THE ROLE OF THE YEN

Kathryn M. Dominguez

University of Michigan and NBER

forthcoming in International Capital Flows,
   edited by Martin Feldstein,
   University of Chicago Press for the NBER: Chicago.

August 1997
Revised: January 1999

Prepared for the CIPE-NBER International Capital Flows Conference in Woodstock, Vermont, October 1997. I am grateful to NBER for financial support, to Martin Feldstein, James Hines and Gunter Dufey for comments and suggestions, to Peter Boberg, Pat McGuire and Heather Montgomery for help in translating Japanese documents, to Mr. Fukuda for helpful discussions and for providing access to his survey results, and to Takatoshi Ito and David Weinstein for assistance in obtaining data.
1. Introduction

Over ninety percent of American exporters sell their goods abroad using contracts denominated in dollars. Over eighty percent of German exporting companies denominate their sales in deutsche marks. Over fifty percent of French and British exports are denominated in francs and pounds sterling, respectively. This pattern of invoicing exports in domestic currencies is characteristic of most developed countries with a single, notable, exception: Japan. Japanese companies are more likely to denominate exports in dollars than in yen.

This paper analyzes the role of the yen in international financial and commercial transactions. Over the last twenty-five years the yen has played a surprisingly small role in international markets. Far fewer commercial contracts, bonds, bank loans, and official reserves are denominated in yen than in U.S. dollars, and fewer in yen than in deutsche marks, in spite of the size and performance of the Japanese economy. Nowhere is this puzzle more apparent than in Japan itself, where Japanese companies and investors are more likely to transact in dollars than in yen.

There are several possible explanations for the apparent under-utilization of the yen. The first is habit formation. After the Second World War the dollar replaced the pound sterling as the dominant currency in world trade. Although the U.S. economy has declined in importance, habit formation works to maintain the central role of the dollar. A second explanation is that a large and growing share of Japan’s exports go to the United States, and U.S. imports are predominately invoiced in dollars. Third, the short-term capital market in Japan is relatively under-developed. For example, the size of the Japanese Treasury Bill market is much smaller than that in the United States. Foreign investors or importers receiving yen therefore have fewer opportunities to park their yen-denominated funds. Also, high transactions costs in the bankers’ acceptance market limit the amount of trade financed in yen. A fourth explanation involves the role of Japan’s large trading companies that handle the bulk of Japan’s exports (and imports). It may be that these trading companies are able effectively to hedge the foreign exchange risks that arise when
Japanese exports are denominated in foreign currencies.

Over time it should be the case that any impact of dollar habit formation on yen usage should diminish; similarly, any limitations on short-term yen investing and financing should have little long run impact. Further, although these considerations might explain the dominance of the dollar over the yen, they apply equally well to Germany, yet the deutsche mark is much less dominated by the dollar than is the yen. The only explanation, of the first three, that distinguishes Germany from Japan, is the bias in Japanese exports toward the U.S. market. Exports to the United States do not directly explain why Japanese companies invoice so rarely in yen, but this bias combined with “pricing-to-market” strategies often followed by Japanese firms may partly explain low yen invoice ratios.

“Pricing to market” models imply that firms set their export prices in foreign currencies if profits are at risk of falling sharply when the domestic currency appreciates, yet profits rise only slowly when the foreign currency appreciates (in other words, profits are concave functions of the exchange rate). If the reverse is true (profits are convex functions of the exchange rate), then exporters will prefer to invoice in the domestic currency.¹ Fukuda and Ji (1994) find empirical evidence supporting the hypothesis that the profits of Japanese firms generally fall more rapidly as the yen appreciates than they rise when the yen depreciates. However, this explanation ignores the possibility that exporters can hedge exchange rate risk. If hedging is possible and not too costly, invoicing can be separated from exchange rate risk management, and “pricing to market” behavior will not necessarily be related to the choice of the invoice currency. The fourth explanation for the low yen invoicing ratios is related to this point. If the large Japanese trading companies are able effectively to hedge the exchange rate exposure exporting firms face when invoicing in currencies other than the yen, then “pricing to market” behavior does not explain the low yen invoice ratios.

The final explanation, that large trading companies effectively hedge the foreign currency exposure of Japanese exporters, does not explain why the dollar remains the dominant currency used in Japan. If
hedging is possible and relatively costless, then the denomination of the invoice currency is, in principle, arbitrary. On the other hand, the dollar remains the dominant currency in derivative markets, suggesting that the cost of hedging dollar exposure may be lower than for other currencies. There are signs that the yen is being used more heavily in international capital markets even as yen invoicing ratios remain low. The share of yen-denominated sovereign debt has risen dramatically, at the expense of the dollar, in certain Asian and Pacific countries. Over a quarter of new bond issues by developing countries and countries in transition are now denominated in yen. And the volume of yen transactions in OTC foreign exchange derivative contracts now exceeds those denominated in deutsche marks.

What is the ultimate significance of the continued under-utilization of the yen? In the short run, a case can be made that the low yen invoice ratios accentuate the slow adjustment of Japanese bilateral current account imbalances. The Japanese economy has run large and persistent current account surpluses with the rest of the world, and particularly with the United States. Theory indicates that such surpluses are unlikely to persist over prolonged periods. If exchange rates are flexible, then the value of the domestic currency should rise in response to a current account surplus, rendering export goods less competitive and imports more attractive so that, in equilibrium, a country’s current account returns to balance. If exports are invoiced in the domestic currency, then the automatic adjustment process is straightforward. However, if exports are invoiced in the foreign currency and relative prices remain unchanged (perhaps due to “pricing the market” behavior), then the adjustment process is far from automatic. Of course, if the domestic currency strengthens and relative prices do not change, the profits of exporting firms (as denominated in the domestic currency) will fall. Eventually, relative prices must change if exporters are to stay in business. Price adjustment therefore implies that the significance of yen invoicing lies in its implications for short run adjustments and not long run resource flows.

This paper explores the reasons why the role of the yen has not kept pace with the rise in Japan’s economic power in world trade, as well as the implications of this pattern for Japan and the rest of the
world. The paper is organized in five sections. Section 2 reviews the history of Japanese inflation, the liberalization of the Japanese financial markets, and the international use of the yen. Section 3 explores the reasons that the yen is rarely used as an invoicing currency in international trade. Section 4 examines the practice of yen exchange rate risk management and shows how hedging techniques can be used by Japanese firms to offset the risks of invoicing in foreign currencies. Section 5 considers the relationship between the international use of the yen and the Japanese balance of payments. Section 6 concludes the paper by analyzing the significance of the relatively minor role of the yen in international markets.

2. The International Role of the Yen

The U.S. dollar is the dominant international currency. The dollar is widely used in international trade contracts, it makes up the bulk of international reserves, and over 80% of the derivative market is dollar-based. The German deutsche mark is second in importance after the dollar, while the Japanese yen is a distant third. Domestic and international currency demands depend on several factors that include: the ease with which currency transactions can be made, the stability of a currency’s purchasing power, regulatory oversight of the currency, and the investment opportunities available in the currency. This section reviews each of the factors that influence demand for the yen.

2.1 The Theory of International Currency Use

International currency uses are similar to national currency uses. An international currency is a medium of exchange, an unit of account, and a store of value outside the country in which it is issued. So, for example, the dollar is used to discharge financial obligations, used to denominate trade contracts, and serves as an investment asset for individuals, companies, and governments outside of the United States. An international currency is considered a “vehicle” if it is used to denominate and execute foreign trade and international capital transactions that do not involve direct transactions with the issuing country.

