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## The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2004

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## IMF Working Paper

Research Department

### **The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2004**

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#### **Abstract**

**This Working Paper should not be reported as representing the views of the IMF.**

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

We construct estimates of external assets and liabilities for 145 countries for the period 1970–2004. We describe our estimation methods and present key features of the data at the country and the global level. We focus on trends in net and gross external positions, and the composition of international portfolios, distinguishing between foreign direct investment, portfolio equity investment, official reserves, and external debt. We document the increasing importance of equity financing and the improvement in the external position for emerging markets, and the differing pace of financial integration between advanced and developing economies. We also show the existence of a global discrepancy between estimated foreign assets and liabilities, and identify the asset categories that account for this discrepancy.

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## I. INTRODUCTION

Global economic developments in recent years have demonstrated the importance of understanding international balance sheets. Ongoing financial globalization—the accumulation of larger stocks of gross foreign assets and liabilities—has increased the magnitude of fluctuations in the value of cross-border holdings, whether scaled by GDP or domestic financial variables.<sup>2</sup> In addition, there have been sizable shifts in the composition of asset and liability positions, with attendant revisions in the risk profiles of individual economies.<sup>3</sup> Finally, the emergence of large external imbalances has led to renewed interest in the international adjustment mechanism and the dual role played by exchange rates in influencing both net capital flows and net capital gains on external holdings.<sup>4</sup>

To improve our understanding of these phenomena, we assembled a comprehensive and up-to-date dataset on the foreign assets and liabilities of advanced, emerging, and developing countries for the period 1970–2004. This updates and extends our initial contribution (Lane and Milesi-Ferretti, 2001a), which included estimates for the external portfolios of 67 countries over the period 1970–98. The new *External Wealth of Nations Mark II (EWN II)* dataset covers over twice as many countries (145 in total), incorporates an extensively revised methodology, and draws upon a richer range of data sources.

In this paper, we describe the construction of the dataset and provide a few illustrative stylized facts. The virtually global coverage allows us to define “world” trends meaningfully, as well as to investigate the scale of the global discrepancy in the measurement of foreign asset and liability positions. Among the key stylized facts that emerge from an initial data analysis, we highlight the further intensification in the degree of financial globalization during the past decade for both industrial and developing countries, despite the occurrence of several financial crises and the reversal in global stock market values in 2001–02. Marked shifts in the composition of international balance sheets are also noteworthy, with an increased reliance on debt liabilities as a source of external finance by major debtors (most notably, the United States), whereas the emerging markets have increased the equity component in their external liabilities and accumulated significant official reserve assets.

We also examine recent developments in the evolution of net foreign asset positions. Among the industrial countries, there has been considerable persistence in the cross-sectional distribution: with the exception of the increase in the net external liabilities of the United States, the identities of the major creditors and debtors in 2004 are the same as in 1996. Among other countries, those in emerging Europe, the Commonwealth of Independent States (CIS) region, and the Western Hemisphere have experienced a significant increase in the scale of net external liabilities, while Africa, emerging Asia, and the Middle East have all experienced significant improvements in their net external positions.

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<sup>2</sup> Lane and Milesi-Ferretti (2001a, 2003, 2005a), Tille (2003).

<sup>3</sup> Lane and Milesi-Ferretti (2005b).

<sup>4</sup> Lane and Milesi-Ferretti (2005a), Tille (2003) and Gourinchas and Rey (2005).

We also highlight significant differences in the composition of countries' external portfolios. A significant number of industrial countries are "short debt, long equity" (most notably, the United States and the United Kingdom), with the important exception of Japan, which is "long debt, short equity." In contrast, emerging markets and developing countries are typically "short equity," with those countries with overall negative net liability positions having net liabilities in both debt and equity categories. Finally, we emphasize the importance of the valuation channel—innovations to the net foreign asset position are significantly more volatile than the current account. Differences between changes in net foreign assets and the current account balance are quite persistent in many countries and represent an important source of long-term shifts in net external positions.

The rest of the paper is structured as follows. In Section II, we explain the methodology that was employed to generate estimates of foreign asset and liability positions. The scale and scope of the dataset is described in Section III. We discuss selected empirical findings in Section IV, with some concluding remarks provided in Section V. A web appendix provides detailed notes for each country appearing in the dataset.

## II. METHODOLOGY

In the Mark I version of this dataset, we employed a broadly uniform methodology to construct estimates of foreign asset and liability positions for 67 countries over 1970–1998, which relied extensively on cumulative flow data with valuation adjustments. Since then, a much broader group of countries has begun to publish estimates of external assets and liabilities—the so-called International Investment Position (IIP)—following the methodology described in the IMF *Balance of Payments Manual*, fifth edition, 1993 (*BPM5*).

We take these developments into account by incorporating national estimates of IIPs into our estimation methodology. For most countries, we use as a benchmark the official IIP estimates for recent years.<sup>5</sup> We then work backward with data on capital flows, together with calculations for capital gains and losses, to generate estimates for stock positions for earlier years, back to 1970 in most cases. Since there is much cross-country variation in the reliability of the data on capital flows and estimated stock positions, we employ a range of valuation techniques to obtain the most appropriate series for each country.

Before turning to a description of estimation issues in relation to individual categories on the international balance sheet, it is useful to clarify the nature of the balance of payments and international investment position (IIP) data which form the backbone of our database. The 5<sup>th</sup> revision of the *Balance of Payments Manual* (IMF, 1993) works on the basis of the residence principle—hence, external assets and liabilities, as well as capital inflows and outflows, refer

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<sup>5</sup> However, reported IIP estimates may have only incomplete coverage of a country's external position. In those cases, we use alternative methods and sources to come up with our own estimates.

to claims and transactions between a country's residents and nonresidents. International holdings and international transactions are classified in the following broad categories:

- Portfolio investment, subdivided into equity securities and debt securities (including bonds and money market instruments);
- Foreign direct investment, which refers to equity participations above 10 percent;<sup>6</sup>
- Other investment (which includes debt instruments such as loans, deposits, and trade credits);
- Financial derivatives; and
- Reserve assets.

For each of these broad categories, balance of payments data measure net capital inflows and outflows during a recording period, and the IIP data measure the stocks of external assets and liabilities at the end of the recording period.

More specifically, *capital inflows* measure net purchases or sales by nonresidents of domestic assets, while *outflows* measure net purchases or sales of foreign assets by residents.<sup>7</sup> From this definition it should be clear that both capital inflows and capital outflows can also take negative values—for example, if nonresidents are net sellers of domestic shares in a given year, portfolio equity inflows will be negative. Similarly, if a government repays a portion of its external debt, the reduction in nonresidents' claims on the government is recorded as a negative capital inflow, because nonresidents are net sellers of bonds issued by the domestic government.

The underlying stocks of external assets and liabilities are, in general, positive. There are, however, a few exceptions. The most common one relates to foreign direct investment. For example, a company investing \$100 in equity of a firm overseas may borrow an amount of \$110 from that firm via an intracompany loan. In this case the stock of FDI abroad would be -\$10 (see *BPM5* and IMF (2003)). It is also possible for domestic residents to be shorting equities in a foreign country, in which case portfolio equity assets would be negative. Be that as it may, these occurrences are extremely rare in our data.

Our data classification follows the one described above, but groups together portfolio debt and other investment, reporting the stock of external debt assets and external debt liabilities.

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<sup>6</sup> Once an FDI investment is established, all subsequent financial transactions between the parent and affiliate are classified under FDI, including intrafirm debt assets and liabilities.

<sup>7</sup> Throughout the paper we measure net purchases of foreign assets by residents and of domestic assets by nonresidents with a positive sign. In balance of payments statistics, the former have a negative sign.



The decomposition between bonds and other investment is available only for countries that report the IIP. However, this reporting period is typically much shorter than the time span that our database covers.

Our methodology relies both on direct estimates of stocks, assembled from a variety of sources, and on indirect estimates constructed using cumulative flows with appropriate valuation adjustments. The cumulative flow method can be illustrated as follows. Denote by  $D$  the stock of holdings at the end of year  $t$  and by  $d$  the flow of net purchases during year  $t$ . Let  $p_t$  be the U.S. dollar price of asset category  $D$  at the end of period  $t$  (for example, the end-of-year stock market price index measured in dollars), and  $\bar{p}_t$  the average price of asset  $D$  during year  $t$ . Then

$$D_t = \frac{p_t}{p_{t-1}} D_{t-1} + \frac{p_t}{\bar{p}_t} d_t . \quad (1)$$

That is, the value of holdings at the end of period  $t$  is the sum of holdings at the end of the previous period, adjusted for valuation changes, and net purchases during the year, evaluated at end-of-year asset prices. This updating formula can be used to obtain holdings  $D_t$  given an estimate of holdings  $D_{t-1}$ , flows  $d_t$ , and asset prices  $p$ , or to back out  $D_{t-1}$  given  $D_t$ ,  $d_t$ , and  $p$ .

When series are constructed cumulating flows forward, it is important to obtain initial values for 1970 (or later starting years). Our main general source for this purpose is the pioneering work of Stefan Sinn (1994) who constructed estimates of external asset and liability positions for 145 countries over 1970–87. For those countries where we construct historical data by cumulating flows backward from a stock measure dating after 1970, the data collected by Sinn provide a useful check on the reliability of the estimates.

The following sub-sections provide more detail, by asset category, on the construction of the data. Details on individual country estimates are provided in the data appendix.<sup>8</sup>

### **A. Portfolio Equity Assets and Liabilities**

Portfolio equity holdings measure ownership of shares of companies and mutual funds that are below the 10 percent threshold—the statistical convention for distinguishing between portfolio and direct investment. We use three primary sources for the *stocks* of portfolio equity assets and liabilities:

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<sup>8</sup> The data and its appendix are available via the Internet at:  
<http://www.imf.org/external/pubs/ft/wp/2006/data/wp0669.zip>.

- Stock estimates as reported in the IIP section of the IMF's *International Financial Statistics (IFS)* and *Balance of Payments Statistics (BOPS)*;
- the IMF's *Coordinated Portfolio Investment Survey (CPIS)*, covering over 60 investor countries and territories, which provides data on the geographical allocation of these entities' portfolio asset holdings over 220 destination territories;
- Bilateral estimates on foreign holdings of portfolio equity assets in the United States and U.S. holdings of equity overseas, constructed by Frank Warnock on the basis of U.S. Treasury data.<sup>9</sup>

In particular, the equity liabilities of a country derived from the *CPIS* provide a lower bound on that country's stock of equity liabilities, and holdings in the United States provide a lower bound on the country's total equity asset holdings. The majority of countries report their holdings at market value.

However, only very few countries have consistently reported their IIP over the whole sample period, with the majority of countries starting to report after 1990. We therefore complement and integrate these stock estimates with balance of payments data on portfolio equity inflows and outflows. As in Lane and Milesi-Ferretti (2001a), we construct market-value estimates of portfolio equity assets and liabilities by using cumulated portfolio equity outflows (for assets) and inflows (for liabilities), adjusted so as to take into account fluctuations in stock prices. These prices are measured with price indices for domestic and international stock markets, where we typically assume that a country invests its foreign equity holdings in a "world" portfolio with weights identical to the Morgan Stanley Capital International's world index.<sup>10</sup> For portfolio equity foreign liabilities, we assume that foreign investors hold a broadly based index of domestic shares, such that the value of portfolio equity liabilities rises in line with the domestic stock market.

In this paper we use cumulative flows not only forward from an initial value, as in Lane and Milesi-Ferretti (2001a), but also backward (as is the case, for example, when a country first publishes a stock estimate toward the end of the sample) to generate alternative series. This extension is justified by the large number of countries that have started reporting their IIP over the past few years.

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<sup>9</sup> See Chinn, Rogers, and Warnock (2006) and Warnock and Warnock (2005) for data on U.S. equity liabilities and Thomas, Warnock, and Wongswan (2004) for U.S. equity assets.

<sup>10</sup> For countries with large stock markets, we use the world index excluding the home country. Lane and Milesi-Ferretti (2004) show that the geographical composition of foreign equity portfolios is systematically affected by bilateral factors such as trade linkages and gravity-type variables; however, the global index is broadly appropriate as a valuation benchmark.

In some cases, the forward cumulative flow series yields estimates in line with the reported stock for recent years. In other cases, however, the reported stock estimate is much larger than what the underlying flows in preceding years would justify, suggesting that past capital flows have been underreported. Calculating past holdings using adjusted cumulative flow backward would imply implausibly large initial stocks. In these cases, we extend the stock backward using the percentage change in the adjusted cumulative flow series or, in some cases, the percentage change in holdings vis-à-vis the United States.

For countries that do not publish IIP data, we can proxy the stock of portfolio equity liabilities for 2001–03 with the holdings in that country reported by participants to the *CPIS*. Those holdings can then be extended backwards using adjusted flows or the percentage change in the adjusted cumulative flow series. For portfolio equity assets, we can use estimated holdings in the United States as a lower bound.

## **B. Direct Investment Assets and Liabilities**

The FDI category includes controlling stakes in acquired foreign firms, in addition to greenfield investments.<sup>11</sup> In addition, at least for some countries, an increasingly important component of FDI is foreign property investment. Our main data sources for the stocks of foreign direct investment are:

- IIP estimates;
- Estimates reported by UNCTAD's *World Investment Report*.

The majority of countries provide book-value estimates of FDI assets and liabilities, with only a relatively small number reporting market-value estimates. Again, we complement existing stock estimates with cumulative flow measures, with valuation changes designed to capture shifts in relative prices across countries.

- For market-value series, we adjust positions for shifts in stock market price indices, similar to our method for portfolio equity holdings.<sup>12</sup>

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<sup>11</sup> The threshold is 10 percent of an entity's equity. Thus, FDI encompasses minority stakes in addition to majority control. The 10 percent threshold is intended to differentiate FDI from portfolio equity positions that are "passive" investments.

