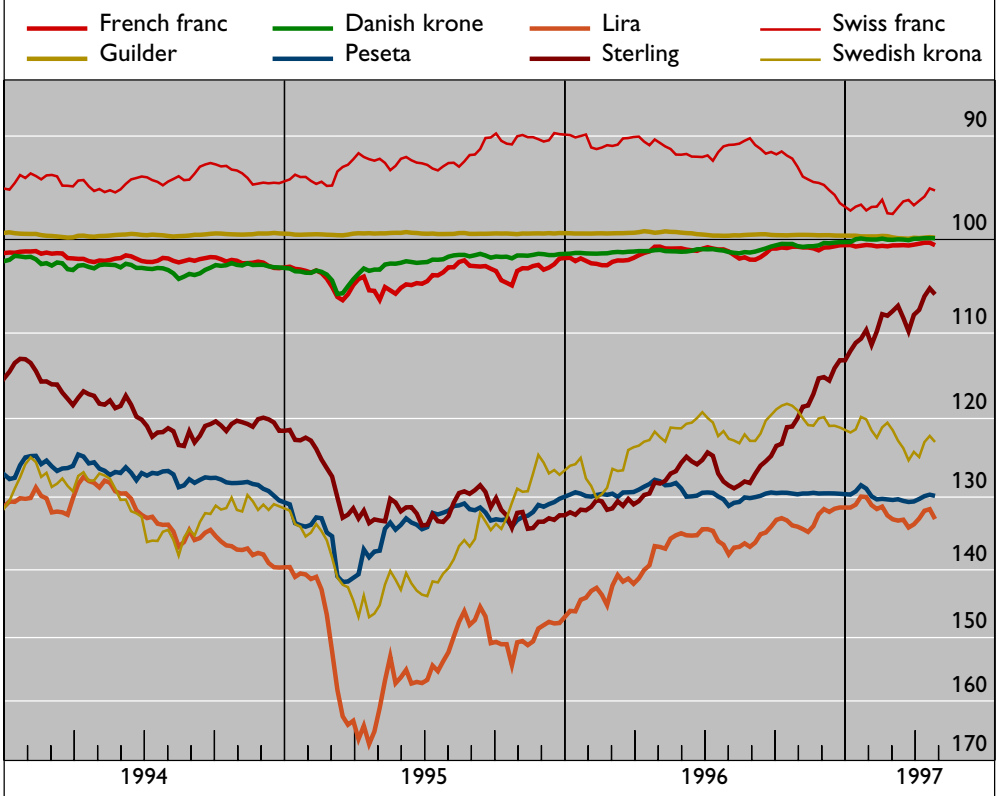
The strengthening of the US dollar against the mark during 1996 and the early months of 1997 was accompanied by a firming of most European currencies against the mark, the conspicuous exception being the Swiss franc (Graph V.6). These recent exchange rate movements are consistent with a pattern that has been observed in the past. When the mark depreciates against the dollar, the Swiss franc depreciates even more; most other European currencies also depreciate against the dollar, but to a lesser extent, thus strengthening vis-à-vis the mark, while the Canadian and Australian dollars appreciate against the US dollar (Graph V.7). Typically, the currencies of Germany's neighbours – and more recently the escudo and the peseta – track the mark quite closely, while sterling, the Irish pound, the lira and the Swedish krona share half or more of the mark's movements.

… trade links …

The correlation coefficients shown at the bottom of Table V.4 indicate how well measures of trade links, the comovement of cyclical fluctuations and international portfolio bias explain the exchange rate sensitivities. Trade intensity matches the pattern of currency links most closely. Given the observed

Exchange rates of European currencies against the mark

Weekly averages, ERM central rate in August 1992 = 100* (semi-logarithmic, inverted scale)



Note: A rise indicates an appreciation against the mark. Since February 1994, the Belgian franc has moved closely in line with the guilder.

* For the Swiss franc and the Swedish krona, August 1992 = 100. Graph V.6

elasticities, changes in the dollar/mark exchange rate tend to exert a broadly similar impact on the effective exchange rates of European currencies. Even so, these elasticities, together with trade patterns, imply that the recent depreciation of the mark has improved Germany's competitiveness more than that of its neighbours.