The same factors that determine whether a currency is used internationally also influence its use as
a vehicle currency, although most international currencies are not vehicle currencies. For example, the
Mexican peso is an international currency in that it is widely held and used by traders and investors outside
of Mexico. On the other hand, the peso is not a vehicle currency in that it would rarely be used in
transactions other than those involving at least one party from Mexico. Vehicle currencies are
distinguished from international currencies by their relatively low transactions costs. After all, parties to a
transaction are unlikely to use a currency other than one of their own, unless using the third currency is
considerably cheaper than the alternatives. Transactions costs for currencies, in turn, are likely to be lowest
for currencies that are heavily used. Moreover, once a currency emerges as a vehicle, economies of scale
enter into play, reducing transactions costs yet further.

Historical studies of the emergence of the pound sterling as the dominant vehicle currency during
the second half of the nineteenth century and the rise of the dollar after WWII suggest that at least two
conditions must describe an issuing country for its currency to achieve dominance. First, the value of the
currency should be relatively stable. Second, the country issuing a dominant international currency should
have well-developed financial markets. The next two sections examine Japan’s inflation history and the
development of Japanese financial markets in order to determine whether Japan satisfies the two conditions
needed for the yen to achieve “vehicle” status.

2.2 Japan’s Inflation History

Monetary policy decisions in Japan are not made by an independent central bank. The Bank of
Japan Law authorizes the Policy Board, which includes representatives of the Ministry of Finance, to
formulate, direct, and supervise Japanese monetary policy. Over the last twenty years, Ministry of
Finance's (MOF) influence on Bank of Japan (BOJ) policy decisions varies with changes in top personnel
and economic conditions. Typically, when the BOJ wants to change monetary policy, it consults with
MOF, the finance minister, and the prime minister before coming to a decision. The objectives of Japanese
monetary policy have undergone substantial changes over the last two decades, focusing alternatingly on
economic growth, the value of the yen, the balance of payments, and inflation. The BOJ has no legal mandate to maintain price stability.

In the early 1970s, partly as a result of the first oil-price shock, the Japanese inflation rate exceeded that in the United States or Germany. From 1970 to 1975 Japan’s inflation averaged over ten percent, while inflation in the United States and Germany averaged six percent. In the second half of the 1970s Japanese inflation rates continued to exceed those in Germany, but were, on average, slightly lower than inflation rates in the United States. In the 1980s inflation rates in all three countries were significantly lower; German and Japanese inflation rates were roughly comparable, and U.S. inflation was about two percentage points higher. More recently, Japanese rates of inflation have been well below those of both Germany and the United States, indeed using some definitions of price changes, Japan is currently experiencing deflation.

Of the G-7 countries, Japan experienced the highest rate of inflation variability (6%) in the 1970s. In contrast, in the 1980s Japan had the third-lowest rate of inflation variability, only .1% above that of Germany. These data suggest that markets might have doubted the stability of the yen's purchasing power in the 1970s, but for the past decade and a half Japan’s inflation record has been comparable to that of Germany and slightly better than the U.S. record. Therefore, Japan’s more recent inflation performance might more credibly establish the purchasing power stability of the yen. At the same time, however, that Japan’s inflation rate has stabilized at a low level, so too have the inflation rates of the other G-7 countries. It may be that one of the impediments to greater international usage of the yen is the wide array of other currencies that currently have strong records of low and stable inflation.

2.3 Liberalization of Japanese Financial Markets

In the period after WWII and before the breakdown of the Bretton Woods system, the Japanese monetary authorities actively discouraged international use of the yen. Historical accounts suggest that Japanese policy-makers were concerned that, if the yen were widely held outside of Japan, then the BOJ’s
ability to control the yen money supply would be substantially reduced. Consequently, Japanese financial markets were highly regulated and capital inflows and outflows severely limited. Moreover, the financial system was designed to encourage personal savings and direct financial resources to chosen private and public investment projects.

In the mid-1970s Japan entered a recession along with most of the G-7 countries as a consequence of which, the corporate sector demand for funds declined and large government budget deficits emerged for the first time in post-war Japan. The public sector became a net borrower of funds; the number of government bonds outstanding rose eight-fold from 1974 to 1982. Japan's bond markets grew dramatically over this period and a rising share of bank portfolios consisted of government bonds. Further, in order to reduce the burden of the government debt, interest rates on new issues were kept at below-market levels. At the same time the Japanese financial community, and particularly Japanese banks, began to demand changes in the financial system. Japanese bank profits suffered as a consequence of the low interest rates they received on government debt and the highly regulated interest rates they were allowed to offer depositors. In order to compete with other financial institutions Japanese banks needed to be able to offer new financial instruments and to access international capital markets.

Deregulation of Japan's financial markets began in the late 1970s. Table 2.3 provides a chronology of Japanese financial market liberalizations starting in the seventies. One of the first measures taken was to allow resale of government bonds. As a consequence the primary and secondary government bond market dramatically expanded. At the same time the Gensaki market (for repurchase agreements on government bonds) and the market for certificates of deposit were established. In 1980 the Foreign Exchange and Trade Control Law was enacted, under which capital flows were gradually liberalized although numerous restrictions on outflows and inflows remained. In 1984, in the aftermath of the Yen-Dollar Agreement, and in part to allay U.S. and other G-7 concerns that the closed nature of Japanese domestic markets was artificially depressing the value of the yen, a new phase of financial market liberalization was put in place.
A number of measures were taken to increase foreign access to Japanese financial markets and to allow Japanese capital to flow into the euro-currency markets. In June 1984 the conversion of foreign currencies into yen was completely decontrolled; in June 1985 the market for yen-denominated banker's acceptances was created and the Japanese government was allowed to issue short-term bonds to refinance existing debt; in June 1986 foreign banks were given permission to issue euro-yen bonds; in December 1986 the Tokyo offshore market was created; and in November 1987 the euro-yen commercial paper market was decontrolled.

The implementation of BOJ monetary policy has undergone substantial changes in the past twenty years in conjunction with the deregulation of financial markets. The intermediate target of BOJ monetary policy shifted in mid-1978 from bank lending to a broadly defined money stock. Money market operations also shifted from "window guidance," or moral suasion, together with direct control of interest rates, to controlling the supply of reserves to the banking system and thereby indirectly influencing interbank interest rates. The discount rate in Japan is the rate at which commercial banks can borrow funds from the BOJ, and it is always lower than the interbank rate. Consequently, discount window lending is rationed by the BOJ. The two-month-bill discount rate, the interbank rate that serves as an intermediate target for the BOJ, often diverged from comparable market interest rates during the 1980s. For example, in the summer of 1988, euro-yen rates were markedly higher than comparable bill discount rates, suggesting that arbitrage between offshore and onshore markets was not then possible.

In November 1988 the BOJ introduced a number of measures intended to further liberalize Japanese domestic money markets. One of the more important of these measures consisted of shifting BOJ market interventions into markets for securities of shorter maturities, including the one to three week bill market and the overnight commercial paper market. One of the goals of the 1988 reform effort was to enhance interest rate arbitrage between the domestic and offshore markets, as well as arbitrage between the interbank and open money markets. Since the reforms were implemented, the markets for shorter-maturity
instruments have grown dramatically and short-term interest rates are now more reflective of market conditions.\footnote{9}

By 1990 virtually all the restrictions on Japanese capital flows had been eliminated. However, a number of the new financial instruments introduced in the nineteen-eighties have yet to develop significant market depth. For example, complicated operating procedures have hampered the development of the yen banker’s acceptance market; trading in the Gensaki market is complex due to the tax on securities transactions; and the treasury-bill market is relatively inactive. In November 1996 Prime Minister Hashimoto initiated a financial system reform plan to liberalize the remaining restrictions on Japanese financial markets.\footnote{10} A drastic revision of the Foreign Exchange Law took effect on April 1, 1998. And, in principle, permission and prior notification for all external settlements and capital transactions are no longer required.

