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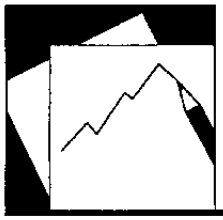

IMF Working Paper

Foreign Direct Investment in Emerging Markets: Income, Repatriations and Financial Vulnerabilities

Alexander Lehmann

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Policy Development and Review Department

Foreign Direct Investment in Emerging Markets: Income, Repatriations and Financial Vulnerabilities

Prepared by Alexander Lehmann[1]

Authorized for distribution by Hans-Peter Lankes

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Abstract

Based on U.S. data, the returns on foreign direct investment in emerging markets are shown to be substantially higher than would be suggested by official balance of payments statistics. This paper identifies the determinants of FDI profitability in 43 industrialized and developing countries. After financial leverage and the effect of tax minimizing income transfers are controlled for, host country risk and market openness are found to raise affiliate returns on equity and returns on sales. In the context of a number of financial crises during the 1990s, income repatriations are shown to be pro-cyclical, though the effect of host country recessions is mitigated through continued spending on fixed capital and a re-direction of affiliate sales towards export markets.

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Author's E-Mail Address: alehmann@imf.org

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Contents

Page

I. INTRODUCTION

Over the course of the 1990s, foreign direct investment (FDI) has rapidly become the most important source of foreign financing for developing countries (Table 1). Most countries have liberalized their investment regimes, and many provide costly fiscal incentives, in the expectation of the multiple benefits that are typically associated with FDI. In a widely-held view, foreign direct investors are believed to increase domestic capital formation, to augment host country stocks of technology and managerial know how, and to improve access to export markets and to a comparatively stable source of external financing.

While the benefits of foreign direct investment are generally acknowledged, if not always fully substantiated in the empirical literature, a number of key properties remain unclear. A critical one is profitability. How do returns on direct investment vary across countries, and with regulatory and macroeconomic risks in the host country? How are the resulting cash flows allocated across the competing claims, such as reinvestment in the income-generating affiliate, or dividend payouts to the parent firm, possibly for investment in other foreign affiliates? Finally, have these income flows mitigated or aggravated the effects of the financial and currency crises that have recurred periodically in emerging markets over the 1980s and 1990s? To date, research into any of these questions has been held back by a lack of data that are comparable across countries and over time.

This paper provides estimates for the rates of return on foreign direct investment in 23 emerging markets, identifies their determinants in a cross-country context, and examines the uses of cash flows generated by foreign direct investment enterprises. To get a sense of the magnitude of flows which we intend to analyze here, make any reasonable assumptions for depreciation rates and of rates of return on risky investments and multiply the sum with the direct investment stock in developing countries—estimated at $1.4 trillion in 1999.[2]

On the surface, it is not clear why the size of these flows should be a cause for concern. By acquiring an equity stake in a foreign enterprise, a direct investor will lay claims only to the corresponding flow of dividends, without necessarily changing the share of reinvested earnings. However, there are at least three reasons that suggest that the growing penetration of foreign investors in emerging markets indeed represents a structural change in the external accounts of these countries. Firstly, U.S. data suggest that foreign direct investment enterprises in emerging markets are predominantly majority-owned by direct investors (Figure 1). Therefore, a share of cash flows that is substantially larger than would be commensurate with foreign direct investors' ownership share is potentially available for redistribution within multinational companies. Through its intra-firm markets for goods, finance, and information, the multinational company overcomes the segmentation of national markets, and the financial performance of any one affiliate will be evaluated against that of all others. The likelihood of redistribution of capital away from under-performing host countries increases with the share of

[2]UNCTAD (2000).

foreign ownership in total assets. Secondly, foreign direct investment in the developing world is predominantly in the form of so-called green-field investment, rather than through acquisitions of existing enterprises.[3] In the process, the investor generates new external financing structures and payments obligations, and does not simply perpetuate those of previously existing enterprises. Thirdly, foreign affiliates in emerging market economies typically have privileged access to international capital markets. Affiliate liabilities are almost always guaranteed by the parent company, and consequently credit ratings are evaluated on the basis of the balance sheet of the consolidated group. There is a possibility, therefore, that foreign affiliates may preserve their host country's access to international credit in times of financial distress during which domestically-owned enterprises are already cut off from foreign financing. Conversely, foreign affiliates may be better able to overcome formal and informal impediments to external payments, openly—based on preferential terms in investment laws, investment contracts, or international investment agreements—or illicitly, for instance by means of so-called transfer pricing.

Apart from examining the implications of growing foreign ownership for financial vulnerability, it is important to calibrate key relationships in balance of payments accounts. The magnitude of foreign direct investment stocks in a number of economies calls for robust estimates of rates of return and for a sound understanding of the financial flows within the multinational firm. Greater precision in balance of payments projections is critical in emerging markets that have become heavily dependent on FDI inflows, as for instance Brazil and Argentina, where about three quarters of the cumulative current account deficits between 1996 and 2000 were financed by FDI inflows.

The rest of this paper is organized as follows. Section II reviews the methodological problems in recording FDI income and provides readily implementable methods for estimating the profitability of foreign direct investment. While host country FDI statistics often fall short of the required compilation standards, data on the outward direct investment of U.S. companies suggest that profitability of foreign affiliates in emerging markets is significantly higher than is generally assumed, substantially so, once the payments for intra-firm license fees and other services are included. The constructed profitability measure works well in tracking the redistribution of capital flows towards emerging markets over the 1990s, and their decline in relative importance in the three years to 1999. Section III identifies the principal determinants of affiliate profitability in a sample of 43 countries. After controlling for the tax regime and financial leverage, trade openness and host country risk are found to increase affiliate profitability. Section IV then looks at the uses of foreign direct investment income. In line with the growing attractiveness of emerging markets, the share of capital expenditures in affiliate cash flows has increased over the 1990s. While the share of repatriations in total net income has shown a corresponding decline, this ratio has shown distinct spikes during periods of financial crises. While this paper does not add to the empirical findings on the volatility of FDI flows relative to other private flows, this section does highlight the role of reinvested earnings as the

[3]UNCTAD (2000) estimates that the share is at least 60 percent.

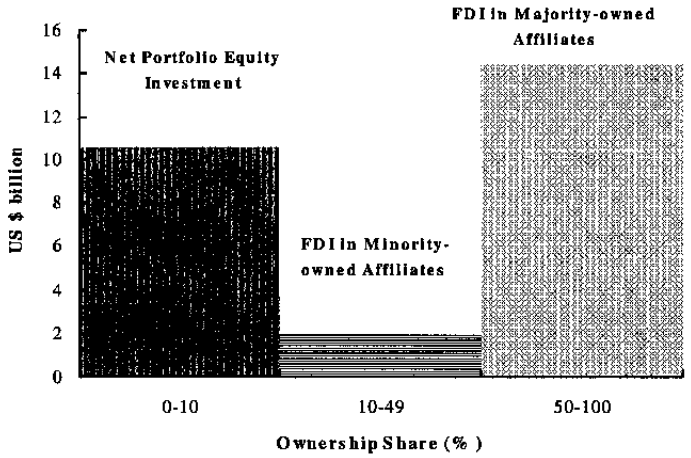
main contributor to FDI volatility, and of income outflows as a means of capital repatriation.[4] Both sets of findings pose a number of policy challenges, which are reviewed in the concluding Section V.

Table 1. Net Private Capital Flows to Emerging Markets
(In billions of U.S. dollars)

	1997	1998	1999	2000
Total net Private Capital Inflows	126.1	45.3	71.5	32.2
Bank Loans and Other	-62.1	-127.2	-135.6	-172.1
Net Portfolio Investment	43.3	23.8	53.7	58.3
Net Foreign Direct Investment	144.9	148.7	153.4	146

Source: IMF (2001).

Figure 1. 1994 U.S. Purchases of Foreign Assets in Emerging Markets by Share of Ownership in the Acquired Entity (in billions of U.S. dollars) 1/



Source: U.S. Department of Commerce and U.S. Department of the Treasury.
1/ 19 largest emerging markets that are covered in surveys of both U.S. portfolio and FDI outflows; comparisons between FDI flows to minority and majority owned affiliates are only available for so-called benchmark years, the latest of which was 1994.

[4]See Claessens and others (1995) and Sarno and Taylor (1999) for the time series properties of individual components of capital flows.

