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and the Interpretation of the Balance of Payments –  
With an Application to Transition Economies***

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# **Reinvested Earnings Bias, The “Five Percent” Rule and the Interpretation of the Balance of Payments – With an Application to Transition Economies\***

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## **ABSTRACT**

### **Reinvested Earnings Bias, The “Five Percent” Rule and the Interpretation of the Balance of Payments – With an Application to Transition Economies**

We show that the imputation of reinvested profits of the subsidiaries of foreign firms as a debit item on a host country's balance of payments account tends to overstate the current account deficit. We also show that, because of the workings of the FDI financial life cycle, this phenomenon is most evident for countries that have recently received large inflows of capital. The transition economies of East Europe certainly fall among such countries, and we show that, for the Czech Republic and Hungary, this imputation has a large effect on their reported current account balance. We verify the working of the FDI financial life cycle using two different panels of developed, developing and transition economies.

**Keywords:** balance of payments, financial crisis, foreign direct investment, transition economies

**JEL Classification Numbers:** F21, F23, F34

## **NON-TECHNICAL SUMMARY**

This paper examines an anomaly in the balance of payments accounting framework that tends to overstate the current account deficit of countries that are net recipients of foreign direct investment (FDI) and especially of those countries that are experiencing, or that have recently experienced, large inflows of FDI. The anomaly is due to the imputation of the reinvestment of profits by foreign-owned affiliates as a debit item on the current account even though such reinvestment involves no transactions on the foreign exchange market and, of course, represents a much more stable form of financing than do short-term capital inflows. The paper shows that this bias is of considerable quantitative significance for a number of developing countries and particularly so for the transition economies of Eastern Europe.

Reinvested earnings are reported as a credit item on the capital account as part of FDI in the capital account to reflect foreign investors' increased investment in the country. To offset this credit item and maintain the double-entry nature of the balance of payments, the reinvested earnings of a foreign-owned affiliate are also recorded as a liability on the current account to reflect the foreign investors' investment returns on equity. Countries that have received large inflows of FDI that generates large profits that are reinvested in the local economy will, paradoxically, appear to have large current account deficits even though the reinvested profits may be used to purchase local inputs such as land, structures, etc. While it is true that proponents of the benchmark for current account deficit, which is set at 5% of GDP (“five-percent rule”), emphasize the need to consider the way in which the current account deficit is financed, in common practice a close analysis of the financing of the deficit is generally not undertaken, and, therefore, the bias of reinvested earnings which do not effect floats in exchange market, if quantitatively important, should be addressed more seriously.

This study empirically evaluates an increasing role of a debit of the balance of income (including reinvested earnings) in a debit of the overall current account. The paper provides cross-country longitudinal data that show the statistical relationship between the ratio of the debit in the balance of income to the debit in the current account and the ratio of a sum of FDI inflow in the period from  $t$  through  $t-n$  to the current stock of FDI in the period  $t$ . The data set covers 32 countries.

The results of panel estimations with the dummy variables for developing and transition economies establish that the relationship between the ratio of FDI inflow to the stock of FDI and the ratio of a debit of the balance of income to a debit of the current account balance begins to weaken when the older FDI inflows are included in the model. This confirms our hypothesis that early in the life of foreign investments, when FDI inflows start to generate a profit, most of the profit is reinvested back to the host economy in the first few years. The results also show that reinvestment of profits is sensitive to country characteristics. In the case of the transition economies, the high levels of reinvestment of profits fall off more quickly than they do in developed countries, a result of the way in which the transition economies privatized in the 1990s.

We also show that in the transition economies reinvested profits have caused a significant debit of the balance of income. If the profits are reinvested, these reinvested earnings cause a bias in an expectation about the pressure on a foreign exchange market. Thus we conclude that the foreign exchange market should pay much greater attention to the way in which the current account deficit in transition economies has been financed.

## 1. INTRODUCTION

While currency crises have a variety of causes (Eichengreen *et al.*, 1996; Goldstein *et al.*, 2000; Krugman, 2000; Summers, 2000), both the economic literature and practical experience with crises shows that the ability to forecast them remains controversial.<sup>1</sup> Despite this, international lenders, organizations like the IMF and the World Bank, as well as the economic press, have adopted certain “rules of thumb” that serve, if not as predictors of crises, then at least as warning signs that countries that violate such rules of thumb are in danger of experiencing a currency crisis or speculative attack on their currencies. Perhaps the best known of these informal rules is that a country's current account deficit should not exceed five percent of GDP. For example, Milesi-Ferreti and Razin (1996), observe that “[c]onventional wisdom is that current account deficits above 5% of GDP flash a red light, in particular if the deficit is financed with short-term debt...” and Summers (1996) warns that “close attention should be paid to any current account deficit in excess of 5% of GDP...” Such high and sustained current account deficits are viewed as precursor to a currency crisis because they are often financed by short-term capital inflows into the country, and such inflows are subject to sudden reversals.

In this paper we call attention to an anomaly in the balance of payments accounting framework that tends to overstate the current account deficit of countries that are net recipients of foreign direct investment (FDI) and especially of those countries that are experiencing, or that have recently experienced, large inflows of FDI. The anomaly is due to the imputation of the reinvestment of profits by foreign-owned affiliates as a debit item on the host country's current account even though such reinvestment involves no transactions on the foreign exchange market and, of course, represents a much more stable form of financing than do short-term capital

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<sup>1</sup> See Goldfajn and Valdés (1998), Berg and Pattillio (1999), Kaminsky and Reinhart (1999), Burkart and Coudret (2002).

inflows. We also show that this bias is of considerable quantitative significance for a number of developing countries and particularly so for the transition economies of Eastern Europe.

The remainder of the paper is organized as follows. In the next section we show how reinvested profits of foreign firms are imputed as a debit item on the current account. In section three we discuss the factors that determine the magnitude of the distortion in the current account balance that this imputation causes and we show that, for a number of countries, and particularly for some of the transition economies of East Europe and the former Soviet Union, such reinvested profits may actually represent a very significant part of the observed current account deficit. In Section 5 we show that countries that have experienced relatively large recent inflows of FDI tend to have a higher ratio of income account debits to current account debits, a finding that lends support to our thesis.

