

January 1995

U.S. Equity Investment in Emerging Stock Markets

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This article examines U.S. equity flows to emerging stock markets from 1978 to 1991 and draws three main conclusions. First, despite the recent increase in U.S. equity investment in emerging stock markets, the U.S. portfolio remains strongly biased toward domestic equities. Second, of the fraction of the U.S. portfolio that is allocated to foreign equity investment, the share invested in emerging stock markets is roughly proportional to the share of the emerging stock markets in the global market capitalization value. Third, the volatility of U.S. transactions in emerging-market equities is higher than in other foreign equities. The normalized volatility of U.S. transactions appears to be falling over time, however, and we find no relation between the volume of U.S. transactions in foreign equity and local turnover rates or volatility of stock returns.

In the past several years the opportunities for equity investment in developing economies have increased remarkably. The expansion of local equity markets and the development of instruments for issuing equity directly on international markets have given firms in these economies increased access to the world supply of capital. Indeed, developing economies as a group increased their borrowing through new equity issues from virtually zero in 1987 to \$5 billion in 1991.¹ This borrowing accounted for more than 10 percent of the total capital raised by these economies in 1991 (Gooptu 1993). From the perspective of international investors, these rapidly growing markets offer potentially high rates of return and an important means of diversifying portfolio risk (Divecha, Drach, and Stefak 1992; Harvey 1993, 1995; Wilcox 1992). As the share of foreign investment in emerging markets has risen, however, policymakers have become increasingly concerned about the factors determining international investment, the permanence of foreign capital investments, and the impact of foreign investment on local turnover and on the volatility of stock prices.

1. A billion is 1,000 million.

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To better understand the behavior of foreign investors in emerging stock markets (ESMs), we examine U.S. equity investment in nineteen economies: the industrial markets of Canada, Germany, Japan, and the United Kingdom, and fifteen emerging markets in Asia, Latin America, and Europe. This narrows the focus of the study to the portfolio allocation decisions of U.S. investors; however, U.S. investment currently accounts for a substantial fraction of portfolio flows to developing economies (see Chuhan 1992). The richness of data on U.S. equity transactions allows us to examine portfolio investment behavior at a level not possible (at least to our knowledge) with other data sources. In particular, the availability of data on U.S. purchases and sales of equity on a bilateral basis makes it possible to identify market-specific factors that affect U.S. investment. We focus on purchases and sales in foreign equity; in future work we plan to extend our analysis to investment in foreign corporate bonds.

We have chosen to include industrial markets in the sample in order to place portfolio investment in emerging markets in the context of changes in global portfolio investment behavior. In general, we find that the investment patterns observed in the emerging markets seem to be mirrored in U.S. investment patterns in the industrial markets. The principal difference is that the increased investment activity in emerging markets began slightly later than in the industrial markets. Our findings suggest that the recent increase in equity investment flows in emerging markets should be viewed as part of a global trend toward increased cross-border investment and not as a separate phenomenon.

Section I describes the data sources. Section II discusses the changes in the U.S. investment portfolio since 1976. Section III provides some descriptive statistics on U.S. net purchases of foreign equity. Section IV turns to gross purchases of equity and the relation between U.S. equity investment and local market turnover as well as stock price volatility. Section V draws some general conclusions that may be of relevance for policymakers concerned about the rise of investment in ESMs.

I. DATA SOURCES

The data on equity flows were collected from U.S. Department of the Treasury (various issues). By law, all banks, brokers, dealers, and individuals are required to report the value of any security transaction involving a foreign resident. The data record the value of U.S. purchases and sales of domestic and foreign securities (bonds and equity) on a bilateral basis in sixty-four economies. See Tesar and Werner (forthcoming) and (1994) for more details about these data. The international investment position data used in section II are reported by the U.S. Department of Commerce. These series are based on a cumulation of the transactions series and are adjusted by the Department of Commerce for changes in equity prices and exchange rates.

There are some shortcomings with the data. First, although investors are required to report their transactions with foreigners, they incur no penalty for

failing to do so. There are obvious reasons for underreporting equity transactions when capital controls are present. Second, the rapid expansion of markets, the emergence of new markets, and the development of new types of financial instruments make it difficult for the reporting agencies to keep pace with the volume of flows. (See Steckler and Truman 1992 for a complete description of the problems involved in collecting data on portfolio flows.) Finally, estimates of stock positions are plagued by the usual problems of incorporating capital gains on the portfolio and changes in exchange rates. Despite these problems, the data remain the sole public source of information on bilateral equity flows between the United States and the rest of the world.

Data on equity returns and market capitalization values for emerging markets are drawn from the International Finance Corporation (IFC) Emerging Markets Data Base (EMDB). Equity returns for the industrial economies and market capitalization values are from Capital International Perspective, S.A. and Morgan Stanley & Co. (various issues), hereafter referred to as MSCI. U.S. Treasury bill rates are from the Center for Research in Securities Prices.

II. THE INTERNATIONAL PORTFOLIO OF U.S. INVESTORS

The increasing role of emerging markets in the global equity market can be seen in table 1. The first two columns show each economy's equity market capitalization values as a fraction of global market capitalization in the first quarter of 1986 and again in the first quarter of 1991. The third column shows the percentage change in the market shares during the 1986–91 period. The share of the United States in the world market has fallen from roughly 45 to 35 percent, whereas Japan's share has risen from 26 to 32 percent. Taken as a group, the share of the five industrial economies has decreased slightly, from 87 percent of the global total in 1986 to 83 percent in 1991.

Within the set of emerging markets, there appears to be some heterogeneity in the growth of market shares across regions. Market capitalization shares have generally increased in Asia and Europe. The Republic of Korea and Taiwan (China) each accounted for about 1 percent of the global total in 1991. The market shares of Greece and Portugal have also increased dramatically, although their absolute market sizes remain small. In Latin America, the increases in relative market sizes are less pronounced, and there has been an actual decline in market share in Brazil, from 1.6 to 0.3 percent, during this period.

One simple strategy for achieving an internationally diversified portfolio is to invest in foreign equities in proportion to each economy's share of the world market. This strategy abstracts from the effect of currency denomination on portfolio choice. In 1991 such a strategy would have required investors to hold roughly one-third of their portfolio in U.S. equities, one-third in Japanese equities, about 10 percent in British equities, 4 percent in German equities, 3 percent

Table 1. *Equity Market Shares, 1986–91*
(percent)

| <i>Market</i> | <i>1986.1</i> | <i>1991.1</i> | <i>Percentage change</i> |
|--|---------------|---------------|--------------------------|
| <i>Industrial markets</i> | | | |
| Canada | 3.13 | 2.53 | -19.22 |
| Germany | 4.15 | 3.52 | -15.21 |
| Japan | 26.02 | 32.36 | 24.38 |
| United Kingdom | 8.13 | 9.86 | 21.26 |
| United States | 45.26 | 35.04 | -22.57 |
| Total | 86.68 | 83.31 | -3.89 |
| <i>Emerging stock markets</i> | | | |
| <i>Asia</i> | | | |
| India | — | 0.42 | — |
| Indonesia | — | 0.09 | — |
| Korea, Rep. of | 0.19 | 1.15 | 507.53 |
| Malaysia | 0.27 | 0.64 | 141.57 |
| Philippines | 0.01 | 0.10 | 553.44 |
| Taiwan (China) | 0.26 | 1.35 | 430.84 |
| Thailand | 0.04 | 0.38 | 937.78 |
| Total | 0.76 | 4.13 | 443.17 |
| <i>Europe</i> | | | |
| Greece | 0.02 | 0.19 | 1020.23 |
| Portugal | 0.02 | 0.11 | 505.59 |
| Turkey | — | 0.21 | — |
| Total | 0.03 | 0.50 | 1360.42 |
| <i>Latin America</i> | | | |
| Argentina | 0.04 | 0.06 | 59.71 |
| Brazil | 1.59 | 0.27 | -82.80 |
| Chile | 0.05 | 0.21 | 304.16 |
| Colombia | 0.01 | 0.02 | 47.77 |
| Mexico | 0.08 | 0.43 | 415.36 |
| Total | 1.78 | 0.99 | -44.43 |
| Percentage of world market capitalization covered by these countries | 87.48 | 87.94 | — |

— Not available.

