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Features of a Dollar Decline

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Any future decline in the value of the dollar—either designed by policymakers to help reduce the US current account deficit or reflecting a loss of confidence in the US economy that undermined the ability to attract sufficient foreign capital to cover the current account deficit—would need to involve a wide range of currencies. Unless a well-organized policy to weaken the dollar against a broad basket of currencies that reflected the modern trade patterns of the US were orchestrated, the dollar might eventually fall more against currencies that are less important for the current account and those of countries that are less well positioned to cope.

Earlier this year, we at Goldman Sachs updated some research that we conducted in 1999 arguing that the US balance of payments was unsustainable (O'Neill and Hatzius 2002). This research tried to determine what would be necessary to stabilize the net foreign liability position of the United States. Specifically, we showed that to prevent net foreign liabilities from going above 40 percent of GDP by 2007, the United States would have to see a permanent improvement in the current account balance by around \$200 billion, some 2 percent of GDP. We went on to show that if this were to be solely the result of a decline in the dollar, a decline of as much as 43 percent on a trade-weighted basis could be necessary. In reality, of course, other countervailing influences would be likely to play a role, and a significant increase in foreign domestic demand relative to the United States would be likely to vastly diminish the need for such a large move in the dollar.

It does seem as though something must be done in the coming years to stabilize the US net foreign liability position even if, as it appears, this

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Curropov	1085	2002
Currency	1965	2002
Japanese yen	20.6	13.3
Canadian dollar	19.7	17.0
Euro	18.8	16.3
Pound sterling	4.9	4.3
Mexican peso	4.5	10.4
Korean won	3.6	4.3
Chinese yuan	1.8	8.0

Table 1.1 Weights of seven currencies as computed in the Fed's broad trade-weighted dollar index (1985 and 2002, in percent)

Source: Federal Reserve.

is not currently obvious to the markets. And if the necessary shifts in relative domestic demand do not occur, then ultimately the dollar might decline as precipitously as predicted in our model to achieve a better balance. Stronger domestic demand seems particularly important given the current fragile state of demand outside the United States, particularly in the euro zone and even more in Japan.

Our own estimates for currency equilibrium, further discussed below, suggest that the fair value for the dollar appears to have risen in recent years, reflecting the stronger productivity performance of the US economy relative to others. This approach does not suggest that a large dollar decline against all the major currencies would currently be appropriate.

Three different alternatives for the future would be consistent with a recent appreciation in the equilibrium value of the dollar. The first is that the future US current account deficit may turn out to be lower than current trends suggest as a result of improved efficiencies associated with the productivity improvements, generating increased exports and/or reduced imports. Of course, there are no imminent signs of this. Second, it is possible that the United States can sustain a higher current account deficit than before. Perhaps FEER¹-like models should consider that possibility, as better-quality capital flows can be sustained as a result of the healthier economic conditions. Third, of course, relative productivity trends may change again, and if Japan and the euro zone economies improve their productivity growth in the future, then this would imply a renewed decline in the equilibrium exchange rate of the dollar, more compatible with the current message from FEER-like models.

Whichever is the correct explanation, it would be unwise to force an adjustment on economies that might find it difficult to cope with an immediate loss of export opportunities. It is argued below that this is particularly important with respect to Japan. In relation to this point, it is also important to be aware of the very large shift in US foreign trade relationships since the 1980s. Table 1.1 compares the current and earlier

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^{1.} Fundamental equilibrium exchange rate.

weights for several countries as computed in the broad trade-weighted dollar index formulated by the Federal Reserve Board (Leahy 1998). The Fed's index is based on three separate indices for imports, exports, and third-party competition. As the table shows, today China carries a weight of 8.0 percent, more than that of Germany (about 5.4 percent). The weight for Mexico has also risen sharply, and China and Mexico together have a greater weight than either the euro zone or Japan. In fact, the euro zone and Japan have a combined weight of only around 30 percent, less than the combined weights of Canada, China, and Mexico.

It would be inappropriate to look to currencies that make up just 30 percent of the trade-weighted exchange rate of the dollar to provide the counterpart appreciation needed to improve the US current account. Movement of the dollar against a broader group—certainly one that involved the currencies of Canada, China, Korea, and possibly Mexico in addition to those of the euro zone (and only modestly Japan)—might seem more viable.

