

**Determinants of Employment Growth at MNEs:  
Evidence from Egypt, India, South Africa and Vietnam\***

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*Forthcoming, Comparative Economic Studies*

**Abstract:**

Many foreign investment operations into emerging markets are small, and are likely to have only a limited impact on the local economy. However, host governments often expect transfer of advanced technology from MNEs operating in these markets to local firms by way of inter-firm mobility of skilled laborers. The extent of such transfers would be limited, among other factors, by the size of the pool of skilled laborers that can potentially be mobile between MNEs and local firms. This, in turn, is determined by employment growth at the MNEs. We develop an empirical specification that models this employment growth, by drawing on both the economics and international business literature. This model is then estimated using firm-level data from four emerging markets. We find that wholly owned FDI operations have higher employment growth, while local industry and institutional characteristics moderate the growth effect. This suggests that policies encouraging foreign investors to set up in form of joint ventures may not actually raise the benefits for the host economy.

*Keywords:* MNE, Employment growth, Control, Institutions

*JEL classification:* O13, O33, J21, F23

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\* The authors are grateful to Simon Commander, Stephen Gelb, Danchi Tan, two anonymous referees and editor Jeffrey Miller for helpful comments, to the Egyptian, Indian, South African and Vietnamese country teams for the collection of data, and to Caitlin Frost, Maria Bychkova, Gherardo Girardi for excellent research assistantship. The authors remain responsible for all remaining errors. The research was made possible by a research grant from the UK's Department for International Development.

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# **Determinants of Employment Growth at MNEs: Evidence from Egypt, India, South Africa and Vietnam**

## **1. Introduction**

Spillovers, in the form of technology transfer from a multinational enterprise (MNE) to local firms in the host country, are often proposed as an important rationale for establishing policy regimes conducive to foreign direct investment (FDI) in developing countries (Findlay, 1978; Borenszstein, de Gregorio and Lee, 1995). Technology transfer remains the cornerstone of the substantial literature on spillovers, though much of the evidence linking presence of MNEs to technological improvement of the local firms is indirect (Meyer, 2004).<sup>1</sup> Empirical studies have typically examined the link between the extent of foreign ownership in a domestic firm or foreign presence in a sector on the level or change in the multifactor productivity in that sector (e.g., Aitken and Harrison, 1999). Evidence favoring a positive relationship have been explained in three ways: (a) demonstration effect of the MNEs' production processes on their local competitors, (b) improvement in the productivity of the firms that are in the supply chains of both the MNEs and the local firms, and (c) migration of laborers from MNEs to local firms either through employment or start-up entrepreneurial ventures.

Direct evidence is the strongest in favor of the impact coming from the migration of laborers from MNEs to their local competitors. For example, Hou and Gee (1993) and Tsiang and Wu (1985) have found evidence of technological spillovers from MNEs to local firms in Taiwan, South Korea, Hong Kong and Singapore. Similarly, Pack (2001) and Katz (1987) report evidence suggesting that local managers of MNEs often leave to start their own businesses, thereby facilitating technology transfer from the MNEs to local companies. This is also consistent with the recent experience of the Indian software industry (Commander, 2003).<sup>2</sup> The process of spillovers by way of

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<sup>1</sup> The evidence linking MNE presence in a sector in a developing country to technological improvements among domestic firms in the same sector is mixed (see Blomstrom and Kokko, 1998). Specifically, it has been argued that the extent of the spillover would significantly depend on the ability of the local firms to assimilate the new technology in their own production processes (Kokko, 1994).

<sup>2</sup> There is also evidence from countries like Kenya that only a small proportion of laborers (especially managers) leave MNEs to join local firms in developing

recruitment of MNE personnel by local firms in emerging markets has been modeled theoretically (e.g., Kaufman, 1997), and, not surprisingly, these models suggest that the extent of spillovers would depend on the (marginal) costs and benefits associated with the hiring of laborers by both MNEs and local firms.