Note: Values are for each economy's equity market capitalization as a share of the global equity market capitalization value, based on data for the first quarters of 1986 and 1991.

Source: For industrial economies and world total, MSCI; for emerging stock markets, the IFC EMDB.

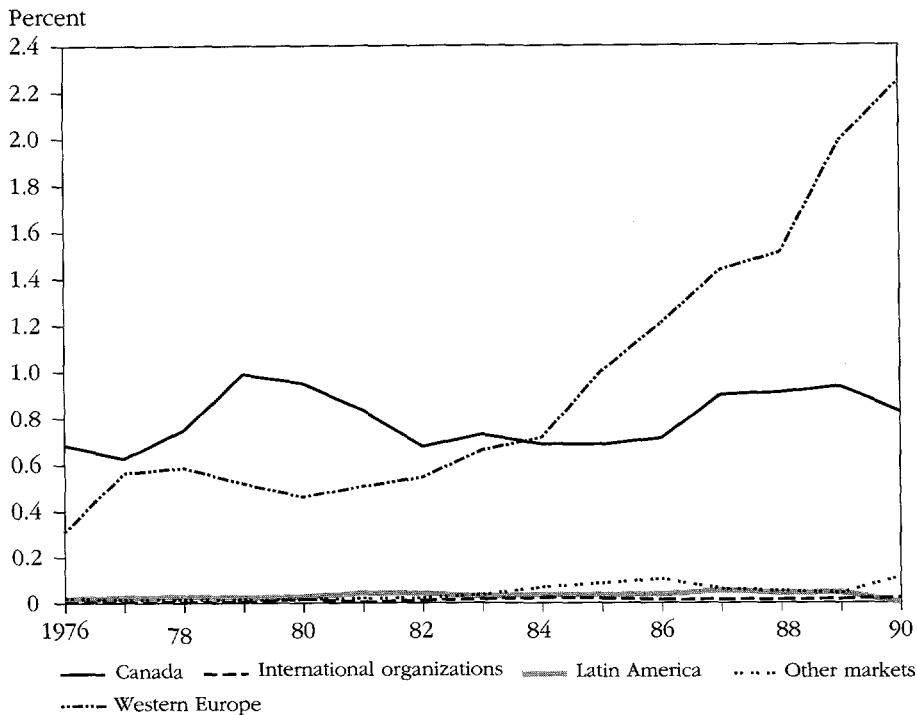
in Canadian equities, and the balance distributed across other European and emerging markets.²

Figure 1 shows the equity portfolio chosen by U.S. residents. For each economy or region for which data are available, investment positions are expressed as a fraction of the value of U.S. equity market capitalization.³ The U.S.

2. If investors are identical, this is the equilibrium portfolio held in all economies. Tesar and Werner (forthcoming) demonstrate that for investors in the five industrial markets in our sample, such a portfolio generally dominates a portfolio of domestic securities in terms of the tradeoff between risk and return. Harvey (1993, 1995) finds further gains from international diversification by combining a portfolio of eighteen industrial markets (those covered by the MSCI index) with emerging-market securities.

3. For the purposes of this paper, "region" denotes both a geographical region and a group of markets.

Figure 1. *The International Equity Portfolio of U.S. Residents, 1976–90*
(percentage of U.S. equity market capitalization value)

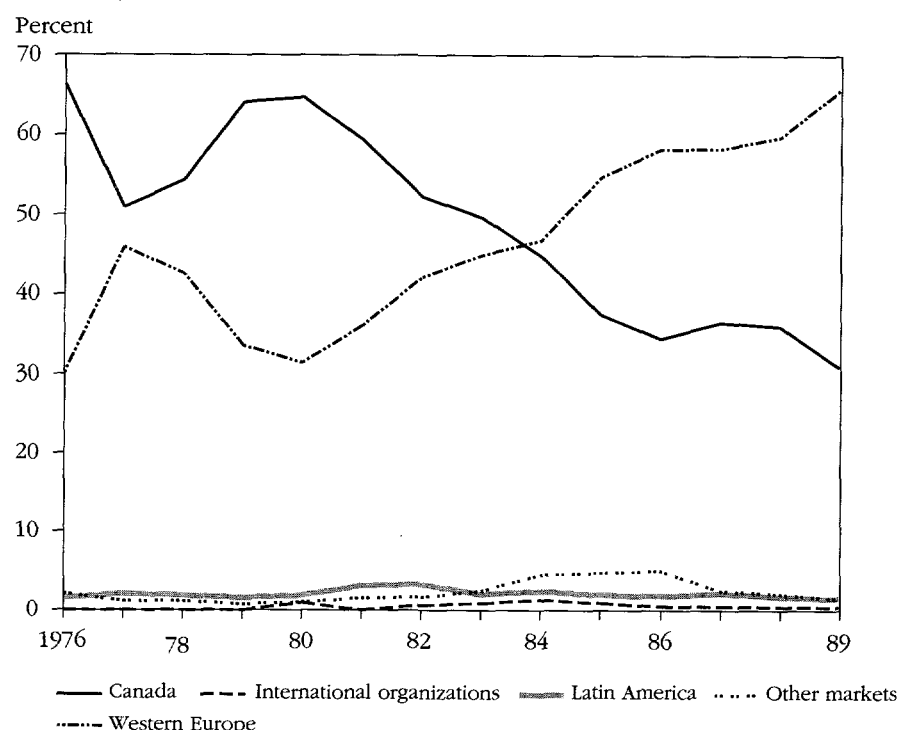


Source: U.S. Department of the Treasury (various issues).

investment share in Western European equities increased from 0.3 percent in 1976 to about 2.2 percent in 1990. The share invested in Canada remained fairly constant, at less than 1 percent, and there has been a very slight increase in investment in other markets. Data on the U.S. international investment position in Japan are not reported by the Department of Commerce. The remaining 96 percent is invested in domestic equities. Note that if U.S. investors were to hold the market portfolio, 6 to 7 percent of their portfolio would be allocated to the emerging markets and the smaller European markets listed in table 1. This figure exceeds the current total of U.S. equity investment in all markets. This strong bias toward domestic securities, despite the apparent gains from international diversification, has been documented for other industrial markets as well (French and Poterba 1991; Tesar and Werner, forthcoming).

The reallocation of international equity investments across regions over time is illustrated in figure 2. Here the investment positions are plotted as shares of the total international portfolio held by U.S. residents. The share of the international portfolio allocated to Western Europe has risen from 30 percent in 1976 to nearly 70 percent in 1989. This was accomplished by pulling investment out of Canadian equities. There has been very little reallocation involving equity from the market groups "Latin America" or "Other markets." Thus, although

Figure 2. *The Share of Total International Equity Investment Held by U.S. Residents, 1976–89*



Source: U.S. Department of the Treasury (various issues).

the increased investment in emerging-market equities appears large from the perspective of the recipient economies, it remains a small fraction of the U.S. portfolio and is in fact much smaller than the investment position suggested by a portfolio that is weighted by market capitalization.

