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Overweight in U.S. Securities?

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Assessing the Potential for Further Foreign Demand for U.S. Assets: Has Financing U.S. Current Account Deficits Made Foreign Investors Overweight in U.S. Securities?

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Abstract:

Since 2001, foreign investors have acquired roughly \$5 trillion in U.S. securities – more than doubling their holdings of U.S. equities and bonds – as both official and private inflows have financed record U.S. current account deficits. Although the rapid growth of foreign holdings of U.S. securities raises concerns that foreign investors may have become too heavily weighted in U.S. assets, foreign investors have not in fact materially changed the relative allocations between U.S. and other foreign securities in their portfolios in recent years. Based on data from the most recent comprehensive surveys of foreign portfolio investment, the 2006 IMF Coordinated Portfolio Investment Surveys (CPIS), most foreign investors remain relatively more underweight in both U.S. equities and bonds than they do in foreign securities in general. Although the underweight position suggests that there remains potential for foreign investors to continue to acquire U.S. securities, econometric evidence indicates that the underweight position itself reflects a preference by foreign investors for securities of countries with which they have strong economic or cultural ties, consistent with recent research that suggests “location” or “information” preferences in both domestic and international portfolios. As securities markets abroad continue to deepen, such factors are likely to continue to attract investment from “nearby” markets, especially from European investors.

Keywords: equities, bonds, home bias, international portfolio allocation

JEL codes: F3, G15, G11

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Introduction

For the past several years, foreign investors have acquired record amounts of U.S. securities, as both official and private inflows have financed the record U.S. current account deficits. According to official Balance of Payments estimates, foreign acquisitions of U.S. securities totaled about \$3 trillion over the five-year period from 2001 to 2005, and in 2006 and 2007, foreign investors acquired \$2 trillion more. Have such large increases in foreign holdings of U.S. securities increased foreign portfolio shares to the extent that foreign investors are close to having acquired their “fill” of U.S. securities?

Future foreign demand for U.S. securities depends importantly on the perceived relative attractiveness of U.S. assets as well as developments in wealth and securities markets abroad. On the one hand, increased financial wealth abroad provides a larger pool of investable funds available for acquisition of U.S. securities, and advances in financial intermediation will make it easier for foreign investors to acquire them. If U.S. securities are considered especially attractive to investors in terms of the liquidity of markets, the variety of products offered, and in disclosure, accounting standards, and corporate governance, then increased wealth abroad should continue to provide a steady source of capital inflows to the United States. On the other hand, increased issuance of securities abroad means there is a growing pool of attractive alternatives to investing in U.S. financial assets. At the same time, the development of foreign securities markets provides alternatives that may attract U.S. investors to move an increasing share of their portfolios abroad. Any increase in such capital outflows means the inflows from abroad required to finance a given current account deficit would have to be that much larger. An additional component to assessing foreign demand for U.S. assets is the potential for foreign official inflows into the U.S. both in the form of international reserves investment and from sovereign wealth funds.

To assess the potential for further foreign acquisitions of U.S. securities, we need to understand how large foreign holdings of U.S. securities are: not so much in absolute terms but in relation to the rest of the foreign portfolio. We also need to understand the determinants of foreign portfolio allocations to understand how much “room” there is for additional acquisitions of U.S. securities. This study finds that recent record foreign inflows into U.S. securities have not materially altered the relative allocations between U.S. and other foreign securities in foreign portfolios. In fact most countries continue to be more underweight in U.S. assets than they are in foreign assets in general according to the standard model of international asset allocation, the International Capital Asset Pricing Model (ICAPM). Thus, even with the recent depreciation of the dollar – which works to reduce the optimal share of the portfolio allocated to U.S. securities – there still appears to be ample “room” for foreigners to continue to acquire additional U.S. securities.

But the persistent presence of this underweight itself carries a warning on the relative attractiveness of U.S. securities to foreign investors. Econometric evidence indicates that this underweight reflects in large part a preference for securities issued in markets that are closer to the home countries of foreign investors and with whom foreign investors have closer cultural and economic ties, consistent with recent research that suggests “location” or “information” preferences in both domestic and international portfolios.¹ Though U.S. assets are often thought of as “superior” in terms of liquidity, market depth, and investor protections, these advantages may not be sufficient to offset perceived advantages of investments “closer to home”.

The results in this paper are complementary to those of Forbes (2008), who, focusing only on investment into the United States, finds that countries with less-developed home securities markets tend to have larger shares of their foreign portfolios in U.S. securities, but also that countries with larger trade flows and that are closer to the U.S. tend to have larger portfolio shares as well. Thus, investors from Latin American countries as well as Asian countries with strong trade links with the United States tend to hold more of their foreign portfolio in U.S. securities than in other foreign securities. However, further deepening of securities markets abroad is also likely to continue to attract investment from “nearby” markets, especially from those developed country investors who currently provide the bulk of private investment into U.S. securities. Nonetheless, it appears that when these portfolio determinants are taken into consideration, foreign portfolios should be able to absorb the additional U.S. securities necessary to fund expected future current account deficits, even under fairly conservative estimates of growth in market capitalization over the next several years.

Section 1 reviews recent developments in foreign official and private portfolios of equities and debt securities, and section 2 compares current foreign portfolio allocations with the predictions of the ICAPM. Sections 3 and 4 present econometric analysis of the determinants of foreign portfolio allocations and recent changes in these allocations. Section 5 concludes with an examination of the implications for further acquisitions of U.S. securities under alternative assumptions about market growth abroad.

¹ See for example Chan, Covrig, and Ng (2004), Coval and Moskowitz (1999), and Ivkovic and Weisbenner (2003) for results finding location-based investor preferences and Kang and Stultz for preferences for larger (better known) firms.

1. How large are foreign holdings of U.S. securities and how have they evolved in recent years?

1.a. Recent estimates of foreign acquisitions of U.S. securities

Between 2001 and 2007, cumulated U.S. current account deficits amounted to roughly \$4 trillion. These deficits were largely financed by foreign acquisitions of U.S. securities: during this period, securities inflows from foreign official and private sources were about \$5.3 trillion (Figure 1), bringing estimated total foreign holdings of U.S. long-term securities to nearly \$10 trillion by year-end 2007. Between 2001 and 2007, combined U.S. equity and bond market capitalization increased by roughly \$21 trillion. In other words, the increase in foreign holdings of U.S. long-term securities represented roughly 25 percent of the increase in U.S. market capitalization.

If current account deficits continue the neighborhood of \$600-\$650 billion for the next 4-5 years,² financing those deficits over the next several years will require further net financial inflows of more than \$3 trillion. Based on the experience of the past several years, the bulk of these inflows most likely will continue to be in the form of foreign acquisitions of U.S. securities. However, as Figure 1 also illustrates, U.S. investors' acquisitions of foreign securities have generated an increasing offset to this source of financial inflows: financial outflows from U.S. acquisitions of foreign securities have grown from less than \$100 billion per year in 2001 and 2002 to more than \$360 billion in 2006 and more than \$275 billion in 2007. Financing current account deficits through 2012 could require foreign holdings of U.S. securities to increase by considerably more than \$3 trillion, with foreign holdings of U.S. securities by 2011-2012 increasing to levels in the neighborhood of \$13-\$14 trillion. Looking further out, Bertaut, Kamin, and Thomas (2008) use projections from a detailed partial-equilibrium model of the U.S. external sector and find that U.S. portfolio liabilities in held in the form of U.S. securities could reach \$34 trillion by 2020. Would such large increases in holdings of U.S. securities make foreign portfolios unreasonably exposed or "overweight" in U.S. assets?

To address these questions, it is useful to understand how large foreign private holdings of U.S. securities are, how large they are relative to foreign official holdings, and how such holdings have grown over time. We begin by looking at comprehensive estimates of U.S. long-term debt securities and equities held by foreign investors (Figure 2). As of the most recent survey of foreign holdings of U.S. securities conducted for June 2007, foreigners held \$9.1 trillion in U.S. long-term securities, with \$6 trillion held in long-term debt securities and \$3.1 trillion in equities. Total foreign holdings are estimated to have

² As of April 2008, Consensus Forecasts showed a projection of \$688 billion for the U.S. current account deficit in 2008, and long-term projections of the U.S. current account deficit of about \$625 billion per year through 2012. The IMF's projection of the U.S. current account deficit for 2008 is somewhat smaller at \$615 billion but is projected to increase by 2013 to about \$675 billion (as of the April 2008 World Economic Outlook).

reached about \$9.5 trillion by year-end 2007.³ Figure 2 also documents the sizable (and growing) share of U.S. securities held by foreign official investors, which include both reserve holdings and holdings of central government investment funds. U.S. securities held by foreign official institutions were measured at \$2.8 trillion in June 2007 and are estimated to have grown to more than \$3.5 trillion by year-end 2007. The larger share of foreign holdings in the form of debt securities compared to equities in part reflects the sizable holdings of official investors. However, foreign private investors also hold a somewhat larger share of their U.S. portfolio in long-term debt securities (about 55 percent) than in equities (roughly 45 percent).⁴

1b. How large are foreign holdings of U.S. securities relative to other foreign assets in foreign portfolios?

Although U.S. liabilities estimates are considered to be reasonably comprehensive in their measures of U.S. securities held by foreigners—and in the changes in such holdings—they do not allow us to gauge how large such holdings are relative to other foreign securities or to domestic securities in foreign investors' portfolios. Fortunately, we now have access to several years of comprehensive cross-border portfolio data from the IMF's Coordinated Portfolio Investment Surveys (CPIS) to help address this question. Approximately seventy countries participate in the CPIS, measuring and reporting, by country, their domestic investors' private portfolio holdings of equity, long-term debt, and short-term debt. Among countries that do not participate, the most notable (in terms of holdings of U.S. securities as measured by the U.S. liabilities surveys) are Mainland China, Taiwan, and most Middle East oil exporters.⁵

Table 1a shows total holdings of all foreign long-term debt securities and holdings of U.S. long-term debt securities from the 2001 and 2006 CPIS surveys for the countries with the largest foreign debt portfolios. Because the CPIS data exclude reserve holdings,

³ Estimates of foreign holdings of U.S. securities are derived from the comprehensive annual surveys of foreign holdings (now conducted annually each June) and extended with the Treasury International Capital (TIC) monthly data on cross-border securities transactions, adjusting for valuation changes. See Bertaut and Tryon (2007) for a discussion of the methodology.

⁴ See also Lane and Milesi-Feretti (2005) for a discussion of the implications of the changing nature of U.S. inflows for sustainable adjustment of the U.S. current account.

⁵ Another advantage to using the CPIS data is that although the U.S. liabilities data are considered very comprehensive in their ability to identify U.S. securities held by foreigners, the use of chains of intermediaries in the custody and management of securities makes it difficult to accurately identify the actual country of ownership of U.S. securities. For example, if an Italian resident acquires a U.S. security but has it held with a custodian bank in Luxembourg, the U.S. liabilities data will typically only be able to identify that that particular security is held in Luxembourg, and not that it actually represents an investment by an Italian resident. Thus, holdings as measured by the U.S. liabilities surveys are subject to "custodial bias" as they tend to overstate holdings of countries that have large custodial centers (such as Belgium, Luxembourg, Switzerland, the United Kingdom, and financial centers in the Caribbean), and to understate holdings of other countries. For a more detailed discussion of how comparable the U.S. liabilities data are to reported holdings of U.S. securities in the CPIS, refer to Bertaut, Grier, and Tryon (2006).

the table also shows comparable figures from the IMF Survey of Geographical Distribution of Securities Held as Foreign Exchange Reserves (SEFER) on long-term securities held as reserves and by international organizations, and the portion of those held in the form of U.S. long-term debt securities.⁶

In all countries shown, total holdings of foreign debt securities (“bonds”) increased between 2001 and 2006 – and in many cases, total holdings of foreign securities more than doubled over this five-year period. For all countries shown, holdings of U.S. bonds also increased but in general neither the share in U.S. bonds nor the increase in the share appears especially large for any given country. Total reserve holdings and reserve holdings in U.S. debt securities also increased over this period, but here the share held in U.S. debt securities declined somewhat to about 0.5 by 2006.

Because not all countries participate in the SEFER, Table 2 summarizes more complete information on reserve holdings from the IMF Currency Composition of Official Foreign Exchange Reserves (COFER) surveys, and provides estimates of the portion of those reserves held in dollars. According to these data, total reserves holdings have grown from about \$2 trillion at year-end 2001 to about \$5 trillion at year-end 2006 and \$6.4 trillion at year-end 2007. Based on COFER information on how much of these reserves are dollar-denominated, we estimate that total dollar reserves likely increased from about \$1.5 trillion at year-end 2001 to about \$4 trillion by 2007, although the dollar share of total reserves is estimated to have declined from about 71 percent to about 63 percent, primarily because of dollar depreciation: over the 6-year period, the dollar depreciated about 33 percent relative to the currencies in the Federal Reserve’s Nominal Major Foreign Currency Index.⁷ The table also shows a similar increase (though starting from a somewhat lower level) for estimated total foreign official holdings of U.S. dollar-denominated portfolio assets from the U.S. liabilities surveys and TIC data.⁸ We also

⁶ The SEFER data report aggregate holdings of short-term and long-term debt securities and of equities, by country of issuer of the security, that are held by international organizations or as reserves. No detail is available by country of reserve holder, and the IMF does not release information on which countries participated in the SEFER. For year-end 2006, total securities holdings reported in the SEFER amounted to \$2,221 billion, of which \$1,639 billion was in long-term debt securities. In comparison, total reserves in the COFER data were \$4,174 billion.

⁷ Not all reserves reported in the COFER data are allocated by currency. Nearly all industrial country reserves are allocated, and of these, the dollar share in 2005 was 73.6 percent. For developing countries, only about 53 percent of reserves were allocated by currency, with a dollar share of about 60 percent. We assume that for all industrial countries, the dollar share in each period is the same as the allocated industrial dollar share, and likewise for developing countries, the dollar share is the same as the allocated developing country dollar share.

⁸ Total liabilities as reported in the TIC system differ from total estimated reserve holdings of dollar assets in two important ways that are somewhat offsetting. First, the TIC system definition of “foreign official” is broader than that of reserve holders because it includes entities such as general government investment funds. Second, the TIC data and U.S. liabilities surveys can only account for U.S. securities and other dollar liabilities that are held with custodians in the United States. If foreign official investors hold U.S. securities with foreign custodians, the U.S. liabilities surveys will identify them as being foreign held, but as being privately held by the custodian bank in the country of custody.

include information on China's total reserves as reported to the IMF, and, because China is not a CPIS reporter, compare these with our TIC-based estimates of total Chinese holdings of U.S. dollar-denominated assets. We estimate that China's dollar holdings (which include holdings by private Chinese investors as well as official holdings) at year-end 2007 were a little over \$1 trillion, of which about \$500 billion were in Treasury securities and about \$400 billion were in long-term agency securities. It is probably reasonable to assume from these estimates that the bulk of China's total foreign portfolio is in the form of official holdings of U.S. debt securities, and that the share of China's portfolio in dollars has increased from roughly 60 percent in 2001 to about 75 percent by year-end 2006.⁹

Many of the larger CPIS reporters are euro area countries, and in large part, the substantial increases in holdings of foreign bonds for euro area investors reflects expansion into holdings of securities issued by other countries that are also in the euro area. This factor also accounts for the relatively small share held in U.S. securities for some euro area countries – for example, for Germany in 2006, U.S. bonds made up only 8 percent of all foreign long-term debt securities held by German investors, whereas bonds issued by other euro-area countries made up nearly 70 percent. Table 1b shows same data as Table 1a, but aggregates foreign holdings of all reporting euro-area countries, and excludes intra-euro area holdings. In this presentation the euro area in aggregate is now the largest holder of long-term debt foreign securities (excluding reserve holdings), even when intra-euro area securities are excluded. U.S. securities make up a larger share of the foreign portfolio of the euro area aggregate portfolio, but they are still less than a third of all foreign debt held by euro area investors, (and in fact the share in 2006 is slightly less than the share in 2001). Only for a few countries (Bermuda, Canada) are U.S. securities the majority of foreign holdings.¹⁰ For most others it is well under half.

Tables 3a and 3b show similar information from the 2001 and 2006 CPIS for holdings of foreign equity. As 3a clearly illustrates, the United States is by far largest holder of foreign equities, with holdings at year-end 2006 measured at \$4.3 trillion. Holdings of U.S. equities by other foreign countries are relatively modest, amounting to \$2.1 trillion

⁹ Although the COFER data do not indicate which countries report allocated reserves and which do not, increases in the “unallocated” totals for developing countries have tracked well with published increases in China's reserves over the past couple years. If China is indeed one of the countries reporting reserves in the “unallocated” developing country category, our estimate of total reserves in dollars may be on the low side, because it appears that China's dollar share is greater than the 60 percent assumed for all developing countries.

