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Japan’s Deflationary Hangover: The Syndrome of the Ever-Weaker Yen

by

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Abstract

Beginning in the 1970s with the emergence of Japan as America’s foremost industrial competitor, demands for restraints on particular Japanese exports and that the yen be appreciated became rampant in the U.S. As a result of this “Japan bashing”, the yen did rise from 360 to the dollar in 1971 to touch 80 in April 1995, when U.S. Secretary of the Treasury Robert Rubin ended it by announcing a strong dollar policy. Subsequently, the yen has fluctuated but with no net appreciation.

However, the deflationary damage to Japan’s economy had been done. In 1997 in their book Dollar and Yen, Ronald McKinnon and Kenichi Ohno identified the “The Syndrome of the Ever-Higher Yen”. Actual yen appreciation and supporting monetary policy imposed a deflationary shock on the Japanese economy, and expected further appreciations drove nominal interest rates on yen assets toward zero—the dreaded liquidity trap—while slowing wage growth. Yen prices of tradable goods began to fall broadly in the mid 1980s; and they argued that the great asset bubbles in real estate and stock prices in the late 1980s were endogenous to the syndrome. After the bubbles burst in 1990-91, the negative shock to Japan’s economy was compounded by a further rise in the yen up to April 1995—leading to Japan’s infamous “lost decade” from 1992 to 2002.

Today, surprisingly, Japan still suffers from a deflationary hangover with wage stagnation and the near-zero-interest liquidity trap. Since 2003, however, output has begun to grow modestly through export expansion—the only way it can grow because domestic demand remains moribund within the liquidity trap. However, this export growth has been led by a passive real depreciation of the yen: prices and wages in Europe and the United States have grown, and are growing, faster than in Japan. Thus the yen becomes ever-weaker in real terms—which one could now characterize as “The Syndrome of the Ever Weaker Yen”. In 2007, American and European industrialists and politicians are again complaining that the yen is too weak (Japan bashing mark II?) although the pressure on Japan to appreciate is not yet as great as it is on China.

But Japan is trapped. If it does appreciate, its fragile economy will be driven back into outright deflation. The only solution is to stabilize the nominal dollar value of the yen over the long term, but this need not be immediately effective in placating foreign mercantilists. Under foreign pressure to appreciate the renminbi, China with its booming economy is now in the position Japan was in more than 20 years ago. Policy makers in China should take heed that they are not forced to go down the same road as Japan.

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Introduction

In early February 2007, a phalanx of incoming Democratic committee chairmen—Levin, Rangel, Frank, and Dingel—worrying particularly about a 32% increase in automobile imports from Japan from 2005 to 2006 and which continue to increase strongly in 2007, wrote a letter to U.S Treasury Secretary Paulson:

“The weak yen reflects (Japanese) monetary and fiscal policies, including setting low interest rates and failing to stimulate consumer demand. We believe that the weak yen is a reflection of Japanese government policy. It reflects the Japanese government’s massive intervention earlier in the decade, an intervention which still reverberates in the value of its currency”.

On March 30, the Financial Times reported “A lobbyist for GM, Ford, and Chrysler said the Treasury Secretary needed to be pushed into spearheading a co-ordinated international effort that would lead to Japan selling down its excess reserves to stimulate a stronger yen”.

On the other side of the Atlantic, the financial press has also been full of quotes from politicians complaining about the yen being unduly weak against the euro and pound sterling making Japanese exports too competitive. In its 10 February 2007 issue, The Economist pontificated “A country with one of the world’s largest current-account surpluses and low inflation (but no longer deflation) should have a much stronger currency. Japan’s economy is no longer flat on its back. Last year it grew by an estimated 2.3% and is forecast to maintain a similar pace this year. As a result Japan does not need such low interest rates or a super-cheap currency any more. Indeed, Japan’s abnormally low interest rates (the short-term interbank rate is just one quarter of one percent) could be viewed as a form of intervention to hold down the yen” (page 77).

The Economist produced a graph showing a sharp fall in the real trade-weighted yen of more than 30 percent over the last eight years. (The euro and pound have appreciated even more against the yen in real terms.) Going back further, The Economist showed that, by February 2007, the “real” yen had depreciated just below where it was in 1970—just before the Nixon shock of August 1971 drove the dollar down against all the major currencies.

Without contradicting any of these statistics, I will show that the Japanese have been rather hapless victims of international monetary events. Foreign exchange risk (fear...
of yen appreciation) has kept Japanese interest rates mired close to zero for more than a
decade, and still prevents the Bank of Japan from properly stimulating domestic
aggregate demand. In 2003-07, wages remain stagnant even though output has resumed
growing modestly after the preceding “lost decade”. The recovery remains so fragile that
the Japanese government is divided and uncertain on the question of raising interest rates
and strengthening the yen. Here I examine the historical roots of Japan’s continuing
macroeconomic fragility resulting in today’s syndrome of the ever-weaker yen.

Parsing the Yen’s Real Depreciation

Changes in real exchange rates depend both on relative rates of price inflation and
changes in nominal exchange rates. Consider first the underlying rates of price inflation.
Figure 1 plots the paths of the consumer price indexes (CPIs) for Japan, the Euro Zone,
and the United States, from 1 January 1999—when the euro officially came into
existence—to 1 January 2007. Over this eight–year period, inflation was 22.8% in the
United States, 18.5% in the Euro Zone, and minus 2.3% in Japan.

<Figure 1>

Figure 2 then plots the nominal (undeflated) exchange rates for the yen/dollar, the
euro/dollar, and the yen/euro from 1 January 1999 through to March 2007. Despite a few
ups and downs, the nominal yen/dollar rate was little changed: from January 1999 to
January 2007, the dollar had appreciated just 4.7% against the yen. By adding the CPI
inflation differential to the change in the nominal exchange rate, 29.8% is the
approximate real appreciation of the dollar against the yen. More precisely, if we double
deflate the nominal yen/dollar rate by the Japanese and U.S. CPIs, figure 3 shows the
actual real appreciation of the dollar against the yen to be 28.7%. Either way, the real
appreciation of the dollar came mainly from the 25.1% inflation differential, i.e., the
higher inflation in the United States, and not from the dollar’s modest nominal
appreciation against the yen.

