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FOREIGN OWNERSHIP, PROFITABILITY AND PRODUCTIVITY IN INDIAN INDUSTRY

Abstract

This study examines the influence of foreign ownership on firm performance in India. The analysis is based on a very large sample of firms. Firms' performance is measured as return on sales, return and the proportion of value added to the value of production. Foreign ownership is categorized according to the control exercisable at different levels of ownership, which is determined by the institutional structure of the environment firms operate in. The results show that, after controlling for a variety of firm and environment-specific factors, only when property rights devolve to foreign owners at ownership levels that provide unambiguous control do firms in which there is foreign ownership display relatively superior performance. Implications for investors contemplating investments in India, and for economic policy making are also discussed.

1. INTRODUCTION

This paper reports the results of a study examining the performance implications of foreign ownership for a large cross-section of firms in Indian industry. India is presently in the news as a location of consequence for overseas firms wishing to invest abroad.[1] India, however, has had a long history of foreign investment, and at independence, in 1947, the pre-dominant share of capital in industry was foreign-owned (Kidron, 1965). Since the 1950s, India has followed a command-and-control based mixed-economy regime, one which became autarkic in the 1960s, with negative consequences on her ability to attract or retain foreign investment; however, since 1991, a fundamental economic policy-switch is in progress as a result of which there has been a move towards a market-based regime in which foreign capital is expected to play a significant part.[2]

The idea behind attracting foreign investment has been not only to tap additional sources of capital available to the resource-short Indian economy, but also to provide for greater productive efficiency of Indian firms because of the presence of better-performing foreign firms, which are assumed to have superior capabilities, thereby raising the efficiency of capital use in Indian industry by submitting projects to rigorous commercial tests of feasibility at the prevailing international cost of risk capital. While this shift to inviting foreign investment may in general be beneficial, and the supposition that foreign firms do perform better than domestic firms may be valid, much of the policy-making has occurred in the context of the absence of systematic empirical support for the proposition that foreign firms do indeed outperform domestic firms in India.

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[1] "Anyone who invests in India is a sucker but anyone who does not invest in India is a bigger sucker." (Anonymous American commentator, c. 1963; quoted in Kidron, 1965).

[2] The results generated by the study have important contemporary policy consequences at the country level as well, especially for firms seeking to make investments overseas, with respect to issues concerning the role of foreign ownership in influencing firms' performance.

With respect to the relative performance of foreign versus domestic firms, three issues arise. Given that the core assumption in the literature is that firms investing abroad possess superior capabilities which are likely to be reflected in relatively superior performance outcomes (Caves, 1982), the issues, then, are: first, will the capabilities be translated into superior performance outcomes in all cases, or are there institutional constraints within which foreign firms operate that may inhibit the translation of these capabilities into performance outcomes? From the perspective of firms making international investment decisions, the second issue is: how attractive is a transition-economy, such as India, in terms of its performance-generating potential, and what level of investments should be made in India if superior performance is desired? The third issue, of more immediate relevance to a government, is: how attractive is the institutional environment in terms of attracting foreign investment, and, therefore, what ownership levels should be allowed so that foreign investors are motivated to enter the economy?[3]

These issues are examined, at differing levels of conceptual and empirical detail, with respect to India, and the paper unfolds as follows: in section 2 theoretical reasoning connected with the capability-based view of why firms invest abroad; the associated performance outcomes if they do; more important, the form such investments take; and the impact that the Indian institutional context is likely

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[3] Cable (1995) lists the reasoning behind the Indian government's opening-up of the foreign investment regime as being influenced by several considerations, which are: to attract external capital flows to finance the current account deficit in a form which does not add to debt-service obligations; to augment capital formation, particularly in sectors where supply shortfalls have resulted from lack of domestic investment; to use foreign companies' access to international trading networks to generate export earnings; and to use a significant inflow of investment by blue-chip multinationals as a way of raising overall confidence in India, so indirectly improving the prospects for improved credit rating and for attracting back domestic capital which was sent overseas as flight capital.

to have on the performance of firms with differing levels of foreign ownership, are discussed. Section 3 contains a discussion of empirical issues, while in section 4 we discuss the results obtained. Section 5 concludes the paper.

2. THEORY AND INSTITUTIONAL ISSUES

2.1 THEORETICAL CONCERNS

For more than three decades, since the seminal work by Hymer (1960), a theme in the foreign direct investment literature is that firms are motivated to invest abroad because they have superior exploitable capabilities relative to domestic firms (Buckley and Casson, 1976; Caves, 1982; Dunning, 1988). Therefore, the hypothesis that, within a given country context, firms in which there is a higher share of foreign ownership will, on average, be more profitable and productive than their domestic counterparts, because the overseas firms possess particular intangible skills and capabilities which the domestic firms do not, follows almost axiomatically.[4]

A stream of early literature (Brash, 1966; Caves, 1974; Dunning, 1970; Dunning and Pearce, 1977; Forsyth, 1972; Globerman, 1979) has established the existence of such direct effects of foreign ownership with respect to OECD countries;[5] yet, the developing country studies (Vendrell-Alda, 1978;

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[4] Cable and Persaud (1987) highlight the intrinsic attractiveness of foreign direct investment relative to commercial borrowing or a portfolio investment in equity as a means of acquiring capital. Foreign direct investment not only links returns and remittances to project performance, unlike commercial borrowing, but it also provides an integrated package of capital, management and technology which are less efficiently or easily assembled piecemeal.

[5] There is also a literature which establishes the existence of the indirect effects of foreign investment via spillover effects on domestic firms' productivity, mostly set in the context of developing countries. From the view-point of a host country, foreign investments have a spillover effect since the technology and productivity of local firms may improve as the foreign firms demonstrate new technologies, provide technical assistance to local suppliers and customers, and train workers and managers who may be employed later by local firms. Simultaneously, foreign firms can both expand the scope of the domestic market, and also influence domestic firms to become relatively more efficient via exacerbating competitive pressures (Cable, 1995). See, for example, Blomstrom (1989), Blomstrom

Willmore, 1986) are equivocal, and the most-recent study of an OECD country (Globerman, Ries and Vertinsky, 1994), does not find any positive performance effects associated with foreign ownership, raising questions about the validity of the hypothesis in the contemporary context. [6]

From the point of view of firms making strategic decisions to invest in other countries, [7] the issue of whether these investments do perform better relative to the investments made by domestic competitors then becomes relevant, since the performance differential reflects the returns accruing to the superior capability sets that the investor firm possesses. [8] If such returns are not likely to accrue,

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and Persson (1983), Haddad and Harrison (1993) and Kokko (1994) for details of the evidence generated with respect to the spillovers issue. There is yet another literature which has examined whether foreign-owned firms are more export-oriented than domestic firms. See, for example, Cohen (1975), de la Torre (1974), Jenkins (1979), Lall and Kumar (1981), Lall and Mohammed (1983), Newfarmer and March (1981), Riedel (1975) and Willmore (1976). Athukorala, Jayasuriya and Oczkowski (1995) criticize these studies for not incorporating controls for a host of firm-related and industry-related variables which can have significant relationships with firms' performance, and it is a point of view we are sympathetic to.

[6] There are two allied strategic questions which we do not go into, but which also deserve research attention. The first is, given the willingness of a firm to invest abroad, which of, say, two countries is the more attractive in terms of the rents likely to be generated? The second is, given a decision between investing at home or abroad, in one or more countries, are the home returns likely to be smaller or greater than the returns generated abroad?