¹⁰ For Bermuda, U.S. long-term debt securities were 83 percent of all foreign bonds held in 2001 and 77 percent in 2006. This U.S.-heavy portfolio presumably reflects the holdings of the large number of mutual funds in Bermuda.

in aggregate, less than a fourth of their total holdings of foreign equities and only about half for Canada and Australia.¹¹

2. Comparing portfolio weights to the ICAPM

2.a. Constructing foreign portfolio shares

Although the CPIS data suggest that foreign holdings of U.S. securities are not “outsized” relative to total holdings of foreign securities, we also need to consider holdings of “home country” securities to properly put U.S. and other foreign holdings into perspective and to assess how much “room” foreign investors have to expand their U.S. portfolios. Large holdings (in dollar terms) of foreign securities may not be large relative to holdings of domestic securities, while investors in countries with relatively modest foreign portfolios may in fact be quite internationally diversified. Following the same methodology as in Bertaut and Kole (2003), we construct estimates of domestic holdings of domestic securities, using national financial balance sheet data where available and using proxies based on estimates of market capitalization and international investment position data where balance sheet data are not available. Although this exercise allows for more complete portfolio measures, it limits the sample of “useable” CPIS countries to 26, but those countries account for nearly 85 percent of foreign equities reported in the total CPIS for 2006, and more than 80 percent of non-reserve holdings of bonds.¹²

¹¹ A sizable portion of U.S. holdings of foreign equity reflects investment in equity issued in Caribbean offshore financial centers, in many cases issued by formerly-U.S. based multi-national corporations that have reincorporated in the Caribbean for tax and regulatory advantages. As of December 2006, U.S. holdings of equity issued in Caribbean financial centers (the Bahamas, Bermuda, the Cayman Islands, the British Virgin Islands, the Netherlands Antilles, and Panama) were \$439 billion, accounting for about 10 percent of all foreign equity held by U.S. investors. These financial center holdings raise a problem of interpretation: U.S. investors may not think of these securities as foreign securities, because they trade in dollars on U.S. exchanges and are often issued by firms that in many respects behave like U.S. firms. Although we do not know the extent to which holdings of Caribbean center equity for other CPIS-reporting countries similarly reflects holdings of equities of reincorporated multinationals, we suspect that at least some are similarly affected: total holdings of Bermudan equity in December 2006 by CPIS countries other than the United States amounted to over \$150 billion, whereas market capitalization of Bermuda (which excludes such reincorporates) was estimated at only about \$2 billion (Standard and Poor’s Global market Factbook). If we include reported holdings of Caribbean financial center equity with U.S. equity as an “upper bound” to what may be thought of as equity of “U.S.” firms, estimated foreign holdings of “U.S.” equity are increased by \$535 billion, or by about 20 percent. Almost half of this increase is due to Caribbean holdings attributed to Hong Kong; for the other CPIS countries the addition has a much smaller effect. But even when we add in Caribbean equity, U.S. holdings are less than half for most countries; for the euro area aggregate, U.S. and Caribbean financial center equity together still account for less than 10 percent of the foreign portfolio.

¹² The largest omissions in our sample (in terms of amounts of foreign securities reported in the CPIS) are Ireland, Luxembourg, the Channel Islands, Bermuda, the Cayman Islands, and the Netherlands Antilles. Together, these countries account for about 16 percent of reported foreign long-term securities in the 2006 CPIS and 12 percent of long-term U.S. securities.

Also following Bertaut-Kole, we define each investor country x 's total equity portfolio as investment by domestic residents in home equities plus investment in foreign equities, as taken from x 's asset survey. We then calculate the share of x 's portfolio allocated to country y equities as x 's holdings of y equities divided by x 's total equity portfolio:

$$Seq_x^y = \frac{x's \text{ holdings of } y \text{ equities}}{x's \text{ total equity portfolio}}$$

The share of country x 's total portfolio invested in all foreign equities is given by

$$Seq_x = \frac{x's \text{ holdings of all foreign equities}}{x's \text{ total equity portfolio}}$$

Although portfolio shares held in long-term debt securities can be defined in an analogous way, an additional complication arises from reserve holdings. Because motivations of reserve holders may differ from those of private investors, we first calculate private bond shares relative to each country x 's portfolio excluding reserves, which we denote as Sbp_x^y :

$$Sbp_x^y = \frac{x's \text{ holdings of } y \text{ bonds (excluding } y \text{ bonds held as reserves)}}{x's \text{ total bond portfolio (excluding bonds held as reserves)}}$$

We likewise calculate the share of country x 's total private portfolio invested in all foreign bonds as

$$Sbp_x = \frac{x's \text{ holdings of all foreign bonds (excluding held as reserves)}}{x's \text{ total bond portfolio (excluding bonds held as reserves)}}$$

For some countries, however, reserve holdings can make a marked difference to total holdings of foreign bonds.¹³ Following the methodology discussed in Bertaut, Grier, and Tryon (2006), we add to each country's foreign bond investment from the CPIS an estimate of total reserve holdings in foreign long-term debt securities, and we add to the reported holdings of U.S. securities an estimate of reserves held in dollars.¹⁴ Figure 3 shows the effect of adding reserves to estimated foreign portfolio shares for some of the largest CPIS reporting countries in 2001 and 2006, with the euro area countries again shown in aggregate. For some countries, especially emerging market countries, total

¹³ Although reserves can be held in equity, data from the SEFER (which include both reserve holdings as well as holdings of international organizations) indicate that such holdings are small, and that excluding reserve holdings is a fairly small omission when considering a country's total equity portfolio. Total reported holdings of equity on the SEFER were \$43 billion for December 2006 (1.5 percent of the SEFER total).

¹⁴ Long-term debt securities held as reserves are based on each country's reported total reserves less gold. The share allocated to long-term debt securities is estimated from the relation between total reserve holdings identified in the SEFER and holdings of long-term debt securities identified in the SEFER. To estimate reserve holdings of U.S. long-term debt securities, we use data from the IMF COFER survey of the currency composition of reserves. For more details, see text note 23 to Bertaut, Grier, and Tryon.

foreign shares and shares in U.S. securities are a good bit larger when we include estimates of reserve holdings. The chart also shows a notable increase in the portfolio shares held in other foreign securities, especially euro area securities.

2.b. Comparing portfolio shares to market shares and ICAPM predictions

Because the share of a given investor country's portfolio allocated to a given destination country's securities will change as the market value of the securities held is altered by exchange rate movements, asset price changes, and growth in market capitalization, it is useful to compare holdings to shares in market capitalization, which are similarly affected. Figure 4 shows how global market cap shares of equities and bonds have changed over the period 2001 to 2006. The U.S. market cap share has declined from nearly 50 percent in 2001 to 36 percent in 2005 for equities, and from 45 percent to 39 percent for bonds. At the same time, the euro area share was unchanged for equities but has increased from 22 percent to 28 percent for bonds. In part, the declining market cap share for the United States reflects the depreciation of the dollar over this period, while the increased shares for the euro area (for bonds) also reflects the sizable growth in the euro-area securities markets.

To compare each country's investments to the global market portfolio, we calculate for each investor country x the *relative portfolio weight* (We_x^y) of equities held in each destination country y as the ratio of two fractions: The numerator is the share of each country x 's holdings of country y equities as defined above, and the denominator is the share of country y 's equity market capitalization (EMC) in the global equity market:

$$We_x^y = \frac{Seq_x^y}{\frac{EMC_y}{\sum_y EMC_y}}$$

Likewise, the relative portfolio weight in destination country y bonds is calculated as the ratio of the share of each country x 's holdings of country y bonds to the share of country y 's bond market capitalization in the global bond market.

Comparing shares to market cap allocations also allows for comparison of actual portfolio allocations to the implications of the ICAPM that investors should hold the world portfolio and for measures of international home bias. For example, if an investor country held 36 percent of its equity portfolio in U.S. equities in 2006, this ratio would be equal to 1. For investment in any country y , a value less than 1 implies an underweight in country y equities relative to the ICAPM prediction, and a value greater than 1 implies an overweight position.

We construct similar measures to determine whether a country's holdings of foreign equities or bonds more generally are consistent with the benchmark portfolio. For

equities, the numerator of this calculation is country x 's total foreign equity holdings divided by x 's total equity holdings. For each country, the denominator is the size of the foreign equity market from country x 's perspective—that is, the global market excluding x 's home equities—relative to the global market:

$$We_x^y = \frac{\sum_{y \neq x} Seq_x^y}{\sum_{y \neq x} MC_y} \left(EMC_x + \sum_{y \neq x} EMC_y \right)$$

In this case, the weight can also be thought of as a measure of “home bias”, as it will be equal to 1 if the share of foreign equities (bonds) in a country’s portfolio equals the share of foreign equities (bonds) in the global market. A value less than 1 implies a relative underweight position in foreign equities (bonds) and a corresponding overweight position in domestic securities (home bias).

2.c. Changes in U.S. and foreign portfolio weights

Figure 5 shows the relative portfolio weights in all foreign equities (the horizontal axis) and in U.S. equities (the vertical axis) for several CPIS reporting countries (the euro area countries are shown in aggregate) in 2001 and 2006. The arrows show the change in these weights over the five-year period. Note the scales on both the horizontal and vertical axes: all values shown are less than 1, indicating that the countries shown have less than the ICAPM portfolio weight in foreign equity (that is, they have “home bias”). They also have less than the ICAPM weight in U.S. equity. The diagonal line indicates portfolios where the portfolio allocation to U.S. equity, though it may be less than the ICAPM weight, is at least as great as the portfolio allocation to foreign equity in general. Points below the diagonal line indicate portfolios that are more biased against U.S. equity than they are against foreign equity in general, whereas points above the diagonal line indicate portfolios in which U.S. equities are relatively favored, compared with foreign equity in general. Overall, the chart suggests that many foreign portfolios – especially European portfolios – tend to be disproportionately weighted against U.S. equity: more of these country portfolios lie below the 45 degree line than above, and for no country does the weight in U.S. equity seem to be unduly large relative to total foreign exposure.¹⁵

For most countries, the movement between the 2001 and 2006 surveys is upward and to the right, indicating portfolios that are becoming somewhat less home-biased. In most

¹⁵ Note that if we were to show the euro area countries individually and to count intra-euro holdings of other euro area equity as foreign, all of their portfolios would lie well below the 45 degree line – indicating portfolios with a larger bias against U.S. equity than for the euro-area aggregate portfolio.

cases, the movement is also roughly parallel to the 45-degree line, indicating a roughly equal expansion in U.S. exposure and in foreign exposure in general. However, for a few countries – notably the Czech Republic and Canada, this measure of “home bias” increased. This somewhat surprising development is the result of a considerable expansion in home equity for these countries: for the Czech Republic, domestic equity market cap grew 5-fold over this 6-year period, and for Canada, market cap grew 250 percent, whereas global market cap about doubled. As most of this domestic equity was held by domestic investors in both countries, the portfolio shares in foreign equity—and U.S. equity—declined, although in both countries the actual dollar amounts of both their U.S. and their total foreign equity holdings increased.

Figure 6 shows the same presentation for changes in portfolio weights in foreign and U.S. bonds. Bond portfolio weights – and their changes between 2001 and 2006 – show a generally similar picture to that for equities, with all countries displaying “home bias”, a number of countries lying below the 45-degree line, and no countries with appreciably higher U.S. weights than foreign weights in general.

For many countries, however, reserve holdings account for an important share of the total foreign bond portfolio. Figure 7 plots portfolio weights in U.S. and all foreign bonds, including bonds held as reserves, with the countries shown in two panels to make it easier to identify the individual country movements. Adding estimates of reserve holdings and the fraction of those denominated in dollars makes a noticeable difference to both foreign and U.S. bonds shares, especially for emerging market economies. However, there has only been a limited effect so far on relative weights in all foreign debt compared with U.S. debt.

3. Accounting for relative portfolio weights in foreign equities and bonds

On the surface, then, it appears that foreign investors have “room” to increase holdings of U.S. securities. Based on developments between 2001 and 2006, any further reduction in home bias is likely to be achieved through increases in both U.S. and foreign securities. And compared to the ICAPM, foreign investors could increase their holdings of U.S. securities at least to be equally weighted with all foreign securities even if the current extent of home bias persists. But this assumption leaves unanswered the question of what accounts for the relative underweight in U.S. securities, at least in foreign private portfolios. If this underweight is likely to persist, the potential room to increase holdings of U.S. securities will be more limited.

Looking only at equities, Bertaut and Kole (2003) find that while foreign investors are underweight in U.S. securities, they tend to be more heavily weighted in securities of neighboring countries and countries with which they have strong trade connections. And as has been found in other research, foreign investors are also significantly more likely to hold higher portfolio weights in countries with superior country credit risk ratings and

with stronger accounting disclosure rules.¹⁶ But although equities issued or listed in the United States may be thought of – at least by U.S. investors – to be superior on disclosure, accounting rules, and governance, these factors do not appear to overcome perceived or actual information advantages that attract non-U.S. investors to other “nearby” markets. As a result, investors in euro area countries tend to be more highly weighted – and in fact may be overweight – in other European and particularly in other euro area equities, investors in Nordic countries tend to be more highly weighted in other Nordic equities, and Australian and New Zealand investors tend to be more highly weighted in each other’s equities.¹⁷

This study follows the methodology of Bertaut-Kole to estimate the determinants of relative portfolio weights in both equities and bonds for private investors of 26 investor countries and for an expanded list of destination countries (nearly 80) for 2006.¹⁸ Investor countries are primarily developed economies but include some emerging markets as well, whereas about two-thirds of the destination countries are emerging market economies.¹⁹ As in Bertaut-Kole, the estimation model is based on the Cooper-Kaplanis (1985) model of international portfolio allocation, with the implication that investors will hold foreign securities closer to their market capitalization weights where (relative) costs of investing are smaller. Such costs will depend on frictions such as restrictions to foreign investment, transaction costs or custodial fees, the legal environment, and the costs of acquiring information. Only private portfolios are considered, as motivations of official investors are likely to differ.

The dependent variables are the relative portfolio weights of each destination country y ’s equities or bonds for each investor country x We_x^y as of December 2006 (as defined above). Explanatory variables include measures of trade connections, distance between investor and destination countries, common language, and several variables included to measures financial market depth and tradability, information costs, credit ratings, relative market performance, and measures of investor protection and enforcement of contracts. Some of these variables are specific to investor-destination county pairs while others apply more generally across all investor countries. We include the euro area countries individually in these regressions, but also include a dummy variable for “euro area pair” to capture any effects of intra-euro area investment beyond those explained by trade, distance, or other measures of information costs. Dummy variables are also included for

¹⁶ See for example Dahlquist, Pinkowitz, Stulz, Williamson (2003); Aggarwal, Klapper, and Wysocki (2003); Gompers, Ishii, and Metrick (2001); Gugler, Mueller, Yurtoglu (2003).

¹⁷ In related research using the 1997 and 2001 CPIS, Berkel (2007) finds a “friendship bias” in equity portfolios of some country pairs, especially those within the euro area.

¹⁸ The sample for bonds is a bit smaller (26 investor countries) because it is difficult to obtain reliable estimates of domestic investment in domestic bonds. For robustness, regressions were also calculated for 2003.

¹⁹ Emerging market investor countries are Argentina, Chile, the Czech Republic, Israel, Korea, and Malaysia.

financial center locations including the United States. Details of the explanatory variables and their expected contributions are listed in table 4.

The regressions are estimated with two types of models: first, the equations for equities and bonds are estimated separately, allowing for individual investor-country country fixed effects in explaining portfolio weights. Second, the equations are estimated with a bivariate model, allowing for the portfolio choices of each investor country across destination country equities and bonds to be determined jointly. For roughly half of the investor-destination country pairs the observed portfolio weight is zero, so both models use tobit specifications. Because of probable errors in determining total market cap for some destination countries as well as possible misclassification of destination countries by some CPIS reporters, we censor the weights from above at a portfolio weight of 6 to trim the extreme outliers in the data and allow us to better identify explainable variation in most portfolio weights.²⁰ Censoring with a weight of 6 will still allow us to identify destination countries with considerable overweights, as the average (uncensored) portfolio weights are under 1 for both equities and bonds: the average equity portfolio weight in 2006 was 0.67 and the average bond portfolio weight was 0.79.²¹ (Appendix Table A1 compares results for the standard equity and bond models with those from uncensored models with and without Luxembourg as a destination (for equities) and with and without several Eastern European countries (for bonds)).

²⁰ Measures of market cap may be incomplete especially for equities, as some of these securities may be privately held and non-traded, or are held as fund shares that are frequently not included in measures of market cap. Misattribution by destination country can arise if CPIS reporters record the nationality of securities held in their portfolios by location of holdings rather than country of issue. This is not usually a problem for countries that conduct security-level asset surveys, but even such surveys can misclassify holdings of companies that have reincorporated in a different country.

²¹ Fewer than 2 percent of equity and bond weights in the sample have uncensored values greater than 6. For equities, the most frequent destination country by far to be censored is Luxembourg: 19 of the 28 countries in the sample had reported holdings of Luxembourg equity sufficient to generate equity portfolio weights greater than 6. Some CPIS countries (i.e. Italy and Switzerland) reporting holdings of Luxembourg equity sufficient to generate overweights in excess of 100. Because Luxembourg is a major custodial center, it is probable that some of these overweights reflect holdings of equity held in Luxembourg but not necessarily issued in Luxembourg (see Warnock 2007). However, the pervasiveness of the Luxembourg overweight suggests that fund shares that are not included in the estimate of Luxembourg's market capitalization may also be a contributing factor. For example, two countries known to conduct security-by-security CPIS surveys and thus presumably able to correctly assign equity holdings to actual country of issuance (Austria and Netherlands) have estimated weights in Luxembourg equity of 43.7 and 27, respectively. And although the United States does not appear overweight in Luxembourg equity (calculated relative portfolio weight is .47), nearly one-fourth of Luxembourg equity held by U.S. investors is the form of fund shares (see Report on Foreign Portfolio Holdings of U.S. Securities as of June 30, 2007 <http://www.treas.gov/tic/shl2007r.pdf>). Reference survey report). For bonds, the most frequent overweights are calculated for a number of emerging-market European countries. For these destination countries, incomplete measures of market cap are likely to be a source of large overweights, as holdings attributed to these destinations are unlikely to reflect custodial holdings.

