

## Strategic Insight

### From Petrodollars to Petroeuros: Are the Dollar's Days as an International Reserve Currency Drawing to an End?

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*"We do not rule out the possibility of pricing our crude oil exports in euros. That would be interesting for our European partners."*

Vladimir Putin, Russian President

*"A switch to euros for oil trading will not happen in my lifetime...governments can make any statements they want, but that's commerce."*

Bruce Misamore, Chief Financial Officer, Yukos

#### Introduction

Almost 70% of the world's international currency reserves—the money that nations use to finance international trade and protect themselves against financial speculators—takes the form of U.S. dollars. The dollar is used for this purpose because it is relatively stable. Because the United States has a major share of world trade and financial assets, certain commodities, in particular oil, are denominated in it. The net result is a large diversified demand for dollars.<sup>[1]</sup>

The use of the U.S. dollar as an international currency, however, has been declining gradually for over thirty years. In the past several years, this reduction in the share of dollar reserves has accelerated with the decline in the value of the dollar and the rise of the euro as a legitimate contender for reserve currency status. Traditionally, speculation over movements in the dollar's value have focused on technical issues surrounding the sustainable size of the country's current account deficit and the relative attractiveness of U.S. financial markets.<sup>[2]</sup> While these factors still dominate discussion in the financial press, the scope of the debate has broadened to America's "unilateral approach to foreign affairs," and decisions concerning the war on terrorism and the war in Iraq.<sup>[3]</sup>

Many websites<sup>[4]</sup> are currently peddling the theory that the United States invaded Iraq because in 2000 Saddam Hussein had switched from dollars to the euro as the medium of exchange for purchasing Iraqi oil—the invasion was largely undertaken to discourage OPEC and other oil exporting countries from following suit. While many of these sites vary in detail, the logic of their arguments is similar:

1. The United States has a great economic interest in maintaining the existing dollar based system—petrodollars eventually end up in the hands of foreign companies and governments, which in turn look for a safe place to invest them.
2. There is a natural inclination to shift dollars back to the United States, thereby avoiding any currency risk.
3. Back in the United States, the dollars flow into assets such as U.S. bonds, keeping interest rates low, or into equities thus creating stock market appreciation.

4. The United States benefits from greater availability of investment capital, which is used to fuel growth in a non-inflationary environment.

5. The great demand for the dollar (aided by the fact that oil is paid for in dollars) helps maintain its strength in international currency markets despite the rapid outflow of currency from the United States that is driven by massive current account deficits.

6. The strong dollar lessens the real costs borne by the United States in Iraq. Because countries have to hold large amounts of dollars as reserves to pay for their oil, the United States can in effect exchange the paper it prints for real goods and services, many of which ultimately wind up in places like Iraq or Afghanistan.

Proponents of this view contend that the dollar priced oil system creates a virtuous cycle for the United States, making the country's massive trade deficit tolerable and its foreign military operations financially bearable. They believe that the existing dollar/oil system allows the U.S. government to run up a massive deficit without rising interest rates as foreign dollars are used to purchase U.S. government debt. The economy thrives because the U.S. private sector is not crowded out of the financial markets. The net result of the use of dollars as a reserve currency is to allow strong levels of consumption and investment despite extraordinary low rates of savings. Meanwhile, the United States can pursue overseas military operations without being encumbered by the resource constraints facing other countries—the United States can have both guns and butter. Proponents of this view believe that breaking the dollar-oil link would drastically reduce role of the U.S. dollar as an international reserve currency, and thus the military and economic power of the United States.

Europeans would like to create their own virtuous cycle with the euro linked to oil, allowing international hard currency reserves to flow back into Europe as investment. In addition to reducing the commercial and military power of the United States,<sup>[5]</sup> many Europeans see the displacement of the dollar by the euro as the international reserve currency ushering in a new era, similar to that associated with the displacement of the pound sterling by the United States dollar following World War II. The EU welcomed President Putin's statement (October 9, 2003) that Russia was considering pricing its crude in euros (petroeuros) rather than dollars.

The sections below assesses the likelihood of a shift towards petroeuros. What might produce such a new oil pricing arrangement? What factors might help maintain the existing system? What is the possible effect of a change on the United States? Would it be as great as many of the euro oil pricing theorists suggest?

