

**Reinvested earnings as a form of foreign direct investment:
Evaluating the determinants of affiliate reinvestment**

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Abstract

Reinvested earnings are an empirically important component of FDI, and the managerial and policy implications of affiliate reinvestment have been neglected in the IB literature. This paper is a first attempt to understand the determinants of reinvestment, and to test these empirically with data on reinvestment between the five leading investors from Europe and the US.

Our model treats reinvestment as a form of marginal investment, and consequently we focus on factors that increase the attractiveness of the host country as an investment location, as well as factors that increase the attractiveness of the alternative of repatriation. We identify six determinants, namely, macroeconomic factors affecting investment opportunities in the host country, the profitability of foreign investment, exchange rates, differences in systems of corporate governance, the tax treatment of repatriated foreign income (intra-firm dividends), and the use of dividend policy as a means of managerial control.

Our results have implications for policies aimed to attract inward investment, where we think more attention should be paid to the determinants of sequential flows of investment by existing investors. Measures aimed to attract *de novo* investment have often not produced the desired results, and reinvested earnings can contribute substantially to the stock of investment over time.

Key words

FDI, reinvestment, taxation, investment attraction

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INTRODUCTION

As the stock of foreign direct investment (FDI) in the global economy matures, new investment is more likely to be sequential, i.e. additional to existing investments, and possibly influenced by strategic considerations, such as trying to pre-empt or imitate the industry leaders. In addition to these flows of investment, incremental foreign investment is also more likely to take place as a result of the reinvested earnings of the foreign affiliates of existing multinational enterprises (MNEs). The spectacular growth of foreign direct investment, particularly in the 1990's, has given new impetus for an investigation into the importance and implications of reinvested earnings as a component of direct investment flows.

To our knowledge, in the international business literature to date, nothing has been written regarding the empirical importance of reinvested earnings, or what factors govern the decision of whether income earned in a foreign location will be repatriated to the parent in the home country, or whether it will be reinvested in the foreign location. Consequently, this paper is a first attempt to understand the determinants of reinvestment, and to test these empirically with data on reinvestment between the five leading investors from Europe and the United States.

We will demonstrate that reinvested earnings can represent a significant contribution to overall foreign investment, and that depending on the policies on repatriation adopted by the parent firm, reinvested earnings can either add to the stability of investment in a particular host location, or detract from it. We find that the American pattern of foreign investment, which is characterized by high levels of reinvested earnings and considerable stability in the patterns of reinvestment, is in direct contrast to the pattern exhibited by major European investors, whose cumulated reinvestment over time is negligible, and exhibits a highly variable pattern.

Our conceptual model treats reinvestment as a form of marginal investment, and consequently we focus on factors that increase the attractiveness of the host country as an investment location, as well as factors that increase the attractiveness of the alternative of repatriation. We identify six major factors, namely, macroeconomic factors affecting investment opportunities in the host country, profitability of foreign investment, exchange rates, differences in systems of corporate governance, tax treatment of repatriated foreign income (intra-firm dividends), and the use of dividend policy as a means of managerial

control. We conclude by summarizing our findings and by assessing their relevance to future research.

LITERATURE REVIEW AND RESEARCH PROPOSITIONS

When MNEs earn income abroad, this income can either be reinvested in the affiliate, or it can be repatriated to finance projects in the home country or in third countries. What determines the proportion of income that is reinvested has not been investigated in the literature to date, although attempts have been made to model the pattern of repatriation of earnings (the payment of intra-firm dividends).

In this paper, we conceptualize the issue of reinvestment as a form of marginal investment in a predetermined location. Our approach is akin to that taken by Kopits (1972), who argued that MNEs have a desired level of capital accumulation (financed through reinvestment), which in turn determines the level of the intra-firm dividend. This self-financing argument has strong historical support (see e.g. Penrose (1956) and Chandler (1990)), although the use of reinvestment earnings to finance affiliate expansion may have become somewhat less important over time. Consistent with this view, we expect investment opportunities in the host country to be the most important determinant of reinvestment.

Many ways of characterizing investment opportunities exist in the economic literature. Here we consider two simple measures, one at the country level, and one at the industry level. The most obvious macro-level determinant of investment opportunities is the rate of growth in GDP, or alternatively, the difference between the rate of growth in the host country and the home country. Favourable economic conditions in the host country would encourage reinvestment, while favourable conditions in the home country would encourage repatriation.¹

At the level of the industry, the income earned by MNE affiliates in a given sector could also be considered an indicator of further investment opportunities in the host market. Although positive income is necessary for reinvestment to take place, it is not obvious whether higher levels of income would encourage higher levels of reinvestment, or higher levels of repatriation. We hypothesize that higher levels of income would signal better operating conditions in a given industry, and therefore encourage more reinvestment. However, since a higher level of income is also related to the size (and maturity) of investment in the sector, this should be controlled for in the empirical analysis. Thus our first proposition is that:

¹ Of course, data permitting, differences in the rates of growth at the sectoral level could also be employed.

P1. Better comparative investment opportunities in the host location will encourage reinvestment

The second factor we consider is that affiliate reinvestment is likely to be influenced by firm-specific differences in profitability. This proposition is in line with other models of firm-level investment behaviour, but testing it in a cross-country context is complicated by the fact that any real differences in profitability are likely to be at least partly masked by differences in accounting standards and disclosure requirements, as well as the use of transfer pricing.

Unlike investment opportunities, which at the country and industry level are external to the firm, differences in productivity (and consequently of profitability) are internal to the firm, and reflect the use of its firm-specific assets and capabilities.² In the case of an MNE affiliate, they reflect both the mobile firm-specific-assets of its parent, as well as the mobile and immobile subsidiary-specific assets of the affiliate (Rugman & Verbeke, 2001). To the extent that high affiliate profitability is real, and not the result of transfer pricing, we would expect more profitable affiliates to have higher levels of reinvestment.