The obvious questions, therefore, are why a MNE should transfer high quality technology from the parent firm to the developing country subsidiary, and why it should train its labor force efficiently to use this technology. These issues have been addressed in the theoretical literature on spillovers. Fosfuri, Motta and Rønde (2001) show that a MNE would transfer technology to a developing country subsidiary and train the local laborers only if the local firms do not directly compete with the MNE in the product market. Campbell and Vousden (2003) extend this line of argument and use a two-period model to argue that a MNE would limit the number of laborers that are trained in the use of the cutting edge technology, thereby increasing the skilled wage to the point where it is unprofitable for a local firm to employ these skilled laborers. Wang and Blomstrom (1992), however, posit that a MNE would seek to maintain its technological dominance over the local firms not by limiting technology transfers, but by progressively transferring better technology from the parent to the developing country subsidiary, thereby creating a virtuous circle of competition, spillovers and continual technological upgrade of both the MNE subsidiary and the local firms.

Systematic studies of the factors that impact on the growth of MNE subsidiaries and their decision to hire laborers, who are the conduit through which technology is transferred from the MNEs to their competitors, are very rare (Bloningen and Tomlin, 2001; Tan and Mahoney, 2005). To our knowledge no such studies exist as yet for emerging markets, so crucial issues for such economies, such as the impact of the policy environment and the institutional arrangements on employment creation,

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countries (Gerschenberg, 1987). Further, 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. But, by and large, inter-firm mobility of labor is widely accepted as a channel through which technology spillovers of FDI take place (see Dosi, 1988).

remain unexplored. Further, while there are a large number of studies that explore the determinants of firms' employment growth in general (see, e.g., Hart, 2000; Fotopoulos and Louri, 2004), they do not take into consideration the strategic objectives of the firms that can be of paramount importance in the context of foreign direct investment by MNEs into emerging markets.

Our contribution is to examine the determinants of employment growth at MNEs, taking into consideration the strategic objectives of these firms, the impact of local conditions, and the companies' experience in those environments. Our analysis is based on a unique dataset of 293 MNEs operating in four developing countries: Egypt, India, South Africa and Vietnam. These countries were chosen because they have relatively high levels of foreign direct investment among the cohort of non-Chinese emerging market economies, thereby facilitating the collection of a reasonable number of foreign subsidiaries through random sampling. Moreover they differ significantly with respect to key independent variable in this study, namely, their policy and institutional environment, as well as their pool of skilled laborers,. We use this cross-country dataset to estimate an employment function that links growth of employment at the MNEs to their characteristics, the nature of the parent MNEs control over the local subsidiary, the characteristics of product and factor markets in the local country, and local institutions.

Our results suggest that the extent of control that a MNE has over its affiliate, characteristics of the relevant industry in the host country, and institutional and regulatory environments of the host country are important determinants of its employment growth in emerging markets. This is an important finding for policy makers in emerging markets, who may be encouraging FDI to take forms, such as joint ventures, which fail to maximize employment growth and therefore potential spillover benefits.

The remainder of the paper is structured as follows: In Section 2 we briefly summarize the relevant aspects of the literature on the growth of firms, including employment growth. The data and variables are described in Section 3 and the regression specification and results are reported in Section 4. Section 5 concludes.

## **2. Employment Growth at MNEs Operating in Emerging Markets**

Firms would increase their workforce when the additional employees would add to the profitability of the operation. This may be the case if markets are growing and if complementary factors are available. The economics literature suggests that such growth opportunities would depend on the control over the host country operation, the initial size of a firm and the availability of financial resources for expansion. In addition, more recent literature on MNEs, some of which was discussed in the previous section, indicates that factors like the quality of local institutions, familiarity of MNEs with the local business practices, as well as strategic objectives of these firms would also affect their expansion, and, thus, employment growth.