II. Measuring Foreign Direct Investment Income

A. Definitions in the Balance of Payments Methodology

Recording the transactions by foreign direct investors is plagued by well-known statistical problems, like differing ownership limits, the exclusion of reinvested earnings from flow data, and the lack of affiliate statistics. As regards foreign direct investment income, both the fifth edition of the IMF's *Balance of Payments Manual* (BPM5) and the OECD's *Benchmark Definition of Foreign Direct Investment* clarified definitions considerably. Foreign direct investment income *should* include three components:

(i) dividends and distributed branch profits in proportion of the equity held by the direct investor gross of any withholding taxes;

(ii) reinvested earnings, again in proportion of the direct investment stake; and

(iii) income on debt, i.e., the accrued interest owed by the direct investment enterprise to the direct investor.[5]

B. Compilation Practice and Alternative Data Sources

In practice, only few emerging markets adhere to these standards. A survey jointly sponsored by the IMF and the OECD in 1997 showed that of the 14 largest emerging markets only six correctly recorded all three components of FDI income, and an even smaller number met all compilation standards. None of these countries reported a continuous series in published balance of payments statistics. Most gaps were reported in the recording of reinvested earnings and debt income (see box).

These problems are not surprising. Many statistical agencies have only recently begun to properly distinguish between portfolio and direct investment assets, and resulting income is consequently often misclassified. Reinvested earnings are one of the few items in the balance of payments that do not involve a currency transaction, and therefore often elude central banks that are tasked to monitor external payments.

These findings suggest that the *International Financial Statistics* (IFS) are ill-suited for cross country comparisons of FDI income in emerging markets: even where the *Balance of Payments Manual's* income definition is applied at present, FDI inflows have rarely been recorded

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[5]"Net income is calculated by deducting from gross income all costs incurred by the enterprise in connection with operations. Deductions include taxes owed by the enterprise and due for payments, other current transfers payments, and depreciation costs for fixed capital assets." (IMF, 1996) See also the IMF and OECD publications on the relevant balance of payments categories: IMF (2000b) and OECD (1996).

correctly over a long enough time period to allow for the computation of accurate and comparable stock figures.

Box 1. The IMF/OECD Survey of Implementation of Methodological Standards for Direct Investment

In 1997 the IMF and the OECD jointly undertook a survey on the implementation of the recommended compilation standards for direct investment data, including FDI income. A comprehensive survey form was sent to 171 IMF member countries of which 114 countries responded. Even though most countries responded on a confidential basis, summary results for the 14 largest emerging market FDI recipients are discouraging.

Only six out of the fourteen countries reported a capacity to record all three components of FDI income. All six showed gaps in the data that are reported in the IFS, or did not report disaggregated income data, so that the distribution between reinvested earnings and dividends cannot be monitored. One large Asian country did not record any components of FDI income. Only seven of the fourteen countries recorded income on debt; in several cases this is based on estimates, rather than reporting from foreign affiliates, and the income is shown under balance of payments lines other than FDI income.

The recording of FDI income in the statistics of outward investment by major industrialized countries is markedly better. All but one of the seven largest investor countries recorded dividends, reinvested earnings and income on debt as components of the earnings accruing to their foreign affiliates. However, OECD statistical agencies are only gradually building up capacities to record foreign affiliates' data, and very few consistent sources exist to analyze developments over time or by partner country.

The estimations here will therefore rely on one source only: the statistics on the outward direct investment by U.S. companies, published by the Bureau of Economic Analysis (BEA) at the U.S. Commerce Department. This source applies a methodology that is largely consistent with the IMF's balance of payments definitions across a large number of host countries and over a 16-year history, covering capital flows to, and financial and operational variables in U.S. foreign affiliates. Apart from the balance of payments data that are compiled for all foreign direct investment enterprises (these are enterprises in which the U.S. equity stake exceeds 10 percent), the BEA also provides annual income statements and balance sheets of foreign affiliates that are majority owned by U.S. enterprises (so-called MoFAs).

C. Benchmark Estimates for the Rate of Return on FDI

Given the expansion of foreign ownership in a number of emerging markets over the 1990s, benchmark estimates for the income earned on the cumulative stock of foreign direct investment will become essential for accurate balance of payments projections. Clearly, profitability is a function of several country-specific variables, most notably the industry composition of assets, country risk and trade openness, which will be examined in the following section. Nonetheless, Table 2 below lists ratios for recorded FDI income over invested capital for the world average,

and in a sample of emerging markets. Sources for these estimates were the IFS data—taking the published figures at face value—and the U.S. Commerce Department data.

In accounting terms, these profitability measures correspond to a return on invested capital (ROIC): income is after tax but includes interest payments to direct investors; investment stocks are the corresponding capital employed by direct investors, including debt and equity capital. Investment stocks have been valued on three different bases: firstly, at historical costs, for which FDI inflows have simply been added up from the earliest data point (in the case of the U.S. data a currency translation adjustment is applied); secondly, at book values, based on an assumption for the average depreciation rate, which is the standard method by which financial performance is reported to shareholders; and, thirdly, at current costs, based on the assumption that capital stocks appreciate in line with the price index for U.S. capital goods (see the Appendix for data sources and methodology).[6] Given that the depreciation rate will normally be larger than the appreciation of capital goods, the rate of return based on stocks at historical costs will be a lower bound of profitability.

The fact that the estimated U.S. rates of return are nearly twice as high as those based on the IFS data may in part be explained by U.S. tax provisions that allow for a limited reallocation of income across countries to minimize world tax liabilities; oil exporters where this problem is particularly pronounced were therefore omitted. Tax factors of course do not affect the world average return of U.S. affiliates, which stood at nearly 17 percent in the four years to 1998, and the next section will demonstrate that, even after controlling for tax-induced income transfers, risky developing countries generated substantially higher profits than U.S. outward investment on average.[7]

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[6]The estimations assume that the entire capital stock is subject to depreciation and appreciation, which is questionable, given that the U.S. majority-owned affiliates have highly liquid balance sheets.

[7]Eurostat is the only statistical agency that prepares data for a comparable range of countries, though for a much more limited number of data series. Data for the outward investment of U.K. companies yield profitability estimates that are comparable to those computed for U.S. companies. Based on investment stocks at historical costs (hence underestimating returns at book values), averages for the years 1995 to 98 were 11.9 percent for Mexico, 17.1 for Brazil, 13.9 for Malaysia and 20.4 for India.

Table 2. Returns on Direct Investment in Emerging Markets, 1995-98 (percentage rates) 1/

	IFS data			U.S. data		
	at historical costs	at book values	at current costs	at historical costs	at book values	at current costs
World				12.0	16.8	14.8
Emerging Markets Sample						
Argentina	7.1	8.8	8.2	11.0	12.4	11.2
Brazil	8.7	12.0	9.8	14.1	14.4	12.8
Chile	11.8	14.3	13.1	13.8	18.4	17.4
China	7.8	8.5	8.2	13.8	14.2	13.4
Colombia	3.1	4.1	3.6	..	..	..
Costa Rica	6.5	8.2	7.4	22.2	33.4	30.9
Dominican Republic	27.3	37.3	31.0	31.9	20.6	18.6
Ecuador	6.0	7.4	6.8	10.0	12.2	10.5
Egypt	0.9	1.3	1.1	19.2	44.7	30.8
India	..	..	..	5.8	6.3	5.6
Indonesia	5.0	5.9	5.6	24.1	24.9	22.0
Jamaica	17.1	20.0	18.9	4.4	5.2	4.8
Korea	3.2	3.9	3.6	12.6	20.7	18.8
Malaysia	11.0	14.8	13.0	19.4	31.5	28.7
Mexico	6.1	7.8	7.0	14.8	14.3	13.1
Nigeria	11.0	14.2	12.7	..	..	..
Peru	5.0	5.5	5.4	17.2	19.7	15.8
Philippines	5.2	6.3	5.8	18.3	25.6	22.5
South Africa	23.5	26.4	25.4	12.6	10.8	9.0
Thailand	..	..	..	18.5	22.1	20.1
Trinidad and Tobago	6.0	8.2	6.8	17.8	28.1	23.7
Turkey	3.7	4.7	4.2	15.8	14.0	12.8
Venezuela	7.2	8.9	8.4	16.2	12.9	11.4
Sample Average 2/	8.7	10.9	9.8	15.9	19.4	16.9

Sources: IMF, and U.S. Department of Commerce.
1/ arithmetic averages; see the Appendix for methodology.
2/ unweighted average of the sample.

