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‘Third-World Copycats’ To ‘Emerging Multinationals’: Institutional Transformation and Strategic Renewal in the Indian Pharmaceutical Industry

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**‘THIRD-WORLD COPYCATS’ TO ‘EMERGING MULTINATIONALS’:
INSTITUTIONAL TRANSFORMATION AND STRATEGIC RENEWAL IN
THE INDIAN PHARMACEUTICAL INDUSTRY**

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‘THIRD-WORLD COPYCATS’ TO ‘EMERGING MULTINATIONALS’: INSTITUTIONAL TRANSFORMATION AND STRATEGIC RENEWAL IN THE INDIAN PHARMACEUTICAL INDUSTRY

ABSTRACT

This paper examines the strategic renewal process of developing economy firms as they face economic liberalization and related institutional transformations at home that threaten their competitive advantage. Theorizing that internationalization serves as an engine of renewal, we investigate how knowledge and resource transformation serve as a prelude to product market renewal. Using longitudinal data on 71 Indian pharmaceutical firms from 1995-2004, we find that product market internationalization is enabled by internationalization of technological and financial resources. Further, we theorize and find support for our predictions that the impact of these transformed resources on strategic renewal is conditioned by time and business group affiliation, and that renewal impacts financial performance. Several implications for theory and practice surrounding the strategic renewal of these firms and their transformation into emerging multinationals are discussed.

The recent phenomena of “emerging multinationals,” or rapidly globalizing firms from developing economies, is receiving increasing attention from scholars (Khanna and Palepu 2002), international associations (OECD 2006), business press (Business Week 2006), and industry consultants (BCG 2006)¹. This interest is driven by their potential to “radically transform industries and markets around the world” (BCG 2006) by leveraging unique, and less understood business models (Khanna and Palepu 2002; OECD 2006). Facing powerful environmental contingencies of economic reform and institutional transitions (Hoskisson, Eden Lau and Wright 2000, Wright, Filatotchev, Hoskisson and Peng 2005, Peng 2003), these emerging multinationals are, interestingly, in many cases, present day re-incarnations of stodgy, archaic firms that flourished in an erstwhile protectionist system. Given the fledgling nature of our understanding of these powerful new forces of industry disruption, and the need for a theory-based understanding of the phenomena, we examine the process of strategic renewal in the Indian pharmaceutical industry during the 1995 -2004 period when it faced dual institutional pressures of economic liberalization and changing intellectual property regimes.

Our study builds on existing research that has studied how the ability of organizations to respond to change has critical implications for their performance and survival. For example, the challenges faced by incumbents to adapt to technological and market disruptions, and the consequences when they fail to respond appropriately are well documented (Christensen and Bower 1996, Henderson and Clark 1990). Thus, it is suggested that the ability to develop new sets of capabilities as the basis of competitive advantage shifts over time has emerged as an underlying theme in strategy and organization research (e.g. Helfat and Peteraf 2003, Teece, Pisano, and Shuen 1997). However, despite recognition that models of advantage based on protection of assets and uncertainty avoidance have limited value (Ilinitich, D’Aveni and Lewin 1996), and that organizations need to evoke the powers of strategic renewal through a continuous process of morphing their resources and capabilities on one hand and their product markets on the other, a few significant gaps remain in our understanding of this phenomena.

¹ As a case in point, OECD notes that the rate of outward FDI growth by companies from emerging markets has outpaced that of companies from the industrialized countries since 2003, a trend that is likely to continue in the years ahead.