Some of the earliest studies on FDI demonstrated the superior productivity of foreign investors over indigenous producers, such as the higher productivity of US firms as opposed to the indigenous British firms (Dunning, 1998[1958]), and the productivity gap between foreign and domestic firms has been reconfirmed in a large number of studies since then. Indeed, ownership-specific advantages are considered to be essential in explaining why firms would find it profitable to exploit their assets and capabilities via direct investment rather than some other modality abroad. Somewhat paradoxically, the low profitability (rather than productivity) of both Japanese as well as European investors in the US has also been noted repeatedly in the literature. Among the recent studies documenting the financial and managerial difficulties of foreign firms in the US have been Delios and Beamish (2001) and Jones and Gálvez-Muñoz (2002), while the implications of different corporate objectives to the profitability of Japanese firms have been explored by Buckley and Hughes (2001).

Few studies have directly addressed the issue of the extent to which the profitability gaps are real, or caused by differences in accounting conventions and different corporate objectives, as well as transfer pricing. The most comprehensive analysis to date was carried out by Grubert, Goodspeed and Swenson (1993), who observed that in 1987, foreign affiliates in the US had nearly four times lower taxable income than their US counterparts, whether

² At the level of the firm, Tobin's q has commonly been used to proxy for investment opportunities.

measured in relation to total assets or in relation to sales. Since transfer pricing is nearly impossible to measure directly, in their study, Grubert et al. (1993) investigated a range of other possible reasons for low affiliate profitability, including a greater reliance on debt, a lower cost of capital, fixed costs related to mergers and acquisitions, fluctuation in exchange rates (in the period of the late 1980s) and transfer pricing.

They found that the distribution of taxable income to assets of foreign firms was centred around zero within a narrow range, while the distribution of domestic firms was wider and shifted to the right. This implies that the average domestic firm was more likely to have positive taxable income, although the profitability of foreign controlled firms did show a rising trend over time. They also found that exchange rates had a significant effect on the profitability of wholesaling companies, and that the ratio of taxable income to assets was understated for many foreign companies due to recent asset re-valuations in connection with acquisitions. At the same time, levels of debt and interest income, or possible poor performance of acquired US firms, did not seem to be explanations for the low level of profitability of foreign affiliates. Cost of capital differences also did not seem to be important, and if anything, the parents of foreign companies tended to be more profitable than comparable US companies. They concluded that up to a half of the differential between rates of return on foreign and domestic companies could be explained by factors other than transfer pricing, leaving the other half unexplained, and thus possibly accounted for by transfer pricing. In a more recent study, Mataloni (2000) found that there was still a persistent gap between the ROA of foreign non-financial affiliates and indigenous US firms in 1988-97. The gap was present in 22 out of 30 sectors, but it did show some signs of narrowing over time, possibly due to a catch-up effect, when new acquisitions from the late 1980s became integrated into the acquiring (European and Japanese) firms.

The majority of the spectacular growth in inward investment flow into the United States in the late 1990's was equity investment in the form of mergers and acquisitions. Most of this investment was undertaken by European firms in the new technology-intensive sectors, such as computers and communications equipment and services, as well as in finance and insurance, particularly life-insurance (Howenstine & Troia, 2000). The investment in computer and microelectronics was undertaken at least in part to close the technology-gap with American industry, and as a consequence, the 'latecomer' argument, which has been applied to Japanese technology intensive investment in the United States (see e.g. Belderbos (2003)), might apply for this investment as well. Consequently, even if the earnings gap between foreign affiliates and indigenous US firms might have narrowed during the 1990s,

the new wave of acquisitions suggests that another period of lower performance owing to a renewed 'latecomer' status might again be expected. Our second proposition is that:

P2. Affiliate profitability is positively related to rates of reinvestment

In addition to these two fundamental drivers of reinvestment, we also consider three contextual factors that might influence reinvestment behaviour by affecting the attractiveness of the repatriation of earnings. These factors are changes in exchange rates, differences in systems of corporate governance, and differences in systems of taxation.

As regards the influence of exchange rates, the expectation is simply that a sustained depreciation of the host country currency can be expected to discourage repatriation, and therefore to increase reinvestment. It should be noted however, that on a theoretical level, such macroeconomic explanations are antithetical to the idea of foreign direct investment as exploiting the firm-specific assets and capabilities of the investing firm. The desire to manage an enterprise abroad is fundamentally separate from portfolio investment, which is a financial investment solely predicated on obtaining the highest available return. Although some theories based on macroeconomic considerations do explain some forms of FDI, the accepted view sees them as partial determinants of foreign direct investment flows, and considers exchange rates as more likely to affect the timing rather than the level of FDI (Dunning, 1993). Nonetheless, we consider this an empirical matter and propose that:

P3. Depreciation of the host currency will discourage repatriation and therefore increase reinvestment

The second contextual factor affecting the attractiveness of repatriation is due to the different expectations of corporate performance that prevail under different systems of corporate governance. Using the broad grouping of liberal market economies and coordinated market economies employed by Hall and Soskice (2001), the liberal market economies such as the US and the UK are characterized by flexible labour markets and high stock market capitalization, while the coordinated economies, such as Germany, Switzerland and, to an extent, France and the Netherlands, operate a bank-based system which is characterized by a high reliance on debt financing and the cross-ownership of banks and corporations. Continental European firms, like Japanese firms, are said to take a more long-term view as regards affiliate performance, and to tolerate lower earnings in the short to medium term than their liberal market counterparts.

We would therefore expect firms in a liberal market system, that are generally more concerned about short-term financial performance and shareholder value, to be more eager to

repatriate earnings, while subsidiary reinvestment would be a consistent choice for the firms in a coordinated market system. As an empirical matter, we should note, however, that separating the influence of different systems of corporate governance from other country-specific factors, such as differences in systems of taxation is likely to be quite difficult. We hypothesize that:

P4. Coordinated market systems of corporate governance in the home country will increase rates of reinvestment

The third contextual factor influencing reinvestment by changing the attractiveness of the option of repatriation is the influence of the tax system. The literature on MNEs and taxation distinguishes between two main types of effects, locational effects and behavioural effects. The effects we are concerned with here are behavioural effects, that affect the form in which an MNE would choose to repatriate its earnings, whether through intra-firm dividends, interest payments or royalties.³ In contrast to the approach adopted in this paper, the studies on taxation tend to assume that the MNE makes a decision on the desired level of repatriation (intra-firm dividends), and that the level of reinvestment is determined by default.