D. Evolution of Profitability and Capital Flows

Figure 2 presents the returns on equity (ROE) of U.S. majority owned foreign affiliates for 20 industrialized and 20 developing countries and, in the right-hand panel, for a number of key industries.[8] ROEs measure the profitability of the entire affiliate, hence include income accruing to and capital provided by parties other than direct investors; net income is measured after foreign income taxes and interest payments, including those to direct investors. This measure therefore only partly overlaps with a profitability measure that fully reflects returns on FDI capital. However, ROEs make use of actual book values, and a large number of other financial and operational data can be utilized. In any case, the bias compared to a more comprehensive rate of return should be small. Equity is the principal component of U.S. direct investment capital, and dividends are typically used to signal profitability of foreign operations to home

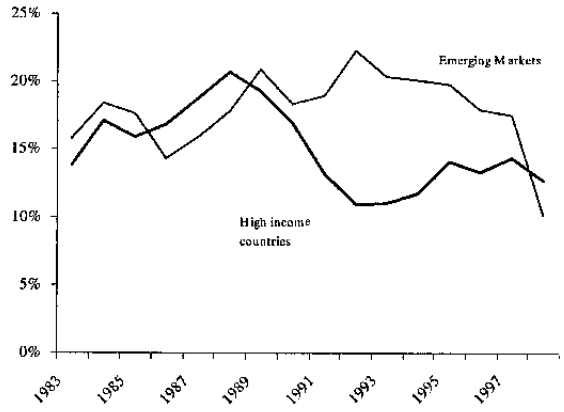
[8]Emerging markets are the countries listed in Table 2, excluding China, Costa Rica, and the Dominican Republic, for which time series covered only a part of the sample period. High-income countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, New Zealand, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

country investors.[9] Intra-company loans extended by U.S. parent companies to their foreign affiliates represent only about 20 percent of outward FDI capital, and such intra-company loans are typically regarded as a substitute financing instrument with risk-return properties similar to those of equity.

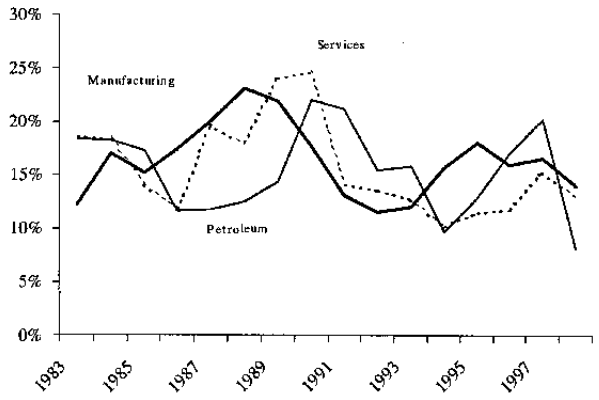
The chart suggests that from about 1989 profitability in emerging markets exceeded that in industrialized countries. Whereas returns in OECD markets saw a steep decline in the late 1980s, lasting until about 1992, the average ROE in emerging markets stayed above 17 percent up to 1997. This out-performance was only reversed with the steep decline in emerging markets profitability in 1998. The observed time paths are likely to be explained by country factors, rather than by the differing industry composition of U.S. assets in the two country groups: the right hand panel suggests that the decline of profitability in the early 1990s was observed in three of the principal industries.

Figure 2. Return on Equity of U.S. Majority-Owned Foreign Affiliates, 1983-98

a. by country group



b. all foreign affiliates by sector



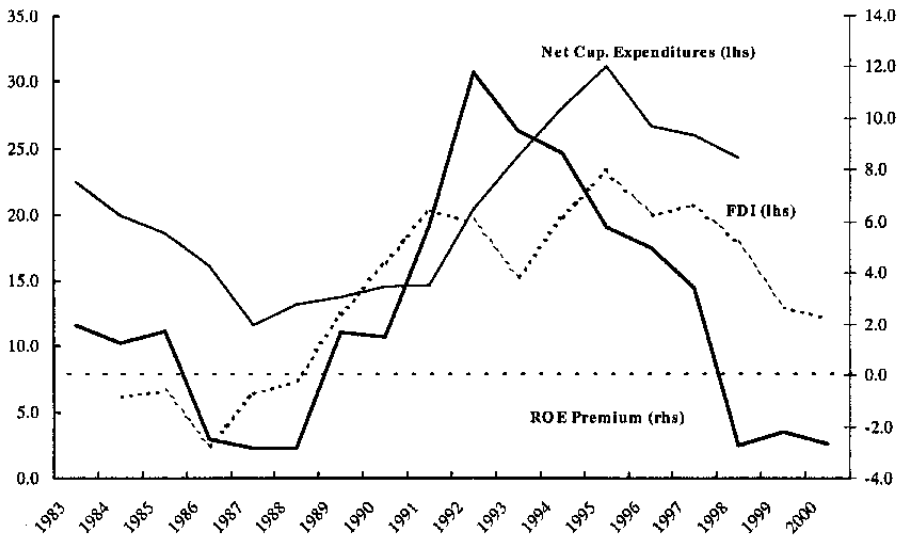
Source: U.S. Department of Commerce.

Returns on emerging market FDI stocks have been more volatile than in industrialized countries —with average normalized standard deviation of returns nearly three times as high. Still, over the 1990s, emerging market risk ratings generally fell, and the excess returns on FDI are likely to reflect an out-performance in the risk-adjusted returns on invested capital. As Figure 3 suggests, the premium realized in emerging market returns over those for U.S. direct investment in OECD countries indeed rose in parallel with U.S. investors' directing larger shares of total

[9]Hines (1996).

outward FDI flows to this group of countries, and from about 1991, this financed a correspondingly larger share of capital expenditures by U.S. foreign affiliates.

Figure 3. ROE Premium in 23 Developing Countries and their Shares in U.S. Outward FDI, and in Capital Expenditures by U.S. Foreign Affiliates (percent) 1/



1/ ROEs and capital expenditures are for majority-owned U.S. foreign affiliates only; the ROEs for 1999 and 2000 have been estimated based on the income earned by all U.S. foreign affiliates. FDI shares are moving two-year averages. All variables are defined in the appendix.

III. Determinants of Foreign Direct Investment Income

The theory of foreign direct investment has evolved around the industrial organization literature that explains the expansion of the international firm. However, the country determinants identified for FDI flows are not necessarily synonymous with those for high affiliate profitability. Simply consider a small host economy with restrictive trade and investment barriers in which rents accruing to direct investors compensate for the attendant political and economic risks, and for the sub-optimal scale of operations.

A. Theory

To fix ideas, consider the foreign affiliate's profits. Assume that the multinational's capital stock has been allocated based on the historical risk and return attributes observed in individual countries. Let output in any one country be determined by a fixed coefficients production function in three factors, capital K, labor L and intermediate inputs I: Q=Min[K,aL,bI], so that the distribution of capital explains the distribution of production. The unit costs of intermediate inputs on the world market are 1, though the foreign affiliate pays an ad-valorem tariff τ on all imported goods. The cost function is therefore $C(K,L,I) = wL + rK + (1+\tau)I$, where all variables

are country-specific; only the cost of capital r can be assumed to be uniform throughout the multinational's operations.

Given capital stocks and production, the affiliate only has to decide on the profit-maximizing allocation of sales between two segmented markets: in export markets homogenous products attract a uniform price p_w; by contrast, trade restrictions allow the affiliate to price-discriminate in the host country, where the affiliate faces a downward sloping demand curve $D= kYp_h^{-\sigma}$. Demand depends on national income Y, and a constant elasticity of demand $\sigma>0$. The empirical literature on trade and industry structure has shown that higher trade barriers imply lower demand elasticities, and by consequence, higher monopoly power for incumbent firms. It is likely that a similar effect holds for country risk in the host market, as establishment by multinational companies is discouraged and competition reduced.[10] Several other factors of course determine the short-run dynamics in host country prices, among them the host country business cycle and the effects of any exchange rate pass through, though none will have a systematic effect on the averaged dependent variables in the regressions below. All else equal, high country risk and trade protection are therefore likely to raise host country prices, and skew the allocation of affiliate sales toward that market. Denoting the share of host country sales with s, the average unit value of the affiliate's output p is obtained as a weighted average of prices in the host country market (p_h) and in the world market (p_w).

$$p = (1-s)p_w + sp_h$$

As the fixed coefficient production technology obviates the need for further optimization, profits are simply:

$$\pi = pK - K\left[r + \frac{w}{a} + \frac{1+\tau}{b}\right]$$

and return on assets (ROA) is:

$$ROA = \frac{\pi}{K} = p - \left[r + \frac{w}{a} + \frac{1+\tau}{b}\right]$$

The regressions below will employ return on equity and return on sales as dependent variables. Based on this simple profit function, both variables should be negatively related to host country wage rates. Country risk would increase both profitability measures by raising host country prices (through its effects on demand elasticity) and through the secondary effect on the higher

[10]In addition, country risk may be assumed to raise the cost of capital for funds that are internal to the firm.

share of host country sales. The effect of trade barriers is ambiguous, as both domestic prices and variable costs go up in τ.