<Figure 2>, <Figure 3>

The story of the yen/euro rate is somewhat different. Since 1 January 1999, the
euro has appreciated 19.2% against the yen in nominal terms—as shown in figure 2. If
the CPI inflation differential between Japan and the Euro zone of 20.8% (figure 1) is
added to this nominal euro appreciation, the approximate real appreciation of the euro
against the yen is close to 40%. When the real exchange rate is calculated more precisely
by double-deflating the nominal exchange rate by the CPIs in Japan’s and the Euro Zone,
figure 3 shows the euro’s real appreciation against the yen to be 43.7%. Thus the euro’s
more visible nominal appreciation was almost as important as the inflation differential in
explaining the euro’s large real appreciation against the yen, which now so irritates
European mercantile interests and their governments.

Changes in the euro/dollar rate have been less dramatic. Since 1999 to 1 January
2007, the euro also appreciated against the dollar by 12.1% in nominal terms (figure 2),
and by 10.4% in real terms (figure 3). This real appreciation of the euro against the dollar was slightly muted because CPI inflation in Europe was moderately lower than in the United States (figure 1). Although some Europeans—notably the Airbus aircraft company—are worried about the relatively small decline in the dollar, most see Japan with its weak yen to be the greater mercantile threat to European heavy and high tech industries.

Unit Labor Costs. To check on these calculations of “real” exchange rates deflated with broadly based CPIs, consider the OECD’s estimated unit labor costs more narrowly in manufacturing—the only sector for which comparable data are available across all three areas. Unit labor costs are wage costs in local currencies less productivity growth per unit of output.

Figure 4 compares the course of manufacturing wages in Japan, the Euro Area, and the United States from the first quarter of 1999 through the fourth quarter of 2006. American nominal wages in manufacturing rose by 24%, European by 27.8%, and Japanese by only 7.9%. Figure 5 then shows that Japanese unit labor costs fell by 24.2%, whereas those in the Euro Area fell by just 3% and those in the U.S. by 5.9%. (Although this general fall of unit labor costs in manufacturing is striking, it need not hold in other sectors within our three economies.) Thus, manufacturing unit labor costs in the Euro Area rose relative to those in Japan by 21.3% percentage points. But on top of this, the euro appreciated in nominal terms against the yen by 19.2%. (figure 2). To be more precise, double deflating the nominal yen/euro exchange rate with manufacturing unit labor costs, figure 6 shows the “real” appreciation of the euro against the yen to be a remarkable 55% from early 1999 through the fourth quarter of 2006.

Can one explain this increase in Japan’s international competitiveness by its superior productivity growth? Somewhat surprisingly, from first quarter 1999 to fourth quarter 2006, manufacturing productivity growth rates across all three areas were similar. Changes in labor productivity can be back out of the OECD data on wages (figure 4) and unit labor costs (figure 5) to show that growth in labor productivity was 32.1% in Japan, 29.9% in the U.S., and 30.8% in the Euro Area. Although slightly lower productivity growth (1.3 percentage points in manufacturing) contributed to the Euro Area’s loss of competitiveness relative to Japan, this effect was dwarfed by the euro’s nominal appreciation of 19.2% against the yen, and by European wage growth being 19.9 percentage points higher than Japan’s.

Based on unit labor costs, the dollar’s real appreciation against the yen was “only” 22.7% (figure 6), but still very substantial. However, most of the loss in U.S. competitiveness relative to Japan came from the faster growth in U.S. wages, or, to put it differently, wage stagnation in Japan. From 1999 through the fourth quarter of 2006, American wages grew by 16.1 percentage points above their Japanese counterparts in manufacturing when U.S. productivity growth was only 1.2 percentage points less.
To erase any doubt about the persistent deflationary pressure on prices and wages in Japan, figure 1 shows a 2.3 percent fall in Japan’s CPI from 1999 to early 2007. Beyond just manufacturing, Figure 7 provides comparable wages across the whole of the private sectors of Japan, the United States, France, and Germany. (No such general series was available for the euro area as a whole.) From the first quarter of 1999 to the fourth quarter of 2006, Japanese (nominal) wages actually fell by 3.4% while those in the U.S. rose by 27.8%, by 33.4% in France, and by only 16.5% in Germany. And wage deflation in Japan continues. *The Economist* (21 April 2007 p. 44) reports that “In January and February 2007 total cash wages per worker in Japan actually fell 1.1% compared with a year earlier”. Wage deflation in Japan continues to be unique relative to the other large industrial countries.

<Figure 7>

Does Japan’s persistent wage stagnation simply reflect Japan’s low or non-existent GDP growth during its “lost decade” after the stock and land bubbles burst in 1990-91? Perhaps not. Most interesting, from 2003 though 2006, when Japan’s real output and GDP growth finally began to grow a modest 2 percent per year (figure 8), Japanese money wages still fell in private industry generally—and rose only slightly in manufacturing (figure 4). Because Japan’s unit labor costs continue to fall from wage stagnation, Japanese exports became even more competitive in world markets—thus triggering the return to Japan bashing in 2007.

<Figure 8>

**Intra-European Differences in Wage and Productivity Growth: An Aside**

The euro’s real appreciation against the yen (and even against the dollar) affects some countries within the euro area much more than others. Before the advent of the euro, all the potential member countries had to show substantial convergence in their CPI inflation rates (which they did) and to keep their nominal exchange rates stable for a year or more before entry. With advent of a common currency on January 1, 1999, wage costs and productivity within the Euro Area—and more generally in the European Union (EU)—were expected to gradually converge. For a fringe of the least developed, low per capita income, smaller countries—led by Ireland and some in Eastern Europe—rapid growth in their catch-up phases has led to some convergence.

Surprisingly, however, measures of competitiveness among some of the more mature industrial countries in the eurozone have diverged. Based on unit labor costs in manufacturing, figure 9 compares the evolution of unit labor costs since 1999 through 2006 for Germany, Italy and France to the United States and Japan. Within the European group, at one extreme Italian unit labor costs rose 20.8%, and at the other extreme Germany’s fell by 13.5%. France was about the eurozone average: its manufacturing unit labor costs fell about 4%. The experiences of Greece, Portugal and Spain are closer to Italy’s, whereas Austria’s is similar although not quite as good as Germany’s (Degrauwe
Germany with its large current account surplus is in Europe an outlier in better retaining its international competitiveness in the face of an appreciating euro.

The Historical Origins of Japan’s Deflationary Trap

Should the Bank of Japan, and the Japanese government more generally, now be faulted for striving for a deliberately undervalued (beggar-thy-neighbor) currency? Are they cheating in the international money game? Essentially no. The Japanese authorities are trapped into allowing an ever-weaker yen into the new millennium.