When multinationals repatriate affiliate income, or in other words, pay themselves dividends from abroad, the tax treatment of this income differs across countries. In addition to MNE affiliates being subject to income taxes in their host location, most home countries tax the repatriated earnings of foreign affiliates as well.⁴ Two basic systems of affiliate taxation exist, which seek to neutralize the effects of this double taxation. The system applied by the US and the UK (as well as Japan) is one where credit is applied for the taxes paid by incorporated subsidiaries in the host country against the tax liabilities of parent firms. Under this credit system, depending on the differences in rates of taxation between the home and host country, either more taxes will be due, or credit can be accumulated if more tax was paid in the host country than was due in the home country. Most credit system countries also allow for tax deferral, so that tax is only incurred if and when income is repatriated to the home country.⁵

The second system, also known as territorial taxation, exempts income earned abroad from domestic taxation. This system is applied in most EU countries, with the exception of Greece, Ireland, Spain and the UK, although the extent to which income is fully or partially

³ Corporate income taxes might also affect the desirability of reinvestment directly, although this is more likely to be the case with greenfield investment rather than reinvestment.

⁴ Some countries (e.g. Germany, Belgium, Japan) have also taxed retained income at a different rate than distributed income (so called split-rate income tax), but this is no longer the case today.

⁵ Branch plants are subject to US taxes whether or not dividends are paid, and thus without deferral, but these account for less than 5% of all the affiliates of US firms.

exempted varies across countries and is affected by the provisions of bilateral tax treaties (Commission of the European Communities, 2001; Hines, 1996; Mooij & Ederveen, 2003). An exemption system is also applied in Switzerland, but only the earnings of branches are exempt, while incorporated Swiss subsidiaries in the US are subject to home-country taxation, which again varies by canton (Hines, 1996).

Differences in the tax treatment between royalties, interest, dividends and reinvested earnings can induce distortions that have implications for the financial management of the multinational. Such distortions include for example the degree to which a parent would finance the subsidiary through debt or equity, since interest payments to the parent can be deducted from the pre-tax earnings of the subsidiary, while dividends are paid out after the deduction of tax. Taxes on repatriated earnings could also distort the payout ratio of intra-firm dividends by encouraging firms in the credit system (such as US firms) to defer repatriation from high tax subsidiaries so that taxes due can be applied against accumulated excess credit (see e.g. Altshuler and Grubert (2001), Desai et al. (2001) and Grubert (1998)).

Differences in systems of taxation are likely to affect both the timing and the extent of profit repatriation, although the magnitude of this effect is difficult to ascertain, since there is little understanding of what constitutes a 'normal' level of repatriation by MNEs. For example, Hines and Hubbard (1990) found some evidence of deferral from high-tax subsidiaries in a cross-sectional sample of US MNEs for 1984. They also found that a large proportion of the total dividends paid was accounted for by large payments by relatively few firms. More recently, Desai et al. (2001) concluded, that while a variety of non-tax considerations affected repatriation decisions, lower rates of tax on repatriated profits were nonetheless associated with higher rates of repatriation. Higher-taxed foreign affiliates of US MNEs had higher dividend payout rates, but if the firm was in a position of excess credit, or foreign income was exempt, these effects would disappear. By contrast, firms in low tax countries might prefer to engage in reinvestment within the MNE network (perhaps making use of tax heavens) rather than repatriate income.⁶

Indeed, the possibility of excess credit, which arises when firms pay taxes abroad that are higher than they would have been required to pay in their home country, complicates matters considerably. While the sensitivity of firms from credit and exemption countries to high rates of taxation should be clearly different, this is often not the case empirically,

⁶ Deferral of repatriation may also be increasingly undertaken via indirect affiliate ownership. Desai et al. (2002) show that indirect ownership of US affiliates has increased from around 15% of all affiliates in 1982 to over 35% in 1997.

because firms in credit countries differ in the degree to which they have excess credit. For example, a study by Slemrod (1990) compared the behaviour of foreign affiliates from credit and exemption countries in the US, and found no difference in their behaviour. The type of FDI was found to matter, however, as higher taxes had a negative effect on (equity) FDI and transfer of funds (intra-firm loans), but not on reinvested earnings.

The primary problem in assessing the empirical importance of the taxation related effects on reinvestment is likely to be due to MNEs' use of transfer pricing, and the fact that MNEs optimise their tax liabilities on a global basis. The difficulties in measuring the extent of the use, let alone manipulation, of transfer prices by MNEs has been extensively documented by Eden (1998; 2001). Although the solutions to this problem are beyond the scope of this paper, one step forward would be to adopt the approach used by Bellak et al. (2006), who constructed bilateral marginal and average tax rates in their study on the impact of taxation on FDI location. Such bilateral rates account for all of the relevant aspects of the tax codes of the home and host countries, so that a more realistic measure of the tax burden for discrete as well as marginal investment is obtained. The problems of measurement set aside, we expect that:

P5. Higher taxes on affiliate income will decrease rates of reinvestment

Like the tax studies, studies that treat the issue of intra-firm dividends in a manner analogous to the dividends paid to shareholders also consider the relevant decision to be one of determining the level of intra-firm dividends rather than the level of reinvestment. The key to this approach, however, is to attribute deviations from optimal tax behaviour to agency considerations.

High dividend payments to shareholders can alternatively be seen as a signal of the good financial health of the firm, or they can be seen as a tool to discipline management. Similarly, high intra-firm dividends might either signal the good performance of the affiliate, or they might be used by corporate management to try to control the affiliate. The expectation is, that an affiliate in a culturally or institutionally distant and/or politically risky country would present a greater agency risk to the parents, and therefore the parent would desire a higher degree of control of the affiliate's investment behaviour. Under such conditions, the parent might require higher intra-firm dividend payments (repatriation rather than reinvestment of affiliate income) than it requires from its other affiliates in less risky or more familiar markets.

To test this proposition, Lehmann and Mody (2003) analysed the dividend repatriation patterns of US, UK and German multinational subsidiaries based on a panel consisting of annual aggregate data on income and dividends for 1982-2001. They found that UK investors had the highest and most stable dividend payout ratios, followed by the US and Germany. Host country political risk, statutory tax rate, economic growth and incidence of currency crisis had inconsistent effects of dividend payout rates. However, this result might be due to examining three different source countries in a very large number of host countries, both developed and developing, with very different sectoral composition across countries.

