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**DETERMINANTS OF EMPLOYMENT GROWTH AT MNES:
EVIDENCE FROM EGYPT, INDIA, SOUTH AFRICA AND VIETNAM**

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Abstract:

Foreign investors are expected to contribute to economic development through a variety of channels. However, many foreign investment operations are small, and almost insignificant in their impact on the local environment. An important indication of the potential contribution of foreign investors is thus their employment growth. Employees working for, and trained by, a multinational enterprise may become carriers of new technology and business practices. The more employees receive access to new knowledge, the more they in turn may spread the knowledge across the economy, for instance by setting up their own businesses. In this paper, we make a first step in investigating the determinants of this important mediating variable, employment growth. For a dataset covering four diverse emerging economies, we find that wholly-owned FDI operations have higher employment growth, while local industry characteristics moderate the growth effect.

Keywords: MNE, employment growth, control, institutions, FDI policy

JEL classification: O13, O33, J21, F23

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Non-technical summary

The literature on foreign direct investment (FDI) has traditionally addressed three issues, the determinants of the volume of FDI inflow to a country the determinants of the choice of entry mode of a multinational enterprise (MNE) entering a new country and the spillover effects of FDI. The latter, come largely in the form of technology transfer by MNCs to their foreign subsidiaries

It is established that FDI flow to a country increases with improvement in the quality of its human capital and physical and institutional infrastructure, and with a decline in factors like policy volatility and corruption. To maximize benefits to local firms, governments in many developing countries have stipulated that foreign firms set up business operations in these countries in the form of joint ventures (JVs), assuming that such cooperation among multinational enterprises and their local partners would facilitate the transfer of technology and business practices. However, in the presence of informational asymmetry, MNEs often prefer to use JVs as vehicles for gaining a better understanding about the business environment in the host countries, and to develop business relationships with other firms, the governments and the bureaucracy. Once these relationships are established, JVs are often dissolved; usually the MNE buys out the equity stake of the others or it enters the market on its own with a wholly owned subsidiary This leaves no incentive on part of the MNE to transfer technology to its local JV partner. Further, MNCs often use developing countries either as production bases for relatively unsophisticated inputs for their products, or as target markets for products that are past their prime in their product cycle and the technology transferred to developing countries by developed country MNEs may be as old as ten years. It is not surprising, therefore, that the evidence about spillover effects of FDI is mixed.

The movement of employees is a major element in the transfer of technology. MNEs build local human capital through training of local employees, yet these highly skilled individuals may move to local firms or start their own entrepreneurial businesses. Labor mobility can enhance productivity throughout the economy by transferring tacit knowledge that could not be transferred through informal contacts between firms. However, MNEs naturally try to discourage highly trained employees from leaving by paying salaries above local standards. Empirical evidence on spillovers from labor

mobility is far from conclusive. Studies suggest that most employees that received extensive training stay with their MNE. On the other hand, studies of successful local firms find that many entrepreneurs of top managers had prior links to MNEs. This evidence suggests that the movement of employees may not be large but those that do leave may have a substantive impact on the development of indigenous firms, especially if they set up their own businesses. The larger the pool of workers that work for MNEs, the greater is the probability of a significant transfer of technology and business practices from the MNCs to the domestic firms. The size and growth rate of employment at MNCs operating in these countries is important because of the potential rate of transfer of technology and business practices from these transnational firms to the domestic firms in these countries, by way of inter-firm labour mobility.

We have to date little empirical evidence under what circumstances MNE create employment in emerging markets. In particular, the impact of the policy environment and the institutional arrangements on employment creation remain unexplored. Our contribution is based on a unique data set of 293 MNEs operating in four developing countries that differ significantly with respect to their policy and institutional environment, as also their pool of skilled labourers, namely, Egypt, India, South Africa and Vietnam.

The most important finding of our empirical analysis is that employment growth at MNE affiliates in developing countries is significantly higher if the MNEs have controlling equity stakes in these affiliates. This highlights the importance of control in fostering commitment of the MNE towards its affiliate in a risky developing country business environment. If a MNE has an equity stake in a developing country affiliate that gives it unambiguous control over corporate strategies and the associated decisions, it is able to (re)structure the affiliate such that a transfer of technology is feasible, thereby facilitating the growth of the affiliate, as manifested by its employment growth.

This result has an important policy implication, namely that FDI policies of developing countries that aim to foster technology transfer from MNEs to the domestic firms by limiting the ability of the former to operate wholly owned subsidiaries in these countries may be counterproductive. MNEs operating in these

countries as minority shareholders in local firms or as JV partners of the latter may have neither the willingness nor, on account of the technology gap, the ability to transfer cutting edge knowledge and business processes to the affiliate over which it does not have complete control. Complete control over the activities of an affiliate enhances the commitment of a MNE towards its affiliate, and enables it to transfer technology which, in turn, is manifested into growth of employment in the affiliate and, therefore, into a higher rate of diffusion of cutting edge knowledge and business processes from the MNE to the local firms. In restricting the equity stake that MNEs can have in their affiliates, developing country governments ignore the secondary channels of technology transfer discussed above. This may help to explain why the empirical literature on FDI finds little evidence of FDI-driven technology enhancement in developing countries.

1. Introduction

The literature on foreign direct investment (FDI) has traditionally addressed three issues, namely, the determinants of the volume of FDI inflow to a country (e.g., Borenszstein, de Gregorio and Lee, 1995; Noorbakhsh, Paloni and Youssef, 2001; Globerman and Shapiro, 2002; Habib and Zurawicki, 2002), the determinants of the choice of entry mode of a multinational enterprise (MNE) entering a new country (e.g., Agarwal and Ramaswami, 1992; Hennart and Park, 1993; Görg, 2001; Luo, 2001; Barbosa and Louri, 2002; Gleason, Lee and Mathur, 2002), and the spillover effects of FDI. The spillover effects, it has been argued, comes largely in the form of technology transfer by MNCs to their foreign subsidiaries and the consequent improvement in productivity of domestic firms in the host countries (e.g., Mansfield and Romeo, 1980; Hasan, 2002; Patibandla and Petersen, 2002, Sinani and Meyer, 2004).

