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The Euro and Developing Country Finance

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Abstract

More than six years after the introduction of the euro, impacts on developing countries have been relatively modest. Overall, the euro has become much more important in debt issuance than in official foreign exchange reserve holdings. The former has benefited from the creation of a large set of investors for which the euro is the home currency, while demand for euro reserves has been held back by the dominance of the dollar as a vehicle and intervention currency, and the greater liquidity of the market for US treasury securities. Fears of dollar decline may fuel some shifts out of dollars into euros, however, with the potential for a period of financial instability.

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1. Introduction

Six years after the introduction of the euro (on January 1st, 1999), its effect on developing country finances and exchange rate regimes has been relatively modest. How the introduction of the euro would transform the monetary system was widely debated during the late 1990s. Some suggested greater volatility of the dollar/euro rate than the dollar/DM or dollar/FFranc rates, for instance, because the euro economy was more closed (Bénassy-Quéré et al., 1997), others to the dangers that a bi-polar world might be more unstable and require more policy coordination than one with the “hegemonic stability” provided by the dollar (Bergsten, 1997). Honohan and Lane (2001) expected that the euro would provide an attractive anchor currency for African countries wanting to peg. In the event, changes to the functioning of the international monetary system have, so far, been relatively small.

As described below, bond issuance in euro has developed much more rapidly than reserve currency use, for reasons we will explore. Even for bond issuance, so far the large expansion of euro denominated paper has come from the advanced countries, and developing countries (except those which are new or potential European Union members) has been small.

However, the hegemony of the dollar as a reserve currency is being questioned because of fears that the dollar may have to depreciate substantially to restore sustainability to the US balance of payments—given a current account deficit equal to 6 percent of US GDP and net foreign liabilities (at market value) in excess of 20 percent of GDP. Prospects for the US currency or balance of payments are not the subject of this
paper. Instead, it considers the current role of the euro in developing country finance and prospects for the future, focussing on debt issuance and reserve currency use.

2. The Role of the Euro in Developing Country Finance

Since its introduction on January 1, 1999, the euro has assumed an important international role, but to varying extents depending on the dimensions one considers. Money can serve a number of international functions: as the currency in which exports and imports or external assets are denominated, as a vehicle currency for foreign exchange transactions, and as a component of official foreign exchange reserves, among others. In its latest annual review of the international role of the euro, the European Central Bank has highlighted the fact that bond issuance in euros far exceeds that in the legacy currencies (i.e., the national moneys of euro-area countries that were replaced by the euro). The explanation for this change lies in the effect the introduction of the euro has had in creating a single market for debt instruments in euro across a dozen countries. This is a notable change relative to the segmented markets that existed before, since a French investor purchasing bonds denominated in deutsche marks, for instance, took on exchange risk, which was also true for a German investor buying franc-denominated bonds. The elimination of intra-euro-area exchange risk has created a market for euro-denominated securities that rivals in size the US market for dollar securities. As a result, a potential issuer of bonds faces comparable terms, whether it issues in dollars or euros: underwriting fees are comparable (or may in fact be lower for euro issues\(^1\)), and so is market liquidity for comparably sized issues. Issuance in euro increased rapidly; already in 1999, the euro was approaching the importance of the dollar. According to Bloomberg

\(^1\) See “Deutsche Bank Ousts Citigroup: Demand for euro-denominated issues puts sales on a record pace for 2005,” *Bloomberg Markets*, November 2005
figures, in 2003 international issuance in euro surpassed that in dollars, and by 2005 the euro accounted for about 60 percent of international bond issuance, compared to 30 percent for the dollar.

However, the issuance of euro has been primarily by private sector entities in the advanced countries rather than developing country sovereign or non-sovereign issuers. And developing country issues are concentrated among European countries, especially those that are recent or prospective EU members. Table 1 gives a breakdown of amounts issued in euros by developing countries since 2003.

While the amount issued by Eastern Europe borrowers is significant, the issuance by countries in other regions is very modest. The exact definition of international bonds also makes a difference for the ranking of the two currencies, and the ECB takes a more conservative definition, in effect treating the euro area as a single country, so that international euro issues from countries within the euro area are excluded. This definition suggests a somewhat greater share for the dollar than for the euro (see Table 2). Whatever their relative importance, it remains that the euro has very quickly rivalled the dollar in bond issuance. But if we compare the issuance during the last 2 ½ years by developing countries in Table 1 with Table 2, we see that euro issuance by developing countries outside Eastern Europe ($25 billion, or $10 bn. annually) is only one-twentieth of the total issuance of euro-denominated bonds.

In other dimensions, the international role of the euro has developed less rapidly (Galati and Tsatsaronis, 2003). In foreign exchange markets, the euro’s role is roughly the same as the deutsche mark in the past. The dollar is a much more important vehicle currency, appearing as one of the currencies in a foreign exchange market trade more
than twice as often as the euro. The dollar was one of the two currencies in forex transactions in 96 percent of all currency trades in 2004, and the euro only 44 percent.\textsuperscript{2}

As for exports and imports of goods and services, the euro’s role in invoicing and settlement has seen notable increases in the past two years for euro area countries’ trade outside the euro area, as well as for the trade of EU new member states\textsuperscript{3}. Thus, the euro’s role at present seems to be regionally focussed. More widely, however, the dollar retains its dominant role in international trade, with many commodities, most notably energy products, being denominated in dollars.