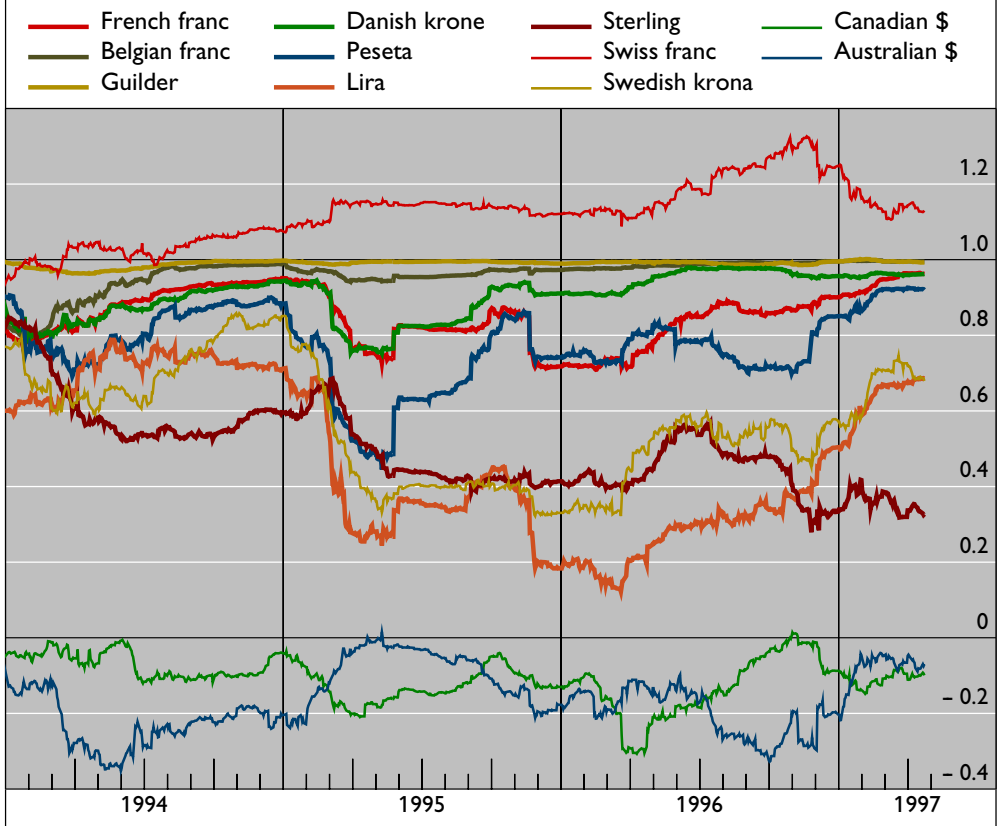
… business cycle synchronicity …

Strong trade links – such as those between Germany and the Netherlands – can lead to tight currency links by heightening official interest in bilateral exchange rate stability. Trade also transmits cyclical impulses across borders. Countries with common business cycles tend to pursue similar monetary policies and to record similar balance-of-payments changes, and thereby to experience similar exchange rate changes. However, the symmetry of cyclical fluctuations matches currency links less well than does trade intensity. The failure of the Canadian dollar since late 1996 to follow its typical pattern by appreciating against a rising US dollar reflects the different cyclical positions in North America. With inflation low and unemployment still high in Canada, the authorities there cut official rates 11 times in 1996, and in early 1997 short-term rates in Canada did not immediately follow the rise in their US counterparts.

… and international shifts of funds

Another explanatory factor is the source of funds shifted from Europe to North America. The extensive international investment in Swiss francs suggests that, as the dollar strengthens, a shift of funds from Europe to North America

Sensitivity to movements in the mark against the dollar



Note: Each point represents an estimated elasticity derived as the parameter, β , in the regression $\log X/\$_t - \log X/\$_{t-1} = \alpha + \beta(\log DM/\$_t - \log DM/\$_{t-1})$ over the current and previous 125 working days. By definition, the DM/$ sensitivity to itself is unity, and that of the dollar is zero. Graph V.7

occurs disproportionately at the expense of the Swiss franc, which accordingly weakens. This portfolio bias can be proxied by the ratio of international deposits and eurodeposits to GDP, which is highest for the Swiss franc, lower for the French franc and lowest for the lira.

Events in 1995 and 1996 suggest that the causal relationship between dollar strength and the cohesion of European currencies (or the prospects for monetary union) runs in both directions. While the weakening of European currencies against the mark in reaction to the US stock market fall on 16th July 1996 illustrates how US developments can influence European currencies, the dollar's weakness when doubts arose regarding the breadth of participation in monetary union in September 1995 (see last year's Annual Report) illustrates how European developments can influence the dollar.

European currencies

The strength of the dollar vis-à-vis the mark in 1996 favoured the firming of European currencies against the mark and helped the Finnish markka to join

Explaining exchange rate sensitivities

	Exchange rate sensitivity[1]	Trade intensity[2]		Correlation of business cycles				International portfolio bias[5]	*Memo item: Dollar exchange rate changes on 16th July 1996*	
				Output gaps[3]		Supply shocks[4]				
		with DE	with US	with DE	with US	with DE	with US		*% change[6]*	*ratio to DM/$ change*
Swiss franc	1.05	2.87	0.59	0.40	0.25	0.34	0.20	3.44	*– 2.1*	*1.37*
Mark	1.00	0.00	0.34	1.00	0.20	1.00	0.18	1.39	*– 1.5*	*1.00*
Guilder	0.94	2.75	0.53	0.63	0.39	0.24	0.18	0.89	*– 1.4*	*0.94*
Belgian franc	0.93	2.22	0.48	0.52	0.09	0.39	0.15	1.05	*– 1.4*	*0.95*
Danish krone	0.84	2.22	0.29	0.29	0.42	0.21	0.17	–	*– 1.4*	*0.94*
French franc	0.82	1.94	0.42	0.38	0.14	0.36	0.16	0.67	*– 1.3*	*0.82*
Escudo	0.82	1.68	0.30	0.33	–0.00	0.02	–0.05	–	*– 1.3*	*0.81*
Peseta	0.73	1.87	0.33	0.10	–0.33	–0.03	–0.08	–	*– 1.2*	*0.81*
Irish pound	0.53	1.15	0.75	–	–	–	–	–	*– 0.5*	*0.33*
Swedish krona	0.49	1.59	0.43	0.28	0.29	0.08	0.19	–	*– 0.5*	*0.31*
Pound sterling	0.46	1.39	0.81	–0.01	0.56	–0.05	0.13	0.89	*– 0.3*	*0.32*
Lira	0.45	1.93	0.40	0.55	0.41	0.25	0.25	0.62	*– 0.6*	*0.39*
US dollar	0.00	0.41	0.00	0.20	1.00	0.18	1.00	1.62	*0.0*	*0.00*
Canadian dollar	–0.09	0.14	5.29	0.06	0.86	–0.24	0.22	–	*0.2*	*–0.12*
Australian dollar	–0.12	0.36	0.92	–0.07	0.76	–0.05	0.05	–	*0.2*	*–0.16*
Memorandum item: Correlation with sensitivities[7]										
of values	*1.00*	*0.93*	*–0.63*	*0.69*	*–0.71*	*0.75*	*–0.06*	*0.58*	*–0.96*	*0.97*
of rank orders[8]	*1.00*	*0.88*	*–0.41*	*0.68*	*–0.57*	*0.69*	*0.00*	*0.80*	*–0.95*	*0.95*

[1] Exchange rate sensitivities are defined as the slope coefficient in a regression of daily percentage changes of dollar exchange rates on percentage changes in dollar/mark exchange rate changes, estimated over the period 1994–96. [2] Ratio of the bilateral trade share with Germany (the United States) to the German (US) share of world trade. [3] Correlation of output gaps computed as deviations from potential GDP estimated using the Hodrick-Prescott filter. [4] Estimated following the method of Bayoumi and Eichengreen described in "Shocking Aspects of European Monetary Integration", in *Adjustment and Growth in the European Monetary Union,* Cambridge University Press (1993), but using quarterly data from 1980 to 1995 and four lags. [5] Ratio of cross-border and local foreign currency deposits in each currency to GDP of the country of issue in 1995. High values indicate large international use of the currency in relation to the scale of domestic financial markets. [6] A decline indicates an appreciation against the dollar. [7] Since trade intensity with Germany (the United States) is not defined for Germany (the United States), these two countries are excluded. [8] Spearman rank order correlation. Table V.4