Although Japanese financial markets have changed dramatically over the past twenty-five years, many of the important liberalization measures are relatively recent. It is clear that the highly restrictive financial market structure put in place immediately after WWII actively discouraged international use of the yen. Deregulation has reversed this policy, but the pace of financial market reform has been quite slow. Part of the answer to why the yen is so little used internationally may be explained by the incompletely developed financial markets in Japan.

2.4 Stylized Facts on the International Use of the Yen

International usage of the yen has increased steadily over the past two decades. This is not surprising given the relatively low base from which the yen market started in the early nineteen-seventies. Moreover, the share of yen-denominated instruments varies widely across financial markets. A small percentage of international bonds are denominated in yen, while the share of yen-denominated sovereign debt in selected countries is relatively high. This section examines data on the usage of the yen as a medium of exchange, as a reserve currency in Central Bank portfolios, and as an investment currency.
Information concerning the currency composition of the spot foreign exchange market is not readily available because physical markets for foreign exchange transactions do not exist. The foreign exchange market is decentralized and data on the volume of global trading are not collected. However, starting in 1989 the central banks of 21 countries began a triennial survey of foreign exchange turnover in the interbank markets in an attempt to estimate global activity in the spot and various derivative markets. (The survey in 1995 included 26 countries.) Table 2.4.1 presents data on the currency composition of global spot foreign exchange turnover from these central bank surveys. (These data are made available by the Bank for International Settlements (BIS).)

According to the BIS surveys, use of yen relative to other currencies has actually declined over the past five years. While use of the dollar has fallen, it is the deutsche mark and other EMS currencies, rather than the yen, that have replaced the dollar in some markets. Table 2.4.2 indicates that yen trading tends to be concentrated in Asian/Pacific centers as well as in the United States and the United Kingdom. In these markets, major shares of yen turnover are reported (between 14 and 29%), but yen trading accounts for low single percentages in most other markets. Although practically all markets report some turnover in yen trades against domestic currencies, most yen transactions involve the U.S. dollar (85%), the pound sterling (6%) or the deutsche mark (5%). In contrast to London and New York, the range of currencies actively traded in Tokyo is limited: 76% of all turnover in Japan involves the yen and the U.S. dollar, up from 67% in 1992.

Unsurprisingly, the yen is used most heavily domestically, with the United Kingdom and the United States ranked two and three in terms of total transactions. In percentage terms, however, it is in Singapore and Hong Kong that the yen is used most heavily. Other than in Japan, the yen is always ranked behind the U.S. dollar, and, with the exception of Hong Kong, the yen is also always ranked behind the deutsche mark in terms of total currency transactions in each of the countries.\textsuperscript{11}
The Yen as a Reserve Currency

Central Banks hold foreign reserves to facilitate trade and to affect exchange rates through interventions in foreign exchange markets. The importance of currencies as international media of exchange and stores of value can therefore be inferred from their relative shares in official reserves. Table 2.4.3 presents aggregate data on the currency composition of all official reserve holdings, and, for available years, the holdings of selected Asian countries.12

The share of yen in official reserve holdings has remained relatively low and stable over the past fifteen years for all countries, and actually fell between 1985 and 1990 in selected Asian countries. The U.S. dollar remains the dominant currency held in aggregate by central banks, and the share of Asian central bank reserves denominated in dollars has risen, not fallen, in recent years.

The Yen as an Investment Currency

One of the characteristics of international currencies, and particularly vehicle currencies, is their use to denominate investments. Until the mid-1970s, most international bonds, euro-currency deposits, and international bank loans were denominated in dollars. Over the past twenty-five years the share of dollar-denominated investments has fallen, and, depending on the particular form of investment, the relative shares of deutsche mark and yen-denominated investments have risen.

The share of yen-denominated international bonds (euro-bonds plus foreign currency bonds) rose dramatically in the second half of the 1980s. Table 2.4.4 indicates that the yen share reached a peak in 1990 at 13.5% of the international bond market. By 1996, however, the yen share had fallen back to just over 8% of the market. Part of the explanation for the sudden rise and fall in numbers of yen-denominated bonds is that, in the early 1990s, many Japanese companies had difficulty raising funds in the stock market due to the fall in stock prices, and therefore they turned to international bonds for alternative financing.13

The data suggest that this shift to bond financing reversed itself by 1996. Further, aggregate yen-denominated issuance of long-term international bonds contracted further in 1997, apparently due in large
part to Japanese investors shifting their purchases of foreign securities away from straight euroyen and
dual-currency Samurai issues towards U.S. dollar and sterling bonds.\[14\]

Although the yen share in the overall international bond market is relatively low, yen-denominated
bond issues by developing countries and countries in transition has risen dramatically; the yen’s share in
these issues rose from 13 percent in 1994 to 26 percent in 1995.\[15\] The expansion of the yen market in
bonds issued by developing countries is due to the relatively low interest rates prevailing in Japan and the
elimination (in January 1994) of the 90-day lockup period before which sovereign yen-denominated
Eurobonds could be sold to Japanese investors after initial placement.\[16\]

Bank deposits of currencies held outside countries of issue are termed euro-currency deposits. The
volume of transactions in the eurocurrency market is now well over $4 trillion on a net basis (netting out all
interbank deposits). As a matter of accounting, a currency’s share in the eurocurrency deposit market rises
as the currency appreciates against other currencies. Given the substantial appreciation of the yen in 1995,
therefore, we might expect the yen share in the eurocurrency market to have risen, but the data in Table
2.4.5 indicate that the yen share has remained low. The share of yen-denominated euro-currency deposits
has only risen 4 percentage points since 1980, when 1 percent of deposits were denominated in yen. Table
2.4.5 shows that euro-dollar deposits make up over 44% the euro-currency market, and mark-denominated
deposits are ranked second at 15%. The other European currencies, including the ECU, have smaller than
5% shares in the euro-currency market. At the same time, Europe is the dominant region for euro-banking
(56% of the market in 1995). Japan’s share in the eurocurrency market was 9%, just below that of the
United States (at 11%) in 1995.

Table 2.4.6 shows that while the share of yen denominated international bank lending increased
two-fold from 1991 to 1995, the share of deutsche mark denominated international bank lending increased
five-fold. Shares of U.S. dollar, pound sterling, and swiss franc denominated bank loans fell over the
period. Although yen denominated international bank lending has significantly lower volume than do dollar
and deutsche mark lending, Japanese banks rank first in terms of international banking assets. In 1997 international lending by Japanese banks represented 22% of the world market, a 13-year low, but which nevertheless exceeds German banks that hold a 17% share of the world market, and U.S. banks with an 11% share of the market. Japanese banks have reduced international lending since the early 1990s due to the new capital adequacy ratio requirements and the dismantling of restrictions on the domestic financial system. In addition, the weakness of domestic credit demand and the recent poor performance of the Japanese equity market (which reduced the value of the latent reserves included in Japanese banks’ core capital) resulted in a 3% drop in Japanese bank lending between 1996 and 1997.

Although the overall share of yen-denominated loans is small, the proportion of yen-denominated debt in selected Asian and Pacific countries has risen dramatically in recent years. The increase is in part due to the appreciation of the yen in 1995 and the increase in official yen loans as part of an increase in official development aid.

The yen share in sovereign debt issued by selected countries in Asia and the Pacific has also increased dramatically. Table 2.4.7 shows that, in the case of Thailand, over fifty percent of sovereign debt is denominated in yen, up from only twenty-five percent in 1980. The shift into yen-denominated debt by these countries is largely at the expense of the dollar. The share of Asian sovereign debt denominated in deutsche marks and other European currencies is generally less than 5%.

The data presented in this section suggest that while the use of the yen in international capital markets has grown substantially since the early 1980s, the U.S. dollar and the deutsche mark remain the dominant currencies. The yen's market shares in international bonds, euro-currency deposits, external bank loans, and official reserves remain well below 20 percent. On the other hand, the share of yen-denominated sovereign debt among selected Asian and Pacific countries has risen dramatically, suggesting an emerging regional bias toward the yen.