The basic estimation models for the portfolio weights of any investor country i in equities and bonds of any destination country j are then:

$$\begin{aligned}
W_{equity} 06_i^j = & \alpha_{eq} + \beta_{1,eq} \text{TRADE06}_{1,j} + \beta_{2,eq} \text{DISTANCE}_{i,j} + \beta_{3,eq} \text{DISTSQR}_{i,j} \\
& + \beta_{4,eq} \text{LANGUAGE}_{i,j} + \beta_{5,eq} \text{MCEQUITYGDP06}_j + \beta_{6,eq} \text{EXR0106}_{i,j} \\
& + \beta_{7,eq} \text{IRATE3MO06}_{i,j} + \beta_{8,eq} \text{BETAEQUITY06}_{i,j} \\
& + \beta_{9,eq} \text{DOING BUSINESS06}_j + \beta_{10,eq} \text{ADR06}_j + \beta_{11,eq} \text{GDR06}_j \\
& + \beta_{*,eq} (\text{Dummy variables for financial center destinations}) + \varepsilon_{eq;i,j}
\end{aligned}$$

$$\begin{aligned}
W_{bonds} 06_i^j = & \alpha_{bd} + \beta_{1,bd} \text{TRADE06} + \beta_{2,bd} \text{DISTANCE} + \beta_{3,bd} \text{DISTSQR} \\
& + \beta_{4,bd} \text{LANGUAGE} + \beta_{5,bd} \text{MCBONDSGDP06} + \beta_{6,bd} \text{EXR0106} \\
& + \beta_{7,bd} \text{IRATE3MO06} + \beta_{8,bd} \text{BETABONDS06} + \beta_{9,bd} \text{ISSUANCE} \\
& + \beta_{10,bd} \text{DOING BUSINESS06} \\
& + \beta_{*,bd} (\text{Dummy variables for financial center destinations}) + \varepsilon_{bd;i,j}
\end{aligned}$$

For the fixed effect models, α_{eq} and α_{bd} take individual values for each investor country:

$\alpha_{eq,i}$ and $\alpha_{bd,i}$

For the bivariate specification, the error terms are distributed as

$$\varepsilon_{eq}; \varepsilon_{bd} \sim N[0,0, \sigma_{eq}^2, \sigma_{bd}^2, \rho]$$

3.a. Explaining portfolio weights in foreign equities and bonds

Results from the fixed-effect tobit models for equities and bonds for 2006 are presented in Table 5.

Effects of proximity, trade, and common language:

In all models, the share of a given country's cross-border trade with a given destination country (TRADE06) has a significant positive coefficient in the equity equation, indicating that investors are significantly more likely to have higher equity portfolio weights in countries where trade connections are stronger. An interpretation of this result is that such trade connections give information about the destination country's firms. TRADE06 does not enter significantly in the bond regressions, possibly because a sizable portion of foreign bond portfolios are likely to be in the form of public sector debt, and thus trade connections are less likely to provide information about individual firms. DISTANCE between investor-destination country capitals (in thousands of kilometers) has a consistently significant negative coefficient in both the equity and bond equations, indicating that investors are indeed more likely to invest in "nearby" firms. But this

effect is non-linear: distance squared (DISTSQR) enters with a significant positive coefficient, so although distance works against investment in a given country's securities, the "penalty" for being increasingly distant diminishes. The significance of TRADE06 and DISTANCE help account for the relative underweights of U.S. equities and bonds in many foreign portfolios, especially European portfolios: Although the U.S. is a relatively important trading partner for many countries (including euro area countries), the distance between the U.S. and European countries is quite large (and certainly is large compared to intra-European distances). The coefficient on the dummy variable for common official or primary language (LANGUAGE) between investor-destination pairs is also significant and positive in both equations. This finding may suggest that investors are more likely to invest in countries where common language allows for easier access to information about the country's firms, or it may reflect colonial or cultural ties that also make it easier to acquire information. This effect also tends to work against the U.S. for investment from many European countries.

Although trade, distance, and language are all significant in a basic model such as model 1a, there is clearly an overlap in what these variables capture, as trade shares are likely to be larger for countries that are nearby, and are also likely to be larger for countries that share colonial or cultural ties. Table 6 repeats the regression results for 1a and compares results with models that individually drop trade, distance, and language. When TRADE is dropped, overall model fit is slightly worse, the negative coefficients on DISTANCE in and the positive coefficients on LANGUAGE are increased in both equations. Dropping DISTANCE and DISTSQR increases the positive coefficients on TRADE and LANGUAGE (and TRADE now enters significantly in the bond equation), although there is a more noticeable deterioration in model fit. Dropping LANGUAGE again leads to somewhat larger positive coefficient on TRADE in the equity equation but has little effect on coefficients in the bond equation. Table 8 (discussed below) presents marginal effects from the regression models to quantify the combined contributions of trade, proximity, and language as well as other explanatory variables in explaining portfolio weights.

Effects of regulatory environment, credit risk, and information:

Returning to Table 5, the strength of the regulatory environment of the destination country is clearly important to foreign investors, as countries are significantly more likely to have larger portfolio weights in both equities and bonds of countries that have larger values for DOING BUSINESS06, a variable constructed from the World Bank's Ease of Doing Business project.²² Investors are also significantly more likely to invest in equities

²² The Doing Business project ranks 178 countries on the strength of regulations regarding starting a business, obtaining required licenses, hiring or terminating workers, property rights, rights of borrowers and lenders, shareholder protection, paying taxes, conducting cross-border trade, contract enforcement, and closing a business. The DOING BUSINESS06 variable is a rescaled version of the summary Ease of Doing Business ranking so that larger values correspond to a higher ranking.

of destination countries with a larger share of their domestic companies' equity issued either as either level 2 or level 3 American Depositary Receipts and traded on U.S. exchanges (USADR06). Interpreting the results for ADRs requires a little caution, however. Existing research suggests that U.S. investors are more likely to hold foreign equity offered as ADRs, presumably because ADRs lower transactions and information costs to U.S. investors. Additionally, issuance as a level 2 or 3 ADR may be interpreted as a firm's intent to adhere to U.S. accounting standards, which presumably are considered by U.S. investors to be superior. In the model specifications here, we assume that all U.S. equities held by foreigners are exchange-listed and thus satisfy these same disclosure and accounting standards, and so the value of the ADR variable for the U.S. as a destination country is 1. Note, however, the coefficient on the dummy variable for the U.S. as a destination is negative and significant and of a size that nearly offsets the contribution of ADR. This result suggests that while issuance as an ADR attracts foreign investors to *foreign* equity offered as ADRs, features of U.S. listing—or features of U.S. markets including its depth, credit risk, and governance—do not provide proportional benefits to U.S. firms. Thus, U.S. firms are actually slightly disfavored in foreign portfolios – at least compared to foreign equities that are issued as ADRs – even after accounting for differences in trade shares and distance (see Table 8 below).²³ The coefficient on foreign equity offered as a Global Depositary Receipt and traded on the London Stock Exchange (GDR06) also enters with a positive coefficient, but this coefficient is only marginally significant in this variant of the model.

Models 2 and 3 substitute measures of credit risk as measured by CRATE06, the 2006 Euromoney credit risk rating,²⁴ and the Doing Business subcategory rating for investor protection (IPROTECT06) for the composite variable of the strength of the regulatory environment. Both of these variables also enter significantly in both the equity and bond regressions with little effect on the size or significance of the other explanatory variables, suggesting that all three of these variables in general capture overall “attractiveness” of a country's securities, and that such factors are clearly important for foreign investors.²⁵ Models 4 and 5 investigate whether part of overall “attractiveness” reflects access to information about a given country's securities or firms by substituting access to information as the number of internet users per 1 million population (INTET06), or the number of fixed or mobile phone subscribers per 1 million population (PHONE06) for

²³ These results are not inconsistent with other research that finds that listing in the U.S. is beneficial for attracting *U.S.* investors (see in particular Ahearne, Grier, and Warnock (2004), also Edison and Warnock (2004), and Pagano, Roell, and Zechner (2002)).

²⁴ This “omnibus” variable is a weighted average of Euro money scores assigned to political risk, economic performance, debt indicators, debt in default or rescheduled, credit ratings, access to bank finance, access to short-term finance, access to capital markets, and forfeiting.

²⁵ The difference in the sizes of the coefficients on CRATE06 and IPROTECT06 reflects the differences in the means of respective variables (see Table 4). Not surprisingly, CRATE06 and IPROTECT06 are both quite highly correlated with the summary variable DOBUSINESS06 (with correlation coefficients of .78 and .63, respectively). If both CRATE06 and DOBUSINESS06 are included, DOBUSINESS06 enters with a more significant coefficient in both the equity and bond equations.

DOBUSINESS06. Both these variables enter significantly in the bond regressions but not the equity regressions, though again with little difference in overall model fit or in the coefficients on other variables.²⁶ Substituting the World Bank “Doing Business” measure of contract enforcement (CONTRACT) also generates a significant coefficient only in the bond equation. Taken together, we interpret these results as suggesting that foreign investors are attracted to countries where access to information is easier, and where credit risk and investor protection standards are high.

Effects of market liquidity, market structure, and relative performance:

To capture the relative size or liquidity of the destination country capital market, MCEQUITYGDP06 and MCBONDSGDP06 are included as the ratio of destination country equity or bond market capitalization to GDP (expressed relative to the investor country capitalization ratio). This variable enters with a positive and significant coefficient in all variants of the bond equations, suggesting that investors do seek out destinations where debt securities markets are relatively more developed than their home markets. However, a similar effect does not appear to be present for equity investment, as this variable enters with a negative (though insignificant) coefficient. Likewise, a measure of equity market liquidity (TURNOVER) also enters with an unexpected negative but insignificant coefficient.

For bonds, there is a very significant positive contribution from the percent of international bond issuance of a given destination country that was in the currency of each investor country (ISSUANCE).²⁷ Because most European debt recently has been issued in euros, the contribution of this variable helps explain the “overweight” of euro-area countries in debt securities of other euro area countries, as well as relatively high weights in debt securities of European emerging market countries.

Measures of relative market performance between investor-destination pairs (BETAEQUITY06 and BETABONDS06) enter with expected negative signs but are only consistently significant in the various versions of the equity regressions. Beyond the effects of currency movements captured in the Betas, there does not appear to be an additional significant effect of currency movements as measured as the monthly average change in investor-destination exchange rates (EXM0106). Somewhat surprisingly, the average 3-month market interest rate in each destination country (expressed as the spread

²⁶ INTNET06 and PHONE06 are not surprisingly quite highly correlated with each other, but somewhat surprisingly also highly correlated with both DOBUSINESS06 and CRATE06: the correlation between INTNET06 and PHONE06 is .738; between INTNET06 and DOBUSINESS06 is .718; between INTNET06 and CRATE06 is .805; between PHONE06 and DOBUSINESS06 is .660 and between PHONE06 and CRATE06 is .798.

²⁷ Percent in each currency calculated from total bonds issued over the 2004-2006 period as reported by DCM Analytics.

over 3-month U.S. 3-month market rates) enters with a positive though generally insignificant coefficient.

Of the financial center destination dummy variables included, Ireland, Luxembourg, and Singapore enter with consistently positive coefficients in the equity equations, whereas the U.K. enters with a consistently negative coefficient. For the U.K., the negative coefficient about offsets much of the positive contribution from ADR, suggesting that U.K. firms also may not get the same benefit listing in U.S. markets as do other foreign firms.

For the bond equations, Switzerland has a significant negative coefficient in many of the equations. This result is perhaps not surprising: although Switzerland ranks highly in terms of credit rating, is close to many other European countries, and shares common language with several, its domestic bond market is quite small. Although we control for bond market size relative to GDP, the result for Switzerland suggests that this effect may not be adequately captured through this variable.

Table 9 compares the results from the fixed-effect models 1a and 1b with results from from the bivariate tobit model specification. Although the estimated correlation across error terms (ρ) is significant and positive, indicating that there are investor-country-specific characteristics not captured in the various explanatory variables, the estimated coefficients are very similar to those obtained in the fixed effect models.

3.b. Marginal contributions and fixed-effect terms

Because interpreting the relative contributions of the various explanatory variables is not straightforward from the model coefficients for a Tobit regression, Table 8 shows the estimated marginal contributions from model 1a for equities and 1b for bonds. To help put these contributions into perspective, the final three columns in the upper panel of the table compare the estimated contributions for euro area investors investing in securities of other euro area countries with those for euro area investors investing in the U.S. securities and in securities issued by new entrants to the European Union.

For a euro area investor, the trade share with another euro area country on average is only slightly smaller than the trade share with the U.S., and for the equity regressions, this effect contributes about .06 to the equity portfolio weight in both other euro area and U.S. equities. However, the effect of distance reduces the estimated weight considerably more for U.S. equities, while the language effect has a small positive contribution for euro area equities. Altogether, trade, distance, and language subtract a negligible amount from the weight in intra-euro area equity investment, but a more sizable -0.3 from euro area investment in U.S. equities. Euro area trade shares with new EU entrants are fairly small, but on average these countries are not that far away; taken together, trade, distance, and language subtract about 0.1 from euro area equity investment in these countries,

somewhat less than for investment in the U.S. equities. Thus, trade, distance and language can account for sizable portion of the difference between euro-area investment in U.S. versus intra-euro area equities.

Because the U.S. has high ranking for “doing business”, the estimated contribution from this variable to the portfolio weight in U.S. equities is a sizable 0.28. Euro area countries, on average, have slightly lower “doing business” rankings, but the resulting estimated contribution is still a good-sized 0.23 to for euro area investment in other euro area equities. EU entrants on average have only slightly lower “doing business” rankings than do euro area countries, and so the estimated contribution from this variable is again a sizable 0.22. Equity issuance as ADRs contributes about 0.19 on average to intra-euro area investment and a much larger 0.76 to U.S. equity investment, but as noted above, the effect for U.S. equity is nearly offset by the negative coefficient on the dummy variable for the U.S. as a destination. Because relatively little equity is issued as GDRs in our sample, the estimated contribution from this variable is quite small despite the sizable coefficient. For portfolio weights in the new EU countries, neither ADR nor GDR issuance contribute much, as relatively little of their equity is issued in either form.²⁸ Thus, on net, measures of credit risk or ease of doing business, and listing on U.S. exchanges or issuance as DRs contributes nearly 0.5 to intra-euro area investment in equities, a bit less(0.36) to investment in U.S. equities, and a still-sizable 0.26 to investment in new EU entrant countries.

Although the coefficient on BETAEQUITY06 enters significantly and with the expected negative sign, the contribution from this variable to investment in either U.S. or euro area equities is fairly small. All told, the contributions from estimates of Beta, relative size of market capitalization, exchange rate movements, and three-month interest rates subtract about 0.1 from the euro area estimated portfolio weight in U.S. equity, about 0.05 from the weight in other euro area equities, and about 0.01 from the weight in EU entrant equities.

The lower panel of Table 8 reports marginal contributions for model 2b for bonds. Because the coefficient on trade is small and insignificant, its contribution is negligible, while distance has a much larger negative effect than in the equity models. For euro area investors, the combined effects of trade, distance, and language subtract an estimated .12 from the portfolio weight in intra-euro area bonds, a much larger .58 from the weight in U.S. bonds, and .22 from the weight for EU entrant countries. The “doing business” ranking makes a significant and sizable contribution of roughly the same size as in the equity equations, adding about .17 to the estimated weight in U.S. bonds, and .14 and .13 to intra-euro area and EU entrant bonds.

²⁸ We note however that the contribution from GDR is larger for equity investment in new EU countries than for either investment in intra-euro area equities or investment in U.S. equities, and for some individual EU countries the effect is a good bit larger: for example, for investment in the Czech Republic, GDR issuance contributes about .10 to the estimated portfolio weight.

Bond issuance in own currency makes a very sizable positive contribution to estimated holdings especially for intra-euro area bond investment. This variable adds nearly 0.5 to the estimated portfolio weight in bonds for these countries and also a sizable 0.3 to the estimated weight in bonds of EU entrant countries. In contrast, because relatively little U.S. debt is issued in euros, the estimated contribution to the weight in U.S. bonds is only 0.01.

All told, the bond regression results tend to support those of the equity regressions: for euro area investors, the weights allocated to U.S. securities will tend to be less than those for other euro area securities and usually no larger than those for EU expansion countries, despite the liquidity and depth of U.S. financial markets, and despite the U.S.'s favorable ratings for "doing business" or alternatively for credit risk. For foreign investors in general, the European example suggests that although these benefits of U.S. financial markets do make sizeable, significant contributions to foreigners' portfolio weights in U.S. securities, the effects may be offset by real or perceived benefits of investment in "nearby" countries.

Because the estimations are run as fixed effect panel tobit regressions, we can also compare the sizes the investor-country specific intercept terms, although we cannot estimate a standard error for these coefficients. Table 9 summarizes the intercept terms for models 1a and 2a for equity and 1b and 2b for bonds. Although the panel tobit specification does not allow us to say whether one country's intercept coefficient is significantly larger than another's, nor can we in this framework identify reasons for why one intercept coefficient may be larger than another, there are some clear differences in these intercept terms that help explain some of the variation in observed foreign portfolio weights. In general, the intercept terms are notably smaller (or more negative) for emerging market countries (Argentina, Malaysia, Czech Republic), contributing to their larger observed home bias. The intercept terms tend to be largest for smaller advanced economies with small but well developed domestic financial markets (Denmark, Finland, and Sweden (equities), Austria, Hong Kong and Netherlands (bonds)), accounting in part for their larger average total foreign portfolio weights. For advanced economies with large domestic capital markets (United States, United Kingdom), the intercept coefficients tend to be in the middle of the range of estimates.

4. Explaining changes in portfolio holdings between 2001 and 2006.

The analysis in the previous section points to the importance of trade connections or proximity, along with credit rating and measures of access to financial markets or information as important factors for home investors as they determine where to invest their foreign portfolios. Because we now have access to CPIS data for several years we can also investigate what factors contributed most to *changes* in foreign portfolio allocations over the past few years.

As indicated by the movements of the arrows in Figures 5 and 6, the total portfolio weight in all foreign securities generally – but not always – increased between 2001 and 2006. Likewise, the weight in U.S. securities generally – but not always – increased. To put portfolio changes on a more equal basis, we compute, for each investor country, the total change in portfolio weight for equities and for bonds between 2001 and 2006 (these changes correspond to the movements along the horizontal axis in Figures 6 and 7). Then, for each investor country, we compute the change in the portfolio weight for each destination country relative to the investor country's total change in foreign weight. This specification allows us to put allocation changes for an investor country such as France (where the change in total foreign equity weight was +.116) on an equal footing with those of an investor country such as the Czech Republic (where the change in total foreign equity weight was -.04).