The roots of Japan’s trap today go back to the 1970s. Worried about Japan’s increasing mercantile competitiveness and rising trade surpluses, the United States pressured Japan—by numerous threats of trade sanctions arising out of industry-specific disputes—to keep appreciating the yen for almost two and one half decades. In nominal terms, the yen rose from 360 to the dollar in August 1971 (at the end of the Bretton Woods period of fixed exchange rates) to touch 80 in April 1995, before Treasury Secretary Robert Rubin announced a new “strong dollar” policy and ended overt Japan bashing to appreciate the yen. The Bank of Japan and the U.S. Federal Reserve intervened several times in the summer of 1995 to put a ceiling on further appreciations of the yen. Rubin’s new policy was, in the main, successful. The yen retreated from its extraordinary 1995 high in the late 1990s, and then averaged about 118 to 120 yen per dollar over the past 8 years—albeit with fairly wide fluctuations.

However, the deflationary damage, including heightened fear of foreign exchange fluctuations, had been done. In 1997, McKinnon and Ohno in their book Dollar and Yen: Resolving Economic Conflict between the United States and Japan described what they called “the syndrome of the ever-higher yen” (chapter 1). Actual yen appreciation began forcing down the yen prices of tradable goods in the mid 1980s. The expectation of an ever-higher yen led first to reduced nominal interest rates on yen assets, and contributed to the great bubbles in Japanese stock and land prices in the late 1980s. When the bubbles burst in 1990-91, the deflationary pressure was reinforced by the further sharp appreciation of the already overvalued yen through to April 1995. This forced Japan’s economy into a deflationary slump from which it has yet to fully recover.

Japan’s surprisingly long deflationary hangover can be better understood by looking at co-movements of the yen/dollar rate and of wholesale (tradable goods) prices in Japan and the United States. Figure 10 shows that inflation in Japan’s WPI fell below the high inflation rate in the U.S. WPI by the mid-1970s, but was still positive. When the American price level stabilized in the mid-1980s, Japan’s WPI inflation not only stayed less than in the United States, but it turned sharply negative when the 1985 international Plaza accord provoked the massive appreciation of the yen over 1985-87. Subsequently Japan’s WPI drifted down more slowly until the international price of oil increased after 2002. But Japan’s WPI inflation remained (and remains) far below that in the U.S.
Another measure of Japan’s deflationary hangover is how long land prices continue to fall after the property bubble burst in 1991. Figure 11 shows first the sharp rise in Japanese land prices from 1986 to 1990 when they more than doubled, and then shows that land prices fell by two-thirds—albeit more gradually—from 1990-91 through 2005. Although urban land prices turned up slightly in 2006, land prices continue to fall elsewhere. Unsurprisingly, residential construction remained virtually dormant over this deflationary period—as we shall see.

Wage Growth and the Exchange Rate

What does the historical record tell us about the link among alternative exchange rate arrangements, growth in nominal wages, and price level stability? From 1950 to 1971, Japan provided a useful case study of wage behavior in a very high-growth economy with its exchange rate securely fixed at 360 yen per dollar—the dominant international money.

First, keeping the fixed rate anchored Japan’s price level for tradable goods as Japanese wholesale prices rose at about the same speed as U.S. wholesale prices—only one percent per year (Table 1). Because the bulk of world trade was invoiced in dollars, fixing the exchange rate to the dollar was (is) a stronger anchor for the price level than the size of Japanese bilateral trade with the United States would suggest.

Second, Japanese money wages in manufacturing grew substantially faster—about 10 percent per year in Japan versus only 4.5 percent in the U.S. (Table 1). From the 1950s into the 1970s, Japan’s catch-up phase, productivity growth in manufacturing was much higher than in the U.S. But international competitiveness was roughly balanced by Japan’s much higher wage growth in this period of the fixed yen-dollar exchange rate—see also figure 12.

Why, in a rapidly growing open economy, should wage growth better match productivity growth when the nominal exchange rate is fixed? From the old Scandinavian model of wage determination in high export-growth-led economies (Lindbeck 1979), the tradables sector—with its much higher growth in productivity than in nontradables—naturally becomes the leading sector in wage setting. Employers in export activities bid vigorously for skilled and unskilled workers, subject to remaining internationally competitive at the fixed exchange rate. Thus workers in export-oriented manufacturing receive the main fruits from the high productivity growth there. But then, as the Scandinavian model would have it, these high wage settlements spread into the rest of the
economy, largely nontradable services where productivity growth was much lower. In
Japan, the price of services rose relative to goods prices over 1950-71: Japan’s CPI,
which includes services as well as goods, increased about 5 percentage points faster per
year than its wholesale price index (which contains only goods) and faster than the U.S.
CPI. (table 1). However, under the fixed yen/dollar exchange rate leading to rapid wage
increases, Japan’s international competitiveness in its high-growth tradables sector
remained balanced with the United States—as reflected in the similar rates of price
inflation in tradable goods measured by their respective WPIs.

In Japan’s bygone high-growth era, finding a purely domestic monetary anchor
would have been difficult. As in China today, restrictions on domestic interest rates and
capital controls proliferated, and growth in narrow money was high and unpredictable as
Japanese households rebuilt their financial assets after the war. Thus having the Bank of
Japan simply key on the dollar exchange rate conveniently anchored Japan’s tradable
goods price level while promoting high growth in money wages. By the end of the 1960s,
however, American monetary policy became too inflationary for the dollar to provide a
stable anchor, and the Bretton Woods system of fixed exchange rates collapsed.

How did the switch to a “floating”, but ever appreciating, yen affect relative wage
growth in the two countries? From August 1971 up to the late 1980s, productivity
growth in Japan remained high relative to that in the United States. But Japan bashing led
to ongoing yen appreciation as reflected in the dashed line in Figure 12. The resulting
“syndrome of the ever-higher yen” eventually undermined the system of relative wage
adjustment. As employers began to anticipate further yen appreciation, growth in
Japanese wages slowed—albeit with a lag. Before 1975, money wage growth in Japan
remained much higher than in the United States; but then in 1975-76, Japan’s money
wage growth slowed sharply—the bold line in Figure 12. Since then, wage growth in
Japan has been even lower than that in the United States. While imposing general
deflationary pressure on the Japanese economy, the erratically appreciating yen
undermined the natural process of adjustment in relative wages for balancing
international competitiveness.