## **2. WHY SOME COUNTIES' CURRENT ACCOUNT DEFICIT IS "OVERSTATED"**

Normally, a transaction is recorded on the balance of payments when foreign and the domestic currencies are exchanged between the residents of a country and the rest of the world. Such exchanges usually have a counterpart transaction on the foreign exchange market. However, according to the IMF *Fifth Balance of Payments Manual* (1993), in some cases where no actual currency flows between a country's residents and the rest of the world occur, transactions are nevertheless imputed and entries are made in the balance of payments accounts. The reinvested earnings of foreign-owned affiliates are an example of such an imputed entry in the balance of payments because the earnings of the foreign-owned affiliate, whether distributed in the form of dividends paid to the parent firm or reinvested in the local affiliate, are included in the balance of payments as a deficit item on the current account. In the case of dividends remitted to the parent company, the rationale for the entry is obvious because host-country currency has to be converted

into the currency of the country that is the MNC's home. In the case of profits that are reinvested in the host country affiliate, however, there is no exchange of home-country currency for foreign exchange. Profits earned in the host country's currency remain in the host country. This means that profits reinvested in the local affiliate of a foreign-owned firm are treated as a current account deficit item, that is, an exchange of local currency for foreign currency, even though there is no such exchange takes place. Such an imputation is necessary to preserve the double-entry nature of the balance of payments account, which requires the balance of payments to account for an increase in foreigners' investments in the host country. Nevertheless, while reinvested profits and dividend remittances are reported in the income account as seemingly similar debit transactions, the latter must be financed in some way on the foreign exchange market while the former do not.

As Box 1 shows, reinvested earnings are reported as a credit item on the financial account as part of FDI to reflect foreign investors' increased asset holdings in the host country. To offset this credit item and to maintain the double-entry nature of the balance of payments, the reinvestment of earnings by a foreign-owned affiliates are also recorded as a liability on the current account. A net inflow of reinvested earnings into the domestic economy has a positive impact on the financial account in the form of net direct investment, but the impact on net income receipts within the current account is of an equal, but opposite, amount. Thus, countries that have received large inflows of FDI that generates large profits that are reinvested in the local economy will, paradoxically, appear to have large current account deficits even though the reinvested profits purchase local inputs such as land, structures, etc., and require no foreign exchange financing. While it is true that proponents of the "five-percent rule" emphasize the need to consider the way in which the current account deficit is financed, in common practice a close analysis of the



financing of the deficit is generally not undertaken, and, therefore, the bias described here, if quantitatively important, needs to be addressed more seriously in evaluating whether a country's current-account deficit is sustainable or not. Moreover, there is some irony to the fact that FDI, the most stable source of external finance, and one that Fernández-Arias and Hausmann (2001) found to actually reduce the risk of currency crises and speculative attacks, is also the one form of financing that is included in the balance of payments in a way that makes the country appear more vulnerable to such crises and attacks.

### **3. IS THE REINVESTED EARNINGS BIAS A LARGE PART OF THE CURRENT ACCOUNT DEFICIT?**

#### *A. The Magnitude of Reinvested Earnings from FDI*

Whether the imputation of reinvested earnings in the current account is sufficient to materially affect the magnitude of a country's external deficit depends on three broad sets of factors. The first of these is quantitative. The larger the stock of FDI relative to the size of the economy and the more profitable are foreign firms, the greater is the pool of money that can be reinvested into the local affiliates of foreign firms. The second set of factors consists of country-specific characteristics of the host and home countries that influence the distribution of total affiliate profits into dividends that are remitted to the parent company and into funds that are reinvested back into the local affiliate. This decision depends on a variety of factors including perceptions of host country risk; tax treatment of dividends by the home and host countries; opportunities for extracting funds from the affiliate through transfer pricing, management fees, etc.; and the attractiveness of alternative ways of financing the affiliate's investment needs

(Robbins and Stobaugh, Ch. 5, 1973).<sup>2</sup> The third set of factors consists of the time path of FDI into the host country, which affects both the volume of profits and their distribution between reinvestment and dividends. This third set of factors we characterize as the FDI financial life cycle.

The FDI financial life cycle model is described in Figure 1, which presents a stylized relationship between profits, dividends and reinvested profits over the life of a foreign direct investment project. At the outset, in what we call Stage 1 in the diagram, the MNC makes an investment in the foreign country to found an affiliate. At first, the affiliate will operate at a loss. In the case of an acquisition, this period may be short if the acquired firm is, or can be easily reorganized to become, profitable. In the case of a greenfield investment, during the time taken to acquire a site, build and equip a production facility, train workers and begin production, the interest on the capital invested may result in sizable and longer lasting start-up losses. Thus, in Stage 1, the affiliate operates at a loss and pays no dividends.

In Stage 2, the affiliate begins to operate at a profit as production starts or as the firm becomes more competitive as the result of the restructuring or other competitive advantages provided by the parent firm. However, as the affiliate becomes more successful on the market, it is likely to have significant needs for additional investment, both for working capital as well for increased plant and equipment. Thus, at first, all profits may be reinvested to meet these needs. As time passes and profits continue to grow, the parent firm may begin to require that the affiliate remit some of the profits in the form of dividends, although the monetary value of reinvested profits may continue to increase. The length of the second stage will in part depend on the size of the domestic market, which will determine for how long the affiliate can continue to expand its

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<sup>2</sup> Despite the existence of these other options, dividend remittances have accounted for over 50% of the funds flowing from foreign affiliates to US MNCs in the post-World War II period, and this proportion has shown little change over time.

capacity, on the availability of export markets to the affiliate and on the attractiveness of alternative ways of financing the affiliate's expansion. In Stage 3, the affiliate has reached a "mature" stage where its market share and profit margins in the host country have stabilized. At this point, the parent firm will choose to repatriate a larger share of the profits in the form of dividends so that these funds can be used to finance investment opportunities that offer more dynamic prospects elsewhere, and reinvested earnings will decline both as a share of profits and absolutely.<sup>3</sup>

### *B. FDI Reinvestment In the Balance of Income - Some Evidence*

Table 1 shows how the three determinants of FDI reinvestment discussed above influence the size of the bias in the current account of four countries, Brazil, the Czech Republic, Ireland and Portugal. These four countries provide good data on reinvested profits and also illustrate the significance of the three factors discussed above. The experience of at least three of these countries also provides striking evidence that, in some cases, reinvested profits are a very significant component of the current account deficit.

The first factor, the amount of FDI and its profitability, is most evident in a comparison of Ireland with the other three countries. For Ireland, the difference between the current account with reinvested dividends reported as a debit item and without the inclusion of reinvested profits is around 10 percent of GDP. That is, without the imputation of reinvested profits by foreign MNCs located in Ireland as a debit item, Ireland's current account surplus would be higher by about 10 percent of GDP. This difference between the two measures of the current account surplus is much greater than it is in the other three countries. In part, the greater gap between the

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<sup>3</sup> An interesting example of the workings of the FDI financial life cycle is provided by Koretz (2002), who writes: "The U.S. became a debtor nation during the 1990s. Yet until this year it actually received more income from its direct investments overseas and holdings of foreign financial assets than foreigners received from their U.S. investments." He suggests that this is because

two measures of the current account reflects the fact that the stock of FDI in Ireland is equivalent to over 40 percent of GDP while for the other three countries, it ranges from 11 to 15 percent of GDP. Moreover, as columns 1 and 2 of Table 1 show, FDI in Ireland appears to be more profitable than it is in the other three countries.<sup>4</sup> Thus the much larger volume of MNC profits in Ireland relative to aggregate economic activity does much to explain why the bias in the measurement of the current account is so large.