[7] From a firm's point of view it may make sense to go overseas, since it can make use of excess capacity in its stock of capabilities and resources (Penrose, 1959). Skills and capabilities which are intangible are, in a sense, public goods since there are no finite limits to their uses. They may be exploitable without any constraint as to its quantity they are consumed in, subject, of course, to the constraint that managerial competencies do exist to effect a transfer of the knowledge. But, there may also be tangible skills and capability sets which may have finite capacity limits. Nevertheless, these finite-limit skill sets may also remain under-utilized, and can be profitably leveraged in some other location. For example, over the years firms may have built up managerial cadres which become excess to present domestic requirements. Overseas investments can serve as a vehicle for exploiting managerial capabilities of a team which can share tacit knowledge and coordinating skills amongst themselves in exploiting the increasing returns that characterize intangible skills and capabilities.

[8] Successful firms making overseas investments are likely to possess one or more intangible assets, which can be of various types. The ownership of these assets serves to enhance the competencies and capabilities that firms possess (Prahalad and Hamel, 1990), and the availability of a stock of capabilities helps firm leverage these in other environmental contexts (Penrose, 1959). An

then the question of expending resources toward making investments in another country becomes moot if the environment is such that the marginal benefits of participating therein are zero.

A key issue that arises next is, what is the appropriate level of investments that should be made? Should a firm be a portfolio investor, with a small equity investment in overseas companies made because it possesses excess liquid resources, or a direct investor with organizational control over the strategy and operations of enterprises abroad?[9] These questions turn out to be important, since either form of investment involves different types and levels of resource and capability transfers

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intangible asset may represent technological skills, which can include codified and tacit knowledge about how to produce cheaper and better products given relevant inputs (Nelson and Winter, 1982). An intangible asset may also take the form of a patented design or a process, which is codified in blue-prints and manuals, or it may take the form of design, manufacturing or research know-how shared among a critical mass of firms' employees. Conversely, technological skills may also be embodied in plant and machinery that the firms deploy. Another major form of an intangible asset is marketing skills. A firm can possess special skills in branding, promotion or styling such that its product is clearly distinguishable. Such marketing assets are productive in revenues terms as they generate a price premium for the product in question since buyers are willing to pay more than for other comparable products.

[9] One option that a firm possessing intangible skills or capabilities has is to sell or rent on some basis, say, licensing, capabilities other than those which are embodied in its managers to domestic firms and earn a stream of cash flows. Therefore, the question of why firms which go overseas utilize direct subsidiary organizations is an issue that has generated by now a good deal of literature. The transactions cost framework (Williamson, 1985) is useful for explanatory purposes. Following on from the public good aspect of skills and knowledge that firms leverage, the marginal costs of transfer are almost zero, and, therefore, according to economic theory so should be the price. There are, then, reduced incentives for a purchaser to pay the asking price of the seller which includes, obviously, a rent component and reduces incentives for a seller to accept anything less than the asking price. Hence, under such conditions, deal-completion is likely to be very difficult. A second problem arises because of the information paradox (Arrow, 1962). A seller can convince a buyer of the possibility of some knowledge that is likely to be valuable, but information once revealed may be acquired costlessly by the potential buyer. Simultaneously, adverse selection problems can arise. The buyer may believe that the seller is opportunistic and overstating the value of the knowledge; therefore she may decline to pay the asking price. With conditions such as these likely to exist, the potential for an overseas investor to collect the full revenue from the leverage by license of its existing skills and capabilities to other firms is likely to be low in an arms-length transaction. Therefore, the alternative is internalization via direct equity investment in an organization.

overseas, with consequent non-linear performance impacts. If core intangible assets, which are likely to yield extremely high rates of return overseas, are transferred then full control via majority ownership of the concerned organization is necessary, otherwise technology transfer is not likely to take place (Ramachandran, 1993). Concomitantly, host-country policies, laws and institutions can dictate the different levels of ownership at which either operational or strategic control may be exercised by foreign investors, and the ability to exercise such operational or strategic control can have a major impact on the wherewithal of an investing firm to internalize the returns accruing to its superior capability sets.

In addressing the issue of whether operational or strategic control can be exercised, the nature of property rights is important. A firm may sell or license its skills or capabilities to a firm in another country and ensure that the intellectual property rights regimes in place, such as patent, copyright and trademark laws, protect the seller or licenser from egregious losses of income. With respect to the investment option, where capital outlays are concerned and which may be quite large, a different type of property right is involved. That property right is the right of sale or disposal of resources and capital assets, which is a sine-qua-non of ownership (Demsetz, 1988). If this particular right, which is the ultimate expression of an investor's ability to exercise strategic control, is precluded, or becomes difficult to establish in a foreign-investment situation, then it is equally difficult for an investing firm to internalize the benefits and returns accruing to its superior capability sets.

Host-country policies and rules define the institutional framework within which property rights operate for foreign firms which have made investments in the share capital of firms overseas. Institutions, which are the rules of a society or organizations (Commons, 1950; Davis and North, 1971; Knight, 1952), play an important role in establishing expectations about the rights to use resources in

economic activities and about partitioning income and assets (Hayami and Ruttan, 1985). Therefore, country-specific institutions, particularly with respect to the legal issues affecting ownership, have to be taken into account in assessing the relationship between foreign ownership levels and performance. The Indian institutional context has had a major impact on the way property rights are associated with ownership.

2.2 THE INDIAN CONTEXT

Since 1991 the Indian economy has been in the throes of a major economic transition, with policies reversing over three decades of an inward-looking approach to industrial development. One of the fundamental components of this economic transition is the liberalization of restrictive policies, including the opening up of many sectors of Indian industry, such as oil exploration and power generation, once reserved for state-owned enterprises, to both foreign and Indian capital.[10] Apart from

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[10] These changes, however, have to be reviewed in the light of past institutional considerations that have influenced Indian policy towards foreign investments. At independence, in 1947, India was host to a large body of foreign capital, principally British, though after 1900, and particularly between 1919 and 1947, there was a considerable increase in Indian entrepreneurship (Bagchi, 1972; Chandavarkar, 1985; Mahadevan, 1992; Tomlinson, 1981). As a characteristic of colonial heritage, such investments were concentrated in extractive industries: for example, 85 percent of the area planted to tea was foreign-owned; another area of concentration was international trade and ancillary services. Foreign units were the largest and most influential in any industry that they participated in; for example, Kidron (1965) documents that the average foreign-owned cotton mill employed 3,300 workers, as compared to 1,800 by an Indian-owned mill. Also, as late as 1951-1952 39 percent of India's imports and between 37 and 44 percent of India's exports were handled by foreign firms (Kidron, 1965). From the 1950s, however, the policy thrust was on detailed centralized planning and the role of the state as the premier catalyst of industrial development was codified in industrial policy statements and resolutions (Marathe, 1989). While Indian industrial development progressed, via the organizational mechanisms of both public and private sector enterprises, the role of foreign capital diminished considerably and there were significant capital reparations. After 1947 there were continuing sales of British interests to Indian entrepreneurs; while in 1938 there were 61 large business-groups controlled by the British, by 1962 no more than 25 business-groups remained British (Kidron, 1965).

the lowering of institutionally-based entry barriers, there is also a concerted effort to induce foreign investments across all sectors of Indian industry.[11]

Control over foreign investments is operationalized via the percentage of equity that foreigners can hold and there are relatively few fully, 100 percent, foreign-owned firms in India. Following the guidelines of the International Monetary Fund, the Reserve Bank of India classifies equity ownership of 25 percent or more as enabling control. Below that level, foreign firms are assumed to be relatively passive investors. At a 25 percent level of shareholding, foreign firms have the ability to block members' special resolutions which are necessary to make significant strategic changes, and the passage of which, under the Indian Companies Act of 1956, requires that 75 percent of the shareholders vote in favor. As a consequence, where foreign shareholding is less than 25 percent, relatively lower quality skills and capabilities are likely to be brought into India, since no means of control, through exercise of ability to block special resolutions which may be detrimental to foreign investors' interests, is going to be forthcoming. At an ownership level of less than 25 percent asset protection is difficult. Given relatively low quality resources brought in where foreign ownership is less than 25 percent, it is unlikely that there will be significant performance differences between firms with some foreign ownership and domestic firms.