Table 10 shows the actual and relative increases for each investor country in our sample in U.S. equity and U.S. bonds. For the countries in our sample on average, the portfolio weight in both U.S. equities and bonds increased between 2001 and 2006, but by a little less than the relative increase in all foreign securities (the average relative change was negative for both stocks and bonds). For bonds, there is a clear geographic pattern, with European investors tending to increase the weight in U.S. debt securities by less than they increased weights in other securities, whereas Canadian and Asian investors tended to increase the U.S. weight by a little more. For equities, there is no such clear pattern.

To identify the factors that may account for changes in portfolio weights, we estimate a probit model for a change in the weight in a given destination country that is greater than the investor country's overall change in foreign weight. Thus, for France, any destination country receiving an increase in equity portfolio weight greater than .116 is coded with a 1 and all other destination countries are coded 0. For the Czech Republic, any change greater than -.04 is coded with a 1.²⁹

The first set of columns in the top panel of Table 11 presents the results from this exercise. For changes in equity holdings (upper panel, columns 1-4), investor countries were more likely to increase equity portfolio weights in countries where trade shares were larger and that were relatively close by. Credit rating has a somewhat surprising negative (though insignificant) coefficient, while change in credit rating has positive (though insignificant) coefficient.

The first four columns in the lower panel present results for changes in bond holdings. As tended to be the case for the tobit portfolio weight regressions, trade is not significant,

²⁹ Destination countries with a 0 weight in both periods are coded as 0.

but distance and distance squared are,³⁰ and bond issuance in investor country currency also enters with a sizable positive coefficient. As with the results for the change in equity weights, credit rating has a negative and insignificant coefficient, while the coefficient on the change in credit rating is positive but not significant. Taken together, these results suggest that countries were more likely to increase the portfolio weights (relative to their overall foreign portfolio allocation) into securities of countries that are close by and were important trading partners, but the information on credit rating provides somewhat of a puzzle, as the tobit regressions suggested that credit risk rating (or proxies such as “doing business” ranking were important in explaining portfolio weights.

A concern with this specification is that these results may in large part reflect investor-destination pairs with weights of 0 in 2001 and again in 2006: in 2001, investor countries tended not to invest in securities of countries that were distant or with whom trade was relatively unimportant, and that had a relatively low credit rating. As most of these factors did not change appreciably between 2001 and 2006, these investor countries were still unlikely to invest in these destinations in 2006. Indeed, examination of the predicted probabilities suggests that much of the model’s power may be coming from its ability to identify these “0, 0” portfolios and not from its ability to identify positive increases in portfolio weights.

Columns 8-11 in Table 11 present results from the same probit regressions, but here the samples exclude investor-destination pairs where the actual portfolio weights in 2001 and 2006 were both 0, so that we only examine portfolio combinations that increased or decreased. Trade (or distance) remains an important determinant for a relative increase in portfolio weight, though common language enters with a significant negative coefficient in the equity regression. Credit rating now has a larger negative and quite significant coefficient in both the equity and bond regressions, whereas the change in credit rating enters with a sizable positive coefficient in both equations, though it is significant only in the equity regression. This finding is robust to alternative specifications substituting internet access or “doing business” ranking for credit rating. Interpreting these coefficients is tricky, as the full sample results (as well as the tobit results presented in Tables 5 and 6) clearly indicate that credit risk does matter for portfolio allocations. Instead, these results suggest that when we exclude country pairs with no investment in either year (typically, in destination countries with the lowest credit ratings), investor countries were then somewhat more likely between 2001 and 2006 to *increase* their shares (relative to the rest of their foreign portfolio) into securities issued by those countries whose credit ratings increased over the period, rather than those with the highest ratings.

³⁰ And as was true for the tobit regressions, the coefficient on trade becomes significant if distance and distance squared are dropped from the regression.

In particular, euro area and other developed European country investors tended to increase their exposures to other securities of other developed European countries by more than they did for foreign exposure overall, reflecting the importance of trade and other connections brought about by proximity. This finding may suggest that for euro area investors, such securities may increasingly be thought of as substitutes for domestic securities in their portfolios. But European investors also expanded into emerging markets where credit ratings increased, especially into those that met the criteria for joining the European Union in 2004. These results thus suggest that although there continued to be considerable appetite for U.S. securities between 2001 and 2006 (as actual weights in U.S. securities did increase over this period), it may not be reasonable to assume going forward that the weight allocated to U.S. securities will increase *proportionally* with an increase in total foreign securities, especially for European investors.

5. How much “room” is there in foreign portfolios for further acquisitions of U.S. securities?

What do these results suggest about “room” in foreign portfolios for additional holdings of U.S. securities required to finance projected U.S. external deficits? Using long-run projections of a detailed partial-equilibrium model of the U.S. balance of payments, Bertaut, Kamin, and Thomas (2008) show that under plausible assumptions, the U.S. current account balance will widen further to a little more than 6 percent of GDP by 2020 and the U.S. NIIP will deteriorate further to roughly 60 percent of GDP. They estimate that financing these cumulated deficits would require foreign investors to acquire roughly \$26 trillion in additional holdings of U.S. securities over this period, with the result that their holdings of U.S. securities would increase from \$8.5 trillion at end-2006 to more than \$34 trillion by 2020.³¹ Based on fairly modest assumptions of growth in relative market capitalization (assuming U.S. and foreign market cap grow at the respective rates of their nominal GDP), the share of U.S. securities in foreign portfolios would grow from an estimated 0.12 in 2006 to roughly 0.18 by 2020, and the relative portfolio weight in U.S. securities would grow from 0.30 to roughly 0.55 over the same period, an increase they note is substantial but still implies that foreigners would remain underweight in U.S. assets.

We extend the analysis of Bertaut, Kamin, and Thomas to consider what an aggregate foreign portfolio weight of 0.55 in U.S. securities might mean for foreign industrial, emerging market, and official portfolios. As discussed above, foreign private industrial country investors have tended to be more underweight in U.S. securities than they are in all foreign securities, but their total holdings of U.S. securities are considerably larger and

³¹ The estimate of a \$26 billion increase in foreign holdings of U.S. securities comes from the model’s projections of the increase in U.S. portfolio assets, the increase in U.S. portfolio liabilities, and an assumption that roughly 80 percent of portfolio liabilities are held in the form of U.S. securities (a fraction that is actually somewhat larger than in recent years).

their portfolio acquisitions have accounted for a larger fraction of financial inflows into U.S. securities. Private emerging market country investors tend to have somewhat higher U.S. exposures (relative to their total holdings of foreign securities), but their total holdings of U.S. securities only account for about 20 percent of total foreign holdings. Although a full examination of potential portfolio shifts is beyond the scope of this paper, we can present some scenarios of different market capitalization and portfolio growth rates to consider how plausible the resulting portfolio combinations are, given the assumption that foreign investors would need to acquire \$26 billion in additional U.S. securities by 2020.

We assume that, as in the “baseline” scenario presented in Bertaut, Kamin, and Thomas, U.S. and foreign market capitalization grow at the respective rates of nominal GDP used in the baseline projections.³² In the first scenario, we refine this assumption by assuming different rates of growth of market capitalization of industrial and emerging market economies, reflecting their respective rates of nominal GDP growth. As a result, the share of emerging market capitalization in global market capitalization increases from 17 percent in 2006 to 21 percent by 2020, while the share for industrial countries grows from 46 percent to 48 percent and the share for the U.S. shrinks from 37 percent to 31 percent.³³ We further assume that total private portfolios in foreign industrial and emerging market countries grow proportionally with their growth in market capitalization, and that foreign industrial and emerging market investors continue to hold 7.5 percent and 15 percent, respectively, of their total portfolios in U.S. securities, the shares held on average in 2006-2007. Foreign official investors are assumed to acquire any residual U.S. securities necessary to finance current account deficits.

Column A of Table 12 shows the results of this baseline scenario. Industrial country investors would acquire an additional \$5.8 trillion in U.S. securities, bringing their total holdings of U.S. securities to \$10.4 trillion, and emerging market investors would acquire \$3.6 trillion, bringing their total holdings of U.S. securities to \$5.3 trillion. Industrial country investors’ relative portfolio weight in U.S. securities would increase by a fairly small amount, from 0.20 on average in 2006 to 0.24 by 2020. The effect on emerging market investors is a bit more noticeable (the weight increases from 0.39 to 0.49) but this too does not appear worrisome. Because we assume that foreign official investors would absorb any residual financing required, their holdings of U.S. securities would have to increase by \$16.4 trillion to \$18.6 trillion. Though this is a large increase, it does not appear unrealistic, given projections of growth in reserve holdings and expectations of increasing portfolios of sovereign wealth funds.³⁴ Further, the rate of growth in official

³² Faster growth of foreign market cap relative to U.S. market cap would make the U.S. share in global market cap smaller than in the baseline assumption and, all else equal, would increase the implied total foreign weight in U.S. securities to a bit above .55.

³³ The decline in the market cap share for the U.S. to .31 is slightly larger than the .32 generated in BKT because updated estimates for 2007 show slightly more deterioration.

³⁴ See for example Stephen Jen (2007), “How Big Could Sovereign Wealth Funds Be by 2015?”

holdings of U.S. securities from 2007 to 2020 is roughly the same as occurred between 1995 and 2007, and while the projected share of U.S. liabilities held by official investors would increase from 26 percent in 2006 to 54 percent by 2020, at 54 percent, the share would be no larger than that held by official investors in the first half of the 1980s.

In scenario B, we assume the same rate of growth of foreign market capitalization and the same increase \$26 trillion increase in U.S. securities required to finance U.S. current account deficits, but we assume a slightly faster rate of growth for foreign industrial country market capitalization and foreign industrial portfolios, and correspondingly slower growth rates for emerging market portfolios. We further assume that industrial country investors increase the share of their portfolio held in U.S. securities to 10.5 percent, while emerging market investors decrease their share to 12 percent. Under these assumptions, industrial country investor holdings would grow to \$15.3 trillion, an increase of \$11 trillion, more than offsetting the smaller increase in emerging market investor holdings. As a result, the residual financing required by official investors is smaller than in scenario A, increasing to \$15.1 trillion, or 44 percent of U.S. liabilities. The portfolio weight of industrial country investors in U.S. securities would increase to 0.33, somewhat larger than in scenario A, while that of emerging market investors would remain unchanged at 0.39.

Scenario C considers the effect of a faster pace of growth of emerging market portfolios and market capitalization, and correspondingly smaller increases for investor countries. Investor countries are also assumed to hold a smaller share of their portfolio in U.S. securities (4.5 percent) while emerging market investors increase their share to 18 percent. Under these assumptions, industrial country investor holdings would increase only \$1 trillion to \$5.6 trillion, while emerging market investors would acquire \$6.1 trillion, increasing their holdings to \$7.8 trillion. The portfolio weight of industrial investors would actually decrease in this scenario to 0.14, while that of emerging market investors would increase to 0.58. Because the increase in emerging market country holdings is not sufficient to offset the decrease in industrial country holdings, a larger share would have to be absorbed by official investors, increasing their holdings to \$21 trillion, or 61 percent of U.S. liabilities.

All told, the results of these scenarios suggest that the implied financing needs of projected current account deficits would be reasonably be accommodated by a combination of industrial, emerging market, and official acquisitions, and that the resulting effects on portfolio weights in U.S. securities are not themselves likely to be a source of concern.

Concluding remarks

The experience of the past several years indicates that while projected financing needs of expected U.S. current account deficits are large, there remains considerable room in

foreign portfolios for increased holdings of U.S. assets, taking into account the continued need for reserve holdings and the potential for further diversification of official holdings. Despite the roughly 33 percent depreciation of the dollar over the 2001-2007 period, foreign private investors nonetheless increased the dollar amounts of their holdings of U.S. equities and bonds by nearly \$3.5 trillion, and official investors acquitted a further \$1.8 trillion. Thus far, increased foreign holdings of U.S. securities have been matched by substantial increases in holdings of other foreign securities, in large part reflecting the rapid growth in market capitalization abroad, so that while on average the foreign relative portfolio weight in U.S. securities increased over the period, in most cases it increased by less than did the weight in all foreign securities. However, the persistence of the relative underweight of U.S. securities in foreign portfolios itself suggests that foreign investors are indeed finding attractive alternatives to U.S. securities for portfolio diversification, and the growing availability of such alternatives may have implications for the prices at which foreign investors choose to acquire U.S. securities.

A useful extension of this work would be to explore more fully how country-specific institutional factors and recent changes in investor country domestic markets have affected their demand for foreign securities. The relative sizes of the fixed-effect terms in the panel regressions suggest that such factors contribute importantly to the extent of “home bias” abroad, and thus to foreign demand for both U.S. and other external assets. Understanding how such changes in market developments abroad are likely to affect the willingness of foreign investors to invest outside their home country will help us better assess how future foreign demand for U.S. assets is likely to evolve.

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Table 1a. Total private holdings of foreign long-term debt securities and holdings of long-term U.S. debt securities, selected countries, 2001 and 2006 CPIS, and total reserve holdings, 2001 and 2006 SEFER. Millions of Dollars

	Total Long-term Debt, 2001	Total Long-term Debt, 2006	Holdings of U.S. long-term debt, 2001	Holdings of U.S. long-term debt, 2006	Share in US securities, 2001	Share in US securities, 2006
Total CPIS	6,426,437	16,295,314	1,661,234	3,625,226	0.258	0.222
Total Reserves	921,350	1,955,426	530,411	976,828	0.576	0.500
Japan	1,004,878	1,811,986	347,168	563,401	0.345	0.311
France	462,133	1,569,158	63,562	145,080	0.138	0.092
United Kingdom	667,303	1,559,315	160,994	458,441	0.241	0.294
Germany	401,582	1,289,385	34,908	104,831	0.087	0.081
United States	555,358	1,275,516	....	....	....	....
Luxembourg	414,491	1,128,219	60,643	185,112	0.146	0.164
Netherlands	244,746	694,304	47,372	93,838	0.194	0.135
Ireland	183,871	683,104	38,348	137,346	0.209	0.201
Italy	307,580	598,936	35,580	71,749	0.116	0.120
Spain	103,395	471,405	7,733	39,531	0.075	0.084
Switzerland	227,602	406,675	35,306	53,987	0.155	0.133
Belgium	165,127	394,632	18,685	31,722	0.113	0.080
Bermuda	96,077	263,338	79,496	203,866	0.827	0.774
Austria	80,288	260,595	7,793	17,706	0.097	0.068
Norway	58,838	259,063	14,825	49,784	0.252	0.192
Jersey	44,977	253,048	20,836	97,679	0.463	0.386
Hong Kong SAR of China	85,877	189,303	22,902	45,849	0.267	0.242
Sweden	38,981	126,350	11,542	28,053	0.296	0.222
Canada	25,285	118,571	15,212	69,582	0.602	0.587
Denmark	36,875	116,970	6,210	16,955	0.168	0.145
All Other	299,822	870,016	101,707	233,892	0.339	0.269

Table 1b. Total private holdings of foreign long-term debt securities and holdings of long-term U.S. debt securities, selected countries, 2001 and 2006 CPIS, and total reserve holdings, 2001 and 2006 SEFER. Euro-area countries aggregated and intra-euro holdings excluded. Millions of Dollars.

	Total Long-term Debt, 2001	Total Long-term Debt, 2006	Holdings of U.S. long-term debt, 2001	Holdings of U.S. long-term debt, 2006	Share in US securities, 2001	Share in US securities, 2006
Total CPIS	4,957,339	11,620,821	1,661,234	3,625,226	0.335	0.312
Total Reserves	921,350	1,955,426	530,411	976,828	0.576	0.500
EuroArea	967,292	2,714,144	321,153	843,079	0.332	0.311
Japan	1,004,878	1,811,986	347,168	563,401	0.345	0.311
United Kingdom	667,303	1,559,315	160,994	458,441	0.241	0.294
United States	555,358	1,275,516	....	....	....	....
Switzerland	227,602	406,675	35,306	53,987	0.155	0.133
Bermuda	96,077	263,338	79,496	203,866	0.827	0.774
Norway	58,838	259,063	14,825	49,784	0.252	0.192
Jersey	44,977	253,048	20,836	97,679	0.463	0.386
Hong Kong SAR of China	85,877	189,303	22,902	45,849	0.267	0.242
Sweden	38,981	126,350	11,542	28,053	0.296	0.222
Canada	25,285	118,571	15,212	69,582	0.602	0.587
Denmark	36,875	116,970	6,210	16,955	0.168	0.145
Singapore	41,960	82,159	11,269	19,951	0.269	0.243
Australia	14,396	80,710	6,951	35,002	0.483	0.434
All Other	170,288	408,246	76,958	162,771	0.452	0.399

Table 2: Total and dollar reserves, IMF COFER data

	billions of dollars							change	percent
	2001	2002	2003	2004	2005	2006	2007	2001-2007	2001-2007
IMF COFER data: total reserves	2,049.8	2,408.4	3,025.2	3,748.4	4,174.4	5,036.8	6,396.5	4,346.7	3.12
Allocated	1,566.9	1,793.8	2,220.6	2,641.6	2,822.4	3,315.3	4,322.3	2,755.4	2.76
in dollars	1,120.0	1,202.6	1,463.3	1,738.3	1,883.8	2,171.0	2,605.9	1,485.9	2.33
(estimated: total in dollars)	1,459.0	1,603.5	1,956.6	2,405.3	2,709.0	3,225.6	4,022.4	2,563.4	2.76
estimated share in dollars	0.712	0.666	0.647	0.642	0.649	0.640	0.629		
Total TIC FOI liabilities in dollars	1,052.4	1,199.3	1,510.4	1,997.3	2,305.4	2,805.9	3,393.3	2,340.8	3.22
(of which: debt securities)	981.4	1,107.7	1,382.5	1,861.0	2,150.6	2,614.6	3,326.0	2,344.6	3.39
memo:									
China, total reserves	215.6	291.1	408.2	614.5	821.5	1,068.5	1,530.3	1,314.7	7.10
China, US liabilities estimates, total \$ holdings	154.1	220.1	296.0	443.0	609.0	813.6	1,127.1	973.0	7.31
US dollar liabilities/total reserves	0.715	0.756	0.725	0.721	0.741	0.754	0.754		

Source: IMF COFER survey, and FRB staff estimates

Table 3a. Total private holdings of foreign equity and holdings of U.S. equity, selected countries, 2001 and 2006 CPIS.

