

Uneven domestic knowledge bases and the success of foreign firms in the USA

Abstract

This article seeks to explore the impact of knowledge unevenness on the performance of foreign firms in a highly developed host country, the USA. The drivers of competitiveness for firms from countries at different levels of development, i.e. with uneven knowledge bases, are compared to better understand the interplay between firms' indigenous capabilities and their ability to tap into the knowledge concentrated in the USA. The findings suggest that firms from less developed countries will tend to be relatively less successful in the USA than firms from more advanced countries, and specifically that the drivers of their competitiveness will differ. Three main points are evident. First, the data point to the marginal status of developing country firms: There are relatively fewer and smaller developing country firms in the USA than firms from the developed world. Second, the USA is a challenging environment for developing country firms, and firms have scope and indeed need for capability upgrading. Finally, capital (rather than human) assets represent the most important capability base for developing country firms in the USA. In sum, firms cannot "escape" the constraints of a relatively knowledge-poor environment by investing in a knowledge-rich country; the domestic knowledge base is important in explaining the investment behavior and success of firms from countries at different levels of development in a highly advanced country.

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Foreign direct investment (FDI) between more and less developed countries has long been recognized as one of the more effective ways to mitigate the unevenness of global knowledge. Since Dunning's pioneering work (1958), there has been recognition that FDI can facilitate knowledge spillovers to less developed contexts. However, there has increasingly been an awareness that linkages with the local economy are required in order for knowledge to be disseminated beyond the enclave of the multinational corporation (MNC) to the economy at large – and quite a few examples of how those linkages materialized only imperfectly (Akbar & McBride, 2004, Feinberg & Majumdar, 2001, Kelegama & Foley, 1999).

The empirical work thus far has concentrated on investment from more to less developed countries. But investment from less to more developed countries also serves to connect the more extensive knowledge base of the developed world with the smaller capability base of the developing world. In addition, firms from developing countries can be assumed to be embedded in their home economies, so that it should be relatively easy for them to share their expanded knowledge.

The challenge for these firms is to benefit adequately from their presence in the knowledge-rich developed world, and in this paper, I investigate the drivers of their success in a highly advanced country, the USA. I argue that developing country firms' capabilities are often more limited, or at least less appropriate in a more developed context, and that the level and nature of development of firms' home country therefore have an effect on their success in a developed market. Moreover, because of the evolutionary nature of capability development, firms from developing countries struggle to take advantage of the full range of potential resources in

the more developed location. Thus even when developing country firms locate to the developed world, the effects of the globally uneven distribution of knowledge remain.

Firm capabilities and international expansion

One of the central theoretical lenses through which business activity is studied is the resource-based view of the firm, so called in recognition of the insight by Penrose (1959) that the managerial resources of the firm represent the central constraint to the growth of the firm. Penrose was not explicitly concerned with internationalization, seeing it instead as one possible growth avenue for the firm. In fact, numerous strategy theorists have developed and extended the resource-based view of the firm (Barney, 1991, Grant, 1996, Teece, Pisano, & Shuen, 1997) without exploring its possible implications for international business.

However, Penrose's insights easily lend themselves to application in an international context. The evolutionary nature of firm resources – the fact that they expand as a result of experience – has been particularly important. For example, it has been a building block in the incrementalist theory of internationalization of Johanson and Vahlne (1977), who argue that firms' knowledge of a market will influence their commitment to it, which will in turn further extend their knowledge of the market. Certain dimensions of Johanson and Vahlne's model are no longer valid – e.g. within a world of globally distributed production, the hierarchy from exports to foreign production is no longer as clear – but its evolutionary emphasis can still be found in a range of other theories on multinational expansion, for example Cantwell (1989) and Kogut and Zander (1992).

Within evolutionary theories of the multinational, future growth is argued to be shaped by the capabilities that the firm already possesses. The key text on the evolutionary theory of the firm is by Nelson and Winter (1982) who describe the importance of "routines" – coordinated, repetitive sets of organizational activities – as determinants of organizational capabilities and

behavior. The continuing debate over whether routines should be conceptualized as effortful or mindless actions (Becker, 2004) is consistent with evidence on the dual consequence of evolutionary development: Firms do become highly competent in certain areas, but their competence also remains largely limited to those areas (Cantwell & Fai, 1999, Stuart & Podolny, 1996, Vertova, 1999). Because learning is path dependent, the nature of multinationals' expansion is shaped by their capability bases.