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[11] From the 1960s, till the commencing of reforms in 1991, a self-reliance and import-substituting orientation dominated Indian policy thinking, with the objective of developing national industrial capabilities and promoting the growth of indigenous capital. A particularly large amount of investments went into the state-owned enterprises, which came to account for two-thirds of the capital invested in Indian industry. During this phase the attitudes towards foreign investment, expressed as restrictions on the percentage of equity that foreigners could hold, became harsher than they had ever been before (Marathe, 1989), resulting in annual foreign direct investment inflows of only around $ 100 million in the late 1980s, compared with annual inflows into China, since the opening-up of 1978, of $ 3.5 billion (Jalan, 1991). In spite of these trends, foreign firms remain very much a part of the Indian commercial and industrial scene, and though significant declines in the share of industrial output by foreign firms have taken place, in 1984-1985 this share was about one-sixth of the total value of industrial output (Rosen, 1992).

Foreign firms were allowed to have a maximum shareholding of 40 percent in their Indian subsidiaries till 1991. An ownership stake of between 25 percent and 40 percent has meant that foreign firms could have exercised operational control, as a result of which the quality-level of resources brought into the subsidiary is likely to have been higher than if ownership were less than 25 percent. Therefore, performance differences are expected to be noted between firms with between 25 percent and 40 percent foreign shareholding and firms with less than 25 percent foreign shareholding.

A number of high quality foreign firms bringing in specialized resources and skills, not generally found in India, have been allowed to have a greater than 40 percent ownership stake in Indian firms, though they have not been permitted majority voting rights control that goes with a 51 percent ownership stake. These firms have come under FERA monitoring by both the Ministry of Finance and the Reserve Bank of India. An over 40 percent stake has implied not only operational control, but also control over strategic decision-making and property rights. The Indian government has operated on the principle of separation of ownership and control, for example as articulated by Berle and Means (1932), that it is difficult for a large number of small shareholders to undertake concerted collective action in a corporate context; therefore, effective control can be wielded by a single large shareholder which, though owning upwards of 40 percent of the shares, does not necessarily possess full-majority voting rights that accrue with a 51 percent shareholding.

Majority ownership, where foreign owners can have a 51 percent shareholding in Indian firms, is a comparatively recent phenomenon, and is a policy-switch implemented after the 1991 reforms. The reforms give foreign investors effective and unambiguous control over asset and income partitioning, and the ability to block both ordinary and special resolutions, which may be sponsored by other shareholders and could be detrimental to foreign firms' interests. A 51 percent ownership holding

simultaneously gives foreign firms the wherewithal to implement ordinary resolutions without the need for recourse to the votes of other sympathetic supporters. Whether foreign shareholding is 40 percent or more for pre-1991 observations, or 51 percent or more for post-1991 observations, in either case the relative quality level of resources and skills likely to be transferred to Indian firms is likely to be high, with a consequential highly-positive impact on performance. In summary, three categories of foreign ownership can be defined: first, investment below 25 percent, investment between 25 and 40 percent (51 percent), and investment of 40 percent (51 percent) or above, and each of these categories have varying influences on firms' performance.

3. EMPIRICAL ANALYSIS

3.1 DATA

To evaluate the effect of foreign ownership on the economic performance of firms, and to assess whether foreign firms do outperform domestic firms, this study uses firm-level data for over 1000 Indian firms listed on the Bombay Stock Exchange. In addition to ownership, the proportion of shares held by foreign investors, directors, the general public and financial institutions which are principally government-owned, the data include information extracted from the profit and loss account and the balance sheet of individual firms, data with respect to asset utilization, exports and imports, and various financial performance ratios. The data were collected from multiple sources. The Center for the Monitoring of the Indian Economy (CMIE) provided initial data. Thereafter, details on ownership and some aspects of firm behavior and performance were collected from the Bombay Stock Exchange, and the office of the Registrar of Companies in the Department of Company of the Ministry of Law, Justice and Company Affairs of the Government of India. The principal limiting factor was the availability of data on ownership, which was not readily available for all firms, and in conjunction with

the guidance provided to us by officials of the Department of Statistical Analysis and Computer Services of the Reserve Bank of India, we were able to collect ownership data for over 1,000 firms.[12]

The data collected is cross-sectional and not time-series in nature largely because of difficulties with obtaining ownership patterns. Ideally, data collected on changing patterns of ownership and firm performance over a long time period are likely to yield richer findings. The data, however, does have a time component to it because the ownership data relate for different firms to different years between 1988 and 1994. Given this aspect of the data we explicitly have to control for time-effects by including an index variable which takes on the value between 0 and 5 depending on the year each observation relates to between 1988 and 1994. The large, heterogeneous cross-section of firms in the data-set allows us to control for firm-level, industry-wide, and institutional effects, given that a lack of controls has been the lacuna of past studies (Athukorala, Jayasuriya and Oczkowski, 1995): The variables used in the study are listed in Table 1. A correlation matrix is given in the appendix to this paper.

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[12] This study differs from much of the earlier work in this area insofar as most analyses comparing the relative impact of foreign and domestic ownership base their findings on analyses of industry-level or plant-level data to make the case that a foreign firm may turn out to be a better performer. The problem with such analyses is obvious in that they lead to an ecological fallacy, whereby either plant-level data collected from census records or industry-level data are used to draw conclusions about the performance of individual firms. Ownership is a firm-level concept, and not an industry-level or a plant-level concept. Therefore, the correct unit of analysis is the firm. There is, also, an additional problem with either plant-level or industry-level analysis in that neither unit of analysis permits the control for a number of firm-specific factors which have to be taken into account in explanations of performance. The approach used in this paper is different because the focus is at a relevant unit of analysis, the performance of individual firms. Moreover, this is, perhaps, one of the largest cross-sectional data sets on firms collected to study the impact of foreign ownership on firm performance for any developing nation, and especially for India where the last similar comprehensive study of Indian industry was conducted by Hazari (1966), who investigated the ownership structure of Indian industry. The purpose of that study was limited as it was more concerned with identifying broad ownership patterns, than with assessing the influence of ownership, per-se, on firm performance.

3.2 *MEASURES OF FIRM PERFORMANCE*

Firms' performance is measured for the purposes of this study using three different variables: return on assets, return on sales and value added as a proportion of the value of production. In common with similar work studying the impact of ownership on firms' performance (Boardman and Vining, 1989), return on assets and return on sales are used as performance measures.[13]

Apart from profitability, another key measure of firm-level performance is productive efficiency, or the ability of firms to convert resource-inputs into outputs. A relevant measure is total-factor productivity, to calculate which data on not only the value of outputs, but also details of the different inputs used by firms are necessary; however, our data-base did not include any employee information, and we do not, thus, have a key variable required to undertake traditional productive efficiency calculations. The Organization for Economic Cooperation and Development [OECD] (1994) has, however, established the use of another measure, which is calculated as value added as a proportion of the value of production. We have data in respect of value added and value of production available for the firms studied, and, based on the precedent set by an international organization, use this particular ratio as another measure of performance.