<sup>12</sup> This correction is subject to several caveats. First, if a country's FDI liabilities take the form of greenfield investments, these may bear little relation to the activities represented by the firms on the domestic stock market. Second, some proportion of FDI is attributable to investment in residential and commercial properties. Third, the value of FDI includes the value of accumulated cash and liquid assets held by an affiliate—the value of such treasury holdings again will not have a direct relationship with the stock market.

- For book-value series, we use two alternative methods: either cumulative U.S. dollar flows (for countries with either very volatile real exchange rate measures or FDI concentrated in commodity-producing sectors or extractive industries); or cumulative flows adjusting outstanding holdings for fluctuations in real exchange rates (as in Lane and Milesi-Ferretti, 2001a). For example, if the real exchange rate of a country appreciates relative to the U.S. dollar we assume that the U.S. dollar value of FDI holdings in the country correspondingly increases.

As in Lane and Milesi-Ferretti (2001a), our initial values are based on estimates by Sinn (1994) or, for several emerging markets, derived from OECD (1972), complemented with cumulative flows between 1967 and 1970. If data on FDI flows from the IMF's Balance of Payments Statistics are unavailable or incomplete, we use FDI inflows and outflows reported by UNCTAD. Finally, for a few countries we extrapolate the evolution of FDI flows and stocks from their bilateral positions and transactions vis-à-vis the United States, as reported by the U.S. Bureau of Economic Analysis.

### **C. Debt Assets and Liabilities**

The debt category offers the greatest data challenges, particularly in the measurement of foreign debt assets. This category includes portfolio debt securities, plus bank loans and deposits and other debt instruments. Our main data sources are:

- The country's reported IIP;
- The World Bank's Global Development Finance database (only for external debt liabilities of developing countries and emerging markets);
- The IMF's *World Economic Outlook (WEO)* database (only for external debt liabilities of developing countries and emerging markets);
- The Quarterly External Debt Database (QEDS), jointly developed by the World Bank and the International Monetary Fund, which brings together detailed external debt data that are published individually by countries that subscribe to the IMF's Special Data Dissemination Standard (SDDS).<sup>13</sup>
- The IMF's *CPIS* (for portfolio debt assets and, indirectly, portfolio debt liabilities);
- The Bank of International Settlements (BIS) data on a country's assets and liabilities vis-à-vis BIS-reporting banks;

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<sup>13</sup> These data can be found at the link:

<http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/EXTDECQEDS/0,,menuPK:1805431~pagePK:64168427~piPK:64168435~theSitePK:1805415,00.html>

- Data on foreign assets and liabilities of banks and other banking institutions reported by *IFS* (lines 7a.d, 7b.d, 7e.d, 7f.d, 7k.d, 7m.d);
- National sources.

For industrial countries, our previous work did not provide direct estimates of gross debt positions. In this paper, we use existing estimates of debt holdings overseas, extended backward with capital flows with valuation adjustments, often complemented with data from national sources. The valuation adjustment is based on available information on the currency composition of debt assets and liabilities. For example, if a country's debt holdings are estimated to be entirely denominated in euros, the value of holdings is estimated adjusting the past (or subsequent) holdings for changes in the end-of-year exchange rate between the euro and the U.S. dollar, and adding (or subtracting) the flows occurring during the year.

For emerging markets and developing countries, a measure of the stock of external debt liabilities is typically available from the World Bank and/or the *WEO* for most of the entire sample period. When necessary, these series are extended with cumulative flow data, with valuation adjustments to reflect the currency composition of debt positions.

Measuring debt assets is, however, much more complex.<sup>14</sup> The only comprehensive series of holdings of debt assets overseas by domestic residents is the IIP. While it is now reported by around 100 countries, it is often available only for recent years. In addition, historical data on capital outflows are often incomplete—indeed, some countries only report data on “net” other investment flows for most of the sample period. To address these shortcomings, we again use a variety of methods. For several countries we estimate the stock of debt assets as the sum of claims by nonbank domestic residents on BIS-reporting banks (reported by such banks, and available from 1977 onward) plus foreign assets by commercial banks and other banking institutions (reported by *IFS*). The BIS series in particular may contain holdings accumulated through unrecorded financial flows (for example, capital flight). We also construct series based on cumulative capital outflows backward, in cases when the country starts reporting its IIP late in the sample, and forward (when no IIP data on debt asset holdings are reported or such value appears too low relative to the underlying capital outflows).<sup>15</sup> Finally, in some cases we combine holdings data from *IFS*, BIS, and national sources with capital flow data to construct a series for debt assets.

#### **D. Financial Derivatives**

The stock of financial derivatives corresponds to the market value of the outstanding

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<sup>14</sup> The extensive literature on capital flight constitutes an early attempt to provide estimates of foreign asset holdings by domestic residents, particularly for developing countries. See, for example, Cuddington (1987), Dooley (1988), Claessens (1997), and the discussion below.

<sup>15</sup> For countries with significant unrecorded outflows we also make use of data on net errors and omissions to estimate the value of overseas debt holdings.

derivatives' contracts. Only a few countries report separately data on the value of the outstanding stock of financial derivatives. Whenever such data are available, we include them in our dataset.

### **E. Official Reserves**

As in our previous work, we use IMF data on total reserves minus gold (which include foreign exchange, SDR holdings, and the reserve position in the IMF), supplemented by data from national sources. Gold holdings are excluded, primarily since the gold held by a central bank does not constitute a liability of another country.

### **F. Measurement Error**

Clearly measurement error in our dataset is substantial, for two main reasons. The first is the incomplete reporting of balance of payments and especially IIP data, and the second is the difficulty of tracking increasingly complex international financial transactions.

The first problem is particularly acute for countries in the Middle East, sub-Saharan Africa, and small financial centers (for which small errors in measuring gross positions translate into large errors in the measurement of net positions). An additional source of error arises because of the discrepancy between current account transactions and financial flows (the so-called net errors and omissions), an issue discussed at length in Lane and Milesi-Ferretti (2001a). In this dataset we do not make systematic use of net errors and omissions in calculating a country's net external position, but report their cumulative value separately. In some cases, our alternative data sources (such as holdings by a country's residents in BIS-reporting banks for unrecorded outflows, or a country's survey of its liabilities for unrecorded inflows) may capture part of these holdings.

With regard to the second reason, the increased complexity of financial instruments and of the financial structure of companies, together with the growing integration of international financial markets, has complicated further the task of accurately measuring external positions. In some cases, the increase in the size of gross international transactions may overstate the extent of financial interdependence between different economies. For example, a U.S. financial institution can set up a mutual fund in an offshore center, which in turn invests in the United States, and whose shares are purchased by, say, euro area residents. Rather than measuring simply a portfolio equity inflow in the United States from the euro area, the data will record a portfolio equity inflow in the offshore center (from the euro area), and a corresponding outflow from the offshore center to the United States. To some extent these developments are reminiscent of trends in goods' trade, where the ratio of value added to total exports may be very small.

While these problems need to be taken into account when interpreting the data, understanding recent trends in global financial integration and international borrowing and lending requires a global perspective. In that light, we view the construction of (albeit imperfect) estimates of external positions for all major "players" in the international financial system as a crucial first step.

### III. THE DATASET: A GLOBAL OVERVIEW

Our dataset covers 145 countries over 1970–2004, and also reports data for the euro area as a whole. We include all countries with income above US\$1 billion in 2000 (or US\$2 billion in 2004). The only exceptions are 3 small international financial centers—the Bahamas, Barbados, and the Netherlands Antilles—plus Iraq and Afghanistan.<sup>16</sup> We report aggregate foreign asset and liability positions. In addition, we also include the breakdown between portfolio equity, direct investment, and debt categories. We provide a complete span of data for the period 1970–2004 for 91 countries. For a further 54 countries, we report data for shorter periods.

#### A. The World NFA Discrepancy

Given the effectively global coverage of the data, we can document not only regional and country trends, but also address for the first time consistency issues between the world data on foreign assets and liabilities. While the existence of a world current account discrepancy is well known and documented (see, for example, the International Monetary Fund's *Balance of Payments Statistics Yearbook* and Marquez and Workman, 2001), lack of data has so far prevented a similar analysis for the stocks of external assets and liabilities.<sup>17</sup> That the world current account discrepancy and the difference between world investment income earnings and payments are systematically negative, together with anecdotal evidence of underreporting of foreign assets, suggests that measured world external liabilities will exceed assets.

Figure 1 shows that this is indeed the case. The figure plots the cumulative value of the world current account discrepancy, together with the difference between total external assets and liabilities measured in our dataset, scaling both series by world GDP. The co-movement between the two series is striking, all the more so in light of the fact that, as described in the previous section, the new version of our dataset is based to a much weaker extent on cumulative capital flows than the previous one. We then decompose the global stock gap between the underlying asset categories. This is done in Figure 2, which shows that portfolio equity holdings account for almost half of the world NFA discrepancy, with the remainder accounted for by the debt category.<sup>18</sup>

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<sup>16</sup> For the former, we can construct proxies of their gross external positions using the data sources discussed in the previous section. However, the substantial margin of error around these estimates and their large size relative to domestic economic activity makes it very difficult to construct a reasonably consistent series for the net external position.

<sup>17</sup> While it is true that some of the offshore centers not included in the dataset hold large stocks of assets and liabilities (relative to their size), they are de facto pure intermediaries, with trivial net positions. Therefore they would not significantly alter the picture with regard to differences between “global” assets and liabilities, although they may affect the breakdown between equity and debt.

<sup>18</sup> Foreign direct investment is the most problematic series from the point of view of measurement, given that some countries report it at book value and others at market value.

Thanks to the results of the portfolio survey, it is possible to shed some more light on the discrepancy between portfolio equity assets and liabilities, by comparing total liabilities reported by a country with the total assets that other countries claim to be holding in that location. The latter information can be gleaned from the *CPIS*. This is done in Table 1, which highlights how the portfolio equity liabilities reported by Ireland, Luxembourg, and the United States are substantially higher than the reported portfolio equity holdings in these economies by *CPIS*-reporting countries.

These results suggest that the source of the problem is the under-reporting of claims on these countries. For Ireland and the United States, this is bolstered by additional bilateral evidence obtained by comparing the surveys on foreign holders of domestic equities conducted by such countries with the data from the *CPIS*. As shown in Table 2, U.S.-reported data on holders of U.S. equities are much higher for financial centers (such as Singapore, Switzerland, and the United Kingdom) than holdings reported by these financial centers.<sup>19</sup> This is a result to be expected—these shares may be held by custodians in these countries on behalf of nonresidents. There is also a large discrepancy between Canadian holdings reported by the United States and those reported by Canada. As for Ireland, the largest discrepancies are those with the United Kingdom and the United States, which total over US\$200 billion.

In sum, while some progress can be made in determining where some of the underreported external assets are held, it is much more difficult to establish which country's residents hold such claims. Looking forward, increased availability of bilateral data should allow countries to refine and widen the scope of their estimates, particularly for assets held overseas.

#### **IV. SELECTED EMPIRICAL FINDINGS**

In this section, we briefly present some general patterns in the data. We first examine indicators of financial globalization. Next, we report findings on the composition of international balance sheets. Finally, we describe some features about the evolution of net foreign asset positions. In presenting the data, we occasionally divide countries into two groups: long-standing OECD countries, which we denote as "industrial," and the remaining countries, which we denote as 'emerging' and developing (Appendix 1). The separation is clearly artificial in some cases—for example, Hong Kong S.A.R. and Singapore have considerably higher GDP per capita than several of the "industrial" countries.

##### **A. The Scale of International Financial Integration**

In Lane and Milesi-Ferretti (2003), we constructed a volume-based measure of international financial integration

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<sup>19</sup> The large difference for holdings in Caribbean offshore centers is explained by the partial participation of these centers to the *CPIS*. For example, the survey for the Cayman Islands did not cover mutual funds.



$$IFIGDP_{it} = \frac{(FA_{it} + FL_{it})}{GDP_{it}}, \quad (2)$$

where  $FA$  ( $FL$ ) denotes the stock of external assets (liabilities). The  $IFIGDP$  ratio provides a volume-based measure of international financial integration.

Figure 3 plots this ratio for both the industrial group of countries and emerging markets and developing countries over the period 1970–2004.<sup>20</sup> Over this period, the ratio has increased by a factor of 7, from 45 percent in 1970 to over 300 percent in 2004. During the 1970s and 1980s, the increase in international financial integration was fairly gradual ( $IFIGDP$  reached 100 percent only in 1987), but an acceleration took place in the mid-1990s:  $IFIGDP$  passed 200 percent in 1998 and 300 percent in 2004.<sup>21</sup>

The scale of international financial integration for the emerging markets/developing countries group has also increased steadily over time, tracking closely trends for industrial countries until the early 1990s.<sup>22</sup> From then on, however, the acceleration in cross-border asset trade by industrial countries was not matched by the emerging markets and developing country group, where the pace has been much more gradual.

The difference between the two groups of countries is even starker when the evolution of international financial integration is compared with international trade integration. Figure 4 displays the sum of external assets and liabilities, scaled by the sum of imports and exports of goods and services. For both groups, the expansion of asset trade outstripped the expansion of product trade from the mid-1970s to the late 1980s, with the ratio higher for industrial countries throughout the period. From then onward the increase in the ratio for industrial countries was very rapid, with the spectacular increase in asset trade outpacing a relatively modest expansion in goods' trade. For emerging markets trade in goods increased much more rapidly than for industrial countries during this period, but the growth in asset trade was instead much slower than in industrial countries, and therefore the ratio has remained broadly stable over the past 20 years.