Country-specific factors also play a role in the magnitude of the current account bias caused by FDI. Although Brazil, the Czech Republic and Portugal have similar ratios of FDI to GDP, an examination of column 4 of Table 1, the percentage of FDI profits that is reinvested in the country, reveals that Brazil is something of an outlier. In the other two countries, as well as in Ireland, about half of FDI profits are reinvested. In Brazil, the rate of reinvestment is quite low, and in some years negligible.<sup>5</sup> As expected, the difference between the Brazilian current account deficit measured with and without reinvested profits is virtually nonexistent. On the other hand, for the Czech Republic and Portugal, the difference is appreciable, usually over one percent of GDP for the Czech Republic and nearly one percent for Portugal. These are significant biases when considered in the context of the "five percent rule".

Of particular relevance to the transition economies is the FDI financial life cycle effect on the volume of reinvested earnings in the current account balance. This is so because the transition economies have gone from a state where they had virtually no FDI at the start of the 1990s to a situation where some, such as Hungary, Poland and the Czech Republic, have FDI stocks of a magnitude, whether measured relative to GDP or population, that compares with many other

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"... a lot of recent direct investment in the U.S. has faced big startup costs. Investment by U.S. companies overseas is older, so it earns higher returns."

<sup>4</sup> It is important to bear in mind that FDI in Ireland may *appear* more profitable because Ireland's accounting standards may make it more difficult for MNCs to understate profits through transfer pricing, royalties, management fees, etc.

middle-level income countries that have received FDI inflows for much longer periods of time. The major difference between the transition economies and other countries then is not in the stock of FDI but rather in its vintage.

If the FDI financial life cycle model is correct, then, currently, the amount of reinvestment of MNC earnings in the transition countries is abnormally high and is likely to be increasing because most of the foreign affiliates are entering or operating in Stage 2 of the FDI financial life cycle. Only later, as they enter Stage 3, will the bias in their current account steadily diminish as the reinvestment of earnings drops off and is replaced by dividend repatriation, which, unlike reinvested earnings, does create claims on the foreign exchange market.

The workings of the FDI financial life cycle are illustrated in Figure 2, which shows the role that reinvested earnings play in the FDI position and in the balance of income of two transition economies, the Czech Republic and Hungary. Hungary attracted a large stock of FDI early on in the transition. This was due to the fact that Hungarian privatization was consciously designed to attract foreign "strategic" investors for Hungary's state-owned firms and, later, financial institutions. For the first half of the 1990's Hungary was by far the leader in both the stock of FDI and annual FDI inflows among the East European transition economies. The Czech Republic, on the other hand, chose to privatize the bulk of its state-owned firms by means of the "voucher privatization" that put firms in the hands of domestic rather than foreign owners. While some Czech firms, SPT Telecom, the telephone monopoly, and the carmaker Škoda being prime examples, were sold to foreigners, much of the investment in the Czech Republic through mergers and acquisitions had to wait until then new domestic owners could take control of their firms and then decide to sell them to foreigners. As a result, much more of the FDI into the Czech

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<sup>5</sup> The low rate of reinvestment in Brazil may reflect the country's poor economic performance in the late 1990s.

Republic had to take the form of greenfield investments, which naturally took longer to plan and implement. Consequently, while the two countries had similar levels of stocks of FDI by the end of the 1990s, the vintage of Czech investments was much newer than Hungary's.

This timing of FDI in the two countries is reflected in Figure 2, which shows the contribution of reinvested earnings to both net FDI on the financial account (bars above the zero line) and to the balance of income on the current account (bars below the zero line). In the case of the Czech Republic, reinvested earnings are a small part of total FDI inflows, but they are a large part of the deficit on the income account. The former is due to the fact that most of the stock of FDI in the Czech Republic has entered the country in the second half of the 1990s so that FDI inflows from abroad still constitute the main avenue for foreigners to acquire or increase investments in the Czech Republic. The FDI financial life cycle suggests that this recent investment should yield no or low profits or, to the extent that it does yield profits, these should mainly be reinvested in the Czech affiliates that generate them. Thus, when we examine the Czech balance of income, these reinvested profits form a large share of the deficit on this account because few of the foreign investments in the Czech Republic are sufficiently mature to be in Stage 3 of the FDI financial life cycle where their profits would be repatriated to the parent company in the form of dividends.

In Hungary, total profits on FDI are higher than they are in the Czech Republic, as the FDI financial life cycle model would predict. Also, reinvested profits account for a larger share of total FDI flows in Hungary than they do in the Czech Republic, both because the inflows of new FDI are lower in Hungary than they are in the Czech Republic and because the earnings of the more mature foreign investments in Hungary are greater than those of relatively newer investments in the Czech Republic. Moreover, because profits on FDI in Hungary are higher, as

suggested by the FDI financial life cycle model, even if higher dividends are paid out, there is nevertheless more money to reinvest as well. In Hungary a larger proportion of FDI occurred in the early 1990s, and thus Hungarian FDI projects are more mature and some investment projects may be approaching Stage 3 of the FDI financial life cycle. As more FDI projects enter Stage 3, Hungary is experiencing larger dividend outflows than are evident in the Czech Republic. Of course, as other investment projects in Hungary enter Stage 2, reinvested profits will continue to grow as well, even if they do account for a smaller share of the deficit on the balance of income.

While the data we have presented show that the imputation of reinvested earnings has a significant effect on the reported current account deficits of the two transition economies, it is also worthwhile to examine the dynamics of this bias in order to see how it has evolved and what its likely effect may be in the future. To this end we examine more carefully the case of the Czech Republic. At the end of the 1990s and in 2000 and 2001, the most important item of the Czech current account balance, the trade deficit, declined due to favorable developments in the terms of trade. The services surplus remained stable from 1995 on. Nevertheless, there was a steady increase in the current account deficit due to the increasing deficit in the balance of income.