But while the focus on evolutionary theory is on how the presence of (certain types of) firm capabilities delimits firms' expansion, Penrose refers to the relative absence (or at least scarcity) of capabilities and how they delimit expansion. The traditional Penrosian framework holds that firms will benefit most if they expand either into new geographical or into new product markets, but not both. I argue that firms from developing countries are similarly constrained, both by their more limited capability bases and by the fact that their capabilities that are less likely to be useful in an advanced context. For example, SABMiller developed formidable logistics capabilities to compensate for the poor distribution infrastructure in the developing markets where it was long concentrated – capabilities that are of less use in the USA. Developing country firms are therefore likely to face a Penrosian-type tension when investing in more developed countries, and this tension is likely to result in differing profiles for firms from less and more developed countries. I compare and contrast how firms from more and less developed countries, with very different resource bases, perform in a developed context.

Asset exploiting and asset augmenting foreign direct investment

The eclectic (OLI) paradigm holds that firms' decision to expand abroad can be explained with reference to their ownership advantages, the location where foreign operations is established, and the decision to internalize foreign markets, rather than rely on arm's length transactions like exports (Dunning, 2001). The eclectic paradigm has been scrutinized and further

expanded by numerous researchers (see for example the special issue of *International Journal of the Economics of Business* edited by Cantwell & Narula, 2001) and remains a robust framework for explaining foreign expansion.

This paper (like the work of Penrose) is not centrally concerned with how or why firms choose to internalize activities, focusing instead on the "O" and "L" dimensions of the OLI. Since the development of the OLI (or eclectic) paradigm, the conceptualization of ownership advantages has received considerable scrutiny. At the core of most of the debates is a concern with whether firms need some pre-existing capabilities in order to internationalize, or whether they can internationalize precisely in order to secure ownership advantages. In the formulation of the eclectic paradigm, this has given rise to a distinction between O_a and O_t assets, i.e. assets (O_a) that are endogenous to firms and assets (O_t) that are acquired through exogenous, transaction-type relationships (Dunning & Narula, 2004). Various other researchers explore the same tension. Cantwell's early work (1989) first documented created asset seeking by multinationals, while Kuemmerle (1999) makes a distinction between home base augmenting and exploiting, and Chung and Alcacer (2002) research knowledge seeking through foreign direct investment.

In its simplistic form, the debate about asset exploiting versus asset augmenting expansion presents the two types as opposites. In asset exploiting expansion, firms are argued to use their high quality capability bases to expand into areas where they learn very little, if anything. In asset augmenting (or created asset seeking) foreign direct investment, firms are argued to start out with very limited capability bases, but benefit from high quality learning. Such extremes are conceptually possible, and although rare, examples can be found of such investment experiences, for example, the phenomenon of developing countries establishing "R&D outposts" or "listening posts" in the developed world (Cho & Lee, 2003, Miotti & Sachwald, 2001, Narula, 2003). In those cases, developing country firms avoid direct competition with the highly

competitive firms of the developed world and focus only on created asset seeking. However, few developing country firms invest in the developed world primarily in order to access its created assets – it is more often an ancillary motive together with market seeking (World Investment Report, 2006).

It is important to recognize that there is typically is a process of ongoing mutual reinforcement between firms' current and eventual capability bases. The work of Cohen and Levinthal (1990, 1989) demonstrates how the capability base of firms determines their "absorptive capacity", and therefore the extent to which they can further expand their capabilities. This insight is central to an evolutionary perspective of firm growth, and empirical work focusing on developed contexts consistently finds that the development of new capabilities takes place in interaction with existing capabilities (Almeida, 1996, Patel & Vega, 1999, Pearce, 1999). In other words, asset augmenting and asset exploiting should be seen as points along a continuum, and although the relative importance of each may differ in different situations, most investments have elements of both.

Yet work on less developed contexts often glosses over the importance of pre-existing firm assets. In fact, some authors (Chen & Chen, 1998, Moon & Roehl, 2001) argue that the very lack of capabilities is a central reason for firms' foreign direct investment. This often is accompanied by an almost determinist view of location: If firms can locate in technologically more developed locations, they are likely to see technological development. The successes of a few firms – notably Hyundai and Samsung – are often mentioned, although there is also considerable evidence that developing country firms in more advanced markets struggle in the host context (Lautier, 2001, Perrin, 2001, SAPA, 2003). Location – the dimension of the eclectic paradigm of which the conceptualization has perhaps changed least since the OLI was first

formulated – certainly plays an important enabling role. However, this paper provides evidence that location cannot be viewed in isolation from firms' capabilities and actions.