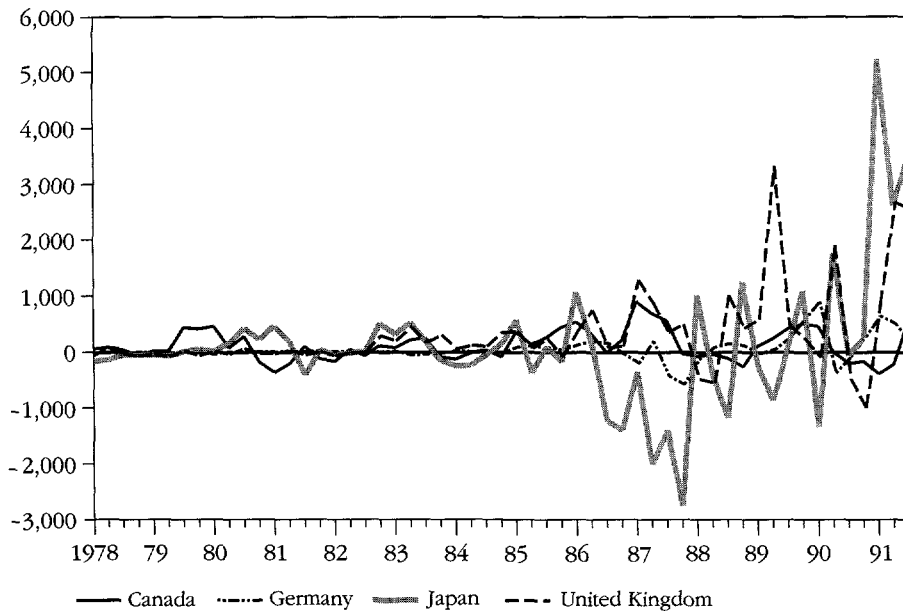
The small U.S. investment position in emerging markets is consistent with the figures reported by pension fund managers in the United States and Europe. Fund Research, a group studying institutional investors, reports that investment in emerging markets “probably represents only around 0.5 percent of institutional investors’ portfolio holdings” (*Financial Times*, October 26, 1992). Chuhan (1992) finds that investment in emerging markets was roughly 2 to 3.5 percent of the international portfolio held by U.S. pension funds from 1988 to 1991.

III. U.S. NET PURCHASES OF FOREIGN EQUITY

Data on international investment positions allow us to examine portfolio allocations directly. Unfortunately, these data are limited to a small set of economies or regions and are rarely available on a bilateral basis. We therefore turn to the data on U.S. transactions in foreign equity. Unlike the data on investment positions, these figures do not reveal the overall portfolio allocation; however,

Figure 3. *Quarterly Net Purchases of Equity in Foreign Industrial Economies by U.S. Residents, 1978–91*

Millions of dollars



Source: U.S. Department of the Treasury (various issues).

the transactions do reflect the marginal adjustments in the portfolios of those individuals and institutions actively participating in these markets.⁴ In this section we examine patterns in U.S. net portfolio flows to four industrial and fifteen developing economies.

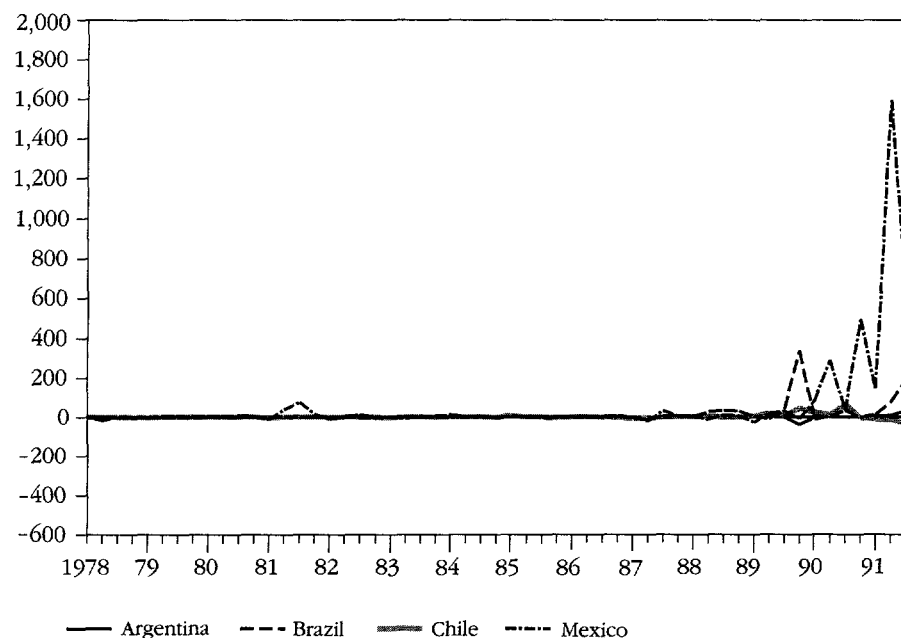
U.S. investment flows cover a substantial fraction of total foreign equity investment in developing economies. In 1990 U.S. net equity flows to developing economies reached \$1.4 billion, compared with net flows of \$200 million from Canada and \$60 million from Germany (see Chuhan 1992, table 2). In 1991 net flows from these three economies to developing economies approximately doubled. In terms of gross flows, U.S. equity investment was about \$10 billion in 1991, compared with gross equity flows of \$310 million from Germany. Data on gross equity flows from other industrial economies are unfortunately not available.

Figures 3 through 6 show the quarterly net purchases by U.S. residents of foreign equity in various markets from the first quarter of 1978 to the third quarter of 1991. All flows are in millions of dollars. Net purchases are defined as U.S. purchases of foreign equity from foreign residents less U.S. sales of

4. Tesar and Werner (1994) examine the cross-border portfolio flows between the United States and Canada, Germany, Japan, and the United Kingdom, exploiting both U.S. and foreign data sources. Despite the data collection problems discussed above, we find a high correlation between U.S. net purchases of Canadian and German equities across the official statistics of the three economies.

Figure 4. *Quarterly Net Purchases of Equity in Emerging Stock Markets in Latin America by U.S. Residents, 1978-91*

Millions of dollars



Source: U.S. Department of the Treasury (various issues).

foreign equity to foreign residents during the quarter. From figure 3 it is apparent that U.S. transactions in foreign equity began to pick up in the mid-1980s. Interestingly, a relatively large net sale of roughly \$2.5 billion of foreign equity to Japanese residents occurred in 1987. By the early 1990s this flow had reversed to a net purchase of equity from Japanese residents of \$5 billion. There was also a large net purchase of equity from British residents in 1989 of approximately \$3 billion. This volatility in net purchases is a characteristic of equity flows to both the industrial and emerging-market economies. It is evident in figures 3 through 6 that this volatility has increased in both sets of economies over the sample period.

Figure 4 shows that net purchases of foreign equities from Latin America are on a smaller scale than those from the industrial economies. In Latin American economies, the increased investment activity was delayed until the late 1980s. The variance of these flows is especially large for Mexico. U.S. residents purchased on net approximately \$1.5 billion worth of Mexican equities in the second quarter of 1991. This large net outflow from the United States to Mexico coincided with the American Depositary Receipt (ADR) issue of Telmex securities in the United States in May 1991. Issues of ADRs, Global Depositary Receipts (GDRs), and securities issued in the United States under Rule 144A tend to produce lumpiness in portfolio flows between the United States and the ESMS

Figure 5. *Quarterly Net Purchases of Equity in Emerging Stock Markets in Asia by U.S. Residents, 1978-91*