In Figure 3, we show the net balances on the income account of the Czech Republic. Figure 3 shows that the growth of the income account deficit was almost entirely due to the imputation of net reinvested earnings as a debit item on this account. In 1995, reinvested earnings played virtually no role in the income account and perhaps were not even measured or reported as a separate item in the balance of payments. There was a small surplus in the compensation of nonresident employees and small deficits in the interest balance and dividends and redistributed earnings. It was only in 1998 that a deficit in reinvested earnings appeared, and its magnitude was then about equal to those of the deficits in the interest balance and nonresident employee

compensation. Since then, the deficit from reinvested earnings has made up the largest share of the deficit on the income account, and it is almost entirely the source of the growth of the income account deficit.

Moreover, not only has the growth of net reinvested earnings driven the income account deficit, and, by extension, the current account deficit, but the importance of reinvested earnings to the current account deficit has also created additional uncertainty about the size of current account deficit itself. In Figure 3 we present the preliminary and revised income accounts for 2000 and for 2001. In 2000, the preliminary figures considerably underestimated the volume of net reinvested earnings. The Czech National Bank estimates reinvested earnings in the current period through extrapolation, surveys and forecasts, and estimates based on such methods require larger revisions than do some other entries in the balance of payments accounts. For example, the Czech National Bank revised the net reinvestment of profits figure for 2000 upward by 84 percent from the formerly published figure of CZK 20,000 million to CZK 36,871 million. Figure 3 shows that this revision accounted for the bulk of the revision in the income account. More important, as a result of this revision, the current account deficit jumped to above 5 percent of GDP in 2000, raising concerns about the long-term viability of the external balance. If a revision of similar proportions were to be required for the estimated earnings reinvestment of foreign MNCs reported for 2001, which was published as CZK 32,000 million, the revised figure would be in the neighborhood of CZK 57,600 million. This potential revision is labeled “Forecast by Authors” in Figure 3, and it shows the serious consequences that such a revision would have for the deficit on the income account.



#### **4. THE FDI FINANCIAL LIFE CYCLE IN INTERNATIONAL PERSPECTIVE**

In the foregoing parts of this paper, we have shown that the imputation in the balance of payments of reinvested earnings on FDI can have a potentially large impact on a country's current account deficit and that there are systematic factors that explain the magnitude of the volume of reinvested earnings over time and across countries. While it is quite true that a sophisticated interpretation of a country's current account deficit would take into account the sources of financing of the deficit and that such an analysis would bring to light the contribution of reinvested earnings, very few countries actually report the magnitude of reinvested earnings on FDI in their balance of payments accounts, making such a careful analysis difficult. In our own research, we have had to obtain the information on reinvested earnings for many countries from specialized sources rather than from their balance of payments accounts, and even specialized sources do not always provide this information on a consistent basis.

Due to the paucity of data on reinvested earnings from FDI, in this section we turn our attention to the income balance. As is evident from Table 1 and Figures 2 and 3, for many countries, reinvested profits on FDI make up a large part of the income account deficit. Moreover, as Figure 3 shows, due to the workings of the FDI financial life cycle, reinvested earnings can change quite rapidly over time, much more so than do other items included in the income account balance, and, as a result, changes in the entire income balance tend to reflect changes in the this component of the balance. Consequently, for many countries, changes in the debit items in the income account can be a good proxy for movements in the reinvestment of earnings on FDI, and it is this variable whose behavior we examine in this section.

Because the income account debits include both reinvested profits and dividend repatriation, the importance of the former can be tested by examining the relationship between the

vintage of the stock of FDI and movements in the debit items on the income account. If the FDI financial life cycle model is correct, then we should see an increase in the income account debit soon after the inflow of FDI because of the increase in reinvested earnings on FDI, which will occur sooner than does profit repatriation by the length of time needed for firms to move from Stage 2 to Stage 3. On the other hand, if there is only a weak link between the income account debit items and recent FDI inflows, then either reinvested FDI does not play an important role in movements of the income balance debit items or the FDI financial life cycle model represents an unimportant phenomenon because it is profit repatriation, which occurs somewhat later after the inflow of FDI, that would be the major driving force behind movements in the income account. In this section, we test for the existence of a relationship between the vintage of FDI inflows and profit reinvestment, the latter proxied by the debit items in the income balance. We also examine differences in this relationship between transition economies and developed and developing countries. We hypothesize that FDI reinvestment in developed, developing and transition economies countries follows a path over time that is similar in shape to that described in Figure 1 but that the length of time needed to reach the various stages of the FDI financial life cycle or the propensity to reinvest profits at any stage of the FDI financial life cycle may differ between these three categories of host countries.

Most countries experience a continuous stream of FDI, some new and some in the form of reinvested profits. We have argued that the age structure of FDI plays a major role in determining the magnitude of reinvested profits along with country-specific factors such as the magnitude of FDI, its profitability, etc. In this section we employ a sample of thirty two countries with data extending from 1993 to 2000 to test whether the vintage of FDI plays a significant role in the magnitude of FDI. The sample consists of developed, developing and transition economies for

which we were able to find consistent data for the entire sample period. Some countries are small, others, like the United States and the Peoples Republic of China, are both large and major recipients of FDI. <sup>6</sup> We also use a subset of these countries that consists of only developed and developing countries to test the same relationship over a significantly longer time period from 1981 to 2000.

The magnitude of the debit items on the balance of income, reflecting changes in reinvested FDI, should be a greater or smaller share of the debits on the current account, *ceteris paribus*, depending on the vintage of the FDI inflows. To account for country size effects and the differences in openness to international commerce among countries, we normalize the income debit items by the country's current account debits. Moreover, because we lack data on the vintage of FDI in a country, we use as an indicator of vintage the ratio of the sum of FDI for the most recent  $n$  years to the total stock of FDI. This relationship can be stated as:

$$\left[ \frac{BI\_debit}{CA\_debit} \right]_t = f \left( \frac{\sum_{m=0}^n FDI_{t-m}}{Stock\_FDI_t} \right) \quad \text{Eq. 1}$$

where  $t$  denotes the year;  $BI\_debit$  is the value of the debit items in the balance of income,

$CA\_debit$  is the value of the debit items in the current account;  $\sum_{m=0}^n FDI_{t-m}$  is a sum of FDI

inflows in the period from  $t$  through  $t-n$ , where  $n \in \{1,2,3,\dots\}$ ; and  $Stock\_FDI_t$  is the stock of

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<sup>6</sup> Among the developed countries are Australia, France, Germany, Great Britain, Ireland, Italy, Japan, New Zealand, Portugal, Spain, and the United States of America; among the developing countries, Argentina, Brazil, Chile, China, India, Indonesia, Korea, Mexico, Peru, Singapore, South Africa, Turkey, and Venezuela. The transition countries are Bulgaria, the Czech Republic, Estonia, Hungary, Romania, Russia, Slovakia, and Slovenia. Poland was not included among the transition countries due to a change in its balance of payments methodology in 1995, which rendered the Polish balance of payments data inconsistent with that of other countries. The sample period begins in 1993 to allow us to account for the separation of Czechoslovakia into two countries.