<Figure 12>

In addition, the slump in Japanese absorption reduced imports, which offset the
slower growth in exports from the higher yen. Thus Japan’s large trade surplus, measured
as a share of its own GDP, did not decline (McKinnon 2007, Qiao 2007). Although this
earlier episode of Japan bashing to push the yen up failed in its principal objective of
reducing Japan’s trade surplus, it did cause severe deflationary disorder within Japan’s
macro economy that continues to the present day.

But why should wage stagnation continue today, 12 years after Secretary Rubin
announced his strong dollar policy and the end of American arm twisting to get the yen
up? The answer is twofold. First is the stagnation in Japanese GDP growth until 2002—
its “lost decade”—with only weak growth subsequently (figure 8). Second, because of a
currency mismatch within Japan’s financial system, residual foreign exchange risk
remains that could well inhibit higher wage settlements. But to understand these issues better, let us first consider key aspects of Japan’s financial system.

**Interest Rates and Japan’s Currency Mismatch**

Financial markets are also forward-looking. When future changes in exchange rates are well signaled from some easily identifiable source, such as continual foreign mercantile pressure, interest rates begin to adjust.

After the yen first appreciated in 1971, about 17% from the “Nixon Shock”, most analysts felt that this was a one-time devaluation of the dollar against the currencies of all the major industrial countries. However, by the late 1970s, the United States began to single out Japan, its foremost mercantile competitor, for overt political pressure to appreciate the yen. In 1977, In the midst of trade disputes and the threat U.S. trade sanctions on imports from Japan, the U.S. Secretary of the Treasury Michael Blumenthal stated that the yen should be appreciated. This contributed to a run on the “Carter dollar” in 1978 with a sharp yen appreciation. At this point, the financial markets began to behave as if the yen would continually appreciate into the indefinite future.

Long-term interest rates on 10-year Japanese government bonds (JGBs), which are not directly controlled by the government, best reflect this big change in exchange rate expectations. Figure 13 shows the interest rate on JGBs before 1978 to be about the same as that on 10-year U.S. Treasuries—and if extended back into the 1950s and ‘60s, interest rates on JGBs were typically one to two percentage points higher than those on U.S. Treasuries. But by 1978, the relationship turned around. Since then, JGB rates have averaged 3 to 4 percentage points less than on U.S Treasuries. In April 2007, the interest rate on U.S treasuries was about 4.7% and that on JGBs was 1.6%.

<Figure 13>

From 1978 to 1995-96, this interest differential can be readily explained by the principle of open-interest parity. Figure 13 also shows logarithmically the trend of the appreciating yen against the dollar from 1971 to 1995 which was also about 3 to 4 percentage points per year. Since 1995, however, the yen has not appreciated on net balance—although it has fluctuated widely against the dollar. But the large interest differential remains. To explain this apparent anomaly, the growing currency mismatch within Japan generates a negative risk premium in interest rates on yen assets. To make this concept clearer, consider the following equation linking interest rates in American and Japanese financial markets in the absence of capital controls:

\[ i = i^* + E(\hat{e}) + \phi \]  

(1)

where \( i \) is the interest rate on yen bonds, and \( i^* \) that on dollar bonds at the same term to maturity. The interest differential, \( i - i^* \), between yen and dollar bonds is partitioned into two components: \( E(\hat{e}) \) is the expected change in the yen/dollar rate (negative if
appreciation is expected), and \( \phi \) is the risk premium (negative in the Japanese case). Because both these components are negative, \( i < i^* \).

In the Japan bashing period before April 1995, one could reasonably expect that the yen would continue to appreciate so that the \( E(\hat{e}) \) term was dominant. (Similarly, today’s China bashing to appreciate the renminbi is forcing down nominal interest rates on renminbi assets within China [McKinnon 2007].) Because entrenched expectations often change with a lag, after 1995 the expectation of a secular appreciation of the yen may have decayed only gradually so that \( E(\hat{e}) \) remained important while slowly losing its dominance.

However, for the interest rate differential to remain so large today, one must appeal to the negative risk premium \( \phi \). Although Japan is the world’s largest creditor country, it does not lend much in yen because of the currency asymmetry associated with the dollar standard. Instead, Japan’s large current account (saving) surpluses are financed partially by outward foreign direct investment but mainly by building up foreign currency claims (mainly dollars) on foreigners (Table 2). This leads to a currency mismatch within Japan’s economy.

< Table 2>

In the private sector in particular, financial institutions such as insurance companies acquire higher yield dollar assets even though their liabilities are mainly in yen—as are their annuity obligations to policyholders. Although these financial institutions have come to depend on the higher yield on dollar over yen assets, they fear any fluctuation in the yen/dollar exchange rate that would change the yen value of their dollar assets relative their yen liabilities. Even a random upward blip (appreciation of) in the yen could wipe out their net worth. So they will hold dollar assets only if they are given a substantial risk premium for doing so.

Because American interest rates are mainly determined in world markets, portfolio equilibrium within Japan’s economy requires that interest rates on yen assets be bid down (as in equation 1) by the amount of the negative risk premium to make Japanese investors at the margin willing to hold dollar assets. Because of the currency mismatch, this negative risk premium will be higher (more negative) the greater the fluctuations in the yen/dollar rate and the larger are Japan’s private holdings of dollar assets. And figure 13 shows that, in the absence of secular appreciation of the yen since 1995, the yen/dollar rate has still fluctuated very substantially.

Japan’s current account (saving) surpluses only became significant in the early 1980s. But more than 20 years later, the cumulative total of liquid dollar claims held by the economy is now much greater relative to GNP then it was back in the 1980s—and it is continually growing (Table 2). Private sector finance for acquiring counterpart dollar claims is always chancy because of ongoing high volatility in the yen/dollar exchange rate (figure 13)—the risk that offsets the higher yield on dollar assets relative to yen
assets. For the private sector to keep acquiring dollar claims, the interest rate differential may have to increase—i.e., an increasingly negative risk premium—as per equation 1.

Japanese banks, insurance companies, trust funds, and even some individuals hold dollar assets over a wide spectrum of different terms to maturity. But interest rate adjustment for currency risk is more difficult at the shorter end of the maturity structure than for the 10-year bonds shown in Figure 13. First, governments in industrial countries tend to target some short-term interbank rate—federal funds in the U.S., Gensaki in Japan—as an instrument of monetary control thus leaving it rigid for extended periods. Consequently, these rates cannot change to counteract short-term shifts in currency risk. Second, if the currency risk is sufficiently great, nominal interest rates on yen assets—particularly those at short term—are eventually forced toward zero. Figure 14 shows the near-zero interest rate on short-term yen assets, the so-called liquidity trap, that has persisted since early 1995.