The extent and nature of developing country firms' success in a developed host country are likely to be affected by the extent to which they have less appropriate and often more limited capability bases and lower "absorptive capacity". The available resource base of developing country firms is often not adequate to allow those firms to simultaneously pursue market-seeking and created asset seeking strategies in the developed world. First, countries are engaging in outbound FDI at an increasingly earlier point in their evolution (Dunning, Van Hoesel, & Narula, 1998, Tolentino, 1993). Many developing country firms have simply had less time to develop the capabilities they need to compete outside their home market, whether in a developing or developed host country. In addition, the challenge of their more limited capability bases is likely to be especially severe when they invest in the developed world. Most of the capabilities of developing country firms would have evolved in less developed contexts – whether their home country or other developing countries – and it is possible that those capabilities may not be appropriate in an advanced economy.

The relational context of capability expansion by developing country firms

Although investment in the developed world allows developing country firms to locate in closer proximity to technologically advanced firms, it cannot be assumed that such investment will provide developing country firms with access to the full range of knowledge resources of the developed world. The non-market resources of a location – e.g. those offered by industry associations, benchmarking studies, or advisory bodies – are available only to those firms that are able to negotiate the social context in which they find themselves. The concept of relational assets helps to structure the argument. Relationships, whether at a dyadic, multilateral or network level, are facilitating assets that enhance virtually all the other activities of the firm. They are

"entirely human intensive" (Dunning & Narula, 2004:205) and because they are highly context-specific, they are only partially mobile across national boundaries. Eden and Molot (2002) demonstrate that the longer-tenure of long-established MNCs in the Canadian auto industry translates into their legitimacy in the host country, and that those MNCs use their insider status to keep at bay new entrants who still lack relational assets and are therefore seen as outsiders. As relative newcomers in the developed world, developing country firms are also likely to face such marginalization – in addition to the fact that they typically also possess a more limited "technical" resource base.

The limited relational and ownership-type assets of developing country firms jointly shape and constrain the performance of those firms. In particular, as relative outsiders in the developed world, developing country firms are probably largely excluded from non-market based networks of knowledge creation. Firms from developing countries are therefore particularly likely to rely on market-based resources to support their expansion into the developed world. Those resources can be accessed even by firms with limited relational assets: A firm can transfer funds generated in Latin America or the Middle East into the developed world much more easily than the relational assets generated in those contexts.

Hypotheses

In exploring economic success in the USA, I argue that the structure of determinants of economic success of firms from the developed world differ from that of firms from developing countries. Firms from the developed world tend to have a longer history investing in the USA and elsewhere, and are more likely to benefit not only from more favorable domestic conditions like more sophisticated demand and a skilled labor force, but also from the knowledge and capabilities accumulated in other regions. There are therefore likely to be structural differences between firms from less and more developed countries in a common host country.

Countries at higher levels of development share with the USA a number of characteristics, for example a strong institutional infrastructure, a dense web of interrelationships between the various actors in the economy, a better skilled workforce and more sophisticated demand (Bernardes & da Motta e Albuquerque, 2003, Mowery & Nelson, 1999, Nelson, 2002). Firms from those countries investing in the USA find themselves in a relatively similar context, compared to firms from developing countries where markets tend to be smaller, economies dominated by conglomerates, and the institutional infrastructure often much weaker (Amsden & Hiking, 1994, Khanna & Palepu, 1997, Lall, 2001). The relatively lower level of development of their home base negatively affects the competitiveness of firms from developing countries, and case study research documents that developing country firms in the developed world often struggle to compete effectively (Lautier, 2001, Perrin, 2001, SAPA, 2003). In addition, most firms from developing countries tend to be concentrated in commodity-type industries that offer generally lower returns (Lall, 1998). It is therefore possible to hypothesize a link between the level of development of a firm's home country and its performance in the USA so that the more developed a country, the greater its return on assets in the USA, i.e.:

H1: For firms from more developed countries, the higher the level of development of the home country, the greater is their economic success in the USA.

However, I argue that this link holds particularly for countries at a relatively higher level of development. For firms from less developed countries, competitiveness in the USA may be determined not so much by the absolute level of development as by the distribution of opportunities within a society. Many developing countries are characterized by an internally uneven distribution of knowledge – a stark contrast between an elite with access to considerable educational and economic opportunities, and a large unskilled and poor underclass. Numerous

studies (De Gregorio & Lee, 2002, Sylwester, 2003, Verway, 1966) find that a smaller enrolment in higher education is correlated with greater income inequality and vice versa. Thus the educational and economic opportunities of the Argentinean and Chilean elites, white South Africans under Apartheid, and Saudi insiders all rival those found in the developed world. Although those opportunities generally came at the expense of the population at large, quite sophisticated (albeit isolated) local competencies have emerged.