Turning to the use of the euro as a reserve currency, the ECB report emphasizes the modest increase in euros in other countries’ reserves, the US dollar remaining, in 2003, by far the most important reserve currency by a factor of about 3 to 1: for all countries, dollar holdings constituted 64 percent of the total, and the euro 19.7 percent—the rest consisting of Japanese yen, pound sterling, Swiss francs, and unspecified currencies. For developing countries the proportions between dollar and euro were similar, though each had a share that was slightly lower, and the share of unspecified currencies was higher.

New data, published in the IMF’s 2005 Annual Report, give a somewhat different picture, however. These data distinguish between additional reserve currencies and countries that did not report (something that was not done in earlier IMF calculations), and the data rely less on the use of estimation techniques to fill gaps. Data for developing countries were particularly likely to be estimated in previous IMF publications, given more frequent non-reporting of data. The new data give substantially higher shares for

\textsuperscript{2} See ECB (2005), p. 29.

\textsuperscript{3} See ECB (2005), chapter 4.
both the dollar and the euro, but particularly the latter. As seen in Table 3, the edge of
the US dollar on the euro, though substantial, is considerably less with the new IMF data.
For developing countries, euro holdings at end 2004 constituted 29.2 percent of reserves,
compared to 59.9 percent for the US dollar—the US dollar’s advantage roughly 2 to 1,
not 3 to 1.

The stock data include both quantity changes and price changes (Table 4): the
euro benefited from increased valuation (due to the appreciation of the currency against
the SDR), and the dollar suffered from reduced valuation. The quantity increases, 2004
versus 2003, are much more heavily in favour of the dollar (SDR 176 billion versus SDR
29 billion) than either the change in raw reserves or the stock of reserves. As pointed out
for 2003 by the ECB report, this reflects the fact that much of the reserve accumulation
that occurred was done by countries, like China, with currency pegs to the US dollar, or
other Asian countries de facto limiting fluctuations of their dollar exchange rates, rather
than those countries, mainly in Europe, that use the euro as an anchor\textsuperscript{4}. In considering
prospective reserve use in section 4 below, it will be noted that that situation has persisted
through 2005, as much of the reserve accumulation has again been by Asian countries or
by oil exporting countries, whose main export is priced in dollars and whose currency is
in many cases either linked to the dollar or to a basket of currencies where the dollar has
the preponderant share.

3. The Demand for Reserves and External Debt, and Its Currency Composition

a) The Level of Reserves and External Debt

Projecting the use of the euro requires first an analytical framework for understanding
the reason for the accumulation of reserves. In this regard, a puzzle has been the
continued accumulation of reserves by emerging-market developing countries despite their official move to greater exchange rate flexibility. In recent years, East Asia in particular has continued to accumulate large reserves, and, as described in section 2, China is one of the top two holders of foreign exchange reserves (with Japan). Other East Asian economies, such as Hong Kong SAR, Malaysia, and Singapore also hold large reserves (Chart 1), as well as Korea and Taiwan POC.

There are three principal contenders for explaining the large accumulation of reserves in Asia: 1) buffering exports and imports, 2) a “new Bretton Woods system” with Asian countries deliberately undervaluing their currencies and accumulating US dollar claims, and 3) a precautionary demand for reserves to counter “sudden stops” of external financing.

The traditional literature (Frenkel and Jovanovic, 1981) has stressed the buffer stock role of reserves, to meet liquidity needs in the face of stochastic export and import flows. However, as pointed out by Aizenman and Marion (2002), this theory does not explain the rapid growth in foreign exchange reserves in Asia since 1998, especially since that period has been characterized by a benign international environment accompanied by greater exchange rate flexibility than previously, if not for China or Hong Kong, at least for the other emerging market countries of the region.

An alternative theory, characterized as “mercantilism” or “the New Bretton Woods System,” and due to Dooley et. al. (2003), associates Asian countries’ reserve accumulation with a deliberate attempt to maintain undervalued currencies so as to export to the United States and achieve domestic “export-led” growth. They liken this system, in which their trade surpluses with the United States are then recycled to the US in the

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4 ECB (2005), p. 54.
form of accumulation of US treasury securities (held as reserves by the Asian countries) to the relation between the center country (the US) and the periphery (the rest of the world) during the period of fixed but adjustable parities in force between 1945 and 1973. The rest of the world wanted to accumulate reserves in the form of claims on the reserve currency country, the United States, and this permitted the latter to run a balance of payments deficit since it financed world reserve growth.

However, the parallel with the earlier period is imperfect, as in that period the United States typically ran current account surpluses, not deficits; it was the capital account that was in deficit. The US in effect played the role of financial intermediary, providing international liquidity in the form of short-term, relatively riskless and liquid assets that served in part as official foreign exchange reserves in the rest of the world, the US for its part accumulating longer term claims on the rest of the world. In the current situation, rather than being just an intermediary, the US is using external financing to consume more than it produces, running a current account deficit which attained $800 billion in 2005. Moreover, the export-led strategy of East Asian countries is not new, while the vast accumulation of reserves by Asian emerging market countries is a phenomenon that is comparatively recent, that is, since 1998.