3. The Role of the Yen as an Invoicing Currency
Exporters must determine the currencies in which to denominate their prices. Most firms in developed countries choose to invoice exports in domestic currencies. The advantage of this strategy is that the exporter's exchange rate exposure is thereby minimized. Since invoice prices are not easily changed when exchange rates fluctuate, export prices rise when domestic currencies strengthen relative to currencies of export destinations. To the extent that higher export prices reduce market shares, long-run profits may suffer. This line of reasoning suggests that, under certain demand conditions in foreign countries, invoicing in the currencies of destination countries may be preferable to invoicing in domestic currencies. This strategy of focusing on shares of foreign markets is termed “pricing to market,” and it is this strategy that Japanese firms are alleged to follow. This section examines the roles of exchange rates and market structure in the invoicing decisions of Japanese firms.

3.1 The Choice of Invoicing Currency in International Trade

A study of Swedish companies in the 1960s found that the exporter’s currency, rather than a common vehicle currency, was most frequently used to denominate international trade contracts. This observation, which is commonly known as Grassman’s Law, continues to describe most developed countries other than Japan. Recent empirical studies of international invoicing practices find the following additional patterns: (1) invoicing in the exporter’s currency is more likely for differentiated manufactured products; (2) trade between a developed country and a developing country tends to be denominated in the currency of the developed country; (3) trade in primary products and transactions in financial investments are usually denominated in U.S. dollars; (4) exports to the United States tend to be invoiced in U.S. dollars; and (5) currency hedging by importers in forward markets is not common.

When an exporting firm invoices in a foreign currency, company profits are affected by exchange rate changes. Likewise, from an importer's point of view, the cost of foreign products depends on exchange rates if prices are set in foreign currencies. Both exporters and importers, therefore, prefer to invoice trade contracts in their own currencies in order to minimize foreign exchange risk. Given this, why is it
commonly observed that exporters (and not importers) invoice in their own currencies? One explanation is that, in the case of differentiated manufacturing products, exporters are likely to have some degree of monopoly power, as a consequence of which they will have more negotiating power than importers. Another explanation focuses on the ability of both sides to offset exchange rate risks. Importers may be in a better position to guard against currency fluctuations by shifting burdens of higher costs due to exchange rate changes to their domestic customers. This is most easily accomplished in the absence of competing domestic industries. This may be the explanation for why trade contracts between developing countries (that are less likely to have competing domestic industries) and developed countries tend to be invoiced in the developed country’s currency. McKinnon (1979) offers yet another explanation for observed invoicing patterns. He reports that importers often receive open-account credits from exporters that allow importers some discretion in the timing of their payments in return for bearing currency risk.

Explanations of why primary products and capital assets are usually denominated in dollars rely on the role of market structure. Whereas exporters selling differentiated products are typically assumed to have some degree of market power, international capital markets and markets for primary products are more often highly competitive. Because prices in competitive markets tend to be relatively volatile, it is useful to denominate prices in numeraire currencies in order to make price changes as informative as possible. Further, the numeraire currency is likely to be an established vehicle currency, such as the dollar.

It is difficult to explain why hedging exchange rate risk is so uncommon among importers. McKinnon (1979) notes that prices of primary goods are determined by global demand and supply conditions, thereby providing importers an automatic hedge. If the value of an importer’s currency falls, the homogeneous nature of the product ensures that the domestic-currency price of the importer’s inventories will rise by the same amount as the exchange rate change.

3.2 Recent Currency Invoicing Practices Among the G-6
It is instructive to compare invoicing practices among the G-6 countries in order to place Japan in context. Table 3.2 presents domestic currency invoice ratios for exports and imports by G-6 countries in the years 1980 and 1988. Japan and Italy are outliers in the export panel of the table with the lowest domestic invoice ratios. In the import panel of table 3.2, Japan's domestic invoice ratio is well below those of the other G-6 countries.

3.3 Why is the Yen Rarely Used as an Invoicing Currency?

The share of yen denominated invoicing of trade contracts is low, especially when compared to dollar and deutsche mark shares. Not only is the yen rarely used by other countries to denominate trade contracts, the yen is also rarely used by Japanese firms. If we compare the use of the yen against the dollar (in table 3.3.1) in Japan’s export or import contracts we find that, although the dollar share has fallen over the years, use of the dollar continues to outstrip that of the yen.

One of the explanations for the low ratio of yen usage in Japan’s export and import contracts is that a large share of Japanese trade is with the United States. U.S. exports and imports tend to be denominated in dollars. In order to ascertain whether the low use of the yen is mainly due to U.S. dominance of Japan’s trade, it is instructive to consider whether Japan’s trade with other parts of the globe are more likely to be denominated in yen. Table 3.3.2 breaks out the share of yen invoicing in Japan’s exports and imports to East Asia.

The data in Table 3.3.2 suggest that the share of yen invoicing in Japanese trade contracts with firms in East Asia is indeed higher than the overall share, and that, at least until 1993, the share was growing. Interestingly, the data show that the percentage of yen-invoiced trade contracts with East Asia fell in 1994 and 1995, but remain higher than those with the world as a whole.

Beyond reporting aggregate statistics on currency invoice ratios, it is difficult to characterize fully the differences between Japanese behavior and that of firms elsewhere. However, a number of recent empirical studies of Japanese manufacturing firms find evidence of “pricing-to-market” behavior.22
Although this evidence helps to explain why dollar prices of Japanese goods have not changed one-for-one with the recent movements of the yen against the dollar, it does not explain the proclivity of Japanese firms to invoice in dollars. As long as Japanese firms hedge the exchange rate risk that arises when trade is invoiced in a foreign currency, pricing to market behavior does not depend on the use of a particular currency of invoice. In other words, Japanese firms could invoice in yen (or any other currency) and simply vary the yen price so that relevant exchange rate changes do not impact final destination prices. The fact that firms are able to hedge against adverse movements in the exchange rate effectively decouples the relationship between profits and the exchange rate, and, in turn, weakens the relationship between profits and the invoicing currency. There remains a puzzle as to why Japan is an outlier among the G-6 in its trade invoicing practices.

_Survey Evidence on Invoicing Practices from Japanese Subsidiaries in the U.S._

In order to investigate the reasons why Japanese companies often prefer to invoice exports in dollars rather than yen, Mr. Fukuda, an NBER researcher and former MOF official, conducted a survey of Japanese subsidiaries in the United States. Mr. Fukuda interviewed the vice-president or head of finance of each of twenty-one Japanese companies located in the United States. Although the scope of each interview varied, each consisted in part of a set of standard questions reproduced in the appendix to this paper. In all cases the companies agreed to be interviewed under the condition of confidentiality. Fifteen of the companies included in the survey are in the manufacturing sector, three are general trading companies, one is a special trading company, one is a financial services company and one is an accounting firm.²³ The sample of firms surveyed was not selected randomly and the responses are intended to provide suggestive, not statistical, evidence.

One of the goals of the survey is to learn whether there are particular circumstances in which Japanese companies are more likely to invoice exports in yen. Although the majority of the companies surveyed generally invoice their U.S. sales in dollars, those interviewed suggested a number of situations in
which yen invoicing is likely to arise. Such situations include circumstances with unusually long production runs, such as when an export contract is signed at the R&D stage of production. Yen-denominated contracts are also more likely if: (1) production requires a majority of inputs acquired from other Japanese companies under contracts denominated in yen; (2) the yen/dollar exchange rate is unusually volatile; (3) the U.S. importer requests invoicing in yen; (4) the exports are going to Asian countries rather than the United States; and (5) the exports are beef products.