Using firm-level data from the Bureau of Economic Analysis (BEA) on 23,799 majority-owned affiliates in 1982-1997, linked to Compustat data of parent dividends to shareholders, Desai et al. (2001) applied a Lintner (1964) dividend payout model as a baseline for intra-firm dividends. They found that, just as in the case of dividends paid to shareholders, firms have a desired level of dividends they do not want to deviate from year-to-year. In a later study, Desai, Foley and Hines (2003) found that dividend payments from US affiliates to their parents are 'common, large and persistent', and a third of affiliates report positive dividends, with a median ratio of dividends to net income of 78%.⁷ Furthermore, 72% of affiliates that paid dividends in 1996 also paid dividends in 1997, although this is still lower than the persistence of dividends that firms pay to their shareholders. The inclusion of affiliate capital expenditure had little effect on the Lintner model, implying that an absence of intra-firm dividends could not be equated simply with capital expenditure (which could be financed by other means as well). Furthermore, a comparison of publicly and privately held parents suggested that there was little influence of outside shareholders on the dividend policy. While incorporated affiliates adjusted long-run payout ratios to reflect tax costs, their payout ratios were remarkably similar to foreign branches, which do not face tax consequences from dividend remittance.

An interesting, although less robust, finding from Desai, Foley and Hines (2003) is that US multinationals continued to reinvest in affiliates even when it was not optimal in terms of the overall tax burden. This occurred specifically when parents invested new equity in a subsidiary, while simultaneously receiving a dividend. Partially owned affiliates, affiliates that were located far away, and that had high political risk (weak legal protection) had the most rigid dividend policies, and they were the likeliest to engage in tax penalized behaviour,

⁷ In 1984, only 16% of the foreign affiliates of US firms paid dividends (Hines & Hubbard, 1990).

suggesting that managerial decision making, and possibly control issues, may underlie these patterns.

While this approach is intriguing, it does not offer any direct evidence that agency considerations have played a role in intra-firm dividend decisions. The proxies used to characterise the riskiness of host countries, such as the cultural/institutional distance associated with affiliate operations are imperfect, and they are particularly problematic in the context of investment between OECD countries due to limited variability. Indeed, the fundamental question of whether MNEs make decisions on repatriation or reinvestment has not yet been addressed in the literature, and would require survey-based data to determine conclusively. Nevertheless, in light of the existing studies we propose that:

P6. Higher agency costs will result in lower rates of reinvestment

DATA AND METHODS

The data on reinvestment used in this paper comes from the United States Department of Commerce, Bureau of Economic Analysis (BEA). This is balance of payments data, which yields the following information: the investment position at historical cost at year end, the after-tax income earned by the affiliates, and the annual flow of investment broken down to its three component parts, namely equity, inter-company debt and reinvested earnings. Reinvested earnings is the only major component of the foreign investment position that originates in the host country, rather than being transferred from the home country.⁸

The balance of payments data collected by the BEA is among the most detailed and consistent of its kind. The data on reinvestment is drawn from mandatory enterprise surveys that are conducted annually. These are supplemented by comprehensive benchmark surveys every five years. The data is collected in a consistent manner for both outward and inward FDI, enabling comparisons to be made between the two series. Although the data is collected at the firm level, we are limited to using the industry-level data that is publicly available, since the firm-level data is only accessible to US citizens working directly under the auspices of the BEA. In line with all balance of payments data, these data do not represent the total assets or extent of activity in a foreign affiliate, but rather they represent the proportion of financing for the foreign affiliate that originates in the home country of the parent. In most cases the affiliate receives financing from other sources as well. The process of data collection and the

⁸ Valuation adjustments, which occur when foreign assets recorded at historical value are sold and their value is adjusted to reflect the market price, is another component of the foreign investment stock that does not represent a direct transfer of resources from the home country.

definitions of the components of foreign direct investment are discussed in detail by Quijano (1990) and Mataloni (1995).

Ideally, one would like to contrast these data with data from European or Japanese sources on investment abroad. However, triangulation with other data sources is difficult in this case, since the balance of payments data that is available from other source countries varies in its treatment of reinvested earnings. Although the guidelines issued by the IMF and the OECD have been adopted in most countries, and the balance of payments statistics are now more consistent than before in their definition of FDI, the treatment of reinvestment is still far from uniform. The primary reason for this is that since reinvested earnings do not give rise to cross-border transactions that would flow through the banking system, enterprise surveys are required to obtain the data, whereas for the other components of FDI, data can be collected from central bank sources. Consequently, a number of countries, such as Denmark, France, Japan, Spain, Singapore and Thailand have either not collected data on reinvested earnings, have collected the data but do not report it, or have only collected data pertaining to either inward or outward transactions.

In light of these difficulties, and since US FDI to Japan has been extremely low, we focus on transatlantic investment, limiting our empirical analysis to investment between the US and the five leading European investors (in terms of stocks) in the US. These are the United Kingdom, France, Germany, the Netherlands and Switzerland. The same five countries also account for the largest share of US investment in Europe. The BEA data is currently available from 1982 to 2005. However, there is a break in the series for US inward FDI in 1998, when the industrial classification was changed from SIC to NAICS. For US outward FDI, the break occurs in 1999. For the sake of consistency, we have limited our data to the period of 1982-1998 for US outward FDI and 1982-1999 for inward FDI to the US.

Due to data limitations, we are able to consider only three of the six propositions in the empirical analysis. Appendix I contains the variable definitions. To proxy for the investment opportunities in the host location, we use the income earned by foreign investors in each industrial sector, and the difference in the GDP growth rate between the home and host countries. Since we hypothesize that higher levels of income lead to higher levels of reinvestment, we need to control for the absolute size of the sector in our analysis. This is done by including FDI stock as the control variable for the size of the industry sector.

In order to consider the role played by profitability on reinvestment behaviour, we constructed a rough sectoral measure of profitability from the ratio of the income earned in a given sector to the size of the FDI stock in that industry. However, due to the fact that FDI

stock is measured in book values, and the bulk of European investment to the United States is much more recent than the other way around, this measure of profitability is very noisy.⁹ Furthermore, the relevant measure of profitability is really profitability at the firm level, but since our data is at the industry level, we are unable to incorporate this into the analysis. The sectoral measure of profitability did not show up as significant in any of the models, and due to the problems in its construction, we decided to drop it from the analysis.