A third model, due to Aizenman and Marion (2002, 2004), links reserve holdings to the precautionary accumulation of reserves not to cushion variability of current account flows, but rather to guard against capital account crises—the “sudden stops” to which

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5 As a result of the maturity mismatch, in part, the US earns more on its foreign assets than it pays on its foreign liabilities. See Gourinchas and Rey (2005).
they were subject during the devastating financial crises of 1997-98. Thus, they put forward a model in which both external borrowing and holding of reserves are the result of an optimizing decision by countries, in the face of volatility in the balance of payments. If default is ruled out, then only the net position (reserves minus external debt) is relevant; but in the face of possible default, the demands for each of them individually are identified. Foreign exchange reserves (those at least that are not attachable by foreign creditors) would allow the country to face the sudden stop of further capital inflows without a severe contraction in imports and resulting output crash—which is what they suffered in 1997-98.

Such a model has the advantage of giving an explanation of the reserve behavior of East Asian countries during the last few years, but the link between reserves and the possibility of default seems too simplistic. In particular, it is not so much the risk of default as the possibility of facing disadvantageous conditions if trying to borrow on international capital markets that makes holding reserves attractive. Moreover, Aizenman and Marion’s model does not give a ready prediction (without considerable additional empirical work) of the level of reserves that would be adequate to meet the precautionary need. Presumably, after having built up an adequate stock, further accumulation (except that which would allow for trend growth) would be unnecessary. Finally, the story does not seem to fit very well the case of the largest emerging market holder of reserves, China, which has little external debt and which did not suffer a crisis in 1997-98. Despite this, it has continued to accumulate reserves which now approach $1 trillion.

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6 This is also the explanation given by Federal Reserve Board Chairman Bernanke for the large current account deficits of the United States. See “The Global Saving Glut and the US Current Account,” Federal Reserve Bank of New York, October 2005.
Prasad and Wei (2005) examine the Chinese capital account and reserves in some detail. They tend to reject the “mercantilist” explanation of Chinese reserve accumulation. Instead, they link the recent accumulation with the occurrence of “hot money” inflows that have evaded capital controls and that may be speculating on an appreciation of the renminbi. However, those inflows are covered many times over by the stock of reserves, so that their explanation is also incomplete.

Genberg et al. (2005) also throw doubt on the hypothesis that Asian currencies are being deliberately undervalued, and link reserve accumulation to portfolio inflows. They find only weak evidence that Asian dollar reserve accumulation has any important effect on keeping US interest rates low.

b) Currency Composition

The theoretical literature on the currency denomination of debt and reserves focuses on the advantages of cushioning the stochastic fluctuations of exports and imports by hedging their currency exposure. However, this focus is not completely satisfactory. As argued above, liquidity is also important, and it is likely to be more important for holding reserves than debt issuance. Liquidity of the secondary market for debt will be important for purchasers of that debt, but not necessarily for the issuer, and it is the latter that determines the choice of currency (albeit in response to the cost of issuing in the different currencies). In contrast, the official holders of reserves potentially need to be able to access them quickly and in difficult market conditions, where the ability to turn reserve assets into cash for intervention purposes at the prevailing market price will be of the first
importance. Thus, the fact that the liquidity of markets for euro-denominated government debt is limited by the existence of a number of different national issuers, when compared to the US treasury, helps to explain why the role of the euro in foreign exchange reserves has lagged its development as a currency for debt issuance, relative to the dollar.

Theoretical models that consider optimal portfolio composition in terms of a mean-variance, or capital asset pricing, models, typically equate debt issuance with negative reserve holding. For instance, Claessens (1992) treats the two as being part of the same decision, and he analyses the optimal currency composition of the net debt position (external debt minus foreign exchange reserves). Thus, the optimal portfolio takes into account the variations of a country’s export and import prices, and how they are related to the variance of reserve currencies. The optimal portfolio consists of a speculative portfolio (whose weight depends on the degree of risk aversion of the investor), a minimum variance portfolio, and a hedging portfolio that depends on covariances of the assets with commodity prices. His analysis, applied to Mexico and Brazil, gives very volatile portfolio proportions due to changing covariances. This prediction does not square well with the well-known stability of countries’ reserve assets. Though central banks could presumably use currency swaps and dynamic hedging techniques to achieve that optimal portfolio, they do not typically seem to do so.

Thus, diversification models seem more applicable to the denomination of debts rather than reserves, and this is indeed the primary focus of Claessens’ article. He calculates the risk-minimizing hedging portfolio for Brazil and Mexico for the period

7 In this regard, reserves need to be distinguished from other assets held by the official sector which are held primarily for investment purposes, as opposed to foreign exchange
1973-89, finding that both countries should have borrowed primarily in US dollars (borrowing negligible quantities of deutsche mark, and holding small amounts of reserves in yen). Kool (2000) calculates the optimal bond portfolios of investors resident in the euro area, the UK, Japan and the US, using a mean-variance model and each country/region’s currency as numeraire. Not surprisingly, each of the countries/regions would, according to the optimal portfolio allocation, hold a preponderance of the bonds issued in its own currency (because this would eliminate an important source of fluctuation of returns, due to the volatility of nominal exchange rates).