The Extent of Dollar Overvaluation

We estimate equilibria for currency rates according to our Goldman Sachs dynamic equilibrium real exchange rates (GSDEER) model. In addition to accepting the Williamson rationale (Wren-Lewis and Driver 1998) that real exchange rates are not stable and need to reflect equilibria for both internal and external balance, the GSDEER model argues that the Balassa-Samuelson model (Balassa 1964 and Samuelson 1964) holds for the major currencies also. The GSDEER model estimates the real exchange rate as a function of relative productivity in the different economies. We use data from the Organization for Economic Cooperation and Development (OECD) on labor productivity and estimate nominal exchange rates deflated by either producer prices or GDP deflators. (The 1996, 2001, and 2002 editions of our annual *Foreign Exchange Market* give a more detailed explanation and some econometric estimates.)

The GSDEER method suggests that the dollar is currently overvalued by around 15 percent on an effective trade-weighted basis, with the equilibrium having risen somewhat in recent years, reflective of the relative improvements in US productivity.

Against a narrower basket of major currencies (the Fed's major tradeweighted index), we estimate that the dollar is now overvalued by a smaller degree, just under 10 percent. This reflects the dollar decline against these currencies earlier this year as well as some rise in the equilibrium associated with the rise in US productivity.

Some evidence to support the modest increase in the equilibrium value of the dollar can be seen in the overall performance of the US balance of payments in recent years. Although the current account balance has



Figure 1.1 United States: BBoP vs. current account

 $\mathsf{BBoP}\ =\ \mathsf{broad}\ \mathsf{basic}\ \mathsf{balance}\ \mathsf{of}\ \mathsf{payments}$

Source: US Department of Commerce and Goldman Sachs calculations.

deteriorated despite the weakness of the overall economy since late 2000, substantial net inflows of capital have persisted. It was only in the past few months that net inflows of foreign direct investment, bonds, and equities were unable to offset the deteriorating current account deficit.

The combined balance of the current account, net direct investment, and portfolio flows can be described as a broad basic balance of payments, and as can be seen in figure 1.1, this aggregate has stayed close to balance as a percentage of GDP until the past few months. Now the broad balance has moved into deficit, and the overall balance is starting to depend on more short-term inflows.

The degree of positive capital flows may have partially reflected the belief that rising relative US productivity might offer better returns on investments than elsewhere or a view that the current account balance might be lowered in the future, as discussed earlier.

The underlying current account deficit will presumably become more of a problem for the dollar if quality capital flows slow more quickly, resulting in increasing dependence on short-term flows. This would then increase the risk of a forced abrupt improvement in the current account deficit, raising the risk of a sharp decline in US domestic demand and a sharp decline in the dollar.

The likely alternatives for the dollar in the coming years can perhaps be bounded by the following cases. A decline of 15 percent would result in a return to fair value reflecting relative productivity levels and would

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GSDEER = Goldman Sachs dynamic equilibrium real exchange rates *Source:* Goldman Sachs.

allow for a more equitable balance of world capital flows and an improved US current account. At the other extreme, a decline by close to 40 percent could result if markets are forced to adjust the US current account abruptly and significantly. To reduce the risk of an abrupt adjustment, policymakers may need to work toward adjusting the global pattern of demand to secure a better balance.

The Yen and the Japanese Economy

According to our basic research on currency equilibria, the yen is actually close to equilibrium against the dollar, with our latest specific point estimate suggesting a fair value currently around 119 yen to the dollar. In fact, our simple models of productivity-adjusted exchange equilibria actually show that the yen is overvalued on a trade-weighted basis. In this regard, it is difficult to believe that the yen should play a lead role in any policy-induced dollar decline to improve the US current account balance. It should play a role, but probably not a lead role.

Historically, our estimates have been reasonably similar to those of FEER-type models. In recent years, however, our estimates show that the equilibrium of the yen has declined. Against the yen, as can be seen in figure 1.2, the fair value of the dollar has improved, reflecting the improvements in US productivity relative to Japan, and this has more than compensated for Japan's negative inflation.



Figure 1.2b Japanese yen trade-weighted index, 1984-2002

Figure 1.2c Productivity in the United States and Japan, 1990-2002



year-over-year change, percent

Source: Japanese Cabinet Office; Japanese Ministry of Public Management, Home Affairs, Posts and Telecommunications; US Department of Labor; and Goldman Sachs calculations.