	Millions of Dollars					
	Total Foreign Equity, 2001	Total Foreign Equity, 2006	U.S. equity, 2001	U.S. equity, 2006	Share in US equity, 2001	Share in US equity, 2006
Total CPIS	5,200,145	13,779,537	1,027,413	2,096,152	0.198	0.152
United States	1,612,667	4,328,962	....	....	....	....
United Kingdom	558,379	1,362,010	129,190	340,777	0.231	0.250
Luxembourg	319,093	1,148,213	85,544	213,233	0.268	0.186
France	201,752	706,969	41,916	92,162	0.208	0.130
Germany	381,184	611,558	69,891	71,173	0.183	0.116
Netherlands	235,023	558,129	94,262	209,698	0.401	0.376
Ireland	133,755	543,534	46,180	139,472	0.345	0.257
Italy	239,472	534,875	38,099	31,809	0.159	0.059
Japan	227,351	510,418	123,511	224,136	0.543	0.439
Canada	230,796	480,281	134,390	236,901	0.582	0.493
Switzerland	247,409	421,723	47,216	63,354	0.191	0.150
Hong Kong SAR of China	94,615	350,846	11,458	15,537	0.121	0.044
Belgium	106,331	267,105	10,033	21,708	0.094	0.081
Sweden	105,051	260,392	39,254	65,054	0.374	0.250
Norway	41,472	176,025	11,868	46,459	0.286	0.264
Spain	58,698	175,415	8,650	12,327	0.147	0.070
Australia	64,160	164,856	37,377	81,144	0.583	0.492
Denmark	48,085	130,725	14,902	31,555	0.310	0.241
Bermuda	31,032	113,922	11,974	39,747	0.386	0.349
Finland	20,155	96,259	4,106	11,420	0.204	0.119
Guernsey	24,991	95,495	5,611	17,202	0.225	0.180
Singapore	31,319	93,973	6,034	15,801	0.193	0.168
Austria	31,190	88,145	6,999	9,273	0.224	0.105
Jersey	32,617	75,248	10,440	11,038	0.320	0.147
All other	123,547	484,460	38,509	95,172	0.312	0.196

Table 3b. Total private holdings of foreign equity and holdings of U.S. equity, selected countries, 2001 and 2006 CPIS. Euro-area countries aggregated and intra-euro holdings excluded. Millions of Dollars

	Millions of Dollars					
	Total Foreign Equity, 2001	Total Foreign Equity, 2006	U.S. equity, 2001	U.S. equity, 2006	Share in US equity, 2001	Share in US equity, 2006
Total CPIS	4,365,873	11,440,365	1,027,413	2,096,152	0.235	0.183
United States	1612667	4328962	....	....	....	....
total Euro area	901,705	2,431,345	407,028	817,807	0.451	0.336
United Kingdom	558,379	1,362,010	129,190	340,777	0.231	0.250
Japan	227,351	510,418	123,511	224,136	0.543	0.439
Canada	230,796	480,281	134,390	236,901	0.582	0.493
Switzerland	247,409	421,723	47,216	63,354	0.191	0.150
Hong Kong SAR of China	94,615	350,846	11,458	15,537	0.121	0.044
Sweden	105,051	260,392	39,254	65,054	0.374	0.250
Norway	41,472	176,025	11,868	46,459	0.286	0.264
Australia	64,160	164,856	37,377	81,144	0.583	0.492
Denmark	48,085	130,725	14,902	31,555	0.310	0.241
Bermuda	31,032	113,922	11,974	39,747	0.386	0.349
Guernsey	24,991	95,495	5,611	17,202	0.225	0.180
Singapore	31,319	93,973	6,034	15,801	0.193	0.168
Jersey	32,617	75,248	10,440	11,038	0.320	0.147
Mauritius	446	70,463	5	588	0.011	0.008
South Africa	28,408	66,082	3,893	12,685	0.137	0.192
All Other	85,369	307,600	33,262	76,366	0.390	0.248

Table 4. Details of variables included in the tobit regressions for relative portfolio weights in foreign country equities and bonds

Dependent variables:

for each investor country, relative portfolio weight in destination country y equities or bonds

	mean
Equity	0.294
Bonds	0.570

Explanatory variables:

	mean	Expected Contribution	Description
TRADE06	1.234	+	for each investor country, the share of total trade accounted for by destination country y <i>Source: IMF Direction of Trade database</i>
DISTANCE	7.211	-	distance between each investor-destination country pair capitals, in 1,000 kilometers
LANGUAGE	0.092	+	Dummy variable; = 1 if investor-destination country pair share a common official or national language
EMCGDP06	1.066	+	Equity market capitalization/GDP for each destination country, relative to market capitalization/GDP ratio of investor country. <i>Source: S&P Global Market Factbook</i>
EXM0106	0.235	-	For each investor-destination country pair, monthly average change in exchange rate between December 2001 and December 2006 (+ is investor country appreciation).
EXT0601	21.787	-	For each investor-destination country pair, total change in exchange rate between December 2001 and December 2006 (+ is investor country appreciation).
IRATE3MO	3.982	-	For each destination country, the spread for the destination country 3-month money market rate (or 3 month treasury bill rate) over the U.S. 3-month money market rate.
CRATE06	0.660	+	For each destination country, the Euromoney Country Credit Risk rating for 2006
INTNET06	36.053	+	For each destination country, number of internet users per 1,000,000 population in 2006 <i>Source: World Bank Information and Communication technology indicators in the World Development Indicators (WDI) database.</i>
PHONE06	113.284	+	For each destination country, number of fixed or mobile telephone subscribers per 1,000,000 population in 2006 <i>Source: World Bank Information and Communication technology indicators in the World Development Indicators (WDI) database.</i>
DOING BUSINESS 06	1.196	+	For each destination country, World Bank "Doing Business" overall index for 2006, rescaled
CONTRACT	1.118	+	For each destination country, World Bank "Doing Business" measure of contract enforcement
IPROTECT	5.597	+	For each destination country, World Bank "Doing Business" of investor protection standards
<i>for equities:</i>			
BETA-EQUITY06	1.033	-	For each investor-destination country pair, the estimated slope coefficient from a regression equation of the average monthly return on equity in the destination country for the period 2001-2006 on an intercept and the average monthly return on a global equity market cap portfolio.
ADR06	0.104	+	For each destination country, share of market capitalization issued as American Depository Receipts as of December 2006 <i>Source: BoNY ADR Index</i>
GDR06	0.009	+	For each destination country, share of market capitalization issued as Global Depository Receipts and trading on the London Stock Exchange as of December 2006
<i>for bonds:</i>			
BETABD06	0.757	-	For each investor-destination country pair, the estimated slope coefficient from a regression equation of the average monthly return on bonds in the destination country for the period 2001-2006 on an intercept and the average monthly return on a global bond market cap portfolio.
BMCGDP06	7.892	+	For each destination country, estimated bond market capitalization relative to GDP (for 2006). <i>Source: BIS securities database; domestic + international bonds</i>
Dummy variables			
DEUROPR			for destination = United Kingdom, Ireland, Luxembourg, Switzerland, Hong Kong, Singapore, Bahamas, or United States
DNEWEU			Dummy variable; = 1 if investor & destination countries are both in the euro area
			Dummy variable; = 1 if destination country was one of the new entrants to the European Union in 2004

Additional variables for probit regressions (Table 8)

RPEMC0106	2.477	+	Percent growth in equity market capitalization relative to investor country market cap growth, December 2001 to December 2006
RPBMC0106	1.868	+	Percent growth in bond market capitalization relative to investor country market cap growth, December 2001 to December 2006
DCR0306	0.077	+	Change in Euromoney Country Credit Risk rating, 2003 to 2006.

Table 5a: Tobit Regression Results:**Dependent variable = relative portfolio weight in destination country equity**

	Model 1a				Model 2a				Model 3a			
	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value
TRADE06	0.023	0.006	3.476	0.001	0.023	0.007	3.542	0.000	0.023	0.006	3.716	0.000
DISTANCE	-0.127	0.016	-8.121	0.000	-0.121	0.016	-7.524	0.000	-0.129	0.015	-8.810	0.000
DISTSQR	0.004	0.001	5.012	0.000	0.004	0.001	4.751	0.000	0.005	0.001	5.554	0.000
LANGUAGE	0.227	0.078	2.897	0.004	0.240	0.079	3.046	0.002	0.197	0.075	2.626	0.009
MCEQUITYGDP06	-0.018	0.024	-0.724	0.469	-0.019	0.025	-0.775	0.438	-0.031	0.023	-1.359	0.174
TURNOVER	-0.001	0.001	-1.482	0.138	-0.001	0.001	-1.402	0.161	0.000	0.000	-0.592	0.554
EXM0106	-0.034	0.053	-0.646	0.518	-0.039	0.055	-0.713	0.476	-0.072	0.048	-1.490	0.136
IRATE3MO06	0.008	0.004	2.026	0.043	0.007	0.004	1.754	0.079	0.005	0.004	1.201	0.230
BETAEQUITY06	-0.223	0.096	-2.323	0.020	-0.194	0.096	-2.013	0.044	-0.191	0.089	-2.131	0.033
DOING BUSINESS06	0.289	0.064	4.539	0.000								
CRATE06					0.586	0.191	3.064	0.002				
INVPROTECT06									0.060	0.016	3.710	0.000
CONTRACT												
INTERNET06												
PHONE06												
USADR06	1.366	0.239	5.727	0.000	1.183	0.252	4.702	0.000	1.403	0.222	6.314	0.000
GDR06	1.545	0.838	1.843	0.065	0.769	0.815	0.944	0.345	0.746	0.759	0.983	0.326
DUK	-0.594	0.185	-3.217	0.001	-0.514	0.185	-2.774	0.006	-0.661	0.175	-3.776	0.000
DIREL	1.827	0.191	9.571	0.000	1.911	0.191	9.998	0.000	1.779	0.183	9.723	0.000
DLUX	4.601	0.165	27.949	0.000	4.456	0.176	25.305	0.000				
DSWITZ	-0.195	0.181	-1.078	0.281	-0.207	0.182	-1.136	0.256	0.033	0.176	0.185	0.854
DHK	0.411	0.277	1.485	0.138	0.468	0.278	1.685	0.092	0.473	0.261	1.813	0.070
DSING	0.303	0.170	1.783	0.075	0.313	0.173	1.807	0.071	0.245	0.163	1.502	0.133
DUS	-1.219	0.249	-4.886	0.000	-1.071	0.252	-4.241	0.000	-1.318	0.236	-5.586	0.000
DEUOPR	0.072	0.096	0.751	0.453	0.038	0.097	0.395	0.693	-0.010	0.093	-0.107	0.915
Std.Dev.	0.770	0.015	49.916	0.000	0.775	0.016	49.891	0.000	0.717	0.014	49.838	0.000
loglikelihood	-1677.457				-1682.473				-1568.544			
N	1686				1686				1660			

Table 5b: Tobit Regression Results:**Dependent variable = relative portfolio weight in destination country bonds**

	Model 1b				Model 2b				Model 3b			
	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value
TRADE06	0.001	0.009	0.156	0.876	0.001	0.009	0.077	0.938	0.002	0.009	0.244	0.808
DISTANCE	-0.183	0.022	-8.215	0.000	-0.176	0.023	-7.580	0.000	-0.181	0.022	-8.107	0.000
DISTSQR	0.006	0.001	5.256	0.000	0.006	0.001	4.706	0.000	0.006	0.001	5.236	0.000
LANGUAGE	0.475	0.106	4.481	0.000	0.565	0.109	5.172	0.000	0.473	0.108	4.371	0.000
MCAPBONDSGDP06	0.101	0.028	3.558	0.000	0.104	0.030	3.404	0.001	0.144	0.040	3.613	0.000
EXM0106	0.021	0.068	0.312	0.755	0.042	0.072	0.589	0.556	0.005	0.067	0.078	0.938
IRATE3MO06	0.004	0.005	0.873	0.382	0.003	0.005	0.552	0.581	0.003	0.005	0.672	0.501
BETABONDS06	-0.236	0.156	-1.510	0.131	-0.274	0.176	-1.556	0.120	-0.231	0.159	-1.456	0.146
DOING BUSINESS06	0.157	0.081	1.947	0.052								
CRATE06					0.343	0.237	1.445	0.148				
INVPROTECT06									0.023	0.021	1.109	0.268
CONTRACT												
INTERNET06												
PHONE06												
ISSUANCE	0.976	0.170	5.741	0.000	1.063	0.169	6.305	0.000	1.036	0.170	6.096	0.000
DUK	-0.212	0.222	-0.957	0.339	-0.215	0.236	-0.911	0.362	-0.221	0.223	-0.991	0.322
DIREL	-0.025	0.236	-0.107	0.915	-0.026	0.248	-0.105	0.917	-0.136	0.254	-0.536	0.592
DLUX	-0.042	0.341	-0.122	0.903	-0.128	0.358	-0.359	0.720				
DSWITZ	-0.510	0.236	-2.159	0.031	-0.550	0.250	-2.200	0.028	-0.394	0.243	-1.621	0.105
DUS	-0.180	0.238	-0.757	0.449	-0.200	0.255	-0.786	0.432	-0.211	0.242	-0.872	0.383
DEUOPR	-0.268	0.164	-1.631	0.103	-0.347	0.169	-2.055	0.040	-0.310	0.169	-1.829	0.067
DNEWEU	0.209	0.102	2.044	0.041	0.267	0.103	2.603	0.009	0.249	0.102	2.451	0.014
Std.Dev.	1.063	0.021	51.658	0.000	1.119	0.022	51.558	0.000	1.056	0.020	51.606	0.000
loglikelihood	-2149.602				-2254.817				-2116.248			
N	1644				1694				1618			

Table 5a (continued): Tobit Regression Results:
Dependent variable = relative portfolio weight in destination country equity

	Model 4a				Model 5a				Model 6a			
	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value
TRADE06	0.023	0.006	3.834	0.000	0.022	0.007	3.383	0.001	0.021	0.007	3.229	0.001
DISTANCE	-0.122	0.015	-8.299	0.000	-0.128	0.016	-7.999	0.000	-0.134	0.016	-8.246	0.000
DISTSQR	0.004	0.001	5.356	0.000	0.005	0.001	5.163	0.000	0.005	0.001	5.470	0.000
LANGUAGE	0.229	0.075	3.066	0.002	0.239	0.079	3.043	0.002	0.235	0.079	2.982	0.003
MCEQUITYGDP06	-0.025	0.023	-1.079	0.281	-0.013	0.024	-0.516	0.606	-0.009	0.024	-0.357	0.721
TURNOVER	0.000	0.000	-0.560	0.575	0.000	0.001	-0.589	0.556	0.000	0.001	-0.296	0.767
EXM0106	-0.107	0.047	-2.296	0.022	-0.091	0.052	-1.750	0.080	-0.113	0.051	-2.207	0.027
IRATE3MO06	0.005	0.004	1.343	0.179	0.005	0.004	1.222	0.222	0.005	0.004	1.164	0.244
BETA06	-0.226	0.090	-2.504	0.012	-0.203	0.096	-2.111	0.035	-0.204	0.096	-2.112	0.035
DOING BUSINESS06												
CRATE06												
INVPROTECT06												
CONTRACT	0.067	0.046	1.456	0.145								
INTERNET06					0.001	0.001	1.164	0.244				
PHONE06									0.000	0.001	-0.511	0.609
USADR06	1.365	0.223	6.128	0.000	1.362	0.245	5.566	0.000	1.446	0.244	5.916	0.000
GDR06	0.390	0.751	0.520	0.603	0.630	0.817	0.771	0.441	0.538	0.813	0.661	0.508
DUK	-0.545	0.172	-3.176	0.001	-0.532	0.185	-2.876	0.004	-0.533	0.185	-2.873	0.004
DIREL	1.947	0.177	10.997	0.000	1.942	0.193	10.046	0.000	1.908	0.191	9.984	0.000
DLUX					4.593	0.171	26.875	0.000	4.661	0.168	27.684	0.000
DSWITZ	-0.162	0.169	-0.959	0.338	-0.176	0.182	-0.964	0.335	-0.181	0.182	-0.994	0.320
DHK	0.551	0.260	2.117	0.034	0.492	0.278	1.773	0.076	0.520	0.282	1.846	0.065
DSING	0.374	0.160	2.342	0.019	0.402	0.171	2.357	0.018	0.452	0.173	2.618	0.009
DUS	-1.188	0.233	-5.104	0.000	-1.158	0.251	-4.620	0.000	-1.183	0.252	-4.705	0.000
DEUOPR	-0.042	0.092	-0.459	0.646	0.061	0.097	0.634	0.526	0.055	0.097	0.564	0.572
Std.Dev.	0.718	0.014	49.834	0.000	0.775	0.016	49.881	0.000	0.775	0.016	49.879	0.000
loglikelihood	-1574.661				-1686.553				-1687.269			
N	1660				1686				1686			

Table 5b (continued): Tobit Regression Results:
Dependent variable = relative portfolio weight in destination country bonds