The literature therefore suggests that employment growth of MNEs operating in emerging markets is likely to be affected by the following factors:

*Control over the host country operation:* A MNE can enter an emerging market either as a Greenfield operation, or by acquiring a local firm, or by setting up a JV in partnership with a local firm. Although evidence about the impact of foreign ownership on firm growth is mixed (e.g., Pfaffermayr and Bellak, 2000), more often than not, controlling equity share in the hands of foreign investors, namely, MNEs, has a positive influence on the profitability of firms in emerging market contexts (e.g., Sabirianova, Svejnar and Terrell, 2005). The literature concludes that a MNE would ideally want to enter an overseas market by way of a Greenfield project or acquisition of a local firm, both of which gives it full operational control over the local operation (see Estrin and Meyer, 2004).

However, it has been suggested that learning to operate in the foreign environment may be an important factor impacting growth of MNE operations in overseas markets (Blonigen and Tomlin, 2001). The literature on the choice of entry mode of MNEs in overseas markets argues that if the information regarding local conditions is imperfect and if the local institutions and factor markets are not well developed, MNEs choose to initially enter overseas markets in the form of JV with local firms (see, e.g., Meyer, 2001; Sinha, 2001). But these foreign investors are usually concerned that transfer of technology will benefit the local partner, who may – in a worst-case scenario – emerge as a competitor (Buckley and Casson, 1998). In these models, therefore, MNEs choose to transfer cutting edge technology to their

emerging market operations and grow only after they have acquired full operating control over the local operation, either through a buy-out of the local partner, or the acquisition of a local firm, or through the floatation of a new firm.

The extent of control a MNE has over its local operation is also likely to be influenced by the extent of reforms in the relevant host country industry. For example, the ability of a MNE to open a new plant or acquire an existing plant to expand its production capacity will be influenced by factors like industrial licensing regimes and legislations aimed at limiting market power of individual firms.

*Host country institutions and MNE experience:* The ability of a MNE to grow in an overseas market would also be dependent on the local institutional environment, and this is particularly true in the context of emerging markets (Khanna and Palepu, 1999; Khanna et al., 2005). If weak institutions lead to macroeconomic instability, it is likely to have a detrimental impact on employment growth at MNEs (Aizenman, 2003). Further, and in a more obvious way, a MNEs ability (and willingness) to expand its local operation would depend on factors like the flexibility of the local labor market, the ease with which contracts can be enforced in the host country, and the extent of corruption in host country. *Ceteris paribus*, a MNEs growth in an emerging market is likely to be positively influenced by the extent to which price setting and market behavior has been liberalized, such that voluntary contracts made on the market can be enforced through the legal system, and negatively affected by corruption (Habib and Zurawicki, 2002).<sup>3</sup> Many of these factors can be offset by experience of operating in such institutional environments. Thus relevant experience will ameliorate the increased transactions costs of operations in countries where market-supporting institutions are weak. Thus, local experience would enable a MNE to navigate the local business environment better, and thereby expand its operations, even if the formal institutions are somewhat underdeveloped.

*Initial size of the firm:* The benchmark for the relationship between initial size of a firm and its subsequent growth is Gibrat's law that argues that smaller firms are more likely to grow faster (see Sutton, 1997). However, to the extent that size offers firms "pecuniary" and other economies of scale (Hart, 2000), larger firms may have an

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<sup>3</sup> Note that the overall extent of economic freedom may have an overlap with the regulations governing FDI in emerging markets.

advantage over smaller firms in terms of expansion and this advantage may be reinforced if organic growth involves learning that is not costless (Dasgupta and Stiglitz, 1988). Finally, rapid growth of smaller firms may be hindered if the resultant increase of managerial cost more than outweighs the reduced average cost of production (Williamson, 1967; Penrose, 1980).