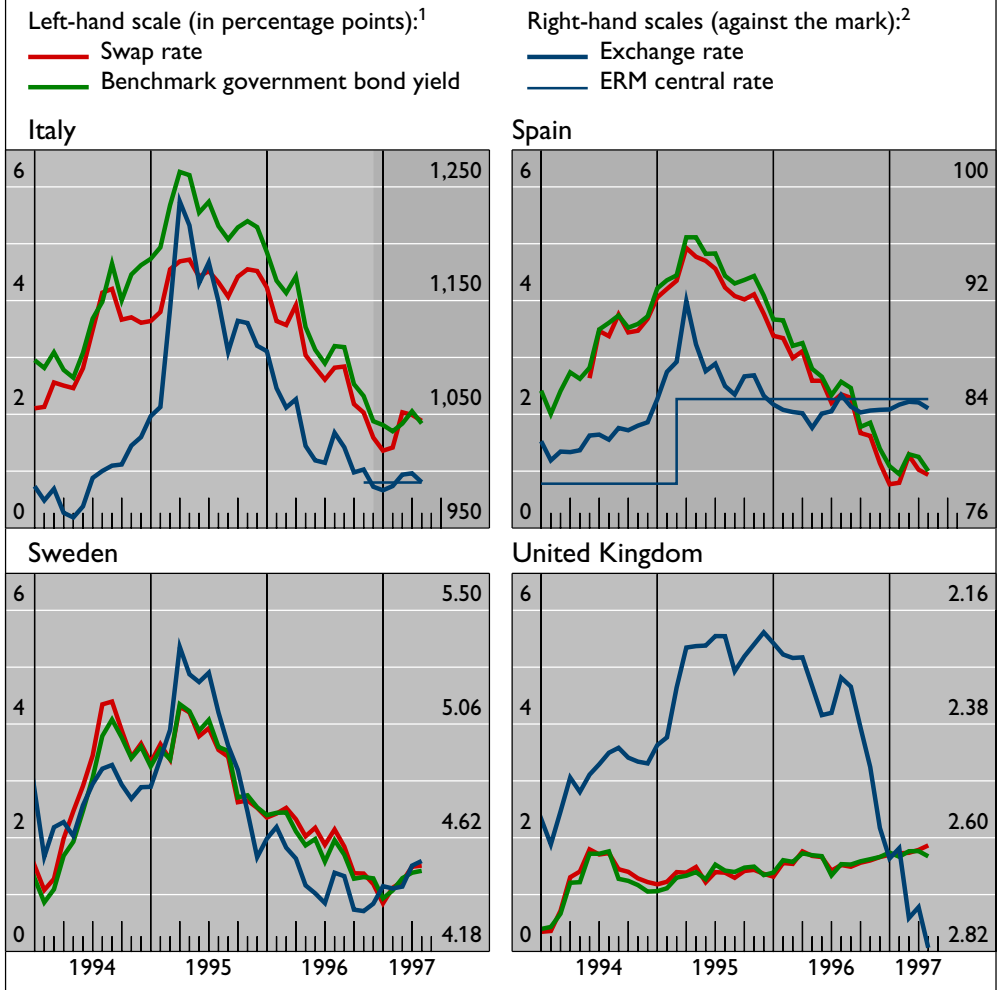
More ERM members and converging bond markets

the ERM on 20th October and the lira to rejoin after a four-year absence on 25th November. This was in sharp contrast to the events of 1992 when it was the mark that was appreciating. It was also the case in 1996 that declining inflation rates, fiscal consolidation and rising expectations of monetary union led to substantial capital inflows into government bonds in Italy ($34 billion up to end-November), Spain ($16 billion) and Sweden ($5 billion). The narrowing of interest rate differentials vis-à-vis Germany in Italy, Spain and Sweden highlights how bond markets and foreign exchange markets were responding jointly to good news (Graph V.8).

Consistent with their usual currency links but in stronger measure, sterling strengthened against the mark in 1996 whereas the Swiss franc weakened. The announcement in March of the UK general election for 1st May 1997 did not prevent sterling from rising to DM 2.77 (its lower limit in the ERM during 1990–92). Forward interest rates suggested expectations that the election

Ten-year yield differentials and European exchange rates

At end-month



Note: The shaded areas denote ERM membership.

[1] Domestic less German rate. [2] Scaled to show a 35% range of variation; for the United Kingdom, DM/£ (inverted scale). A decline indicates an appreciation of the domestic currency.

Sources: Reuters, Datastream and BIS. Graph V.8

would in any case be followed by a rise in interest rates. (In the event, an announcement on 6th May that the Bank of England would be granted more independence accompanied a rise in short-term interest rates, and sterling gained further against the mark and the dollar.) While there was discussion of sterling as a haven from the uncertainties of monetary union, what is demonstrable is that the pound has traded more in sympathy with the dollar in the past year than at any time since the late 1970s (Graph V.7). For its part, the Swiss franc weakened in response to continuing signs of stagnation of the Swiss economy and an aggressive easing of monetary policy in late 1996.

The introduction of the euro

As the probability has increased that several European currencies will merge into the euro, attention has turned to the potential effects on the global foreign exchange market and on global portfolio management, and to the possible use of the euro as an anchor currency by countries outside the industrial world.

The market outlook for European monetary union

Market indicators point to monetary union

Opinion in financial markets regarding the probability of European monetary union, and the currencies likely to be included, firmed last year. Yields on interest rate swaps, as traded in the over-the-counter derivative market, offer a measure of these changing views. Implied exchange rates calculated out to ten years forward show that the currencies of a number of countries are expected to be stable against the mark (Graph V.9, upper panels). Indeed, for much of the past year forward French franc swap contracts, starting in 1999 and extending to 2004, have featured fixed interest rates noticeably lower than those on corresponding mark contracts owing to a strong domestic French portfolio shift into bonds in the face of low short-term rates. This rate configuration persisted despite international disinvestment of $39 billion out of French government bonds in the first three quarters of 1996 and international investment in German government bonds of $27 billion in the year as a whole, as well as parallel transactions in swap contracts.