FDI in period  $t$ . The higher the ratio of recent FDI inflows,  $\sum_{m=0}^n FDI_{t-m}$ , to the total stock of FDI in the country, the newer the vintage of FDI in the country, and the more we expect to see the reinvestment of earnings characteristic of Stage 2 rather than the capital repatriation of Stage 3. We use cumulated investment for the past one, two and three years for the panel that includes transition economies and FDI cumulated for from one to five years for the longer panel that does not include the transition economies.

Because there are country-specific factors such as the actual stock of FDI in the country, domestic market size, access to export markets, political stability, etc., at work, we employ a panel estimation with fixed effects to take these country-specific factors into account. To test whether the timing of the FDI financial life cycle differs between developed, developing and transition economies, we specify Equation 1 for estimation purposes as:

$$Y_{i,t} = c_{n,i} + \alpha_{n,i,t} X_{n,i,t} + \beta_{n,i,t} dum\_1_{n,i,t} X_{n,i,t} + \gamma_{n,i,t} dum\_2_{n,i,t} X_{n,i,t} + \varepsilon_{n,i,t} \quad \text{Eq. 2}$$

where  $Y_{i,t} = (BI\_debit/CA\_debit)_{i,t}$ ;  $X_{n,i,t} = \sum_{m=0}^n FDI_{t-m} / Stock\_FDI_{i,t}$ ; and two slope dummy variables are introduced:  $dum\_1$  and  $dum\_2$ . These dummy variables are defined as follows:

$dum\_1 = 1$  if country  $i$  is a developing country

$= 0$  otherwise,

$dum\_2 = 1$  if country  $i$  is a transition country

$= 0$  otherwise.

From this panel estimation we can calculate the slope for the developing countries as  $\hat{\alpha}_n + \hat{\beta}_n$ , and for the transition countries as  $\hat{\alpha}_n + \hat{\gamma}_n$ . For the developed countries, the slope coefficient is equal to  $\hat{\alpha}_n$ .

The results of the estimation for the panel that includes the transition economies are reported in Table 2. The coefficient for the developed countries,  $\hat{\alpha}_n$ , is significant for all values of  $n$ , the

number of years over which we cumulate the most recent flows of FDI, and it decreases steadily with  $n$ . The effect of a newer vintage of FDI capital stock in the ratio of income balance debits to current account debits is even greater for developing and transition economies because the coefficients  $\beta_n$  and  $\gamma_n$  are also positive and significant. This implies that the propensity to reinvest earnings on FDI is be greater in these countries than it is in developed countries because recent acquisitions in these countries may involve firms that are in greater need of restructuring and upgrading of technology and capacity than is the case in acquisitions made in developed countries. For example, General Electric, which acquired Hungary's flagship manufacturing firm, Tungsram, had to undertake an aggressive program of investment in its acquisition in order to make it fully competitive on the world market for light bulbs (Marer and Mabert, 1999). Similarly, Volkswagen had to make large investments in its Czech acquisition, Škoda, in order to bring the firm's products, technology and quality standards up to par (Bohatá, 2000). Alternatively, the length of Stage 1 may differ between developed and developing and transition countries. The difference between developed and transition economies, however, does not extend to beyond  $n=2$ , since thereafter  $\gamma_n$  is no longer statistically significant.

An obvious problem with including transition economies in our sample is that it is not possible to construct a balanced panel that goes back beyond the start of the 1990s. Therefore, in order to explore larger values of  $n$ , we use a subset of our country panel that includes only developed and developing countries, and extend the data back to 1981, thus allowing us to increase the value of  $n$  beyond the value of 3 used with the larger sample of countries. The results for this regression are reported in Table 3. The value of  $\hat{\alpha}_n$  is, except for  $n=1$ , quite similar to that obtained from the sample used to generate the estimates reported in Table 2. It does, however, decrease with increasing  $n$ , again reflecting the decreasing influence of reinvested profits as we include older

vintages of FDI in the explanatory variable. However, in contrast to the results in Table 2,  $\beta_n$ , the slope dummy for developing countries, is not significant for any value of  $n$ , and thus the effect of the FDI financial life cycle is the same for both sets of countries. Given differences in time and country coverage between the two samples, these minor differences are not surprising. What is important is that, for both samples, there exists a positive relationship between the vintage of a country's FDI stock and the share of income balance deficits items in the current account deficit. Given the rather low values of  $n$  at which this phenomenon is observable, it is reasonable to conclude that the debit item on the income balance that is increasing as the vintage of the capital stock becomes newer is the imputation of reinvested profits rather than dividend repatriation.

## 5. CONCLUSIONS

We have shown that the imputation of reinvested earnings as a debit item in the balance of payments of host countries creates a situation where the current account deficit can appear to be in deficit even though there is no need to finance some or a large part of this deficit on the foreign exchange market. We have also shown that, because of the workings of the FDI financial life cycle, such a bias is most evident for countries that have recently received large inflows of capital. Our analysis also shows that two of the transition economies of East Europe, the Czech Republic and Hungary, have received large inflows of FDI over a short span of years, and this imputation has had a large effect on their current account balances. We verified the working of the FDI financial life cycle using two different panels of developed, developing and transition economies.

Countries that do encounter large inflows of FDI, especially if existing stocks of FDI are relatively small, should make an effort to call attention to this phenomenon so that foreign

investors can evaluate their economic performance more accurately. Moreover, transition and developing countries that have not taken care to report reinvested MNC earnings in their balance of payments account should take care to do so in order to clarify the financing needs implied by their reported current account deficits.