B. Regression Results

Empirical work on FDI income needs to tackle a number of complications: first, foreign direct investment is premised on the parent firm making intangible assets available to its affiliates. Technical know how, managerial expertise, product branding, and access to export markets have the nature of firm-specific public goods. Utilization of these intangible assets confers oligopolistic rents to the affiliate and income accruing in the affiliate could be highly sensitive to the pricing policies adopted by the parent firm. For U.S. outward FDI such payments are substantial: *in addition* to income, royalties, license fees and charges for other services accounted for 37 percent of net income for all countries, and about 15 percent in the sample of emerging markets. These costs have been subtracted to obtain net income, and it is assumed that this is reflective of the rents obtained. Secondly, foreign affiliates are part of an international network of affiliates within which profits are redistributed to minimize world tax liabilities. The U.S. tax code explicitly provides that losses in one host country may be offset against profits in others. The parent company could also effect such profit-redistribution through the use of transfer prices, though international tax law restricts this practice. A proxy for the restrictiveness of the host country tax regime will control for this effect.

The return on equity (ROE) is a good proxy for the returns to direct investors, and is regularly used in reporting to capital owners. Assets are measured at book values and will hence suffer from the familiar valuation problems, which result from aggregating capital goods purchased at various times and prices. Still, employing this variable as a dependent variable to identify the determinants of profitability is justified by previous research in the area of industrial organization, showing that using returns over assets valued at book rather than current or market values introduces no more than a non-systematic error in cross-sectional regressions (Mueller, 1990). Profit margins (ROS) gauge the pricing power of the foreign affiliate. While margins differ considerably across industries, they avoid the asset valuation problems that plague return on asset measures. ROS is related to ROE through the well-known financial accounting identity:

$$\text{ROE} = \frac{\text{Net income}}{\text{Sales}} * \frac{\text{Sales}}{\text{Average Assets}} * \frac{\text{Average Assets}}{\text{Average Equity}}$$

Differences in the coefficient estimates between ROE and ROS will indicate that either the asset turnover ratio or the financial leverage ratio is sensitive to some of the control variables.

The left-hand side of Table 3 identifies the determinants of ROEs, averaged over the period 1991-98, with the top part for the total sample of industrialized and developing countries, and the lower part for the 23 emerging markets only. The affiliate debt-equity ratio (DER), the average effective income tax rate (TAXR), the share of affiliate sales sold within the host market (SL), and the rating for political risk (PRISK) were included as explanatory variables.

Regressions 1 and 5 represent the most basic specifications for ROE and ROS respectively, with the latter omitting DER from the right-hand side variables. Effective tax rates (TAXR) are highly significant and depress net—that is, *after tax*—income, confirming income transfers to low tax jurisdictions. Political risk in the host country shows the expected effect of raising both profitability measures (higher values of PRISK representing *lower* risk); variables for economic and financial risk were also found to be significant (not shown here). The variable for local sales shares is significant and shows a negative—rather than the expected positive—sign. Based on the aggregate data that are used here it is difficult to interpret this effect: more open host economies may attract export-oriented production of higher quality goods, and they may also exhibit higher productivity, due for instance to higher rates of technology transfer within the multinational firm.

It is of course possible that these results have been biased due to the industry composition of U.S. assets which varies considerably across the countries in our sample. High export shares of affiliate sales (low values of SL), for instance, may reflect effects that are specific to commodity exporters. To control for such effects, the share of oil exports in total host country exports (variable FUEL) has been included in regressions 2 and 6 with the variable SL now measuring the residuals of a regression of SL on FUEL, thereby avoiding any potential collinearity effects. Similar results hold, though PRISK now just misses significance in the smaller sample.

In a second step, the dependent variable was corrected for industry-composition effects by subtracting the weighted average of world returns in 13 industrial sectors, with the country specific weighting vector determined by average industry shares in assets over the period 1991-98. The dependent variable now measures the premium or discount in any one host country over the profitability measures that would have been predicted on the basis of average world returns in the 13 industries. Regressions 4 and 7 show that the coefficient estimates and significance are only marginally changed, suggesting that the variation of average returns across industries is minimal over the eight year period that is considered here.

The inclusion in regression 2 of a proxy for the age of U.S. investment (AGE) and of relative labor costs (WAGR) did not produce significant coefficients. When only the wage variable was included, significance of all variable and coefficient estimates of all variables except PRISK remained more or less unchanged. Only when WAGR was substituted for PRISK could a significant coefficient be obtained (regression 3).

Table 3. Determinants of Average Rates of Return on Equity and Return on Sales
(t-values are below the coefficient estimates)

	Return on equity (ROE)				Return on sales (ROS)		
	absolute values			premium 1/	absolute values		premium 1/
	1	2	3	4	5	6	7
				All Countries N=43			
DER	5.80 **	4.95 **	5.33 **	5.05 ***			
	2.04	2.63	2.40	2.84			
SL	-0.27 ***	-0.19 ***	-0.22 ***	-0.21 ***	-0.12 ***	-0.10 ***	-0.10 ***
	-2.72	-3.08	-3.30	-3.43	-3.60	-2.83	-2.79
TAXR	-22.79 ***	-30.84 ***	-21.54 ***	-32.16 ***	-8.19 ***	-10.24 ***	-10.52 ***
	-3.08	-3.95	-3.25	-4.03	-2.75	-3.47	-3.19
PRISK	-0.57 ***	-0.46 ***		-0.48 ***	-0.22 ***	-0.20 ***	-0.23 ***
	-2.76	-3.28		-3.34	-3.63	-3.42	-3.49
FUEL		0.27 ***	0.29 ***	0.25 ***		0.07 ***	0.08 ***
		3.78	3.28	3.70		5.44	5.06
WAGR			-0.20 ***				
			-3.23				
R-squared	0.52	0.64	0.61	0.65	0.55	0.59	0.58
				Emerging Markets N=23			
DER	10.21 **	8.68 ***	8.87 **	8.01 **			
	2.74	3.01	2.82	2.68			
SL	-0.29 ***	-0.22 ***	-0.23 ***	-0.25 ***	-0.15 ***	-0.13 ***	-0.14 ***
	-3.32	-3.86	-3.51	-4.47	-4.80	-3.99	-4.19
TAXR	-27.07 ***	-31.34 ***	-26.94 ***	-33.01 ***	-9.08 **	-10.21 ***	-10.53 **
	-2.99	-3.30	-3.32	-3.25	-2.69	-2.92	-2.69
PRISK	-0.58 **	-0.45		-0.50 *	-0.17	-0.14	-0.16
	-2.16	-1.72		-1.77	-1.66	-1.30	-1.33
FUEL		0.23 ***	0.26 ***	0.22 ***		0.07 ***	0.07 ***
		4.72	4.75	4.41		4.41	4.30
WAGR			0.17				
			0.64				
R-squared	0.70	0.77	0.73	0.76	0.61	0.65	0.64

1/ difference to weighted average of world returns in 13 industries.

The variable for political risk in the host country captures a range of institutional, regulatory and governance factors. Various studies have shown that corruption and the lack of other adequate governance structures introduce asymmetric information and raise the agency costs between market participants and government regulators. Higher costs of capital hence discourage inward direct investment.[11] The regressions in this section have made a first attempt in quantifying this effect, and show that it is substantial. For a country like Nigeria to upgrade its governance structures to the standard of, say, Singapore—an improvement of 30 out of 100 points—would lower the required return by over 13 percent, and make a commensurately larger range of Nigerian investment projects attractive to foreign investors.

[11] PriceWaterhouseCoopers (2001) and Wei (2000).

IV. Allocation of Foreign Direct Investment Income

Estimates of net income, together with those for depreciation charges, yield the cash flow of foreign direct investment enterprises that is potentially available for repatriation. In 1997, one year before a precipitous downturn in earnings, this free cash flow of U.S. majority owned affiliates in the sample of emerging markets amounted to $29 billion, with an additional $3.6 billion in royalties and other payments for services made to parent companies. Given that U.S. companies account for only about one quarter of total investment stocks in developing countries, these figures highlight the vulnerability of emerging market economies to sudden shifts in the allocation of cash flows. While foreign affiliates may continue to invest in the downturn of the host country economy and may access foreign sources of capital to do so—their income repatriations have the potential to further aggravate an imminent payments crisis.