We did include a measure to assess the impact of exchange rates and systems of taxation, but not of the impact of systems of corporate governance, since it was impossible to model country effects in our sample. We were also unable to assess whether agency costs, and thus issues of control, influenced the rate of repatriation of earnings (and therefore rates of reinvestment), as this would require survey-based evidence.

As regards measures of taxation, there are four types of tax rates commonly used in the literature: statutory tax rates, average tax rates (ATR) based on micro or macro data on actual taxes paid, and effective marginal tax rates (EMTR) or effective average tax rates (EATR) computed from the tax code.¹⁰ We employ each of these rates in the analysis.¹¹ Like the growth variables, the tax variables can be entered either as simple levels, or as differences between the home and host country, and in principle, both absolute and relative levels can have a distinct impact on the results. However, since we model investment as either originating from a single home country, or directed to a single host country, it makes no difference to the empirical results which form we use.¹² For the sake of simplicity, we use the tax rates in absolute levels.

While EMTR measures the difference between pre-and post tax return on the marginal investment project, EATR applies to an investment project on which the investor may earn economic rent. Average tax rates based on data are also known as backward looking or *ex post* rates, while statutory rates and effective calculated tax rates are forward looking or *ex ante* rates of taxation. Average (*ex post*) tax rates based on micro or macro data have the benefit of reflecting all of the elements of the tax code. At the same time, they are likely to suffer from endogeneity problems, since the average tax rates based on data also reflect underlying differences in, for example, profitability or rates of growth between locations. On

⁹ See e.g. Bellak and Cantwell (1996) on the issues related to the valuation of the FDI stock, and estimated differences between book value, replacement value and market value.

¹⁰ Although rates based on actual tax revenues are also sometimes called effective tax rates to distinguish them from statutory rates.

¹¹ We do not consider the effects of the split-rate income tax applied in Germany until 2001.

¹² This is also true of the relative GDP growth rate.

the other hand, *ex ante* tax rates calculated from the tax code are based on assumptions about interest rates, forms of financing and so on, which influence the results.

Recently, Devereux et al. (2002) have argued, that when a multinational enterprise decides whether to serve a foreign market by export or by foreign direct investment, or when it decides between two locations, such choices are discrete. Furthermore, such decisions are made by firms with market power, that expect to earn economic rent on the investment. Consequently, for the location decisions of an MNE, they argue that EATR is the relevant rate, while affiliate reinvestment may be more sensitive to EMTR.

Since our data is industry-level and not firm-level, the cases in the panel specifications consist of unique country-industry pairs that are observed over time. The variables relating to the economic conditions in the host country, namely exchange-rate, growth rate and rates of taxation are measured at the country level. The correlation tables given in Tables 1a and 1b indicate no particular problems as regards multicollinearity, except possibly for the relatively high correlation between FDI position and income. (There is also a high correlation between the statutory tax rate and the EMTR and EATR, which are based on the statutory rate, but these are never employed in the same model.)

The empirical analysis proceeds in two stages. In the first stage, we show descriptive statistics that reveal the general patterns in the data. In the second stage we explore both the cross-sectional as well as the time series dimensions of the data in more detail. Our empirical analysis in the second stage centres on finding the preferred specification among three alternatives, namely ordinary least squares (OLS), a fixed effects model and a random effects model. In contrast to pooled OLS, the fixed effects and the random effects models utilize both the cross-sectional as well as the time series dimensions in the data, and they are able to account for unobserved heterogeneity between cases (e.g. firms or industries). The main difference between these approaches is that while in OLS, the constant term absorbs the firm or industry-specific effects, in the panel data analysis these effects are either parameters to be estimated, as in the fixed effects specification, or they are assumed to be distributed randomly, as in the random effects specification (Baltagi, 2001; Greene, 2000).

DESCRIPTIVE STATISTICS

Tables 1a and 1b present some descriptive statistics on US FDI in Europe, and European FDI in the US respectively. Looking at these tables we can observe that although the average FDI stock of US FDI in Europe and European FDI stock in the US are similar in size, average reinvestment is nearly ten times higher for US investment in Europe than the other way around. Furthermore, the variability of reinvestment is considerably lower for US investment

in Europe than the other way around. The average income earned by US investors on their investment in Europe is also about twice as high as the income earned by European firms on their investment in the United States.

A high degree of intra-industry investment characterizes the transatlantic relationship within the manufacturing sectors, although following growth through acquisitions since the mid-1990s, the largest individual sector in terms of American investment in Europe is now financial services, including insurance but not including depository institutions (banks). Chemicals (pharmaceuticals) are the largest manufacturing sector, and the petroleum sector is notable, although not particularly in the five largest host countries. Germany and France host the largest share of US manufacturing investment, while financial services are relatively more important in the Netherlands, Switzerland and the UK. For European investment in the US, extensive investment in Chemicals (pharmaceuticals), and a considerably lower share of financial services are notable. Other important sectors for outward investment are petroleum investment from the Netherlands, motor vehicles from Germany, the telecommunications sector from the UK and the insurance sector from Switzerland.

For American investment abroad, reinvested earnings represent a notable component of annual flows of FDI. Indeed, reinvestment has exceeded equity flows in most of the years covered here. For European investment in the United States, reinvested earnings have been a substantial component of the FDI flows in some years, but this has been followed by sizable cumulative withdrawals, making European reinvested earnings volatile, but negligible in absolute terms in this period.¹³ As a proportion of income, European firms also reinvested a lower proportion than did American firms.

PANEL DATA ANALYSIS

The results of our second stage analysis using panel data are contained in Tables 2a and 2b. We begin with Table 2a, which reports the results for analyses employing the panel data on US investment in Europe. Model 1 is our basic restricted (pooled) OLS model. Model 2 introduces a control for size, and a Wald test confirms the significance of the added variable. Model 3 adds the year dummies, which are also found to be jointly significant by employing a Wald test, although their impact on R^2 is very modest. Although our measure of size is quite highly correlated with income, the highest variance inflation factor (VIF) found after the estimation of Model 1 was about 4, and therefore we do not expect multicollinearity to pose a problem in the analysis.

¹³ Negative reinvestment represents a reversal of prior reinvestment, which is distinct from divestment, which shows up as a one-time capital flow back to the investor country. Negative reinvested earnings simply indicates that reversals of reinvestment from prior years exceeded new reinvestment in a given year.