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[13] Because of differences in how depreciation may be computed, and a number of other reasons, accounting rates of return have been assumed to be non-equivalent to economic rates of return (Fisher and McGowan, 1983). Nevertheless, these accounting-data based measures are used for all our observations; hence, there is consistency in measurement within the sample. Previous researchers (Kay, 1976; Kay and Mayer, 1986) have also established that accounting ratios have significant correlation with economic rates of return, and there are a number of studies, both in the industrial organization field (Bain, 1951; Weiss, 1974; Cowling and Waterson, 1976; Gollop and Roberts, 1979; Long and Ravenscraft, 1984; Martin, 1984; Slade, 1986; Scherer, 1987) and in the strategic management field (Capon, Farley and Hoenig, 1990; Chakravarthy, 1986; Lenz, 1981; Ramanujam and Venkatraman, 1986; Woo, Willard and Daellenbach, 1992) which have employed these accounting-ratios based measures of performance.

3.3 *INDEPENDENT VARIABLES*

The existence of institutional constraints imposed by the Indian government implies that foreign ownership impact has to be assessed at three levels: first, for firms with upto 25 percent foreign shareholding; second, for those firms with foreign shareholding greater than 25 percent, but less than 40 percent prior to 1991, and 51 percent afterwards; and, third, for companies in which foreign shareholding was greater than 40 percent prior to 1991, and larger than 51 percent after 1991. The data that we have acquired on shareholding reports the percent of shares in each firm that are owned by foreign firms, with information allowing us to identify firms with different levels of foreign shareholding, and categorize these: into firms with less than 25 percent foreign shareholding, firms with between 25 percent and 40 percent (51 percent after 1991) shareholding, and firms with more than 40 percent (51 percent after 1991) foreign shareholding, and, thereafter, assess the differential impact of the different categories of foreign ownership on performance.[14]

3.4 *CONTROLS*

A key methodological weakness of much of the earlier literature referred to is that the analyses have been based on a simple, often non-parametric, comparison of the performance of a domestic sub-sample versus a foreign sub-sample without controlling for other relevant factors. However, other than foreign ownership levels, several control factors need to be introduced. It is quite feasible to conclude that foreign-controlled firms may be attracted to industries which have above average profitability or productive efficiency levels, and that foreign ownership may be

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[14] However, we do have a lacuna in that we cannot identify home-country sources of ownership, which Globerman, Ries and Vertinsky (1994) have been able to do. Such a qualitative aspect of foreign ownership can be important. For example, Kojima (1978) has argued that Japanese firms are, a-priori, better performers than firms from U.S.A. or Europe and in third-country locations will outperform American-owned or European-owned firms.

clustered in industries which enjoy above-average performance relative to other industries. To control for such biases in our estimates, we introduce a number of controls, all of which can impact positively or negatively on firms in their ability to attain above-average levels of performance. Again, there is no fully-developed theory or a standard model which explains differences in firm-level performance, and we rely on the literature in choosing the variables that have been identified as important in influencing performance.

Theoretically, the size of a firm can affect a firm's performance in many ways, and SIZE is introduced as a control variable. Key features of a large firm are its diverse capabilities, the ability to exploit economies of scale and the formalization of procedures. These characteristics, by making the implementation of operations more effective (Penrose, 1959), can allow larger firms not only to generate larger returns on assets and sales, but also to capture more value as a proportion of the value of production than smaller firms. Alternatively, larger firms could be less efficient because of the loss of control by top managers over strategic and operational activities within the firm (Williamson, 1967). Increased bureaucratization and extensive hierarchies also reduce the incentives for managers to be efficient as the rents from superior performance tend to dissipate among a larger number of personnel in the firm. Smaller firms, while they are unable to enjoy the advantages of diversity and economies of scale, are less hierarchical and bureaucratic and can therefore be more flexible and adapt to situations where rapid-decision making can allow firms to obtain larger than average profits (Carlsson, 1989). Size can have both positive and negative consequences on performance, and with respect to the Indian firms studied we do not prognosticate about the sign of the SIZE coefficient, but leave it to be determined from the empirical data.

There is another reason why SIZE is an important control variable. While our data is cross-sectionally extensive, we do not have the ability to measure firm's market-power or the level of concentration in the industries that the sample firms operate in. This is a major limitation of the data, and we cannot include controls for market-structure factors which are important drivers of economic performance. On the other hand, SIZE reflects the ability of firms to attain economies of scale as well as market power (Boardman and Vining, 1989). Therefore, the use of the SIZE variable as a control proxies for market-power, though imperfectly.[15]

AGE is introduced as a control variable, since how old firms are is a key determinant of performance. Again, we do not prognosticate on whether AGE is positively or negatively related to performance in the Indian context, and leave the issue to be empirically determined. Extant theory is also equivocal on the issue. The industrial organization literature suggests that older firms are more experienced, have enjoyed the benefits of learning, and can, therefore, enjoy relatively superior performance compared to newcomers. On the other hand, early economic literature (Marshall, 1920) and current sociological writing (Hannan and Freeman, 1989) suggest that older firms are prone to inertia, and the bureaucratic ossification that goes along with age; thus, they are unlikely to leave the flexibility to make rapid adjustments in the contemporary environment. Therefore, relative performance is likely to suffer.

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[15] In India, the concentration of economic power has been a contentious issue, and since the late 1960s the enforcement of monopolies legislation has attempted to reduce industrial concentration, but implementation has left much to be desired (Bardhan, 1984; Bhagwati, 1993; Marathe, 1989). The Monopolies and Restrictive Practices Act (MRTP) was promulgated in 1969 to prevent industrial concentration, and whether they belong in highly-concentrated industries or not, firms in which there is relatively greater foreign ownership have been subject to monitoring by the separate agencies that implement the FERA and the MRTP Acts.

The relative quantum of diversification of business activities by firms impacts on performance (Ramanujam and Varadarajan, 1989). Related diversification is one way of exploiting firms' excess capacities in the resources that it possesses (Penrose, 1959), and may lead to better performance for the firm as a whole (Rumelt, 1974). Unrelated diversification away from the core activities of the firm can lead to lower than average performance because it leads to a dissipation of energies and resources into areas which demand more than necessary attention (Bettis and Prahalad, 1986). An alternative view is that expansion into a broad range of activities leads to the acquisition of novel capabilities, the benefits of which can be leveraged back into the original line of business activity. Therefore, unrelated diversification may turn out to be beneficial for firms. However, the context is also important. In India, the industrial policy regimes have led firms to undertake a broad range of relatively unrelated diversification forays (Marathe, 1989). The effects of such business diversity have to be controlled for, and their impact assessed. Therefore, DIVERSITY is introduced as a regressor.

Exposure to foreign trade is assumed to exert pressures on firms to attain superior performance, since competitive intensity rises as a result of which x-inefficiencies in firms are reduced and export-oriented strategies are more conducive to micro-economic performance (Krueger, 1983; Leibenstein, 1976; Little, Scitovsky and Scott, 1970). Firms which have relatively greater levels of export sales face competitive pressures from firms in overseas markets and, necessarily, have to be efficient and also produce high-quality output so as to be effective competitors. Additionally, the experiences gained in operating overseas also lead to a greater range of experiences and skills acquisition, and these can be leveraged to benefit the totality of a firm's business activities, leading to relatively superior performance. India has traditionally been an

export-pessimistic country (Bhagwati, 1993; Mohan and Aggarwal, 1990), and Indian firms' share of global foreign trade has been minuscule. Firms which have been relatively high exports are also likely to be more progressive and risk-oriented, with relatively better performance patterns likely to be noted and EXPORT SALES is introduced as a regressor in the model.