It is now well established that FDI flow to a country increases with improvement in the quality of its human capital and physical and institutional infrastructure, and with a decline in factors like policy volatility and corruption. It is also stylised that in the era of globalized capital markets, where overseas borrowing can be used to supplement domestic savings, the importance of FDI perhaps lies less in the quantity of capital inflow than on its ability to transfer technology and business best practices to the domestic firms in the host country (Findlay, 1978; Borenszstein, de Gregorio and Lee, 1995). If transfer of technology and business best practices significantly improves the productivity of domestic firms in the recipient countries, these firms would improve their international competitiveness, and the impact of this spillover effect on the economy of the recipient country is arguably much greater than the impact of the FDI itself. To maximize such benefits to local firms, governments in many developing countries have stipulated that foreign firms set up business operations in these countries in the form of joint ventures (JVs), assuming that such cooperation among multinational enterprises and their local partners would facilitate the transfer of technology and business practices.

However, in the presence of informational asymmetry, MNEs often prefer to use JVs as vehicles for gaining a better understanding about the business environment in the host countries, and to develop business relationships with other firms, the governments and the bureaucracy. Once these relationships are established, JVs are often dissolved; usually the MNE buys out the equity stake of the others or it enters the market on its own with a wholly owned subsidiary (see, e.g., Sinha, 2001). It is easily seen that, given that the expected Nash equilibrium is the dissolution of the JV, there is no incentive on part of the MNE to transfer technology to its local JV partner, and this is borne out by empirical evidence (Ramachandran, 1993). Further, MNCs often use developing countries either as production bases for relatively unsophisticated inputs for their products, or as target markets for products that are past their prime in their product cycle (see, e.g., Estrin and Meyer, 2004). Indeed, there is evidence to suggest that technology transferred to developing countries by developed country MNEs may be as old as ten years (Mansfield and Romeo, 1980). It is not surprising, therefore, that the evidence about spillover effects of FDI is mixed. Some evidence suggests that foreign equity stake in a domestic firm is likely to improve this firm's productivity, yet the impact of MNCs' presence in a developing country may not necessarily have a productivity-augmenting impact on other domestic firms, at least not in the same industry (Aitken and Harrison, 1999; Görg and Strobl, 2001; Meyer 2004).

Despite the barriers to transfer of technology, however, there is evidence to suggest that some domestic firms in developing countries can become globally competitive by adopting the state of the art technology, and by adapting to industry best practices. The Indian software industry is a case in point. In part, this is on account of import of technology (Vishwasrao and Bosshardt, 2001; Hasan, 2002). However, technology and business best practices are equally likely to be transferred from MNEs to domestic firms in developing countries by way of migration of labour from the former to the latter, a process that is well documented in the context of the Indian software industry (e.g., Commander, 2003).

The movement of employees is a major element in the transfer of technology within an industry, and beyond. MNEs build local human capital through training of local employees, yet these highly skilled individuals may move to local firms or start their own entrepreneurial businesses. Even rank and file employees acquire skills, attitudes and ideas on the job through exposure to modern organization forms and international quality standards. Labor mobility can thus enhance productivity throughout the economy by transferring tacit knowledge that could not be transferred through informal contacts between firms.

MNEs naturally tend to discourage highly trained employees from leaving by paying salaries above local standards. Thus labor mobility will be low in emerging economies where MNEs have substantial advantages over domestic firms. Empirical evidence on spillovers from labor mobility is far from conclusive. Studies focusing on staff in MNEs find that most employees that received extensive training stay with their MNE. For instance, Gershenberg (1987) finds only 16 percent of labor movement from MNEs to Kenyan firms. On the other hand, studies of successful local firms find that many entrepreneurs or top managers had prior links to MNEs. For example, Katz (1987) reports that many managers of local firms in Latin America started their career with MNE subsidiaries. Altenburg (2000) reports that spin-off electronics companies in Malaysia maintain close relations as suppliers and subcontractors with the MNE, while Hill (1982) makes similar observations in the Philippine appliance and motorcycle industry.

This evidence suggests that the movement of employees may not be large in terms of the number of individuals moving to local firms. However, those that do leave may have a substantive impact on the development of indigenous firms, especially if they set up their own businesses. Such movements may not be against the interest of the multinational firm if the new firms become business partners, for instance as suppliers, or by advancing innovations that developed within the sphere of the MNE but could not be pursued further as they fell outside the core competences of the firm.

The larger the pool of workers that work for MNEs, the greater is the probability of a significant transfer of technology and business practices from the MNCs to the domestic firms.¹ In other words, even if we make the reasonable assumption that the labourers employed by MNEs comprise a small fraction of the overall labour force in a developing country (Kraye, Heinrichs and Frobel, 1988), the size and growth rate of employment at MNCs operating in these countries is important because of the potential rate of transfer of technology and business practices from these transnational firms to the domestic firms in these countries, by way of inter-firm labour mobility.² Despite the importance of direct and indirect contributions of MNE employment for economic development, we have to date little empirical evidence under what circumstances MNE create employment in emerging markets. In particular, the impact of the policy environment and the institutional arrangements on employment creation remain unexplored. Our contribution to this nascent literature is based on an unique data set of 293 MNEs operating in four developing countries that differ significantly with respect to their policy and institutional environment, as also their pool of skilled labourers, namely, Egypt, India, South Africa and Vietnam. Our results suggest that availability of appropriate human capital, institutional factors and the extent of control that a MNE has over its affiliate are important determinants of the growth of employment of MNEs in emerging markets.