In the OLS specification, the individual effect (α_i) is assumed to be the same across all cross-sectional units. By contrast, in the fixed effects specification the α_i are parameters to be estimated, where i is the index of cross-sectional units observed over time (t) as indicated below:

$$y_{it} = \alpha_i + \beta x_{it} + \varepsilon_{it} \quad \varepsilon_{it} \sim N(0, \sigma^2)$$

This approach yields the within-estimator, also known as the LSDV (least squared dummy variable) estimator.

To arrive at our preferred specification, the first test we conduct is between Models 2 and 4, which are the OLS specification and the fixed effects model respectively. (These models include the control for size, but exclude the year dummies.) The test statistic is an F-statistic based on the number of restrictions and the number of observations minus parameters in the equation (Greene, 2000:562). The null hypothesis is that the constant terms are equal, and the efficient estimator is pooled OLS.¹⁴ Correspondingly, higher values of the test statistic would favour the fixed effects specification. We find that the firm specific effects are not equal, and the fixed effects model is preferred to the restricted (OLS) specification.¹⁵

In the random effects model, the α_i are random variables as indicated below, and the estimation is done by using generalized least-squares (GLS).

$$y_{it} = c + \beta x_{it} + v_{it} \quad v_{it} = \alpha_i + \varepsilon_{it} \quad \alpha_i \sim (0, \sigma_\alpha^2)$$

A key assumption of the random effects specification is that the errors are uncorrelated with the regressors (α_i are uncorrelated with x_{it}). The benefit of random effects estimation is that it requires fewer parameters to be estimated, but the downside is that the assumption of independence is not often met in reality. A Hausman test can be employed to assess the probability that the errors are uncorrelated (Greene, 2000:576). A higher value of the test statistic would lead to a rejection of the null hypothesis and favour the fixed effects model over random effects, since the random effects model would be inconsistent in that case.

Our test statistic comparing Models 4 and 5 suggests that the errors are likely to be correlated with the regressors, and therefore the fixed effects specification is the preferred model for our data. Model 6 presents the fixed effects specification with the year dummies added. A Wald test confirms the joint significance of the added variables, and therefore the

¹⁴ An alternative way of testing the fixed effects model against OLS is a likelihood ratio test using residual sums of squares as described by Liu et al. (2000).

¹⁵ The R^2 of the fixed effects model is the within- R^2 , which is comparable to the R^2 of the pooled OLS model. However, the R^2 of the random effects model does not have all the properties of an ordinary R^2 (Stata Corp, 2005:289).

year dummies should be included in the preferred specification, although again their influence on the explanatory power of the model is modest.

As expected, we find that income is a strong positive determinant on the level of reinvestment. The control for size is also significant, but negative, indicating that sectors with less accumulated investment have higher levels of reinvestment. This indicates that reinvestment is not simply driven by the size of the accumulated investment, but also by the specific investment opportunities prevailing in different sectors. The extent to which higher income is associated with more mature investment was not possible to assess with our data, but the negative sign could also signify relatively new (but sizeable) flows of investment. The difference in rates of GDP growth is also significant and has the expected negative sign. A positive gap between the US rate of growth and the rate of growth in the host country has a negative impact on reinvestment, as strong economic growth in the home country would favour repatriation. The exchange rate variable is expected to have a positive sign, since a depreciation of the local currency (an increase in the exchange rate) would encourage reinvestment rather than repatriation. The variable is not significant, which would be consistent with the explanation that exchange rates affect the timing of direct investment, but not the level of activity.

The tax variable is expected to be negative, as higher rates of taxation would discourage reinvestment and favour repatriation. The variable is not significant, and the same results are obtained using any of the alternative tax rates (statutory rate, EMTR and EATR). We show the results for the backward-looking rate, since this is the only measure that is significant in at least some of the model specifications.¹⁶ Nonetheless, these results do not necessarily mean that tax rates have no effect on marginal investment activity, but rather that simple home-host country differences, whether backward or forward looking, are not sufficient to capture the effects of taxation on (re)investment behaviour. MNEs engaging in marginal FDI do not simply base their decisions on the prevailing tax rates, but on the provisions of the tax code particularly regarding credit for taxes paid.¹⁷ Better measures of the tax burden, such as properly constructed bilateral tax rates, should yield better estimates, although country-specific measures are still unable to account for the proportion of investing firms that are in a position of excess credit in any given year.

¹⁶ It should also be noted, that the backward looking tax rate we use is a much broader measure of the tax burden than the other three measures.

¹⁷ Of course, MNEs may also base their decisions on the tax rates prevailing in third countries, but this is impossible to account for in models of this sort.

Table 2b presents the results of an identical process employing the data on European investment into the US. The model selection results in the same preferred specification as in Table 2a, namely Model 6, which is the fixed effects model with a control for size and year dummies. As before, income is a strong positive determinant of the level of reinvestment, and the control for size is also significant and negative. Since the GDP growth variable is defined as the difference between the growth rate in the US and the investing countries, the expectation here would be that it obtains a positive sign, but we obtain the opposite result. Similarly, since the exchange rate is expressed as the value of the European currencies in dollar terms, the expected sign in this case would be negative. As the host currency appreciates, repatriation should become a preferred alternative to reinvestment, and this is the result we obtain. The tax variable is now expected to have a positive sign, since higher rates of taxation at home (relative to the host) would encourage reinvestment. The backward looking tax variable is not significant, and the same results are obtained using any of the alternative tax rates.

DISCUSSION AND SUGGESTIONS FOR FURTHER RESEARCH

This paper has demonstrated that reinvested earnings are an important component of the flows of FDI, and that differences exist in the patterns of reinvestment in the transatlantic context. While American firms demonstrate a preference for relatively high levels of reinvested earnings that are stable over time, European firms show a pattern where reinvested earnings are an important component in some years, only to be reversed in subsequent years. There are notable differences between the major European investor nations, with UK firms being closest to the Americans in terms of rates of reinvestment, but in general the rates of reinvestment are uniformly lower for European firms, and the pattern of instability is shared by all five major European investors.