Do these stylized facts hold for holdings of equity instruments as well? To explore this issue, we report a second measure of financial integration that focuses exclusively on portfolio equity and FDI holdings (see Lane and Milesi-Ferretti, 2003):

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<sup>20</sup> Excluding Luxembourg (whose external position is available only from 2000 onwards) lowers the value of  $IFIGDP$  for industrial countries over the past five years by 15 to 20 percentage points, without altering the overall trend. Similarly, excluding Hong Kong S.A.R. (where data are available since 1989) lowers  $IFIGDP$  for emerging markets, without altering the overall trend.

<sup>21</sup> A test for a trend break is significant, starting in 1994. If a single trend break is permitted over 1970–2004, the statistical test identifies 1998 as the most significant year.

<sup>22</sup> The sample composition changes over time, since data are missing for a number of non-industrial countries for the early years of the sample.

$$GEQGDP_{it} = \frac{(PEQA_{it} + FDIA_{it} + PEQL_{it} + FDIL_{it})}{GDP_{it}}, \quad (3)$$

where *PEQA* (*PEQL*) denotes the stock of portfolio equity assets and *FDIA* (*FDIL*) denotes the stock of direct investment assets (liabilities). Figure 5 shows the evolution of *GEQGDP* for both country groups. For the industrial group, the figure shows three phases—until 1985, the *GEQGDP* ratio was broadly stable; from 1985 to 1995, it gradually increased; since 1996, it increased much more rapidly, save for the 2001–02 disruption from the reversal in global equity valuations. The trend has been reasonably similar for emerging markets and developing countries, with cross-border equity positions growing strongly during the 1990s. Indeed, equity integration for these countries has grown not only with respect to their GDP, but also with respect to trade (graph not shown), unlike their total financial assets and liabilities. This suggests a significant shift in the structure of these countries' external portfolios, an issue we take up in the next subsection.

## B. Trends in External Capital Structure

The composition of international balance sheets has been the subject of wide discussion in recent years, with an excessive reliance on debt finance perceived as increasing vulnerability and an equity-based financing promoted as improving international risk sharing (Rogoff, 1999; Lane and Milesi-Ferretti, 2001b). What do recent developments tell us about the trends in external capital structure? While we describe developments for both large country groupings, we focus more on the group of emerging markets and developing countries.<sup>23</sup>

We first consider the share of equity (portfolio and FDI) liabilities in total liabilities

$$EQSHARE\_LIAB_{it} = \frac{(PEQL_{it} + FDIL_{it})}{FL_{it}}, \quad (4)$$

Figure 6 shows the dynamics of *EQSHARE\\_LIAB* for the industrial and developing country groups. The trends are broadly similar—a decline during the 1970s (the flip-side of the explosion in international debt trade during that decade), and an increase in the 1980s and especially the 1990s. For industrial countries, the past five years have seen a reversal in *EQSHARE\\_LIAB*, with the 2004 value falling to 36 percent.

As explained in Lane and Milesi-Ferretti (2005b), this is only partly attributable to the decline in equity valuations during 2000–02, and also reflects a significant shift in the composition of capital flows, with debt flows dominating in recent years. However, for emerging markets and developing countries the increase in the relative importance of equity liabilities has continued unabated—in 2004 they accounted for half of total external

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<sup>23</sup> Trends for industrial countries are discussed more at length in Lane and Milesi-Ferretti (2003).

liabilities. Underlying this trend is a steady increase in the share of FDI, which now accounts for about 75 percent of developing countries' equity liabilities, as well as a sharp increase in the value of the portfolio equity liabilities, particularly during the past decade, in line with the development of local financial markets.<sup>24</sup>

The decline in the relative weight of debt in the external portfolio of developing countries and emerging markets has been accompanied on the asset side by rapid accumulation of official reserves. Figure 7, which reports the ratio of external debt and official reserves to exports for the entire group of emerging and developing economies, highlights these trends. The dramatic decline in the aggregate ratio of debt to exports since the late 1980s is remarkable, and holds also if we take the average or the median external debt-to-export ratio, rather than the aggregate one. As a result of these developments, the ratio of official reserves to total debt liabilities has increased from 29 percent in 1998 to 64 percent in 2004. The growth in reserve holdings by emerging markets and developing countries stands out also when compared with developments in industrial countries: while total holdings of reserves by both country groups were virtually the same in 1995 (over \$700 billion), by 2004 total reserve holdings by emerging markets and developing countries (just under \$2.5 trillion) exceed holdings in industrial countries by \$900 billion.

### **C. Net Foreign Asset Positions**

We begin our discussion by characterizing the distribution of net external positions at the end of 2004, the final year of our dataset. Figure 8 plots the ratio of net foreign assets to GDP against (log) GDP per capita for the global sample of countries. While the cross-sectional correlation is significantly positive at 0.45, there is considerable variation in positions at any given level of development. This is especially the case for the high-income group of countries, where the level of dispersion is much wider than for the lower-income cohorts. In terms of our country groupings, the variation of GDP per capita explains over 40 percent of the cross-sectional variance for industrial countries, and less than 30 percent for emerging markets and developing countries. Among the latter, it is noteworthy that the largest creditor positions are disproportionately identified with oil producers and the richer Asian countries.

We turn next to the evolution of net external positions over time for large country groupings. For this purpose, it is useful to separate out the United States from other industrial countries. Figure 9 plots the aggregate net foreign asset position, scaled by the country/group's GDP, for emerging and developing countries, other industrial countries, and the United States, from 1980 onward.<sup>25</sup> In addition to the well-known deterioration in the U.S. net external position,

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<sup>24</sup> The share of portfolio equity liabilities may be overstated in part because many countries report FDI liabilities at book value rather than at market value (IMF, 2003a).

<sup>25</sup> The broad trends in the data are analogous if we scale net foreign assets by world GDP (net external positions do not sum to zero because of the global discrepancy described earlier). The positions of the United States and emerging markets are scaled down relative to other industrial countries, since the latter group is larger in size. For a discussion of recent trends in global imbalances, see Lane and Milesi-Ferretti (2005b).

the chart also highlights the dramatic improvement in the aggregate net external position of emerging markets and developing countries since the late 1990s. As for other industrial countries, the upward trend in their net external position was reversed since 2001, primarily because of a deterioration in Spain, Italy, Australia, and the United Kingdom.

The evolution of net foreign assets in recent years is described in more detail in Figures 10a-10f, with Table 3 providing correlations and group averages, weighted by GDP. Figure 10a and Table 3 show that there was relatively little change on average for the industrial countries, with considerable cross-sectional persistence. No industrial country switched between creditor and debtor status, with the most remarkable shift being the increased indebtedness of the United States. Among emerging and developing regions, emerging Europe, the CIS, and several Latin American countries experienced an expansion in net external liabilities over 1996–2004. However, other regions underwent a significant improvement in their net positions—the Middle East experienced the most dramatic gain, followed by emerging Asia and Africa. While the recent increase in oil prices is certainly important for the Middle East group, the main impetus for emerging Asia has been a focus on improving the external balance sheet in the wake of the 1997–98 Asian and Russian financial crises.

We conclude the discussion of net external positions by briefly returning to the issue of measurement error (see Section II.F). Table 4 provides data on the cumulative value of net errors and omissions as of the end of 2004. For the purpose of the discussion, we will refer to positive net errors and omissions as unrecorded capital inflows and negative errors and omissions as unrecorded capital outflows. On the one side, Switzerland is by far the largest receiver of unrecorded capital inflows.<sup>26</sup> On the other side, a number of countries have experienced unrecorded capital outflows of the order of 20 percent of GDP or more, with Russia, Norway, and Kuwait standing out in terms of absolute magnitudes. While for Switzerland this does not necessarily bias its estimated net external position, since unrecorded inflows may well be captured by the survey data used to calculate the IIP of the country, for countries experiencing unrecorded outflows it is less likely that the cumulative value of these flow is captured in the estimates of external assets. More generally, these figures provide a rough sense of the notable margins of uncertainty surrounding external accounts.

We also examine the composition of net foreign asset positions. This is important, since the average returns and risk profile associated with a given net foreign asset position depend on the composition of foreign assets and liabilities. In Figure 11a, we plot the net equity position against the net debt position for the group of industrial countries. Ireland and Luxembourg are excluded as extreme outliers—both have very high positive net debt and negative net

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<sup>26</sup> This does not necessarily bias its estimated net external position, since unrecorded inflows may well be captured by the survey data used to calculate the international investment position of the country.

equity positions.<sup>27</sup> This scatter diagram shows that there is no systemic cross-sectional relation between net debt and net equity (the correlation is 0.02).<sup>28</sup> Table 5a shows the matrix of net debt and net equity positions. A substantial number of industrial countries (including the United States and the United Kingdom) display the “hedge fund” characteristic of being long in foreign equity and short in foreign debt, while the only major industrial country to display the opposite pattern is Japan.<sup>29</sup>

Figure 11b shows that for emerging markets and developing countries there is a typically a positive relation between net debt and net equity (the correlation is 0.35).<sup>30</sup> No country exhibits the “short debt, long equity” profile: as is documented in Table 5b, 71 developing countries have net liabilities in both the debt and equity categories. An interesting feature is that 31 of the 39 countries with positive net debt positions have negative net equity liabilities—largely reflecting the high official reserves positions of the major recipients of FDI and portfolio equity inflows.

The documented cross-country differences in portfolio structure in general, and the importance of equity holdings in particular, suggest that changes in the valuation of assets and liabilities can play an important role in driving net foreign assets, in addition to net borrowing or lending. Indeed, in previous work we have argued that capital gains and losses on outstanding holdings of foreign assets and liabilities are quantitatively important in driving a wedge between the current account balance and changes in net foreign assets.<sup>31</sup> Table 6 shows that the correlation between these variables has declined over time, falling from 0.71 in 1971–1981 to 0.33 in 1993–2004 for the industrial group and from 0.72 to 0.47

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<sup>27</sup> For financial centers with a large mutual fund industry, the net portfolio equity position is likely to be negative because foreign-owned shares in mutual funds are recorded as portfolio equity liabilities, even though some of the assets of the mutual funds are invested in bonds and money market instruments.

<sup>28</sup> The cross-sectional correlation when Ireland and Luxembourg are included is -0.996.

<sup>29</sup> Ireland and Luxembourg also are long in foreign debt and short in foreign equity, reflecting their roles as major offshore centers for the global mutual fund industry.

<sup>30</sup> For a number of Middle Eastern countries, such as Kuwait, Qatar, and Saudi Arabia, portfolio equity holdings overseas are likely to be substantially underestimated. This is because these countries do not report data portfolio equity outflows or holdings, and partner-country data (such as the U.S. survey of portfolio equity liabilities) only report aggregate holdings of “Middle East oil exporters.” Any reasonable assumption about the extent of diversification of external asset holdings would imply that these countries have a positive net equity position.

<sup>31</sup> As discussed in Lane and Milesi-Ferretti (2001a), capital transfers (such as debt forgiveness) and net errors and omissions can also drive a wedge between the current account and the change in net foreign assets. We come back to this issue below.

for a selected group of emerging markets. The weakening of the correlation is the counterpart to the accumulation of larger gross external holdings—the importance of valuation effects is generally in proportion to the scale of the international balance sheet. Tables 7a-7b show that the valuation channel typically implies larger short-term volatility of changes in net foreign assets relative to the current account balance.

However, it is also important to know whether the valuation channel merely raises volatility or also influences the long-term evolution of the net foreign asset position. While there is a strong cross-sectional correlation between the cumulative current account balance and the change in the net foreign asset position over long time periods for both industrial countries and emerging markets, Tables 8a-8b demonstrate that the cumulative divergence over time can be quite substantial. These tables present data on the change in the net foreign asset position, the cumulative current account, cumulative capital transfers, and cumulative errors and omissions. To understand the link between these variables, it is useful to abstract initially from capital gains and losses. If errors and omissions measure unrecorded capital flows that are also not captured by the stock data, or if they represent a mismeasurement of underlying trade flows, we would expect the sum of current account, capital transfers, and errors and omissions to be close to the change in net foreign assets. If instead errors and omissions measure unrecorded capital inflows that are captured by the stock data (something more likely to occur with unrecorded inflows than unrecorded outflows) then the sum of the current account and capital transfers would be close to the change in net foreign assets.

Within the “industrial” group, there is a number of countries where the difference between the change in net foreign assets and the cumulative current account is substantially positive (primarily Switzerland, but also the United States, Canada, and the United Kingdom). While capital transfers explain the divergence for Canada (linked to the move to Canada of wealthy immigrants during the 1990s, as discussed in Lane and Milesi-Ferretti, 2001a), the data suggest substantial cumulative capital gains for the United States and Switzerland. In contrast, the difference between changes in net foreign assets and the cumulative current account is substantially negative for the Netherlands, Iceland, Finland, Sweden, New Zealand, and Spain, and does not appear to be explained by capital transfers or errors and omissions.

Among the developing countries, Table 8b shows that differences between cumulative current account balances and changes in net foreign assets in emerging markets and developing countries can be substantial even over a protracted period of time.<sup>32</sup> As is discussed in Lane and Milesi-Ferretti (2005a), these differences can often be attributed to negative cumulative valuation effects. In turn, these result from a combination of exchange rate depreciation (since debt liabilities are disproportionately in foreign currency) and fast-growing domestic asset valuations (with portfolio equity and FDI liabilities rising in value over time). The table also highlights the remarkable size of errors and omissions, likely capturing unrecorded capital outflows, particularly in the Philippines and Venezuela.

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<sup>32</sup> Table 8b and Figure 12b also shows the impact of debt-reduction schemes, which can drive a wedge between cumulative current account deficits and changes in net foreign asset positions.

In sum, the past decade has witnessed significant changes in net external positions across the globe. Emerging markets and developing countries as a group have experienced a substantial improvement in their aggregate external positions since the late 1990s, driven in particular by developments in emerging Asia and the Middle East. Other regions, such as emerging Europe, have accumulated substantial liabilities. In industrial countries, external positions have generally increased relative to GDP, with debtors (such as Australia, Spain, and the United States) accumulating more liabilities and creditors (such as Japan and Switzerland) more assets. With the increase in gross assets and liabilities, the valuation effects induced by changes in exchange rates and asset prices have become an important source of fluctuations in countries' external portfolios, often swamping the effects of the underlying capital flows.