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**Box 1**

**Reinvested Earnings in the IMF Balance of Payments Methodology**

A. Current account

1. Trade balance

2. Balance of services

**3. Income balance**

3.1. Credit

3.1.1. Interest accepted, income from CB reserves

3.1.2. Income from work abroad

3.1.3. Dividends and distributed earnings

3.1.4. Reinvested earnings abroad

3.2. Debit

3.2.1. Interest paid

3.2.2. Payments to foreign workers

3.2.3. Dividends and distributed earnings

**3.2.4. Reinvested earnings in the reporting country**

B. Capital account

C. Financial account

**1. Direct investment**

1.1. Abroad (debit)

1.1.1. Equity capital

1.1.2. Other capital

1.1.3. Reinvested earnings abroad

1.2. In the reporting economy (credit)

1.2.1. Equity capital

1.2.2. Other capital

**1.2.3. Reinvested earnings in the reporting country**

2. Portfolio investment

3. Financial derivatives

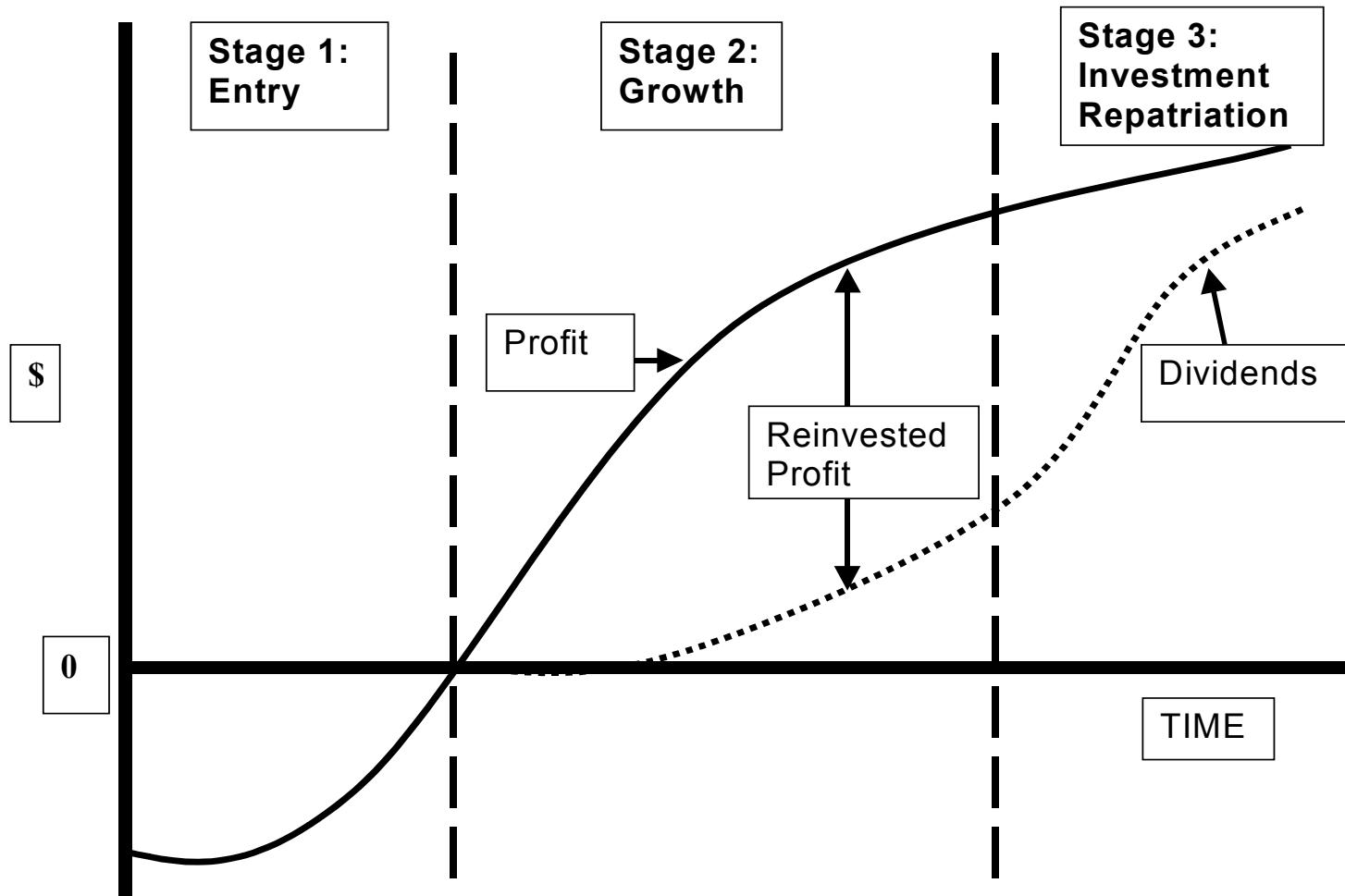
4. Other investment

D. Net errors and omissions, valuation changes

E. Change in reserves (-increase)

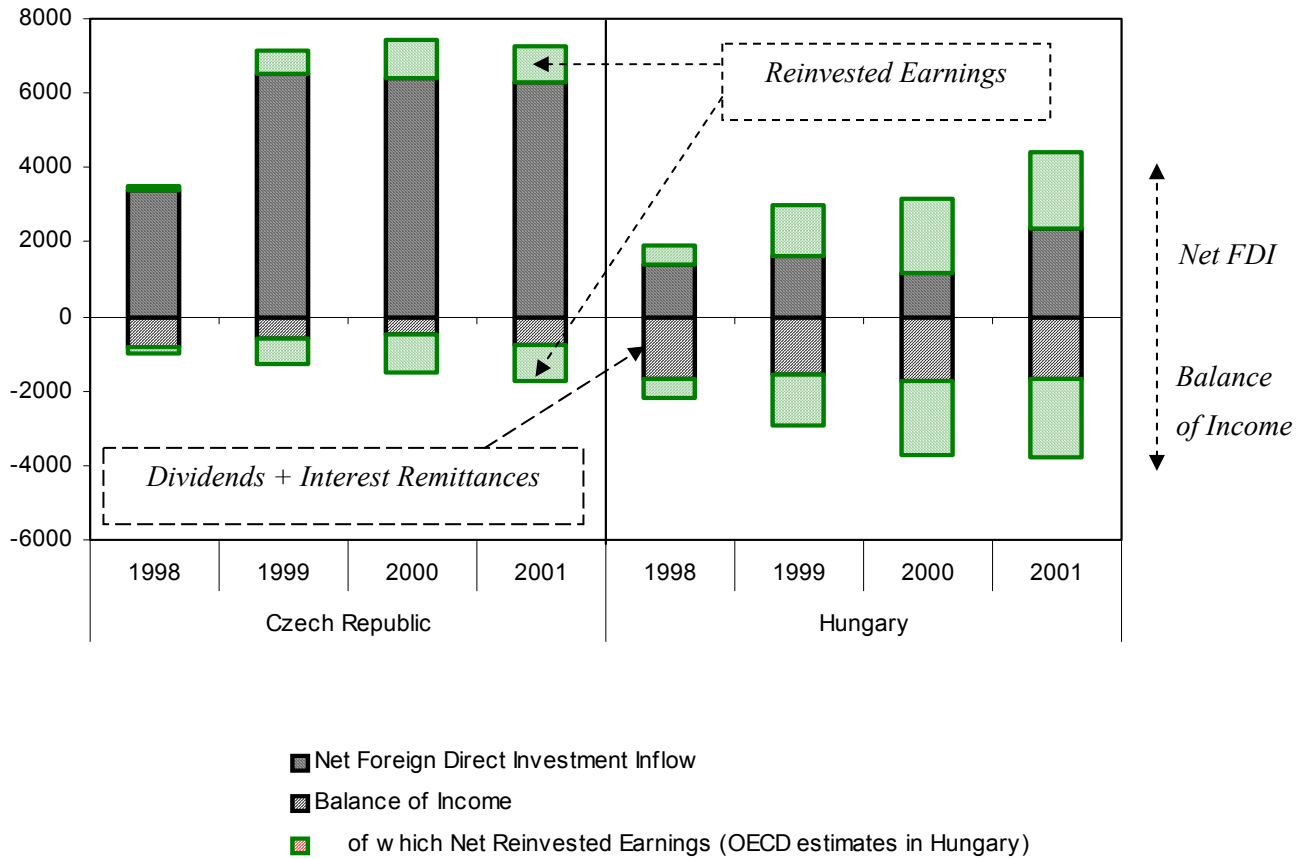
Source: Compiled from IMF, *Fifth Balance of Payments Manual*, 1993, p. 43-48.