	Model 4b				Model 5b				Model 6b			
	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value
TRADE06	0.000	0.009	0.021	0.983	0.001	0.009	0.125	0.901	0.003	0.009	0.342	0.733
DISTANCE	-0.175	0.022	-7.876	0.000	-0.175	0.023	-7.517	0.000	-0.170	0.023	-7.451	0.000
DISTSQR	0.006	0.001	4.951	0.000	0.006	0.001	4.608	0.000	0.006	0.001	4.658	0.000
LANGUAGE	0.499	0.108	4.641	0.000	0.562	0.109	5.153	0.000	0.532	0.108	4.937	0.000
MCAPBONDSGDP06	0.130	0.040	3.271	0.001	0.101	0.030	3.330	0.001	0.095	0.029	3.251	0.001
EXM0106	-0.002	0.066	-0.036	0.972	0.035	0.069	0.510	0.610	-0.004	0.068	-0.065	0.948
IRATE3MO06	0.003	0.005	0.682	0.495	0.002	0.005	0.348	0.728	0.004	0.005	0.788	0.431
BETABONDS06	-0.304	0.161	-1.883	0.060	-0.264	0.167	-1.581	0.114	-0.381	0.172	-2.211	0.027
DOING BUSINESS06												
CRATE06												
INVPROTECT06												
CONTRACT	0.181	0.065	2.782	0.005								
INTERNET06					0.003	0.002	2.036	0.042				
PHONE06									0.003	0.001	2.816	0.005
ISSUANCE	0.998	0.170	5.860	0.000	1.053	0.168	6.251	0.000	1.047	0.167	6.281	0.000
DUK	-0.229	0.219	-1.042	0.297	-0.220	0.233	-0.944	0.345	-0.287	0.230	-1.249	0.212
DIREL	-0.079	0.246	-0.322	0.748	0.059	0.249	0.236	0.814	-0.026	0.242	-0.107	0.914
DLUX					-0.125	0.357	-0.351	0.726	-0.091	0.348	-0.260	0.795
DSWITZ	-0.492	0.236	-2.086	0.037	-0.526	0.248	-2.125	0.034	-0.523	0.241	-2.169	0.030
DUS	-0.241	0.238	-1.012	0.312	-0.220	0.253	-0.873	0.383	-0.185	0.242	-0.765	0.444
DEUOPR	-0.296	0.169	-1.750	0.080	-0.318	0.168	-1.891	0.059	-0.344	0.164	-2.095	0.036
DNEWEU	0.203	0.102	1.982	0.047	0.256	0.103	2.494	0.013	0.204	0.103	1.989	0.047
Std.Dev.	1.055	0.020	51.625	0.000	1.117	0.022	51.619	0.000	1.088	0.021	51.646	0.000
loglikelihood	-2113.121				-2253.920				-2200.531			
N	1618				1694				1668			

Table 7: Tobit Regression Results: Comparison of Fixed Effect Models with Bivariate Model

	Fixed effect model 1a				Fixed model, sample adjusted to correspond more closely with bivariate model sample				Bivariate Model			
	Equity				Equity				Equity			
	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value
CONSTANT	0.023	0.006	3.476	0.001	0.022	0.007	3.288	0.001	0.334	0.193	1.736	0.083
TRADE06	-0.127	0.016	-8.121	0.000	-0.127	0.016	-7.839	0.000	0.019	0.008	2.515	0.012
DISTANCE	0.004	0.001	5.012	0.000	0.004	0.001	4.655	0.000	-0.143	0.019	-7.379	0.000
DISTSQR	0.227	0.078	2.897	0.004	0.228	0.082	2.785	0.005	0.005	0.001	3.938	0.000
LANGUAGE	-0.018	0.024	-0.724	0.469	0.001	0.025	0.048	0.962	0.248	0.074	3.334	0.001
MCEQUITYGDP06	-0.001	0.001	-1.482	0.138	-0.001	0.001	-1.488	0.137	0.004	0.031	0.125	0.900
TURNOVER	-0.034	0.053	-0.646	0.518	-0.052	0.054	-0.957	0.338	0.000	0.001	-0.348	0.728
EXM0106	0.008	0.004	2.026	0.043	0.011	0.004	2.604	0.009	0.036	0.043	0.834	0.404
IRATE3MO06	-0.223	0.096	-2.323	0.020	-0.334	0.103	-3.236	0.001	0.009	0.004	2.256	0.024
BETAEQUITY06	0.289	0.064	4.539	0.000	0.317	0.066	4.802	0.000	-0.272	0.139	-1.958	0.050
DOING BUSINESS06	1.366	0.239	5.727	0.000	1.318	0.245	5.369	0.000	0.332	0.100	3.323	0.001
USADR06	1.545	0.838	1.843	0.065	1.293	0.864	1.497	0.134	1.119	0.408	2.741	0.006
GDR06	-0.594	0.185	-3.217	0.001	-0.633	0.190	-3.331	0.001	1.539	1.384	1.112	0.266
DUK	1.827	0.191	9.571	0.000	1.821	0.196	9.288	0.000	-0.579	0.569	-1.018	0.309
DIREL	4.601	0.165	27.949	0.000	4.556	0.169	26.889	0.000	1.927	0.218	8.821	0.000
DLUX	-0.195	0.181	-1.078	0.281	-0.268	0.187	-1.435	0.151	4.577	0.130	35.096	0.000
DSWITZ	0.411	0.277	1.485	0.138	0.190	0.290	0.657	0.511	-0.270	0.523	-0.517	0.605
DHK	0.303	0.170	1.783	0.075	0.213	0.176	1.208	0.227	0.158	0.591	0.267	0.790
DSING	-1.219	0.249	-4.886	0.000	-1.226	0.257	-4.778	0.000	0.197	0.327	0.604	0.546
DUS	0.072	0.096	0.751	0.453	0.063	0.099	0.633	0.527	-1.102	0.628	-1.754	0.079
DEUROPR	0.770	0.015	49.916	0.000	0.791	0.016	48.439	0.000	0.035	0.110	0.320	0.749
Std.Dev.									0.822	0.010	78.628	0.000
loglikelihood	-1677.457				-1647.017							
N	1686				1636							
	Bonds				Bonds				Bonds			
	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value
CONSTANT	0.001	0.009	0.156	0.876	0.000	0.009	-0.033	0.973	0.941	0.192	4.912	0.000
TRADE06	-0.183	0.022	-8.215	0.000	-0.184	0.023	-7.900	0.000	-0.004	0.015	-0.274	0.784
DISTANCE	0.006	0.001	5.256	0.000	0.006	0.001	5.001	0.000	-0.215	0.026	-8.298	0.000
DISTSQR	0.475	0.106	4.481	0.000	0.534	0.112	4.765	0.000	0.007	0.002	4.112	0.000
LANGUAGE	0.101	0.028	3.558	0.000	0.099	0.030	3.354	0.001	0.532	0.112	4.744	0.000
MCAPBONDSGDP06	0.021	0.068	0.312	0.755	0.038	0.071	0.533	0.594	0.031	0.032	0.979	0.327
EXM0106	0.004	0.005	0.873	0.382	0.003	0.005	0.668	0.504	0.189	0.070	2.699	0.007
IRATE3MO06	-0.236	0.156	-1.510	0.131	-0.268	0.164	-1.638	0.101	-0.001	0.007	-0.091	0.927
BETABONDS06	0.157	0.081	1.947	0.052	0.150	0.084	1.793	0.073	-0.134	0.168	-0.798	0.425
DOING BUSINESS06	0.976	0.170	5.741	0.000	0.987	0.179	5.511	0.000	0.242	0.092	2.625	0.009
ISSUANCE	-0.212	0.222	-0.957	0.339	-0.221	0.230	-0.961	0.337	1.005	0.116	8.671	0.000
DUK	-0.025	0.236	-0.107	0.915	-0.035	0.245	-0.142	0.887	-0.285	0.598	-0.478	0.633
DIREL	-0.042	0.341	-0.122	0.903	-0.045	0.354	-0.126	0.900	0.135	0.415	0.325	0.745
DLUX	-0.510	0.236	-2.159	0.031	-0.515	0.245	-2.104	0.035	0.561	0.435	1.292	0.196
DSWITZ	-0.180	0.238	-0.757	0.449	-0.185	0.246	-0.753	0.452	-0.698	0.366	-1.909	0.056
DUS	-0.268	0.164	-1.631	0.103	-0.270	0.171	-1.583	0.113	-0.140	1.209	-0.116	0.908
DEUROPR	0.209	0	2	0	0.189	0	2	0	-0.405	0.209	-1.939	0.052
DNEWEU	1.063	0.021	51.658	0.000	1.100	0.022	49.638	0.000	0.128	0.096	1.337	0.181
Std.Dev.									1.195	0.019	64.239	0.000
rho									0.296	0.022	13.563	0.000
loglikelihood	-2149.602				-2102.044				-3727.084			
N	1644				1593				1569			

Table 8. Estimated marginal contributions to relative portfolio weights from model 1a for equities and 1b bonds, and estimated effects for euro area investors

				Mean of dependent variable			Equity investment			
				Euro area investor in:			Estimated contribution to equity weight			
	Marginal effect	Std. Error	P-value	US	other euro area countries	EU enlargement countries	US	other euro area countries	EU enlargement countries	
TRADE06	0.012	0.004	0.002	4.76	4.60	0.64	0.057	0.059	0.008	
DISTANCE	-0.070	0.010	0.000	6.66	1.45	2.05	-0.102	-0.468	-0.144	
DISTSQR	0.002	0.000	0.000	44.39	2.09	4.21	0.005	0.108	0.010	
LANGUAGE	0.125	0.048	0.009	0.00	0.13	0.00	0.016	0.000	0.000	
MCEQUITYGDP06	-0.010	0.013	0.466	1.97	1.23	0.51	-0.012	-0.019	-0.005	
TURNOVER	0.000	0.000	0.137	182.80	100.51	33.46	-0.043	-0.077	-0.014	
EXM0106	-0.019	0.028	0.510	0.68	0.00	0.06	0.000	-0.013	-0.001	
IRATE3MO06	0.005	0.002	0.048	0.00	0.18	1.97	0.001	0.000	0.009	
BETAEQUITY06	-0.123	0.043	0.005	0.76	1.12	1.11	-0.138	-0.093	-0.136	
DOING BUSINESS06	0.160	0.049	0.001	1.75	1.45	1.36	0.279	0.231	0.217	
USADR06	0.755	0.145	0.000	1.00	0.25	0.01	0.191	0.755	0.006	
GDR06	0.853	0.506	0.092	0.00	0.01	0.04	0.004	0.002	0.035	
DUK	-0.328	0.106	0.002							
DIREL	1.010	0.177	0.000							
DLUX	2.542	0.344	0.000							
DSWITZ	-0.108	0.100	0.282							
DHK	0.227	0.151	0.133							
DSING	0.168	0.096	0.080							
DUS	-0.673	0.155	0.000	1			-0.673			
DEUROPR	0.040	0.054	0.460		1			0.040		
Total estimated contributions (excluding fixed effect intercept terms)								-0.413	0.525	-0.016

				Mean of dependent variable			Bond investment			
				Euro area investor in:			Estimated contribution to bond weight			
	Marginal effect	Std. Error	P-value	US	other euro area countries	EU enlargement countries	US	other euro area countries	EU enlargement countries	
TRADE06	0.001	0.005	0.876	4.76	4.60	0.64	0.004	0.004	0.001	
DISTANCE	-0.114	0.013	0.000	6.66	1.45	2.05	-0.759	-0.165	-0.234	
DISTSQR	0.004	0.001	0.000	44.39	2.09	4.21	0.177	0.008	0.017	
LANGUAGE	0.295	0.074	0.000	0.00	0.13	0.00	0.000	0.038	0.000	
MCAPBONDSGDP06	0.063	0.018	0.000	1.29	1.70	0.20	0.081	0.107	0.013	
EXM0106	0.013	0.043	0.757	0.68	0.00	0.06	0.009	0.000	0.001	
IRATE3MO06	0.003	0.003	0.390	0.00	0.18	1.97	0.000	0.000	0.005	
BETABONDS06	-0.147	0.089	0.100	0.66	1.04	0.77	-0.098	-0.152	-0.112	
DOING BUSINESS06	0.098	0.054	0.071	1.75	1.45	1.36	0.171	0.141	0.133	
ISSUANCE	0.608	0.131	0.000	0.02	0.82	0.53	0.014	0.500	0.320	
DUK	-0.132	0.138	0.339							
DIREL	-0.016	0.147	0.915							
DLUX	-0.026	0.212	0.903							
DSWITZ	-0.317	0.155	0.040							
DUS	-0.112	0.149	0.452	1			-0.112			
DEUROPR	-0.167	0.106	0.115		1			-0.167		
DNEWEU	0.130	0.067	0.052			1			0.130	
Total estimated contributions (excluding fixed effect intercept terms)								-0.512	0.315	0.272

Table 9. Fixed effect intercept coefficients from model 1a (equity) and model 1b (bonds)

	Equity		Bonds	
	Model 1a	Model 2a	model 1b	model 2b
US	0.463	0.373	0.743	0.742
Austria	0.334	0.272	1.912	1.893
Belgium	0.354	0.288	0.924	0.841
Denmark	0.524	0.455	1.421	1.375
Finland	0.790	0.725	0.853	0.764
France	0.370	0.303	0.961	0.970
Germany	0.125	0.061	1.199	1.167
Greece	-0.070	-0.133	0.534	0.514
Italy	0.281	0.218	0.562	0.495
Netherlands	0.350	0.285	1.404	1.368
Norway	0.451	0.378	1.080	1.089
Portugal	0.293	0.227	0.661	0.616
Spain	0.092	0.022	0.388	0.305
Sweden	0.578	0.508	0.787	0.686
Switzerland	0.384	0.309	1.302	1.259
UK	0.402	0.329	1.660	1.649
Czech Rep	0.311	0.243	0.449	0.428
Canada	0.160	0.070	0.679	0.602
Argentina	0.056	-0.049	0.109	0.036
Chile	0.267	0.167	0.396	0.283
Hong Kong	0.071	-0.027	1.144	1.142
Japan	0.243	0.152	1.067	1.035
Korea	0.029	-0.064	0.715	0.631
Malaysia	-0.178	-0.276	0.205	0.103
Singapore	0.392	0.299	1.001	0.880
Australia	0.204	0.106	0.394	0.257

Table 10. Change in foreign portfolio weights in U.S. equity and bonds and change relative to average change in foreign portfolio weights

	Equity		Bonds	
	Actual change in US equity weight	change in US equity weight relative to average change in foreign equity	Actual change in US bond weight	change in US bond weight relative to average change in foreign bonds
Austria	-0.043	-0.130	0.009	-0.154
Belgium	-0.043	-0.113	0.013	-0.143
Denmark	0.043	0.008	0.027	-0.046
Finland	0.054	-0.168	-0.015	-0.282
France	-0.001	-0.117	0.031	-0.233
Germany	-0.020	0.014	0.037	-0.132
Greece	0.055	-0.010	0.006	-0.191
Italy	-0.044	-0.087	0.021	-0.009
Netherlands	0.171	0.084	-0.007	-0.133
Norway	0.112	0.050	0.134	-0.187
Portugal	0.025	-0.174	0.027	-0.103
Spain	-0.014	-0.018	0.020	-0.014
Sweden	-0.008	-0.029	0.052	-0.081
Switzerland	-0.027	0.084	0.040	-0.081
UK	0.126	0.034	0.089	0.093
Czech Rep	0.002	0.041	-0.001	-0.080
Canada	-0.007	0.039	0.132	0.049
Argentina	0.114	0.016	0.066	0.045
Chile	0.194	0.055	0.054	0.036
Hong Kong	-0.022	-0.028	0.088	-0.031
Japan	0.014	0.016	0.026	0.047
Korea	0.019	-0.021	0.060	0.021
Malaysia	0.000	-0.007	0.004	-0.115
Singapore	0.062	-0.022	0.020	0.003
Australia	0.004	0.027	0.372	0.112
All investor countries	0.031	-0.033	0.052	-0.122

Table 11

Probit Regressions: Increase in equity portfolio weight in given destination country

	All investor-destination pairs				Excludes pairs with 0 weight in both 2001 and 2006			
	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value
TRADE06	0.049	0.014	3.553	0.000	0.046	0.014	3.239	0.001
DISTANCE	-0.063	0.028	-2.233	0.026	-0.057	0.033	-1.727	0.084
DISTSQR	0.002	0.002	1.083	0.279	0.002	0.002	0.966	0.334
LANGUAGE	-0.104	0.138	-0.752	0.452	-0.274	0.151	-1.808	0.071
RPEMC0106	-0.020	0.015	-1.356	0.175	-0.035	0.020	-1.744	0.081
EXT0601	-0.001	0.001	-1.184	0.236	-0.002	0.001	-1.590	0.112
IRATE3MO06	0.011	0.007	1.562	0.118	0.022	0.011	2.023	0.043
BETAEQUITY06	-0.110	0.159	-0.695	0.487	-0.245	0.196	-1.246	0.213
CRATE06	-0.158	0.267	-0.591	0.555	-0.660	0.348	-1.897	0.058
DCR0306	1.157	0.888	1.303	0.193	1.937	1.050	1.844	0.065
USADR06	0.294	0.260	1.134	0.257	0.004	0.268	0.015	0.988
GDR06	1.451	1.435	1.011	0.312	-0.370	1.667	-0.222	0.824
N	1684				1105			
Log likelihood	-788.444				-620.456			

	Pred 0	Pred 1	Total		Pred 0	Pred 1	Total
Actual 0	926	105	1031	Actual 0	465	128	593
Actual 1	237	344	581	Actual 1	182	260	442
Total	1163	449	1612	Total	647	388	1035

Probit Regressions: Increase in bond portfolio weight in given destination country

	All investor-destination pairs				Excludes pairs with 0 weight in both 2001 and 2006			
	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value
TRADE06	0.004	0.010	0.432	0.666	-0.002	0.010	-0.159	0.874
DISTANCE	-0.114	0.028	-4.066	0.000	-0.136	0.035	-3.904	0.000
DISTSQR	0.004	0.002	2.751	0.006	0.007	0.002	3.207	0.001
LANGUAGE	0.360	0.126	2.857	0.004	0.451	0.143	3.158	0.002
RPBMC0106	-0.037	0.015	-2.376	0.017	-0.061	0.020	-3.042	0.002
EXT0601	-0.001	0.001	-0.659	0.510	-0.001	0.001	-1.216	0.224
IRATE3MO06	0.010	0.006	1.583	0.113	-0.002	0.010	-0.223	0.823
BETABONDS06	0.058	0.198	0.295	0.768	-0.051	0.235	-0.216	0.829
CRATE06	-0.251	0.251	-0.998	0.318	-0.880	0.344	-2.561	0.010
DCR0306	0.490	0.912	0.537	0.591	1.657	1.110	1.492	0.136
ISSUANCE	0.655	0.163	4.031	0.000	0.755	0.193	3.907	0.000
N	1666				1083			
Log likelihood	-844.954				-611.287			

	Pred 0	Pred 1	Total		Pred 0	Pred 1	Total
Actual 0	1023	104	1127	Actual 0	574	82	656
Actual 1	307	116	423	Actual 1	232	100	332
Total	1330	220	1550	Total	806	182	988

Table 12: Estimated increases in portfolio holdings and portfolio weights of US securities necessary to finance projected to finance U.S. current account deficit in 2020

	Share of Global Market Capitalization			Estimated holdings of US securities (trillions of dollars)			Relative Portfolio Weight in U.S. securities		
	2006			2006			2006		
All foreign investors	0.625			8.5			0.317		
Industrial countries	0.456			4.6			0.201		
Emerging Market countries	0.169			1.7			0.388		
Foreign Official Holders (holdings as share of U.S. liabilities)				2.2			0.26		
	Projected shares in 2020			Projected amounts in 2020			Projected weights in 2020		
	Baseline			Baseline			Baseline		
	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario
	A	B	C	A	B	C	A	B	C
All foreign investors	0.691	0.691	0.691	34.3	34.3	34.3	0.544	0.544	0.544
Industrial countries	0.480	0.512	0.431	10.4	15.5	5.6	0.236	0.330	0.141
Emerging Market countries	0.211	0.179	0.260	5.3	3.6	7.8	0.486	0.389	0.583
Foreign Official Holders (holdings as share of U.S. liabilities)				18.6	15.2	20.9			
				0.54	0.44	0.61			

Assumptions:

Projections of U.S. current account and associated financing needs are taken from the baseline projections in Bertaut, Kamin, and Thomas (2008): How Long can the unsustainable U.S. current account deficit be sustained?