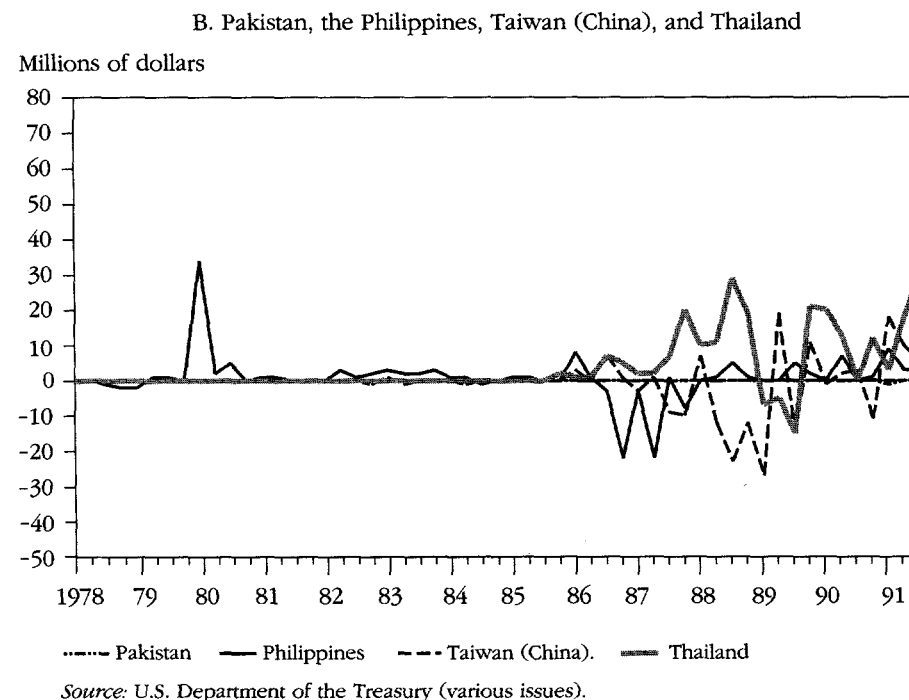
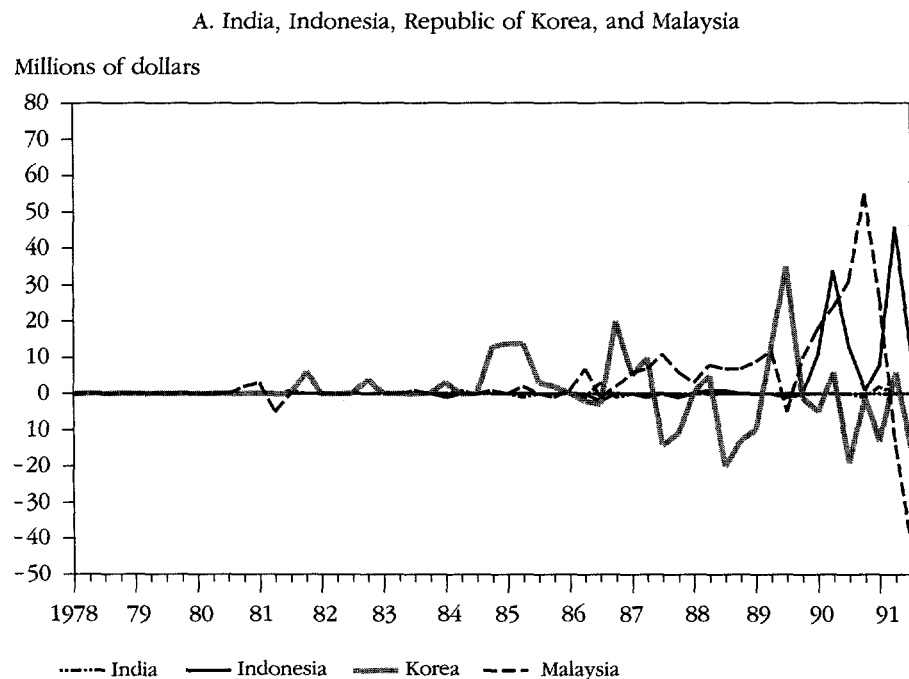
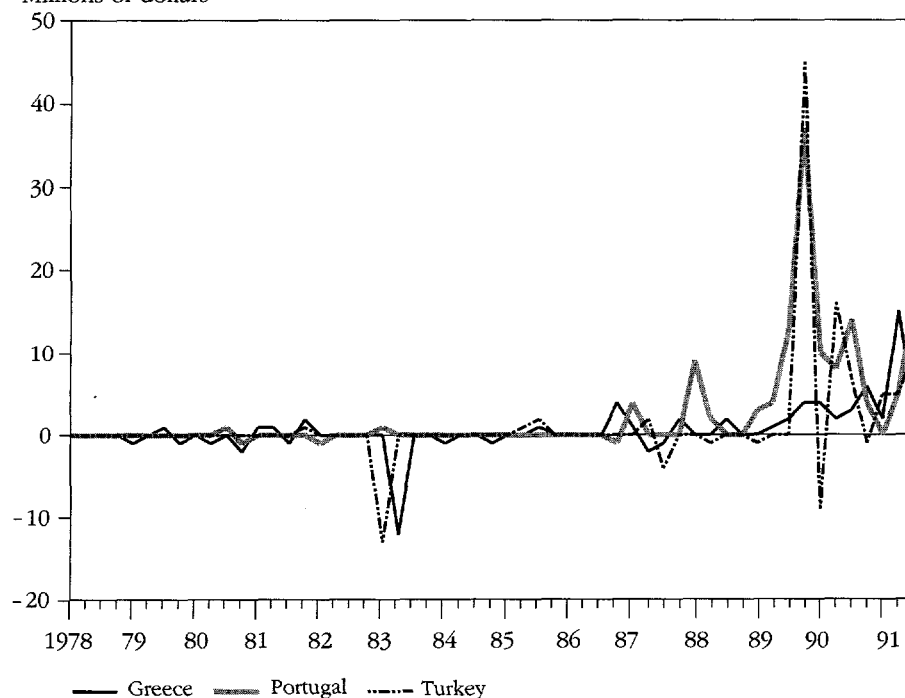


Figure 6. *Quarterly Net Purchases of Equity in Emerging Stock Markets in Europe by U.S. Residents, 1978–91*

Millions of dollars



Source: U.S. Department of the Treasury (various issues).

because these securities are first issued in large blocks to the sponsor and are then reissued on the U.S. market (see Gooptu 1993 for a more complete discussion).

Figure 5 shows net purchases of equity from ESMS in Asia. The flows are on a yet smaller scale—roughly one-tenth of the scale of figure 3. Excluding the net purchase of Filipino equity in late 1979, the increase in U.S. purchases of Asian equity began at about the same time as that of equities in the industrial economies. The flows to the emerging markets in Europe plotted in figure 6 are of the same order of magnitude as those in Asia, with a notable spike in net purchases of Turkish and Portuguese equity in the third quarter of 1989.

Table 2 provides descriptive statistics of net purchases of foreign equity during the same time period. All data are now deflated by the U.S. consumer price index. The United Kingdom tends to be the largest recipient of U.S. equity investment, with a mean level of \$293 million. Investment in Canada follows with a mean of \$128 million, and in Japan the mean is \$84 million. As seen in figures 4–6, mean flows to emerging markets are on a smaller scale, the largest recipients being Mexico, with a mean of \$53 million; Brazil, \$12 million;

Malaysia, \$3 million; and Portugal, \$2 million. Three economies—Taiwan (China), Argentina, and Colombia—experienced mean outflows of equity investment in this period. The coefficient of variation, defined as the standard deviation divided by the mean, gives some indication of the volatility of net purchases in relation to the mean level of equity flows. With the exception of the very high coefficient for Argentina, the variability of net purchases in the emerging markets is of the same order of magnitude as that in the industrial markets in our sample.

The theory of portfolio choice has no direct implications for net purchases of foreign equities. Given the roughly random-walk behavior of equity returns, however, it follows that changes in portfolio allocations due to changes in expected returns would exhibit little serial correlation. If, however, U.S. investors are moving gradually toward an internationally diversified portfolio, or if they respond slowly to changes in financial markets, net purchases may exhibit some persistence. Columns 4 through 7 of table 2 indicate that net purchases of equity from both sets of markets tend to exhibit high first-order autocorrelation. There are some notable exceptions, however. Argentina, Brazil, and Colombia have *p*-values of 0.85 or higher, indicating a high probability that the autocorrelation coefficients are equal to zero, and the first-order autocorrelation in India is significantly negative.

To get a measure of the evolution of the U.S. portfolio over time, table 3 shows the cumulated value of net purchases of foreign equity for each of the markets in our sample. Note that these figures do not correspond to a true measure of the stock value of the equity held in each market, because we do not take into account capital gains or changes in exchange rates. However, these figures provide a rough estimate of the U.S. investment position. The first column of table 3 shows the value accumulated over the entire period, from the first quarter of 1978 to the third quarter of 1991. The second column shows the value accumulated since 1986, when activity on these markets began to increase. The final column shows the percentage of the equity position accumulated in the latter part of the sample.