The rest of the paper is structured as follows: In Section 2 we develop the analytical paradigm underlying the empirical analysis. The data and variables are described in Section 3. The regression specification and the results are reported and discussed in Section 4. Section 5 concludes.

¹ The potential rate of transfer of technology and business best practices would also depend on the extent to which the MNEs train their employees. However, data about training offered to employees at a specific affiliate of a MNE is difficult to obtain. Further, data on training would not take into account learning by doing in the course of the employees' regular activities. Hence, albeit imperfect, size as measured by the employment level is perhaps the best available indicator of the potential for technology transfer.

² Economists have, of course, long argued that a major impact of MNEs on employment in the host countries is by way of indirect channels like local supply chains (Lall, 1979), and indeed much of the literature linking FDI with employment growth explores ways to measure the indirect impact of FDI on employment growth.. But as we have already argued the importance of MNEs lie in their ability to transfer skills and technology to the local markets and only the section of the labour force that is directly hired by the MNEs is relevant in this context.

2. Labour Demand of MNEs in Developing Economies

Suppose that a firm's production function is given by

$$q = f(l, k; m) \quad [1]$$

when q is output, l is labour, k is capital, and m is the managerial input (see, e.g., Bhaumik and Estrin, 2003). Cost minimisation, which is the dual of profit maximisation, yields the labour demand function

$$l = g(w, r, p, q(m)) \quad [2]$$

when w is the wage rate, r is the rental rate of capital, and p is the price of the final product. Economic theory suggests that $\partial l / \partial p$ and $\partial l / \partial q$ are both positive. In other words, if there is a growth in sales, whether on account of an increase in p or because of an increase in q , the demand for labour is likely to increase. In imperfect competition, the *real* growth of sales of a firm – the change in q – depends on two different factors, namely, the growth of the industry to which the firm belongs, and the market share of the firm within that industry.

Therefore, a MNE's demand for labour is likely to depend on both the realised and expected growth rates of the relevant industry in the host country, as well as on its expected share of the host country market (Watanabe, 1980). The expected rate of growth, in turn, will depend on the extent to which the industry in the host country is liberalised, the extent of economic reforms undertaken at the country-wide level. The expected market share, on the other hand, would depend on the extent of competition faced by the MNE affiliate in the host country. It would also depend on the ability of the MNE's local management to adopt marketing and other strategies that are consistent with the business environment in the host country, i.e., on the quality of the managerial input. In any country, but especially in the context of a developing country, this quality would, in turn, depend on the experience of a MNE in mitigating the context-specific institutional and other challenges. We discuss some of these issues below. In sum, therefore, labour demand and employment growth are likely to be positively related to the industrial growth rate, the extent of economic reforms/liberalisation both at the country-wide and industry level and the extent of operating experience of a MNE in the context of developing countries, and is likely to be negatively related to the extent of competition faced by the MNE in the host country.

The behaviour of a MNE with respect to its size or level of employment will also depend on its strategic objectives. MNEs usually set up operations in new countries either to cater to large local markets, or to gain access to local resources that are valuable in so far as the supply chains of the MNEs are concerned. This distinction has important implications for how investors set up their operations (Buckley and Casson 1998). Local production for local markets eliminates the cost of transporting the product from production locations in other countries, and are also able to eliminate tariffs from the retail price of the product, thereby making it competitive *vis a vis* the domestic and import competition in the new location. Local production facilities also endow MNEs with the flexibility in the production process that is required to appeal to local tastes and preferences (Bartlett and Ghoshal, 1989).³ Resource-seeking investment, on the other hand, permits MNEs to leverage the resources available in the new production location – be it petroleum in Russia, skilled IT personnel in India or cheap low-skilled labour in Thailand – to give its global operation a competitive edge over its rivals. While MNEs tend to be more capital intensive than their domestic counterparts (Marsh, Newfarmer and Moreira, 1983), it is easily seen that the strategic objective of a MNE may play a role in determining its optimal labour-capital mix. For example, it can be argued that a resource-seeking MNE that has entered a developing country to take advantage of the low wage rate of its skilled (and perhaps semi-skilled) labour force is likely to adopt a labour-intensive technology in the host country,⁴ whereas a market-seeking MNE might produce its product in the host country with an unchanged input mix because its strategy is to leverage on its brand to make super-normal profits in the host country market.

Aside from agency problems, we also have to take into account the fact that in reality it is usually not possible indefinitely to substitute one factor of production with another. This is especially true if we view a firm not as a vehicle to transform inputs like labour and capital into output, but as an organisation that also has to transform the

³ McDonald's outlets in India, for example, use mutton instead of beef, and their products have been significantly Indianised to suit the culinary taste of the local consumers.

⁴ The Heckscher-Ohlin theory about international specialisation argues that most developing countries have a comparative advantage in labour-intensive products. Therefore, resource seeking MNEs are even more likely to opt for labour intensive production techniques if they use a developing country as a location for downstream units of their supply chain, or as an export base to the rest of the world.

output into market share, market share into profits, profitability into working capital etc. In reality, therefore, a mix of several different factors of production like skilled technical labour, skilled managerial labour, skilled professionals like accountants and lawyers, and supporting infrastructure in the form of ICT and electricity are required for meeting the multiple objectives (or transformation goals) of the firm. In other words, a firm may not be able to grow in terms of its labour force if it does not have adequate access to complementary factors like adequate ICT infrastructure.