When asked why their companies invoice in dollars, rather than in an alternative currency, most of the companies surveyed cite the competitive nature of U.S. markets. A typical response was that in order to maintain product price competitiveness it is necessary to price U.S. exports in dollars. Further, respondents indicate that the management of the exchange rate risk is in all cases left to the parent company in Japan. For most of the subsidiaries, exchange rate hedging is handled by the finance department of the Japanese parent company on an overall company-wide basis (as opposed to a transaction-by-transaction basis). Futures markets are heavily used for exchange rate hedging, and in some companies, options are also used.

In all of the companies surveyed the invoicing currency decision is made by the parent company and there have been no changes in corporate invoicing policy in recent memory. A few of those surveyed indicate that there was some discussion of switching to yen invoicing in the early nineteen-eighties when the yen was weak relative to the dollar. But since the major swing in the yen/dollar exchange rate in 1985 there has been no further discussion of changes in invoicing policies. When asked how companies have dealt with the recent wide swings in the yen/dollar exchange rate, some of the companies revealed that they include provisions in their trade contracts that allow adjustment of dollar prices during periods of "excessive" exchange rate volatility.

None of the companies anticipated increased use of yen invoicing in the near future. They suggested that a more likely change would be higher production levels and purchase of production inputs in the U.S. market. Interviewees also cited recent changes in the U.S. tax treatment of foreign exchange gains
and loses that makes "netting" easier, and, in turn, provides greater incentives to invoice in dollars.$^{24}$ One of the impediments to yen invoicing cited by a few of the companies is the difficulty foreigners face in borrowing and investing yen assets in Japanese financial markets.

**4. Hedging Yen Exchange Rate Risk**

The data presented in the previous section show that the majority of Japan’s trade contracts are denominated in U.S. dollars rather than yen. From a typical Japanese exporter’s perspective this means that the firm receives dollar revenues, but incurs most costs in yen. Likewise, Japanese importers need to make payments in dollars, although sales are likely to be denominated in yen. In both these situations Japanese firms face exchange rate risk. Over the past twenty five years markets in numerous hedging instruments have been created in order to provide firms opportunities to hedge against loses due to adverse exchange rate movements. This section examines the theory and practice yen exchange rate risk management.

**4.1 Overview of Yen Exchange Rate Behavior**

The yen appreciated by 250 percent against the dollar from 1970 to 1994. Among other major currencies, only the swiss franc and the deutsche mark appreciated strongly against the dollar (by 225% and 125%, respectively) over the same period. The rise in the value of the yen relative to the dollar occurred in two stages. First, in the 1970s after the breakdown of the Bretton Woods system and in the wake of the 1973 oil shock, the yen strengthened from 360 yen to the dollar to just under 200 yen per dollar. The dollar then strengthened considerably in the early 1980s (largely as a consequence of Volcker's tight money regime and Reagan's fiscal expansion), with the exchange rate above 200 yen per dollar until late 1985. In the fall of 1985, and in concert with G-5 intervention efforts to weaken the dollar, the yen began its second dramatic appreciation against the dollar, peaking in April 1995 at 80 yen to the dollar.

Dramatic movements in the yen/dollar exchange rate over the last 25 years leave no doubt that
Japanese firms invoicing in dollars face substantial exchange rate risks. However, reports in the financial press in 1993 and 1994, before the yen had actually peaked against the dollar, suggest that Japanese firms anticipated yen weakening. The possibly widely held expectation that the yen appreciation against the dollar was temporary may explain accompanying reports that many Japanese firms were not adequately hedged against exchange rate risk in the early 1990s. After the volatility in the yen/dollar rate in 1995, however, it seems unlikely that Japanese firms exposed to exchange rate risk would choose to remain unhedged.
4.2 Exchange Rate Hedging Instruments

An exchange rate hedge provides insurance against adverse currency movements. A Japanese exporter invoicing in dollars is "completely hedged" if changes in the value of the yen relative to the dollar do not influence its yen profits. Such a hedge provides an offsetting cash receipt if the value of the dollar falls relative to the yen, and requires an offsetting cash payment if the dollar rises relative to the yen.

The market for hedging instruments has grown dramatically in the last twenty years. There are many ways to manage exchange rate risk (and other forms of risk). The most basic exchange rate hedge involves a forward or futures contract that simply fixes the future price of foreign currency. A slightly more sophisticated hedge involves an option contract that is left unexercised if currency movements are favorable. Further, there are many swap instruments that allow firms to take advantage of differences in financing opportunities over time, geographic regions, and currency markets.

Exchange rate risk management can involve simple transaction-by-transaction hedging, overall balance sheet hedging, and more sophisticated hedging techniques that take into account exchange rate risks that competitors face. Likewise, the instruments used to hedge exchange rate risks range from “plain vanilla” contracts to exotic derivative structures. However, the growth of derivative markets and the use of exotic products slowed dramatically in 1995 as a consequence of major loses experienced by some financial and nonfinancial firms. The notional principal outstanding of exchange-traded derivatives rose by less than 4 percent in 1995, compared with an average annual growth rate of 40 percent during the last decade.

4.3 The Practice of Yen Exchange Rate Risk Management

Firms are not obliged to disclose the details of their hedging practices and most hedges appear as off-balance sheet items in company accounts. Further, as Garber (in this volume) discusses, the use of derivative products does not necessarily imply that firms are attempting to reduce risks. Derivative products can be used to speculate as well as to hedge (or to enhance) risk. The existing anecdotal evidence
on the hedging practices of Japanese firms suggests that, rather than using financial instruments to hedge exchange rate risks, firms have shifted production from Japan during periods of yen appreciation. For example, on June 9, 1993 when the dollar had fallen to the 113-114 yen per dollar range, the headline on the Asian Wall Street Journal read “Most Japanese Firms Hold Off Hedging Their Currency Needs.” Numerous articles in the popular press in the last few years report that Japanese manufacturers have shifted production to lower cost countries including the United States. On the other hand, many explain the fact that a majority of Japanese trade is handled by a small number of large trading companies by the greater ability of the trading companies effectively to manage exchange rate risks. Trading companies have the advantage of economies of scale, and they may be able to offset risk exposure from their export business with that from imports. Moreover, most of the respondents to Mr. Fukuda’s survey of Japanese subsidiaries in the United States indicate that their parent companies engage in some form of exchange rate risk management.

Unfortunately there are no aggregate data on the proportion of Japanese firms engaging in exchange rate risk management. But, a 1996 survey of the use of derivatives by Japanese corporations by Nippon Life Insurance found that about 41% of the 493 corporations polled used derivative products. Dominguez (1998) examined the degree to which Japanese companies hedge by estimating their exposure to movements in the dollar using Japanese stock market data and an international version of the CAPM model. The results suggest that approximately half of all publicly traded Japanese companies are hedged against dollar exposure.

The BIS provides survey data on the currency composition of derivative products typically used to manage risk. There is not necessarily a strong correlation between hedging practices and the use of a currency in derivative markets, but information on the size of the yen derivative market indicates something about the hedging opportunities available to Japanese firms.

The first systematic survey of over-the-counter (OTC) and exchange traded derivative markets was
performed in 1995 by the BIS. Table 4.3.1 presents BIS data on the currency composition of the four main categories of OTC exchange rate derivative contracts: outright forwards, foreign exchange swaps, currency swaps, and options.28 Outright forward transactions are defined as the exchange of two currencies for settlement more than two business days after the conclusion of the deal. Foreign exchange swaps are transactions involving the exchange of two currency amounts on a specific date and a reverse exchange of the same amounts at a later date. A currency swap is a contract committing two parties to exchange streams of interest payments in different currencies for an agreed period of time and to exchange principal amounts in different currencies at a pre-agreed exchange rate at maturity. Finally, an exchange rate option gives the holder the right to purchase (in the case of a call) or sell (in the case of a put) a currency at a specified exchange rate during a specified period. The main foreign exchange hedging instrument not available in the OTC markets are futures contracts (and options on futures contracts), which are exclusively exchange traded. A futures contract is essentially the same as a forward contract, except that one party to the transaction is always the exchange, and cash flows are settled daily (marked to market) rather than settled at the maturity of the contract.