Strategic objectives of MNEs: We have taken into consideration the possibility that the behavior of a MNE with respect to its size or level of employment might 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.<sup>4</sup> While, in general, MNEs tend to be more capital intensive than their domestic counterparts (Marsh, Newfarmer and Moreira, 1983), the strategic objective of a MNE may play a crucial role in determining its optimal labor-capital mix. For example, a MNE that has entered a developing country to take advantage of an abundantly available, and hence inexpensive, local resource – typically semi-skilled labor, is likely to adopt a labor-intensive technology in the host country,<sup>5</sup> 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 earn rents in the host country market.

Availability of labor and complementary factors of production: In the context of emerging markets, we have to take into account possible paucity of resources that can

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<sup>4</sup> 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). Resource-seeking investment, on the other hand, permits MNEs to leverage the resources available in the new production location – be it petroleum in Egypt, precious metals in South Africa, skilled IT personnel in India or cheap low-skilled labor in Vietnam – to give its global operation a competitive edge over its rivals.

<sup>5</sup> The Hecksher-Ohlin theory about international specialization 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.

constrain a MNEs ability to expand operations. There might be a shortage of (semi-) skilled personnel who can adapt quickly to the MNEs' technology (McDonald, Tuselmann and Heise, 2002). This can be either be a consequence of inadequate educational facilities, or because laborers with adequate skills may be organizationally embedded and/or geographically fragmented in emerging markets. For example, high skilled managerial labor may be scarce 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 labor. In addition, a MNE's ability to grow may be adversely affected by paucity of supporting factors of production like machinery and ICT services.

Local market structure: Elston (2002) has argued that firms that face fewer financial constraints are more likely to grow faster and this line of argument has found some empirical support (e.g., Heshmati, 2001). To the extent that any expansion is financed by free cash flow accruing to a firm (Jensen, 1987), expansion of a firm's operation would depend on its profitability, and profitability, in turn, depends on the extent of competition faced by the firm in this market (Fosfuri, Motta and Ronde, 2001).<sup>6</sup> In the context of MNE operations in emerging markets, a firm's expansion might also depend on the willingness of the parent MNE to finance growth of the emerging market operation (Ushijima, 2005). This willingness too is likely to depend on the profitability of the local operation that would determine the rate of return on the investment made by the parent MNE, and hence on competition.

Finally, we also control for local industry demand.

In other words, employment growth of MNEs in emerging markets is captured by the following function, which is made operational for empirical in the following section:

$$\text{Employment Growth} = f(\text{Control, Institutions, Experience, Initial size, Strategic objectives, Factor availability, Local market structure, Local demand}) \quad [1]$$

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<sup>6</sup> As we have seen earlier in the paper, threat of competition may adversely affect employment growth (and employee training) for other reasons as well (Campbell and Vousden, 2003).



In effect, we have built our empirical specification by drawing on a number of different yet related strands of theories of economics and international business studies. Our specification takes into consideration classical issues like the relationship between initial size and growth of firms, as also more recent debates like those concerning the impact of institutions on firm (especially MNE) behavior in emerging markets. We draw on economic theories concerning the impact of informational asymmetry and uncertainty about contract enforcement on the entry mode choice, and subsequent behavior of, MNEs in southern markets. And, at the same time, we take into account factors like strategic objectives of MNEs that are largely ignored in the economics literature, with a few exceptions (see, e.g., Ethier, 1986), but are deemed important by international business theorists. This harmonization of the relevant literature has allowed us to develop an empirical framework that can be used to examine the determinants of employment growth at MNEs, the importance of such growth being spillovers in ways that are discussed in the first section of this paper.

### **3. Data, Variable Measurement and Specification**

#### **3.1 Survey**

The dataset was collected from randomly selected MNE affiliates operating in Egypt, India, South Africa and Vietnam, using a survey instrument. 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 organizational 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.<sup>7</sup> The sampling methods and descriptive statistics for the dataset are described in detail in Chapter 2 of Estrin and Meyer (2004).