A. Aggregate Flows and Home Country Effects

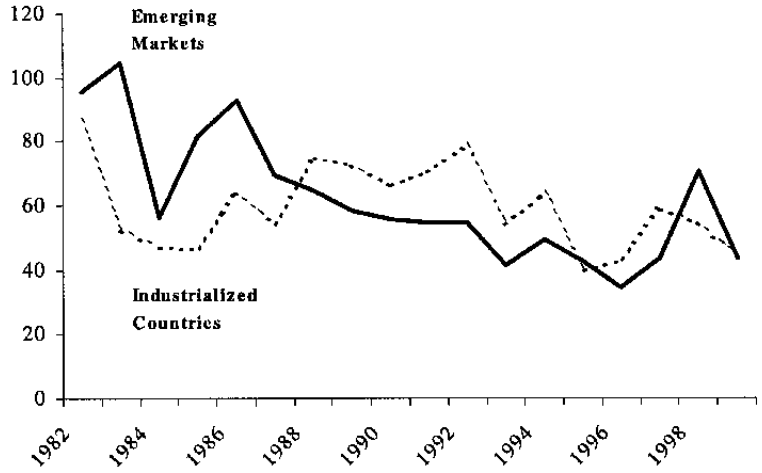
It is of course difficult to generalize about the allocation of FDI income between reinvested and repatriated earnings. The marginal propensity to reinvest additional FDI income may differ due to the maturity of investment projects, and due to expectations about the duration of income shocks. However, if observations for the 23 emerging markets in the sample are pooled over the period 1982 to 2000 the following estimate for the correlation between first differences emerges:

$$\Delta RNV_t^i = 0.77 * \Delta INC_t^i \qquad \text{(414 observations)}$$
$$R^2 = 0.70$$

This correlation coefficient is significant at the 1 percent level, and slightly higher in the 1980s than in the second half of the sample period; between countries only minor differences emerge. Given the above caveats, this suggests that, on average, a shock to direct investors' income primarily affects reinvested earnings, and that only about one quarter of it will translate into variations of repatriated income.

As any other capital flow, repatriated earnings are subject to factors in both the investor's home country and the recipient country. Figure 3 shows the share of income that is repatriated by U.S. foreign affiliates in OECD economies (dotted line) and in the sample of 23 emerging markets (bold line). The correlation between the two country groups suggests that factors that are common to both—most likely in the United States—drive the repatriation share in any one country. The share of earnings repatriated from emerging markets also shows a number of distinct spikes, in 1983, 1985-86, and 1998. In 1983, earnings repatriations exceeded income, and served as an instrument of capital repatriation, a phenomenon that was also observed for individual emerging markets in later years. Each of these three periods coincided with steep declines in emerging markets FDI income (Figure 2a). However, in proportional terms earnings repatriations changed by less than FDI income; in 1985 and 1998, U.S. repatriations actually increased as FDI income fell. These observations suggest that earnings repatriations are by no means determined through a constant dividend payout ratio.

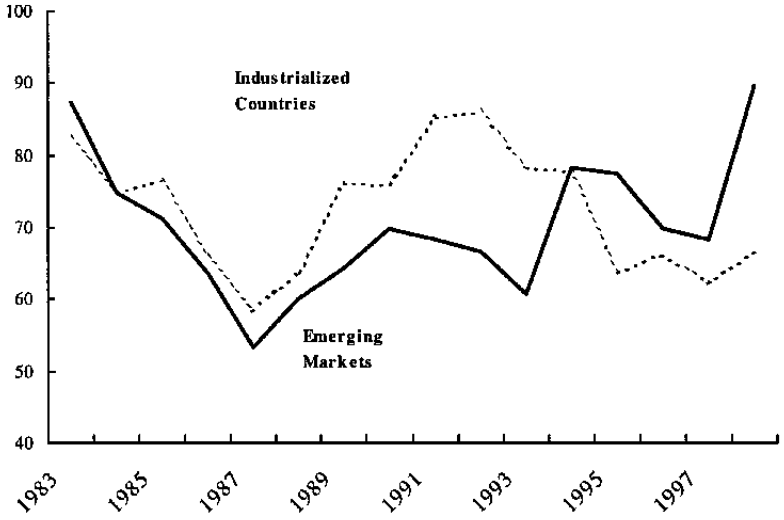
Figure 4. Shares of Repatriated Earnings in Total FDI Income (percent), 1982-99 1/



1/ 20 industrialized countries and 20 emerging markets, as in Figures 2 and 3.

While the above casts some doubt on the stabilizing influence of direct investors during downturns in the host country's business cycle, the evolution of the fixed investment undertaken by U.S. affiliates paints a more positive picture. Figure 5 depicts the share of U.S. affiliates' gross fixed capital expenditures in their free cash flows. For both country groups this ratio begins to rise in 1988, one year after the share of repatriations in income began to fall for emerging markets, and coinciding with the rise in emerging market profitability depicted in Figure 2. Despite a steep 20 percent decline in cash flows in 1998, affiliate capital expenditures actually slightly increased in absolute terms, financed through both host country and intra-firm capital. This aggregate picture would therefore suggest that the activity of U.S. affiliates has a stabilizing (counter cyclical) influence on the host economy, with the share of investment expenditures in income generated by affiliates increasing during downturns in host country activity. This stability of investment expenditures is also borne out at the country level, and it is these instances of external payments difficulties to which the rest of this section turns.

Figure 5. Gross Fixed Capital Expenditures in Percent of Affiliate Cash Flows, 1983-98 1/



1/ CPX/CSF of majority-owned affiliates; emerging markets are the 20 countries previously used minus Trinidad and Tobago.

B. FDI Flows in the Context of Currency and Financial Crises

In most developing countries the largest part of FDI income is reinvested within the host country, and this is true even for the relatively mature and hence profitable U.S. foreign affiliates. Examining this allocation of cash flows in times of host country currency and financial crises is equivalent to assessing first the propensity for continued asset expansion of existing investors and, second, assessing the composition of intra-firm finance through which this is accomplished.

Variations in FDI flows. With the onset of a financial crisis, investors adjust expectations regarding growth in domestic demand, exchange rates, and cash flows for repatriation. On this basis, capital may be repatriated, or allocated to other markets that yield higher risk-adjusted returns. Foreign direct investment, however, is typically regarded as less responsive to adverse macroeconomic developments. It is associated with fixed investment which can only be liquidated at a substantial loss. While the fixed investment may indeed be irreversible—its value is often dependent on the utilization of technology and of other intangible assets within the multinational company—FDI is no more than a flow to the liability side of the foreign affiliate's balance sheet. For the U.S. affiliates in the sample of emerging markets balance sheets have been highly liquid, with the book value of fixed assets amounting to no more than 37 percent of total balance sheet assets. Due to the pervasive hedging operations that characterize corporate financial management within the multinational firm, aggregate balance of payments data are inadequate for an assessment of whether or not the remaining liquid assets are subject to the same forces as those of portfolio investors.

In the wake of currency crises in Asia in 1997-98 concerns were voiced over a "fire sale" of domestic assets to foreign investors. Note that in the context of perfect capital markets—both domestic and foreign investors have access to the same sources of financing—risk adjusted returns on all assets will be equalized. A depreciation in the host country currency will have no impact on levels of inflows. However, a characteristic of FDI is that the direct investor has an informational advantage over any creditor regarding future payoffs from the foreign project. If foreign and domestic investors are rationed in credit markets, the foreign investor who holds a larger share of wealth in a currency that has appreciated vis-à-vis that of the prospective host country will outbid domestic investors.[12]

The "fire-sale" of host country assets is more likely where the currency depreciation goes hand-in-hand with a financial crisis. A drop in asset values could result from a breakdown of governmental guarantees that had previously insured domestic financial intermediaries against adverse outcomes. Asset prices drop to their fair value, in line with expected returns. At this point, those foreign direct investors who can manage these assets more efficiently will out-bid domestic investors. An alternative model essentially views the pre-crisis asset values as appropriate and attributes asset price deflation to a self-fulfilling change in expectations that leads to asset sales, not unlike those observed during bank-runs. Direct investors may be less efficient managers, though due to their access to uninterrupted credit they will keep a project in existence where a domestic investor would not. The net present value of cash flows to foreign investors will exceed that to domestic investors, and again the former will bid up assets to reservation prices in excess of those offered by domestic investors.[13]

The composition of FDI flows between reinvestment and new debt and equity is determined by tax considerations. Due to the home country taxation of dividends, reinvested earnings will be the preferred source of financing for established and profitable investors, whereas fresh debt and equity will finance loss making, recently established or newly acquired affiliates. Due to the reassessment of asset values in the context of a currency crisis one may therefore observe declining or even negative reinvestment at the time of inflows of FDI for the purpose of acquiring recently devalued domestic assets. Variations in the share of income repatriations in total income should hence gauge the changing assessments of mature investors of prospects in their respective host countries.