### Advantages of Having a Reserve Currency

The United States enjoys several advantages in having the dollar as an international reserve currency. These include<sup>[6]</sup> :

**Convenience for residents.** It is more convenient for the country's importers and exporters, borrowers and lenders to be able to deal in its own currency than foreign currencies. The global use of the dollar, as with the global use of the English language, provides American businessmen with a great advantage over their foreign counterparts.

**Increased business for the country's banks and other financial institutions.** As a result of its international status, U.S. banks have a comparative advantage in dealing with dollars. Only U.S. banks have access to the safety net provided by U.S. regulatory authorities (e.g., the ability to discount assets with the Federal Reserve).

**Seignorage.** This is perhaps the most important advantage of having other countries hold one's currency. These countries must give up real goods and services or ownership of the real capital stock, in order to

add to the currency balances that they use. These financial gains, however, are not as large as many believe. Currently for the United States they are estimated to come to around 0.5% of Gross Domestic Product (GDP).[\[7\]](#)

There is another (smaller) component of seignorage in addition to the currency component. Most foreign central banks and other investors hold their dollars in the form of interest paying treasury bills. To the extent that the reserve currency role of the dollar allows the U.S. Treasury to pay a lower interest rate on its liabilities than most other borrowers, the difference is a further source of seignorage.

**Political power and prestige.** The benefits of "power and prestige" are nebulous. Nevertheless, the loss of key currency status and the loss of international creditor status have sometimes been associated, along with such non-economic factors as the loss of colonies and military power, in discussions of the historical decline of great powers. Causality may well flow from key currency status to power and prestige and in the opposite direction as well.[\[8\]](#)

On a broader scale, Niall Ferguson[\[9\]](#) notes that one pillar of American dominance can be found in the way successive U.S. government sought to take advantage of the dollar's role as a key currency. Quoting several noted authorities, he notes that

[the role of the dollar] enabled the United States to be "far less restrained...than all other states by normal fiscal and foreign exchange constraints when it came to funding whatever foreign or strategic policies it decided to implement." As Robert Gilpin notes, quoting Charles de Gaulle, such policies led to a "hegemony of the dollar" that gave the U.S. "extravagant privileges." In David Calleo's words, the U.S. government had access to a "gold mine of paper" and could therefore collect a subsidy from foreigners in the form of seignorage (the profits that flow to those who mint or print a depreciating currency).

The web contains many more radical interactions of the dollar's role. Usually something along the following lines:

World trade is now a game in which the U.S. produces dollars and the rest of the world produces things that dollars can buy. The world's interlinked economies no longer trade to capture a comparative advantage; they compete in exports to capture needed dollars to service dollar-denominated foreign debts and to accumulate dollar reserves to sustain the exchange value of their domestic currencies.... This phenomenon is known as dollar hegemony, which is created by the geopolitically constructed peculiarity that critical commodities, most notably oil, are denominated in dollars. Everyone accepts dollars because dollars can buy oil. The recycling of petro-dollars is the price the U.S. has extracted from oil-producing countries for U.S. tolerance of the oil-exporting cartel since 1973.[\[10\]](#)

America's coercive power in the world is based as much on the dollar's status as the global reserve currency as on U.S. military muscle. Everyone needs oil, and to pay for it, they must have dollars. To secure dollars, they must sell their goods to the U.S., under terms acceptable to the people who rule America. The dollar is way overpriced, but it's the only world currency. Under the current dollars-only arrangement, U.S. money is in effect backed by the oil reserves of every other nation.[\[11\]](#)

While it is tempting to dismiss passages of this sort as uninformed rants, they do contain some elements of truth. There are tangible benefits that accrue to the country whose currency is a reserve currency. The real question is: if this situation is so intolerable and unfair, why hasn't the world ganged up on the United States and changed the system? Why haven't countries like Libya and Iran required something like euros or gold dinars in payment for oil? After all, with the collapse of the Bretton Woods system in 1971 the International Monetary Fund's Standard Drawing Rights (unit of account) was certainly an available alternative to the dollar.[\[12\]](#)

Having the dollar as an international reserve currency is not without its costs to the United States. Chief among them is the possibility of large fluctuations in the demand for the dollar and hence in its

movements vis-à-vis other currencies. In the past, the German and Japanese governments have been reluctant to let their currencies play larger international roles. They have been particularly worried about the possibility that a sudden increase in demand for marks or yen on the part of foreign residents would cause their currencies to appreciate and thereby make their products less competitive.