### 3.2 Variable Measurement

Our measure of employment growth is the growth rate of the labor force associated with an MNE affiliate from the inception of its operation in the host country to 2000 (EMPGROWTH). In order to account for the fact that an early entrant in the host country market chalks up cumulative employment growth over a greater number of years, we control for the length of operation of a MNE in a host country market using a linear time trend (FIRMAGE). The value of the time trend is 1 for a MNE affiliate that initiated operation in 1991, and 10 for a firm that initiated operation in 2000.

The measures of the other explanatory variables are as given below:

*Control:* Our dataset allows us to classify four different forms in which the local operations of a MNE came into existence, namely, Greenfield project, acquisition of a local firm giving the MNE unambiguously controlling equity stake, partial acquisition of a local firm that does not give the MNE an unambiguously controlling stake, and JV. The discussion in the earlier sections suggests that the MNEs are unlikely to expand local operations, especially in the form of employment, so long as they do not have operational control of the local operations. In other words, employment growth at a Greenfield project or an acquisition that gives a MNE outright and unambiguous control over the local operation is likely to be higher than the employment growth at a JV or in the case of a partial acquisition. At the same time, however, it is not obvious as to whether there is any systematic difference in the growth rates of Greenfield projects and outright or full acquisitions. Hence, we create three dummy variables, one each for Greenfield, full acquisition (ACQUISITION) and JV-partial acquisition (JV). In the regression model, reported later in the paper, Greenfield is the omitted

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<sup>7</sup> Of these, 23 percent are from Egypt, 22 from India, 30 percent from South Africa and 25 percent from Vietnam. In related research in which roughly the same sample was used, we used the Heckman two-step method to examine whether there is a selection bias with respect to the MNE affiliates that did not provide information that led to the generation of missing values. Our analysis suggested that the missing values are random in nature, and do not owe their origin to selection bias.

category. On the basis of the above discussion we expect the coefficient of JV dummy variable to be negative, but we do not have any priors about the coefficient of the acquisition dummy variable.

*Institutions:* We proxy institutional development by four measures, three of which are based on published data for the four host countries. The first is the *corruption perception index* published annually by Transparency International, which is based on an aggregation of multiple published indices that measure managerial perception of corruption (CPI). This rates countries in terms of the degree to which corruption is perceived to exist among public officials and politicians, and reflects the views of business people and analysts. We also use the *economic freedom index* (EFI), developed by the Heritage Foundation, which provides a wide range of information about institutional development. Variables contained in the aggregate index include capital market development, property rights enforcement, regulation, trade policy and government intervention in the economy. For each observation in our sample, the value of this index is its value for the year of the MNE's entry into the relevant emerging market. Since the index were available only for the 1995-2000 period, we had to leave out of our analysis the less than 5 percent of the firms in the sample that entered the four countries between 1990 and 1995.

Given the empirical evidence about the impact of the nature of the legal system on the individual and collective behavior of economic agents (Djankov, La Porta, Silanes and Shleifer, 2002; Djankov et al., 2003), we control for the legal environment of the host countries using a dummy variable that takes the value 1 if a country's legal system is based on the Anglo-Saxon common law paradigm, and is zero otherwise (COMMONLAW). Our prior is that rate of expansion of emerging market operations, and hence employment growth at these operations, is likely to be affected positively by the extent of economic freedom and the existence of an Anglo-Saxon common law system, and negatively by the extent of corruption perception.

Finally, we use information collected in the survey about industry level reforms. The extent of industry-specific reforms was measured by the four country teams responsible for the survey, based on discussions with local firms as well as MNEs operating in those industries. Measures for four different aspects of reform, including privatization of state owned firms, were obtained on a Likert scale that runs from 1 (no policy changes) to 5 (major policy changes). Using Crombach's alpha, we

ascertained that it is possible to club together the four measures of reform, and hence a composite measure that is a simple average of the four component measures was used for the analysis (IREFORM).