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Country or region	Weight
United States	25.43
Euroland	24.84
Korea	6.21
Taiwan	5.30
United Kingdom	5.29
Canada	4.91
China	3.56
Hong Kong	3.22
Singapore	2.82
Australia	2.12
Switzerland	2.05
Thailand	1.93
Malaysia	1.47
Sweden	1.44
Mexico	1.31
Indonesia	1.19
India	0.92
The Philippines	0.65
New Zealand	0.41

Table 1.2 Components of the Japanese
yen in the Goldman Sachs
trade-weighted index

Source: Goldman Sachs.

We also find that the yen appears to be overvalued on a trade-weighted basis, which is not surprising considering that the other Asian economies have a considerable weight in Japan's trade (table 1.2). Each of the Chinese yuan, the Hong Kong dollar, the Korean won, and the Taiwan dollar seems cheap relative to the yen. In addition, the euro is an important part of the trade-weighted yen exchange rate, and according to our estimates, the euro remains undervalued relative to the yen.

Analysis of the breakdown of world export performance supports our valuation. The latest OECD estimates of relative export share of world exports show that Japan's share is still declining despite the level of the yen (figure 1.3). Much of the loss appears to have coincided with gains by China rather than by the other G-7 nations, although some Euroland economies have gained modestly.

This analysis may surprise those who simply observe Japan's persistent current account surplus and accumulation of foreign exchange reserves, both of which would rather bluntly suggest that the yen is in fact undervalued. Our research implies that the ongoing trade surpluses are more a reflection of weak imports and perhaps the depressed level of Japanese domestic demand rather than of high exports. As with other major economies, imports in Japan are greatly determined by the level of demand rather than the exchange rate; if Japanese demand had been significantly stronger over the past decade or so, Japan's trade surpluses might not have been as high as they are.



Figure 1.3 Share of world exports, 1989-2001

Source: IMF. Eurostat.

percent

In this context, it is especially difficult to argue that the yen should play a lead role in any policy-induced decline in the dollar. In addition to our evidence of fair value for the yen, the current weak state of the Japanese economy must be taken into account. As figure 1.4 shows, Japanese GDP growth has strongly underperformed the United States since 1991, and in fact we now believe that Japan's long-term growth potential is just about 0.9 percent, while that of the United States is just under 3.0 percent. This is a far cry from the 1970s and 1980s, when Japan also ran large current account surpluses but had stronger trend growth.

Japan needs to undertake significant economic reform in order to strengthen its economic performance and to raise its long-term growth trend in view of its demographic and financial challenges. It would be difficult for Japan to absorb a trade-weighted yen appreciation on top of these severe challenges in the coming years.

This suggests that other currencies important to Japan, such as the Chinese yuan, the Korean won, and the euro, would need to strengthen more than the yen in any decline of the dollar for the trade-weighted yen to weaken.

The Broad Balance of Payments

Back in 1999, we started to give more attention in our analyses to the basic balance of payments rather than the current account balance as a

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Source: US Department of Commerce, Japanese Cabinet Office, and Goldman Sachs calculations.

key driver of currencies. We did this primarily in order to understand the euro better in its infancy, but the approach is also applicable to the yen.

We define the broad basic balance of payments (BBoP) as the combination of the current account, net foreign direct investment flows, and portfolio flows of both bonds and equities. If all three are analyzed together, there appears to be a good correlation between the BBoP as a percentage of GDP and the trade-weighted exchange rate. The BBoP can be regarded as perhaps the best guide to commercial supply and demand for a currency and the remaining parts of the balance of payments are effectively hot money or short-term money flows (except for reserve changes).

The current account usually dominates the Japanese BBoP, but as can be seen in figure 1.5, this is not always the case. For example, in 1996-97, when the yen declined sharply, the BBoP was actually in modest deficit despite the current account surplus, reflecting large Japanese portfolio outflows. Again in the last year or so, Japan's BBoP has declined despite an upward turn in the current account surplus.

In 1998 the yen continued to weaken despite a significant improvement in Japan's current account and BBoP. The decline of the yen was being sustained by large speculation, particularly in the hedge fund community. Not surprisingly, when US and Japanese authorities joined in intervening to buy yen, the underlying BBoP allowed the yen to recover rapidly.