## V. CONCLUDING REMARKS

The stylized facts described in this paper illustrate the fruitfulness of the *EWN II* dataset as a comprehensive source of information on gross and net international investment positions, despite the severe measurement problems. Relative to the previous state of knowledge, the greatly-increased country coverage of the dataset is an important advance that will enable researchers to take a truly global view of developments in international financial trade. This feature is especially important in understanding the dynamics of external imbalances. Furthermore, the extension of the dataset to include 1999–2004 provides important information on the financial globalization process, in view of the ongoing increase in the scale of gross asset trade, accompanied by substantial shifts in the composition of international balance sheets, during this period.

An important contribution of this paper is to highlight the shift in the structure of the external portfolio for emerging market economies. Taken collectively, these countries have sharply improved their net foreign positions over the past decade. Moreover, the risk profile of their external balance sheets has been substantially changed by the growth in the share of equity liabilities in total liabilities and the rapid growth in the accumulation of foreign reserves. However, this aggregate performance masks differences in trends, particularly between emerging Europe and emerging Asia plus the Middle East: the former has been rapidly accumulating net liabilities, while the latter regions have been running large surpluses.

In terms of gross financial integration, we have noted that the developing world has lagged behind the industrial countries in terms of the scale of cross-border asset trade (especially in the debt category). We may expect some catch-up by these countries, in line with further progress in domestic financial development and external capital account liberalization. That said, the increasing prominence of the major emerging market economies as international investors is already reshaping the nature of international asset trade.

There is a rich set of potential applications of this dataset. For instance, in combination with data on international investment income and capital flows, the dataset also makes it possible to study rates of return on holdings of foreign assets and liabilities on a much broader scale than was previously feasible. This will deliver a greater degree of insight into the role played by the valuation channel in the international adjustment process.

In terms of the research agenda, there is clearly scope for a two-pronged strategy. In one direction, much remains to be achieved in understanding the determinants of the cross-country and time-series variation in gross and net external positions (especially for developing countries). In the other direction, our estimates of foreign asset and liability positions can be usefully employed in empirically investigating a wide range of hypotheses about the impact of international financial integration on macroeconomic performance. We expect the *EWN II* dataset to stimulate a new wave of research on these questions—by ourselves and by the wider research community.



## Appendix

### Country/Territory List

<i>Australia</i>	Brazil	Iran, Islamic Republic of	Peru
<i>Austria</i>	Brunei Darussalam	Israel	Philippines
<i>Belgium</i>	Bulgaria	Jamaica	Poland
<i>Canada</i>	Burkina Faso	Jordan	Qatar
<i>Denmark</i>	Cambodia	Kazakhstan	Romania
<i>Finland</i>	Cameroon	Kenya	Russia
<i>France</i>	Chad	Korea	Rwanda
<i>Germany</i>	Chile	Kuwait	Saudi Arabia
<i>Greece</i>	China, P.R.: Mainland	Kyrgyz Republic	Senegal
<i>Iceland</i>	Colombia	Lao People's Dem. Rep	Serbia and Montenegro
<i>Ireland</i>	Congo, Dem. Rep. of	Latvia	Singapore
<i>Italy</i>	Congo, Republic of	Lebanon	Slovak Republic
<i>Japan</i>	Costa Rica	Libya	Slovenia
<i>Luxembourg</i>	Côte d'Ivoire	Lithuania	South Africa
<i>Netherlands</i>	Croatia	Macedonia	Sri Lanka
<i>New Zealand</i>	Cyprus	Madagascar	Sudan
<i>Norway</i>	Czech Republic	Malawi	Swaziland
<i>Portugal</i>	Dominican Republic	Malaysia	Syrian Arab Republic
<i>Spain</i>	Ecuador	Mali	Taiwan Province of China
<i>Sweden</i>	Egypt	Malta	Tajikistan
<i>Switzerland</i>	El Salvador	Mauritius	Tanzania
<i>United Kingdom</i>	Equatorial Guinea	Mexico	Thailand
<i>United States</i>	Estonia	Moldova	Togo
Albania	Ethiopia	Morocco	Trinidad and Tobago
Algeria	Fiji	Mozambique	Tunisia
Angola	Gabon	Myanmar	Turkey
Argentina	Georgia	Namibia	Turkmenistan
Armenia	Ghana	Nepal	Uganda
Azerbaijan	Guatemala	Nicaragua	Ukraine
Bahrain	Guinea	Niger	United Arab Emirates
Bangladesh	Haiti	Nigeria	Uruguay
Belarus	Honduras	Oman	Uzbekistan
Benin	Hong Kong S.A.R.	Pakistan	Venezuela, Rep. Bol.
Bolivia	Hungary	Panama	Vietnam
Bosnia and Herzegovina	India	Papua New Guinea	Yemen, Republic of
Botswana	Indonesia	Paraguay	Zambia
			Zimbabwe

Note: Industrial countries in *italics*.

Table 1. Portfolio Equity Liabilities Reported By Destination And Investor Countries, 2003  
(Aggregate data, billions US\$)

	Reported by destination country	Reported by investor countries
Ireland	479	151
Luxembourg	1,143	623
United States	1,827	1,274

Note: reported portfolio equity liabilities are those that countries report in their International Investment Position. Derived liabilities are the sum of portfolio equity assets that participants to the CPIS report to be holding in the given country.

Table 2. Portfolio Equity Liabilities Reported By Destination And Investor Countries, 2003  
(Bilateral data, billions US\$)

	Reported by destination country	Reported by investor countries
Holdings in the United States		
Canada	203	152
Caribbean financial centers	227	24
Singapore	73	7
Switzerland	119	52
United Kingdom	229	174
Holdings in Ireland		
Japan	15	3
United Kingdom	139	25
United States	95	22

Source: IMF, *Coordinated Portfolio Investment Survey* (CPIS); Ireland: Lane and Ruane (2006); and United States, Department of the Treasury: *Foreign Portfolio Holdings of U.S. Securities*.

Table 3. Evolution of Net Foreign Asset Positions:  
Industrial and Developing Regions, 1996-2004

	Correlation NFA/Y (1996, 2004)	Regional mean (1996)	Regional mean (2004)	Difference
Industrial	0.82	-0.9	-6.1	-5.3
Africa	0.80	-60.4	-43.8	16.6
Asia	0.91	-10.7	17.9	28.6
Emerging Europe	0.52	-24.2	-49.5	-25.3
CIS	0.65	-7.8	-4.0	3.8
Middle East	0.77	21.3	55.4	34.1
Western Hemisph.	0.64	-30.7	-43.2	-12.5

Note: Correlation NFA/Y(1996,2004) is intraregional correlation between NFA/GDP ratios in 1996 and 2004. Means refer to regional averages (weighted by GDP). “Difference” is the change in the regional mean between 1996 and 2004. For Africa, period is 1996-2003, and for CIS and emerging Europe it is 1997-2004.

Table 4. Cumulative Value Of Net Errors And Omissions, Selected Countries (1970-2004)

	Cumulative net errors and omissions	
	Billions US\$	pct of GDP
Switzerland	140.6	40.9
Cambodia	1.7	34.8
Mauritius	1.6	26.9
Nepal	1.6	25.6
Bahrain	2.2	20.1
United Kingdom	109.5	5.2
Germany	94.4	3.4
United States	272.9	2.3
China,P.R.: Mainland	-97.3	-5.9
Italy	-137.7	-8.2
Venezuela, Rep. Bol.	-21.2	-19.7
Lebanon	-4.2	-21.4
Russia	-145.6	-25.4
Zambia	-1.5	-27.6
Norway	-71.6	-28.6
Bolivia	-3.2	-33.7
Ethiopia	-2.8	-34.8
Oman	-9.7	-39.4
Mozambique	-2.6	-42.7
Kuwait	-56.6	-109.2

Note: The table reports the cumulative value of net errors and omissions. A positive value of net errors and omissions can indicate unrecorded net capital inflows or unrecorded net exports, and a negative value unrecorded capital outflows or net imports. For Russia, the data on net errors and omissions is augmented to include “nonrepatriation of export proceeds” which are classified as other investment outflows but are not used in the calculation of the stock of other investment holdings.

Source: authors’ calculations based on IMF, *Balance of Payments Statistics*.

Table 5a. Matrix of Net Debt and Net Equity Positions: Industrial Countries, 2004

		NET EQUITY	
		<0	>0
NET DEBT	<0	6	11
	>0	3	3

Table 5b. Matrix of Net Debt and Net Equity Positions:  
Emerging Markets and Developing Countries, 2004

		NET EQUITY	
		<0	>0
NET DEBT	<0	73	0
	>0	31	8

Note: Net Debt is the sum of debt assets and official reserves minus debt liabilities; Net Equity is the sum of portfolio equity and FDI assets minus portfolio equity and FDI liabilities.

Table 6. Correlation Between Current Account and Change in Net Foreign Assets: Industrial Countries and Emerging Markets, Annual Data, 1971-2004

	Industrial countries	Emerging markets
1971-2004	0.41	0.66
1971-81	0.71	0.72
1982-92	0.63	0.73
1993-2004	0.32	0.54

Note: Correlation of CA/GDP ratio and D(NFA)/GDP ratio for industrial countries and selected major emerging markets (Israel, Turkey, South Africa, Argentina, Brazil, Chile, Colombia, Mexico, Venezuela, India, Indonesia, Korea, Malaysia, Pakistan, Philippines, Thailand, China).

Table 7a. Standard Deviation of Current Account and Change in Net Foreign Asset Position:  
Industrial Group, 1972-2004

	CA/GDP	DNFA/GDP
United States	1.7	2.2
United Kingdom	1.8	4.5
Austria	1.7	3.3
Denmark	2.7	5.3
France	1.2	3.7
Germany	1.9	2.5
Italy	1.7	2.7
Netherlands	1.7	9.5
Norway	7.0	7.9
Sweden	2.9	8.8
Switzerland	4.8	12.0
Canada	2.2	3.6
Japan	1.4	2.8
Finland	4.2	22.8
Greece	2.1	6.5
Iceland	3.3	6.1
Ireland	4.3	14.3
Portugal	4.6	6.0
Spain	1.9	4.2
Australia	1.7	5.6
New Zealand	3.3	11.8

Note: CA and DNFA are expressed as ratios to GDP.

Table 7b. Standard Deviation of Current Account and Change in Net Foreign Asset Position:  
Selected Emerging and Developing Countries, 1982-2004

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	CA/GDP	DNFA/GDP
Israel	3.5	6.6
Turkey	2.0	4.4
South Africa	2.5	6.6
Argentina	3.4	13.1
Brazil	2.7	4.3
Chile	2.9	5.4
Colombia	3.5	4.8
Mexico	2.7	3.4
Venezuela	7.1	8.5
India	1.0	1.7
Indonesia	3.6	6.6
Korea	3.9	4.0
Malaysia	8.8	11.4
Pakistan	3.2	3.0
Philippines	4.9	3.7
Thailand	6.3	7.9
China	2.1	3.6

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Note: CA and DNFA are expressed as ratios to GDP.



Table 8a. Cumulative Current Account and Change in Net Foreign Asset Position: Industrial Group, 1972-2004

	(1) Change in NFA	(2) Cumulative current account	(3) Difference	(4) Cumulative capital transfers	(5) Cumulative errors and omissions
United States	-23.1	-38.4	15.2	-0.2	2.4
Canada	-9.2	-16.5	7.4	9.5	-4.3
United Kingdom	-13.7	-19.3	5.7	1.0	5.1
Switzerland	124.8	121.4	3.4	-2.0	39.5
Austria	-17.1	-18.7	1.6	-1.0	4.0
Germany	7.6	9.8	-2.2	-0.7	4.6
Australia	-62.3	-60.0	-2.3	3.1	-0.4
France	4.7	9.1	-4.4	-0.3	1.1
Norway	65.5	71.7	-6.2	-0.2	-28.6
Japan	37.6	44.1	-6.5	-1.6	-0.4
Portugal	-68.4	-59.2	-9.2	11.4	2.4
Ireland	-19.3	-4.8	-14.5	5.7	-2.2
Denmark	-10.5	8.4	-19.0	0.2	0.4
Italy	-18.4	-1.6	-16.8	1.6	-8.2
Greece	-73.4	-52.2	-21.2	6.0	-1.8
Spain	-48.7	-29.4	-19.3	8.7	-3.8
New Zealand	-91.3	-66.4	-24.8	6.0	-1.5
Sweden	-9.5	17.9	-27.4	-0.8	-11.2
Finland	-10.7	21.2	-32.0	0.5	-1.3
Iceland	-91.8	-47.1	-44.7	-0.1	-12.3
Netherlands	-8.0	57.2	-65.2	-3.2	-11.9