Another interpretation of the application of portfolio diversification models to reserve choice is to assume that the implied optimal portfolios should approximate the long-run choices of central banks, after inertia has worked itself out. Inertia could potentially be due to a variety of causes, including, perhaps, the slow development of market liquidity. Thus, the optimal portfolios, when compared to actual reserve holdings, could give an indication of long-run trends in the composition of reserves. This was the interpretation given in Masson and Turtelboom (1997), where a mean-variance model with historical returns were used to calculate optimal reserve holdings, in dollars, yen, and euros. In order to consider global reserve demand, returns were expressed in terms of the SDR, chosen as the numeraire. The study gave an optimistic assessment of the demand for euro reserves after lags had worked themselves out: the optimal portfolio suggested a greater potential role for the euro than for its legacy currencies (in particular the deutsche mark), and one comparable to the US dollar.

Since both Masson and Turtelboom (1997) and Kool (2000) relied on data for the deutsche mark (and other European currencies replaced by the euro), rather than for the

market intervention. See below.
euro itself, now that we have more than six years of data on euro returns the exercise merits being redone. Table 5 lists the monthly returns $R$ to holding assets paying the one-month Libor rate $r$ on US dollars, euros, pound sterling, and Japanese yen, respectively, over the period January 1999-September 2005, expressed as an ex post annualized return in SDRs using the monthly change in the SDR spot exchange rate $S$, that is

$$R = ((1 + r/100) \cdot (S_{t+1} / S)^{12} - 1) \cdot 100$$

Average returns from holding pounds sterling are the highest, followed by euro returns; both of these currencies appreciated against the SDR over the period. Returns to holding US dollars are somewhat lower, reflecting depreciation of the dollar over this period, while returns on yen were depressed by very low nominal interest rates. However, the US dollar benefits from the lowest variability among the currencies. There is also a strong negative covariance between dollar and euro returns.

Suppose that these four currencies (which are the components of the SDR) constitute the set of available assets for the portfolio of reserves, and that a country’s imported consumption basket is composed of the goods of the US, UK, Japan and the euro area in the same proportions as they appear in the SDR basket. Assuming that all assets are risky, and that holders of reserve assets are risk averse, the mean-variance model implies that a reserves portfolio should be allocated among the four currencies in proportions embodied in the vector $x$ given by

$$x = \Omega^{-1} \rho / 1' \Omega^{-1} \rho$$
where $\rho$ is a vector of expected real returns, $\Omega$ is the covariance matrix of returns, and $I$ is a vector of ones. By construction the proportions $x$ sum to unity, i.e.

$$I'x = 1$$

Using the realized returns, expressed in terms of the SDR, minus the rate of inflation on the SDR (the consumer price indexes for the US, UK, Japan and the euro area, weighted together), we can calculate such a country’s optimal reserves portfolio. Interestingly, despite higher ex post returns to holding euros than dollars, the optimal portfolio calculated using this model gives a much lower proportion for the euro than for the dollar. In addition, when compared to the weights embodied in the SDR (using September 2005 exchange rates), the euro’s optimal portfolio weight is 5 percentage points lower, sterling’s 2 percent higher, and the yen’s about equal, while the dollar’s optimal share (43 percent) is 3 percent above its SDR weight (40 percent). The proportion for the euro is significantly below that calculated for the deutsche mark in Masson and Turtelboom (1997), despite a similar methodology. The reason is that in that study, the mean returns (calculated over 1981-95) on both deutsche mark and yen were considerably higher than dollar returns, and they were less variable as well. The calculated optimal portfolio suggested roughly equal shares for the dollar and euro (about 38 percent), and a lesser one for the yen (about 23 percent)\(^8\).

Nevertheless, in Table 5 the proportion of euros in the optimal portfolio is second only to the dollar, as is the case for the SDR weighting. Actual reserve holdings, as described above, show that at present, the euro has a considerably lower weight than that

\(^8\) The pound sterling was omitted, and no other reserve currency was considered.
predicted by such a mean-variance exercise. It is clear that other factors are at work for reserve choice in addition to diversification.

Historical returns may of course not give a good indication of what returns will be on these four currencies in the future. In particular, the large US current account deficit has raised fears that the value of the US dollar may fall further in international currency markets. Such an expectation might produce a shift away from dollar reserves in favor of euros. It is somewhat surprising, however, that there is little evidence that such a shift has occurred yet. In addition, the mean-variance exercise when applied to individual countries would use that country’s consumption basket, which would no doubt differ from the SDR basket. It is likely to give widely differing portfolio weights for different countries. What is striking, however, is that in actuality the dollar seems to be a most important part of almost all countries’ reserves, except those countries that peg to another currency—such as those that peg to the euro.

c) Reasons for Inertia in Reserve Holdings

It has long been recognized that reserve currency use evolves slowly, the prime example being the time it took the US dollar to overtake sterling as the world’s major currency, despite the fact that the US economy had overtaken the UK’s in size long before. Several reasons have been adduced for that inertia (see Cohen, 2000). Most important is that holdings of reserve currency reflect the currency’s importance in other dimensions: denomination of trade, anchor currency, vehicle for trading in foreign exchange markets, store of value, etc. Since each of these uses, to a greater or lesser extent, evolves slowly, then the incentives for changing reserve currencies are likely to
develop even more slowly. Hence the incumbent is likely to dominate over any challengers for a long time.