<Figure 14>

The Liquidity Trap and Portfolio Instability

The liquidity trap has major implications for economic policy.

(1) During Japan’s lost decade and even today, the central bank has not been able to stimulate domestic demand by the traditional technique of lowering nominal short-term interest rates when they are bounded from below by zero. Once deflation was set in motion by the greatly overvalued yen in the early 1990s, within the liquidity trap there was (is) nothing the central bank could do to stop it. Engineering a major devaluation of the yen against the dollar in nominal terms, if technically possible, was and is out of the question after the previous episodes of Japan bashing to get the yen up.

(2) Having short-term interest rates compressed toward zero greatly reduced(s) the profit margins, the spread between loan and deposit rates, of Japanese commercial banks. After the real estate and stock market bubbles burst in 1990-91, numerous defaults on bank loans led to a rash of non-performing loans (NPLs) on bank balance sheets. No surprise there. What is surprising, however, is that the banks have not grown out of their NPL problem more than a decade later—even after several subsidized re-capitalizations. McKinnon and Goyal (2003) attributed this anomaly to the artificially reduced bank profit margins arising out of the persistent liquidity trap.

(3) Once yen interest rates near zero, greater portfolio instability in the holding of dollar versus yen assets within Japan is generated. Because yen interest rates cannot be forced below zero, the condition for portfolio stability—equation (1) above—is violated at shorter terms to maturity, with echo effects at longer terms. Episodic runs out of dollars into yen, with private Japanese institutions, fearful of another big yen appreciation, selling dollar bonds to the BoJ, then become more likely.
Although points (1) and (2) are very important for understanding Japan’s past economic malaise and deflationary hangover into the present, here I will simply expand on the less-obvious point (3). For any given interest rate on a dollar asset, in the low-interest liquidity trap the rate on the same-maturity yen asset cannot be forced low enough for Japanese financial institutions to hold the riskier dollar asset—at the margin. But where the margin is depends on how large are the existing stocks of dollar assets in Japan’s private sector. If, from the ongoing current account surplus, private holdings of dollar assets become large relative to the net worth of Japanese financial institutions, then the system becomes very vulnerable to a run.

On the other hand, once there is a run, during which the BoJ bought dollar assets from the private sector on a large scale, Japanese insurance companies, banks, and so forth, eventually become happy holding their remaining smaller stocks of dollar assets if and when they finally decide that the BoJ can hang on without letting the yen appreciate (further). After a run, these institutions may even be willing to re-build their depleted stocks of higher yield dollar assets for many months or years—thus providing finance for the ongoing current account surplus without the BoJ intervening at all.

Figure 15 captures the remarkably episodic nature of (internal) runs from dollars into yen since 1980 by simply plotting the monthly percentage changes in the BoJ’s official foreign exchange reserves—which we know to be mainly dollars, although the authorities don’t reveal the exact currency composition of the reserves. The episodes of concentrated upward spikes in official reserves clearly indicate the presence of runs—often followed by quiescent periods, sometimes with some reserve de-cumulation. However, a single satisfactory metric for measuring runs is not easy to find. Indeed, the absolute scale of the official intervention from late 2002 to early 2004 of $330 billion was much greater than previous interventions (table 2). But it was not particularly large in the percentage terms reflected in figure 15.

With Japanese interest rates mired close to zero and absent overt Japan bashing to appreciate the yen, the behavior of U.S. interest rates becomes the biggest determinant of whether or not there will be a run. After the collapse of the high-tech bubble in 2001, U.S. short-term interest rates came down very sharply with the rate on federal funds touching the unprecedented low level of 1% in January 2004 (figure 14). Because Japanese short-term interest rates were bounded from below by zero, the differential of American over Japanese rates narrowed sharply. Consequently, there was net dishoarding of dollar assets by Japan’s private sector leading to a sharp jump in official exchange reserves. From the end of 2002 though early 2004, official reserves almost doubled. These episodic runs into official reserves, followed by quiescent periods, were also part of Japan’s earlier experience (McKinnon, 2005 Ch 3).

In their letter to Secretary Paulson in 2007, American lawmakers and Michigan automobile executives in particular were harking back to this three-year old intervention episode as evidence that Japan has been unfairly manipulating its currency. On March 9,
2007, the Bloomberg Press reported “Democrats say a book, *Global Financial Warriors* (January 2007) by former U.S. Treasury Undersecretary John Taylor proves that the Bush Administration went along as Japan tried to hold down the foreign exchange value of the yen, hurting American manufactures. Taylor writes that he acquiesced as Japan sold yen to buy dollars in 2003-04 to help the world’s second largest economy pull out of a decade of anemic growth.”

However, after March 2004, when U.S. interest rates started increasing back to “normal” levels, thus increasing the interest differential at shorter maturities with yen assets, the BoJ has hardly intervened at all—figure 15. The private sector has returned to acquiring most of the dollar assets generated by Japan’s current account surpluses. But this is only a lull. Because dollar assets continue to accumulate in private Japanese portfolios, the currency mismatch will again cumulate to a point where the risk premium on yen assets can’t be sufficiently negative (because yen interest rates are bounded from below by zero) for Japanese private investors to keep adding to their stocks of dollar assets. Then any mere rumor of currency appreciation will prompt another run out of private portfolios into official exchange reserves.

**The Yen Carry Trade**

In the liquidity trap, Japan’s ultra-low short-term interest rates lead to a phenomenon popularly referred to as the "yen carry trade". Defined narrowly, the carry trade refers to transactions that combine term-structure risk with currency risk. A speculator, who need not be a Japanese national, borrows short in Tokyo in yen to buy long-term New Zealand or Australian, or U.S. bonds. That is hyper risk taking beyond the ordinary course of business associated with being a Japanese insurance company, bank, or trust fund with longer-term yen liabilities holding dollar assets over the long-term for their higher yield. Such mainline Japanese financial institutions have little term structure risk although still substantial currency risk.

How much of Japan's current account surplus today is intermediated by the yen carry trade, under this narrow definition, is anybody's guess. But I suspect that it is much less than that done through the more traditional forms of international financial intermediation associated with insurance companies and the like—and thus much less than what the financial press thinks.