Further, given the context of emerging markets, we have to take into account paucity of skilled personnel who can adapt quickly to the MNEs' technology (McDonald, Tusselmann and Heise, 2002). Neo-classical theory allows a profit maximising/cost minimising firm to decide on its optimal labour-capital mix without reference to the total supply of labour in the factor market. However, this supply side constraint may be a reality in emerging markets on account of two different reasons. First, the education system of an emerging market may simply not generate enough labourers with adequate skills to adapt to the technology and business practices of a MNE. The concern about skills may not be relevant if the MNE uses its emerging market affiliate to produce something that is an essential part of its supply chain but one that involves old technology.⁵ However, in such a context, any concern about technology transfer is moot. Second, labourers with adequate skills may be organisationally embedded and/or geographically fragmented in emerging markets. For example, high skilled managerial labour may be scarce simply because most skilled managers are owners of their own firms, and language and cultural barriers in large countries like India may prevent internal migration of skilled and semi-skilled technical labour. In sum, a MNE's growth in terms of employment may be affected by the availability of labourers with appropriate skills.

The ability of a MNE to grow in an emerging market would also be dependent on the institutional environment. Clearly, the firm is more likely to grow in size if the institutional environment – defined by bureaucratic procedures, explicit and implicit government policies etc – is conducive to conducting business than if the environment is a hindrance to growth. The quality of local institutions may also impact

⁵ Note that such behaviour is consistent with *internalisation* which is one of the pillars of the OLI framework (Ethier, 1986).

employment growth at MNEs indirectly, by way of their impact on the macroeconomic environment. If weak institutions lead to macroeconomic instability, it is likely to have a detrimental impact on employment growth at MNEs (Aizenman, 2003). We can, therefore, hypothesise a positive relationship between employment growth and the quality of the institutional set-up in the host country.

Neoclassical theory that forms the basis for the above analysis assumes that firms are profit-maximizing or cost-minimising in nature. However, following the seminal paper by Jensen and Meckling (1976), it is now stylised that a firm's behaviour is significantly dependent on the extent to which it resolves the agency problems involving the various stakeholders of the firm. The agency problem potentially faced by a MNE involves the divergence between the MNE parent's objectives and those of the local management.

This problem is likely to be exacerbated if the MNE parent does not have full control of the operations of the affiliate, which is the case if the mode of entry into the new market is a JV or partial acquisition of a local firm (Mansfield and Romeo, 1980; Ramachandran, 1993). In either of these two cases, foreign and local co-owners have to find compromises to match their respective objectives for the local firm. Thus, a MNC would face uncertainty about the extent of convergence between its own objectives and those of the local management, such that the MNE might be more reluctant to expand its operations in the host country relative to a situation in which it has full control of the local operations. Moreover, foreign investors may be concerned that transfer of technology come to benefit the local partner, who may – in a worst case scenario – emerge as a competitor (Buckley and Casson, 1998).

We can, therefore, hypothesise that, *ceteris paribus*, a MNE affiliate is likely to expand its operations in a host country faster if it has full control over the local affiliate's operations than when it has to share control with a domestic firm in the host country.

3. Data and Variable Measurement

3.1 Survey

The data was collected from randomly selected MNE affiliates operating in Egypt, India, South Africa and Vietnam, using a survey instrument (see Estrin and Meyer, 2004). The base population for the survey was defined as all registered FDI projects that were established in the four countries between 1990 and 2000 that had a minimum employment of 10 persons, and minimum of 10 percent equity stake by the foreign investor. The time limit ensured that the information relevant to the decisions taken at the time of establishment of these firms was part of the organisational memory at the time of the survey. Similarly, the stipulations concerning size and equity stake of the foreign investor ensured that the firms included in the base population were not trading or sales offices, but rather were fully operational business operations. The questionnaire was structured to enable us to collect information about not only the characteristics of the local affiliates, but also about the perception of the affiliates about local conditions during the recent years of operation. After accounting for missing observations, we have usable information for 293 observations spread across the four countries.⁶

3.2 Variable Measurement and Specification

Our measure of employment growth is the average growth rate of the labour force associated with an MNE affiliate from the inception of its operation in the host country to 2000. The measures of the explanatory variables are as given below:

We assume that a MNE is resource seeking if it sells less than 50 percent of its output in the host country's market, and capture the motivation of the MNE using a dummy variable that takes the value 1 if a MNE is resource seeking, and zero if it is market seeking. The availability of local resources is measured for three categories: qualified personnel, machinery and equipment, and IT and telecommunications services. The perceptions of the MNE affiliates that responded to our survey are measured on a Likert scale of 1 (never available) through 5 (readily available). As we have reported in Tables 2 and 3, we have used dummy variables to reflect these perceptions, with

⁶ Of these, 23 percent are from Egypt, 22 from India, 30 percent from South Africa and 25 percent from Vietnam.

the dummy variable taking the value 1 if the reported score was 4 or 5 on the Likert scale.

We have similarly measured eight different aspects of institutional/business environment in the host country using Likert scale measures that run from 1 (very conducive to business) to 5 (not conducive at all). Cronbach's alpha suggests that it would be feasible to group these measures into three different categories, namely, conduciveness of official procedures, conduciveness of general institutional framework, and conduciveness of government policies. Official procedures include those associated with obtaining business licenses, and visa and work permits, as well as those related to real estate purchase and environmental regulations. The general institutional framework includes the perception of the MNE affiliates about the legal framework and law enforcement in the host country, and the predictability and stability of rules and regulations. Finally, the responses to the questions about government policies take into account the policies of both the central and the local governments. Using the responses of the MNE affiliates to these eight queries, we construct indices for conduciveness of official procedures, conduciveness of general institutional framework, and conduciveness of government policies, when each index is the average of the responses to the questions included in that category. In part of the subsequent analysis, we use three dummy variables to capture the quality of business environment, with each dummy variable taking the value 1 if the value of the corresponding index is 4 or higher.