For almost all markets, we see a positive accumulation of foreign equity since 1978 (column 1). The exceptions are the emerging markets of Taiwan (China), Argentina, and Colombia. These data suggest that U.S. investors are, albeit gradually, moving from having zero foreign assets to having positive claims. Most of this accumulation has taken place at the end of the period, particularly in Indonesia, Chile, and the European emerging markets. Note that equity from ESMS is roughly 12 percent of the total amount of foreign equity accumulated by U.S. residents since 1978. The figures in table 1 suggest that if U.S. residents were to allocate their portfolio of foreign equities in proportion to market size, about 6 percent of their portfolio would be in the form of ESMS equities. Thus, the recent increase in investment in the emerging markets appears to be slightly larger than the expansion of their market size.

The correlations between net purchases of equity in different markets provide some additional information about the factors affecting U.S. portfolio choice. If

Table 2. *Descriptive Statistics of U.S. Net Purchases of Foreign Equity by Market, 1978–91*
(millions of 1985 dollars)

| Market | Mean | Standard deviation | Coefficient of variation ^a | Autocorrelations | | | | |
|-------------------------------|--------|-----------------------|--|------------------|-------|-------|-------|-------------------------|
| | | | | AR(1) | AR(2) | AR(3) | AR(4) | p-value(4) ^b |
| <i>Industrial markets</i> | | | | | | | | |
| Canada | 127.79 | 283.05 | 2.22 | 0.54* | 0.20 | -0.06 | -0.15 | 0.00 |
| Germany | 46.23 | 195.18 | 4.22 | 0.39* | -0.04 | -0.06 | 0.14 | 0.04 |
| Japan | 84.05 | 1023.43 | 12.18 | 0.32* | 0.32* | 0.25 | 0.04 | 0.00 |
| United Kingdom | 292.75 | 640.85 | 2.19 | 0.27 | -0.09 | 0.00 | 0.13 | 0.24 |
| <i>Emerging stock markets</i> | | | | | | | | |
| <i>Asia</i> | | | | | | | | |
| India | 0.05 | 0.56 | 10.58 | -0.42* | 0.05 | 0.00 | -0.01 | 0.03 |
| Indonesia | 1.76 | 6.51 | 3.70 | 0.42* | 0.07 | 0.21 | 0.47* | 0.00 |
| Korea, Rep. of | 0.73 | 8.14 | 11.15 | 0.21 | 0.01 | -0.21 | -0.09 | 0.21 |
| Malaysia | 3.05 | 9.75 | 3.19 | 0.56* | 0.09 | -0.11 | -0.05 | 0.00 |
| Philippines | 1.06 | 7.92 | 7.45 | 0.10 | 0.28* | 0.00 | 0.01 | 0.28 |
| Taiwan (China) | -0.65 | 6.65 | -10.20 | -0.05 | 0.35 | 0.02 | -0.04 | 0.12 |
| Thailand | 3.26 | 7.28 | 2.23 | 0.45* | 0.11 | 0.02 | 0.10 | 0.01 |
| <i>Europe</i> | | | | | | | | |
| Greece | 0.44 | 2.80 | 6.42 | 0.19 | 0.19 | 0.22 | 0.13 | 0.09 |
| Portugal | 1.97 | 5.19 | 2.64 | 0.48* | 0.27 | 0.33* | 0.22 | 0.00 |
| Turkey | 0.93 | 6.12 | 6.58 | -0.16 | 0.23 | 0.11 | 0.00 | 0.24 |
| <i>Latin America</i> | | | | | | | | |
| Argentina | -0.43 | 7.07 | -16.33 | 0.09 | 0.00 | 0.01 | -0.01 | 0.98 |
| Brazil | 11.75 | 44.61 | 3.80 | 0.11 | -0.06 | 0.05 | 0.07 | 0.85 |
| Chile | 1.32 | 10.59 | 8.03 | 0.34* | 0.28* | 0.23 | -0.25 | 0.00 |
| Colombia | -0.25 | 1.26 | -5.06 | -0.11 | -0.02 | 0.04 | -0.06 | 0.90 |
| Mexico | 52.65 | 190.76 | 3.62 | 0.38* | 0.31* | 0.13 | 0.15 | 0.00 |

* Significant at the 5 percent level.

Note: Net purchases are U.S. purchases of foreign equity from foreign residents less U.S. sales of foreign equity to foreign residents. Values are based on quarterly data from the first quarter of 1978 to the third quarter of 1991, deflated by the U.S. consumer price index (1985.3 = 100).

a. The ratio of the standard deviation divided by the mean.

b. The probability that all four autocorrelation coefficients are zero.

Source: For net purchases, U.S. Department of the Treasury (various issues); for the U.S. consumer price index, IMF (various issues).

Table 3. *Cumulated Real U.S. Net Purchases of Foreign Equity by Market, 1978-91*
(millions of 1985 dollars)

| Market | Cumulated value of net purchases | | Percentage of the equity position accumulated during 1986.1-1991.3 |
|-------------------------------|----------------------------------|---------------|--|
| | 1978.1-1991.3 | 1986.1-1991.3 | |
| <i>Industrial markets</i> | | | |
| Canada | 7,028.3 | 3,833.2 | 54.54 |
| Germany | 2,542.4 | 2,137.8 | 84.09 |
| Japan | 4,622.7 | 2,616.7 | 56.61 |
| United Kingdom | 16,101.4 | 13,680.2 | 84.96 |
| Total | 30,294.8 | 22,267.9 | 73.50 |
| <i>Emerging stock markets</i> | | | |
| <i>Asia</i> | | | |
| India | 3.0 | 1.8 | 60.00 |
| Indonesia | 96.6 | 97.6 | 101.04 |
| Korea, Rep. of | 40.1 | -20.8 | -151.87 |
| Malaysia | 167.9 | 164.6 | 98.03 |
| Philippines | 58.4 | -15.0 | -125.68 |
| Taiwan (China) | -35.8 | -35.2 | 98.32 |
| Thailand | 179.3 | 177.3 | 98.88 |
| Total | 509.5 | 370.3 | 72.68 |
| <i>Europe</i> | | | |
| Greece | 24.0 | 39.9 | 166.25 |
| Portugal | 108.3 | 108.3 | 100.00 |
| Turkey | 51.2 | 61.3 | 119.73 |
| Total | 183.5 | 209.5 | 114.17 |
| <i>Latin America</i> | | | |
| Argentina | -23.8 | -3.6 | 15.13 |
| Brazil | 646.4 | 639.9 | 98.99 |
| Chile | 72.5 | 79.0 | 108.97 |
| Colombia | -13.7 | -7.4 | 54.01 |
| Mexico | 2,895.9 | 2,670.8 | 92.23 |
| Total | 3,577.3 | 3,378.7 | 94.45 |

Note: Values are based on quarterly data deflated by the U.S. consumer price index (1985.3 = 100).

Source: For net purchases, U.S. Department of the Treasury (various issues); for the U.S. consumer price index, IMF (various issues).

U.S. investors turn to foreign equity investments when the returns to domestic investments are low, or if U.S. investors are moving generally toward a more broadly diversified portfolio, we would expect to see a positive correlation between net purchases across markets. It has been suggested, for example, that low U.S. interest rates have prompted the recent increase in U.S. foreign investment in emerging markets. A tendency to reallocate the portfolio between equity investments in two markets, perhaps in response to changes in expected returns, would be reflected in a negative correlation between net equity purchases. The amount that can be learned from these simple correlations is limited, of course, by the fact that investors are likely to care about both the return on the investment and the minimization of risk for the overall portfolio.