A further issue, as Cohen (2000) notes, is that choosing an alternative currency is a risky option for any individual holder, since it depends for its success on others also deciding to use that currency. In other words, there are network externalities, and such externalities may justify history dependence and multiple equilibria in the use of a medium of exchange.

Finally, switching out of the incumbent reserve currency may induce adverse exchange rate movements, so that large holders may be reluctant to do so openly. Such a consideration may be important in the current context for large official Asian holders of US dollars, who seem to be very cautious about suggesting any diversification away from dollar holdings—especially in the light of the publicity given to statements from the Bank of Korea of its intention to diversify.

d) Liquidity

The introduction of the euro has had an important effect in integrating European markets for both government and private-sector bonds (for an assessment, see Pagano and von Thadden, 2004; and Galati and Tsatsaronis, 2003). Most dramatic has been the convergence of bond yields due to the elimination of intra-euro-area exchange rate risk. The ability of investors to invest across borders without taking on exchange rate risk has allowed the creation of pan-European markets for securities, increasing liquidity and permitting better diversification of risks. However, securities issued by different borrowers remain imperfect substitutes. This is obvious in the case of commercial issuers
with different ratings, but is also true of the market for government bonds, where (small) differentials associated with different credit risks remain.

The creation of a euro-area wide market for debt securities by a particular issuer has fundamentally changed the perspective of non-euro area borrowers. While before the euro their potential market if issuing in a European currency was the investors in that country, or those outside it willing to take on exchange risk, now they benefit equally from demands on the part of investors in all the euro area. This lowers transactions costs and increases liquidity in the secondary market for debt. More importantly for the issuer, competition among underwriters in bringing new issues to market has lowered fees, with the expansion of the number of institutions involved. Bloomberg data indicates that the average fee for selling international bonds has declined by a factor of two since 1999, and is lower in Europe than elsewhere: “… in Europe we have 10-15 banks bidding for each deal, and you always have somebody in the business in the mode of building a business, and they tend to undercut fees…”

While the effect on liquidity and transactions costs has been dramatic, its effect has been much more important for the incentives to issue debt than for the holding of euro reserves. While the liquidity of the debt of any given issuer has increased, it has not created a market for government securities with the liquidity of the market for US treasuries. Debt issues by Germany, France, and Italy remain imperfect substitutes, so that the price impact of selling reserve holdings in euros is greater than it would be for selling dollar reserves held in US treasury securities. As Cooper (1997) argued before the introduction of the euro, the attractiveness of the US dollar as a reserve currency is in

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large part derived from the existence of a deep and liquid market in US treasury securities, and in particular in treasury bills: “Amounts measured in billions of dollars can be bought or sold readily, 24 hours a day, anonymously, without influencing the price of the outstanding bills … There is nothing comparable to this market on the European continent, or in Japan, and there is not likely to be for decades to come.”

The short-term government paper market has suffered from the preference of the German government for longer-term securities; France and Italy have large markets for government debt, but nothing comparable to that in the United States. No single euro zone country establishes benchmarks for bonds across the maturity spectrum. In addition, long-term bond markets have been more liquid in the United States: at end-1997, bid-asked spreads for on-the-run 10 year government bonds in secondary markets were only 3 basis points in the United States, compared to 4, 6, and 10 basis points in Germany, Italy and France, respectively.

More recent data suggest that the bid-asked spreads on bunds are now more similar to those on US treasuries, but volumes remain lower. The relative scarcity of short-term German government paper remains a problem, as do national differences in the treatment of collateral for the repo market (Galati and Tsatsaronis, 2003).

**4. Prospects for Further Development of the Use of the Euro**

While the existence of a large pool of euro investors will continue to make debt issuance in euros attractive for developing countries, inertia in reserve currency use and limits on the liquidity of short-term euro instruments will continue to retard the

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12 I am grateful to Gabriele Galati for this information.
development of the euro as an international currency for use in exchange market intervention and reserve holdings. The fragmented nature of the European markets for government bonds remains, despite the creation of the euro. This has led to the following assessment by Ben Bernanke: “The European government bond market has been substantially strengthened by the adoption of the common currency, but it has not attained the liquidity of the U.S. Treasury market (and may never do so). Although aggregate issuance of euro-zone government debt is of the same order of magnitude as U.S. Treasury issues, there remains the fundamental difference that euro-zone debt is the debt of twelve sovereign entities, rather than one as in the United States. Moreover, so far coordination of issuance schedules, the structure of issues, and other technical details has been limited.”

It is possible to imagine innovative solutions that would increase the liquidity of European markets, for instance the creation of a single issuer of government short term paper, as proposed by Alexandre Lamfalussy. However, the prospect for such an institution, which presumably would buy up a significant amount of the euro area governments’ issues, seems distant. As Galati and Tsatsaronis (2003) note, creating such an agency would imply shared responsibility for servicing government debt—contrary to the spirit of the Maastricht Treaty.

It is important to distinguish the holding of reserves for intervention purposes from those that constitute an investment portfolio, where rates of return rather than liquidity are most important. Such an allocation of reserves to different purposes may not in fact be done explicitly by those who manage them, but the size of reserves held by a

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number of Asian countries (Chart 1) exceeds the amount that would be needed on a day-
to-day basis to smooth shortfalls of receipts of foreign currencies and to provide liquidity
to the foreign exchange market. China and Japan each have reserves in excess of $800 billion dollars, while other emerging Asian economies have reserves of around $100 billion. The size of China’s and Japan’s holdings dwarfs that of any of the other industrial countries.