However, the carry trade does contribute to the (potential) volatility of the yen/dollar exchange rate. With any hint of, or rumor that, the yen might appreciate, these carry-trade speculators with their short-term yen liabilities may well react first. They rush to cover their short-positions in yen by not renewing loans or simply buying offsetting yen assets. This quickly adds to the upward pressure on the yen so as to trigger a run that induces mainline financial institutions to start selling off their dollar assets as well, which the BoJ buys as per the positive spikes of official reserve accumulation in Figure 15.
But our concern here with the mechanics of runs and negative risk premia in interest rates should not detract from how expensive foreign exchange instability has been for Japan’s economy. The extraordinary appreciations of the yen through the mid 1990s threw the economy into a deflationary slump. The subsequent low interest rate liquidity trap prevented the Bank of Japan from re-inflating the economy to escape from slump. And, during Japan’s lost decade 1992-2002, massive fiscal deficits have also failed to stimulate private spending while leaving the Ministry of Finance very leery of increasing today’s huge public debt even further.

**Fragile Export-Led Recovery: 2003-07**

However, if the world economy is sufficiently buoyant to attract Japanese exports and stimulate investment in export-related activities, some recovery is still possible. Beginning sometime in 2003, Japan’s economy began recovering: real GDP is increasing about 2.3% per year. Table 3 shows GDP’s various components from 2002 to 2006 in undeflated nominal terms—which, because of mild ongoing deflation, tends to understate real growth rates. Overall *nominal* GDP grew from 2002 to 2006 by just 3.36%.

The relative contributions to this overall GDP growth over these four years are summarized in figure 16. What is remarkable is the lack of growth in private consumption. Despite being a “normal” 57% of GDP, consumption contributed just 1.01 percentage points or 30% of the overall GDP growth of 3.36% from 2002 to 2006. Moreover, private residential investment was also virtually stationary. In contrast, corporate investment (which is normally just 17% of GDP) contributed 3.5 percentage points i.e., more than 100% of the increment in GDP. To square the accounts, government spending was the big negative—falling 1.14 percentage points or 34% of the incremental growth in GDP. And table 3 shows that the bulk of this fall in government spending was in public sector investment.

Exports also made a substantial contribution to Japan’s modest recovery. But this contribution is masked by the standard presentation of the GDP accounts which shows growth in Japan’s *net* exports—table 3 and figure 16—to be slightly *negative*. However, after 2002, the price of oil and related petroleum products began to increase substantially—and Japan is completely dependent on oil imports. Without any significant change in the quantity of oil imported, the yen cost of oil imports rose almost 150% through 2006. (last line in table 3). Thus Japan had to export more in real terms just to pay for the more expensive oil.

To show the increased production for exports, the last two rows of table 3 partition net exports into two components. The first is “net exports ex oil”, and is presumed to be dominated by manufactures as Japan has little or no other exportable natural resources and does not export much in the way of services. The second is gross
imports of oil valued in current yen—and enters with a negative sign, but is the same order of magnitude as net exports ex oil. Figure 16 shows that that net exports ex oil increased by 1.4 percentage points and thus accounts for a remarkable 42% of the modest increase in GDP from 2002 to 2006. Because the international terms of trade turned sharply against Japan in this period, national output increased more than national expenditures when measured in real terms.

This crude adjustment for capturing the adverse oil-based terms-of-trade “stimulus” to Japanese manufactured exports understates the overall magnitude of the stimulus. Not only has the price of oil risen sharply after 2002, but the prices of primary commodities generally have boomed. The prices of iron ore, copper, coal, and many minor minerals, as well as basic grains such as corn, wheat, rice, and soybeans, have all risen sharply—particularly in 2005-06. Thus net Japanese exports ex all primary commodity imports have risen more than just the net exports ex oil shown in Figure 16. However a more precise calculation of the deterioration in Japan’s terms of trade is beyond the scope of this paper. The main point is that Japan’s manufactured exports increased substantially to pay the higher prices on imported primary commodities.

The large increases in Japan’s domestic corporate investment, more than 100% of the increase in GDP since 2002, can now be better understood. I hypothesize that this increase in investment was induced by, and supports, expanding manufactured exports. In addition, the depreciation in Japan’s real exchange rate against both the euro and the dollar, and against other Asian currencies with exchange rates more closely tied to the dollar, makes investment in Japan look relatively inexpensive (McKinnon 2005, ch 2). In particular, Japanese multinational firms, which normally engage in outward FDI, may instead be investing more at home—mainly in export activities.

Japan’s growing export trade, associated with higher petroleum prices, is triangular. Much of its oil imports come from Middle Eastern emirates that are (inadvertently) high savers. Because the emirates have not spent all their new oil riches for goods and services, they built up foreign exchange reserves in euros and dollars. Their purchases of manufactures from Japan are substantially less than the value of their oil sold to Japan. Japan is then induced to step up its exports of manufactures to the United States and Europe to earn internationally attractive currencies such as dollars, euros, sterling, and so on, in order to pay for much of its imports of Middle East oil. In effect, the higher world price of oil and other raw materials accentuates the surge in Japanese manufactured exports into U.S. and European markets. This then aggravates the resurgence of “Japan bashing” by American and European politicians representing manufacturing constituencies.

**Stabilizing the Yen: A Concluding note**

Japan is many years away from working itself out of its deflationary trap without relying on “excessive” export expansion. But a necessary first step would be to reduce the foreign exchange risk that causes the low-interest-rate liquidity trap and undermines
the ability of the BoJ to expand the domestic economy, and causes international financial intermediation to finance Japan’s current-account surpluses to be excessively volatile.

Counterintuitive as it may seem from today’s low real valuation of the yen, stabilizing the yen’s dollar value in nominal terms is the preferred strategy. If the yen is credibly fixed within a narrow band, Japanese nominal interest rates must rise to American levels as the negative risk premium vanishes. Moderately higher nominal interest rates need not have a deflationary impact if risks in capital and labor markets are reduced, and if fears of future deflation are eliminated. Once people knew that the yen would not again ratchet upwards, firms contemplating investing in Japan—and employers granting more generous wage settlements—would feel more confident (McKinnon and Schnabl, 2006). Then private consumption could well increase more generally with residential construction picking up once home buyers felt that the threat of deflation was eliminated once and for all.