We use three different measures of a MNE's experience in the subsequent analysis, namely, the number of countries in which the MNE has operations, a dummy variable that indicates whether or not a MNE had prior experience of operating in a host country, and a categorical variable that takes the value 1 through 4 depending on the number of clusters of emerging markets in which the MNE has operating experience. After some experimentation, we chose four clusters; Africa, Asia (other than Japan), Central and Eastern Europe, and Latin America.

We measure the characteristics of each industry in each host country using three variables, namely, the average growth rate of the industry during the 1990s, the number of competitors of a MNE affiliate in the industry, and the extent of

liberalization and privatization experienced by the industry during the 1990s. In addition, we use a proxy to capture the dynamics of economy-wide of reforms over time. Aside from using a categorical variable to measure the extent of local competition, where 1 stands for none and 5 stands for greater than 10, we also use in the subsequent analysis a dummy variable that takes the value 1 if the number of local competitors is greater than 10, and is zero otherwise. The extent of liberalization and privatization were measured by the four country teams responsible for the survey, using a Likert scale that runs from 1 (no policy changes) to 5 (major policy changes). We measure the dynamics of economy-wide reforms using a time trend with respect to 2000, the implicit assumption being that the extent of reforms increased (linearly) over time. In other words, if the value of the time trend is close to 10 for a MNE affiliate, it entered the host country early in the 1990s, while if this value is zero then it entered the host country late in the decade.

We assume that MNE that entered the host countries with Greenfield projects or by cross-border acquisition of more than 90 percent of a local firm have full control of the affiliate's local operations, while those that entered the host country in the form joint ventures (JVs) and partial acquisition of local firms did not have full control of the affiliates' local operations. We, therefore, capture the extent of control a MNC has over its affiliate's local operations using a dummy variable that takes the value 1 if the mode of entry was Greenfield or full acquisition, and zero otherwise.

The econometric specification also includes some control variables. Specifically, we have controlled for the initial employment level, and the point of entry of a MNE into a host country. The use of the "time trend" variable to capture the point of entry allows us to control for the progress of overall economics reforms in the host countries, under the assumption that the extent of such reforms increased monotonically over time in all the four countries (see, e.g., Estrin and Meyer, 2004). The use of trend variables with similar interpretations is stylized in the literature (e.g., Bhaumik and Dimova, 2004). We also include dummy variables for the host countries and the 2-digit industries of the MNEs in these host countries.

3.3 Descriptive Statistics

The descriptive statistics are reported in Table 1. The average growth rate of employment at the MNE subsidiaries included in the sample was 25.7 percent between the time of their (post 1990) entry into the host country and the year 2000. Given that an average MNE entered a host country in 1996 (i.e., six years after 1990), this translates into around 6 percent growth in employment per annum. This is a small number given the low initial level of employment of about 181, and the average output growth of 11.8 percent in the host country industries to which these MNEs belong. In other words, it is not obvious that high growth of the local industry necessarily translates into employment growth at MNEs. We shall revisit this issue later in the paper.

Most of the MNEs in the sample, about 71 percent, are market-seeking. However, to the extent that they require local resources like qualified personnel, ICT and machinery and equipment, they do not face much difficulty in acquiring them. The average score for the degree of difficulty in obtaining these resources varies between 3.6 and 4.2, where 1 indicates “never available” and 5 indicates “readily available.” This suggests that supply side constraints were unlikely to have been binding in the context of employment growth at these MNEs, perhaps because these firms pay efficiency wages. The business or institutional environment and the perception about the extent of liberalization of the host country economies, however, might have posed a problem, with associated average scores near the middle of the 5-point scale.

Nearly half (45 percent) of the MNEs had commercial experience in the relevant host country prior to setting up manufacturing operations in it, and about 70 percent of the MNEs had operational or commercial experience in similar emerging markets. Indeed, average MNEs in the sample had operational experience in about 25 countries. However, this figure was influenced by MNEs like Coca Cola and Pepsi that have operations in over 175 countries.

The MNEs faced a modest degree of competition in their host country industries. An average MNE's host country industry included 5-10 competitors.

4. Regression Results

The regression results are reported in Table 2. Column 1 reports the coefficients of the specification in which the measures of resource availability, institutional/business environment and local competition are formulated as dummy variables. The continuous/categorical measures of these variables have been used for the specifications reported in Columns 2-4. Given that the dependent variable for these specifications is continuous, all specifications reported in Table 2 have been estimated using ordinary least squares (OLS), with the appropriate correction for heteroskedasticity. The McFadden's adjusted R-square estimates for the regressions are in the range of 0.16 to 0.18, while as well as the F-statistics for the specifications are highly significant and indicate that the specifications are a reasonably good fit for the data. These statistics are entirely consistent with goodness of fit measures of cross-sectional regressions involving less than 300 observations.

The results reported in Table 2 indicate that employment growth at a MNE affiliate is higher if the MNE has full control over the affiliate's operations. We suggested above that this might reflect the MNE's preference for full control before committing significant resources for growth in a foreign subsidiary in an emerging market. Given that there were few cases of cross-border takeover in our sample, full control in our context is near-synonymous with Greenfield projects which add to employment, by definition. However, we have to note that entry into a host country by way of a Greenfield project does not necessarily affect the *rate of growth* of employment.

The negative signs of the coefficients for qualified personnel in IT and telecommunication services possibly reflect that there is both a quality-quantity trade-off in employment, and a significant degree of substitutability between labour and technology-based services. Not surprisingly, employment growth is inversely related to both the initial number of employees, as implied by Gibrat's law which suggests that the size of the labor force in larger firms grow at a slower pace relative to the

size of the labor force in smaller firms, as well as to the extent of local competition faced by the MNE affiliate.