If reserves are held as part of an investment portfolio, then the mean-variance considerations that produce a larger share for the euro than is indicated by the actual data (Table 5) would be expected to come into play. There are several reasons why official reserves may have such an investment purpose. For instance, countries may want to hold external assets in order to diversify away country-specific risks. This is especially true of small economies like Singapore or Hong Kong, and indeed diversification may involve acquiring a wider range of assets, including equities. In Korea’s case, reserve accumulation has also been linked to the eventual financial needs for reconstruction of North Korea, in the anticipation of the reunification of North and South Korea.

a.) Exchange Rate Pegs

A country with a currency board and an exchange rate peg to a single other currency needs to back its monetary base with assets denominated in that anchor currency. Hence there is demand for euro reserves on the part of some of the new members of the European Union, like Estonia. In Argentina, when the Convertibility

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Law, guaranteeing a fixed exchange rate between the peso and the US dollar, was in place, reserves needed to be held in US dollars.

The situation is somewhat different for countries with exchange rate pegs that do not mandate that the monetary base must be backed one-for-one by foreign exchange reserves, or for cases like Hong Kong where reserves are held in excess of the backing needed for the monetary base. For instance, China’s liquid reserves held for intervention purposes could be held in US dollars, but China’s reserves for investment purposes could be in a range of currencies. Total reserves exceed the amount needed for intervention purposes by a substantial amount, even were the renminbi’s peg to the US dollar continue. Even if initially acquired in the form of US dollar reserves, those reserves could be swapped into another currency. Euro assets could constitute an attractive alternative to US dollar assets in this regard.

b) Moves to Greater Exchange Rate Flexibility

The demand for foreign exchange reserves for intervention purposes itself can be expected to decline, given a trend toward greater exchange rate flexibility among emerging market economies. Over the past decade, Mexico, Russia, Brazil, and Argentina have abandoned fixed or crawling pegs and moved to flexible exchange rates. Asian NIEs have also generally introduced more flexibility into their de facto pegs or managed floats. China’s need to accumulate dollar reserves would fall sharply if it allowed the renminbi to float upward in the face of current and capital account surpluses. China’s announced policy of moving to greater flexibility would reduce the need for intervention, by limiting it to the smoothing of fluctuations. The size of reserves needed
might then resemble those of European central banks, for instance, which are much lower as a share of GDP.

While dollar peggers are becoming fewer, the process of euro-area enlargement is producing more peggers to the euro. The 10 new EU member countries admitted on June 1, 2004, and prospective new EU members are expected eventually to join the euro area. Doing so requires membership for at least two years in the exchange rate mechanism of the European Monetary System (ERM II), with a central parity fixed in terms of the euro and maintenance of the rate within intervention bands. These countries, though relatively small in economic size, hold much of their reserves in euros, and that proportion is likely to increase (ECB 2005, pp. 54-55), fuelling demand for euro reserves.

c) Implications of a Bi-polar Currency World for Developing Countries

The effect of the introduction of the euro on developing countries has so far been muted. The euro has become important in some dimensions but not all—as discussed above. A recent assessment of the reserve currency role of the euro concluded: “Under any plausible scenario, the dollar will remain far ahead of the euro and other potential challengers for many years” (Chinn and Frankel, 2005, p. 20). The advent of a bi-polar world, has not (yet) occurred. As for exchange rate volatility, though the euro not fluctuated about 15 percent more than the deutsche mark over the previous 7 year period (comparing the standard deviation of changes in SDR exchange rates—see Table 6), this is not the qualitative change in the international monetary system that some had feared. Despite swings in currency values, monetary policy coordination between Europe and the United States has not been on the agenda. Instead, both areas have oriented their
monetary policies to domestic inflation and activity, and low inflation has led to historically low interest rates on both sides of the Atlantic.

Nevertheless, the implications of the launch of the euro for developing countries are already important. The availability of the euro as an alternative to US dollar borrowing allows better hedging of risks. Given the importance of trade with the euro area, hedging of terms of trade fluctuations would optimally give a substantial weight to the euro in external debt. At present, outside the countries geographically close to the euro area, sovereign debt issuance in euros has been small (ECB, 2005). Such a situation can be expected to change over time. As well as hedging trade fluctuations, a mix of debt in euros as well as dollars would decrease the effect of changes in US monetary policy on developing countries’ debt service obligations, and on their ability to repay, which is substantial at present (Dailami et al., 2005). While holding euro debt would correspondingly subject developing countries to unexpected movements in the ECB’s monetary stance, since dollar and euro interest rate movements are not perfectly correlated, there is something to be gained from diversification.

In projecting reserve holdings by currency, most observers expect an increase over time in the importance of the euro. While noting that reserve currency use is subject to inertia, Eichengreen and Mathieson’s (2000) empirical results using pre-euro data show that the currency denomination of debt is a strong predictor of reserve currency use. Thus, greater use of euro currency debt issuance may well go hand-in-hand with increased holdings of euros in reserves. Another factor that may in the future weigh heavily on the dollar is the size of the US current account deficit and the anticipated need for a real effective depreciation of the dollar to help correct that deficit. While the range
of estimates of dollar depreciation is wide, an extended period of dollar depreciation might produce widespread shifts out of nominal dollar-denominated assets, to the benefit of the euro. Chinn and Frankel (2005) consider various scenarios for future reserve currency use, and those with dollar depreciation as well as UK membership in the euro zone see the euro overtaking the dollar by 2020.