The results of our panel analysis indicate, that the income earned is by far the most significant contributor to reinvested earnings. Although this result may seem obvious, it is obvious only in the sense that positive earnings are necessary for reinvestment to take place. As long as a firm has positive earnings, it has the choice to reinvest or to repatriate a lower or a higher proportion of those earnings. Year by year, an MNE must decide on the level of reinvestment, as well as the extent to which it wants that level to remain stable over time.

Indeed, existing work on US MNEs at the firm level has confirmed that their intra-firm dividend behaviour seems to mirror the dividend behaviour as described in the Lintner model that explains dividends paid to shareholders. The model simply states, that firms set a

target level for their dividend, which they do not like to deviate from over time. The applicability of the Lintner model to intra-firm dividends points to a logical extension of the present analysis, which is to analyze our data by means of a dynamic panel model, where lagged reinvestment is included among the regressors. However, rather than model intra-firm dividend behaviour, in future work we will seek to model reinvestment as a dynamic adjustment process whereby TNC affiliates reach their desired level of capital.

Another important topic for further empirical study, which is not able to be addressed by means of secondary data, concerns the question of which decision is actually made by MNEs; the decision concerning the repatriation of earnings, or the decision concerning reinvestment. If the decision is made concerning reinvestment, which is the approach taken in this paper, then other factors relevant to the profitability of marginal investment are likely to play a role. If the decision that is made concerns intra-firm dividends and the repatriation of earnings, then a different set of factors comes into play, including factors that involve the mitigation of agency problems within the firm.

We believe this work has significant implications in two areas central to international business. First, if the benefits from FDI are tied to the subsidiary's degree of integration to the local economy, the pattern of reinvested earnings can have a significant impact on the effects of FDI on host countries, and it is therefore relevant to the discussion on policies aimed at investment attraction and retention. Second, the use of dividend policy within the multinational firm to mitigate agency problems in the headquarters-subsidiary relationship offers a new way of integrating issues of financial control into the discussion of the strategic management of an integrated multinational.

The issue of the extent to which multinational affiliates integrate into local clusters has been the subject of extensive study, particularly by regional scientists (Cooke, 2001; Peck, 1996). Since reinvested earnings represent gradual investment in the same location, firms exhibiting high (and stable) rates of reinvestment might be more likely to be better integrated into the local economy. As the stock of FDI matures globally, rates of reinvestment will contribute a growing share of the flows of FDI, and consequently, they should be relevant to policies aimed at investment attraction and retention.¹⁸ Investing public resources into retaining firms that have a record of reinvestment may have a better risk-return profile in the long run than trying to attract new investment (Lundan, 2003). While reinvested earnings is not the only means by which a subsidiary can grow and become integrated into its host

¹⁸ See e.g. Mudambi (1999b) and Young et al. (1994) on investment attraction and retention.

location, internally generated funds represent a low risk means of financing future growth, and affiliates with longer duration have been found to be more likely to engage in sequential investment in the same location (Mudambi, 1998).

As regards issues of control, over the past decade the international business literature has moved from a focus on the headquarters-subsidary relationship to subsidiary roles and subsidiary autonomy, and there has been an enormous growth in studies that centre on the process of knowledge acquisition within the firm. Subsidiaries within integrated MNEs have distinct roles, and while some might obtain global product mandates that utilize the subsidiary's unique capabilities and generate independence from the parent firm, other subsidiaries remain much more directly dependent on the parent firm. The opportunities to gain mandates are limited, and often involve a high degree of activity by the subsidiary, but when successful, subsidiaries' entrepreneurial initiative can become the driver for corporate competitiveness (Birkinshaw, 1996; Birkinshaw, Hood, & Jonsson, 1998).

While subsidiary initiative and independence contribute to the competitiveness of the multinational, they also create control problems for the parent. The use of expatriates, training programs and other forms of socialization can be used as a form of control in integrated multinationals (Harzing, 2001). However, Rugman & Verbeke (2001) have argued that not only defined subsidiary roles, but the more general conditions under which subsidiary specific advantages are developed, contribute to the differentiation between subsidiaries of the MNE. Importantly, they also argue that the independence of the subsidiaries cannot adequately be managed by socialization and corporate culture, but that some transparent, recognizable metrics are required within the firm, and that the control problems are likely to be particularly acute following takeovers and mergers.

We believe that integrating financial control as a means of solving agency problems is a promising way to enrich the research on subsidiary control. In the international business literature the role of financial control has been largely absent with a few notable exceptions, such as research on managing the effects of currency fluctuations within the accounting system of a multinational firm (Jacque & Vaaler, 2001; Oxelheim & Wihlborg, 1997). Other studies have considered the role of the MNE headquarters as managing an efficient capital market within the firm, in which case increased subsidiary autonomy might detract from the efficiency of the internal market (see e.g. Mudambi (1999a) on foreign engineering subsidiaries in the UK). Survey-based research is needed to determine what is the role of the headquarters in setting the internal dividend payout ratio, and whether dividend payout ratios

are indeed a means to exercise control in MNE affiliates, or whether they simply represent the residual from decisions on reinvestment.

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Appendix I: Variable Definitions

<i>Variable</i>	<i>Source</i>	<i>Explanation</i>
reinvearn	US Dept. of Commerce, Bureau of Economic Analysis (BEA)	Reinvested earnings in millions of US\$
income	BEA	Income earned in millions of US\$
fdipos	BEA	FDI (stock) position in millions of US\$
return	Author's calculations	Ratio of income to FDI position
xrate	World Bank, World Development Indicators (WDI)	Official exchange rate (local currency per US\$, period average)
gdpgrow	WDI	GDP growth (annual %)
diffgdpgr	Author's calculations	Difference between US and European growth rates
taxes_paid	WDI	Taxes on income, profits and capital gains (% of current revenue)
statutax	Devereux, M.P., R. Griffith and A. Klemm (2002)	Statutory corporate tax rate
emtr_base	Devereux, M.P., R. Griffith and A. Klemm (2002)	Estimated Marginal Tax Rate See Devereux and Griffith (2002) for formula. Assumptions: investment in plant and machinery, financed by equity or retained earnings, taxation at shareholder level not included, real discount rate: 10%, inflation rate: 3.5%, depreciation rate: 12.25%.
eatr_base	Devereux, M.P., R. Griffith and A. Klemm (2002)	Estimated Average Tax Rate See Devereux and Griffith (2002) for formula. Assumptions: investment in plant and machinery, financed by equity or retained earnings, taxation at shareholder level not included, rate of economic rent: 10% (i.e. financial return: 20%), real discount rate: 10%, inflation rate: 3.5%, depreciation rate: 12.25%.