Neither the motivation of the MNE affiliates nor the institutional/business environment affects the average employment growth during the 1990s. This might be on account of the possibility that good performance may not be translated into expansion of operations, especially in a developing country context. MNE affiliates in developing countries possibly pay efficiency wages, thereby attracting highly productive employees who may initially operate well within their *effort possibility frontier*. Hence, if resource constraints are not binding and if the institutional environment is favourable, *de facto* capacity expansion may take place simply by providing these employees incentives that are compatible with greater effort, without an increase in the number of employees itself.

These lines of argument find support in the results that the rate of employment growth is negatively associated with the availability of qualified personnel and ICT services, both of which highlight a quality-quantity trade-off in the context of employment at these MNEs. If their labour force is qualified, i.e., high-skilled, it is possible for them to expand their operations, when required, by eliciting greater work effort from the existing employees and/or by increasing the ICT-labour ratio to increase labour productivity. A negative impact of an increase in labour productivity, achieved in either of these two ways, on employment growth is easily envisaged.

Interestingly, even though we have explicitly controlled for experience of the MNEs regarding operations in the relevant host country as well as in similar emerging markets, as well as for the extent of economic reforms/liberalization experienced by the host countries, the timing of entry into the host country clearly matters. Late entrants add to their labour force much more rapidly than the early entrants. The possible explanation of this observation lies with the fact that the complex political economy of economic reforms in emerging markets reaches some steady state only after some years of intense bargaining among the different stakeholders in the economy, and hence, rather than leading to a first-mover advantage, early entry into such a market may lock a MNE into a sector that shows early promise but reform for which slows down (or even comes to a halt) after some years. For example, although

the banking sector in India was one of the first to be liberalized, the continuing presence of large state owned banks, and the transformation of large domestic incumbents like ICICI from development finance institutions to commercial banks led to a deceleration of the expansion of average foreign banks (Bhaumik and Mukherjee, 2002).

Finally, while employment growth at the MNCs is not sector-dependent, there is a significant host country effect on such growth. Yet, it appears difficult to explain why the rate of expansion of a MNE affiliate's operations is inversely related to the growth rate of the host-country industry to which it belongs. There are two possible explanations for this outcome. First, the turnover of local industries is typically measured in local currencies, which are significantly influenced by exchange rate fluctuations. For example, the exchange rate for the Indian rupee declined from 35.68 rupees per US dollar in September 1996 (i.e., the time of entry of an average MNE into one of the four host countries) to 46.76 rupees per US dollar by the end of 2000. However, MNEs are interested in the expansion of their business operations as measured in the currency of their home base. Hence the greater than 11 percent growth rate of local industries may not be an accurate reflection of the growth in the business operations of the MNEs. Second, the growth of turnover in the local industries may reflect a change in the output mix of these industries, i.e., higher value addition, which is usually accompanied by a capital-favoring input mix. Note also that we control via dummy variables for industry affiliation.

5. Concluding Remarks

We have investigated the determinants of employment growth at MNE affiliates in developing countries. The importance of this line of research lies in the fact that the level of employment at MNE affiliates is a key determinant of the rate and extent of transfer of cutting-edge knowledge and business processes from the MNEs to the domestic firms. The most important finding of our empirical analysis is that employment growth at MNE affiliates in developing countries is significantly higher if the MNEs have controlling equity stakes in these affiliates. Aside from highlighting the importance of control in fostering commitment of the MNE towards its affiliate in a risky developing country business environment, this result possibly also brings into focus the technology gap that usually exists between the developed home countries of

the MNEs and the developing countries which they enter. If a MNE has an equity stake in a developing country affiliate that gives it unambiguous control over corporate strategies and the associated decisions, it is able to (re)structure the affiliate such that a transfer of technology is feasible, thereby facilitating the growth of the affiliate, as manifested by its employment growth.

This result has an important policy implication, namely that FDI policies of developing countries that aim to foster technology transfer from MNEs to the domestic firms by limiting the ability of the former to operate wholly owned subsidiaries in these countries may be counterproductive. MNEs operating in these countries as minority shareholders in local firms or as JV partners of the latter may have neither the willingness nor, on account of the technology gap, the ability to transfer cutting edge knowledge and business processes to the affiliate over which it does not have complete control. Complete control over the activities of an affiliate enhances the commitment of a MNE towards its affiliate, and enables it to transfer technology which, in turn, is manifested into growth of employment in the affiliate and, therefore, into a higher rate of diffusion of cutting edge knowledge and business processes from the MNE to the local firms. In restricting the equity stake that MNEs can have in their affiliates, developing country governments ignore the secondary channels of technology transfer discussed above. This may help to explain why the empirical literature on FDI finds little evidence of FDI-driven technology enhancement in developing countries.