From the point of view of the diversification possibilities available to developing countries, the emergence of a large and deep market for euro securities is no doubt welfare improving. Development of financial assets on a comparable scale to the euro area’s share of global production and trade allows hedging of real-side fluctuations. The euro provides a potential anchor currency for those countries wanting to peg to a stable currency with a wide domain of circulation. From this perspective, the emergence of a bi-polar world is not a reason for concern.

However, a bi-polar world may produce occasional large movements in exchange rates that have serious consequences for developing countries. Policy coordination among the euro area and the United States could then be crucial to prevent disorderly markets and financial instabilities. Policy coordination may not be necessary in normal times between the dollar area and the euro area, when floating exchange rates, accompanying monetary policies that are oriented primarily to achieving domestic targets for inflation and economic activity, do their job in facilitating adjustment to different shocks hitting the two regions. More problematic are times when there are reasons to be concerned about the sustainability of existing exchange rates. In those times, policy coordination may be desirable to limit the rapidity of exchange rate movements and prevent disorderly markets. This was the situation in the mid-1980s, when the US dollar
was widely perceived to be overvalued, and the Plaza Agreement of September 1985 helped bring about a “soft landing” of the dollar. The current situation resembles in some regards the earlier period. Developing countries would suffer from such instability, and hence have a shared interest in seeing cooperation in international monetary relations between the euro and dollar zones. This may be especially true now, when countries’ reserves and international borrowings are predominantly in dollars.
References


Chinn, Menzie and Jeffrey Frankel (2005), NBER Working Paper No. 11510, Cambridge, MA.


Table 1. Issuance of Euro-Denominated Bonds by Developing Countries, 2003-Sept. 2005

<table>
<thead>
<tr>
<th>Region</th>
<th>Total Amount Issued (Euro bn.)</th>
<th>Avg Maturity (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Europe</td>
<td>30.33</td>
<td>10.7</td>
</tr>
<tr>
<td>Middle East/Africa</td>
<td>3.95</td>
<td>9.0</td>
</tr>
<tr>
<td>Asia</td>
<td>3.83</td>
<td>7.4</td>
</tr>
<tr>
<td>South Asia</td>
<td>0.11</td>
<td>5.0</td>
</tr>
<tr>
<td>North America</td>
<td>3.24</td>
<td>11.6</td>
</tr>
<tr>
<td>Central America</td>
<td>0.55</td>
<td>7.5</td>
</tr>
<tr>
<td>South America</td>
<td>13.54</td>
<td>21.8</td>
</tr>
<tr>
<td>Total</td>
<td>55.55</td>
<td>13.1</td>
</tr>
</tbody>
</table>


Table 2. Net Issuance\(^1\) of International Debt Securities, in billions of US dollars

<table>
<thead>
<tr>
<th>Currency</th>
<th>2002Q3-2003Q2</th>
<th>2003Q3-2004Q2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euro</td>
<td>156.6</td>
<td>206.6</td>
</tr>
<tr>
<td>US dollar</td>
<td>155.2</td>
<td>285.1</td>
</tr>
<tr>
<td>Japanese yen</td>
<td>-34.8</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Source: ECB (2005), Table 1.  
1/ Excluding home country issuance.
Table 3. Composition of Foreign Exchange Reserves, end of year, in percent