Table 4. *Correlation Coefficients between U.S. Net Equity Purchases, 1978-91*

| Market | Ger- many | Japan | United Kingdom | India | Indo- nesia | Rep. of Korea | Malay- sia | Philip- pines | Taiwan (China) | Thai- land |
|-------------------|--------------|-------|-------------------|-------|----------------|------------------|---------------|------------------|-------------------|---------------|
| Canada | 0.00 | -0.19 | 0.19 | -0.16 | -0.16 | 0.19 | -0.17 | 0.09 | 0.02 | -0.06 |
| Germany | | 0.35* | 0.04 | 0.12 | 0.18 | 0.08 | 0.07 | 0.03 | 0.25 | 0.18 |
| Japan | | | 0.23 | 0.11 | 0.43* | -0.11 | -0.11 | 0.35* | 0.38* | 0.07 |
| United Kingdom | | | | 0.01 | 0.48* | 0.07 | -0.23 | -0.02 | 0.25 | 0.22 |
| India | | | | | -0.01 | -0.23 | -0.08 | 0.08 | 0.25 | 0.00 |
| Indonesia | | | | | | -0.06 | 0.05 | 0.09 | 0.22 | 0.35* |
| Korea, Rep. of | | | | | | | -0.16 | -0.17 | 0.17 | -0.50* |
| Malaysia | | | | | | | | -0.04 | -0.12 | 0.04 |
| Philippines | | | | | | | | | 0.02 | -0.06 |
| Taiwan (China) | | | | | | | | | | -0.10 |
| Thailand | | | | | | | | | | |
| Argentina | | | | | | | | | | |
| Brazil | | | | | | | | | | |
| Chile | | | | | | | | | | |
| Colombia | | | | | | | | | | |
| Mexico | | | | | | | | | | |
| Greece | | | | | | | | | | |
| Portugal | | | | | | | | | | |
| Turkey | | | | | | | | | | |

* Significant at the 5 percent level.

Note: The correlations are based on quarterly data from the first quarter of 1978 to the third quarter of 1991. Net purchases are in millions of dollars, deflated by the U.S. consumer price index (1985.3 =

The figures shown in table 4 indicate that net equity purchases are generally not significantly correlated across markets. Of the 171 correlation coefficients shown, only 36 are significant at the 5 percent level. Of these, 29 are positive, providing weak evidence that U.S. investors tend to seek more than one foreign channel for investment at the same time. The boxed sections of the table highlight the correlations within the four regions. A positive correlation across markets within a region would be observed if U.S. investors were to make investment decisions based on region-specific as opposed to market-specific factors. There is no evidence of such a region-specific determinant for investment in the industrial markets or the emerging markets of Asia and Latin America. There is, however, a significant positive correlation between U.S. investment in Greece and in Portugal and between U.S. investment in Portugal and in Turkey. There is also a significantly positive correlation between U.S. equity investment in Japan and Indonesia, the Philippines, and Taiwan (China).

IV. U.S. EQUITY TRANSACTIONS IN FOREIGN MARKETS

We define transactions as the sum of U.S. purchases of foreign equity plus U.S. sales. Table 5 shows the means, standard deviations, and coefficients of variation of U.S. transactions in two periods: from the first quarter of 1978 to the fourth quarter of 1985 and from the first quarter of 1986 to the third quarter

| Argentina | Brazil | Chile | Colombia | Mexico | Greece | Portugal | Turkey |
|-----------|--------|--------|----------|--------|--------|----------|--------|
| -0.03 | 0.12 | -0.01 | 0.06 | -0.13 | -0.13 | 0.18 | 0.07 |
| -0.17 | 0.35* | 0.11 | -0.12 | 0.28 | 0.33* | 0.35* | 0.20 |
| 0.18 | 0.33* | -0.22 | -0.13 | 0.43* | 0.15 | 0.24 | 0.30* |
| 0.28 | 0.20 | -0.20 | -0.09 | 0.46* | 0.23 | 0.16 | 0.18 |
| 0.04 | -0.02 | -0.05 | -0.13 | -0.03 | -0.09 | -0.05 | 0.02 |
| 0.21 | 0.17 | 0.02 | -0.10 | 0.81* | 0.54* | 0.24 | 0.24 |
| -0.07 | -0.13 | -0.05 | 0.13 | -0.03 | 0.03 | -0.02 | -0.03 |
| -0.30* | -0.18 | 0.47* | 0.10 | -0.13 | 0.10 | 0.09 | 0.05 |
| 0.01 | 0.04 | 0.00 | 0.05 | 0.06 | -0.02 | 0.04 | 0.02 |
| -0.03 | 0.16 | 0.10 | -0.02 | -0.18 | 0.10 | 0.17 | 0.28 |
| 0.04 | 0.49* | -0.05 | -0.15 | 0.38* | 0.37* | 0.36* | 0.32* |
| | -0.33 | -0.53* | -0.16 | 0.32* | -0.01 | -0.38* | -0.46* |
| | | 0.26 | -0.08 | 0.26 | 0.31* | 0.85* | 0.83* |
| | | | 0.14 | -0.29* | 0.04 | 0.54* | 0.40* |
| | | | | -0.16 | -0.01 | -0.01 | -0.02 |
| | | | | | 0.62* | 0.18 | 0.14 |
| | | | | | | 0.31* | 0.21 |
| | | | | | | | 0.76* |

100). The boxed sections of the table highlight the correlations within the four regions: industrial markets and emerging stock markets in Asia, Europe, and Latin America.

Source: For purchases, U.S. Department of the Treasury (various issues); for the U.S. consumer price index, IMF (various issues).

of 1991. The means and standard deviations of the volume of U.S. transactions are substantially higher in the industrial markets in both periods. However, the coefficient of variation, which normalizes the volatility of the transactions rate by the mean level of transactions, is higher in emerging markets than in industrial markets in every case and across the two time periods. Thus it appears that the transaction rate of U.S. investors in equity from emerging markets is somewhat higher than the U.S. transaction rate in equity from more established markets.

A second conclusion that can be drawn from table 5 is that the volatility of U.S. transactions in relation to the mean appears to be falling over time. The coefficient of variation is smaller in the second half of the sample for all markets but one. The single exception is Mexico, whose coefficient of variation doubled over the time period. The general decline in the variability of U.S. transactions may be exaggerated for markets with very low levels of U.S. equity investment because the data are reported in millions of dollars. Transactions that tend to fall below 1 million dollars will be reported as 0 or 1, inflating the variance in relation to the mean. However, the nearly universal decline in the coefficient of variation over time seems to suggest that as U.S. investors increase their holdings of foreign equity, they tend to transact less frequently. It also suggests that the concern in emerging markets about the high volatility of foreign investment in their markets may be relevant only in the short run.

Table 5. *Volatility of U.S. Transactions in Foreign Equity*
(millions of 1985 dollars)

| Market | 1978-85 | | | 1986-91 | | |
|-------------------------------|----------|--------------------|---------------------------------------|-----------|--------------------|---------------------------------------|
| | Mean | Standard deviation | Coefficient of variation ^a | Mean | Standard deviation | Coefficient of variation ^a |
| <i>Industrial markets</i> | | | | | | |
| Canada | 1,383.31 | 542.57 | 0.39 | 2,609.26 | 844.89 | 0.32 |
| Germany | 195.10 | 150.88 | 0.77 | 1,775.36 | 759.58 | 0.43 |
| Japan | 1,561.85 | 872.55 | 0.56 | 11,209.40 | 2,947.49 | 0.26 |
| United Kingdom | 1,359.14 | 933.32 | 0.69 | 14,912.77 | 4,412.64 | 0.30 |
| <i>Emerging stock markets</i> | | | | | | |
| <i>Asia</i> | | | | | | |
| India | 0.17 | 0.50 | 2.91 | 0.95 | 1.73 | 1.83 |
| Indonesia | 0.10 | 0.56 | 5.66 | 6.15 | 10.82 | 1.76 |
| Korea, Rep. of | 2.42 | 4.51 | 1.86 | 28.17 | 14.69 | 0.52 |
| Malaysia | 0.85 | 2.22 | 2.63 | 44.68 | 56.67 | 1.27 |
| Philippines | 5.05 | 8.92 | 1.77 | 15.63 | 15.97 | 1.02 |
| Taiwan (China) | 0.33 | 0.78 | 2.38 | 47.17 | 39.85 | 0.84 |
| Thailand | 0.06 | 0.35 | 5.66 | 33.47 | 27.09 | 0.81 |
| <i>Europe</i> | | | | | | |
| Greece | 2.01 | 2.81 | 1.40 | 6.06 | 4.40 | 0.73 |
| Portugal | 0.22 | 0.67 | 3.04 | 7.42 | 9.20 | 1.24 |
| Turkey | 0.78 | 3.69 | 4.73 | 13.65 | 26.76 | 1.96 |
| <i>Latin America</i> | | | | | | |
| Argentina | 2.05 | 5.33 | 2.60 | 9.98 | 12.08 | 1.21 |
| Brazil | 1.58 | 4.59 | 2.91 | 59.38 | 101.33 | 1.71 |
| Chile | 0.71 | 1.88 | 2.65 | 17.41 | 22.40 | 1.29 |
| Colombia | 0.63 | 1.41 | 2.24 | 2.37 | 2.50 | 1.06 |
| Mexico | 19.32 | 18.69 | 0.97 | 277.33 | 530.15 | 1.91 |