With the exception of sterling, other European currencies were by early 1997 expected to demonstrate much more stability against the mark than had been the case in 1996 or 1995 (Graph V.9, middle panels). Recent forward rates for the dollar suggest that it might give back to the euro some of its recent gains against the mark.

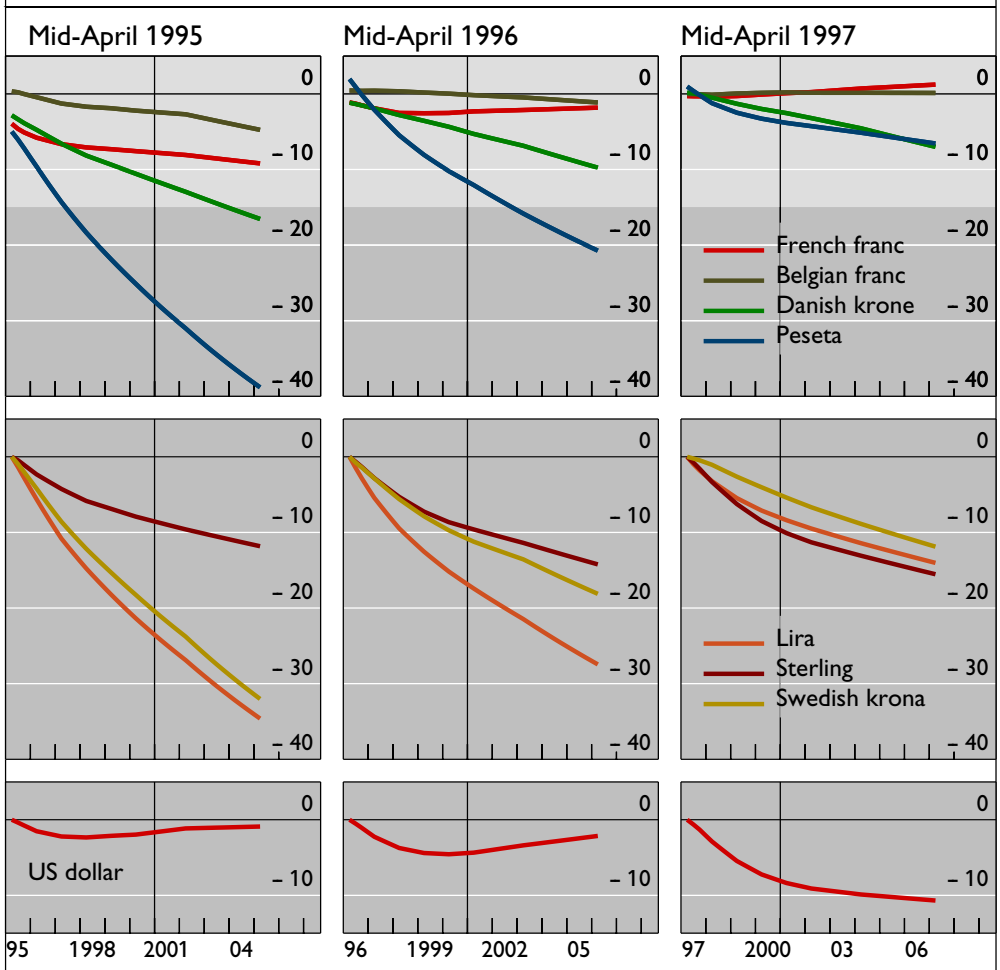
The impact of the euro on the foreign exchange market

The prospect of disappearing European currencies …

Monetary union would reduce revenues from foreign exchange trading and outright position-taking even though many financial firms have profited from the convergence of interest rates in Europe. The April 1995 foreign exchange market survey conducted by the central banks and monetary authorities of 26 countries may be taken as the basis for assessing the scale of the prospective loss of trading. It should be emphasised at the outset, however, that such an estimate can only be approximate, since precise decompositions, for instance of trading of French francs against lire in London, are not available. In addition, the calculations may understate the potential loss of turnover to the extent that an exchange of two

Forward exchange rate changes against the mark

In percentages



Note: Forward exchange rates are derived from differentials on one-year eurodeposit interest rates and, for longer horizons, on interest rate swap (midpoint) yields in the respective currencies (for France, Belgium, Denmark and Spain, relative to their respective central rates). The lira re-entered the ERM on 25th November 1996.

Sources: Reuters and BIS calculations. Graph V.9

European currencies currently entails two exchanges, for example of French francs against dollars and then dollars against lire. (The usual vehicle currency in such a transaction is the mark, not the dollar, however.) Moreover, the decrease in the volatility of many intra-European exchange rates (implied volatility in the French franc/mark averaged 2% in 1996, compared with 7% in April 1995) may well have led to a slowdown in trading, with the result that some of the estimated fall in turnover has already happened. Bearing these caveats in mind, the 1995 survey findings suggest that 10% of the foreign exchange market could disappear with the advent of the euro (Table V.5).