Table 1a. US FDI in Europe 1982-1998

	Obs	Mean	Std. Dev.	Min	Max	reinve~n	income	fdipos	xrate	gdpgrow	diffgd~r	taxes_~d	statutax	emtr_b~e	eatr_b~e	return
reinvearn	1037	115	443	-2317	5660	1.00										
income	1038	317	658	-763	6708	0.80	1.00									
fdipos	1023	2910	5811	-67	72431	0.57	0.87	1.00								
xrate	1105	1.04	0.40	0.56	2.46	-0.02	-0.16	-0.22	1.00							
gdpgrow	1105	2.20	1.62	-1.44	5.72	0.06	0.08	0.04	-0.27	1.00						
diffgdpgr	1105	0.97	2.10	-5.59	5.63	-0.01	-0.03	-0.01	0.35	-0.44	1.00					
taxes_paid	1001	23.31	9.12	11.79	40.70	0.05	0.19	0.24	-0.59	0.29	-0.26	1.00				
statutax	1105	42.13	10.18	31.00	62.73	-0.12	-0.18	-0.20	0.16	0.00	0.02	-0.44	1.00			
emtr_base	1105	25.98	8.91	0.00	47.07	-0.07	-0.10	-0.11	0.21	-0.02	0.05	-0.45	0.71	1.00		
eatr_base	1105	35.64	9.32	26.61	56.37	-0.11	-0.16	-0.18	0.17	0.00	0.02	-0.45	0.98	0.83	1.00	
return	981	0.11	0.36	-3.83	10.00	0.07	0.06	-0.01	0.06	0.04	0.00	-0.03	-0.04	-0.03	-0.04	1.00

Table 1b. European FDI in the US 1982-1999

	Obs	Mean	Std. Dev.	Min	Max	reinve~n	income	fdipos	xrate	gdpgrow	diffgd~r	taxes_~d	statutax	emtr_b~e	eatr_b~e	return
reinvearn	970	12	278	-2342	3055	1.00										
income	989	163	396	-1060	4578	0.70	1.00									
fdipos	991	3522	4233	-3226	29400	0.30	0.76	1.00								
xrate	1080	1.04	0.40	0.56	2.46	-0.08	-0.22	-0.35	1.00							
gdpgrow	1080	2.23	1.59	-1.44	5.72	0.09	0.09	0.09	-0.28	1.00						
diffgdpgr	1080	1.00	2.05	-5.59	5.63	0.07	0.04	-0.01	0.34	-0.46	1.00					
taxes_paid	948	23.39	9.26	11.79	40.70	0.08	0.30	0.37	-0.61	0.28	-0.23	1.00				
statutax	1080	41.90	10.09	30.00	62.73	-0.01	-0.22	-0.25	0.13	0.05	-0.03	-0.43	1.00			
emtr_base	1080	25.87	8.73	0.00	47.07	0.00	-0.11	-0.10	0.16	0.03	-0.01	-0.42	0.74	1.00		
eatr_base	1080	35.44	9.22	25.70	56.37	-0.01	-0.19	-0.22	0.14	0.05	-0.04	-0.44	0.98	0.85	1.00	
return	951	0.03	0.55	-6.17	15.15	0.03	0.04	0.02	0.05	-0.07	0.02	-0.03	-0.05	-0.04	-0.05	1.00

Table 2a. US FDI in Europe, industry-level panel data 1982-1998
Dependent variable: Annual reinvestment

Variables	1. OLS	2. OLS	3. OLS	4. FE	5. RE	6. FE
income	.5370459**	.7919701**	.792676**	.8290871**	.8126485**	.8275371**
diffgdpgr	-7.210621	-1.00942	-20.71399**	-.1351222	-.4255165	-15.91385*
xrate	94.32597**	55.70898	62.47549	87.57326*	63.46172*	17.48481
taxes_paid	-3.646563**	-2.36391*	-2.686377*	-.3574861	-2.560805	4.151913
fdipos	-	-.0341636**	-.034784**	-.0275655**	-.0315222**	-.0272425**
year dummies (16)	No	No	Yes	No	No	Yes
R ²	.6539	.7038	.7132	.7759	.7028	.7849
NT	953	909	909	909	909	909
Test (df)	-	F(1,903) ¹	F(16, 887) ²	F (64, 839) ³	HS $\chi^2(5)$ ⁴	F(16,823) ²
Statistic	-	154.69**	1.81*	4.22**	31.71**	2.13**

¹ Wald test, H0: Coefficient is equal to zero

² Wald test, H0: Coefficients are jointly equal to zero

³ H0: Constant terms are all equal across groups

⁴ Hausman test, H0: α_i are independent of x_{it}

* and ** denote significance at the 5% and 1% levels respectively

Table 2b. European FDI in the US, industry-level panel data 1982-1999
Dependent variable: Annual reinvestment

Variables	1. OLS	2. OLS	3. OLS	4. FE	5. RE	6. FE
income	.5081974**	.7830926**	.7708189**	.8289642**	.8125262**	.8247863**
diffgdpgr	.6325224	2.910285	-7.772721	2.287219	2.77099	-9.282259*
xrate	6.429255	-64.78977**	-103.5454**	-34.62957	-51.20681*	-120.4055*
taxes_paid	-3.826006**	-2.663931**	-4.099361**	-4.329587	-2.069068	-1.489933
fdipos		-.0364027**	-.0342503**	-.0421262**	-.0398486**	-.0401771**
year dummies (17)	No	No	Yes	No	No	Yes
R ²	.5078	.6303	.6449	.7059	.6292	.7165
NT	847	817	817	817	817	817
Test (df)	-	F(1,811) ¹	F(17, 794) ²	F(59, 752) ³	HS $\chi^2(5)$ ⁴	F(17, 735) ²
Statistic	-	270.05**	1.92*	3.28**	63.83**	1.61

¹ Wald test, H0: Coefficient is equal to zero

² Wald test, H0: Coefficients are jointly equal to zero

³ H0: Constant terms are all equal across groups

⁴ Hausman test, H0: α_i are independent of x_{it}

* and ** denote significance at the 5% and 1% levels respectively