**Figure 1. The FDI Financial Life Cycle**



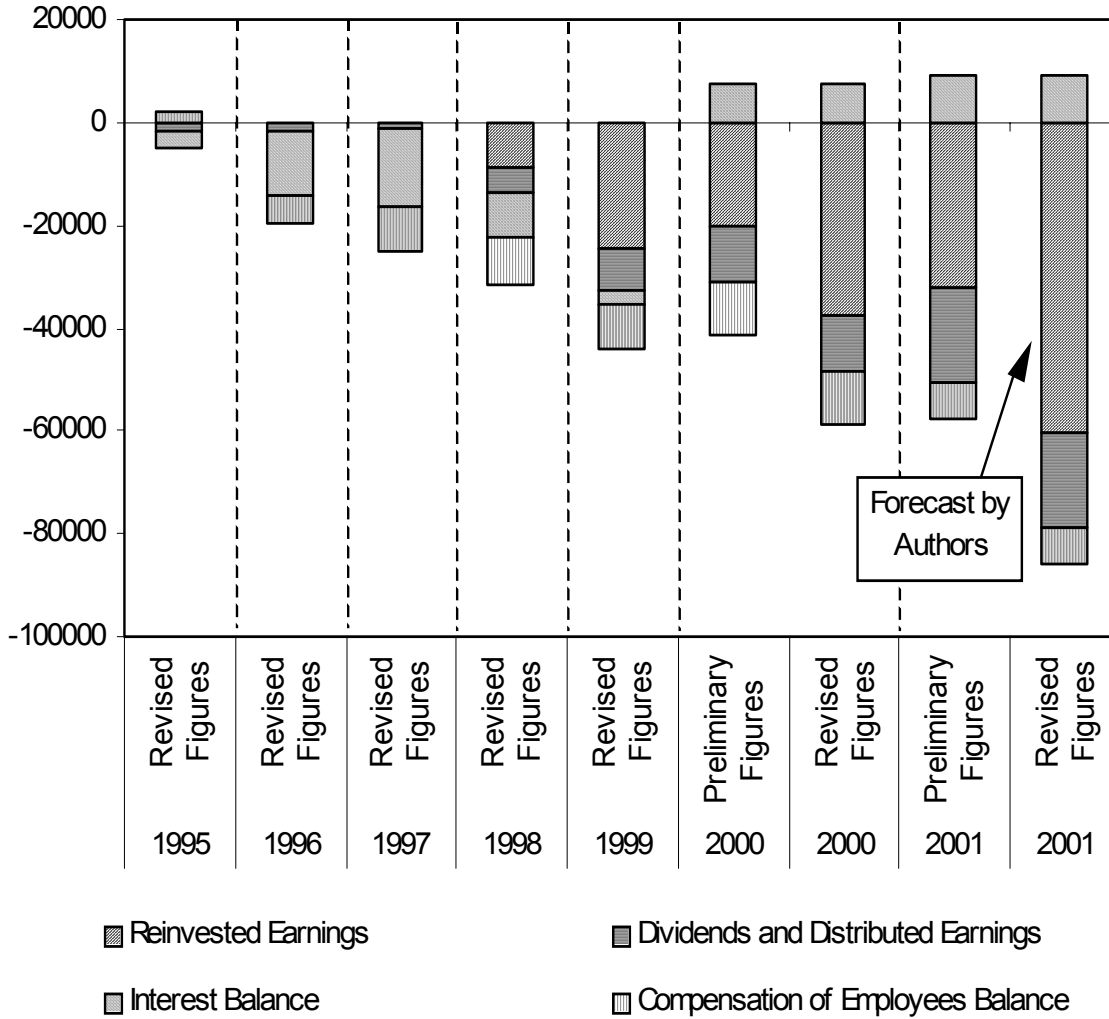
**Figure 2: Reinvested Earnings in the Balance of Payments of the Czech Republic and Hungary (mil. EUR)**

Note: Only preliminary data are available for 2001.



Sources: Czech National Bank, National Bank of Hungary, and *OECD Economic Surveys: Hungary*, Paris, Vol. 2002/10, June 2002, p. 38

**Figure 3: Structure of the Income Account of the Czech Republic**  
( all items are net in mil. CZK)



Source: Balance of Payments Statistics at the website of the Czech National Bank ([www.cnb.cz](http://www.cnb.cz)); Data on reinvested earnings available in "Foreign Direct Investment - 2000." Prague, Czech National Bank, March 2002, p. 116.