Galor and Tsiddon develop a model that demonstrates how, in the early stages of growth, polarization may in fact be necessary to generate the "necessary seeds for future economic growth" (1997:94) as the inequality allows the members of the educated sections of society to overcome the equilibrium forces existing at a low level of development. Using a similar logic, I argue that for less developed countries, the concentration of opportunities is more important than the overall level of development in determining the performance of firms in the USA. Because investment in the USA is undertaken precisely by a small minority of developing country firms, those firms are most likely to benefit from a better skilled, better connected elite, even where this takes place at the expense of the majority of the domestic population. This leads to the following hypothesis:

H2: For firms from less developed countries, the less evenly development is spread in the home economy, the greater is their economic success in the USA.

The effect of capital intensity is also likely to vary for countries at higher and lower levels of development. Ozawa (1992) documents four stages through which the industries of countries progress. At first, mainly Heckscher-Ohlin-type industries are found: Labor-intensive, low wage industries like textiles. As countries develop, they increasingly develop non-differentiated Smithian industries that are capital intensive and rely on scale economies, e.g. steel.

Differentiated Smithian industries that involve assembly-based mass production (e.g. automobiles) follow, and finally Schumpeterian knowledge-based industries like opto-electronics and new materials.

Gross fixed capital formation increases together with the level of development of countries (Narula, 1996). In part, this reflects systematic differences in the capital intensity of the industries that dominate in countries at different levels of development: The capital intensity of an opto-electronics industry is greater than that of steel which in turn is greater than that of the textile industry. However, as Ozawa (1992:36) points out, the human asset base increases at a faster rate than the physical asset base for countries at higher levels of development. Although an opto-electronics industry requires significant capital investment, its human resource requirements are even more extensive. Firms from such Schumpeterian industries can therefore be expected to originate in developed countries. Developing country firms are unlikely to have the requisite capabilities to achieve success in those industries, especially when competing on the home turf of technologically advanced countries.

Since Owaza's work, service industries – especially knowledge-intensive services – have also emerged as important drivers of global economic growth (World Investment Report, 2004). Knowledge-intensive services like IT and telecommunications are characterized by a relatively low need for capital investment, but the need for a highly developed human asset base, and are therefore also most likely concentrated in the developed world. Jointly considering these two dominant industry types, it is possible to hypothesize:

H3a: For firms from more developed countries, there is a U-shaped relationship between the capital intensity of their operations in the USA and their economic success in the USA.

The systematic relationship between countries' level of development and their outbound FDI has long been documented (Dunning, 1981, 1986). Economies need a threshold level of domestic capabilities before outbound FDI takes place. Even though outbound FDI takes place at increasingly earlier points in countries' development, it can be expected that firms from developing countries investing in the developed world would have at least started the transition to Smithian rather than Hecksher-Ohlin-type industries. The high costs of labor in the developed world are likely to further drive that transition. But because greater capital intensity is associated with an even more rapidly expanding requirement for sophisticated human assets, there is a ceiling to the benefits that developing country firms can derive from the capital intensity of operations. Beyond a certain level of capital intensity, firms from developing countries are likely to lack the human asset base to reap the benefits of that level of capital intensity. In other words:

H3b: For firms from less developed countries, there is an inverted U-shaped relationship between the capital intensity of their operations in the USA and their economic success in the USA.

Although all firms require some level of capital investment, I do not anticipate capital expenditure to be significantly correlated (whether positively or negatively) to the success of firms from the more developed countries in the USA. Even where operations are highly capital intensive, the capital requirements serve to limit entry by less resourced firms, but do not act as a driver of success. Instead, firms' ability to leverage human assets will play the determining role in their performance. However, capital expenditure is likely to yield significant economic benefits for firms from developing countries, functioning to rejuvenate and strengthen their core source of competitive advantage in the USA. In addition, because the capabilities embodied in capital goods – for example sophisticated computing support – represent capabilities that can be procured through the market rather than through a relational network, they are likely to be

particularly important to the success in the USA of firms that are still largely outsiders.

Therefore:

H4: For firms from less developed countries, the higher the investment in capital goods in the USA, the greater is their economic success in the USA.