Figure 1.5 Japan: BBoP vs. current account, 1990-2002

GDP, 12-month moving average, percent



BBoP = broad basic balance of payments *Source:* Bank of Japan and Goldman Sachs calculations.

A Note on Foreign Exchange Intervention by Japanese Authorities

A considerable amount of attention is devoted to Japan's large-scale accumulation of foreign exchange reserves and the effectiveness of this intervention, and indeed, other papers in this conference focus on the topic. Two points on the subject deserve mention here. First, it is not always the case that the Japanese authorities intervene to sell yen. As noted above, in 1998, they were joined by the US Treasury in intervening to buy yen. Second, because of the weakness of the Japanese financial system, privatesector risk taking has been so limited in recent years that at times the intervention in the yen by the Ministry of Finance may be designed to close the balance of payments identity and to halt a large, destabilizing rise in the yen, as opposed to being based on the belief that the intervention will be successful in depreciating the yen. Indeed, in view of the chronic weakness of the Japanese economy, it could be argued that both the current and the capital accounts of the balance of payments have been artificially distorted.

The Euro and the Euroland Economy

The Euroland economy is also fragile, and so any policy-induced decline in the dollar to improve the US current account could also cause problems

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Source: Goldman Sachs.

for the euro zone. However, our GSDEER models suggest that the euro is significantly undervalued; with a stronger exchange rate, a better balance of monetary, financial, and economic conditions might help both the Euroland and the world economies. In this light, a policy-induced decline in the dollar that involved a major role for the euro might appear to have more benefits and would, together with a dollar decline against other currencies, make more sense than one greatly focused against the yen.

As mentioned earlier, China carries a greater weight than Germany in the trade-weighted exchange rate of the United States, and as we will see below, the euro zone does not have a large current account surplus. Nonetheless, the case for a policy-induced rise in the euro is reasonable. Figure 1.6 shows our GSDEER estimate for the exchange rate between the euro and the dollar. As can be seen, the euro appears to be significantly undervalued. Indeed, our point estimate is currently 1.19,² implying that the euro is still undervalued by around 20 percent. We also find that the euro is even more undervalued on a trade-weighted basis—some 24 percent—primarily because of undervaluation against the pound sterling and the Swiss franc as well as the yen.

^{2.} Our latest estimate of dollar/euro equilibrium is 1.15, updated since the conference in September 2002.

Figure 1.7 Productivity: United States vs. Euroland, 1975-2002

year-over-year change, percent



Source: Organization for Economic Cooperation and Development.

Two further points are worth making. First, as can be seen in the figure, the equilibrium for the dollar has also improved against the euro, once again because of relative US productivity improvements. A few years ago, the implied GSDEER estimate of the dollar-euro rate was in the mid 1.20s. Second, there is only modest evidence that Euroland is benefiting from the low valuation of the euro. As shown earlier in figure 1.3, the euro zone had some gains recently in its share of world exports, but the gains are modest. This latter fact serves to remind us that any estimate of equilibrium for the euro may be more open to doubt than estimates for most currencies because of the euro's infancy. It is worth noting that anecdotal evidence from many industries around Europe suggests that the euro is relatively cheap, especially in Switzerland and the United Kingdom.

Figure 1.7, which charts the rates of productivity change of Euroland and the United States since the 1970s, shows that the United States has performed better since the mid-1990s. This is a result of both improved productivity growth in the United States and slower productivity growth in Euroland. The latter reflects poorer economic performance in many of the larger economies.

We believe that the trend GDP growth potential of the euro zone has probably weakened to somewhere between 2.0 and 2.25 percent, after being around 2.5 percent when the European Monetary Union (EMU)

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Figure 1.8 Real GDP comparisons: Euroland vs. United States, 1991-2002

Source: US Department of Commerce; Eurostat; Goldman Sachs calculations.

was launched in 1999. Of course the theory of EMU suggested that the process should help boost the trend growth rate, not weaken it.

Within the euro zone, a number of countries have seen their productivity performance deteriorate, but none more so than Germany, and it may well be that the trend growth performance of Germany is now somewhere around 1.75 percent, instead of the 2.5 percent it appeared to be historically. As figure 1.8 shows, Germany has lagged badly behind the rest of the euro zone's economic growth since the early 1990s.