**Table 1. Importance of Reinvested Profits In the Current Accounts of Four Countries****Panel A. Brazil**

	Stock of FDI <i>mil. USD</i> (1)	Profits on FDI in Brazil <i>mil. USD</i> (2)	Of which: Reinvested Earnings <i>mil. USD</i> (3)	Ratio of Reinvested Earnings to FDI Profits (4 = 3/2)
1992	30702	552	175	32%
1993	31994	1631	100	6%
1994	35066	2290	83	4%
1995	39925	2581	384	15%
1996	51125	2705	531	20%
1997	70775	4707	151	3%
1998	102688	5093	124	2%
1999	131264	4221	NA	NA
2000	164043	3105	NA	NA
2001	186679	3702	NA	NA

	Current Account Balance (Including Reinvested Earnings) <i>mil. USD</i> <i>% of GDP</i>		Current Account Balance (Excluding Reinvested Earnings) <i>mil. USD</i> <i>% of GDP</i>		CA Balance Difference as Percent of GDP
1992	6109	1.6	6284	1.6	0.0
1993	-676	-0.2	-576	-0.1	0.1
1994	-1811	-0.3	-1728	-0.3	0.0
1995	-18384	-2.6	-18000	-2.6	0.0
1996	-23502	-3.0	-22971	-3.0	0.0
1997	-30452	-3.8	-30301	-3.8	0.0
1998	-33416	-4.2	-33292	-4.2	0.0
1999	-25335	-4.8	NA	NA	NA
2000	-24225	-4.1	NA	NA	NA
2001	-23213	-4.6	NA	NA	NA

Source: IMF Database; Central Bank of Brazil

**Panel B. Czech Republic**

	Stock of FDI <i>mil. USD</i> (1)	Profits on FDI in Czech Rep. <i>mil. USD</i> (2)	Of which: Reinvested Earnings <i>mil. USD</i> (3)	Ratio of Reinvested Earnings to FDI Profits (4=3/2)
1997	9234	56	NA	NA
1998	14375	347	180	52%
1999	17552	1045	690	66%
2000	21644	1271	955	75%
2001	26764	1423	841	59%

	Current Account Balance (Including Reinvested Earnings) <i>mil. USD</i> % of GDP		Current Account Balance (Excluding Reinvested Earnings) <i>mil. USD</i> % of GDP		CA Balance Difference as Percent of GDP
1998	-1255	-2.2	-1075	-1.9	0.3
1999	-1462	-2.7	-772	-1.4	1.3
2000	-2718	-5.3	-1763	-3.4	1.9
2001	-2638	-4.7	-1797	-3.2	1.5

Source: WIIW Database, IMF Database, Czech National Bank

**Panel C. Ireland**

	Stock of FDI <i>mil. USD</i> (1)	Profits on FDI in Ireland <i>mil. USD</i> (2)	Of which: Reinvested Earnings <i>mil. USD</i> (3)	Ratio of Reinvested Earnings to FDI Profits (4=3/2)
1998	24354	18140	5153	28%
1999	42969	21719	9134	42%
2000	65747	21835	10125	46%
2001	75612	23486	9717	41%

	Current Account Balance (Including Reinvested Earnings)		Current Account Balance (Excluding Reinvested Earnings)		CA Balance Difference as Percent of GDP
	<i>mil. USD</i>	<i>% of GDP</i>	<i>mil. USD</i>	<i>% of GDP</i>	
1998	826	0.9	5980	6.6	5.7
1999	337	0.4	9471	10.4	10.0
2000	48	0.1	10173	11.0	10.9
2001	-308	-0.3	9410	9.2	9.5

Source: IMF Database; Central Bank of Ireland

#### Panel D. Portugal

	Stock of FDI	Profit on FDI in Portugal	Of which: Reinvested Earnings	Ratio of Reinvested Earnings to FDI Profits
	<i>mil. USD</i>	<i>mil. USD</i>	<i>mil. USD</i>	
	(1)	(2)	(3)	
1996	18947	993	633	64%
1997	18605	1094	713	65%
1998	24465	1520	854	56%
1999	23519	1521	999	66%
2000	28161	1666	622	37%
2001	32672	1917	828	43%

	Current Account Balance (Including Reinvested Earnings)		Current Account Balance (Excluding Reinvested Earnings)		CA Balance Difference as Percent of GDP
	<i>mil. USD</i>	<i>% of GDP</i>	<i>mil. USD</i>	<i>% of GDP</i>	
1996	-4244	-3.9	-3612	-3.4	0.5
1997	-5909	-5.7	-5197	-5.0	0.7
1998	-8179	-6.9	-7325	-6.2	0.7
1999	-9278	-8.5	-8279	-7.6	0.9
2000	-10618	-10.2	-9997	-9.6	0.6
2001	-9928	-9.1	-9100	-8.3	0.8

Source: IMF Database; Central Bank of Portugal



**Table 2: Parameter Estimates from Panel Estimation with Fixed Country Effects for 32 Countries (1993-2000)\***

No. of Years Over Which FDI Inflows Are Cumulated	Parameter	Estimate	t-Statistic	Probability value	No. Obs.	Adjusted R <sub>2</sub>	F-Statistic
n=1	$\hat{\alpha}_n$	0.084588	3.422298	0.0008	224	0.9295	75.12
	$\hat{\beta}_n dum\_1$	0.097552	3.288513	0.0012			
	$\hat{\gamma}_n dum\_2$	0.125471	3.914129	0.0001			
n=2	$\hat{\alpha}_n$	0.064912	2.697384	0.0080	192	0.9360	69.34
	$\hat{\beta}_n dum\_1$	0.089786	3.123884	0.0022			
	$\hat{\gamma}_n dum\_2$	0.087915	2.449349	0.0157			
n=3	$\hat{\alpha}_n$	0.042757	1.669264	0.0984	160	0.9473	68.15
	$\hat{\beta}_n dum\_1$	0.065475	2.050421	0.0431			
	$\hat{\gamma}_n dum\_2$	0.023319	0.509025	0.6119			

\* Country dummies available from the authors upon request.

**Table 3: Parameter Estimates from Panel Estimation with Fixed Country Effects for 18 Developed and Developing Countries\* (1981-2000)\*\***

No. of Years Over Which FDI Inflows Are Cumulated	Parameter	Estimate	t-Statistic	Probability value	No. Obs.	Adj. R <sup>2</sup>	F-Statistic
n=1	$\hat{\alpha}_n$	0.049849	1.682616	0.0935	342	0.7155	43.76
	$\hat{\beta}_n dum\_1$	0.046388	1.481200	0.1396			
n=2	$\hat{\alpha}_n$	0.052837	2.097843	0.0368	324	0.7352	45.57
	$\hat{\beta}_n dum\_1$	0.026351	0.989948	0.3230			
n=3	$\hat{\alpha}_n$	0.052385	2.137751	0.0334	306	0.7425	44.56
	$\hat{\beta}_n dum\_1$	0.020434	0.558295	0.5771			
n=4	$\hat{\alpha}_n$	0.058295	2.374608	0.0183	288	0.7622	46.38
	$\hat{\beta}_n dum\_1$	0.036321	0.898119	0.3700			
n=5	$\hat{\alpha}_n$	0.056457	2.197767	0.0290	270	0.7769	46.99
	$\hat{\beta}_n dum\_1$	0.015585	0.345391	0.7301			

\* In order to extend the series back to 1981, we had to exclude Chile, India, Peru, South Africa, Turkey, and Venezuela as well as all the transition economies.

\*\* Country dummies available from the authors upon request.

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