## Petroeuro Scenarios

While from time to time the United States dollar may have become "overvalued" as a result of its status as an international reserve (thereby pricing U.S. manufacturers out of foreign markets), most objective observers would conclude that the benefits of the currency's special role in the international system clearly outweigh the costs. This fact has lent a certain degree of credibility to the quotes in the previous section and to the notion that Iraq's pricing of oil in euros was a factor in the Iraq War. Building on this foundation, a number of commentators have speculated about the likelihood of and consequences of other oil producing countries or even OPEC as a whole also shifting to euro pricing.

One of the best descriptions of this scenario—that the war with Iraq was not so much over oil as it was over the pricing of oil in euros by Saddam Hussein—has been developed by W. Clark<sup>[13]</sup>:

1. The Federal Reserve's greatest nightmare is that OPEC will switch its international transactions from a dollar standard to a euro standard. Iraq actually made this switch in November 2000 (when the euro was worth around 82 cents), and has actually made off like a bandit considering the dollar's steady depreciation against the euro (17% in 2002).
2. The real reason the Bush administration wants a puppet government in Iraq—or more importantly, the reason why the corporate-military-industrial network conglomerate wants a puppet government in Iraq—is so that it will revert back to a dollar standard and stay that way. (While also hoping to veto any wider OPEC momentum towards the euro, especially from Iran—the 2nd largest OPEC producer who is actively discussing a switch to euros for its oil exports).
3. The effect of an OPEC switch to the euro would be that oil-consuming nations would have to flush dollars out of their (central bank) reserve funds and replace these with euros. The dollar would crash anywhere from 20-40% in value and the consequences would be those one could expect from any currency collapse and massive inflation (think Argentina currency crisis, for example). You'd have foreign funds stream out of the U.S. stock markets and dollar denominated assets, there'd surely be a run on the banks much like the 1930s, the current account deficit would become unmanageable, the budget deficit would go into default, and so on.

Hazel Henderson goes pretty much down the same road as Clark, but in doing so, broadens her analysis by looking at OPEC's potential decision to price in euros not so much as a purely political one (as was the case for Iraq). Instead, she suggests that for OPEC a switch to euros could be driven more by concern over the long-term decline in the value of the dollar, as in this scenario<sup>[14]</sup>:

1. U.S. global over-reach in the 'war on terrorism' is already leading to deficits as far as the eye can see—and combined with historically-high U.S. trade deficits, leads to a further run on the dollar. This and the stock market doldrums make the United States less attractive to the world's capital.
2. More developing countries follow the lead of Venezuela and China in diversifying their currency reserves away from dollars and toward euros. Such a shift in dollar-euro holdings in Latin America and Asia could keep the dollar and euro close to parity.
3. OPEC could act on some of its internal discussions and decide (after concerted buying of euros in the open market) to announce at a future meeting in Vienna that OPEC's oil will be re-denominated in euros, or even a new oil-backed currency of their own. A U.S. attack on Iraq sends oil to 40 (euros) per barrel.

4. The Bush Administration's efforts to control the domestic political agenda backfires. Damage over the intelligence failures prior to 9/11 and warnings of imminent new terrorist attacks precipitate a further stock market slide.

5. All efforts by Democrats to shift energy policy toward renewables, efficiency, standards, higher gas taxes, etc. are blocked by the Bush Administration and its fossil fuel industry supporters. Thus, the United States remains vulnerable to energy supply and price shocks.

6. The EU recognizes its own economic and political power as the euro rises further and becomes the world's other reserve currency. The G-8 pegs the euro and dollar into a trading band—removing these two powerful currencies from speculators' trading screens. Tony Blair persuades Brits of this larger reason for the UK to join the euro.

7. Developing countries lacking dollars or "hard" currencies follow Venezuela's lead and begin bartering their undervalued commodities directly with each other in computerized swaps and counter trade deals. President Chavez has inked 13 such country barter deals on its oil, e.g., with Cuba in exchange for Cuban health paramedics who are setting up clinics in rural Venezuelan villages.