Table 4.3.1 indicates that in OTC derivative contracts involving foreign exchange, the yen has the second highest volume, well below that of the U.S. dollar, but greater than deutsche mark volume. The U.S. dollar is involved on one side of 92% of all foreign currency derivative contracts. The comparable figures for the yen and deutsche mark are 26 and 23% respectively.29 In the exchange rate futures markets, dollar/yen contracts make up 31% of the market. However, OTC contracts on dollar interest rates represent only 27% of the market, followed closely by those on yen rates (23%). Moreover, yen interest rate contracts comprise a relatively large proportion of swaps and options compared with interest rate contracts on other currencies.

The geographical distribution of OTC derivative trading is similar to the distribution of overall foreign exchange trading. Table 4.3.2 shows that the United Kingdom was the most active center with
about 30% of total market activity, with the United States and Japan the second and third most active. Further, the United Kingdom, the United States and Japan accounted together for 56% of total trading. While Japan’s share of the derivative market vastly exceeds that of Germany, yen-denominated instruments account for roughly the same share of the market as do deutsche mark denominated instruments. As in the foreign exchange market, the two centers outside of Japan in which the yen is relatively heavily used to denominate derivative contracts are Singapore and Hong Kong.

The BIS data indicate that the market in yen-denominated derivative products is substantial, and that foreign exchange swaps are the most heavily traded of the four categories of OTC foreign exchange derivative products. This, in turn, suggests that Japanese firms interested in hedging dollar/yen exchange rate risk have ample opportunities to do so.

One issue related to hedging opportunities is the available maturity structure of instruments. If trade contracts are set long in advance, then effective hedges may require hedging instruments with long maturities. For the OTC derivative products, 89% of forwards, foreign exchange swaps and options are for products with maturities of up to one year. And the most liquid futures markets exchanges tend to be highest for products with maturities under six months. On the other hand, over 50% of currency swap have maturities of 1 year to 5 years, and roughly 24% of these contracts exceed 5 years.

These findings raise the question of why many Japanese companies choose not to hedge using derivative products. Their reluctance to hedge may have several explanations. The first is that, while hedging opportunities exist, they are costly and may be perceived by company managers as being too costly to justify the benefits. Even if managers are convinced of the value of hedging, they may find it difficult to justify to outsiders the purchase of derivatives in states of the world in which, ex post, such hedges lose money. A second reason may be that a company’s ability to compete in domestic markets depends in part on what its domestic competitors do. If other Japanese firms do not hedge and the value of the yen changes in a way that greatly reduces the value of hedge positions, then firms that hedge may not have the financial
resources to remain competitive in domestic markets.

5. The Relationship Between Yen Exchange Rates and the Japanese Balance of Payments

Balance of payments accounts provide a detailed record of the composition of a country’s current account balance (a country’s net exports of goods and services) and the transactions that finance it. There is a well-documented tendency for a country’s current account first to deteriorate, and then improve, in a J-curve pattern, in response to a currency depreciation. The usual explanation for this phenomenon is that the majority of trade is contractual, and contracts are often set long in advance of actual transfers of goods. It takes time for importers to adjust their orders in reaction to changes in relative prices, and, in the interim, import values (as measured in domestic currency units) rise, thereby deteriorating the current account. In the case of an appreciation of the domestic currency, the reverse is true, with the current account initially improving and then deteriorating. Further, the J-curve dynamics of the current account in response to a change in the exchange rate are consistent with the use of the exporter’s currency to denominate trade contracts (Grassman’s rule). For example, from the perspective of Germany, if most German exports are denominated in deutsche marks and a significant fraction of German imports are denominated in foreign currencies, then when the deutsche mark appreciates, the deutsche mark value of export earnings is not affected, whereas the deutsche mark price of imports falls. Consequently, even if the real value of trade is fixed by pre-set contracts, the German current account improves in the short term when the deutsche mark strengthens.

Japanese invoicing conventions are different. Japanese exports and imports are more likely to be invoiced in foreign currencies (specifically the dollar) than in yen, and pricing-to-market conventions are likely to lead to the maintenance of relative prices. Consequently, if the yen appreciates against the dollar, trade contracts are pre-set, and relative prices are left unchanged, the yen value of both exports and imports will fall. And, if Japanese firms continue to maintain relative prices (rather than passing through the yen appreciation) trade volumes are unlikely to change, further delaying the expected negative influence of the
yen appreciation on the Japanese current account. Hence, Japanese invoicing and pricing-to-market practices are likely to prolong the J-curve effect.

5.1 Overview of Japan’s Current and Capital Accounts

Japan has run current account surpluses since 1981. The ratio of Japan’s current account surplus to GDP reached a peak of 4.4 percent in 1986, declined to 1.3 percent in 1990, rose again during the economic recession of 91-93, and has declined as a share of GDP since that period. Table 5.1 presents data on Japanese current account and capital account flows since 1987. Starting in 1995 the BOJ stopped reporting these statistics in billions of dollars, but trends in these accounts have been stable since 1994. The largest component of the current account is the trade balance, and the figures reported in Table 5.1 show that import growth has outstripped export growth, explaining the slower growth of the Japanese current account surplus in recent years.

In the late 1980s Japan’s imports of long term net assets (line 2 in Table 5.1) exceeded the current account surplus, the difference being made up by short-term capital (line 3). In other words, Japan financed long-term investment by borrowing short-term capital. In 1991, despite continued current account surpluses, there was an outflow of long-term and short-term capital. Ito (1994) describes this as the “unwinding” of capital; basically Japan repaid the short-term debt it had accumulated in the second half of the 1980s. By 1994 long-term capital was again flowing into Japan, but these assets no longer exceeded the current account surplus, so that Japan exported short-term capital. Further, the switch in the long-term capital account to outflow in 1991 seems to have been mainly caused by the investment decisions of foreigners. Foreign capital liabilities exceeded Japanese capital assets in 1991, but by 1994 this pattern had dramatically reversed itself. Looking further at the cause of the capital outflows in the early 1990s, it appears that foreign investment was concentrated in Japanese securities. In 1994 foreign investment in stocks rose marginally from their 1991 levels, but net foreign investments in Japanese bonds fell dramatically, presumably due to the low yields on Japanese bonds.
5.2 Implications of Yen Invoicing Practices for the J-curve

It is difficult to reconcile the persistent Japanese current account surpluses documented in table 5.1 with the dramatic appreciation of the yen relative to the dollar (and most other major currencies) in the last decade. An increase in the value of a currency does not guarantee that the current account balances of the issuing country will deteriorate, but the expectation is that, over time, its export goods will become less competitive on world markets. There are, however, at least three reasons why export prices denominated in yen may take longer to rise in reaction to a yen strengthening. The first reason is the “pricing-to-market” behavior of Japanese manufacturing firms. The second reason is the foreign currency invoicing practices of Japanese firms. As described earlier, pricing-to-market behavior does not explain Japanese invoicing conventions, but, in combination with invoicing conventions, this practice is likely to dampen the effect of any yen appreciation on Japanese export prices. The third reason is that, if Japanese firms hedge against yen appreciation, the costs of exports and imports will not be influenced by changes in the value of the yen.

When domestic firms attempt to maintain foreign market shares and trade invoices are denominated in foreign currencies, an appreciation of the domestic currency is likely to influence export prices even more slowly than in the standard J-curve dynamic. Of course, eventually, if domestic firms are to stay in business and the currency appreciation continues, export prices must rise. Consequently, any effect of pricing-to-market, currency invoicing and hedging is inherently short-run. In the long run we should expect the Japanese current account surplus to fall in reaction to any yen appreciation, and the Japanese balance of payments statistics suggest that this process has begun.