Imports of finished products into a particular domestic industry also reduce x-inefficiencies in domestic firms in that industry as a result of the greater competitive pressures facing the domestic firms (Balassa, 1989). However, there is no theory to suggest if the level of imports undertaken by individual firms is likely to impact performance. In India, institutional factors underlying import-policies have led to the emergence of a rent-seeking class of firms since finite import quotas have hitherto been the norm (Marathe, 1989), with import trade-control policies being instrumental in influencing Indian firms' behavior (Mazumdar, 1991), and is an aspect of the Indian policy regime which has to be controlled for; therefore, we include IMPORTS as a regressor.

A number of industry-related characteristics which may influence performance have to be controlled for (Caves, 1990). The first of these is capital intensity. Evidence also points to the fact that firms with greater levels of foreign ownership are relatively more capital intensive than domestic firms (Agarwal, 1979) and NET FIXED ASSETS is used as a regressor. In some industries the ability to turn over working capital rapidly can influence performance positively, since greater utilization of liquid and, especially, cash resources is attained. QUICK RATIO captures the relative ability of firms to generate cash and other liquid assets as a proportion of their outstanding current liabilities, and a higher value of this variable can reflect both industry conditions as well as latent firm-level cash management capabilities.

INVENTORY and SALES GROWTH are variables which capture aspects of industry-level characteristics that individual firms may be experiencing, as well as general business-cycle related conditions. Some industries may have high inventory holding patterns relative to others, and in some industries growth in sales may be higher or lower compared to other industries. Such factors are reflected in the INVENTORY and SALES GROWTH variables for the individual firms. Additionally, the overall economic environment may be such that during one period inventory holdings may be higher than in others, and sales growth trends may also be negative. These business-cycle influences affect all firms, and the two variables help simultaneously to control for industry-level as well as business-cycle factors. The latter is important in the Indian context, since the Indian economy has gone through a recession in the years 1992 and 1993, two years for which we have a number of observations.

ADVERTISING, MARKETING and DISTRIBUTION are three variables which help to control for operational aspects which can affect firm performance. There is a large literature which has found advertising and firm-level performance to be positively related (Comanor and Wilson, 1974); additionally, foreign-owned firms have a strong predilection for undertaking heavier advertising, relative to domestic firms, to diffuse their brands' image and gain market position, and in the Indian context a number of foreign-owned firms have been credited with strong marketing and distribution skills. Also, in a sense, differences in performance between foreign and domestic firms arise from firm-specific capabilities and predilections which are reflected in firms' advertising and marketing expenditures.

A number of institutionally-related variables have to be introduced so as to control for their effects on performance. First, in India high leverage, or debt-equity, ratios are the norm,

since the state has stepped in as a provider of long-term capital for large industrial projects because equity markets were under-developed and the quantum of personal savings inadequate (Jalan, 1991). In theory, principal-agent reasoning suggests that the greater the level of debt, the greater the amount of lender monitoring and, therefore, the better will be firms' performance (Jensen and Meckling, 1976). In India, such principal-agent concepts have been reversed because, in spite of the presence of a large quantity of debt, the total lack of monitoring by the government-owned lenders have permitted industrialists to earn large rents on a low personal investment base (Jalan, 1991) and there have been no incentives to attain superior performance. Thus, DEBT EQUITY RATIO is expected to be negatively related to performance.

A variable GROUP is also introduced into the regression. Within India a number of business groupings exist, because the origins of Indian enterprise have been based on great trading families who subsequently financed forays into industry (Ray, 1979). A number of these groups own firms in which there is also a large foreign-ownership component. Additionally, a number of firms, which are foreign in origin, now each control a number of companies and form a group. Belonging to a group is expected to lead to capability-spillovers among the firms comprising the group, with a positive impact on the performance of individual firms, as a result of the existence of scope economies in many operational areas (Teece, 1980).

In India indirect taxes consist of a major source of revenue for government and firms act as tax collectors by recovering excise duties from the final customers and passing them on to the government authorities. Unlike, say, U.K. where there is a standard rate of indirect taxes, in India there is a very large variation in indirect tax rates and the presence of such wide variations can impact performance. Also, the role of a firm as a tax collector can lead to lowering of incentives

to maximize profits because the firm is really an indirect revenue-raiser rather than a business enterprise. Thus, EXCISE is introduced as a control variable.

TIME controls for inter-temporal effects, mention of which has been made earlier. The coefficient is expected to be positive, because one expectation from the 1991 liberalization and reforms measures is that the relaxation of rigid institutional practices will motivate firms to be superior performers.

3.5 MODEL ESTIMATION

In India, there are three critical levels of foreign shareholding; less than 25 percent; more than 25 percent but less than 40 percent (prior to 1991) or 51 percent (after 1991); and, over 40 percent (prior to 1991) or 51 percent (after 1991). These ownership levels allow foreign shareholders different levels of control over the firm. A general problem arises as a result. There cannot be a linear function that best represents the data; rather the ownership-performance relationship is likely to be non-linear. While linearity is attractive theoretically, given institutional considerations underlying the ownership-performance nexus it is empirically untenable.

One way to determine the influence of these different categories or levels of foreign ownership is to estimate the independent impact of the various categories of foreign ownership through a series of separate estimations, or through a series of dummy variables, which is tantamount to estimating separate regressions for each ownership category (Maddala, 1977). These approaches, however, rule out any continuous movement from one ownership category to another (Greene, 1990), and also do not use all the information contained in the data for model estimation (Boyce, 1987). An alternative approach builds a relationship between the various categories through a series of linear segments, but forces them to meet at the end-points of each

category of ownership. This approach is captured by a class of models called spline or kinked-regression models (Johnston, 1984; Poirier, 1976).

Originally, spline regression were used for time-series regression models, where the dependent variable could have time-varying relationships with the independent variables (Boyce, 1987; Garber and Poirier, 1974). A spline model is equally appropriate for cross sectional analysis, especially when the key independent variable is continuous with very definite breaks or kinks, and there have been a number of uses of spline-regression models for cross-sectional data (Geroski, 1981; Schwalbach, 1991).

The general function to be estimated is:

$$PERFORMANCE = \alpha^0 + \beta^0 FOREIGN \quad \text{if } FOREIGN < 25 \quad (1),$$

$$PERFORMANCE = \alpha^1 + \beta^1 FOREIGN \quad \text{if } FOREIGN \geq 25 \text{ and } \leq 40\ (51) \quad (2),$$

$$PERFORMANCE = \alpha^2 + \beta^2 FOREIGN \quad \text{if } FOREIGN \geq 40\ (51) \quad (3),$$

where *FOREIGN* is the level of foreign shareholding or ownership

The values for the various categories of ownership or the threshold levels of ownership, are called knots. The knots are determined based on the discussion, with natural kinks in the data being provided by the government regulations. As a result, we have 2 knots, at 25 percent and at 40 percent foreign shareholding levels for the years preceding 1991, and 51 percent after 1991.

The function can be specified using dummy variables

$$d_1 = 1 \quad \text{if } FOREIGN > t_1 \quad (4),$$

$$d_2 = 1 \quad \text{if } FOREIGN > t_2 \quad (5),$$

where $t_1 = 25$ and $t_2 = 40$ (51).