While Clark's and Henderson's scenarios are plausible and no doubt contain many valid points, they appear to include more wishful thinking than hard assessments based on the economic reality of today's oil and foreign exchange markets. For one thing, Iraq's decision was based purely on political, not economic considerations—the United Nations estimated that the Iraq's initial shift to euro pricing in 2000 cost the country at least \$270 million.<sup>[15]</sup> While one can argue that this sum was more than recouped a few years later with the rise of the euro, at the time of the shift the prospects for euro appreciation were bleak. No doubt, while euro pricing might be politically attractive to other producing countries such as Iran and Libya, the fact that they have not done so suggests that even with the recent strengthening of the euro, significant economic costs are still involved in pricing oil transactions in euros.

More fundamentally, OPEC has no direct control over the quotations of the main market crudes. Whereas, in the past (up until the mid-1980s) the Organization did set the official selling prices, this power began to fade when the oil futures market was established in the New York commodity market (NYMEX) in 1983. By 1986, a market-oriented pricing system had been introduced for all oil transactions (Table 1). From that point on, the price of oil has been determined by a complex formula starting with the movement of spot prices in markets such as the NYMEX.

These market developments occurred as a result of the weakening of OPEC brought on by the expansion of production in non-OPEC regions like the North Sea. Seen in this light, changes by OPEC (or any single producing country) in the currencies used to conduct oil transactions are much more complex and difficult to undertake than that implied in the Clark and Henderson scenarios.

Given the realities in the two key crude markets (the NYMEX and the Brent), it is apparent that OPEC cannot just unilaterally decide to price oil in euros. Whether or not such a shift occurs depends much on the actions of several key countries. Both England and Norway are a long way from adopting the euro. More importantly, the Brent and NYMEX markets are not likely to adopt the euro as a basis of trades until the vast majority of participants, both buyers and sellers are convinced it is in their best interest to do so. Today, there is no evidence that this is the case. In fact, to date no one in the vast network of the global oil trade has asked for or offered oil contracts in anything but dollars.<sup>[16]</sup>

**Table 1 Changes in the System to Determine Crude Oil Pricing**

<i>Pricing Eras</i>	<i>Price Exterminator</i>	<i>Price Determination Method</i>	<i>Transaction Price</i>
Fixed Pricing Method(-1986)	OPEC	Government Sales Price	Long term fixed pricing

Market Based Method(1987-)	Market	Market Based Method $P_x = P_m \pm a$ $P_x$ =crude export price $P_m$ =spot price for market crude $a$ =adjustment factor	Price of long-term contract shifts according to the spot price of market crude oils, and the spot transaction price is also determined
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Source: Yuji Nakamura, "The Historical Flow of Black Gold: Two Approaches to Energy Security," London: Institute for International Policy Studies, January 2002, p.8.

## Russia and the Petroeuro

The current discussion surrounding the Russian government's interest in pricing the country's oil exports in euros provides a good illustration of the issues involved in creating a petroeuro. The debate over euro oil pricing was set off in mid-October 2003 when Russian President Valdimir Putin indicated that Russia was considering pricing its crude exports in euros rather than dollars. One has to appreciate his frustration during the current period of dollar weakness. The dollar's 8 percent drop against the euro in August and September 2003 translates roughly into an 8 percent revenue loss for Russia. More importantly, the country is concerned over the dollar's 35 percent drop against the euro since January 2003.

At first sight, a shift in the pricing of Russian oil to the euro makes a certain amount of sense. The eurozone is the largest oil importer in the world, and a full 45 percent of Middle Eastern oil goes to Europe. Moreover, after falling steadily from its January 1999 flotation, the euro has managed a strong rebound in the past two years, regaining its losses, which suggests that the euro is a world-class currency able to hold its value.

Yet, several days after President Putin floated the idea of euro priced oil, Prime Minister Mikhail Kasyanov said his government would not take any decisions on transferring oil settlements into euros. "This topic can not even be discussed. There can be no administrative decisions here. The market decides...oil is a commodity that is traded for dollars, and if it is sold for dollars, it means that suits the buyers and sellers."<sup>[17]</sup> By the end of October 2003 the Putin idea appeared dead in the water.

## Considerations Affecting the Use of a Petroeuro

While one can only guess the complex reasons for Russia's apparent decision not to move ahead with the petroeuro, there are several likely reasons. For producers like Russia, the potential use of a petroeuro comes down to two primary considerations: a bet on long-term reliability of the euro vs. the dollar, together with a geopolitical decision by each country about its relationship with the United States and with Europe. For buyers of oil, the long-term reliability of the euro is of prime concern, as is shorter run currency risk.