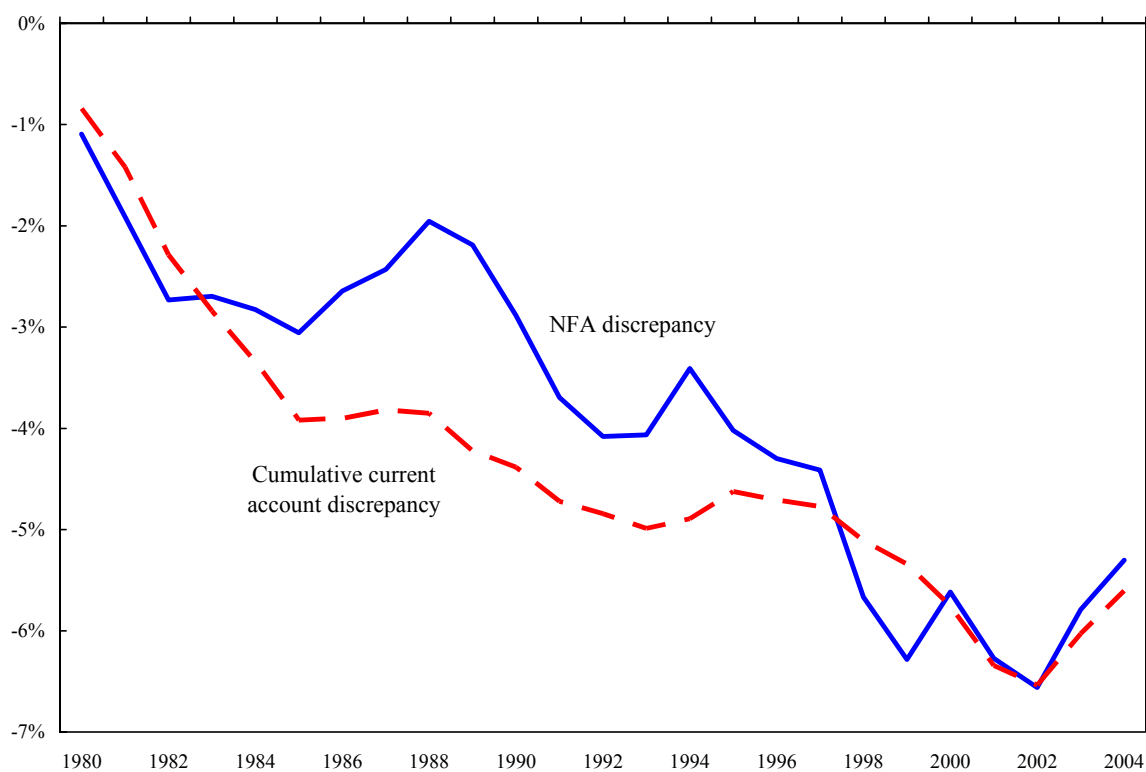
Note: All variables are scaled by 2004 GDP. The cumulative current account balance, capital account balance, and net errors and omissions are calculated over the period 1972-2004, while the change in NFA is the change in the net foreign asset position between end-1971 and 2004. Column (3) is the difference between columns (1) and (2). Positive net errors and omissions can indicate unrecorded capital inflows or unrecorded net exports, while negative errors and omissions can indicate unrecorded outflows or unrecorded net imports. Belgium and Luxembourg are excluded because current and capital account data was reported jointly for the Belgium-Luxembourg Monetary Union until 1999.

Table 8b. Cumulative Current Account and Change in Net Foreign Asset Position: Selected Developing Countries, 1982-2004

	(1) Change in NFA	(2) Cumulative current account	(3) Difference	(4) Cumulative debt forgiveness or capital transfers	(5) Cumulative errors and omissions
Turkey	-42.2	-16.8	-25.4	0.0	2.4
South Africa	6.1	-1.0	7.0	0.0	2.4
Argentina	-27.3	-54.3	27.1	10.6	-10.0
Brazil	-35.0	-32.6	-2.4	2.0	-2.2
Chile	-20.9	-31.7	10.8	5.5	-4.4
Mexico	-32.3	-30.3	-2.0	2.4	-3.7
Venezuela, Rep. Bol.	25.6	62.1	-36.5	3.3	-22.5
India	-8.0	-10.1	2.0	0.0	0.2
Indonesia	-45.4	-4.5	-40.9	0.0	-7.0
Korea	0.0	14.8	-14.8	-1.6	-2.1
Malaysia	4.9	30.3	-25.4	-0.5	-4.0
Philippines	-39.8	-6.4	-33.4	3.5	-19.6
Thailand	-24.0	-8.8	-15.2	0.0	-3.3
China,P.R.: Mainland	7.3	18.1	-10.9	0.0	-5.9

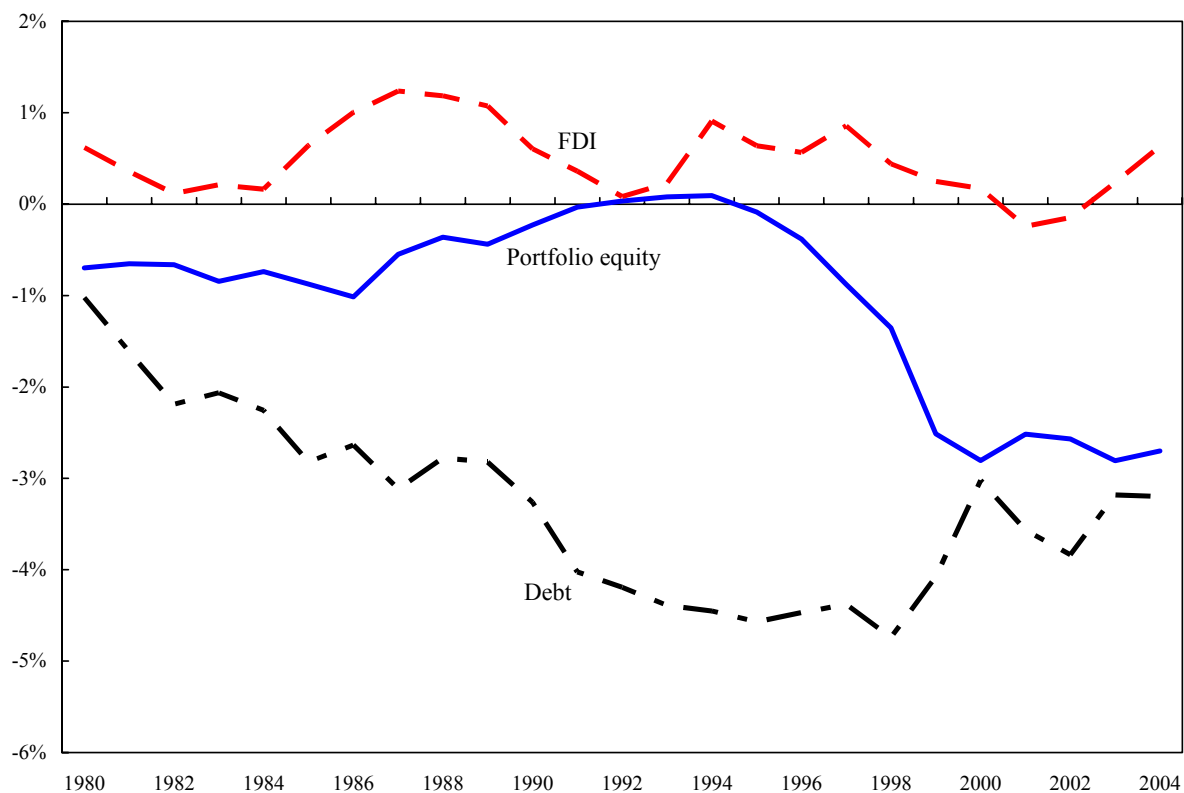
Note: All variables are scaled by 2004 GDP. The cumulative current account balance, capital account transfers, and net errors and omissions are calculated over the period 1982-2004 (1989-2003 for debt forgiveness), while the change in NFA is the change in the net foreign asset position between end-1981 and 2004. Column (3) is the difference between columns (1) and (2). Positive net errors and omissions can indicate unrecorded capital inflows or unrecorded net exports, while negative errors and omissions can indicate unrecorded outflows or unrecorded net imports.

Figure 1. World NFA Discrepancy and Cumulative Current Account Discrepancy,  
1980-2004  
(Share of world GDP)



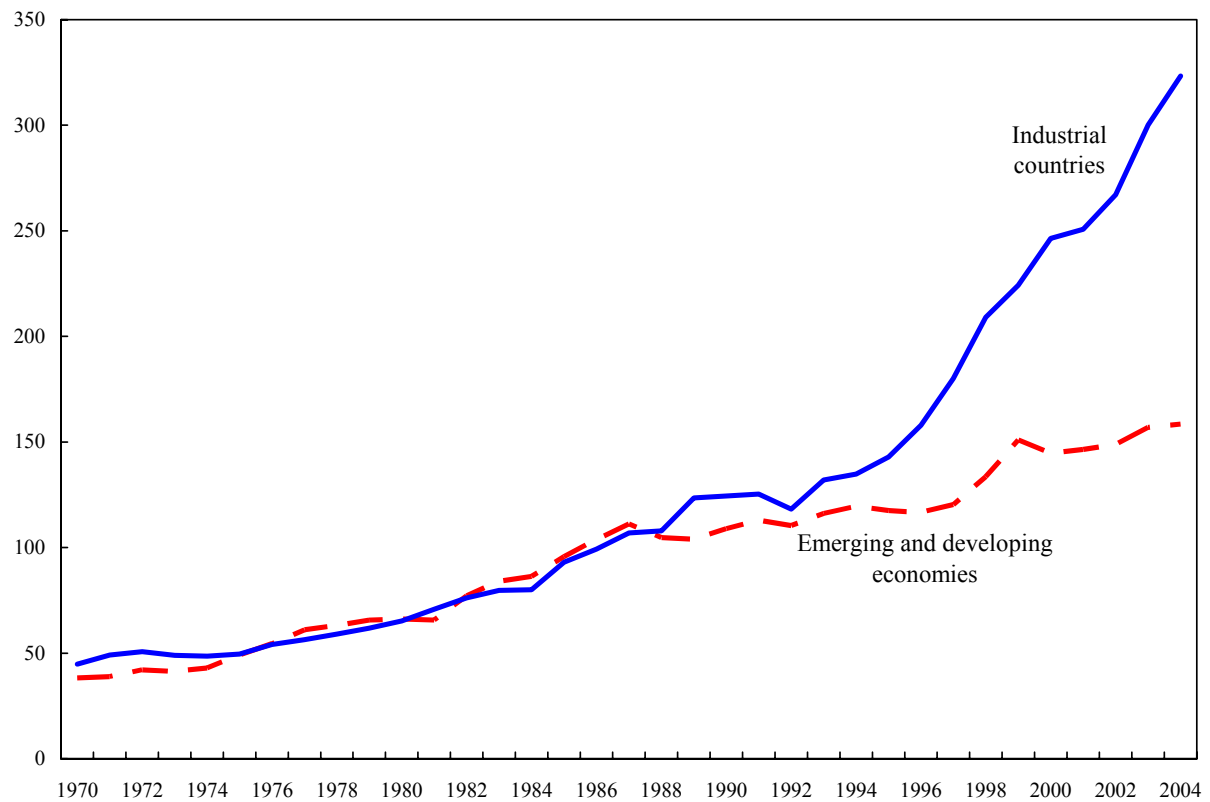
Note: the cumulative current account discrepancy is the cumulative sum of the world current account "residual," given by the sum of current accounts of all countries (from the World Economic Outlook database). The NFA discrepancy is given by the difference between total assets and total liabilities of the 145 countries in the sample. Both variables are scaled by world GDP.

Figure 2. Composition of The World NFA Discrepancy, 1980-2004  
(Share of world GDP)



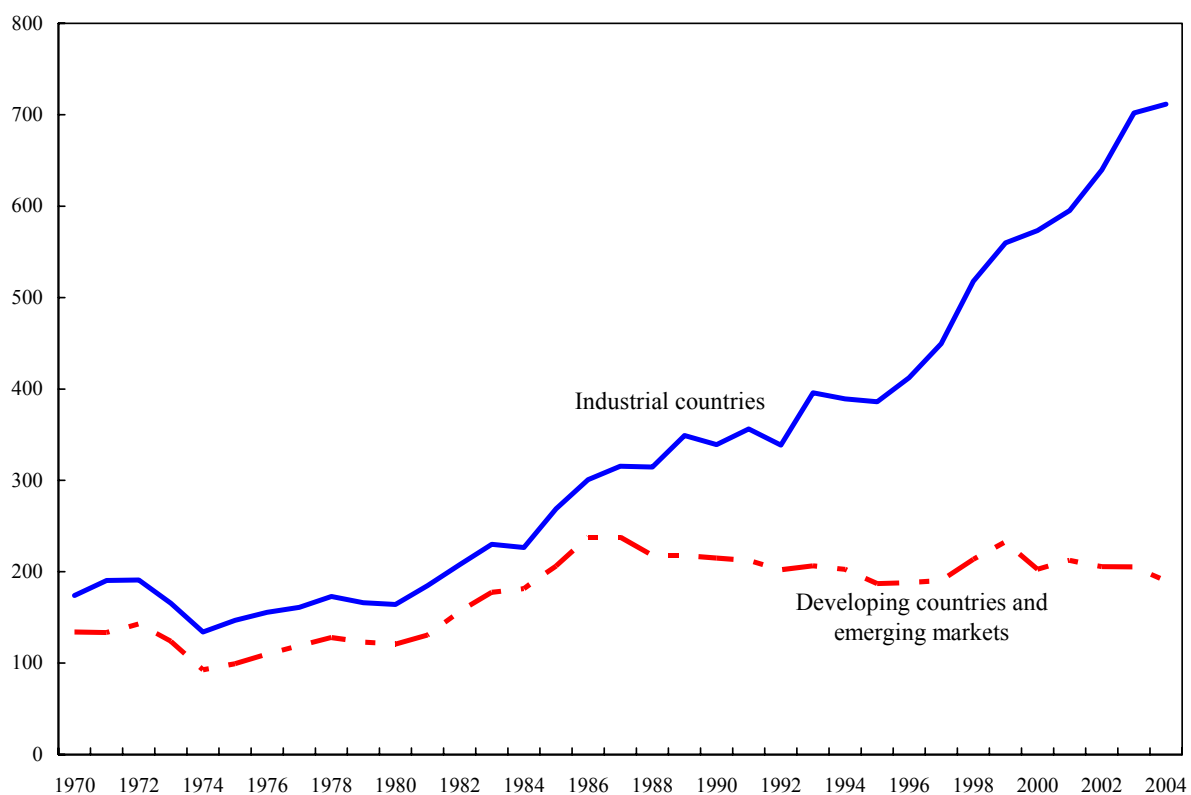
Note: All plotted series are the difference between world assets and world liabilities in the specific categories, scaled by world GDP.