… together with a squeeze on margins owing to the growth of electronic broking …

This prospective decline of foreign exchange trading has to be seen against the background of a squeeze on dealing margins caused by the recent rapid growth of electronic broking of spot foreign exchange transactions. In 1995, direct dealing among banks amounted to between two-thirds and three-quarters of trading volume, and more centralised trading through so-called voice brokers accounted for the balance. Reuters, which provides a network over which banks

European monetary union and foreign exchange turnover

In billions of US dollars and percentages[1]

	Turnover in April 1995						
	Actual					Under the hypothesis of monetary union (total less EMS total)	
	Total[2]		versus:				
			dollar[2]	EMS[3] total	of which mark[2]		
US dollar	1,313	84%	–	714	365	1,313	92%
EU currencies/euro	1,099	70%	714	*300*	140	*799*	56%
Mark	584		365	140	–	(443)	
French franc	127		72	*53*	50	*(74)*	
Guilder	*27*		*18*	*9*	*7*	*(18)*	
ECU	36		25	*11*	10	*(25)*	
Belgian/Luxembourg franc	*29*		*20*	*9*	*8*	*(20)*	
Schilling	*8*		*5*	*3*	*3*	*(5)*	
Irish pound	*3*		*2*	*1*	*0*	*(2)*	
Markka	*5*		*3*	*2*	*2*	*(3)*	
Danish krone	*23*		*17*	*6*	*5*	*(17)*	
Swedish krona	*26*		*15*	*10*	*9*	*(15)*	
Pound sterling	140		103	*32*	29	*(108)*	
Peseta	*33*		*25*	*8*	*8*	*(25)*	
Escudo	*4*		*2*	*2*	*1*	*(2)*	
Lira	*49*		*39*	*10*	*9*	*(39)*	
Drachma	*4*		*2*	*2*	*1*	*(2)*	
Yen	371	24%	329		33	371	26%
Swiss franc	116		86		26	116	
Canadian dollar	50		49		1	50	
Australian dollar	40		39			40	
Emerging currencies	25		23			25	
Hong Kong dollar	15		14			15	
Singapore dollar	6		5			6	
South African rand	4		4			4	
Other reporting countries and unallocated	130		71		18	130	
Grand total	1,572	100%	1,313	1,099	584	*1,422*	100%

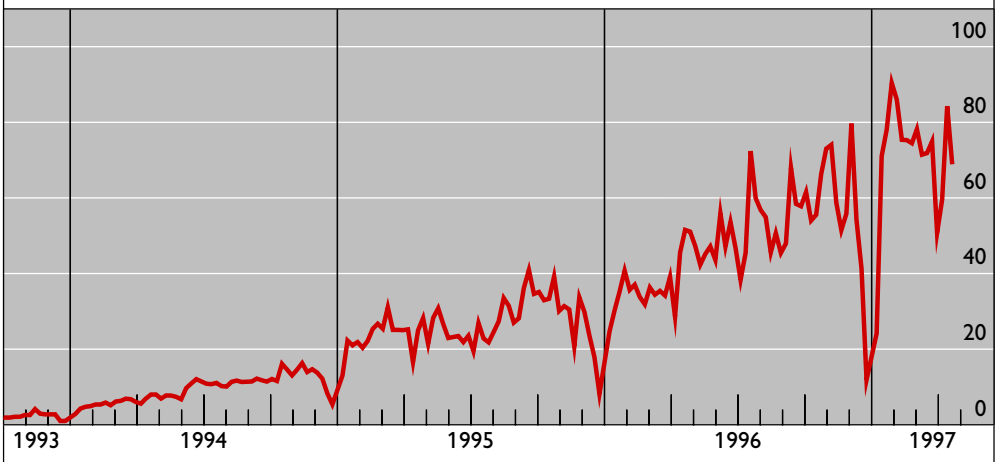
Note: Estimates shown in italics; contribution of EU currencies to euro turnover shown in brackets.

[1] Turnover, net of local inter-dealer double-counting. This table reports the turnover in which a given currency appears on one side of a transaction; consequently, each transaction is counted twice. To take this into account, the grand total is divided by two and set to 100%. Components may not add to totals owing to rounding. EU currencies (excluding the ECU) are ordered according to poll respondents' views on the probability of their joining monetary union at the outset (*Consensus Forecasts*, August 1996). Some transactions between EMS currencies that currently take place using the US dollar as a vehicle would disappear under the assumption of monetary union. Therefore, the currency shares shown in the last column overstate the importance of the euro, understate the importance of the yen and correctly represent the importance of the dollar. [2] Decompositions are available only for the mark, French franc, ECU and sterling; the decomposition of aggregated "other EMS currencies" ($212 billion for the grand total, $148 billion against the dollar and $53 billion against the mark in Tables 1-D, 1-E and 1-F) is estimated using each currency's local currency trading as a proportion of such trading for all other EMS currencies (Table 1-G). [3] The French franc (sterling) EMS total is estimated as the franc (sterling) total less the sum of franc (sterling)/dollar trading and Paris (London) trading of the franc (sterling) vis-à-vis the yen, Swiss franc, Canadian dollar and Australian dollar. The EMS total for every other EU currency is estimated as its total less its dollar trading (local trading of these currencies against the yen, Swiss franc and others is negligible).

Sources: *Central Bank Survey of Foreign Exchange and Derivatives Market Activity 1995* and BIS calculations. Table V.5

Foreign exchange turnover through Electronic Broking Service

Weekly averages of daily spot transactions, in billions of US dollars



Note: Total daily spot foreign exchange turnover in April 1995 averaged $520 billion.

Source: Electronic Broking Service. Graph V.10

deal foreign exchange directly with each other, introduced an electronic brokerage service in 1992 to compete with voice brokers. In response, a year later a consortium of banks started a rival system, called Electronic Broking Service (EBS). In the past 18 months the volume traded over the EBS (and over Reuters as well, although volume figures are not available) has expanded very rapidly (Graph V.10). Electronic broking is mostly growing at the expense of voice broking. Some smaller banks, however, have scaled back their direct dealing since electronic trading offers transparent and low-cost access to prices as they are made. Once a given currency pair attains critical mass, electronic broking can offer very narrow spreads, of one or two hundredths of a pfennig in dollar/mark trading, for example, which is about one-third of previous spreads. Thus, monetary union holds out the prospect of declining activity in a market already adjusting to narrower spreads.