Experience: We use two different measures of a MNE's experience in the subsequent analysis, namely, a dummy variable that indicates whether or not a MNE had prior experience of operating in a host country (SPECIFICEXP), 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 (RELATEDEXP). After some experimentation, we chose four clusters; Africa, Asia (other than Japan), Central and Eastern Europe, and Latin America. We expect prior experience in emerging market conditions, especially within the relevant country itself, to have a positive impact on employment growth of a MNE.

Initial size: In keeping with the focus of our paper, we measure initial size using the number of employees at a MNE during its first year of operation in the emerging market (INITSIZE). Gibrat's law suggests that, *ceteris paribus*, the expected impact of initial size on the subsequent growth rate of employment at the firm would be negative.

Strategy: We operationalize MNE strategy via the objectives of the firm, distinguishing between resource and market seeking motives for FDI. We define a MNE as resource seeking if it sells less than 50 percent of its output in the host country's market, and capture the strategic 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 (RSEEKING).<sup>8</sup> To the extent that the main resource sought by MNEs in emerging markets is (semi-) skilled labor, resource-seeking MNEs might be expected to expand employment at their local operations faster than market seeking MNEs.

Resource availability: The availability of local resources is measured for three categories: qualified personnel itself (PERSONNEL), as well as related factors of

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<sup>8</sup> Since the 50 percent cut off point is plausible yet *ad hoc*, we experimented with other cut off points ranging from 30 percent to 70 percent, but the econometric results, reported later in the paper, remained unaltered.

production like machinery and equipment (MACHINERY), and IT and telecommunications services (ICT). 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).

*Competition:* We measure the extent of competition faced by a MNE in the relevant host country using a categorical variable to measure the extent of local competition, where 1 stands for none and 5 stands for greater than 10 (COMPETITION).

*Local demand:* We use as a measure of local demand for each 3-digit industry's product its average growth rate in the relevant emerging market during the 1990s (IGROWTH).

The specification used for our econometric analysis, derived from equation (1), therefore, is given by the following:

$$\begin{aligned}
 \text{EMPGROWTH} = & \beta_0 + \beta_1 \text{ACQUISITION} + \beta_2 \text{JV} + \beta_3 \text{IREFORM} + \beta_4 \text{EFI} \\
 & + \beta_5 \text{CP} + \beta_6 \text{COMMONLAW} + \beta_7 \text{SPECIFICEXP} \\
 & + \beta_8 \text{RELATEDEXP} + \beta_9 \text{INITSIZE} + \beta_{10} \text{RSEEKING} \\
 & + \beta_{11} \text{PERSONNEL} + \beta_{12} \text{MACHINERY} + \beta_{13} \text{ICT} \\
 & + \beta_{14} \text{COMPETITION} + \beta_{15} \text{IGROWTH} + \beta_{16} \text{FIRMAGE} + \varepsilon
 \end{aligned}
 \tag{2}$$

### 3.3 Descriptive Statistics

The descriptive statistics are reported in Table 1. About half of the firms in our sample of 293 MNE operations in emerging markets are in the form of JV, while another 36 percent are in the form of Greenfield projects. Cross-border acquisitions account for only about 12 percent of the sample, largely on account of South Africa.

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. An average MNE entered a host country in 1996, i.e., 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.

The four emerging markets represented in the sample ranked fairly high in terms of both economic freedom and corruption perception, with an average score of over 3.5 each on a 5-point scale. Of the four countries, two – India and South Africa – are believed to have legal systems that approximate the Anglo-Saxon system.

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.

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 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**

Our empirical analysis involves the econometric estimation of equation (2). In keeping with relevant literature, we also control for all unobserved characteristics of the host countries and the 2-digit industries of the MNEs in these host countries that

may affect employment growth of their local operations (Bloningen and Tomlin, 2001; Tan and Mahoney, 2005). In addition, we take into consideration the possibility that the strategic objectives of the MNEs may have different impact on employment growth in different industries, and hence we control for interaction between the resource-seeking dummy variable and the dummy variables capturing industry-specific factors as well.