C. Two Case Studies

How have these aggregate trends and investor incentives played out in recent crises? Balance of payments transactions that can be attributed to foreign direct investors may not fully reflect their capital account transactions. Inflows may be overstated where host country investors repatriate flight capital under the guise of FDI, for instance to avail themselves of preferential treatment

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[12]Froot and Stein (1991).

[13]Krugman (1998).

granted to foreign investors. Conversely, an established foreign investor may use the acquired assets as a collateral in borrowing from a host country bank, convert the loan into foreign exchange and repatriate it soon after the acquisition is made. Such hedging of foreign currency exposures would be in line with conventional practice of corporate risk management. Nonetheless, FDI transactions published in the *IFS*, and the U.S. data offer some insight into the reaction of foreign direct investors in two instances of financial and currency crises.

Mexico 1994–95

At the time of the Mexican currency crisis, U.S. investors accounted for about 60 percent of the direct investment stock in Mexico, though they are unlikely to have played a major part in precipitating the crisis. Income held up more or less unchanged in the three years to 1994, with ROEs at about 22 percent. The fall in income by about 45 percent in 1995 was swiftly reversed only one year later. The decline in income would no doubt have been sharper had U.S. affiliates not redirected a large part of their sales to the U.S. market. Local sales declined by 21 percent in nominal terms in 1995, but nearly one half of this decline was compensated for by an increase in sales to the United States. Earnings repatriations went up by about $ 500 million in the year prior to the crisis, though lower reinvestment was more than compensated for by higher debt and equity flows to U.S. affiliates. In fact, the balance of foreign currency transactions (debt and equity inflows from U.S. parents minus the sum of income repatriations, and payments for royalties and services to U.S. parents) improved in Mexico's favor in both 1994 and 1995. In both years borrowing by affiliates from their U.S. parents substituted for declining liabilities to other creditors, in 1995 substantially so. Capital expenditures by U.S. affiliates grew in 1994 and stayed at about that level in dollar terms in 1995, while the private investment of Mexican residents fell by about 3 percent of GDP. These observations are essentially consistent with what can be inferred from quarterly *IFS* data, which show slightly lower income for 1995 (minus 13 percent), a higher share of earnings remittances (63 percent of income as compared to 51 percent in 1994) and slightly lower FDI flows to Mexico. The apparent ease with which direct investors withstood the Mexican payments difficulties of 1995 has been attributed to the integration with the United States, its largest trade partner, under the North American Free Trade Agreement (NAFTA). In particular the growth in affiliate export sales compares favorably with that observed during the 1982 debt crisis.[14]

Asia 1997–98

A different story presents itself for direct investment transactions over the course of the Asian crisis. Again, U.S. statistics are the only reliable source to turn to, as none of the four countries that are of interest here—Indonesia, Korea, Malaysia, and Thailand—publish a continuous series for income and reinvested earnings in the *IFS*.

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[14]Lipsey (2001).

Table 4. U.S. and International Financial Flows to and from Mexico, 1993-99

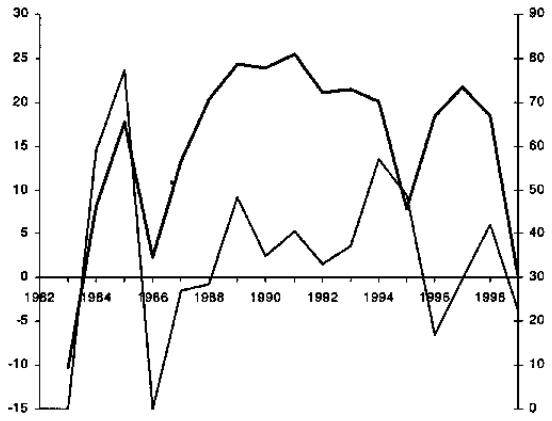
	Mexico						
	1993	1994	1995	1996	1997	1998	1999
U.S. Outward Direct Investment (U.S. $ million)							
Total FDI Income 1/	2525	2497	1369	2931	3893	3885	4721
Return on Equity (percent) 2/	22	20	8	18	22	18	..
FDI Inflows 1/	2516	3674	2955	2747	5596	4718	5355
Reinvestment	1585	1070	699	2436	2732	2247	3663
"New" debt and equity	931	2604	2256	311	2864	2471	1692
Total Debt Financing 2/	2684	1810	-551	2721	4818	6312	..
Purchases of Foreign Currency1/	1567	2305	1284	1171	2039	2570	2141
Income Repatriations	940	1427	670	495	1161	1638	1058
in percent of income	37	57	49	17	30	42	22
Payments of Royalties and other License Fees to U.S. parents	372	542	349	384	506	534	602
Payments for services received from the parent company	255	336	265	292	372	398	481
Net Foreign Exchange Balance (= New FDI - Currency Purchases)	-636	299	972	-860	825	-99	-449
Affiliate Sales and Trade Transactions 2/							
Total Sales	32549	39421	36193	46402	54951	65147	..
Local Sales	22928	27022	21216	24579	30101	38952	..
Exports of goods and services	9621	12399	14977	21823	24850	26195	..
Imports of goods from U.S.	12636	15070	16023	19142	22057	23802	..
Capital Expenditures on Property, Plant and Equipment 2/	1813	2035	2037	2163	2209	3191	..
Investment in Other Assets (U.S. $ million)							
Net portfolio transactions with U.S. residents in foreign assets	11446	3641	1090	2909	3258	1894	3790
Stocks	5135	1205	159	331	-120	-958	1591
Bonds	6311	2436	931	2578	3378	2852	2199
Net Transactions based on IFS							
Portfolio Assets	28355	7415	-10377	13961	4330	-1346	10130
Other Investment	-159	-3804	16256	-19079	-1396	7502	-6340

Source: U.S. Department of Commerce, U.S. Department of the Treasury, IMF.

1/ All U.S. affiliates; data pro-rated for U.S. ownership share.
2/ Majority-owned U.S. affiliates only.

Figure 6. U.S. and International Financial Flows to and from Mexico, 1993-99

Return on Equity (bold line, rhs) and Share of Repatriated Income (percent)



Composition of Outflows (U.S. dollar million)