… leads to a strategic reorientation towards new currencies

Faced with these challenges, foreign exchange dealers are focusing on the growth of trading in currencies from outside the industrial countries. As replacements for European exchange rates, the currencies of emerging economies offer wider margins to interbank dealers (although the electronic brokers are also planning to introduce these currencies). Information on many emerging currencies is not readily available, although participation in the next triennial central bank survey in 1998 will extend beyond the 26 authorities that took part in 1995. Data from official and market sources suggest that trading in currencies not captured by the 1995 survey is expanding rapidly (Table V.6). The aggregate of such business has reached over one-third of the volume of the intra-European trading that may disappear with the introduction of the euro. For example, the Indonesian rupiah is already traded about as much against the dollar and yen as was the lira against the mark in April 1995. One factor helping to boost trading in many "exotic" currencies is that international investors prefer to buy the currency forward rather than to buy local bank deposits or government bills. That is, forward trading allows international investors to reap the high yield obtainable from emerging money markets even prior to reforms

Foreign exchange turnover in emerging currencies

In billions of US dollars

Currencies	Local turnover[1]		Global turnover		
	April 1995[2]	April 1996[2]	March 1996[2]	April 1997[2]	early 1996[3]
Asia	>13.6	>17.8	>16.3	>39.4	36.6
Indian rupee	1.6[4]	1.2	1.0	n.a.	1.1
Indonesian rupiah	4.8[4]	7.8[4]	3.5	10.0	8.5
Korean won	3.1	3.2	1.8	2.4	2.4
Malaysian ringgit	n.a.	n.a.	5.0	10.0	9.5
New Taiwan dollar	1.5	1.6	n.a.	3.0	1.1
Thai baht	2.6[4]	4.0[4]	5.0	14.0	14.0
Latin America	9.1	10.9	>5.8	n.a.	
Argentine peso	1.7	2.0	n.a.	1.5	
Brazilian real	4.3[5]	5.5[5]	4.5	n.a.	
Chilean peso	0.8	0.9	n.a.	n.a.	
Colombian peso	0.1[4]	0.1[4]	0.1	n.a.	
New Mexican peso	2.1	2.2	1.2	n.a.	
New Peruvian sol	0.1	0.2	n.a.	n.a.	
Eastern Europe	1.8	>5.9	>1.6	8.1	
Czech koruna	0.6[4]	2.5[4]	0.5	5.5	
Hungarian forint	0.3	0.6	0.3	0.4	
Polish zloty	0.3[4]	n.a.	0.3	0.4	
Russian rouble	0.6	2.6	0.5	1.4	
Slovak koruna	0.02	0.2	n.a.	0.4	
Other currencies	5.4	6.7	>7.4	>7.0	
New Israeli shekel	0.3	0.5	n.a.	n.a.	
Saudi riyal	1.4	1.5	0.3	n.a.	
South African rand	3.7	4.7	6.0	6.0	
Turkish lira	0.01[4]	0.02[4]	1.1	1.0	
Total[6]	>29.9	>41.3	>31.1	>56.1	

Note: The countries shown (except South Africa) had aggregate GDP of $3.4 trillion in 1992 or 15% of world GDP, compared with 80% for the countries included in the April 1995 central bank survey.

[1] Estimates as reported by the respective central banks, net of double-counting unless otherwise specified, for a period as near as possible to April. For Thailand, 1995 second half and 1996 annual averages. For Indonesia and Argentina, annual average. The turnover of the Russian rouble and the South African rand in April was well above the annual average. [2] Citibank estimates, net of double-counting. [3] Estimates reported in the *Singapore Foreign Exchange Market Committee Annual Report 1996*. [4] On a gross basis. [5] Includes other currencies. [6] The *Central Bank Survey of Foreign Exchange and Derivatives Market Activity 1995* reports a grand total (including South Africa) of $1,136.9 billion. Table V.6

of withholding taxes, custodial arrangements, reserve requirements and other impediments to holding cash instruments in these countries.

The euro and portfolio shifts

The question of how global portfolio managers will respond, in the short run and over the long term, to the introduction of the euro has attracted a great deal of commentary in the past year. Financial market participants have focused on the possibility that official reserve managers might shift their assets out of the mark and into the dollar in the near term, and then might shift out of the dollar

into the euro in the long run. Current international reserve holdings in European currencies fall far short of the potential importance of the euro area in terms of output and world trade. In particular, after European Union countries' reserve holdings of each other's currencies are netted out, the share of EU G-10 members in G-10 output and world trade is twice the share of their currencies in global reserves (Graph V.11).

Four points should be borne in mind in considering possible portfolio shifts. First, the behaviour of euro-area residents could be important in the transition. In a published report, the Swiss authorities discussed the possibility of large shifts out of the euro into the Swiss franc by such residents. However unlikely this may be, the discussion underscores the fact that portfolio shifts need not be confined to investors from outside the euro area.

Official reserves in perspective

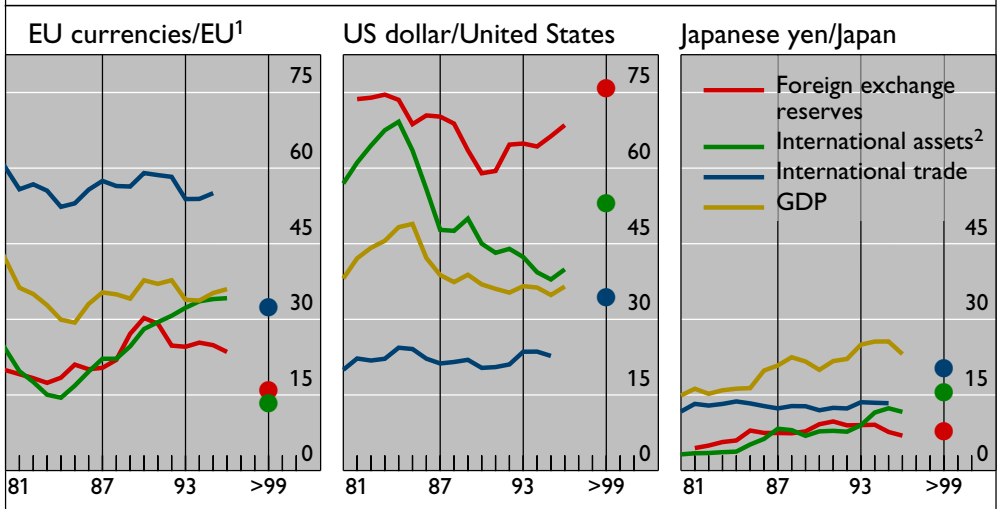
Secondly, official foreign exchange reserves represent only a small part of international portfolios. At $1½ trillion, official reserves amount to much less than total international bonds and (non-bank) deposits outstanding, at over $5 trillion. Moreover, this aggregate does not include the one-quarter of US Treasury securities or the one-third of German public debt securities held by non-residents, in both cases mostly in the private sector. In an era in which private capital flows have demonstrated their importance, the preoccupation with official reserve management seems misplaced.