Note: U.S. transactions are U.S. purchases of foreign equity from foreign residents plus U.S. sales of foreign equity to foreign residents. Values are based on quarterly data deflated by the U.S. consumer price index (1985.3 = 100) for two periods: 1978.1-1985.4 and 1986.1-1991.3.

a. The ratio of the standard deviation divided by the mean.

Source: For transactions, U.S. Department of the Treasury (various issues); for the U.S. consumer price index, IMF (various issues).

Table 6 provides information on four indicators. The first column gives the turnover rate in each market. This is the volume of equity traded over the quarter divided by the local market capitalization value. We use the average of the market capitalization value in the current quarter and the previous quarter. This is to avoid underestimating the turnover rate in economies with rapidly rising nominal market capitalization values caused by high inflation. The data reported are the four-quarter averages for 1990. The second column gives the U.S. transaction rate in each market, which is the U.S. volume of transactions rate divided by the volume traded on the local market. The U.S. volume of transactions in foreign equity is defined as the average of U.S. purchases and sales of foreign equity. The data reported are the four-quarter averages for 1990. The third column gives the standard deviation of excess returns in each market.

Table 6. *Turnover and U.S. Transactions in Foreign Equity Markets*

| Market | Local turnover, 1990 ^a | U.S. trans- actions share in local market, 1990 ^b (percent) | Local volatility, 1986.1– 1990.12 ^c (dollars) | Correlation be- tween U.S. transac- tions share and local turnover, 1986.1–1991.3 ^d |
|-------------------------------|--------------------------------------|---|---|--|
| United States | 0.119 | n.a. | 0.0299 | n.a. |
| <i>Emerging Stock Markets</i> | | | | |
| <i>Asia</i> | | | | |
| India | 0.236 | 0.017 | 0.0890 | –0.383 |
| Indonesia | 0.159 | 1.328 | — | –0.294 |
| Korea, Rep. of | 0.128 | 0.262 | 0.0895 | –0.318 |
| Malaysia | 0.046 | 5.049 | 0.0863 | 0.110 |
| Philippines, the | 0.027 | 7.067 | 0.1271 | 0.116 |
| Taiwan (China) | 0.806 | 0.053 | 0.1789 | –0.236 |
| Thailand | 0.133 | 2.010 | 0.0936 | –0.079 |
| Average | 0.209 | 2.255 | 0.1107 | n.a. |
| <i>Europe</i> | | | | |
| Greece | 0.071 | 1.341 | 0.1526 | –0.538* |
| Portugal | 0.028 | 5.149 | 0.1650 ^e | –0.144 |
| Turkey | 0.105 | 1.635 | 0.2361 ^f | –0.248 |
| Average | 0.068 | 8.125 | 0.1846 | n.a. |
| <i>Latin America</i> | | | | |
| Argentina | 0.072 | 3.654 | 0.3185 | –0.325 |
| Brazil | 0.060 | 3.562 | 0.2299 | –0.268 |
| Chile | — | — | 0.0824 | — |
| Colombia | 0.009 | 29.048 | 0.0651 | –0.329 |
| Mexico | 0.111 | 12.537 | 0.1585 | –0.438* |
| Average | 0.047 | 12.200 | 0.1709 | n.a. |

* Significant at the 5 percent level.

— Not available.

n.a. Not applicable.

a. Quarterly volume of equity traded (defined as total purchases) divided by the average of the current and last quarter's local market capitalization value. Figures shown are the average of the four quarters in 1990.

b. Average of U.S. purchases plus sales of foreign equity during the quarter divided by the sum of total purchases of equity in the local market during the quarter. Figures shown are the average of the four quarters in 1990.

c. Standard deviation of monthly excess returns over the U.S. Treasury bill rate. Values are local monthly returns in dollars less the returns on the U.S. Treasury bill.

d. Correlation between the first and second columns for the longest time period for which data are available (typically 1986.1–1991.3).

e. Calculated for 1986.2–1990.12.

f. Calculated for 1987.1–1990.12.

Source: IFC EMDB and MSCI.

Excess returns are local monthly returns in dollars less the return on the U.S. Treasury bill. The final column shows the correlation between the U.S. transaction share of total transactions on the local market and the local turnover rate. The turnover rate and the standard deviation of excess returns of U.S. equity are provided as benchmarks.

The first column of table 6 provides a comparison of turnover rates across markets.⁵ We find that Taiwan (China) stands out with a quarterly rate of 0.806.

5. See also Mullin (1993) for an extensive discussion of turnover, volatility, and market breadth in emerging markets.

With that exception, the remaining ESMS exhibit turnover rates of roughly the same magnitude or somewhat smaller rates than the United States.⁶ This seems to suggest that liquidity in ESMS is fairly high. The standard deviations of excess returns, however, are higher in all emerging markets than in the United States. Regionally, returns to equity investments in Latin America and Europe tend to exhibit higher volatility than rates in Asian markets.

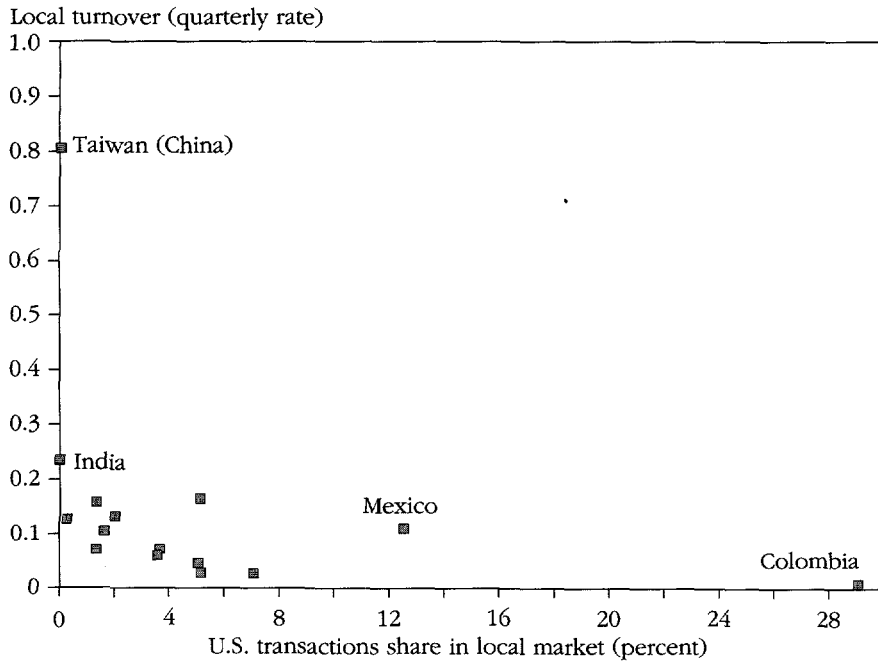
The figures in the second column of table 6 indicate that U.S. transactions are concentrated in a few of the emerging markets. U.S. residents are involved in roughly 29 percent of all transactions in Colombia, 12 percent in Mexico, 7 percent in the Philippines, 5 percent in Malaysia, and 5 percent in Portugal. When comparing regional averages, we see that U.S. investors tend to transact most frequently (as a share of all local transactions) in Latin America. This suggests that in the United States, at least, investors tend to turn to foreign markets with the closest proximity. This accords with the evidence in Tesar and Werner (forthcoming) that the United States invests disproportionately in Canadian equity and that Canada invests disproportionately in U.S. equity.