The regression results are reported in Table 2. All specifications reported in Table 2 have been estimated using ordinary least squares (OLS), with the appropriate correction for hetereskedasticity. The McFadden's adjusted R-square estimates for the regressions are about 0.18, and the F-statistics for the specifications are significant at the 1 percent level. These statistics are entirely consistent with goodness of fit measures of cross-sectional regressions involving less than 300 observations. An interesting aspect of the results is that as the indices measuring economic freedom and corruption perception, and the dummy variable capturing the impact of (common law) legal systems on employment growth are introduced into the specification, in columns 2 and 3, respectively, the goodness of fit of the regressions does not change, but the significance of the controls for host countries declines noticeably. In other words, in our regression specification, the host country dummy variables were largely controlling for cross-country variations in institutions.

Not surprisingly, the cumulative (or overall) employment growth of a MNE affiliate increases with the age of the firm. The other results reported in Table 2 that are consistent with our priors are as follows:

- Relative to a Greenfield project, employment growth is likely to be significantly slower if the host country operation of a MNE is in the form of a JV with a local firm. However, there is no statistically significant difference between employment growth at a Greenfield project and an operation initiated by way of cross-border acquisition that gives the MNE full control of the host country operation.
- The existence of an Anglo-Saxon legal system has a positive impact on the rate of employment growth.

- The annual average employment growth of a MNE is inversely related to the initial size of the host country operation of the firm. This is consistent with Gibrat's law.
- Employment growth at a MNE's emerging market operation is inversely affected by the extent of competition faced by the latter in the host country.

Our results, however, also have a couple of counter-intuitive elements. To begin with, availability of qualified personnel is seen to have had a negative impact on employment growth at the local operation of the MNE. This result possibly implies a plausible quality-quantity trade-off in employment. If the available labor force is qualified, i.e., have the appropriate skills, it is possible for MNEs to expand their operations, when required, by eliciting greater work effort from the existing employees who are presumably paid efficiency wages, rather than by way of employment growth.

Further, the rate of expansion of a MNE affiliate's emerging market 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.

## **5. Concluding Remarks**

There has been a significant growth in the literature on the impact of initial size, financial constraints and ownership structures on the growth of firms, often measured



in terms of rate of change of employment. There has been a parallel growth in the literature on the factors that are likely to affect employment growth at emerging market operations of MNEs. However, there have been few empirical investigations of employment growth at MNE operations, especially in the context of emerging markets. Yet, there is evidence to suggest that training provided by MNEs to their work force is a significant channel of technology spillover in a host country. Using primary firm-level data from four emerging markets, therefore, we address this lacuna in the literature.

A key result is that employment growth at emerging market operations of MNEs is adversely affected if the local operation is a JV with a host country firm. Given the reasonable assumption about the positive relationship between training of MNEs' work force and technology spillover/transfer, which implies that the likelihood and/or magnitude of the spillover/transfer is likely to be positively related to the rate of employment growth at MNEs, this result has an important policy implication. It suggests 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, whether by way of Greenfield projects or cross-border acquisitions, may be counterproductive. In view of the fact that, on account of domestic political compulsions and other reasons, many emerging markets restrict the extent and nature of control a MNE can have over its local affiliate, this may help to explain why the empirical literature on FDI finds little evidence of FDI-driven technology enhancement in developing countries.