References

- Agarwal, Sanjeev and Sridhar N. Ramaswami (1992) "Choice of Foreign Market Entry Mode: Impact of Ownership, Location and Internalisation Factors," *Journal of International Business Studies*, **23**, 1, pp. 1-27.
- Aitken, Brian J. and Anne E. Harrison (1999) "Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela," *American Economic Review*, **89**, 3, pp. 605-618.
- Aizenman, Joshua (2003) "Volatility, Employment and the Patterns of FDI in Emerging Markets," *Journal of Development Economics*, **72**, pp. 585-601.
- Altenburg, Tilman (2000) "Linkages and Spillovers between Transnational Corporations and Small and Medium-sized Enterprises in Developing Countries: Opportunities and Policies," Proceedings of the UNCTAD X Special Round Table 'TNC-SME Linkages for Development,' Bangkok.
- Bartlett, Christopher and Sumantra Ghoshal (1989) "Managing Across Borders: The Transnational Solution," Boston: Harvard Business School Press.
- Bhaumik, Sumon K and Paramita Mukherjee (2002) "The Indian banking sector: A commentary," In: Parthasarathi Banerjee and Frank-Jurgen Richter (eds.) *Economic Institutions in India: Sustainability under Liberalization and Globalization*, Palgrave Macmillan, London, pp. 71-98
- Bhaumik, Sumon K. and Saul Estrin (2003) "Transition and Performance: Comparative Lessons from Chinese and Russian Companies," Working paper no. 525, Ann Arbor, Michigan: William Davidson Institute.
- Bhaumik, Sumon K and Ralitzia D Dimova (2004) "How Important is Ownership in a Market with Level Playing Field? The Indian Banking Sector Revisited," *Journal of Comparative Economics*, **32**, 1, pp. 165-180
- Borensztein, Eduardo, Jose de Gregorio and Jong-Wha Lee (1995) "How does Foreign Direct Investment Affect Economic Growth," Working paper no. 5057, National Bureau of Economic Research, Cambridge, Mass.
- Buckley, Peter J. and Mark C. Casson (1998) "Analyzing Foreign Market Entry Strategies: Extending the Internalization Approach," *Journal of International Business Studies*, **29**, 3, pp. 539-562.
- Commander, Simon (2003) "The Origins and Dynamics of the Software Industry in Emerging Markets," Mimeo, CNEM, London Business School.
- Estrin, Saul and Klaus E. Meyer (Eds.) (2004) *Investment Strategies in Emerging Markets*, Cheltenham: Elgar.
- Ethier, Wilfred J. (1986) "The Multinational Firm," *Quarterly Journal of Economics* **101**, 4, pp. 805-834.

Findlay, Ronald (1978) "Relative Backwardness, Direct Foreign Investment, and the Transfer of Technology: A Simple Dynamic Model," *Quarterly Journal of Economics*, **42**, 1, pp. 1-16.

Gershenberg, Irving (1987) "The Training and Spread of Managerial Know-how: A Comparative Analysis of Multinationals and Other Firms in Kenya," *World Development*, **15**, pp. 931-939.

Gleason, Kimberly C., Chun I. Lee and Ike Mathur (2002) "Dimensions of International Expansions by US Firms to China: Wealth Effects, Mode Selection, and Firm-Specific Factors," *International Review of Economics and Finance*, **11**, pp. 139-154.

Globerman, Steven and Daniel Shapiro (2002) "Global Foreign Direct Investment Flows: The Role of Governance Infrastructure," *World Development*, **30**, 11, pp. 1899-1919.

Görg, Holger (2001) "Analysing Foreign Market Entry: The Choice Between Greenfield Investment and Acquisitions," *Journal of Economic Studies*, **27**, 3, pp. 165-181.

Görg, Holger and Eric Strobl (2001) "Multinational Companies and Productivity Spillovers: A Meta-Analysis with a Test for Publication Bias," *The Economic Journal*, **111**, pp. 723-739.

Habib, Mohsin and Leon Zurawicki (2002) "Corruption and Foreign Direct Investment," *Journal of International Business Studies*, **32**, 2, pp. 291-307.

Hasan, Rana (2002) "The Impact of Imported and Domestic Technologies on the Productivity of Firms: Panel Data Evidence from Indian Manufacturing Firms," *Journal of Development Economics*, **69**, pp. 23-49.

Hennart, Jean-Francois and Young-Ryeol Park (1993) "Greenfield vs. Acquisition: The Strategy of Japanese Investors in the United States," *Management Science*, **39**, 9, pp. 1054-1070.

Hill, Hal (1982) "Vertical Inter-firm Linkages in LDCs: A Note on the Philippines," *Oxford Bulletin of Economics and Statistics*, **44**, pp. 261-71.

Jensen, Michael C. and William H. Meckling (1976) "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics*, **3**, 4, pp. 305-360.

Katz, Jorge M. (1987) *Technology Creation in Latin American Manufacturing Industries*, New York: St. Martin's Press.

Kreye, Otto, Jürgen Heinrichs and Folker Frobel (1988) "Multinational Enterprises and Employment," ILO working paper no. 55.

- Lall, Sanjaya (1979) "The Indirect Employment Effects of Multinational Enterprises in Developing Countries," ILO working paper no. 3.
- Luo, Yadong (2001) "Determinants of Entry in An Emerging Economy: A Multilevel Approach," *Journal of Management Studies*, **38**, 3, pp. 443-472.
- Mansfield, Edwin and Anthony Romeo (1980) "Technology Transfer to Overseas Subsidiaries by US-Based Firms," *Quarterly Journal of Economics*, **95**, 4, pp. 737-750.
- Marsh, Lawrence, Richard Newfarmer and Lino Moreira (1983) "Employment and Technological Choice of Multinational Enterprises in Developing Countries," ILO working paper no. 23.
- McDonald, Frank, Heinz J. Tuselmann and Arne Heise (2002) "Foreign Direct Investment and Employment in the Host Regions," *European Business Review*, **14**, 1, pp. 40-50.
- Meyer, Klaus E. (2004): Perspectives on Multinational Enterprises in Emerging Economies; *Journal of International Business Studies* **35** (4), forthcoming.
- Noorbakhsh, Farhad, Alberto Paloni and Ali Youssef (2001) "Human Capital and FDI Inflows to Developing Countries: New Empirical Analysis," *World Development*, **29**, 9, pp. 1593-1610.
- Patibandla, Murali and Bent Petersen (2002) "Role of Transnational Corporations in the Evolution of a High-Tech Industry: The Case of India's Software Industry," *World Development*, **30**, 9, pp. 1561-1577.
- Ramachandran, Vijaya (1993) "Technology Transfer, Firm Ownership, and Investment in Human Capital," *Review of Economics and Statistics*, **75**, 4, pp. 664-670.
- Sinani, Evis and Klaus E. Meyer (2004): "Identifying Spillovers of Technology Transfer: The Case of Estonia", *Journal of Comparative Economics* **32** (4), forthcoming.
- Sinha, Uday B. (2001) "International Joint Venture, Licensing and Buy-Out Under Asymmetric Information," *Journal of Development Economics*, **66**, pp. 127-151.
- Watanabe, Susumu (1980) "Multinational Enterprises and Employment-Oriented 'Appropriate' Technologies in Developing Countries," ILO working paper no. 14.