Rebalancing Economic Conditions

Euroland needs a stronger trend growth rate, and economic reforms are necessary to achieve them. It is also possible, however, for the euro zone to have a different, more beneficial balance of financial conditions. Table 1.3 shows the impact a broad decline in the dollar would have on a number of different regions and what the consequences for GDP growth

	Depre	Depreciation of US dollar of:		
	10 percent	20 percent	30 percent	
Impact on Goldman Sachs trade-weighted index (percent)				
United States	- 10	-20	- 30	
Euroland	3	5	8	
Japan	3	7	10	
United Kingdom	2	3	5	
Impact on MCI/FCI (basis points)	3			
United States	-50	-100	- 150	
Euroland	26	52	77	
Japan	27	54	81	
United Kingdom	56	111	167	
Impact on real GDP growth (poli	cv unchanged)			
United States	+ 0.50	+1.00	+ 1.50	
Euroland	-0.26	-0.52	-0.77	
Japan	-0.27	-0.54	-0.81	
United Kingdom	-0.37	-0.74	- 1.11	
Advanced economies	-0.01	-0.03	-0.04	
Rate reduction needed to offset	depreciation ^b			
Euroland	. 29	57	86	
Japan	n.p.	n.p.	n.p.	
United Kingdom	57	114	171	
Impact on real GDP growth (full	policy offset)			
United States	+ 0.50	+1.00	+ 1.50	
Euroland	0.0	0.0	0.0	
Japan	-0.27	-0.54	- 0.81	
United Kingdom	0.0	0.0	0.0	
Advanced economies	+0.16	+0.32	+0.48	

Table 1.3 Impact of US dollar depreciation

MCI = Monetary Conditions Index; FCI = Financial Conditions Index; n.p. = not possible a. The MCIs consist of weighted averages of short-term long-term interest rates and tradeweighted exchange rates, and FCIs add the impact of changes in equity markets.

b. The yield curve is assumed to remain constant.

Source: Goldman Sachs.

would be, both with and without economic policy change. The first section of the table shows the impact on the trade-weighted exchange rate. For example, a generalized 10 percent decline in the dollar would have a 10 percent effect on the trade-weighted index for the dollar, all else remaining equal. It would strengthen the trade-weighted euro and yen by about 3 percent and the trade-weighted pound sterling by about 2 percent. A 30 percent decline in the dollar would strengthen the trade-weighted euro by about 8 percent. The second section shows the impact on local financial conditions. The dollar has a weight of 5 percent in our US financial conditions index, and the exchange rate has a weight of about 10 percent for the euro zone and Japan. As the UK economy is the most open, the

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weight is even higher. The third section shows what the impact of the dollar decline would be via the resulting change in financial conditions on real GDP. We would estimate that US GDP growth would be boosted after a year by about 0.5 percent from a loosening of 50 basis points in financial conditions and 1.5 percent from a loosening of 150 basis points.

The euro zone and Japan would be negatively affected by similar magnitudes. Of course, Japan could not react to soften financial conditions easily, as interest rates are already zero. In addition to the yen valuation issue we mentioned earlier, this again serves to remind us that a weaker dollar might be bad news for Japan. However, there would be scope for the euro zone and the United Kingdom to respond, and the fourth section of the table shows the change in interest rates that would be needed in order to keep financial conditions unchanged.

The final section shows what the net consequences would be for each country or region as well as the total GDP consequences for the advanced economies. This shows that a trade-weighted dollar decline can help boost world GDP growth, but that a Euroland policy response would be needed.

The Euroland BBoP

As far as the determinants of the euro exchange rate are concerned, the BBoP seems to be important. Figure 1.9 shows that the euro's movements have coincided rather closely with the path of the BBoP. Initially the euro fell as the BBoP moved into significant deficit, and more recently it has recovered as the BBoP has moved back into surplus.

Unlike Japan's BBoP, the balance for the euro zone is not dominated by the current account but by portfolio and foreign direct investment (FDI) flows. Indeed, as figure 1.10 shows, the euro zone has run a current account balance close to zero for much of its life so far. It has moved recently into a small surplus, perhaps some further indication of the undervaluation of the euro. The BBoP has improved even more sharply than the current account in the last year as both net FDI and net portfolio flows have shifted dramatically. This has happened despite the fact that the United States has continued to outperform the euro zone in terms of economic growth and productivity. This suggests that the euro can continue to appreciate even if Euroland's growth rate is below that of the United States. We would argue that the growth differential compared with expectations about that growth differential are more important than the growth differential alone.