The euro would attract international borrowing as well as investment

Thirdly, the behaviour of global *liability* managers may change in a manner that could partly offset, or more than offset, shifts by private *asset* managers. Debtor countries, for instance, appear to have a very small fraction of their liabilities denominated in the euro's predecessor currencies. Larger and more

The international role of the euro, dollar and yen

Currency and country shares, in percentages



Note: Hypothetical shares beyond 1999 are computed by netting out from most recent observations, respectively: EU holdings of EU currency reserves; EU holdings of EU currency bank assets and EU issuers' bonds/notes in G-10 EU currencies; and G-10 EU trade with EU countries. Total reserves, assets and G-10 GDP were $1.52 (1.38), 5.1 (3.9) and 19.9 trillion respectively in 1996; G-10 trade was $5.8 (3.9) trillion in 1995 (consolidated totals in brackets).

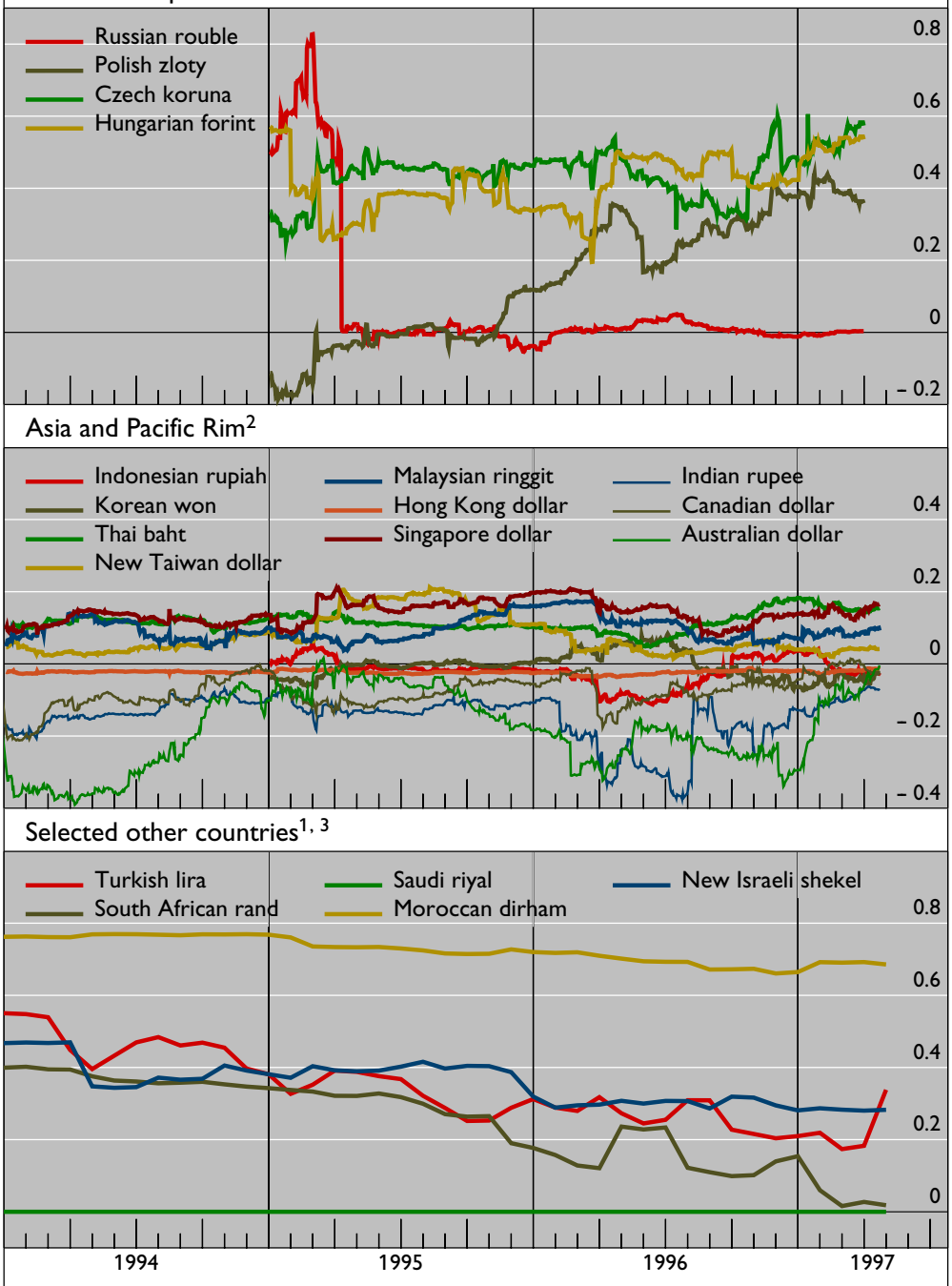
[1] G-10 EU countries only. [2] Includes international bonds, cross-border bank liabilities to non-banks, foreign currency liabilities to domestic non-banks (from 1984) and euronotes (from 1989).

Sources: IMF, OECD, BIS and national data. Graph V.11

liquid fixed income markets in euros, as compared with current European markets, could encourage debt issuance in the euro.

Lastly, it is easy to overstate the effect of portfolio shifts on exchange rates. In the final analysis, business cycle positions and associated expectations about future monetary policy, as well as the credibility of the European Central Bank, will play central roles in determining the external value of the euro.

The geography of exchange rate sensitivities



[1] Sensitivity to movements in the mark against the dollar (see the note to Graph V.7). [2] Sensitivity to movements in the yen against the dollar (by definition, the yen/$ sensitivity to itself is unity). [3] Over the current and previous 36 months.