5.3 Long-term versus Short-term Capital Outflows from Japan

The large Japanese current account surpluses should foster the internationalization of the yen. Japanese financial institutions benefit from opportunities to invest the large accumulated surplus. However, the extent to which the current account surpluses have enhanced the role of the yen depends on how short and long-term capital outflows have been invested. This section examines the portfolio preferences of
Japanese institutional investors, the role of the Japanese banks in providing yen denominated liquidity, and the destination of Japanese foreign direct investment.

**Portfolio Preferences of Japanese Institutional Investors**

The data in Table 5.1 indicates that long-term capital outflows from Japan have been concentrated in securities, and most of these foreign securities are held by Japanese institutional investors (banks, insurance companies and investment trusts). Table 5.3.1 presents data on the shares of foreign security holdings of institutional investors in Japan as compared to institutional investors in other countries. The portfolios of institutional investors in Japan, along with those of investors in the United Kingdom and the Netherlands, are far more internationally diversified than U.S. portfolios. The currency composition of Japanese foreign securities holdings are not available, but Fukao and Okina (1989) present data from the late 1980s showing that 57 percent of life insurance portfolios (which account for 33 percent of Japanese foreign securities investments), were denominated in U.S. dollars and 22 percent were denominated in Canadian dollars. Further, according to Fukao and Okina (1989, p.202), as of the late 1980s, only about one third of foreign security investment by Japanese institutional investors was covered by forward transactions or matching foreign currency liabilities. Consequently, institutional investors were an important channel of uncovered capital outflows from Japan.

**The Role of Japanese Banks**

What role do Japanese banks play in recycling Japanese current account surpluses? Tavlas and Ozeki (1992) argue that Japanese banks have not performed as world bankers by transforming liquid yen-denominated deposits into longer term yen denominated loans and investments. Instead, Japanese banks have been involved mainly in maturity transformation, borrowing short-term funds overseas in foreign currencies and investing funds in long term foreign currency denominated instruments. Prudential regulations limit net foreign exchange exposure of Japanese banks. So that, while Japanese banks hold a large number of foreign securities, these tend to be financed by foreign currency liabilities to avoid
currency risks.

The data reported in table 5.3.2 show that prior to 1991 external assets of authorized foreign exchange banks were predominantly in foreign currencies (mostly U.S. dollars) rather than in yen. Starting in 1992 external yen-denominated assets exceeded those denominated in foreign currencies. Nevertheless, the fact that Japanese banks heavily borrow and lend in foreign currencies means that they provide limited yen-denominated liquidity to the financial markets. The combined evidence in Tables 5.3.1 and 5.3.2 suggest that it is Japanese institutional investors, rather than Japanese banks, that have played the largest role in recycling the Japanese current account surpluses and facilitating the international use of the yen.

**Japanese Foreign Direct Investment**

Japan’s foreign direct investment (line 2 in Table 5.1) is a substantial component of long-term capital flows. Japanese foreign investments are defined as “direct” if Japanese owners control 10% or more of foreign firms in which investment is located. In 1994 direct investment was 16% of Japanese long term capital. Table 5.3.3 presents data on the destinations of Japanese direct investments. The share of Japanese investment in the United States has been remarkably stable over the years; just under half of Japanese foreign direct investment each year goes to the United States. A significant fraction of Japanese direct investment goes to Asia, and starting in 1994 investments in Asia surpassed funds bound for Europe. The yen appreciation against the dollar in the mid 1990s heightened the attractiveness of foreign direct investment for Japanese firms. Japanese manufacturing firms, in particular, have been strengthening production networks in countries with cheaper labor and procurement costs.

History suggests that direct investment, especially in developing countries can enhance the international role of a currency. British direct investment in developing countries in the second half of the nineteenth century, and U.S. direct investment in reconstructing countries after WWII led to the build-up of large external pound and dollar-denominated balances. In the case of Japan, direct investment in Asia, and especially China in the last few years, is substantial, but direct investment to developing countries overall
comprises a relatively small share of net capital outflows. So that, with the possible exception of Asia, Japanese foreign direct investment is unlikely to lead to significant external yen-denominated balances.

5.4 The Role of Bank of Japan Foreign Exchange Rate Intervention Operations

A final measure of a currency's international role is its use by central banks to intervene in foreign exchange markets. Foreign exchange interventions are typically defined as official sales or purchases of foreign assets against domestic assets in the foreign exchange market for the purpose of influencing relative currency values. The BOJ actively intervenes in the foreign exchange market and the majority of BOJ operations involve the yen. Other than the BOJ, however, the only central bank that regularly intervenes using the yen is the Fed. In recent years the Fed typically divides its interventions equally between the yen and the mark. Although, on some occasions, especially in 1995 when the yen/dollar rate was the focus of intervention operations, Fed interventions are exclusively against the yen. The dollar is the predominate intervention currency used by developing country central banks. Intervention within the European Monetary System is carried out exclusively in European currencies. And, non-EMS related interventions by the German Bundesbank typically involve the dollar.

Although no data exist on the relative use of currencies in official interventions, the yen is likely to rank well behind the dollar, and perhaps the deutsche mark. Moreover, daily foreign exchange intervention operations by the G-3 countries are typically under 200 million dollars. Therefore, even were the use of the yen in intervention operations to increase dramatically, such operations are unlikely to have much impact on the international role of the yen.

6. Summary and Conclusions

The role of the yen in international financial markets has greatly expanded in the last two decades. International use of yen was tightly controlled by Japanese authorities prior to the mid-1970s, but since that time Japanese financial markets and institutions have been significantly deregulated. Likewise, the yen’s
purchasing power has remained strong and relatively stable over the past two decades.

Although use of the yen as a medium of exchange, a reserve currency, and an investment currency has grown substantially since the early 1980s, the U.S. dollar and the German deutsche mark remain the dominant international currencies. Moreover, few trade contracts are denominated in yen, in spite of rising Japanese economic power in world trade. The paper explores a number of possible explanations for low yen invoice ratios, including Japanese “pricing-to-market” behavior. But as long as Japanese firms hedge exchange rate risks that arise when trade is invoiced in foreign currencies, pricing-to-market behavior does not rely on the use of particular invoice currencies. Further, BIS data indicate that the market for yen-denominated derivative products is substantial, suggesting that Japanese firms interested in hedging yen/dollar exchange rate risk have ample opportunity to do so. Hence, there remains a puzzle as to why Japan is an outlier among the G-6 in its trade invoicing practices.

Japanese invoicing practices may be partly responsible for observed J-curves. If the yen appreciates against the dollar, trade contracts are pre-set, and relative prices are left unchanged, the yen value of both Japanese exports and imports will fall. And, if the fall in the value of imports outweighs that on exports, the yen appreciation will lead to an improvement in the Japanese current account. However, the influence of currency invoicing on the J-curve is inherently short-run; over time, if Japanese firms are to stay in business, and the currency appreciation continues, export prices must rise. Over the long run, Japanese current account surpluses will fall in reaction to a yen appreciation -- and Japanese balance of payments statistics suggest that this process has begun.

Large and persistent Japanese current account surpluses serve to enhance the internationalization of the yen. Interestingly, it appears to be Japanese institutional investors, rather than Japanese banks, that have played the largest role in recycling Japanese current account surpluses and facilitating the international use of the yen. However, foreign investments by Japanese institutional investors, as well as Japanese foreign direct investments, have predominantly gone to the United States, where the share of yen
balances remains relatively small. The only region in which large external yen-denominated balances have
given to build is in Asia.