### Short-Run Factors

Although many politicians might want to see oil traded in euros it probably will not happen in the foreseeable future for several reasons. The first is simple convenience. As alluded to in Table 1, oil prices are determined by a complex interaction of spot, term and futures trading in different qualities of crude, based on benchmarks like North Sea Brent and West Texas Intermediate (NYMEX), both priced in dollars. If a euro price were intruded for one or more of the benchmarks, price-setting should become even more complex and add currency risk.

This would burden buyers and sellers alike, it would make the real price of oil less transparent, require continuous updating to minimize currency arbitrage, and could make the market less liquid as available

capital was split between two currencies. In addition, payment systems would need to be overhauled. These aren't insurmountable problems, if there were good economic reasons to go ahead with parallel pricing systems. But currencies fluctuate regularly. If the impetus for change now is the weak dollar, that benefit disappears as soon as the dollar rises again.[\[18\]](#)

The fact is any globally traded commodity, whether it is oil or tea, is traded in one currency for transparency, cost and risk reasons. Political considerations are insufficient to prompt change. Global commodities have a self-correcting mechanism to adjust for the strength or weakness of the benchmark currency; one of the reasons for the high oil price today is the weaker purchasing power of the dollar.[\[19\]](#)

### Medium-Term Factors

For the medium to longer term, buyer and seller concerns would center mainly on the dollar/euro rate—will the euro retain the strength it has gained over the last several years? Will the dollar continue to decline vis-à-vis the euro? While forecasting currency movements is one of the most difficult areas in economics, several factors indicate that the euro is unlikely to make significant gains against the dollar for some time, certainly out past the early part of 2004. More likely, it will have difficulty maintaining its newfound strength for several reasons:

1. Economic models developed at Morgan Stanley[\[20\]](#) suggest that by late 2003 the U.S. dollar was only 5-10 percent overvalued—not the 30-40 percent range that one would guess would be associated with a current account deficit of 6% of GDP.
2. Most of the appreciation of the euro during 2002-2003 has been by default, not merit. Improved growth prospects for the United States in 2003-04 eliminate the scope for further appreciation[\[21\]](#) associated with the slow-down in the U.S. economy and added current account deficit caused by 9/11 and the war in Iraq.
3. The rest of the world today is too weak economically to absorb a large U.S. correction—which economy in the world can, now or even over the next few years withstand a 30% appreciation of their currency? The Japanese, for example, have been desperately trying to *devalue* the yen.
4. In the case of the euro, Morgan Stanley's economic models[\[22\]](#) show that the GDP of the euroland economies would immediately decline 1% for each 10% rise in the value of the euro.
5. The economies of the EU should be growing at a lower pace than the United States economy over the next several years—the U.S. economy appears to be able to sustain much higher rates of productivity increase in the present global environment.
6. Euroland policy makers, even without an explicit euro policy have behaved as if they had a strong euro policy: (1) Euroland does not have a single policy-making body that is in charge of currency policy. (2) The sharing of responsibility between finance ministries and the ECB is not well defined, legally speaking. The lack of centralized responsibility for euro policy has created a free-for all where virtually any European policy maker could voice an opinion on the euro. This confusion between economics, market psychology and politics has been very counterproductive—the rise in the euro in 2002 was largely responsible for the region's mini recession.[\[23\]](#) The organization of decisionmaking in Euroland places the euro at a disadvantage vis-à-vis the other major currencies.

These observations on the dollar and the euro are not highly guarded secrets. Nor are they extreme views. They are readily accessible to Russian policy makers, or anyone else. They are widely accepted by traders in the various currency and oil markets. Even if one conceded the euro would continue strengthening for another one or two quarters, there is no evidence the currency will be able to make significant inroads to the dollar dominated markets or international reserve holdings. There would certainly be little cause to justify tinkering with the various links in the world oil market chain—there are

plenty of cheap ways for traders to hedge against currency risk if they are concerned about movements in the dollar.