In all the hypotheses, structural differences between firms from less and more developed countries are hypothesized to function differently, so effects cannot be predicted for the population as a whole.

Methodology

The Bureau of Economic Analysis (BEA) of the USA publishes the aggregate data of all countries with firms investing in the USA, and investment data for the period 1999 to 2003 are available for 150 countries. Because the BEA suppresses information that may enable the identification of firms, limiting the information available on the weakest investor countries that have only one or two firms investing in the USA, comprehensive and comparable investment data are available for only 98 countries. Although this does not constitute the entire population of investor countries in the USA, the data do capture the most important investors in the USA.

In order to conduct the analysis, the sample is first split approximately evenly into a group of more and a group of less developed countries, using GDP per capita as yardstick. Thus the investor countries in the USA are divided into a relatively more developed (where income is higher than US\$7,000 per capita per year) and less developed group (with average annual incomes below US\$7,000). The more developed group consists of 46 countries, and comprises not only the well-known industrial leaders but at the lower end of the scale also leading developing countries like Brazil, Russia, South Africa and Thailand. The group of less developed countries comprises 52 countries, including countries like Algeria, China, Colombia, Egypt, the

Philippines and Venezuela. The division into more and less developed countries allows for an identification of the investment patterns that are associated with different levels of development.

Descriptive statistics about firms from the two groups indicate that they have very different profiles (Table 1). Over 1999 to 2003, the more developed countries have a more than seven times larger presence in the USA than the less developed countries in terms of number of employees. Similar differentials are found for size and capital investment.

[Table 1 about here]

The employee data suggest that firms from developing countries have not only a lower level of development at home, but also a much sparser web of contacts in the USA. The data indicate that developing country firms are a marginal group in the developed world. They are disadvantaged not only in terms of the available knowledge base they can draw on, but also in terms of their access to other firms with like experiences. Given their different profiles, it seems likely that firms from more and less developed countries engage with their host environment, the USA, in different ways.

Because the data from especially the group of less developed countries are lumpy (for example on capital expenditure), the data for the five years from 1999 to 2003 are pooled. Different linear regressions for each country group are conducted to test the hypotheses. Economic success in the USA is measured using ROA (return on assets), a standard measure of efficiency. In order to measure level of development, annual GDP per capita (the average over the period, although the different years are highly correlated) is used. The Gini coefficient, measuring the proportion of wealth of the richest 20% relative to the poorest 20% of the population, is used to measure how evenly capabilities and access to opportunities are spread in the different countries. Both these variable are drawn from World Bank data. Regional dummies

are used to rule out possible regional effects, e.g. the strong recent performance by Asian firms with their low inequality versus the weaker performance of firms from Latin America with its much greater inequality. The four dummies are for Asia (excluding Japan), Africa and the Middle East, Latin America and the Caribbean, and Central and Eastern Europe.

Capital intensity is constructed by the ratio of property, plant and equipment relative to total assets. Investment in the capital asset base is measured by capital expenditure per employee, and investment in the human asset base by the total salary per employee. All data are pooled over the period 1999 to 2003, and because of the skewness of the distribution, either ratios or log values are used. Correlations are provided in Table 2. A number of the variables are significantly correlated, but apart from the relatively high correlation between the investment in capital assets and the investment in human assets (0.56) – which is in accordance with prior research – all correlations are well below 0.5.

[Table 2 about here]

Results

The results are presented in Tables 3 (for firms from more developed countries), 4 (for firms from less developed countries) and 5 (for all firms). The model for firms from more developed countries is only marginally significant, but the other two models are both highly significant. None of the regional dummies in any of the models are significant, and indeed, in the model for firms from less developed countries, the dummy for Africa and the Middle East is excluded because its tolerance is close to zero.

There is clear support for H1: The success in the USA of firms from the more developed countries success is positively and significantly correlated with a country's level of development as measured through its GDP per capita. As for H2, for firms from less developed countries success in the USA is indeed not correlated with the average level of development (which is not

significant) but rather with how opportunities in society are distributed. However, I hypothesized that the existence of elites will be important to enable firms from less developed countries to achieve success in the USA. In contrast, ROA is significantly but inversely correlated with the Gini coefficient. This finding suggests that the more successful developing country firms in the USA are those from countries with a more equitable spread of wealth – the existence of elites does not facilitate firm success in the USA. The importance of the accessibility of opportunities in the developing home country is especially interesting given how large the gap is in the knowledge base of the host compared to the home country

[Tables 3, 4 and 5 about here]

The results for H3a and b (about capital intensity) are in the expected direction, although the results are only marginally significant in the model for firms from more developed countries – firms from less developed countries seem to gain financial benefits from operating in specific types of industries more predictably than firms from more developed countries do. Still, the results for the model for firms from developed countries clearly suggest a U-shaped relationship (and thus some support for H3a). The fact that capital intensity has a negative and its square a positive sign suggests that the more successful firms from developed countries are inclined to be found in either highly capital intensive industries, or in industries with a very low level of capital intensity, probably service industries.