In all scenarios, total foreign holdings of U.S. securities are assumed to reach \$34.3 trillion by 2020. Foreign and U.S. market capitalization are assumed to grow at their projected rates of growth of nominal GDP. U.S. share of global market cap declines to .309 percent in 2020.

Baseline case (Scenario A)

Emerging market country market capitalization and emerging market securities portfolios grow 8.3 percent on average.

Industrial country market capitalization and total securities portfolios grow 5.3 percent on average

Emerging market investors hold 15 percent of their total portfolio in U.S. securities (share held in 2006-2007)

Industrial country investors hold 7.5 percent of their total portfolio in U.S. securities (share held in 2006-2007)

Official investors acquire residual amount of U.S. securities necessary to finance the current account deficit.

Scenario B

Emerging market country market capitalization and emerging market securities portfolios grow 6.9 percent on average.

Industrial country market capitalization and total securities portfolios grow 5.8 percent on average

Emerging market investors hold 12 percent of their total portfolio in U.S. securities

Industrial country investors hold 10.5 percent of their total portfolio in U.S. securities

Official investors acquire residual amount of U.S. securities necessary to finance the current account deficit.

Scenario C

Emerging market country market capitalization and emerging market securities portfolios grow 10 percent on average.

Industrial country market capitalization and total securities portfolios grow 4.4 percent on average

Emerging market investors hold 18 percent of their total portfolio in U.S. securities

Industrial country investors hold 4.5 percent of their total portfolio in U.S. securities

Official investors acquire residual amount of U.S. securities necessary to finance the current account deficit.

Appendix Table A1: Tobit Regression Results: comparison of models 1a and 1b with models without top censor

Results for Equity

	Model 1a				Model 1a no top censor				Model 1a no top censor, excl Luxembourg				Model 1a no top censor, excl Luxembourg and several eastern European countries			
	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value
TRADE06	0.023	0.006	3.476	0.001	-0.020	0.040	-0.493	0.622	0.020	0.011	1.838	0.066	0.019	0.010	1.905	0.057
DISTANCE	-0.127	0.016	-8.121	0.000	-0.307	0.097	-3.167	0.002	-0.177	0.027	-6.660	0.000	-0.149	0.025	-5.929	0.000
DISTSQR	0.004	0.001	5.012	0.000	0.009	0.005	1.699	0.089	0.006	0.002	3.728	0.000	0.004	0.001	2.998	0.003
LANGUAGE	0.227	0.078	2.897	0.004	1.643	0.484	3.396	0.001	0.447	0.135	3.299	0.001	0.404	0.125	3.220	0.001
MCEQUITYGDP06	-0.018	0.024	-0.724	0.469	0.167	0.149	1.121	0.262	-0.039	0.041	-0.940	0.347	-0.048	0.039	-1.241	0.215
TURNOVER	-0.001	0.001	-1.482	0.138	0.001	0.003	0.209	0.835	-0.001	0.001	-1.649	0.099	-0.002	0.001	-1.887	0.059
EXM0106	-0.034	0.053	-0.646	0.518	-0.161	0.324	-0.497	0.619	-0.060	0.089	-0.679	0.497	-0.096	0.083	-1.162	0.245
IRATE3MO06	0.008	0.004	2.026	0.043	0.043	0.026	1.662	0.097	0.032	0.007	4.648	0.000	0.035	0.006	5.363	0.000
BETA EQUITY06	-0.223	0.096	-2.323	0.020	-1.174	0.590	-1.988	0.047	-0.464	0.162	-2.869	0.004	-0.435	0.150	-2.909	0.004
DOING BUSINESS06	0.289	0.064	4.539	0.000	0.910	0.394	2.312	0.021	0.540	0.108	5.009	0.000	0.518	0.102	5.077	0.000
USADR06	1.366	0.239	5.727	0.000	6.914	1.468	4.709	0.000	2.382	0.405	5.878	0.000	2.127	0.374	5.685	0.000
GDR06	1.545	0.838	1.843	0.065	14.646	5.155	2.841	0.004	3.774	1.416	2.665	0.008	2.808	1.360	2.064	0.039
DUK	-0.594	0.185	-3.217	0.001	-2.421	1.133	-2.136	0.033	-1.055	0.313	-3.376	0.001	-0.926	0.288	-3.219	0.001
DIREL	1.827	0.191	9.571	0.000	-0.518	1.184	-0.437	0.662	1.732	0.324	5.348	0.000	1.801	0.298	6.041	0.000
DLUX	4.601	0.165	27.949	0.000	30.911	1.011	30.589	0.000								
DSWITZ	-0.195	0.181	-1.078	0.281	-1.341	1.112	-1.206	0.228	-0.340	0.307	-1.108	0.268	-0.232	0.282	-0.822	0.411
DHK	0.411	0.277	1.485	0.138	0.179	1.702	0.105	0.916	0.774	0.470	1.648	0.099	0.817	0.435	1.880	0.060
DSING	0.303	0.170	1.783	0.075	1.180	1.046	1.128	0.259	0.457	0.288	1.588	0.112	0.429	0.265	1.619	0.105
DUS	-1.219	0.249	-4.886	0.000	-5.095	1.534	-3.321	0.001	-1.952	0.423	-4.617	0.000	-1.714	0.391	-4.379	0.000
DEUOPR	0.072	0.096	0.751	0.453	1.692	0.592	2.859	0.004	-0.089	0.167	-0.533	0.594	0.025	0.156	0.161	0.872
Std.Dev.	0.770	0.015	49.916	0.000	4.728	0.094	50.469	0.000	1.303	0.026	49.391	0.000	1.199	0.025	48.303	0.000
loglikelihood	-1677.457				-3566.299				-2011.552				-1829.908			
N	1686				1686				1660				1560			

Results for Bonds

	Model 1b				Model 1b no top censor				Model 1b no top censor, excl Luxembourg				Model 1b no top censor, excl Luxembourg and several eastern European countries			
	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value	Coeff.	Std.Err.	t-ratio	P-value
TRADE06	0.001	0.009	0.156	0.876	-0.003	0.026	-0.106	0.915	-0.005	0.027	-0.173	0.862	0.004	0.014	0.299	0.765
DISTANCE	-0.183	0.022	-8.215	0.000	-0.397	0.067	-5.912	0.000	-0.402	0.068	-5.872	0.000	-0.164	0.038	-4.353	0.000
DISTSQR	0.006	0.001	5.256	0.000	0.015	0.004	3.985	0.000	0.015	0.004	3.984	0.000	0.005	0.002	2.246	0.025
LANGUAGE	0.475	0.106	4.481	0.000	0.657	0.320	2.052	0.040	0.700	0.331	2.117	0.034	0.545	0.178	3.070	0.002
MCPBONDSDGDP06	0.101	0.028	3.558	0.000	0.247	0.086	2.884	0.004	0.377	0.124	3.033	0.002	0.212	0.068	3.133	0.002
EXM0106	0.021	0.068	0.312	0.755	0.109	0.205	0.533	0.594	0.102	0.207	0.494	0.621	0.037	0.112	0.326	0.744
IRATE3MO06	0.004	0.005	0.873	0.382	0.016	0.014	1.125	0.261	0.017	0.014	1.180	0.238	0.005	0.008	0.621	0.535
BETABONDS06	-0.236	0.156	-1.510	0.131	-0.374	0.470	-0.796	0.426	-0.533	0.492	-1.083	0.279	-0.316	0.266	-1.187	0.235
DOING BUSINESS06	0.157	0.081	1.947	0.052	0.563	0.243	2.313	0.021	0.516	0.249	2.077	0.038	0.095	0.134	0.706	0.480
ISSUANCE	0.976	0.170	5.741	0.000	1.740	0.512	3.399	0.001	1.782	0.523	3.406	0.001	1.404	0.314	4.471	0.000
DUK	-0.212	0.222	-0.957	0.339	-0.438	0.666	-0.658	0.511	-0.507	0.674	-0.752	0.452	-0.172	0.362	-0.476	0.634
DIREL	-0.025	0.236	-0.107	0.915	-0.444	0.711	-0.625	0.532	-0.770	0.752	-1.024	0.306	-0.257	0.404	-0.635	0.526
DLUX	-0.042	0.341	-0.122	0.903	-1.001	1.026	-0.976	0.329								
DSWITZ	-0.510	0.236	-2.159	0.031	-0.684	0.709	-0.965	0.334	-0.584	0.721	-0.810	0.418	-0.433	0.388	-1.117	0.264
DUS	-0.180	0.238	-0.757	0.449	0.017	0.714	0.024	0.981	-0.115	0.728	-0.158	0.875	-0.222	0.391	-0.568	0.570
DEUOPR	-0.268	0.164	-1.631	0.103	-1.367	0.494	-2.768	0.006	-1.462	0.516	-2.831	0.005	-0.564	0.298	-1.895	0.058
DNEWEU	0.209	0.102	2.044	0.041	0.687	0.308	2.228	0.026	0.729	0.314	2.323	0.020	0.249	0.190	1.307	0.191
Std.Dev.	1.063	0.021	51.658	0.000	3.190	0.061	52.004	0.000	3.219	0.063	51.487	0.000	1.727	0.034	50.427	0.000
loglikelihood	-2149.602				-3216.293				-3165.888				-2330.104			
N	1644				1644				1618				1519			

Figure 1. Foreign acquisitions of U.S. securities and U.S. acquisitions of foreign securities

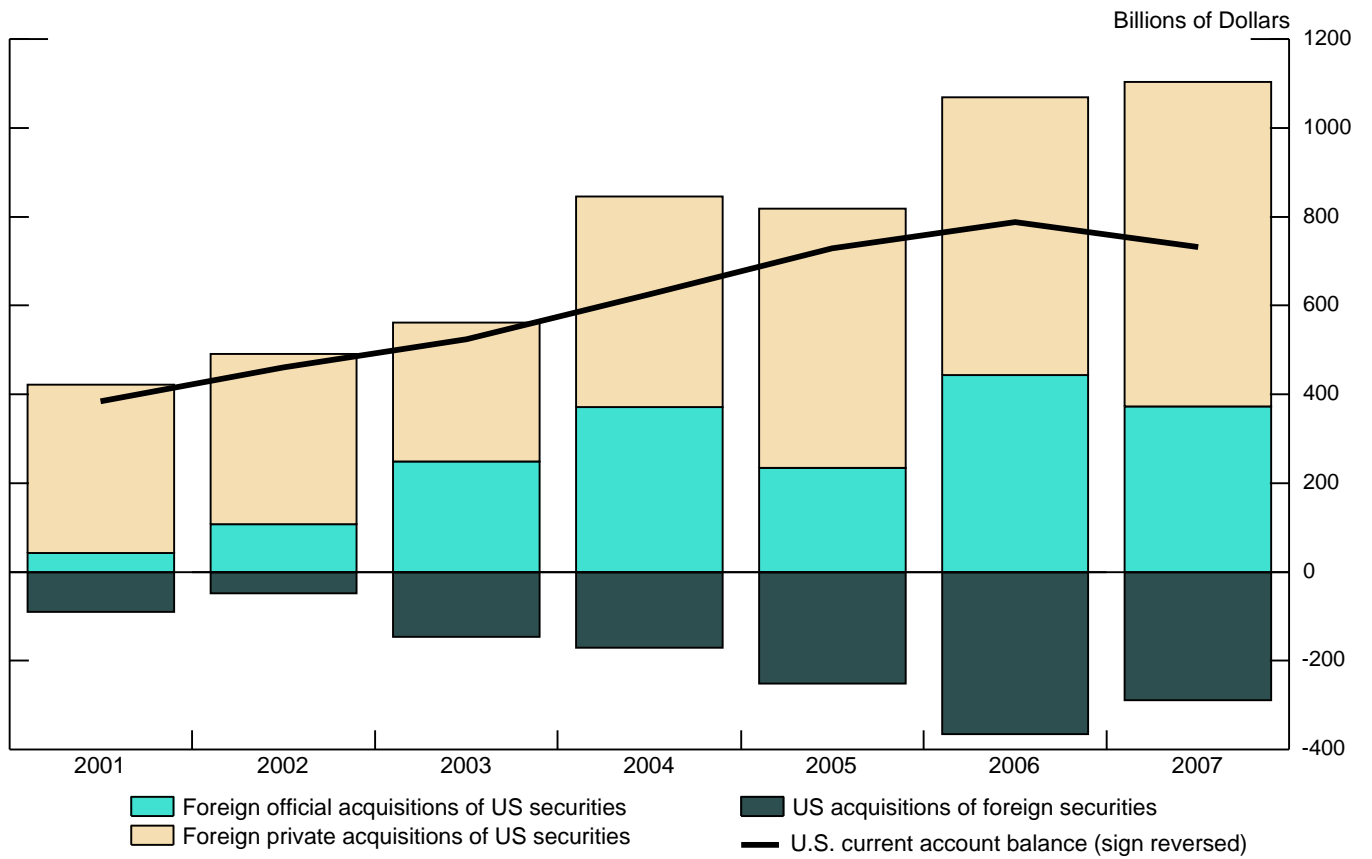
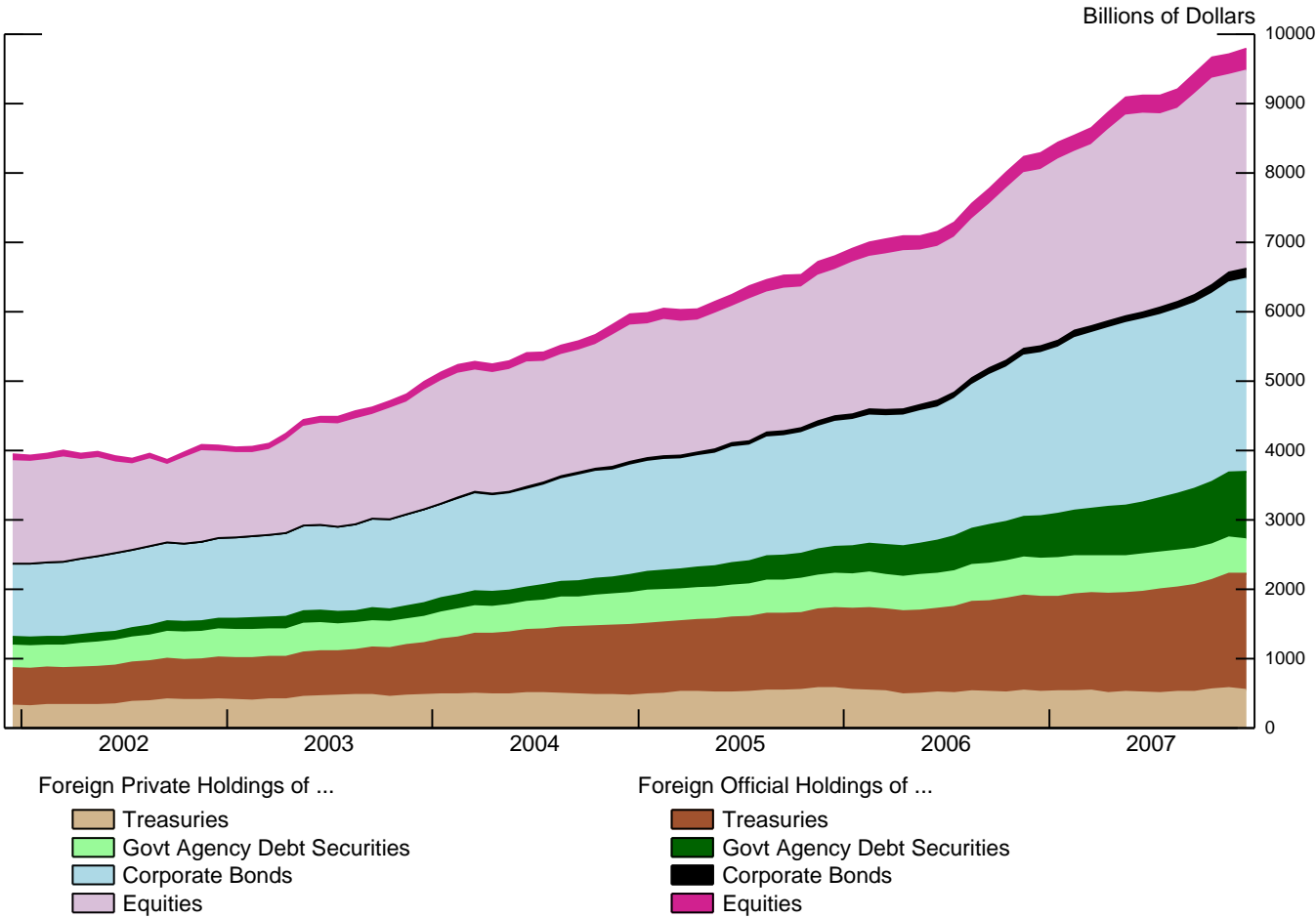


Figure 2. Estimated Foreign Holdings of US Long-Term Securities, by Type of Security and Type of Foreign Holder



Source: FRB staff estimates.