Figure 3. International Financial Integration:  
Industrial Group and Emerging Markets/Developing Countries Group, 1970-2004



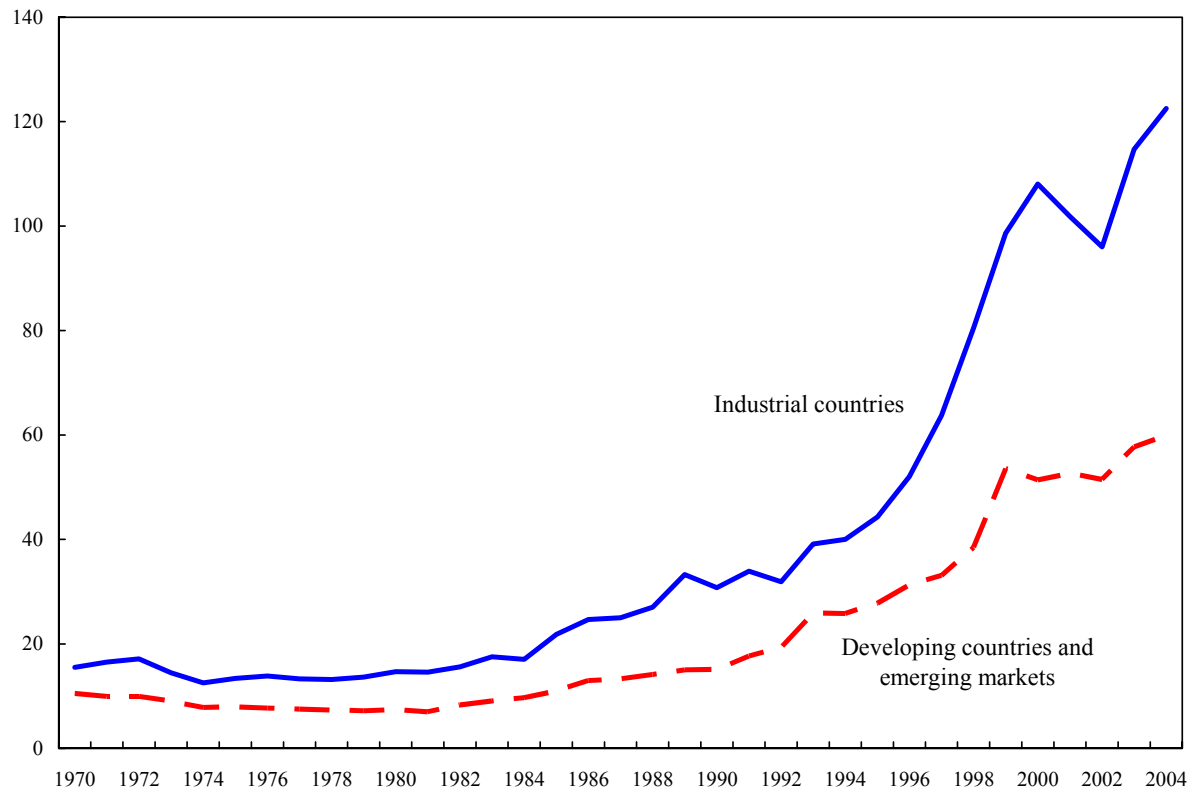
Note: Ratio of sum of foreign assets and liabilities to GDP, 1970-2004.

Figure 4. Financial Integration versus Trade Integration:  
Industrial Group and Emerging Markets/Developing Countries Group, 1970-2004



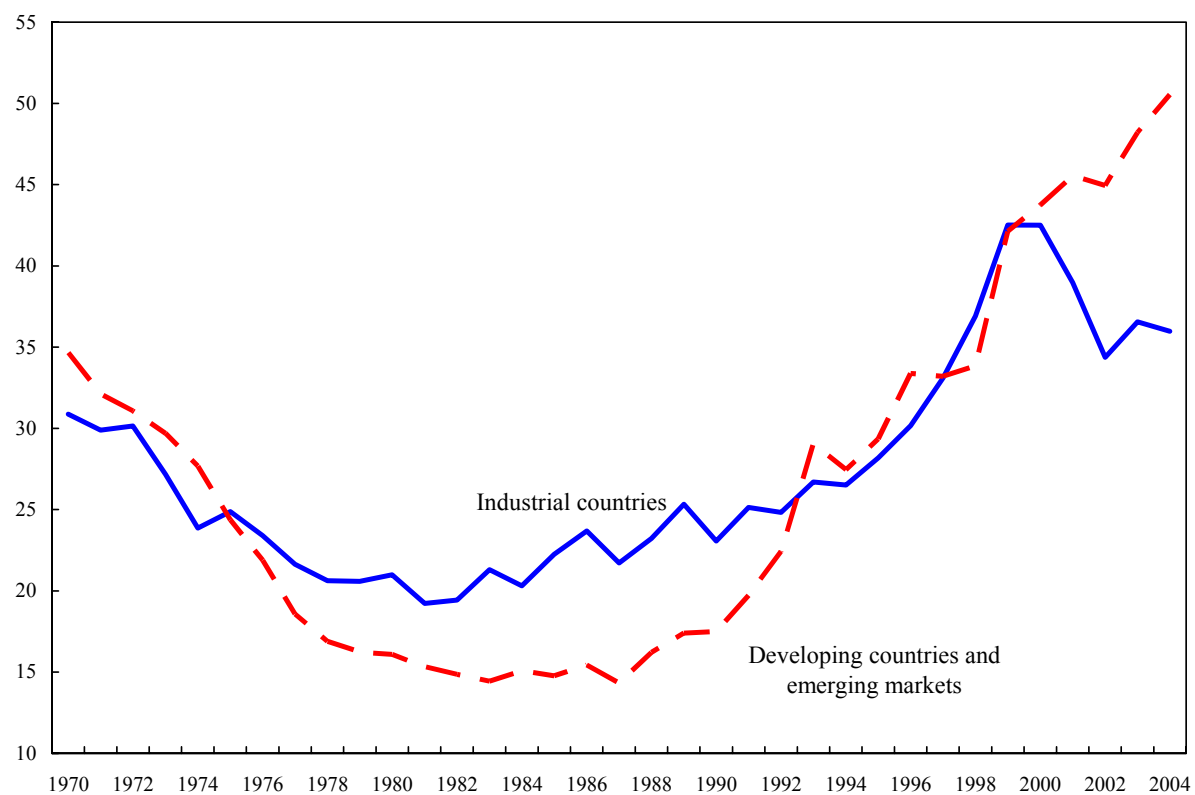
Note: Sum of external assets and liabilities in percent of sum of exports and imports.

Figure 5. International Equity Integration: Industrial Country Group and Emerging Markets and Developing Country Group, 1970-2004



Note: Ratio of sum of foreign portfolio equity and FDI assets and liabilities to GDP.

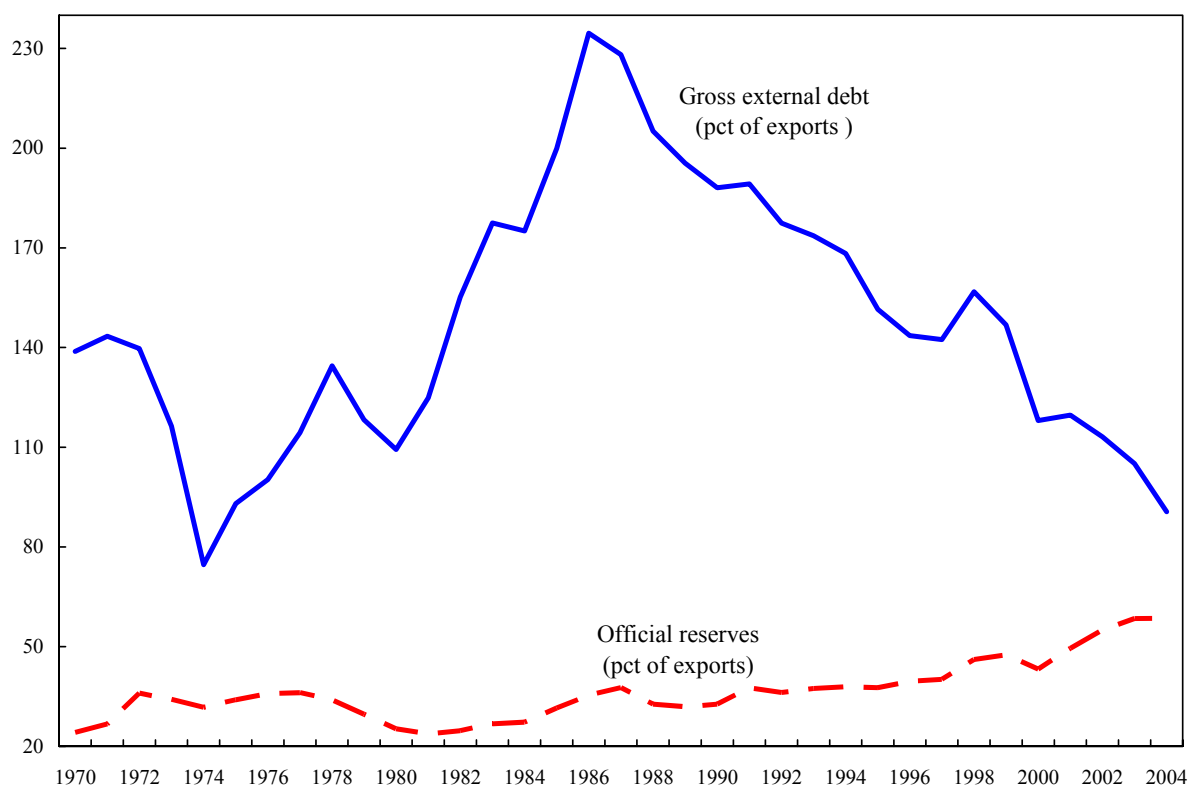
Figure 6. Equity Share in External Liabilities: Industrial Country Group and Emerging Markets and Developing Country Group, 1970-2004



Note: Ratio of portfolio equity and FDI liabilities to total liabilities.

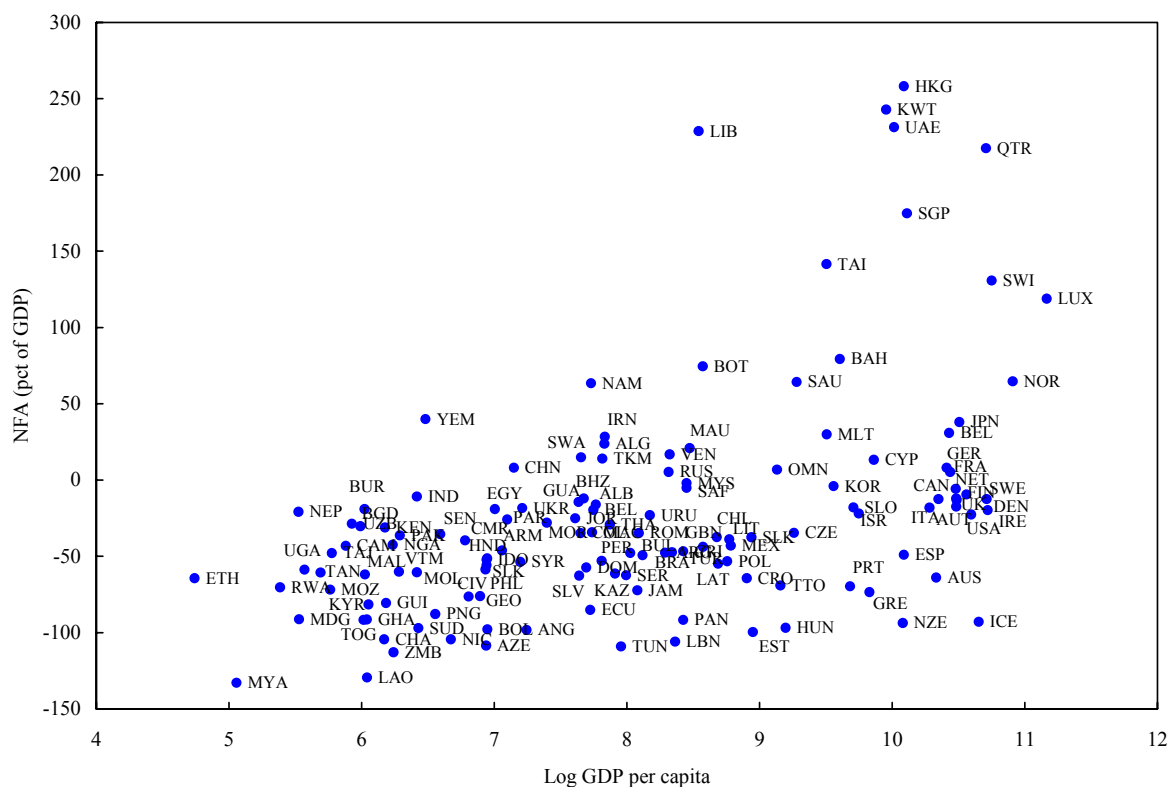


Figure 7. External Debt and Official Reserves, Emerging Markets and Developing Group, 1970-2004