In contrast, the model for firms from less developed countries provides evidence of an inverted U-shaped relationship. The clear support for H3b suggests that the optimum point for the competitiveness of developing country firms does not occur when firms rely too extensively on embedded technologies (in the case of highly capital intensive operations) or on a non-capital intensive asset base, but rather between those two extremes.

For firms from less developed countries, capital investment is also the most significant factor contributing to the economic success in the USA, providing support for H4. Across firms from more and less capital-intensive industries, embedded technology is central to the competitiveness of firms that do not hail from advanced economies. Capital investment is a relatively easy way for a firm with limited internal managerial resources to expand its overall resource base, and therefore offers a way to mitigate the Penrosian tension associated with expansion into a new and more competitive market. As expected, investment in capital assets is not a driver of success for the firms from more developed countries that invest in the USA – those results are not significant.

For the model of the entire population, only two variables are significant, although the model as a whole is significant. A lower Gini coefficient and investment in capital assets are both significantly correlated with the ROA of operations in the USA. Both of these are variables that are significant in the model for firms from less rather than more developed countries, perhaps reflecting the fact that there are more developing countries investing in the USA than developed countries. In this regression they therefore represent the majority of data points, although in terms of the number of firms investing in the USA and the amount they invest, the smaller number of developed countries is far more important.

Robustness checks

For the sake of robustness, the analysis is repeated using operating margin (the ratio of income to sales) as outcome variable. Results using outcome variable are substantively the same, except for the capital intensity of operations. This difference can be explained by the fact that operating margin is not only a function of the capabilities of the firm, but is also to a larger extent determined by the nature of the industry: The margin for software (for example) is simply larger than for processed lumber. Thus, in models using operating margin as outcome variable, the

hypothesized relationship for capital intensity becomes significant for firms from more developed countries but loses significance for firms from less developed countries, although the signs remain in the direction hypothesized in all the models.

Because of data limitations, it is not possible to control for industry – data are presented at the national level, and represents the aggregate for the country. However, because the variables for capital intensity and operating margin are strongly influenced by industry, they offer evidence that developing country firms are more successful in the more Smithian industries, and that firms from more developed countries are found more in either emerging knowledge-intensive or highly capital-intensive industries.

Given the difficulty to determine precisely what constitutes a developed and/or developing country, the analysis was also repeated for “middle-income” developing countries, i.e. the middle two quartiles of the distribution, excluding both the richest and the poorest investor countries in the USA. The group of middle-income developing countries nonetheless spans a wide range of levels of development, with an annual GDP per capita of between US\$3,200 and US\$17,500. The model for this group is not significant, but does achieve significance when the regional dummies are omitted. In both cases, there are two significant variables; success in the USA is positively correlated with investment in capital assets (as for the model for firms from less developed countries and the full model) and negatively with investment in human assets (as for the model for more developed countries). For firms from middle-income countries, neither GDP per capita nor the Gini coefficient is significant. This cautions against a deterministic view of the level and distribution of countries' development as predictors of success in the advanced US economy: The capabilities (ownership advantages) of firms from middle-income economies and specifically the actions they take to expand them are more important for competitiveness than firms' "endowment" in terms of home country competence.

One intriguing question raised by these results is why success in the USA for the less developed countries is correlated with a smaller Gini coefficient, i.e. with a more equitable distribution of wealth in society. In this analysis, the Gini coefficient is used as a proxy for the distribution of economic and educational opportunities in a society, but it may also be that the Gini coefficient taps into some other dimension rather than the distribution of skills and opportunities. For example, greater equality may be linked to an institutional structure which is relatively closer to that of the US, and which may in turn reduce the liabilities of foreignness that are due to cross-country institutional differences. To rule out such an explanation, I also consider the effects of the level of (dis)similarity of the institutional environment that firms face in their home countries versus in the USA. I calculate the average of three indicators, the constraints on executive decision-making powers, the use of institutions (rather than force or illegal means) to maintain law and order, and the feasibility of policy change (as determined by Henisz, 2002). To capture foreignness in the USA, I calculate the difference between the score of a given country and that of the USA, and use the difference in the analysis.