First, although it has been argued that strategic renewal involves an evolutionary process whereby firms acquire new knowledge and assets, and deploy them in novel product market domains (Burgelman 1991), the relationship between changes in resources and capabilities and re-positioning in strategic product-markets is underdeveloped in the literature both empirically and theoretically. On one hand, it is speculated that shifts in product-market domains without concomitant transformations in resources and assets may expose firms to performance or survival risks (March 1991, Floyd and Lane 2000). On the other hand, resources and capabilities are argued to evolve through time in important ways (Helfat and Peteraf 2003). These raise two fundamental questions that are relatively under-explored in the literature: Is there a relationship between resource and output transformations? Do different classes of resources and assets then carry different implications for product-market changes along the evolutionary process of renewal? Second, research on renewal has tended to concentrate on how incumbents are challenged by new entrants in the face of technological change, be it radical, disruptive or non-incremental in nature (e.g. Tushman and Anderson 1986, Abernathy and Utterback 1978). There is, however, a relative paucity of research on how organizations renew themselves during periods of shifting geo-political power, and institutional and regulatory transformations. This is an important gap given that the few studies that have examined how firms adapt to regulatory policy changes (e.g., Keister 1998, Peng 1997, Reger, Duhaime and Stimpert 1992, Smith and Grimm 1987) report distinct patterns of strategic response that are different from other environmental contingencies. Third, only recently the focus has shifted from managing strategic contradictions arising from the decline of established markets and the emergence of new ones, towards understanding various ‘engines of renewal’ (Bowen, Clark, Holloway and Wheelwright 1994). For example, Danneels (2002) suggests that new product development is a vehicle through which a firm is able to renew its competencies and resources, and is therefore a means of corporate renewal. From this perspective, it would appear that internationalization, which is the process whereby knowledge and assets are transferred across borders (Hitt, Bierman, Uhlenbruck and Shimuzu 2006), either from the focal firm or to it, be it underlying technology, finance, or others (Kogut and Zander 1992, Tsang 1999), would be an important source of renewal.

This paper addresses the above gaps by examining strategic renewal in the context of the Indian pharmaceutical industry, where macro-economic reforms (1991) and institutional change related to intellectual property rights (1995) triggered a process whereby a number of firms undertook corporate renewal by internationalizing their product markets. This is an appropriate empirical setting for our study for the following reasons: One, we can identify clear watershed events that constituted fundamental and comprehensive institutional transitions, or changes introduced to the formal and informal rules of the game that affect organizations as players (Peng 2003). Two, as of 2005, the pharmaceutical sector has emerged, along with information technology, as one of the two key industries spearheading India's growth in global trade. Exports have grown at an impressive annual average around 23% over the last decade and a number of indigenous firms have made deep inroads into the both developed and developing country markets (KPMG 2006). Accordingly, the combination of a readily identifiable trigger event, and the subsequent resurgence of the industry provide a unique setting to study the renewal process of these firms through product market internationalization and transformation from being termed as 'third-world copycats' to 'emerging multinationals'.

We develop and empirically test a theoretical framework linking the 'inward' internationalization of the resource and asset base of Indian pharmaceutical firms to the 'outward' internationalization of their product-market domains. First, we contend that in contrast to established 'endogenous' models of internationalization that are more relevant to firms emanating from Western developed countries, the process of strategic renewal of developing country firms that faced severe institutional transitions and the resulting increase in competitive intensity in their domestic markets and an imminent erosion of their competitive base follows an 'exogenous' model of internationalization. In other words, we argue that the process of renewal started with their resource and asset base, which in turn enabled renewal of product market domains. We consider two distinct types of inward international flows that are critical to developing country firms that are participating in global markets, namely technological resources and financial resources, and examine their relationship with the product-market internationalization of these firms. Further, we examine how the relative impact of 'renewed' technological and financial factors on

product-market internationalization changed over time. Finally, we consider a unique institutional aspect of developing countries, namely business groups, and examine how heterogeneity in organizational genesis formed boundary conditions in our analysis of strategic renewal through an exogenous model of internationalization. We test these relationships using a ten year panel data of 71 indigenous firms within the Indian pharmaceutical industry during the period 1995-2004. In the following sections, we first briefly discuss the historical nature of this industry and its evolution in light of institutional transformations. This is followed by the development of the theory and hypotheses. Next we describe the methodology used for the empirical analysis and report our findings. In the final section we discuss the contributions of our findings to organizational strategic renewal research as well as to nascent literature on the emerging multinationals from developing economies.