The evidence suggests that there is little reason to expect international use of the yen to increase
substantially from current levels. The United States and Germany have, over the last decade, established
records of low inflation and deregulated their financial markets, thereby strengthening the positions of the
their currencies. The U.S. dollar, in particular, appears to be widely used in part due to its history as a
vehicle currency. Moreover, introduction of the Euro at the end of the decade is likely to establish an even
stronger competitor to the yen than is the current deutshe mark. Consequently, to the extent that the limited
international role of the yen may be puzzling, this puzzle is unlikely to disappear any time soon.
Appendix


I. CORPORATE POLICY ON INVOICING

In your firm, how is it decided in which currency to invoice exports and imports?

Is there a concrete policy (decision rules)?

Is there any Japanese government, central bank, or MITI policy on this subject? If so, what are they? Are they mandatory? Discretionary?

Who is responsible for this policy, your firm or your headquarters? (level within the company/name)?

Is there any management discretion in making the determination? At what level in the company?

II. FACTORS THAT DETERMINE CURRENCY DENOMINATION OF INVOICING

In your firm, on what basis is the invoicing currency determined?

Does the determination depend on countries on the other side, type of product, timing, or other condition(s) in making the choice?

As for imports you may handle as a trading company, how is the invoicing currency determined?

Which currency is your firm in the U.S.A. using to invoice exports and imports to and from headquarters and/or Japanese firms?

If U.S. dollar denomination is being used instead of yen, what is the reason? Why isn't yen used?

Which currency is your headquarters in Japan using to deal with U.S. firms? If it is using U.S. dollar denominations, what is the reason?

Must the billed and billing party agree in advance on the invoicing currency?

A. INFLATION AND CURRENCY FLUCTUATIONS

Does the relative inflation performance of alternative currencies enter into the invoicing decision process?

If so, are there minimums/baselines/floors?
Who determines them and what are they?

Is past or prospective exchange rate volatility a factor in the invoicing decision?

B. PRICE COMPETITION

Does your firm attempt to stabilize the price of your export products measured in the buyer's currency?

Does your firm invoice in foreign currency in order to maintain a constant markup over invoice price?

C. TAXATION

Are there tax reasons to prefer one invoicing currency to another?

Are these tax reasons unique to the business/trading company?

Does the type of product have a bearing (special tax treatment)?

Does the paired company/nation for billing have an effect?

Do you have an advanced pricing agreement on transfer prices (between your firm and headquarters) with the U.S. Internal Revenue Service? If so, why? If not, why not?

Is some of the ownership of your company located in a tax haven (low tax) country? Or, does your parent company in Japan hold 100% ownership?

What determines whether you reinvest your profits or remit them as dividends? How important are tax considerations in that decision?

III. HEDGING FOREIGN EXCHANGE RISK

When you do invoice in foreign currencies, do you hedge the consequent foreign exchange risk?

Does your company participate in currency hedging operations? Is this your responsibility or is it done elsewhere in the company?

How does your company decide if currency hedging is necessary?

Are there time limits associated with hedging -- out 30, 60, 90 days? More?

If you hedge, do you hedge on an individual transaction (or contract) basis or for a bulk value of sales over a particular period?
Do you use derivative products for hedging or only forward currency contracts? If you use derivative products, what kind of products do you generally use? For 100% of the risk? How and who decides?

Do you generally borrow from your parent company or from foreign lenders? Does the currency in which you borrow influence your invoicing preferences?

IV. FACTORS THAT MIGHT LEAD TO CHANGES IN CURRENT INVOICING POLICY

What factors would lead your firm to change the invoicing currency denomination of your products?

What factors might lead you to invoice more in yen?

What factors might lead you to invoice more in foreign currency?

Has your company's invoicing policy for exports or imports changed recently?

Do you foresee any changes to the current invoicing policies in the near future?
Bibliography


Notes

1 See Krugman (1987) and Giovannini (1988).


4 See, for example, Cohen (1971), and McKinnon (1979).


6 See Frankel (1984) for a detailed description of the Yen-Dollar Agreement.

7 Further, the level of discount window lending changes at the initiative of the BOJ, rather than at the initiative of private banks (as in the United States and Germany).

8 The maturities of collateralized commercial bills were extended on the short end to one week, so that their maturities now range from one week to six months, compared with one month to six months previously; the maturities of collateralized call trading now range from overnight to one week, compared with overnight to three weeks previously. Also, the maturities of uncollaterized call trading were lengthened to a range of overnight to six months. For further discussion see Tavlas and Ozeki (1992).

9 Prior to November 1988 the daily variation in the two-month bill discount rate was typically very small, reflecting the smoothing operations of the BOJ. Since the reform, the variation in the bill discount rate, as well as other short-term rates, has markedly increased.

10 Details of the 1997 Financial System Reform are currently available on the MOF home page (www.mof.go.jp).

11 It should be noted that the Japanese yen reached a postwar peak against the U.S. dollar during the month in which the BIS conducted its 1995 survey, possibly biasing the 1995 numbers.

12 Garber (1996) makes the case that these data may not fully reflect actual central bank reserve holdings. “The data suffer from an incompleteness of coverage, as some countries that may carry weight in the
demand for yen reserves do not regularly respond to the IMF’s inquiry.” (Garber, 1996, 8).


16 Most international yen bonds are either Euroyen issues or Samurai bond issues. Samurai bonds are issued by non-Japanese residents and sold to investors in Japan under Japanese regulations, while Euroyen bonds are issued in the international offshore market.


18 Taguchi (1994).


21 Swoboda (1968), Magee and Rao (1980).


23 Eight of the companies are located in New York, three in Houston, and ten in Los Angeles.

24 “Netting entails offsetting gains on one side of a transaction against loses in another. 1996 IRS regulations permit “netting” within consolidated groups, thereby making it possible for hedging transactions undertaken by one subsidiary to offset risks undertaken by another subsidiary (or parent), with tax liabilities generated only by the net positions.

25 Proctor and Gamble and Orange County are two prominent examples.

26 In April 1994 the Ministry of Finance banned the use of a device known as historic rate rollovers. These allowed Japanese companies to delay taking a hit on loss-making forward currency contracts – agreements to buy or sell a currency at a fixed rate in the future - by selling them to friendly banks before
they expire. The banks avoided making a loss themselves by immediately selling the companies new forward contracts at the same rate. This accounting trick allowed some companies to disguise heavy losses.

In 1993, for example, Showa Shell Sekiyu, a Japanese affiliate of royal Dutch-Shell, said it had discovered that its treasury department had covered up losses of Y166 billion using this technique. The affiliate’s chairman and president subsequently resigned. (The Economist, March 26, 1994, pp.96-97).

27 See, for example, the article in the New York Times on August 29, 1993 with the headline “Japanese Moving Production Abroad”.

28 Only OTC data are presented in the tables because of the low quality of the BIS exchange traded data. Data from exchange-traded derivative markets were collected from OTC firms dealing on exchanges (rather than from the exchanges themselves) only in notional values. Total reported notional values outstanding on exchanges came to roughly one-quarter of the comparable OTC figures.


30 International trade contracts are generally negotiated three to six months before goods are delivered and nine to twelve months before invoices are paid.

31 Japan conducted a series of deregulations of foreign investment by financial institutions in the 1980s. A brief chronology of these are provided in Fukao and Okina (1989, appendix b). Although this deregulation clearly provided Japanese institutional investors greater opportunities to invest abroad, it is likely that the large scale of investment was due in large part to the high real interest rates in the United States in the 1980s.

32 Prior to December 1,1979 Japanese foreign investment was considered “direct” if Japanese owners controlled 25% or more of foreign firms.

33 Japanese FDI data is notoriously unreliable. Weinstein (1997) points out that FDI entries are recorded not on the date of investment, but on the date of acceptance by MOF (the 1980 Foreign Exchange and
Foreign Trade Control Law requires firms to notify MOF prior to the investment. There is often a time lag between time of MOF acceptance and the cash disbursement. Further, the entire value of multiple year investments are recorded on the MOF acceptance date.

34 Japanese direct investment in China jumped 61% in 1995 to 431.9 billion yen.