## Conclusions

Several general propositions emerge as to the likely introduction of a petroeuro and the U.S. motivation for the Iraq War:

1. For a number of technical reasons OPEC is unlikely to shift markets to euro-priced oil. There would be costs and inefficiencies involved, with no real significant benefits gained. The same applies to the buyers of oil.
2. There is good reason to believe that the euro's current appreciation vis-à-vis the dollar will not be sustained—the currency will have a hard time maintaining its current parity with the dollar. The euro's current strong value is taking a toll on euroland economic performance.
3. Even if the euro were to maintain its parity with the dollar, this would not cause the dollar to cease to be the international reserve currency. A two international reserve currency system is more unstable<sup>[24]</sup> than one dominated by a single currency. Markets will move toward stability—and a currency with a historical track record.
4. The fate of the dollar and hence its use as an international reserve currency is largely in the hands of the United States—budget and trade deficits and low savings pose a greater threat to the use of the dollar as a reserve currency than any actions the EU or OPEC could undertake with regard to oil pricing.
5. Even though the United States may derive some economic benefit from having its currency serve as the dominant international reserve currency, the gains are not nearly as great as is often assumed—around 0.5% of GDP at best, much of which is offset by lost manufacturing exports and jobs associated with the strong dollar.

It follows that the notion the United States undertook the Iraq war over its concern with the consequences of Saddam Hussein denominating Iraq's oil sales in euros (and the direction that might move other producing countries) is little more than another web-based conspiracy theory.

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## References

1. George Bonboit, "[The Bottom Dollar](#)" *The Guardian*, April 22, 2003.
2. Cf. Stephen L. Jen, "Tracking the Final Phase of the Dollar Correction," *Morgan Stanley Global Economic Forum*, October 20, 2003.
3. Hazel Henderson, "[Iraq, the Dollar and the Euro](#)," *The Globalist*, June 2, 2003.
4. See for example: [Pressure Point](#).
5. "[Dollar vs. Euro—Hegemony](#)," *Pressure Point*, January 1, 2003.
6. Following Jeffrey A. Frankel, "Reports of the Dollar's Demise Are Greatly Exaggerated" University of California, Berkeley, July 12, 1995.
7. J. Bradford DeLong, "[Threats to American Economic Preeminence?](#)" March 2000.
8. Frankel, op. cit.
9. Niall Ferguson, "Hegemony or Empire?" *Foreign Affairs*, September/October 2003.

10. Henry Liu, "[US Dollar Hegemony Has to Go](#)," *Asian Times*, April 11, 2002.
11. "[War to Defend the Almighty Dollar: Who Owns the Streets?](#)" *The Black Commentator*, February 20, 2003.
12. Nicholas Carozzi, "Pegs and Floats: The Changing Face of the Foreign Exchange Market, Federal Reserve Bank of Philadelphia, *Business Review*, May/June 1980, pp. 13-23.
13. W. Clark, "[The Real Reasons for the Upcoming War With Iraq: A Macroeconomic and Geostategic Analysis of the Unspoken Truth](#)," Independent Media Center, last revised March 6, 2003.
14. Cf. Hazel Henderson, "[Iraq, the Dollar and the Euro](#)" *The Globalist*, June 2, 2003; "[Beyond Bush's Unilateralism](#)" InterPress Service, June 2002.
15. "[U.N. to Let Iraq Sell Oil for Euros, Not Dollars](#)," CNN.Com, October 30, 2000.
16. Aviva Freudmann, "Political Messate in Euro Oil Pricing Talk?" *The Wall Street Journal Online*, October 15, 2003.
17. Anna Baraulina, "[Russian Leaders Argue over Euro](#)," *Pravda*, October 20, 2003.
18. Aviva Freudmann, op. cit.
19. Christopher Weafer, "[Should Russia Price its Oil in Euros?](#)," *The Moscow Times.com* (October 23, 2003), p. 8.
20. Stephen L. Jen, "[Why the Dollar Will not Crash](#)," *Morgan Stanley Global Economic Forum*, September 29, 2003.
21. Stephen Jen, "[Tracking the Final Phase of the Dollar Correction](#)," *Morgan Stanley Global Economic Forum*, October 20, 2003.
22. Eric Chaney, "[A Weaker Euro is Critical for the Recovery](#)" *Morgan Stanley Global Economic Forum*, September 1, 2003.
23. Stephen L Jen, "The Exchange Rate Policies of the 'Big Four'" *Morgan Stanley Global Economic Forum*, September 1, 2003.
24. Ron McKinnon, *Money in International Exchange* (Oxford: Oxford University Press, 1979; Paul Krugman, "The International Role of the Dollar: Theory and Prospect," in J. Bilson and R. Marston, eds, *Exchange Rate Theory and Practice* (Chicago: University of Chicago Press, 1984).