Credibly fixing the yen dollar rate, with the BoJ allowing domestic nominal interest rates to rise, would spring the liquidity trap and restore some—albeit limited—power to the central bank. The yen carry trade would disappear and be replaced by a more normal international financial market. With its surplus saving, Japan would remain a large international creditor. But foreigners would be more willing to borrow in yen-denominated contracts once they knew that the yen could not ratchet up on them. So the proportion of private financial intermediation in Japan’s large current account surplus—in dollars or yen—would increase and stabilize. Foreigners would complain less if the BoJ accumulated fewer, and even began dishoarding, official dollar reserves.

While technically feasible, a credible stabilization of the yen/dollar rate presents a major political problem. It conflicts with recent calls in both Europe and the United States to appreciate the yen—either directly by the BoJ selling dollars to buy yen in the foreign exchange markets, or indirectly by raising domestic interest rates to attract more foreign capital. But officially induced nominal yen appreciations with the fear of more to come would accentuate the deflationary pressure that Japan now faces. As in the 1980s and 1990s, declines in domestic wages and prices would eventually offset any nominal appreciation in its effect on international competitiveness, and Japan would become more deeply mired in its deflationary trap.

To be credible, a new policy to stabilize the yen would require explicit cooperation with the United States. How it could work was described 10 years ago in McKinnon and Ohno (1997, chs 10 and 11)—although apparently very few read the book! The prescription developed there is also relevant for China’s current exchange rate dilemma. But those who do not learn from history are condemned to repeat it.
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Figure 1: Consumer Price Indexes for Japan, the U.S., and the Euro Area from 1999 to 2006
(1999 = 100)

Source: IFS.
Figure 2: Nominal Yen/Dollar, Euro/Dollar, and Yen/Euro Exchange Rates from January 1999 to March 2007
(1999 = 100)

Figure 3: Real Exchange Rates for Yen/Dollar, Euro/Dollar, and Yen/Euro as Deflated by CPI from 1999 to 2006 (1999 = 100)

Source: IFS.
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(1999 = 100)

Source: OECD.
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(1999 = 100)

Source: OECD, European Central Bank.
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Source: IFS, OECD, European Central Bank.
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(1999 = 100)

Source: OECD.
Figure 8: Japan: Private Sector Wages versus GDP Divided by Civilian Employment, from 1999 to 2006
(1999 = 100)

Source: OECD, Cabinet Office (Government of Japan).
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(1999 = 100)

Source: OECD, European Central Bank.
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Source: IFS.
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(1986 = 100)

Source: Bank of Japan.
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(January 1970 to February 2007)

Source: IFS.
Figure 14: U.S. Federal Funds and Japan Gensaki Rates (Overnight) from January 1970 to February 2007

Source: *IFS*, Federal Reserve.
Figure 15: Monthly Percentage Changes in Japanese Official Foreign Exchange Reserves from January 1980 - February 2007

Source: *IFS.*
Figure 16: Change in Components of GDP from 2002 to 2006 as a Percentage of 2002 GDP

Source: Cabinet Office (Government of Japan).
Table 1: Japan and the United States, 1950-1971, with the Yen Fixed at 360 per Dollar
(average annual percent changes)

<table>
<thead>
<tr>
<th>Wholesale prices</th>
<th>Money wages (Mfg)</th>
<th>Consumer prices</th>
<th>Industrial production</th>
</tr>
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<tbody>
<tr>
<td>U.S. 1.63</td>
<td>U.S. 0.69a</td>
<td>U.S. 4.52</td>
<td>U.S. 2.53</td>
</tr>
<tr>
<td>Japan 0.69a</td>
<td>Japan 4.52</td>
<td>Japan 10.00</td>
<td>Japan 5.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real GDP</td>
<td>Nominal GDP</td>
<td>Narrow money</td>
<td>Labor productivity</td>
</tr>
<tr>
<td>Japan 9.45a</td>
<td>Japan 14.52a</td>
<td>Japan 14.52a</td>
<td>Japan 16.10b</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>


c1951-1971.
Table 2: Estimates of Japanese Net Liquid International Assets, 1980-2005