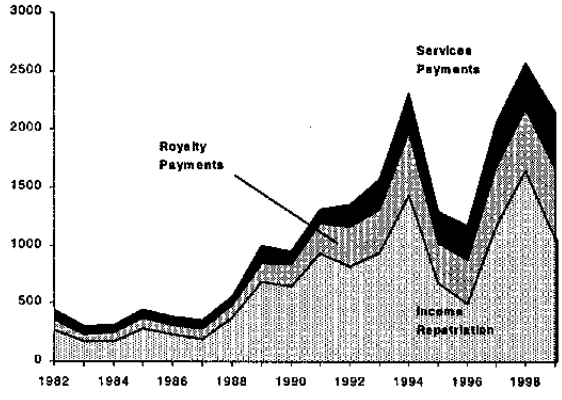


Table 5. U.S and International Flows to and from Indonesia and Malaysia, 1995-99

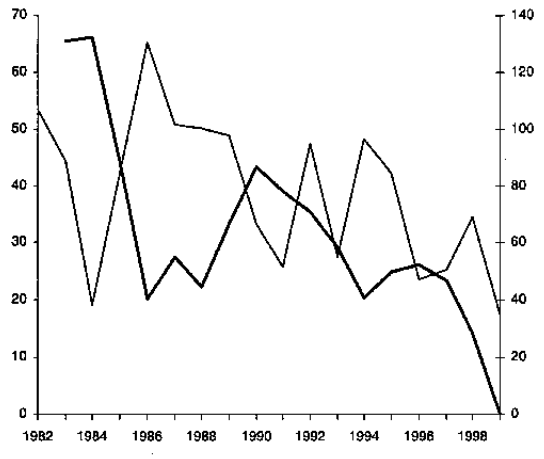
	Indonesia					Malaysia				
	1995	1996	1997	1998	1999	1995	1996	1997	1998	1999
U.S. Outward Direct Investment (U.S. $ million)										
Total FDI Income 1/	1579	2048	1765	1110	1425	1038	1173	1333	126	977
Return on Equity (percent) 2/	25	26	24	14	..	27	24	30	2	..
FDI Inflows 1/	701	862	21	360	2404	868	1029	739	-603	33
Reinvestment	258	1077	867	341	924	569	691	509	-395	503
"New" debt and equity	443	-215	-846	19	1480	299	338	224	-208	-470
Total Debt Financing 2/	1268	866	1002	429	..	1351	1159	-549	748	..
Purchases of Foreign Currency1/	1577	1088	1023	873	577	633	652	1055	743	716
Income Repatriations	1421	971	898	769	501	469	482	824	521	474
in percent of income	85	47	51	69	35	45	41	62	150	49
Payments of Royalties and other License Fees to U.S. parents	28	31	36	18	23	69	71	77	50	53
Payments for services received from the parent company	128	84	89	66	53	95	99	154	172	189
Net Foreign Exchange Balance (= New FDI - Currency Purchases)	-1134	-1301	-1869	-854	903	-334	-314	-831	-851	-1186
Affiliate Sales and Trade Transactions 2/										
Total Sales	8723	9594	9273	6819	..	14006	16188	18611	17470	..
Local Sales	2508	4065	4130	2798	..	8105	8810	9687	5988	..
Exports of goods and services	6215	5529	5143	4021	..	5901	7378	8924	11482	..
Imports of goods from U.S.	180	458	446	249	..	2568	2846	2799	2009	..
Capital Expenditures on Property, Plant and Equipment 2/	1488	1139	1556	1449	..	1535	1632	1455	1179	..
Investment in Other Assets (U.S. $ million)										
Net portfolio transactions with U.S. residents in foreign assets	760	1451	1685	-210	-97	1830	2151	366	-90	526
Stocks	687	81	602	30	-70	-145	433	-195	-72	-454
Bonds	73	1370	1083	-240	-27	1975	1718	562	-18	980
Net Transactions based on IFS										
Portfolio Assets	4100	5005	-2632	-1878	-1792	-436	-268	-248	283	804
Other Investment	2416	248	566	-1599	41	3900	4667	-2591	-4998	-6976

Source: U.S. Department of Commerce, U.S. Department of the Treasury, IMF.

1/ All U.S. affiliates; data pro-rated for U.S. ownership share.
2/ Majority-owned U.S. affiliates only.

Figure 7. U.S and International Flows to and from Indonesia and Malaysia, 1995-99

Return on Equity (bold line, rhs) and Share of Repatriated Income (percent), Indonesia



Composition of U.S. FDI Flows to Malaysia (U.S. dollar million)

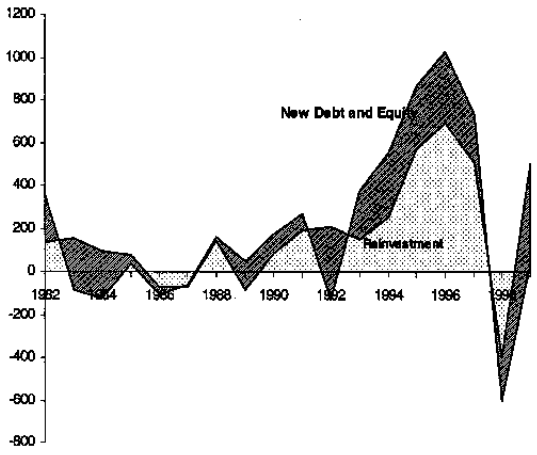


Table 6.U.S and International Flows to and from Korea and Thailand, 1995-99

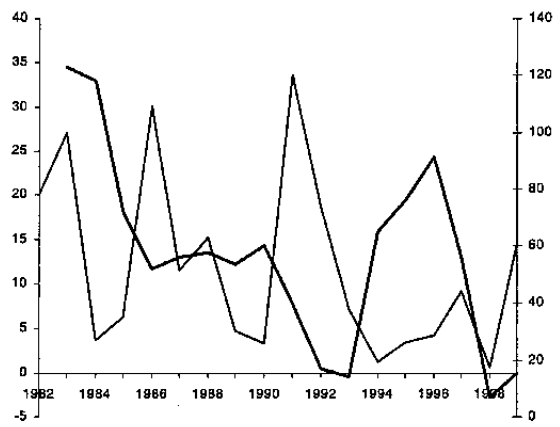
	Korea					Thailand				
	1995	1996	1997	1998	1999	1995	1996	1997	1998	1999
U.S. Outward Direct Investment (U.S. $ million)										
Total FDI Income 1/	695	868	528	688	794	814	699	576	1079	717
Return on Equity (percent) 2/	19	24	13	-3	..	22	17	17	29	..
FDI Inflows 1/	1022	573	681	638	1194	737	951	-16	527	906
Reinvestment	512	618	295	567	312	463	633	-42	60	257
"New" debt and equity	510	-45	386	71	882	274	318	26	467	649
Total Debt Financing 2/	448	-80	-402	989	..	1441	986	-328	980	..
Purchases of Foreign Currency1/	466	355	617	412	793	498	422	790	1174	600
Income Repatriations	183	250	233	121	482	351	266	618	1019	460
in percent of income	26	29	44	18	61	43	30	107	94	64
Payments of Royalties and other License Fees to U.S. parents	188	(D)	241	161	170	82	83	96	60	55
Payments for services received from the parent company	95	105	143	130	141	63	73	76	95	85
Net Foreign Exchange Balance (= New FDI - Currency Purchases)	44	-400	-231	-341	89	-222	-104	-764	-707	49
Affiliate Sales and Trade Transactions 2/										
Total Sales	7529	9074	9169	6966	..	12520	14243	14745	12922	..
Local Sales	6649	8048	8276	6068	..	9318	10216	10101	7454	..
Exports of goods and services	880	1026	893	898	..	3202	4027	4644	5468	..
Imports of goods from U.S.	1680	2525	2174	1320	..	1188	1575	1451	1229	..
Capital Expenditures on Property, Plant and Equipment 2/	290	402	361	319	..	1225	705	890	1057	..
Investment in Other Assets (U.S. $ million)										
Net portfolio transactions with U.S. residents in foreign assets	1866	3347	6045	5068	1246	311	870	1327	144	-110
Stocks	1637	1959	1764	1907	1985	-10	21	-70	82	-51
Bonds	229	1388	4281	3161	-719	321	849	1397	62	-59
Net Transactions based on IFS										
Portfolio Assets	11712	15102	14384	-1224	9190	4081	3544	4527	355	75
Other Investment	7459	11085	-10768	-2162	-11382	16645	14537	-11548	-17521	-13847

Source: U.S. Department of Commerce, U.S. Department of the Treasury, IMF.

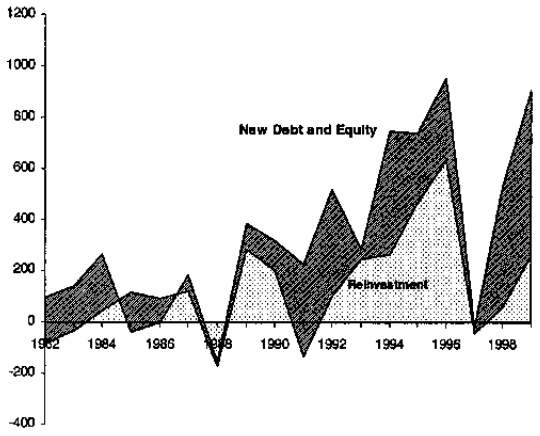
1/ All U.S. affiliates; data pro-rated for U.S. ownership share.
2/ Majority-owned U.S. affiliates only.