Sources: Bank of Japan, Bankers Trust, Datastream and IMF. Graph V.12

The euro, dollar and yen as currency anchors

The euro's international role will depend in part on its use as an anchor currency by non-G-10 countries. The use of European currencies as an anchor currently does not extend beyond parts of Eastern Europe, Africa and the Middle East, as is indicated by the exchange rate sensitivities of non-G-10 currencies to movements in the mark/dollar rate (Graph V.12). The dollar, in contrast, serves as an anchor for currencies in the Americas and Asia, for the Australian dollar and even for some Eastern European currencies. The role of the yen as an international currency is limited even in Asia, where most currencies tend to share no more than 10% of its movements against the dollar. Foreign exchange turnover data in emerging markets confirm the limited role of the yen and show much higher shares of dollar trading in Asia.

Looking ahead, the exchange rate policies of Russia and China could prove of particular importance. The current dollar orientation of Russian policy and foreign exchange holdings (official and private), as well as the scale of its commodity exports, favour linkage to the dollar, but growing trade with Europe could shift the balance towards the euro over time. Hong Kong's fixed link to the dollar, as well as rapidly expanding trade between the United States and China, make a reorientation of China's policy perhaps less likely.

Gold

\$11 billion turns over each day …

The London Bullion Market Association recently reported that clearing turnover in gold in London in late 1996 was equivalent to about \$11 billion per day. According to a Bank of England survey, most of the trading was spot – both physical and book-entry – with a significant forward market and an active option market. The value of gold traded in London thus rivals that of London trading of sterling against the Deutsche mark.

… reflecting an active lease market

This high trading volume reflects the increased propensity of gold producers to lock in their output prices by selling their gold forward. The lack of an upward trend in gold prices may spur such selling, but so does the less speculative desire by producers to reduce the volatility of their cash flows in order to improve their access to credit. These forward sales generate spot sales. That is, the banks that contract to buy the producers' output forward hedge this undertaking by borrowing gold and selling it in the spot market. Banks borrow gold by taking gold deposits, offering a yield known as the lease rate. Although the three-month

Turnover in the gold market in 1996

In billions of US dollars per day

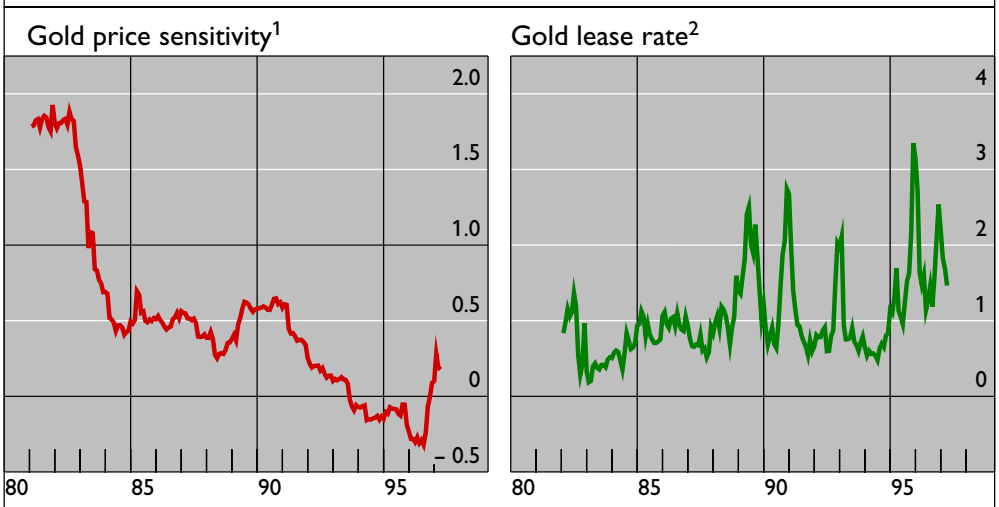
Total	Bullion[1]	Derivatives				*Memorandum items*	
		Exchange-traded[2]		Over-the-counter[3]		*World annual production[4]*	*World reserves[5]*
		Futures	Options	Forwards/ swaps	Options		
14.4	11.0	1.8	0.3	1.1	0.2	*29.2*	*408.9*

[1] Fourth-quarter average. [2] 1996 averages. [3] May averages. [4] At the 1996 average price. [5] End-year holdings by central banks, the BIS, the IMF and the EMI at the end-year price.

Sources: London Bullion Market Association, Bank of England, COMEX, CBOT, TOCOM, BM&F, EOE, IMF and Gold Fields Mineral Services Ltd. Table V.7

Gold price sensitivity and the gold lease rate

Monthly averages



[1] Estimated, as in Graph V.7, by regressing the dollar price of gold on movements in the mark against the dollar over the current and previous 36 months. [2] On three-month gold deposits in London.

Sources: Barclays Bank Plc, N.M. Rothschild and BIS calculations. Graph V.13

lease rate shows considerable seasonal variation (with end-year spikes reflecting a reduction in the supply available for loans extending beyond 31st December), a longer-term uptrend can still be discerned (Graph V.13, right-hand panel). In particular, in the early 1980s gold deposits rarely yielded over 1%, while more recently they have rarely yielded less than 1%.

The dollar price of gold has lost its linkage to dollar/mark changes

Subjecting the price of gold to the same elasticity analysis as was conducted above for exchange rates shows that the dollar price of gold has lost its sensitivity to exchange rate movements. At the time when its price peaked in 1980, gold served for many as a refuge from a dollar seemingly prone to accelerating domestic inflation and international depreciation. Thus, movements in the dollar gold price amplified the mark's movements against the dollar (Graph V.13, left-hand panel). As inflationary expectations have fallen around the world, not least in the United States, the price of gold has shown less and less sensitivity to movements in the dollar/mark exchange rate. In this evolution, the price of gold bears a resemblance to the exchange rate of the South African rand, whose sensitivity to dollar/mark movements has also declined over the last ten years (Graph V.12). This consistency is not surprising given the importance of gold to the South African economy.

Changing gold price dynamics may also be related to the increasing wealth and gold holdings of Asian investors. If rapid Asian growth has raised the proportion of gold bought and held by investors resident in countries whose currencies are most closely linked to the dollar, an increasing fraction of world gold demand (expressed in dollars) is hardly affected by changes in the dollar's value. Thus the growing importance in the gold market of the dollar-linked economies can help explain why the dollar price of gold no longer tracks movements of the mark against the dollar. A question for the future is whether the introduction of the euro will draw the pricing of gold and other commodities away from the dollar.