Combining all three equations yields:

$$PERFORMANCE = \beta_1 + \beta_2 FOREIGN + \gamma_1 d_1 + \delta_1 d_1 FOREIGN + \gamma_2 d_2 + \delta_2 d_2 FOREIGN + \varepsilon \quad (6).$$

To ensure continuity, the segments should be joined at the knots, or

$$\beta_1 + \beta_2 t_1 = (\beta_1 + \gamma_1) + (\beta_2 + \gamma_1) t_1 \quad (7),$$

and

$$(\beta_1 + \gamma_1) + (\beta_2 + \gamma_1) t_2 = (\beta_1 + \gamma_1 + \gamma_2) + (\beta_2 + \delta_1 + \delta_2) t_2 \quad (8).$$

These represent linear restrictions on the coefficients. Collecting terms in (7) and (8), we obtain:

$$\gamma_1 = -\delta_1 t_1 \quad (9)$$

and $$\gamma_2 = -\delta_2 t_2. \quad (10).$$

Inserting (9) and (10) in (6), we obtain:

$$PERFORMANCE = \beta_1 + \beta_2 FOREIGN + \gamma_1 d_1 (FOREIGN - t_1) + \gamma_2 d_2 (FOREIGN - t_2) \quad (11).$$

Introducing these constraints adjust the intercepts so that slopes for the various categories join at the knots.

In a large number of Indian firms, the domestic ownership component is, quite naturally, 100 percent. We can ignore all such firms and not include them in our sample; but that would introduce a selection bias (Heckman, 1979; Maddala, 1983) into the model. To avoid this bias, we include firms with both zero and non-zero foreign ownership into the sample, and estimate the model accordingly. The inclusion of purely domestic firms raises a problem. Purely domestic firms, and firms with non-zero foreign ownership have similar variances on their dependent variables. Introducing a dummy variable that takes on the value of 1 for firms in which there is foreign ownership eliminates the dampening effect that arises when data on the two types of firms are aggregated, and the relationship between different levels of foreign ownership and firm performance can be efficiently estimated.

For each of the regression models estimated studentized residuals are identified. Studentized residuals help identify outliers that do not appear to be consistent with the rest of the data, and as Belsley, Kuh and Welsch (1980) have pointed out, these studentized residuals have an approximate t-distribution with *n-p-1* degrees of freedom. This procedure allows us to determine the influence of any one studentized residual using a t-table. The regression model is then re-estimated by omitting observations that have a large studentized residual, with an absolute value of 1.96 or greater. The re-estimated regressions do not alter the results in any significant way, but provide us with more stable coefficient estimates. Finally, analysis of the residuals also reveal heteroscedasticity. To correct for heteroscedasticity, the maximum likelihood correction process (Judge, Hill, Griffiths, Lutkepohl and Lee, 1988) is then used to estimate the final regression model.

4. RESULTS AND IMPLICATIONS

4.1 FOREIGN OWNERSHIP AND FIRM PERFORMANCE

The estimation results are reported in Tables 2, 3 and 4. The correlation matrix given in the appendix does not reveal any collinearity problems.

As the results show, foreign ownership does affect firm performance but different categories of ownership have varying influences on return on assets, return on sales and the proportion of value added. With respect to returns on assets, foreign ownership below 25 percent, which we classify as FOREIGN LOW, and foreign ownership greater than 25 percent but less than 40 percent (or 51 percent), which we classify as FOREIGN MID, do not have a significant impact (where significance is at least at the 5 percent level using a one-tailed test) on firms' returns on assets. Only when levels of foreign ownership exceed over 40 percent (51 percent),

classified as FOREIGN HIGH, thus permitting firms to exercise control, is the relationship between the level of foreign ownership and performance positive and significant, at the 5 percent level using a one-tailed test. The results for returns on sales are similar. FOREIGN LOW and FOREIGN MID are both insignificant, whereas FOREIGN HIGH is positive and significant. As far as results for the variable measuring the proportion of value added is concerned, both FOREIGN MID and FOREIGN HIGH have a positive and significant influence.

What do these results suggest? Foreign ownership does have a positive and significant influence on various dimensions of firm performance, but only when foreign ownership crosses a certain threshold, a threshold which is defined by the property rights regime. Not surprisingly, it is only FOREIGN HIGH that shows a positive and significant relationship with all measures of performance. FOREIGN MID has a positive influence only on the proportion of value added, while FOREIGN LOW is not significant in any of the regression models. Arising from institutional constraints, where property rights do not devolve on the foreign shareholders, there is likely to be a disinclination to provide capabilities to the firm in which there is an ownership stake, which can lead to superior performance. Conversely, when property rights and control over resources do devolve to the foreign owner, then capabilities which can help to generate superior performance are more likely to be supplied to the Indian firm in question.

In each of the regressions, the magnitude of the coefficient for FOREIGN HIGH is larger than the coefficient for FOREIGN MID, while the coefficient estimate for FOREIGN MID is greater than that for FOREIGN LOW. These data denote that for each category of ownership, the relationship between levels of ownership and performance differs. In other words, between every

category of ownership there is a progressive increase in the steepness of the slope that captures the underlying relationship.

There are several implications. India has also lately emerged as an important location of consequence for foreign firms because of prospective opportunities that arise for various reasons: such as market size, because on a purchasing power parity basis India is the world's sixth largest market; market dynamics, where if India could attain a 5 percent growth rate per annum with sub-optimal policies then logically she should grow much faster with the superior capabilities that foreign firms will be bringing in; and human resources, since the high talent and relative low cost of Indian managers can make the transfer of technology easier to Indian subsidiaries, reducing the need for expatriate staff and increasing the feasibility of using Indian subsidiaries as an export platform (Cable, 1995).

From the point of view of foreign firms making investments in India, it is to be stressed that only investment in Indian firms' share capital at ownership levels at 51 percent (as allowed after 1991) or above ensures superior performance relative to domestic firms, by the removal of constraints that inhibit effective and unambiguous control; hence, foreign firms which are unable to make this level of investment may not reap the entire benefits, in relative performance terms, from their investments. Yet, in the recent past, a number of foreign firms have raised their ownership stakes from 40 to 51 percent. For example, Suzuki Motors of Japan has increased its stake in car-maker, Maruti Udyog Ltd., so that the company is now the subsidiary of a Japanese multinational firm and no longer a state-owned enterprise. Other companies, such as Procter and Gamble, Asea Brown Boveri, Alfa Laval have similarly increased their stakes, and Unilever PLC has made a $12 million cash injection to make Hindustan Lever Ltd., its Indian associate, a 51

percent subsidiary, consequent to which Hindustan Lever Ltd. has been able to finance a number of acquisitions of Indian companies (Cable, 1995). Thus, there is strong precedent that foreign firms do consider India as a worthwhile opportunity, and the results indicate that there are benefits to be gained if other foreign firms also enhance the size of their stakes in Indian firms.

In the past the Indian government has attempted to restrict, as far as possible, foreign ownership to 40 percent, and the evidence showing that firms with foreign shareholding of 40 percent or more have been superior performers relative to domestic firms means that Indian industry has missed opportunities in terms of unrealized spillover effects Additionally, these ownership limits kept out many multinational firms, which otherwise would have done so, from investing in India.

That there has been a major attitudinal change in Indian policy after 1991, from a mere tolerance of foreign presence in industry to actively welcoming new investment, is acknowledged (Bhagwati, 1993; Cable, 1995). Nevertheless, approvals for holding stakes which are greater than 51 percent are still granted at the discretion of bureaucratic authorities, unlike approvals for stakes upto and including 51 percent which are granted automatically, and the approval process is subject to political influences. The data reveal that superior performance is associated with foreign ownership levels of 51 percent and above; therefore, if India is to attract foreign firms of the highest quality, which have the wherewithal to consider a number of other developing and transition economies other than India, such as China, as investment platforms, into making substantial investments in India the maximum ownership stake allowed has to be more than 51 percent in general, and the limit should be raised to 100 percent for which approval should be

automatic. Thereby, the best global firms will be induced to enter Indian industry, and their presence can have a beneficial impact on Indian industry as a whole.