Figure 3. Portfolio shares in foreign long-term debt securities, foreign private holdings from the 2001 and 2006 CPIS plus estimated reserve holdings

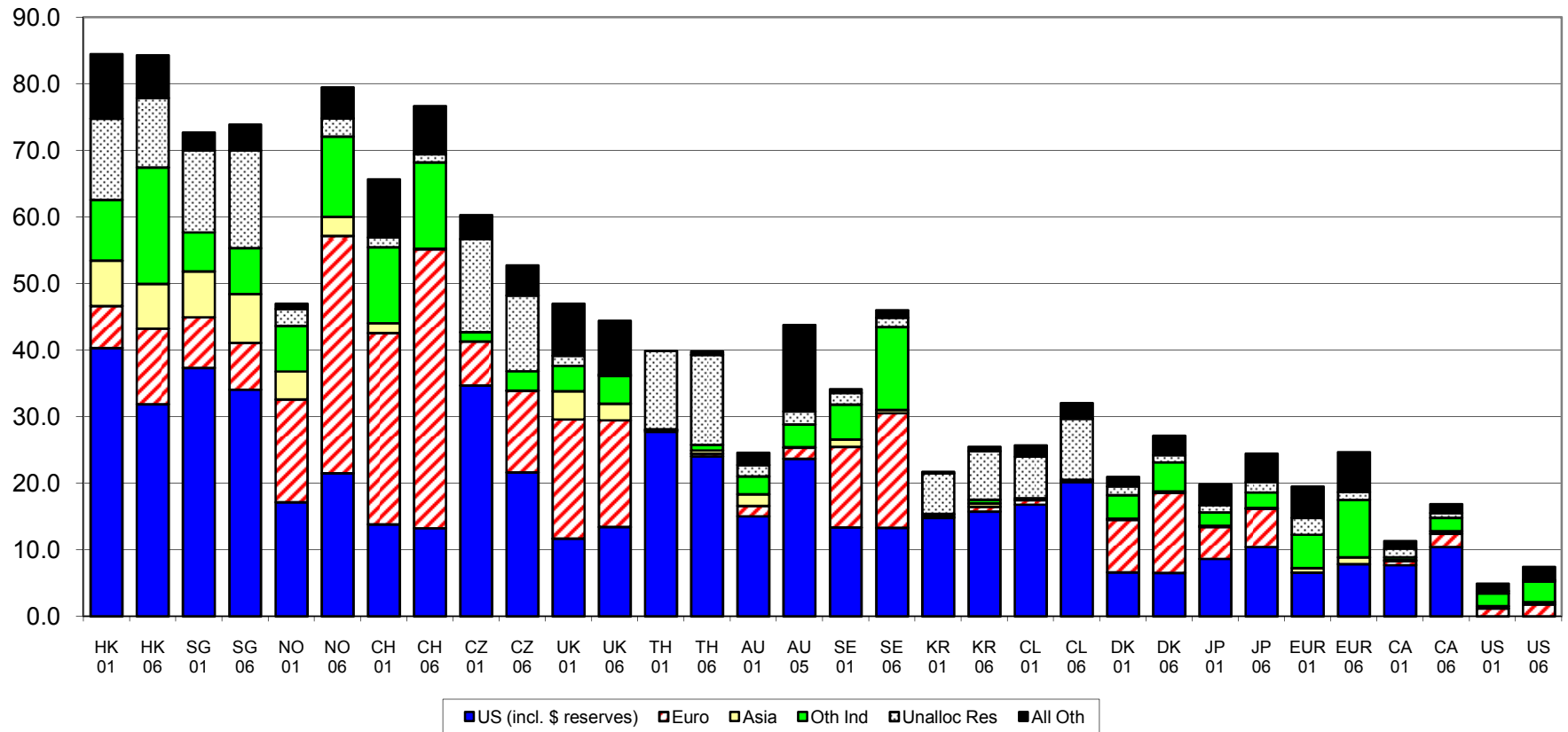
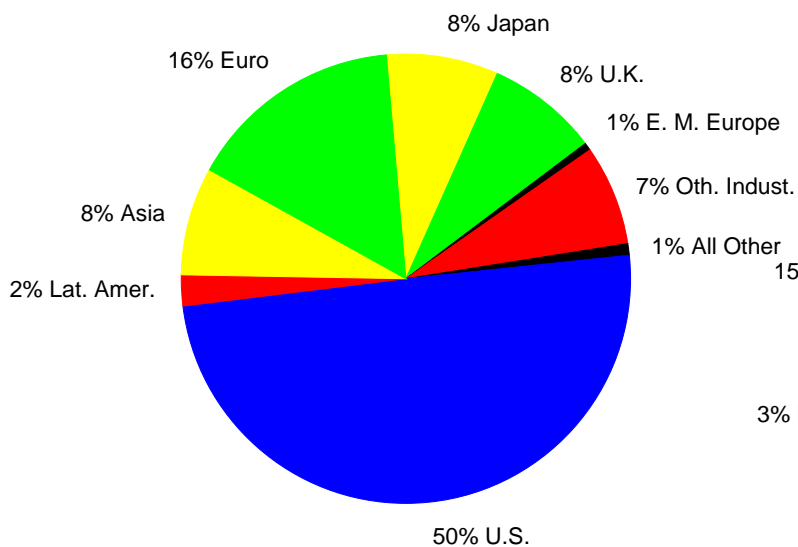
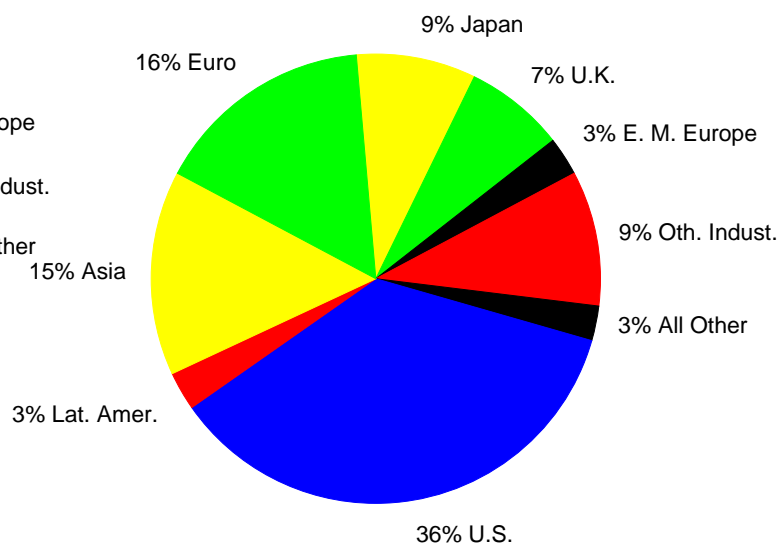


Figure 4. Shares of Global Bond and Equity Markets Capitalization, 2001 and 2006

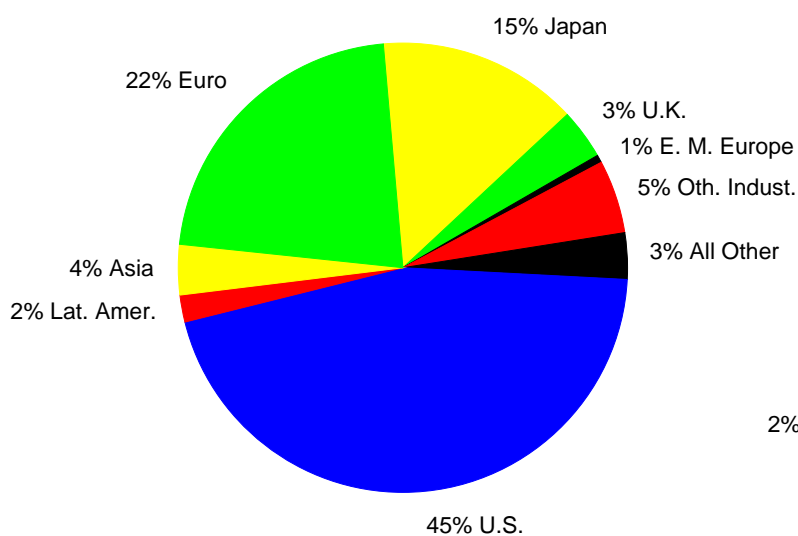
Equity Market Capitalization, 2001



Equity Market Capitalization, 2006



Bond Market Capitalization, 2001



Bond Market Capitalization, 2006

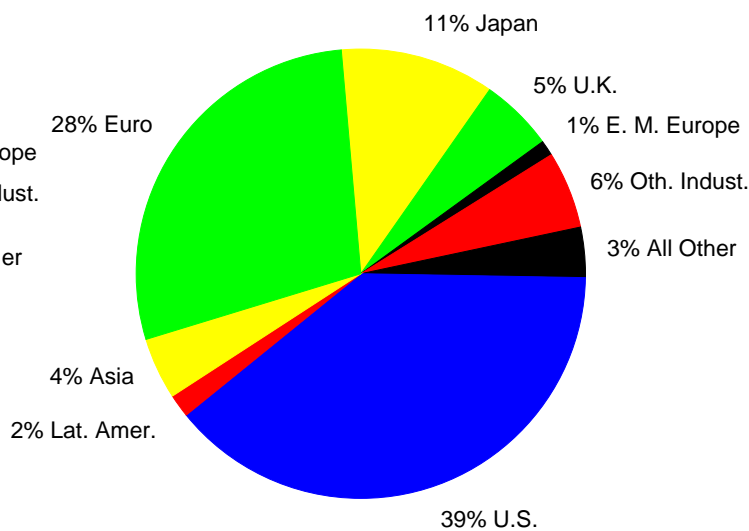


Figure 5

Change in Relative Portfolio Weights in U.S. and Foreign Equity, 2001-2006

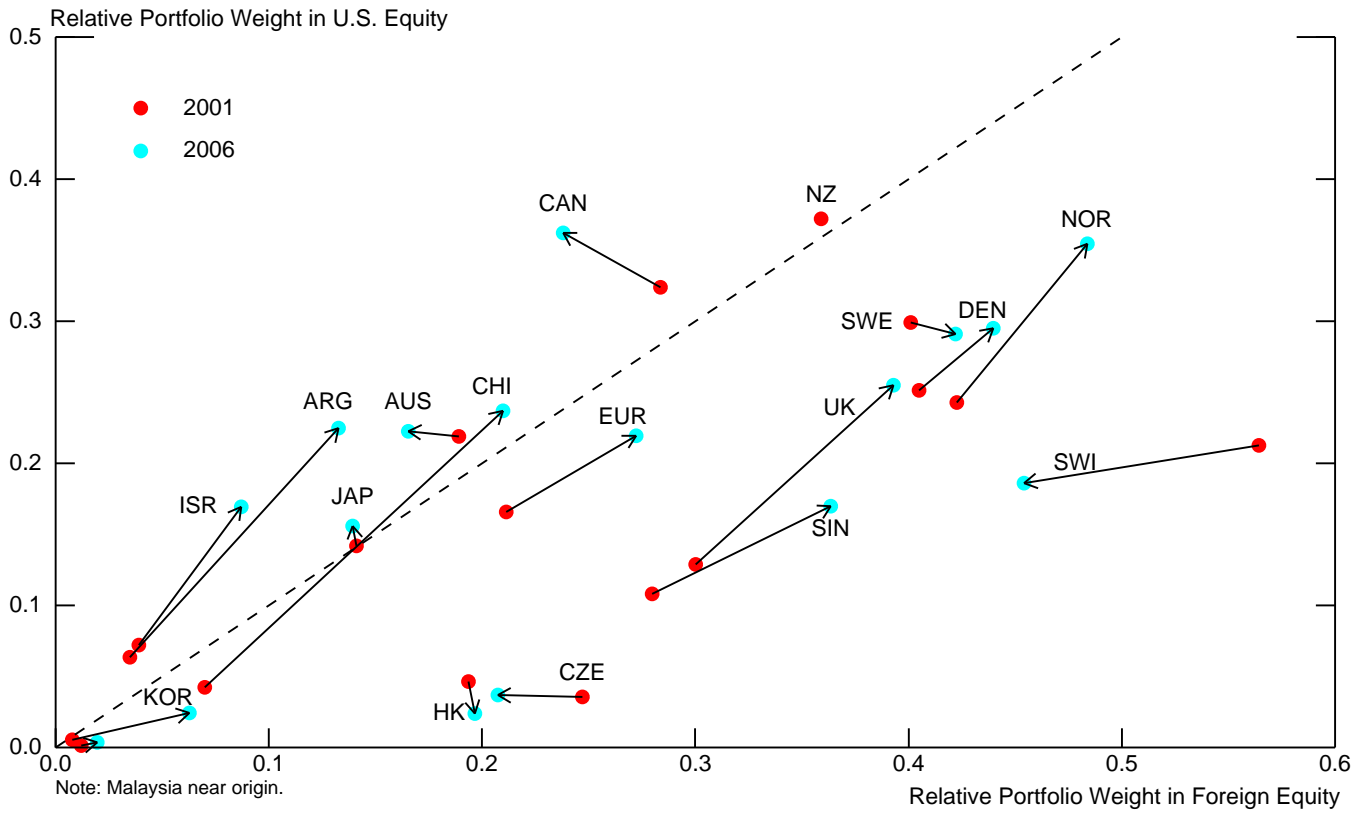


Figure 6

Change in Relative Portfolio Weights in U.S. and Foreign Bonds (Private Portfolios), 2001-2006

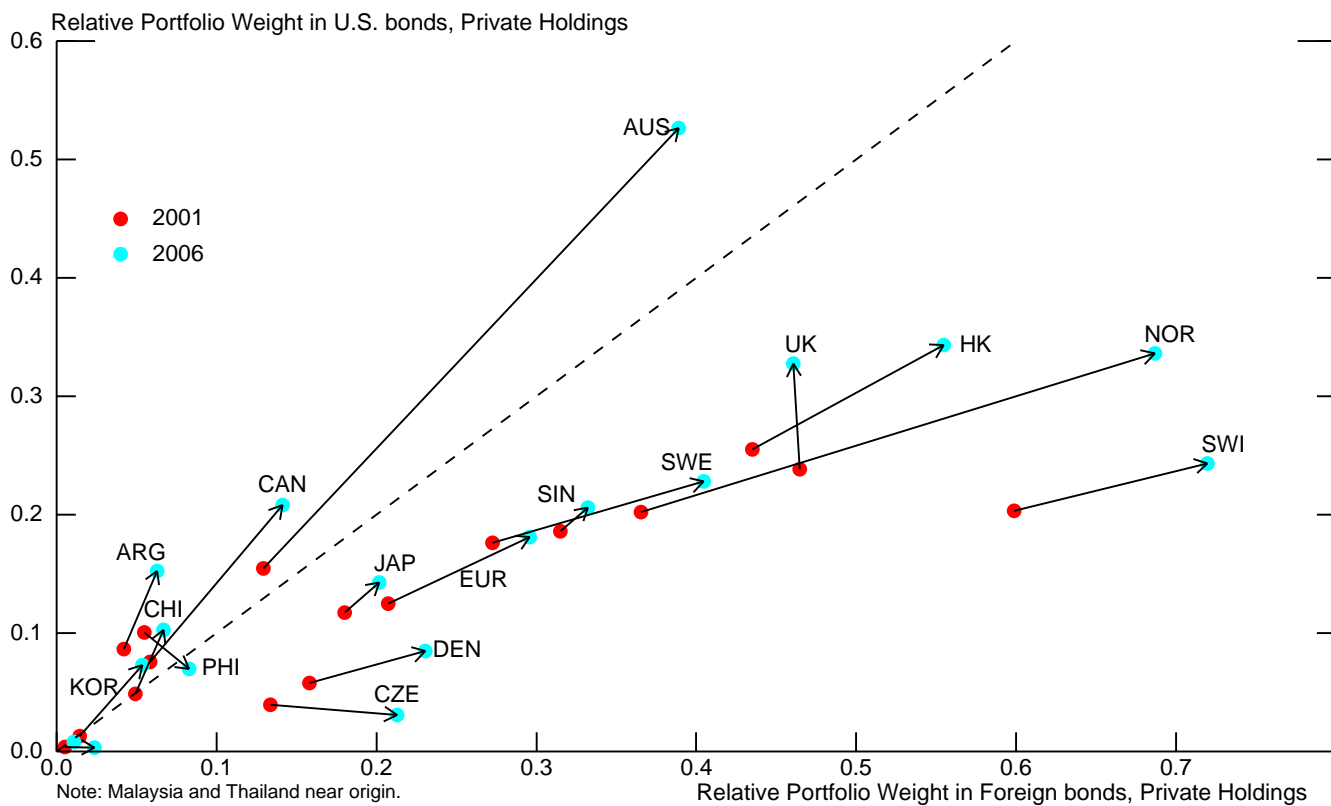


Figure 7

Change in Relative Portfolio Weight in U.S. and Foreign Bonds, Including Reserves, 2001-2006