In the model for firms from less developed countries, institutional similarity is marginally significant, and all previously significant variables – including the Gini coefficient – remain significant. In none of the other models does the institutional similarity variable achieve significance. In the full model, all previously significant variables remain significant, and the inclusion of the institutional similarity variable also results in an increase in the significance of the variable for the investment in human assets. In the model for investment from more developed countries, the inclusion of the institutional similarity variable causes the overall model to lose significance, but no substantive change in the significance levels of any variables. In no case does the inclusion of the institutional similarity variable affect the significance of the Gini coefficient variable. Additional work is needed to see why greater evenness in the distribution of

opportunities at home translate into greater competitiveness in a much more advanced host country.

Summary comments

From the point of view of developing country firms, the USA probably represents a very important market, and firms' successes (or failures) in the USA are likely quite consequential. However, developing country firms are neither as large nor as numerous as the firms from the more developed world. In fact, in terms of size measures like sales and employment, firms from less developed countries represent only about 10% of foreign activity in the US.

The evidence that success in the USA for firms from more developed countries – measured through basic measures of firm efficiency like ROA and operating margin – is correlated with domestic GDP per capita suggests that the vast majority of foreign firms in the USA have some advantage simply through their origins in more developed countries. Limitations in the data mean that it is not possible to parcel out to what extent this advantage is due to their more sophisticated markets and technological infrastructures at home, to greater insitutional similarity with the USA, or simply to the fact that firms from advanced nations generally have had longer experience in foreign countries than developing country firms. However, the implications of the results are clear for developing country firms currently trying to make their mark in the USA. Developing country firms are firstly small, marginal players in the developed world. Secondly, they also face internal barriers presented by their more limited knowledge bases and the fact that they are as a rule less able to rely on "ownership advantages" that they have accumulated in their home countries or other developing countries compared to their counterparts from the developed world.

In addition, limitations to the data mean that it is not possible to parcel out the motives for firms' investment in the USA, and specifically the relative importance of created asset seeking

versus market seeking motives. In particular, feedback effects to the home country are not captured – it may be that developing country firms benefit from a strong flow of knowledge back to the parent, even though financial returns in the USA may not as good as those of firms from developed countries.

The evidence suggests that the drivers of success for firms from developing countries are indeed different to those from the developed world. Firms from developing countries overcome the constraints of their more limited managerial resource base in part by investing in more scalable capital assets: The performance of firms from less developed countries is sensitive to capital investment, in contrast to firms from more developed countries that are more sensitive to variables related to human capabilities, for example average level of development or cost of human assets.

The fact that success in the USA for the less developed countries is correlated with a smaller Gini coefficient, i.e. with a more equitable distribution of wealth in society, is puzzling and suggests the importance of broad-based domestic development to increase the general competitiveness of firms. Additional work is needed to uncover the mechanisms at work that lead to the inability of firms to "escape" some apparently purely domestic constraints of their home countries.

In all, the paper suggests the continued relevance of the basic Penrosian argument for firms from developing countries. Those firms' performance is determined by their internal resource base (that evolved in a very different and less competitive context) more than by the rich resources of their host location. Although it is likely that firms' performance will improve as they develop more experience in the developed world, it is likely to take place through a slow process of incremental advancement. Thus even though the global unevenness of knowledge is likely to be mitigated by the acceleration of FDI from less to more developed countries (World Investment

Report, 2006), the patterns of such investment are likely to reflect the unequal distribution of knowledge worldwide for still a long time.

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Table 1: Size of foreign companies operating in the USA relative to the level of development of the home country

	Relatively more developed countries	Relatively less developed countries
1999 to 2003		
Average number of employees in the USA	6,969	942
Standard deviation	241	86

Table 2: Correlations for BEA data

		Operating margin	ROA	GDP per capita	Gini coefficient	Capital intensity	Cost of human assets	Cost of capital assets
Operating margin	Pearson Correlation	1						
	Sig.	.						
	N	150						
ROA	Pearson Correlation	0.306	1					
	Sig.	0.000	.					
	N	147	149					
GDP per capita	Pearson Correlation	0.132	0.065	1				
	Sig.	0.126	0.457	.				
	N	136	135	158				
Gini coefficient	Pearson Correlation	-0.248	-0.116	-0.378	1			
	Sig.	0.009	0.229	0.000	.			
	N	111	110	120	121			
Capital intensity	Pearson Correlation	-0.225	0.061	-0.434	-0.039	1		
	Sig.	0.006	0.460	0.000	0.684	.		
	N	146	147	140	112	161		
Cost of human assets	Pearson Correlation	0.285	0.057	0.45	-0.294	-0.292	1	
	Sig.	0.000	0.500	0.000	0.002	0.000	.	
	N	146	144	135	109	147	150	
Cost of capital assets	Pearson Correlation	0.179	0.197	-0.031	-0.160	0.310	0.561	1
	Sig.	0.039	0.023	0.735	0.108	0.000	0.000	.
	N	133	133	122	102	134	135	135