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**Table 1**  
**Descriptive Statistics**

	<b>Mean</b>	<b>Standard deviation</b>
Growth rate of employment (percent)	25.69	38.57
<b><i>Ownership and control</i></b>		
Percentage of MNEs with Greenfield project	36.18	
Percentage of MNEs with full acquisition	12.82	
Percentage of MNEs with JV (and partial acquisition)	50.98	
<b><i>Institutional environment in host country</i></b>		
Index of economic freedom <sup>⊗</sup>	3.84	0.65
Index of corruption <sup>⊗</sup>	3.59	0.56
Percentage of host countries with Anglo-Saxon legal system	50.00	
Liberalization and privatization prior to establishment of affiliate <sup>⊗</sup>	2.41	0.82
<b><i>Experience</i></b>		
Percentage of MNEs with in country experience	45.00	50.00
Percentage of MNEs with experience in other emerging markets	70.00	46.00
<b><i>Initial size</i></b>		
Number of employees at start of operations	181.70	485.61
<b><i>Strategic consideration of MNE</i></b>		
Percentage of MNEs that are resource-seeking	29.00	45.00
<b><i>Resource availability in host country</i></b>		
Availability of qualified personnel <sup>⊗</sup>	3.75	0.90
Reliability of IT and telecommunications services <sup>⊗</sup>	4.19	0.90
Availability of machinery and equipment <sup>⊗</sup>	3.62	1.29
<b><i>Characteristics of industry in host country</i></b>		
Growth of industry turnover	11.76	11.58
Number of competitors <sup>⊗</sup>	3.60	1.27
<b><i>Control variable</i></b>		
Firm age	5.85	2.44

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

**Table 2**  
**Determinants of Performance**  
**(OLS estimates with robust standard errors)**

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

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
Constant	43.87 *** (14.80)	0.36 (60.47)	0.37 (60.47)
<b><i>Ownership and control</i></b>			
Acquisition	- 8.44 (9.36)	- 10.10 (9.96)	- 10.10 (9.96)
Joint venture	- 13.05 *** (4.80)	- 14.20 *** (5.20)	- 14.21 *** (5.20)
<b><i>Institutional and regulatory environment in the host country</i></b>			
Index of economic freedom		2.51 (9.58)	2.51 (9.58)
Index of corruption perception		7.63 (6.38)	7.63 (6.38)
English (common) law system			29.90 *** (10.53)
Extent of liberalisation of the host country's industry	0.82 (2.34)	1.67 (2.97)	1.67 (2.97)
<b><i>Operating experience in emerging markets</i></b>			
Prior experience in host country	- 0.15 (4.47)	0.55 (4.82)	0.55 (4.81)
Prior experience in similar emerging markets	0.48 (4.37)	- 0.83 (4.46)	- 0.83 (4.46)
<b><i>Initial size</i></b>			
Initial level of employment	- 0.01 *** (0.00)	- 0.01 *** (0.00)	- 0.01 *** (0.00)
<b><i>Strategic interest of MNE</i></b>			
Resource seeking	4.70 (4.68)	4.37 (4.81)	4.37 (4.80)
<b><i>Resource availability in host country</i></b>			
Availability of qualified labour	- 5.45 ** (2.23)	- 5.65 ** (2.36)	- 5.65 ** (2.36)
Availability of ICT services	- 3.37 (2.22)	- 3.28 (2.29)	- 3.28 (2.29)
Availability of machinery and equipment	0.94 (1.66)	1.34 (1.80)	1.34 (1.80)
<b><i>Characteristics of industry in the host country</i></b>			
Average growth of host country industry during the 1990s	- 0.41 ** (0.16)	- 0.41 ** (0.16)	- 0.41 ** (0.16)
Extent of domestic competition	- 2.74 * (1.54)	- 3.12 * (1.61)	- 3.12 * (1.61)
<b><i>Control variables</i></b>			
Age of the firm	3.70 *** (0.84)	4.57 *** (1.30)	4.57 *** (1.30)

Industry	Yes	Yes	Yes
Resource seeking × Industry	Yes	Yes	Yes
Host country	Yes ***	Yes **	Yes *
Adjusted R-square	0.175	0.183	0.183
F-statistic (Prob > F-statistic)	3.47 (0.00)	3.26 (0.00)	3.26 (0.00)
Nobs	304	293	293

Note: 1. The values within parentheses are standard errors.

2. \*, \*\* and \*\*\* imply significance at 10%, 5% and 1% level of significance, respectively.