Policymakers have become increasingly concerned about the impact of international investment on local market turnover and the volatility of equity returns. To address this question, we examine whether increased transactions by U.S. residents in foreign equity markets contribute to higher rates of turnover or higher standard deviations of excess returns. The fourth column of table 6 reports the correlation between the U.S. transactions share in the local market and the local turnover rate. Of the fourteen markets for which data are available, only two of the correlations are significant at the 5 percent level. Both are strongly negative, suggesting that U.S. investment activity apparently has no effect, or a slightly dampening effect, on the local turnover rate. As further evidence, figure 7 plots a cross-section of turnover rates against the U.S. transactions share for 1990. There is little indication that markets with high U.S. investment activity experience higher rates of turnover than other markets. Finally, figure 8 plots U.S. transactions shares against the standard deviations of local excess returns. Again, there is no evidence that U.S. investment activity contributes to volatility in equity returns. This corroborates the findings of Bekaert (1995), who reports that volatility in ESMS is unrelated to a number of measures of openness, such as foreign ownership restrictions and market integration through cross-listing of market funds.

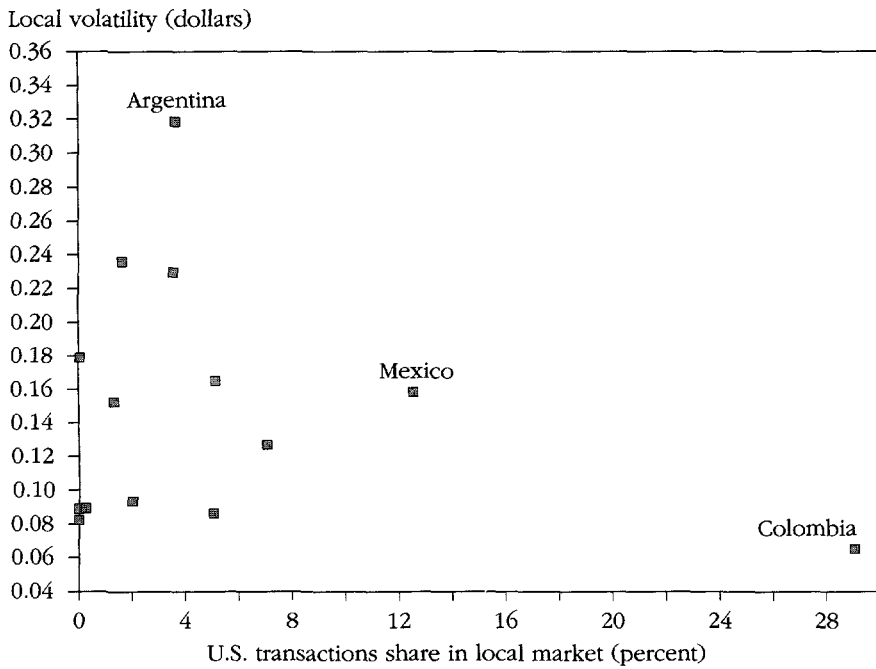
V. CONCLUSION

We draw three main conclusions from our analysis of data on U.S. equity investment in 1978–91. First, despite the recent increase in U.S. equity invest-

6. Note that the U.S. transactions data reflect trading on the New York Stock Exchange and the American Stock Exchange. Thus, to the extent equity trading has migrated away from these markets in recent years, we underestimate the rate of turnover.

Figure 7. *U.S. Transactions and the Local Turnover Rate*

Source: Authors' calculations (see table 6).

Figure 8. *U.S. Transactions and Local Volatility*

Source: Authors' calculations (see table 6).

ment in foreign equities, including investment in emerging stock markets, the U.S. portfolio remains strongly biased toward domestic equities.

Second, the increase in U.S. equity investment in ESMS is roughly in proportion to the share of ESMS in the global market capitalization value. That is, of the fraction of the U.S. equity portfolio that is held in the form of international equities, roughly 12 percent is allocated to ESMS. Although the volume of flows to these markets may appear large from the perspective of the recipient markets, these flows are substantially smaller than what would be observed if U.S. investors were to follow an overall strategy of holding the market portfolio.

Third, the volatility of U.S. transactions is higher in emerging-market equities than in other foreign equities. However, the volatility of U.S. transactions appears to be falling over time when normalized by the mean level of transactions. We find no evidence of a relation between the volume of U.S. transactions in foreign equity and local turnover rates or volatility of stock returns. These findings suggest that the activity of U.S. investors is not the source of excess volatility or high turnover on local equity markets. Thus, these data provide little support for limiting U.S. access to these markets.

REFERENCES

The word "processed" describes informally reproduced works that may not be commonly available through library systems.

- Bekaert, Geert. 1995. "Market Integration and Investment Barriers in Emerging Equity Markets." *The World Bank Economic Review* 9(1):75-108.
- Calvo, Guillermo A., Leonardo Leiderman, and Carmen M. Reinhart. 1992. "Capital Inflows and Exchange Rate Appreciation in Latin America: The Role of External Factors." IMF Working Paper. International Monetary Fund, Washington, D.C.
- Capital International Perspective, S.A., and Morgan Stanley & Co.. Various issues. *Morgan Stanley Capital International Perspective*. New York, N.Y.: Morgan Stanley.
- Chuhan, Punam. 1992. "Sources of Portfolio Investment in Emerging Markets." Working Paper. Processed.
- Divecha, Arjun B., Jaime Drach, and Dan Stefak. 1992. "Emerging Markets: A Quantitative Perspective." *Journal of Portfolio Management* 19(Fall):41-50.
- French, Kenneth R., and J. Poterba. 1991. "Investor Diversification and International Equity Markets." *The American Economic Review* 81:222-26.
- Gooptu, Sudarshan. 1993. "Portfolio Investment Flows to Emerging Markets." Paper presented at a symposium sponsored by the World Bank, Debt and International Finance Division, Washington, D.C., September 9-10. Processed.
- Harvey, C.R. 1993. "Predictable Risk and Returns in Emerging Markets." Duke University Working Paper. Duke University, Fuqua School of Business, Durham, N.C. Processed.
- . 1995. "The Risk Exposure of Emerging Equity Markets." *The World Bank Economic Review* 9(1):19-50.
- IMF (International Monetary Fund). Various issues. *International Financial Statistics*. Washington, D.C.

- Mullin, John. 1993. "Emerging Equity Markets in the Global Economy." *Federal Reserve Bank of New York Quarterly Review* 18(2):54-83.
- Steckler, L. E., and E. M. Truman. 1992. "The Adequacy of the Data on U.S. International Financial Transactions: A Federal Reserve Perspective." International Finance Discussion Papers, Board of Governors No. 430. Processed.
- Tesar, Linda L., and Ingrid M. Werner. 1994. "International Securities Transactions and U.S. Portfolio Choice." In NBER, *The Internationalization of Equity Markets*. Chicago, Ill.: The University of Chicago Press.
- . Forthcoming. "Home Bias and High Turnover." *Journal of International Money and Finance*.
- U.S. Department of the Treasury. Various issues. *Quarterly Bulletin of the U.S. Treasury*. Washington, D.C.
- Wilcox, Jarrod W. 1992. "Taming Frontier Markets." *Journal of Portfolio Management* 19(Fall):51-56.