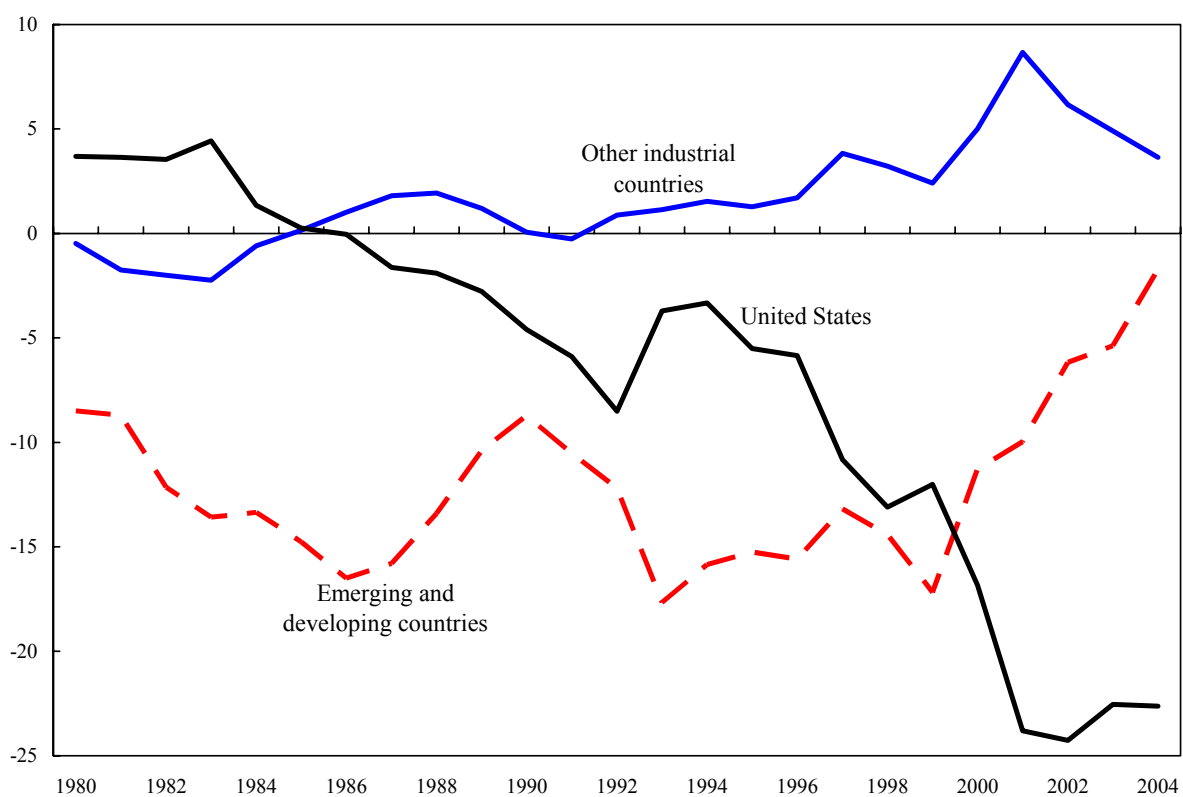
Note: The series “gross external debt” is the sum of external debt liabilities for the entire emerging market and developing country group as percent of the sum of total exports of goods and services. The series “official reserves” is the sum of official reserves for all countries of the group as a percent of the sum of total exports of goods and services.

Figure 8. Net Foreign Assets and GDP per Capita: All Countries, 2004.



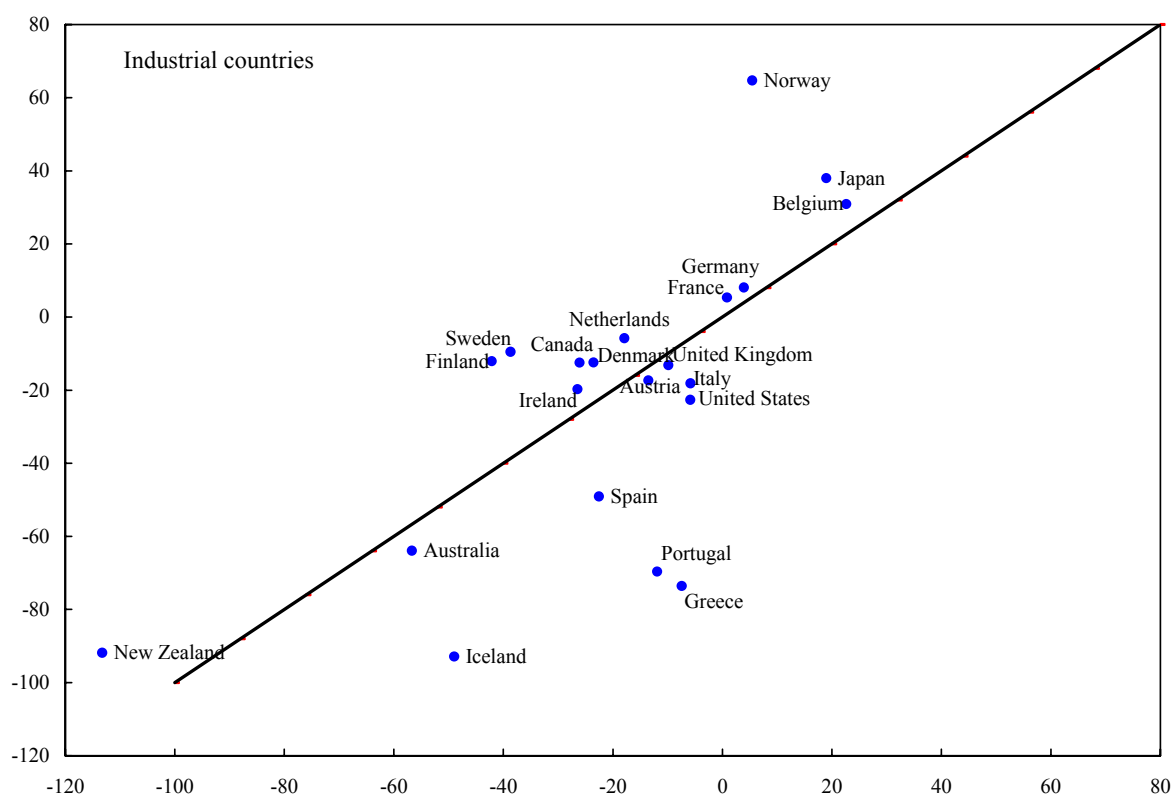
Note: Log GDP per capita (current US dollars) on horizontal axis, NFA/GDP ratio on vertical axis. Correlation is 0.43. Graph excludes Brunei Darussalam (estimated net foreign assets of 600 percent of GDP).

Figure 9. Net Foreign Assets by Country Group (percent of Group GDP), 1980-2004



Note: The chart plots aggregate net foreign assets for the two country groups and the United States, divided by each group/country's GDP. The group "other industrial countries" includes all industrial countries except the United States.

Figure 10a. Change in NFA/GDP, 1996-2004: Industrial Countries



Note: Switzerland is not displayed (NFA of 111% of GDP in 1996 and 131% of GDP in 2004).