Table 1
Descriptive Statistics

	Mean	Standard deviation
Growth rate of employment (percent)	25.69	38.57
<i>Ownership and control</i>		
Percentage of MNEs with full control over the subsidiary	51.00	50.00
<i>Motivation of MNC</i>		
Percentage of MNEs that are resource-seeking	29.00	45.00
<i>Resource availability in host country</i>		
Availability of qualified personnel [⊗]	3.75	0.90
Reliability of IT and telecommunications services [⊗]	4.19	0.90
Availability of machinery and equipment [⊗]	3.62	1.29
<i>Institutional environment in host country</i>		
Conduciveness of official procedures ^{⊗*}	2.55	0.77
Conduciveness of general institutional framework ^{⊗*}	2.91	0.93
Conduciveness of policies at various levels of government ^{⊗*}	2.86	0.97
<i>Experience</i>		
Number of countries in which MNE present	24.75	37.65
Percentage of MNEs with in country experience	45.00	50.00
Percentage of MNEs with experience in other emerging markets	70.00	46.00
<i>Characteristics of industry in host country</i>		
Growth of industry turnover	11.76	11.58
Liberalization and privatization prior to establishment of affiliate [⊗]	2.41	0.82
Number of competitors [⊗]	3.60	1.27
<i>Control variables</i>		
Number of employees at start of operations	181.70	485.61
Year of entry (relative to 1990)	5.85	2.44

Note: 1. ⊗ indicates that the variable was measured using a 5-point Likert scale.

2. * indicates that the Likert scales were inverse, i.e., 1 for “very conducive” and 5 for “not conducive at all”.

Table 2
Determinants of Performance
(OLS estimates)

Dependent variable: Average growth rate of labour force per annum, from start of operations until 2000

	1	2	3	4
Constant	18.52 (15.53)	37.87 (21.08)	41.71 ** (18.31)	40.25 (18.12)
<i>Ownership and control</i>				
Full control	9.75 ** (4.52)	10.58 ** (4.60)	11.51 *** (4.10)	11.38 *** (4.15)
<i>Motivation of MNE</i>				
Resource-seeking motivation	2.42 (5.13)	3.82 (5.06)	3.09 (3.98)	3.58 (4.75)
Infrastructure sector × Resource-seeking motivation				- 8.30 (21.58)
Services (not finance) sector × Resource-seeking motivation				0.052 (9.73)
<i>Resource availability in host country</i>				
Availability of qualified personnel	- 4.77 * (2.46)	- 5.35 ** (2.66)	- 6.62 *** (2.49)	- 6.55 *** (2.48)
Reliability of IT and telecommunications services [∇]	- 6.30 (5.87)	- 4.85 ** (2.42)	- 3.71* (2.24)	- 3.68 (2.26)
Availability of machinery and equipment [∇]	2.46 (4.63)	2.33 (1.98)	1.37 (1.84)	1.43 (1.82)
<i>Institutional environment in host country</i>				
Conduciveness of official procedures [∇]	4.82 (4.80)	- 3.53 (4.66)	- 3.59 (4.38)	- 3.60 (4.37)
Conduciveness of general institutional framework [∇]	5.59 (3.31)	3.04 (3.42)	3.63 (3.16)	3.75 (3.12)
Conduciveness of policies at various levels of government [∇]	- 6.16 (4.38)	- 0.30 (2.83)	- 0.88 (2.45)	- 0.84 (2.48)
<i>Experience</i>				
Number of countries in which MNE present	- 0.23 (0.18)	- 0.24 (0.18)		
Square of number of countries in which MNE present	0.001 (0.001)	0.001 (0.001)		
In country experience			- 1.58 (4.44)	- 1.70 (4.40)
Experience in other emerging markets			- 0.92 (4.40)	- 0.81 (4.45)
<i>Characteristics of industry in host country</i>				
Growth of industry turnover	- 0.43 ** (0.18)	- 0.44 ** (0.19)	- 0.42 ** (0.17)	- 0.43 ** (0.17)
Liberalization and privatization prior to establishment of affiliate	- 2.31 (2.90)	- 3.52 (3.00)	- 0.64 (2.50)	- 0.42 (2.48)
Number of competitors [∇]	- 2.03 (5.27)	- 1.63 (1.84)	- 3.02 * (1.62)	- 3.04 * (1.62)
<i>Control variables</i>				

Number of employees at start of operations	- 0.01 *** (0.00)	- 0.01 *** (0.00)	- 0.01 *** (0.00)	- 0.01 *** (0.00)
Time trend	4.10 *** (1.00)	4.03 *** (0.93)	3.62 *** (0.84)	3.61 *** (0.84)
Sector dummies	YES *	YES	YES	YES
Country dummies	YES ***	YES ***	YES ***	YES ***
Mc Fadden's adjusted R ²	0.16	0.17	0.18	0.17
F value (Prob> F)	3.93 (0.00)	3.79 (0.00)	3.67 (0.00)	3.48 (0.00)
N	281	281	293	293

- Note: 1. ∇ indicates that the variable was used as a dummy variable in specification 1, and as a Likert scale measure in the other specifications.
2. The values within parentheses are standard errors.
3. *, ** and *** imply significance at 10%, 5% and 1% level of significance, respectively.