Figure 8. U.S and International Flows to and from Korea and Thailand, 1995-99

Return on Equity (bold line, rhs) and Share of Repatriated Income (percent), Korea



Composition of U.S. FDI Flows to Thailand (U.S. dollar million)



Income accruing to U.S. affiliates in the four countries dropped sharply in 1997 and 98, by between 36 percent in Thailand and 90 percent in Malaysia. As in the case of the Mexican crisis, increases in affiliate exports mitigated the impact of the domestic recession: while local sales in all four countries fell by nearly $ 9 billion between 1996 and 1998, exports rose by $5 billion. Over the course of the crisis, U.S. investors sharply curtailed FDI flows to the four economies: Korea saw a temporary low for about three years, flows to Thailand and Indonesia fell near or below zero in 1997, and Malaysia saw a substantial outflow in 1998. With the exception of Malaysia, FDI flows to all countries had recovered to pre-crisis levels by 1999. In all countries the share of earnings repatriations in income rose at some point. In 1997 in Thailand and in 1998 in Malaysia earnings remittances in excess of income were used to repatriate capital. For all countries the foreign exchange balance (as defined above) worsened in one of the two years, though this statement needs to be qualified once the trade transactions of U.S. affiliates are taken into account. In Malaysia alone, the difference between affiliate export sales and goods imports from the United States improved by over $3 billion between 1997 and 1998.

Aggregate FDI flows have been shown to be less volatile than portfolio flows or other investment.[15] Still, these two case studies have demonstrated that reinvested earnings are a particularly volatile component of FDI, and in several instances more than exhausted income accrued to direct investors, thereby reducing the net stock of invested capital. Nevertheless, the relative volatility of observed FDI flows to the crisis economies was mitigated by continued fixed investment by U.S. affiliates, and by a swift re-orientation of affiliate sales towards export markets.

V. Conclusions

The estimates for the return on foreign direct investment suggest that profitability is widely underestimated. U.S. data show returns on total foreign direct investment capital in emerging markets in the order of 15 to 20 percent. An additional three percent on invested capital has been paid to parent companies for royalties, license fees and other services, which should be accounted for under the corresponding headings in the services rubric of the current account. The high returns of foreign affiliates are explained in part through access to intangible assets—technology, managerial know-how, and international marketing—that explain the international expansion of multinationals in the first place, and in part through the premia that compensate for operating in risky environments.

The empirical results also highlight the costs of risky investment regimes in developing countries. While investment regimes in these markets have been liberalized, uncertainty about the approval processes and about administrative requirements for established affiliates still persist. Political and regulatory risk in the host county need to be compensated for through

[15]Though there is no consensus on this issue in the empirical literature: Claessens and others, (1995) and Taylor and Sarno (1999).

higher returns on domestic sales, which represent a rent transfer from host country residents to the multinational company. Such premia on earnings will reduce the range of investment projects deemed attractive by foreign investors and by consequence total private capital flows to that country. While the lowering of trade barriers is likely to erode margins for any given product, export-oriented host countries appear to have attracted higher margin production. Both findings expose the fallacy of policies designed to attract foreign investment behind protective trade barriers into an unpredictable regulatory environment.

As regards the allocation of FDI income in developing countries, the largest part of these flows remains in the respective host countries as reinvested earnings, accounting for more than one half of total FDI capital. However, at the margin the propensity of U.S. investors has been to translate income shocks into variations in reinvested earnings, with repatriations remaining relatively stable. The dividend payout ratio of affiliate operations is therefore highly volatile, and tends to increase sharply as income turns down. In several instances, income repatriations exhausted total earnings and reduced the net capital stock. In all five countries that were examined during times of financial crises, export sales substituted for declining domestic sales during host country recessions, and capital expenditures and employment showed only little variation.

The findings here also underline the need for a strengthening of statistical standards and recording capacities for the monitoring of FDI-related transactions. Given the often poor quality of FDI data in emerging markets, and the widespread exclusion of reinvested earnings from published flow data, the observed stability of FDI inflows may need to be qualified once these components are properly accounted for. Future research—and the assessment of financial vulnerability—may need to draw on firm level data. The affiliates of multinational companies have highly liquid balance sheets and access to a wide range of financial instruments. Such firm level data are therefore likely to offer a much more comprehensive picture of direct investors' impact on their host countries' balance of payments.

Appendix: Methodology and Data Sources

The returns on foreign direct investment (ROIC) presented in Figure 1 have been calculated as follows. For the estimates that are based on IFS data:

$$ROIC_t = \frac{2FDIINC_t}{FDIS_{t-1} + FDIS_t}$$

where the FDI stock FDIS has been calculated in two ways: *(i)* at book values

$$FDIS_t = FDIS_{t-1}(1-\delta) + FDI_t$$

with the depreciation rate δ set at 7.5 percent (δ would be 0 for stocks at historical costs); and *(ii)* at current costs:

$$FDIS_t = FDIS_{t-1}[1-\delta + (\frac{P_t^{US}}{P_{t-1}^{US}} - 1)] + FDI_t$$

Investment stocks have been computed as cumulative FDI flows from 1970.[16]

For the estimates based on BEA data for U.S. foreign affiliates INC as referenced below has been used for direct investment income; STK are stocks at historical costs, and stocks at book at current cost have been computed in an equivalent way based on the flow data (FDI), using STK of 1982 as the initial data point (hence understating returns at book and current values).

Return on equity presented in Figure 1 and the other variables used in the regressions are based on U.S. majority-owned affiliates only and are computed as follows:

Return on equity: $$ROE_t = \frac{2NIN_t}{TEQ_{t-1} + TEQ_t}$$

Profit margin: $$ROS_t = \frac{NIND_t}{SLS_t^i}$$

Debt equity ratio $$DER_t = \frac{LBL_t}{TEQ_t}$$

Share of affiliate sales to local market: $$SL = \frac{LSL}{SLS}$$

Effective rate of income taxation: $$TAXR = \frac{TAX}{TAX + NIN}$$

[16]See Lane and Milesi-Ferretti (1999) for the methodology.

Wage rate: $WAGR = \frac{WAG}{EMP}$

Age proxy: $AGE = \frac{SDEP}{GPPQ}$

Cash flows: $CSF = OPI + DEP$

Operating income (OPI) is Net income (NIN) minus income from equity investments and capital gains.

Published figures for net income (NIN) include indirectly owned foreign affiliates. As sales (*SLS*) are for directly owned affiliates only, income had to be corrected to *NIND* to compute ROS.

Data Sources
All U.S. data have been downloaded from http://www.bea.doc.gov/bea/uguide.htm#_1_24.

1. Capital Account Flows

All data are from the file "Balance of Payments and Direct Investment Position Estimates." Data are by country of immediate destination/origin of flows and refer to *all* U.S. foreign direct investment enterprises, adjusted for the share of U.S. ownership.

Series Name	Definition
FDI	Total U.S. FDI flows
INC	Direct investment income.
STK	Direct investment position abroad.

2. Financial and Operating Data

Affiliate data refer only to the majority-owned non-bank affiliates of non-bank U.S. parents and all data items refer to the entire affiliate, i.e. including assets held by and income accruing to host country residents or third parties. All flow data are reported in current U.S. dollars, converted at the average exchange rate.

Series Name	Definition	Source
AST	Total Assets of affiliates (at book value) = LBL + TEQ	*Balance Sheet of Affiliates*
CPX	Gross capital expenditures, including depreciation and depletion	*Capital Expenditures by Affiliates*
DEP	Depreciation and depletion	*Income Statement of Affiliates*
EMP	Number of employees	*Selected Data for Foreign Affiliates*
GPPQ	Gross Property, Plant and Equipment	*Balance Sheet of Affiliates, Country by Account*
LBL	Total liabilities (book values)	*Balance Sheet of Affiliates*
LSL	Local Sales	*Sales by Affiliates, Country of Affiliate by Destination*

Series Name	Definition	Source
NIN	Net income of affiliates. This is income after costs and expenses and foreign income taxes. It includes capital gains and losses (which are normally less than 1percent) and other non-operating items.	*Income Statement of Affiliates*
NIND	NIN minus the sum of capital gains, income from equity investment in other affiliates and income from other equity investment	*Income Statement of Affiliates*
SDEP	Property, Plant and Equipment - Accumulated Depreciation and Depletion	*Balance Sheet of Affiliates, Country by Account*
SLS	Total sales of directly owned affiliates	*Sales by Affiliates, Country of Affiliate by Destination*
TAX	Net income taxes paid in the host country	*Income Statement of Affiliates*
TEQ	Year end bookvalue of total equity stock	*Balance Sheet of Affiliates*
WAG	Compensation of Employees	*Selected Data for Foreign Affiliates*

3. Other variables were obtained from the following sources:

FDI	Direct investment in the reporting economy: net (IFS)
FDIINC	Direct investment income: debit (IFS)
P^{US}	United States: PPI capital equipment (IFS)
FUEL	Fuel exports in percent of merchandise exports (World Development Indicators)
PRISK	Political risk rating (International Country Risk Guide)

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