If the United States continues to grow more slowly than expected, the euro might strengthen further despite the weak growth rate of the euro zone. Of course it would be better for the Euroland economy if the euro strengthened more as a result of Euroland's growth exceeding expecta-

Figure 1.9 Euroland: BBoP vs. TWI, 1998-2002



BBoP = broad basic balance of payments; TWI = Trade-weighted index *Source:* European Central Bank; Goldman Sachs data and calculations.

Figure 1.10 Euroland: BBoP vs. current account, 1998-2002



BBoP = broad basic balance of payments. Sources: European Central Bank and Goldman Sachs calculations.

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tions; and if policy could be changed to help bring about both, that would be good for both the euro zone and the rest of the world.

Figure 1.11 illustrates the dramatic shift in FDI-related flows in the past year. The graph shows our estimate, based on announced deals that are yet to be completed, of the pending "pipeline" of cash mergers and acquisitions (M&A) flows between the euro zone and the rest of the world. After showing significant outflows for much of the euro's life, the current pipeline shows a small pending inflow. This reflects the end of the technology, media, and telecommunications boom as many leading Euroland companies can no longer afford to make overseas acquisitions; indeed, many have to sell them. The US M&A pipeline with the rest of the world is shown for comparison. As can be seen, the opposite trend is evident, with the United States now experiencing net outflows. It is quite likely that if policy could improve the outlook for the Euroland economies, pending inflows might improve even more. While structural reforms and a more welcoming stance on corporate ownership might have a big impact, a significant decline in interest rates might help also.

As for net portfolio flows (figure 1.12), there have been some notable fluctuations in both net bond flows and net equity flows. In recent months net equity flows have been shifting back to the United States.³ Net bond flows have shifted from a large net inflow to the United States in the past few months, and net equity flows have slowed, in contrast with the picture of large net outflows for much of 2000 and early 2001. The recent shift of flows back to the United States after a brief period of net inflows to the euro zone primarily reflects foreign selling of Euroland stocks as US-based investors have been disappointed by the lack of Euroland growth and the absence of policies to stimulate better opportunities.

It seems likely that if growth performance could be improved, these flows would be helped. A significant easing of monetary policy could help to achieve these changes, as could any changes in the implementation of Euroland's Stability and Growth Pact. It may well be that a policy-induced decline in the dollar could help to achieve them, adding to the momentum of the euro, aiding a move closer to equilibrium, and achieving more domestic-led economic growth.

^{3.} The charts are based on the cross-border net flows that Goldman Sachs sees between the United States and the euro zone (the y-axis labels have been removed to preserve client confidentiality).

Figure 1.11a Net Euroland cash mergers and acquisitions pipeline* with the rest of the world



* = Euroland mergers and acquisitions abroad.

Source: Thomson Financial SDC and Goldman Sachs calculations.

Figure 1.11b Net US cash mergers and acquisitions pipeline* with the rest of the world



* = US mergers and acquisitions abroad.

Source: Thomson Financial SDC and Goldman Sachs calculations.

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Source: Goldman Sachs.





Source: Goldman Sachs.

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Conclusion

This analysis has shown that a policy-induced decline in the dollar would need to take into account the changes in rates of productivity growth in recent years as well as the remarkably different patterns of trade that the United States has today compared with in the late 1980s. In addition to arguing that the yen should not play a lead role in any policy-induced decline in the dollar, the analysis argues that the dollar would need to decline against a broader basket of currencies, including those of Canada, China, Korea, and possibly even Mexico. We have shown that the yen is close to equilibrium against the dollar and overvalued on a trade-weighted basis and that given Japan's weak economic health, a yen-led strengthening of a dollar decline would not be helpful.

We have also shown that although the euro zone has a small current account surplus, our models suggest that the euro remains significantly undervalued. In addition, unlike Japan, the euro zone has scope to expand financial conditions in response to a decline of the dollar, which would help to achieve a better balance of domestic-led and world growth.

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