4.2 IMPACT OF CONTROL VARIABLES ON FIRM PERFORMANCE

The control variables have interesting effects on firm performance and deserve discussion in detail.

SIZE: The size of a firm has a positive and significant influence on return on assets as well as return on sales which are measures of profitability. These findings are consistent with the theory that size is a correlate of market power (Boardman and Vining, 1989) and the evidence on India that large firms capture monopoly rents (Bhagwati and Desai, 1970). Size, however, has a significant and inverse relationship with productivity, which, following the precedent set by the Organization for Economic Cooperation and Development (1994), we measure as the proportion of value added to the value of production. This finding is also consistent with the x-efficiency hypothesis (Leibenstein, 1976).

AGE: The age of a firm has a significant and negative influence on return on assets and sales, suggesting that older firms have been inflexible in reacting to the emerging market based environment. Age, however, has a positive and significant impact on the proportion of value added by a firm. This relationship may be attributed to the fact that older firms, though more bureaucratic, may have learnt how to operate within the stringent regulatory frameworks that were a characteristic of the Indian economy.

DIVERSITY: The extent of a firm's diversification only influences the proportion of value added by a firm. Diversification in India has been in seemingly-unrelated areas (Marathe, 1989), and while this may lead to dissipation of resources, there are also backward-spillover effects of

the capabilities acquired in diverse business areas which may be leveraged for the benefit of the firm as a whole.

EXPORT SALES: As expected, exports exercise discipline on a firm by requiring it to be competitive in the international market. The larger the proportion of exports to sales the greater the returns on assets, sales and the proportion of value added. This finding is in consonance with the postulates of the trade-policy literature (Balassa, 1989).

IMPORTS: The variable has a positive and significant impact only on returns on sales, which is a profitability measure, and the data suggest that firms which can incorporate imported materials and supplies into their production processes, may, as a result of enhancement of product-quality and functionalities, be able to attain higher unit-price realizations.

NET FIXED ASSETS: Capital intensity has a mixed impact on a firm's performance. It is negatively related with return on assets, understandable because net fixed assets is a major component of the denominator in the measurement of return on assets. It, however, has a significant and positive influence on return on sales and the proportion of value-added. These findings are consistent with Caves (1990).

QUICK RATIO: Quick ratio has a positive and significant impact on return on sales and the proportion of value added. This result can be attributed to the fact that given the high cost and limited supply of capital in India, the ability of a firm to turn over working capital quickly reflects, in part, unobservable managerial capabilities which influence a firm's performance.

INVENTORY: A larger inventory suggests a drag on a firm's performance, because a higher interest burden has to be faced, with detrimental impact on performance. Indian firms are

no exception to this general rule. Larger inventories do lower a firm's return on assets and sales and have a significant and negative influence on the proportion of value added.

SALES GROWTH: A surprising finding of the research is that growth in sales has a significant negative impact on all three facets of a firm's performance: return on assets and sales and productivity. Some part of this finding can be attributable to the fact that Indian industry faced a recession during 1992 and 1993. Additionally, with liberalization the entry of new firms is likely to be pronounced in sectors which display business growth, and this phenomenon, by increasing competition, can lead to a drop in profitability for all incumbents.

ADVERTISING, MARKETING AND DISTRIBUTION: Advertising does not have a significant influence on any of the measures used to assess a firm's performance in the analysis. The extent of resources devoted to marketing, though, were positively and significantly related only insofar as the return on assets variable was concerned. Marketing efforts do not influence either the return on sales or the proportion of value added. The absence of any impact for advertising and the limited influence of marketing may be attributable to the relative diversity and fragmentation of the Indian market. The diverse and fragmented nature of the market can also raises the distribution costs faced by a firm, and the distribution costs variable, not surprisingly, also has a significant and negative relationship with returns on assets and sales, as well as with the proportion of value added

DEBT-EQUITY RATIO: The debt a firm is carrying is expected to have a deleterious effect on a firm's performance. The variable measuring the debt-equity ratio is negative and significant in all three regression models. This provides support for the earlier observation that monitoring by a principal in India may not be as effective, as the principal is often the government.

GROUP: Whether a firm is a member of a group or not only influences the proportion of value added. If a firm belongs to a group it is more likely to add more value but group membership has no impact on the return on assets or sales for a firm. There are some, but not major, capability spillovers that seem to be taking place if firms belong to a particular group.

EXCISE: The indirect tax regime faced by a firm has a significant and negative effect only on return on sales, but has no influence on return on assets or proportion of value added. The relationship implies that firms playing a role of being tax collectors for the government have muted incentives to be profitable. Also, in a relatively demand-constrained economy like India a higher rate of excise duty on products sold limits the margins that manufacturers can charge, given the inability of Indian consumers to pay more than a particular price.

TIME: The variable measuring change in the environment faced by a firm is not significant for any of the three dependent variables. The introduction of liberalization does not appear to have had any short-run impact on firm performance in India.

5. CONCLUSION

The results of the study, based on an analysis of data for over 1000 Indian firms, supports the view that, after controlling for a number of critical firm and environment-specific factors, categories of foreign ownership have varying impact on firm performance. In terms of the performance indicators used, firms in which property rights devolve clearly and unambiguously to foreign shareholders outperform firms in which foreign shareholders cannot exercise effective control. The results also suggest that partial foreign ownership, over 25 percent but less than 40 per cent prior to 1991 and 51 percent thereafter, in which control does not devolve to foreign firms, may not be any better for foreign investors than investments made without expectations of

control, investments of less than 25 per cent. With control comes a level of profitability that is not available at lower levels of shareholding. If foreign investors wish to enjoy relatively superior returns they should think in terms of investing at levels that will provide them control. For the policy-maker in India, these results indicate clearly that if the full benefits of foreign ownership are to be reaped, foreign control over firms should be permitted.

The analysis presented above is limited by the absence of time-series data on ownership. Ideally, we would like to examine how changing ownership patterns influence firms' performance. Unfortunately, data on changes in ownership are not easily available for most Indian firms. The stock market is only now being automated, and share transfers take over six months to be registered. This research has not dealt with another issue, the varying nature of the domestic partners of foreign investors. Our on-going research indicates that foreign investments can be in Indian corporations, Indian family-led firms and firms in the joint sector. It is conceivable that different categories of domestic ownership may also constrain the influence foreign owners can have on a firms' performance, since some of the domestic owners may allow foreign owners a freer-hand than others. Such an issue needs to be investigated.

Within the limitations, the analysis presented in the paper is the first detailed firm-level analysis of the influence of foreign ownership on firm performance in India. Even though this study has focused on foreign ownership of Indian firms, we believe that our focus on the link between performance and the nature of institutions is important, and this focus can be extended. As long as there is variance in the institutional setup in different countries the impact of similar degrees of ownership on firm performance is likely to vary, and the evaluation of such variances should be a subject for future comparative research.