Figure 10b. Change in NFA/GDP, 1996-2003: Africa

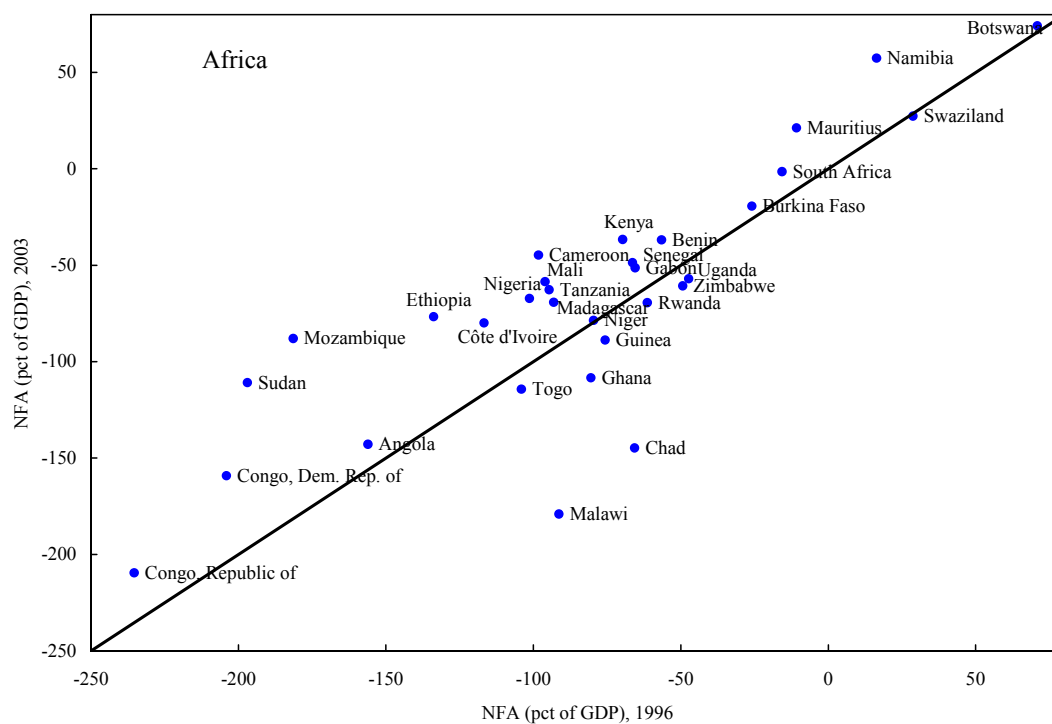


Figure 10c. Change in NFA/GDP, 1996-2004: Asia

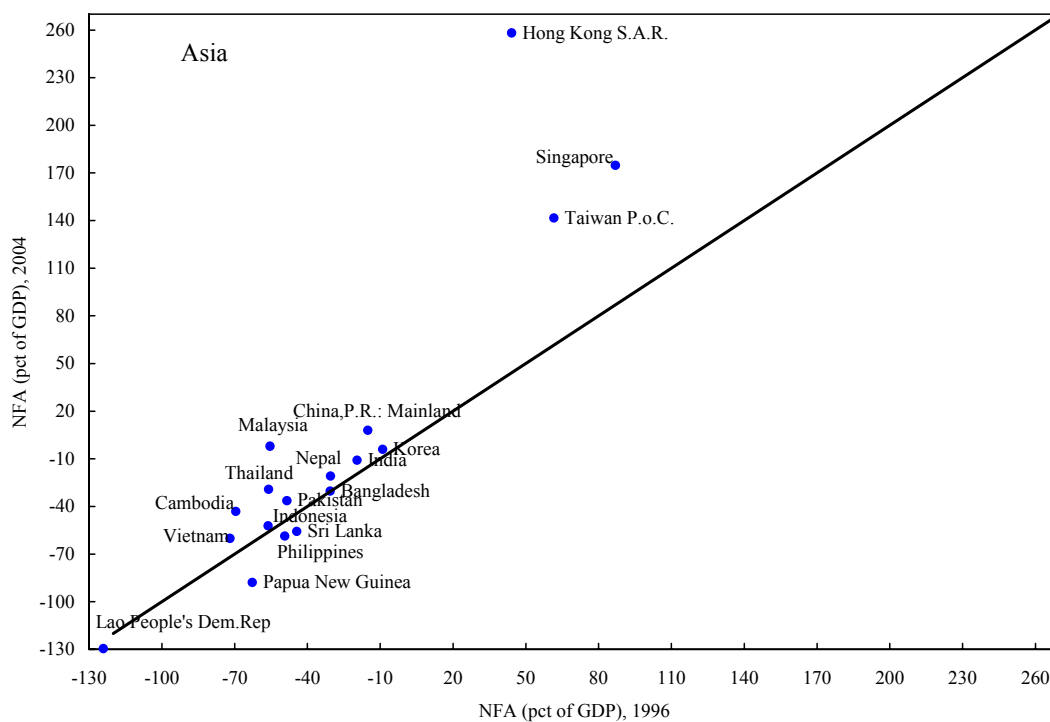


Figure 10d. Change in NFA/GDP, 1997-2004: Emerging Europe

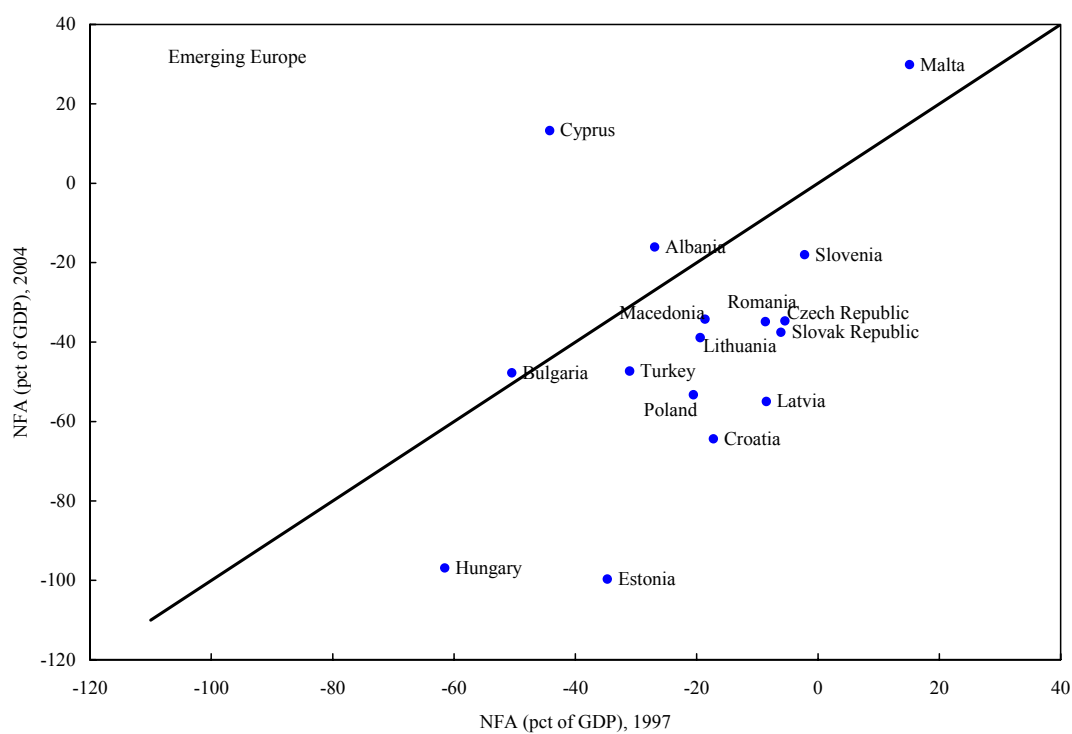


Figure 10e. Change in NFA/GDP, 1997-2004: CIS Countries

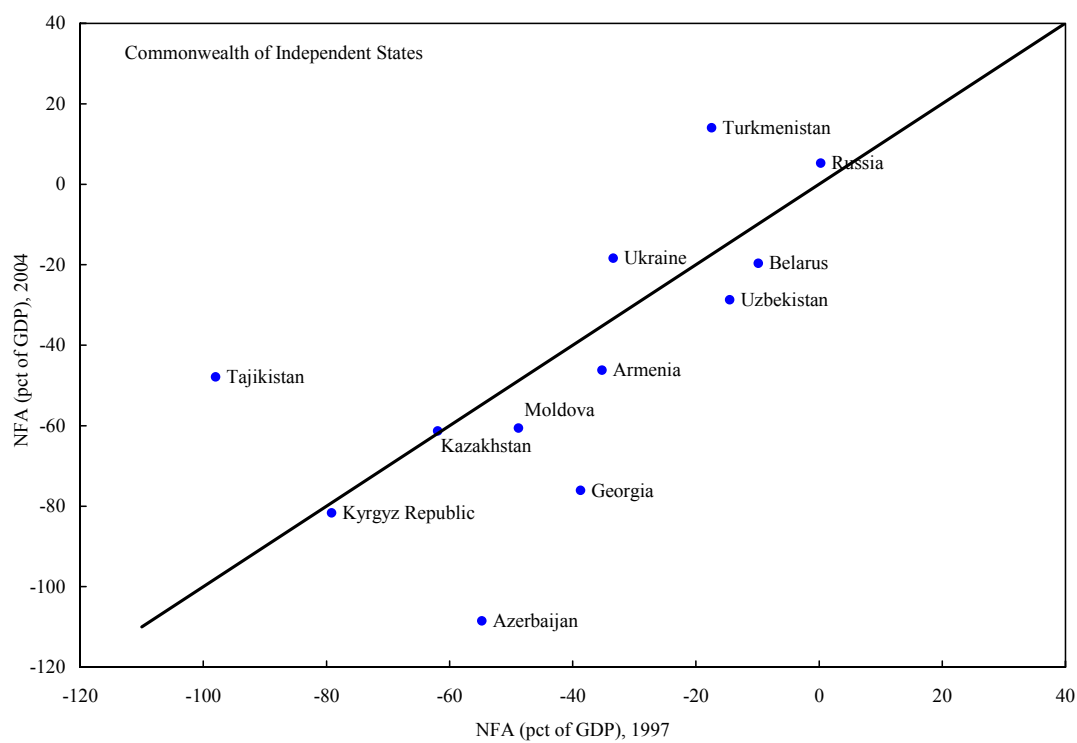


Figure 10f. Change in NFA/GDP, 1996-2004: Middle East

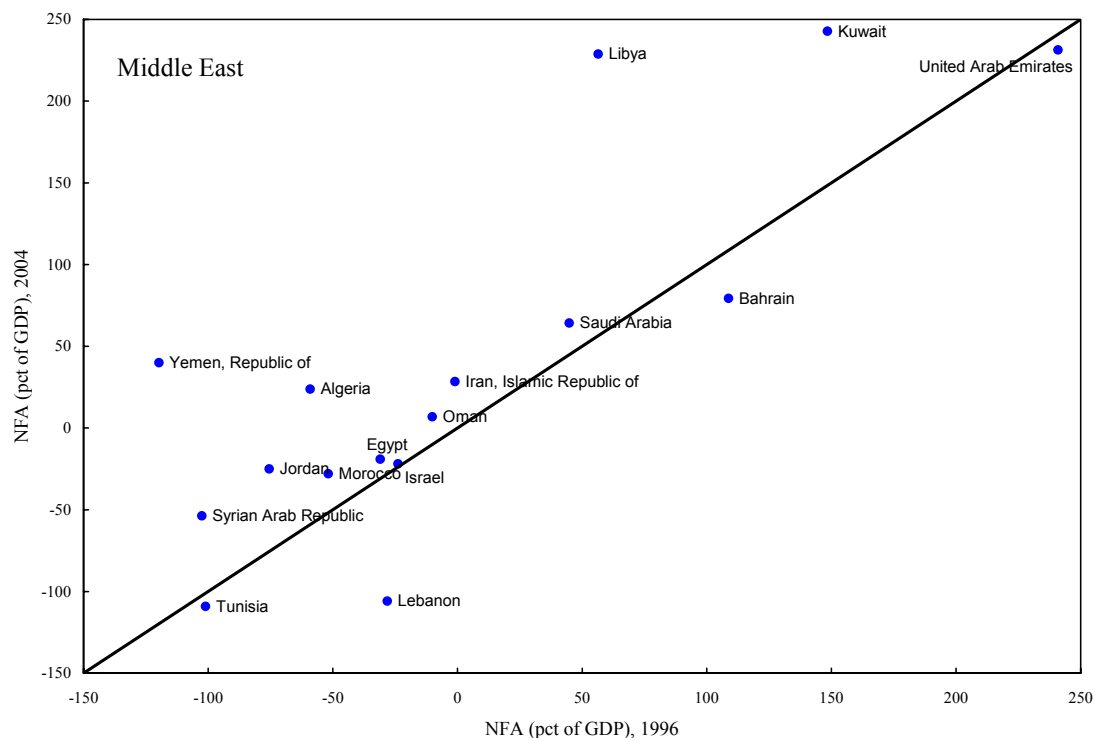
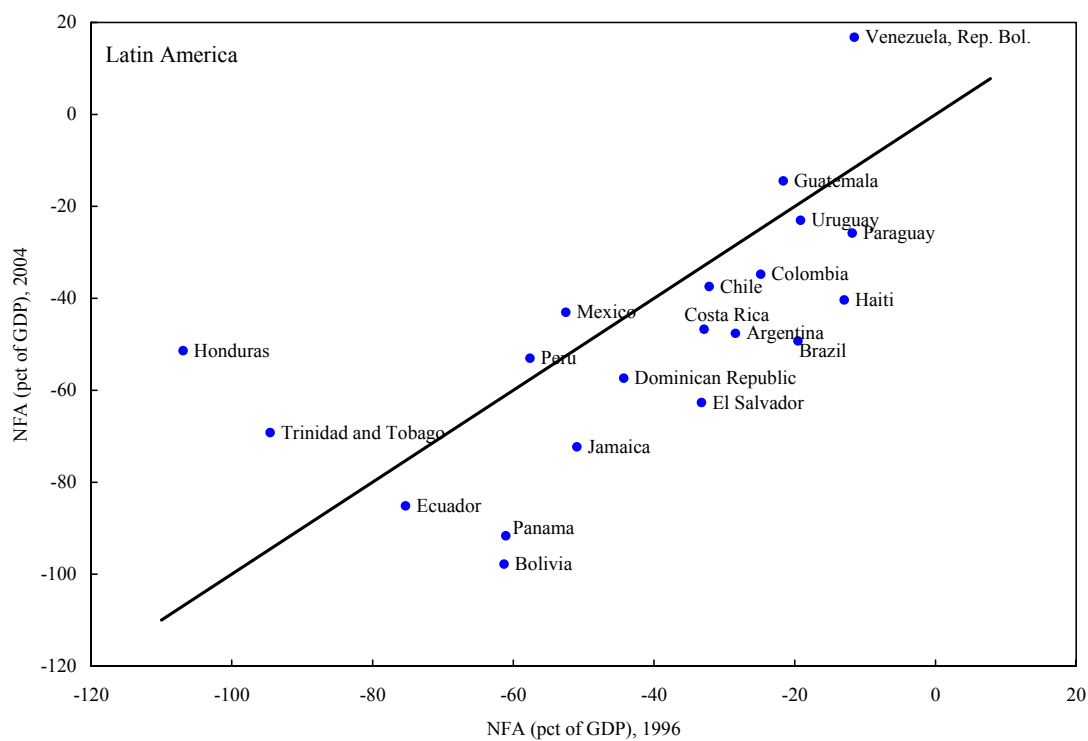


Figure 10g. Change in NFA/GDP, 1996-2004: Western Hemisphere



Note: Figure 10g excludes Nicaragua (NFA of -171% of GDP in 1996 and -104% in 2004).

Figure 11a. Net Equity Position versus Net Debt Position: Industrial Group, 2004

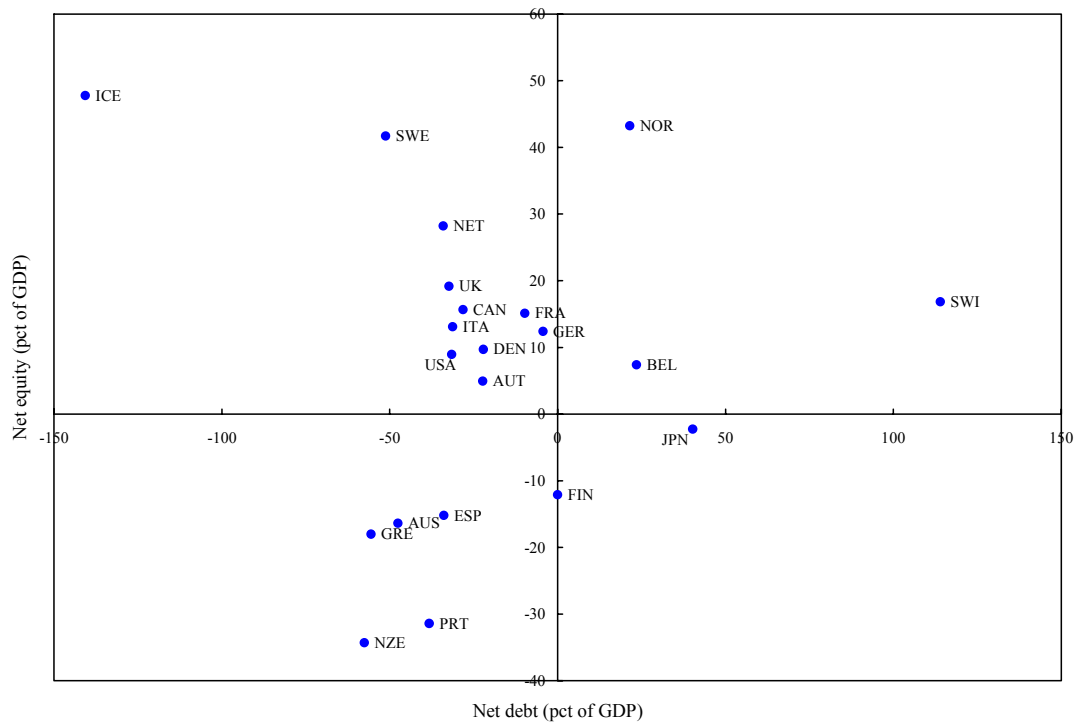
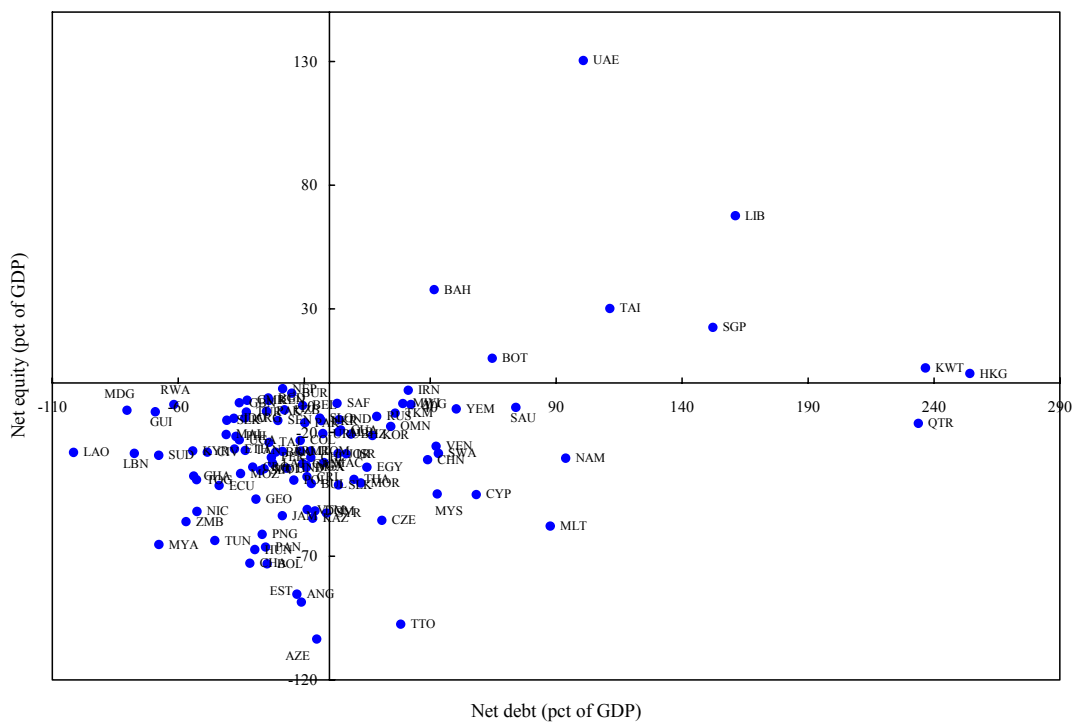


Figure 11b. Net Equity and Net Debt Position:  
Emerging Markets and Developing Countries, 2004



Note: Ireland and Luxembourg excluded from Chart 11a due to extreme values (in both cases, very high positive net debt and negative net equity).



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