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
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<td><strong>All countries</strong></td>
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<td></td>
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<tr>
<td>US dollar</td>
<td>71.0</td>
<td>70.5</td>
<td>70.7</td>
<td>66.5</td>
<td>65.8</td>
<td>65.9</td>
</tr>
<tr>
<td>Euro</td>
<td>17.9</td>
<td>18.8</td>
<td>19.8</td>
<td>24.2</td>
<td>25.3</td>
<td>24.9</td>
</tr>
<tr>
<td>Japanese yen</td>
<td>6.4</td>
<td>6.3</td>
<td>5.2</td>
<td>4.5</td>
<td>4.1</td>
<td>3.9</td>
</tr>
<tr>
<td>Pound strlg.</td>
<td>2.9</td>
<td>2.8</td>
<td>2.7</td>
<td>2.9</td>
<td>2.6</td>
<td>3.3</td>
</tr>
<tr>
<td>Swiss franc</td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
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<tr>
<td>other</td>
<td>1.6</td>
<td>1.4</td>
<td>1.2</td>
<td>1.4</td>
<td>1.9</td>
<td>1.8</td>
</tr>
<tr>
<td><strong>Industrial countries</strong></td>
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<td></td>
<td></td>
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<tr>
<td>US dollar</td>
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<td>72.5</td>
<td>72.7</td>
<td>68.9</td>
<td>70.5</td>
<td>71.5</td>
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<tr>
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<td>17.1</td>
<td>18.0</td>
<td>22.4</td>
<td>22.1</td>
<td>20.9</td>
</tr>
<tr>
<td>Japanese yen</td>
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<td>6.5</td>
<td>5.6</td>
<td>4.4</td>
<td>3.8</td>
<td>3.6</td>
</tr>
<tr>
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<td>2.0</td>
<td>1.9</td>
<td>2.1</td>
<td>1.5</td>
<td>1.9</td>
</tr>
<tr>
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<td>0.2</td>
<td>0.3</td>
<td>0.6</td>
<td>0.2</td>
<td>0.1</td>
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<tr>
<td>other</td>
<td>1.4</td>
<td>1.6</td>
<td>1.5</td>
<td>1.7</td>
<td>1.9</td>
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<td></td>
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<tr>
<td>US dollar</td>
<td>68.2</td>
<td>68.2</td>
<td>68.6</td>
<td>64.0</td>
<td>60.7</td>
<td>59.9</td>
</tr>
<tr>
<td>Euro</td>
<td>19.9</td>
<td>20.6</td>
<td>21.8</td>
<td>26.1</td>
<td>28.9</td>
<td>29.2</td>
</tr>
<tr>
<td>Japanese yen</td>
<td>6.0</td>
<td>6.0</td>
<td>4.9</td>
<td>4.7</td>
<td>4.4</td>
<td>4.3</td>
</tr>
<tr>
<td>Pound strlg.</td>
<td>3.7</td>
<td>3.6</td>
<td>3.6</td>
<td>3.8</td>
<td>3.9</td>
<td>4.8</td>
</tr>
<tr>
<td>Swiss franc</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>other</td>
<td>1.7</td>
<td>1.3</td>
<td>0.9</td>
<td>1.2</td>
<td>1.9</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Table 4. Changes in US Dollar and Euro Foreign Exchange Reserves: Decomposition into Price and Quantity Effects, in billions of SDRs, end year

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US dollar</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in holdings</td>
<td>80.4</td>
<td>90.6</td>
<td>51.5</td>
<td>-8.8</td>
<td>95.9</td>
<td>128.3</td>
</tr>
<tr>
<td>quantity</td>
<td>64.6</td>
<td>51.2</td>
<td>21.9</td>
<td>58.3</td>
<td>176.9</td>
<td>176.1</td>
</tr>
<tr>
<td>price</td>
<td>15.9</td>
<td>39.4</td>
<td>29.6</td>
<td>-67.1</td>
<td>81.0</td>
<td>-47.8</td>
</tr>
<tr>
<td>Year-end value</td>
<td>711.6</td>
<td>802.2</td>
<td>853.8</td>
<td>845.0</td>
<td>940.9</td>
<td>1069.2</td>
</tr>
<tr>
<td><strong>Euro</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in holdings</td>
<td>44.3(^1/)</td>
<td>34.0</td>
<td>25.8</td>
<td>67.5</td>
<td>54.8</td>
<td>42.1</td>
</tr>
<tr>
<td>quantity</td>
<td>64.8</td>
<td>37.8</td>
<td>29.5</td>
<td>41.4</td>
<td>21.9</td>
<td>29.3</td>
</tr>
<tr>
<td>price</td>
<td>-20.5</td>
<td>-3.8</td>
<td>-3.7</td>
<td>26.1</td>
<td>32.9</td>
<td>12.8</td>
</tr>
<tr>
<td>Year-end value</td>
<td>179.9</td>
<td>213.9</td>
<td>239.7</td>
<td>307.2</td>
<td>362.0</td>
<td>404.1</td>
</tr>
</tbody>
</table>


1/ Represents the change from end-1998 holdings of euro legacy currencies by official institutions outside the euro area.

Source: IMF template and Chinese data

US $, bn.
Table 5. Real Returns Expressed in SDRs and Optimal Portfolios (Jan. 1999-Sept. 2005)

|          | mean | std. dev | correlations | Optimal weights | memo: SDR weights | memo: actual, 2004
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean</td>
<td>std. dev</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$</td>
<td>1.98</td>
<td>15.88</td>
<td>1.00</td>
<td>-0.33</td>
<td>-0.09</td>
<td>-0.82</td>
</tr>
<tr>
<td>GBP</td>
<td>4.82</td>
<td>17.16</td>
<td>-0.33</td>
<td>1.00</td>
<td>-0.24</td>
<td>0.19</td>
</tr>
<tr>
<td>yen</td>
<td>1.55</td>
<td>26.53</td>
<td>-0.09</td>
<td>-0.24</td>
<td>1.00</td>
<td>-0.32</td>
</tr>
<tr>
<td>euro</td>
<td>3.66</td>
<td>21.86</td>
<td>-0.82</td>
<td>0.19</td>
<td>-0.39</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Source: author’s calculations
1/ All countries, see Table 2. Rescaled to sum to 100.

Table 6. Standard Deviations of Deutsche Mark and Euro Exchange Rates

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>level</td>
<td>change in logs,</td>
<td>level</td>
<td>change in logs,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mult. by 100</td>
<td></td>
<td>mult. by 100</td>
</tr>
<tr>
<td>Against SDR</td>
<td>0.101</td>
<td>1.544</td>
<td>0.104</td>
<td>1.697</td>
</tr>
<tr>
<td>Against $</td>
<td>0.130</td>
<td>2.295</td>
<td>0.130</td>
<td>2.507</td>
</tr>
</tbody>
</table>

Source: IMF and author’s calculations