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TABLE 1: Description of Variables

Variable	Description
	Dependent Variables:
Return on Assets	Profit after depreciation, interest and taxes as a ratio of total assets
Return on Sales	Profit after depreciation, interest and taxes as a ratio of net sales
Value Addition	Value added as a ratio of the value of production
	Independent Variables:
Foreign	Dummy which equals 1 if the company has any foreign shareholding and 0 otherwise
Foreign: Low	Foreign shareholding up to 25 percent
Foreign: Medium	Foreign shareholding between 25 and 40 percent for the years up to 1991, and between 25 and 51 percent after 1991
Foreign: High	Foreign shareholding over 40 percent up to 1991, and over 51 percent after 1991.
Spline Dummy	Dummy to enable the spline function to meet at the join points
Size	Log of sales
Age	Number of years since incorporation till the date for which data are reported
Diversity	Index taking on the values between 0 and 2 to denote the extent of diversification of each firm into different business areas; 0 denoting single-product firms, 1 denoting multiple activities in related areas and 2 denoting widely diversified firms
Export Sales	Ratio of exports to total sales of each company
Imports	Ratio of imports to total operating expenses
Net Fixed Assets	Ratio of net fixed assets to total assets
Quick Ratio	Ratio of cash and other short-term realizable assets to total current liabilities
Inventory	Ratio of inventory investment to investments in total assets
Sales Growth	Ratio of current year to previous year's sales
Advertising	Ratio of advertising expenses to total operating expenses
Marketing	Ratio of marketing expenses to total operating expenses
Distribution	Ratio of distribution expenses to total operating expenses
Debt Equity	Ratio of total debt to total equity
Group	Dummy variable taking on the value 1 if the firm is classified as belonging to a business group, and 0 if it is classified as an independent company
Excise	Ratio of excise duties paid to total sales
Time	Index variable taking on the values between 0 and 5 for each of the years 1988 to 1994 depending on which particular each observation belongs to

TABLE 2: Weighted Least Squares Regression Results

	Dependent Variable: Return on Assets	
	Coefficient Estimate	Standard Error
Constant	7.632	1.460
Foreign	-1.159**	0.587
Foreign: Low	0.023	0.029
Foreign: Medium	0.026*	0.052
Foreign: High	0.247**	0.089
Spline Dummy	-0.036	0.043
Size	0.621**	0.183
Age	-0.033**	0.009
Diversity	0.357	0.362
Export Sales	0.045**	0.011
Imports	-1.533	1.318
Net Fixed Assets	-0.039**	0.012
Quick Ratio	0.317	0.602
Inventory	-0.053**	0.017
Sales Growth	-0.002**	0.000
Advertising	0.172	0.141
Marketing	0.144**	0.070
Distribution	-0.259**	0.066
Debt Equity	-0.494**	0.054
Group	-0.015	0.405
Excise	-0.026	0.022
Time	0.031	0.168
R^2	0.186	
F	10.354	

*p < .10 (one-tailed); **p < .05 (one-tailed)

TABLE 3: Weighted Least Squares Regression Results

Dependent Variable: Return on Sales		
	Coefficient Estimate	Standard Error
Constant	3.486	1.938
Foreign	-0.487	0.795
Foreign: Low	-0.010	0.037
Foreign: Medium	0.041	0.065
Foreign: High	0.293**	0.113
Spline Dummy	-0.042	0.054
Size	0.586**	0.241
Age	-0.047**	0.012
Diversity	0.410	0.448
Export Sales	0.069**	0.015
Imports	2.982**	1.745
Net Fixed Assets	0.034**	0.016
Quick Ratio	9.592**	0.882
Inventory	-0.049**	0.023
Sales Growth	-0.005**	0.000
Advertising	0.265*	0.184
Marketing	0.021	0.091
Distribution	-0.307**	0.088
Debt Equity	-0.591**	0.076
Group	0.192	0.534
Excise	-0.053**	0.027
Time	0.119	0.221
R^2	0.276	
F	17.321	

*p < .10 (one-tailed); **p < .05 (one-tailed)

TABLE 4: Weighted Least Squares Regression Results

Dependent Variable: Proportion of value added		
	Coefficient Estimate	Standard Error
Constant	21.231	2.590
Foreign	1.640*	1.050
Foreign: Low	0.058	0.048
Foreign: Medium	0.186**	0.085
Foreign: High	0.811**	0.148
Spline Dummy	0.039	0.071
Size	-1.702**	0.315
Age	0.089**	0.015
Diversity	1.327**	0.587
Export Sales	0.106**	0.019
Imports	-2.140	2.323
Net Fixed Assets	0.069**	0.021
Quick Ratio	22.496**	2.037
Inventory	-0.091**	0.033
Sales Growth	-0.003**	0.000
Advertising	-0.094	0.242
Marketing	0.038	0.120
Distribution	-0.341**	0.111
Debt Equity	-0.386**	0.098
Group	2.134**	0.706
Excise	0.050*	0.035
Time	0.103	0.287
R^2	0.301	
F	19.462	

*p < .10 (one-tailed); **p < .05 (one-tailed)

APPENDIX 1: Correlation Matrix

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.
1. Foreign	1.0000																				
2. Foreign: Low	.3367	1.0000																			
3. Foreign: Medium	.1511	.6017	1.0000																		
4. Foreign: High	.0523	.2081	-.0437	1.0000																	
5. Spline Dummy	.1000	.3985	-.0444	.5224	1.0000																
6. Size	.2580	.1256	.1058	.0181	.0895	1.0000															
7. Age	.1770	.0231	.0551	.0277	.0579	.4213	1.0000														
8. Diversity	.1501	.0785	.0446	-.0273	.0965	.4492	.3871	1.0000													
9. Export Sales	.0623	.0753	-.0166	.0832	.0496	.0155	-.0428	-.0059	1.0000												
10. Imports	.0922	.1921	.0751	-.0081	.0384	.0363	-.1502	-.0144	.3314	1.0000											
11. Net Fixed Assets	.0128	-.0627	-.1171	-.0246	-.0776	-.0821	-.2371	-.1189	.0516	.0922	1.0000										
12. Quick Ratio	.0283	-.0528	-.0430	-.0106	-.0267	-.0984	-.0123	.0037	.0025	-.0001	-.1191	1.0000									
13. Inventory	-.0448	.0192	.0788	-.0269	.0357	.0565	.1433	.0371	-.1005	-.0489	-.5167	-.1993	1.0000								
14. Sales Growth	-.0242	.0126	-.0196	-.0128	-.0217	-.0780	-.0792	-.0477	.0509	.1074	.0971	.0132	-.0428	1.0000							
15. Advertising	.0549	.1091	.0925	.0001	.1242	.0039	.0226	.0800	-.0219	.0021	-.0242	.0190	.0217	.0196	1.0000						
16. Marketing	.0576	.0419	.0481	.0095	-.0039	.0330	.0200	.0312	.0666	-.0003	-.0535	-.0515	.0531	-.0095	.1148	1.0000					
17. Distribution	.0223	.0283	.0099	.0443	.0224	.1360	.0604	.0632	.1247	-.1068	.0543	-.0292	-.0737	.0117	.0286	.0212	1.0000				
18. Debt Equity	-.0142	-.0513	-.0591	-.0373	-.0572	-.0670	-.0914	-.0218	-.0477	.0236	.1145	-.0054	.0034	.0113	-.0193	-.0139	.0083	1.0000			
19. Group	.1260	-.0028	-.0396	-.0013	-.0107	.3811	.1673	.2020	-.0233	.0036	.0327	.0521	-.0685	.0308	-.0044	-.0063	.0596	.0115	1.0000		
20. Excise	.1184	.1131	.0949	-.0522	-.0293	.2603	.0714	.1058	-.2193	-.0044	.0726	-.1027	.0051	-.0356	-.0108	-.0025	-.0023	.0359	.1111	1.0000	
21. Time	.1113	.0117	.0653	.0108	-.0262	.1187	.0611	.0105	.0361	-.0125	-.0079	.0374	-.0516	-.0041	.0322	.0318	.0011	-.0282	-.0022	-.0193	1.0000