<table>
<thead>
<tr>
<th>Year</th>
<th>(1) Cumulative Current Account Surplus</th>
<th>(2) Cumulative Net Outward FDI</th>
<th>(3) Estimate of Liquid Foreign Assets</th>
<th>(4) Official Foreign Exchange Reserves</th>
<th>(5) Net Foreign Assets of Banking Institutions</th>
<th>(6) Estimate of Non-Bank Private Foreign Assets</th>
<th>(7) Private Sector NFA as % of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>-10.8</td>
<td>-2.1</td>
<td>-12.9</td>
<td>21.6</td>
<td>-35.0</td>
<td>0.6</td>
<td>NM</td>
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<td>1981</td>
<td>-6.0</td>
<td>-6.8</td>
<td>-12.8</td>
<td>24.7</td>
<td>-37.7</td>
<td>0.1</td>
<td>NM</td>
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<td>1982</td>
<td>0.9</td>
<td>-10.9</td>
<td>-10.1</td>
<td>19.2</td>
<td>-36.5</td>
<td>7.2</td>
<td>NM</td>
</tr>
<tr>
<td>1983</td>
<td>21.7</td>
<td>-14.1</td>
<td>7.6</td>
<td>20.4</td>
<td>-35.1</td>
<td>22.3</td>
<td>NM</td>
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<td>1984</td>
<td>56.7</td>
<td>-20.1</td>
<td>36.6</td>
<td>22.3</td>
<td>-51.1</td>
<td>65.4</td>
<td>39%</td>
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<tr>
<td>1985</td>
<td>107.8</td>
<td>-25.9</td>
<td>81.9</td>
<td>22.3</td>
<td>-65.2</td>
<td>124.8</td>
<td>73%</td>
</tr>
<tr>
<td>1986</td>
<td>193.7</td>
<td>-40.4</td>
<td>153.3</td>
<td>37.7</td>
<td>-139.9</td>
<td>255.5</td>
<td>75%</td>
</tr>
<tr>
<td>1987</td>
<td>278.0</td>
<td>-59.5</td>
<td>218.5</td>
<td>75.7</td>
<td>-219.1</td>
<td>362.0</td>
<td>65%</td>
</tr>
<tr>
<td>1988</td>
<td>357.3</td>
<td>-95.5</td>
<td>261.8</td>
<td>90.5</td>
<td>-260.5</td>
<td>431.8</td>
<td>65%</td>
</tr>
<tr>
<td>1989</td>
<td>420.5</td>
<td>-142.5</td>
<td>278.0</td>
<td>78.0</td>
<td>-251.4</td>
<td>451.4</td>
<td>72%</td>
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<tr>
<td>1990</td>
<td>464.6</td>
<td>-191.3</td>
<td>273.3</td>
<td>69.5</td>
<td>-263.5</td>
<td>467.3</td>
<td>75%</td>
</tr>
<tr>
<td>1991</td>
<td>532.8</td>
<td>-221.6</td>
<td>311.2</td>
<td>61.8</td>
<td>-163.0</td>
<td>412.5</td>
<td>80%</td>
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<tr>
<td>1992</td>
<td>645.3</td>
<td>-236.2</td>
<td>409.1</td>
<td>61.9</td>
<td>-87.0</td>
<td>434.3</td>
<td>85%</td>
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<td>1993</td>
<td>777.0</td>
<td>-249.9</td>
<td>527.0</td>
<td>88.7</td>
<td>225.2</td>
<td>213.1</td>
<td>83%</td>
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<tr>
<td>1994</td>
<td>907.2</td>
<td>-267.1</td>
<td>640.1</td>
<td>115.1</td>
<td>267.2</td>
<td>257.8</td>
<td>82%</td>
</tr>
<tr>
<td>1995</td>
<td>1018.3</td>
<td>-289.6</td>
<td>728.7</td>
<td>172.4</td>
<td>366.5</td>
<td>189.7</td>
<td>76%</td>
</tr>
<tr>
<td>1996</td>
<td>1084.1</td>
<td>-312.8</td>
<td>771.3</td>
<td>207.3</td>
<td>224.7</td>
<td>339.2</td>
<td>73%</td>
</tr>
<tr>
<td>1997</td>
<td>1180.9</td>
<td>-335.7</td>
<td>845.2</td>
<td>207.9</td>
<td>301.5</td>
<td>335.9</td>
<td>75%</td>
</tr>
<tr>
<td>1998</td>
<td>1299.6</td>
<td>-357.0</td>
<td>942.6</td>
<td>203.2</td>
<td>220.7</td>
<td>518.7</td>
<td>78%</td>
</tr>
<tr>
<td>1999</td>
<td>1414.2</td>
<td>-367.0</td>
<td>1047.2</td>
<td>277.7</td>
<td>203.7</td>
<td>565.8</td>
<td>73%</td>
</tr>
<tr>
<td>2000</td>
<td>1533.9</td>
<td>-390.3</td>
<td>1143.6</td>
<td>347.2</td>
<td>219.1</td>
<td>577.3</td>
<td>70%</td>
</tr>
<tr>
<td>2001</td>
<td>1621.7</td>
<td>-422.6</td>
<td>1199.1</td>
<td>387.7</td>
<td>202.9</td>
<td>608.5</td>
<td>68%</td>
</tr>
<tr>
<td>2002</td>
<td>1734.1</td>
<td>-445.5</td>
<td>1288.6</td>
<td>451.5</td>
<td>187.5</td>
<td>649.7</td>
<td>65%</td>
</tr>
<tr>
<td>2003</td>
<td>1890.4</td>
<td>-468.1</td>
<td>1422.4</td>
<td>652.8</td>
<td>184.3</td>
<td>585.3</td>
<td>54%</td>
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<tr>
<td>2004</td>
<td>2062.5</td>
<td>-491.2</td>
<td>1571.3</td>
<td>824.3</td>
<td>219.0</td>
<td>528.0</td>
<td>48%</td>
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<tr>
<td>2005</td>
<td>2226.2</td>
<td>-516.2</td>
<td>1710.0</td>
<td>828.8</td>
<td>372.7</td>
<td>508.5</td>
<td>52%</td>
</tr>
</tbody>
</table>

Memo: Official Foreign Exchange Reserves reported to be 884.4 billion USD as of February 2007.
Table 3: Components of Annual Japanese GDP (2002 – 06)

<table>
<thead>
<tr>
<th>In Billions of Yen</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP (Expenditure Approach)</td>
<td>491,312.20</td>
<td>490,294.00</td>
<td>498,328.40</td>
<td>501,343.40</td>
<td>507,809.50</td>
</tr>
<tr>
<td>Private Consumption</td>
<td>283,253.90</td>
<td>281,791.00</td>
<td>284,428.40</td>
<td>286,530.20</td>
<td>288,204.40</td>
</tr>
<tr>
<td>Private Investment Total</td>
<td>82,462.20</td>
<td>84,590.80</td>
<td>89,414.60</td>
<td>92,998.50</td>
<td>99,683.30</td>
</tr>
<tr>
<td>Private Residential Investment</td>
<td>18,031.20</td>
<td>17,844.20</td>
<td>18,366.80</td>
<td>18,279.70</td>
<td>18,815.00</td>
</tr>
<tr>
<td>Corporate Investment</td>
<td>64,431.00</td>
<td>66,746.60</td>
<td>71,047.80</td>
<td>74,718.80</td>
<td>80,868.30</td>
</tr>
<tr>
<td>Government Expenditures</td>
<td>119,184.10</td>
<td>115,936.70</td>
<td>114,859.40</td>
<td>114,858.70</td>
<td>113,594.90</td>
</tr>
<tr>
<td>Government Consumption</td>
<td>88,305.60</td>
<td>88,502.60</td>
<td>89,468.00</td>
<td>90,684.30</td>
<td>90,897.70</td>
</tr>
<tr>
<td>Public Investment Total</td>
<td>30,878.50</td>
<td>27,434.10</td>
<td>25,391.40</td>
<td>24,174.40</td>
<td>22,697.20</td>
</tr>
<tr>
<td>Net Exports</td>
<td>6,411.90</td>
<td>7,975.50</td>
<td>9,626.00</td>
<td>6,956.00</td>
<td>6,326.90</td>
</tr>
<tr>
<td>Net Exports Ex Oil</td>
<td>10985.006</td>
<td>13303.892</td>
<td>15691.105</td>
<td>15779.323</td>
<td>17,859.65</td>
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<tr>
<td>Oil Imports</td>
<td>-4573.106</td>
<td>-5328.392</td>
<td>-6065.105</td>
<td>-8823.323</td>
<td>-11,532.75</td>
</tr>
</tbody>
</table>

Source: Cabinet Office, Government of Japan.