Correlation is significant at the 0.05 level (2-tailed)

Correlation is significant at the 0.01 level (2-tailed)

Table 3: Performance in USA of firms from more developed countries

ROA in USA of firms from more developed countries					
	Unstandardized				
	Beta	Std error	t-value	Sig.	
(Constant)	-0.331	0.264	-1.253	0.218	
GDP/capita	0.146	0.068	2.154	0.038	
Gini co-efficient	-0.000	0.001	-0.080	0.937	
Africa & the Middle East	0.017	0.032	0.534	0.597	
Central & Eastern Europe	-0.031	0.029	-1.048	0.302	
Latin America & the Caribbean	0.001	0.032	0.024	0.981	
Asia excl Japan	0.012	0.027	0.435	0.666	
Investment in human assets	-0.149	0.052	-2.844	0.007	
Capital intensity	-0.288	0.173	-1.665	0.105	
Capital intensity squared	0.415	0.263	1.578	0.123	
Investment in capital assets	0.009	0.029	0.297	0.768	
Model summary	R	R ²	Adjusted R ²	Std. error of the estimate	
	0.573	0.328	0.141	0.0400	
ANOVA	Sum of squares	df	Mean square	F-value	Sig.
Regression	0.028	10	0.003	1.758	0.105
Residual	0.058	36	0.002		
Total	0.086	46			

Significant at the 0.1 level

Significant at the 0.05 level

Significant at the 0.01 level

Table 4: Performance in USA of firms from less developed countries

ROA in USA of firms from less developed countries					
	Unstandardized				
	Beta	Std error	t-value	Sig.	
(Constant)	.183	0.101	1.810	0.077	
GDP/capita	-0.026	0.024	-1.057	0.296	
Gini co-efficient	-0.003	0.001	-3.161	0.003	
Central & Eastern Europe	-0.023	0.024	-0.991	0.327	
Latin America & the Caribbean	0.013	0.018	0.687	0.496	
Asia excl Japan	-0.019	0.018	-1.055	0.297	
Investment in human assets	-0.016	0.034	-0.471	0.640	
Capital intensity	0.453	0.213	2.126	0.039	
Capital intensity squared	-0.748	0.290	-2.578	0.013	
Investment in capital assets	0.044	0.015	2.803	0.008	
Model summary	R	R ²	Adjusted R ²	Std. error of the estimate	
	0.633	0.400	0.275	0.0431	
ANOVA	Sum of squares	df	Mean square	F-value	Sig.
Regression	0.053	9	0.006	3.189	0.005
Residual	0.080	43	0.002		
Total	0.133	52			

Significant at the 0.05 level

Significant at the 0.01 level

Table 5: Performance in USA of firms from all countries

ROA in USA of firms from all countries					
	Unstandardized				
	Beta		Std error	t-value	Sig.
(Constant)	.142		0.077	1.830	0.071
GDP/capita	-0.007		0.015	-0.455	0.650
Gini co-efficient	-0.002		0.001	-2.543	0.013
Africa & the Middle East	0.020		0.023	0.898	0.372
Central & Eastern Europe	-0.013		0.020	-0.654	0.515
Latin America & the Caribbean	0.009		0.023	0.416	0.679
Asia excl Japan	0.005		0.022	0.224	0.823
Investment in human assets	-0.038		0.027	-1.390	0.168
Capital intensity	0.066		0.137	0.486	0.628
Capital intensity squared	-0.220		0.194	-1.134	0.260
Investment in capital assets	0.046		0.013	3.614	0.000
Model summary	R	R ²	Adjusted R ²	Std. error of the estimate	
	0.475	0.226	0.139	0.0438	
ANOVA	Sum of squares	df	Mean square	F-value	Sig.
Regression	0.050	10	0.005	2.593	0.008
Residual	0.171	89	0.002		
Total	0.221	99			

Significant at the 0.05 level

Significant at the 0.01 level