INSTITUTIONAL TRANSFORMATION IN THE INDIAN PHARMACEUTICAL INDUSTRY

The Indian pharmaceutical industry is sizeable and is ranked globally 4th in terms of volume and 13th in terms of value (CRIS INFAC 2004). In 1970, to strengthen the domestic pharmaceutical industry, the Indian government introduced the *Indian Patent Act, 1970*, which provided legal sanction to process patents for pharmaceutical products. Instead of granting patents to end-products as is done in developed countries, the Indian Patent Act allowed patents of the manufacturing process. This regulation, coupled with special incentives to small scale units, enabled the Indian pharmaceutical firms to thrive and take away the dominant share of the market from the multinationals. Thus, until the early nineteen nineties, the Indian pharmaceutical industry was one of the most inward-looking, highly protected industries, completely dominated by firms of Indian origin. A severe crisis in its balance of payments position triggered a series of major economic liberalization measures by the Indian government starting in 1991 to establish stronger linkages with global economy. As a result most of the industries in India and the Indian pharmaceutical industry in particular witnessed some of the most profound policy changes possible in the last one and half decade. In 1994, the Government of India signed the General Agreement on Tariffs and Trade (now WTO) agreement on intellectual property. As a signatory, India was obligated to introduce product patents and provide legal protection to Trade Related Intellectual Property Rights (TRIPS) by

2005 after a permissible transition period of 10 years. The system of Exclusive Marketing Rights (EMRs) was introduced in 1999 and from 2005 onwards the product patents regime has been in full play in India.

Recognition of product patents has been the most critical regulatory reform in the Indian pharmaceutical industry during the past one decade, just as the introduction of process patents in 1970 had marked a turning point earlier. Reverting to the product patent regime now would provide the protection sought by international pharmaceutical firms to bring in their best products to India and would result in a steep increase in competition. This also marked a dramatic strategic change for Indian pharmaceutical firms, which had traditionally survived through manufacturing and selling knockoffs of patented drugs in India by exploiting the prevailing process patent regime. *The Wall Street Journal* hailed the implementation of the new patent regime in India as “finally putting a stop to decades of simply copying someone else’s pharmaceutical breakthrough” (WSJ, March 25, 2005). The Indian pharmaceutical firms were thus faced with the double whammy of steeper competition from well-entrenched foreign competitors in their domestic market as well as the loss of their traditional core advantage in reverse engineering and manufacturing.

In light of the effects of these institutional transformations, the prognosis for the pharmaceutical industry in 1995 was not promising. However, the last decade has seen a resurgence of this industry and it is considered one of the drivers behind India’s global competitiveness and export-led growth (Ficci 2005). The total exports of pharmaceuticals from India (which are primarily carried out by indigenous Indian firms rather than subsidiaries of multinationals) have increased from \$503.1 million in 1995 to more than \$3.13 billion in 2004 (Ficci 2005). More importantly, in the context of sample of firms in this study, the average percentage of export sales to total sales of the 71 firms has increased from 15% in 1995 to 28% in 2004 (see Figure 1). Thus, the resurgence of this industry as well as strategic renewal of individual firms has been primarily through product market internationalization. That begs the question: what were the drivers behind the strategic renewal of these firms through product market internationalization in global markets given the severe increase in competition and the loss of their core

advantage? We now turn to an examination of these antecedents of strategic renewal and develop the hypotheses.

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THEORY AND HYPOTHESES

Strategic renewal helps organizations shed their inertia, and develop new competencies that protect them from obsolescence during periods of technological and market disruptions (Huff, Huff and Thomas 1992, Burgelman 1991). An evolutionary concept, renewal emphasizes the acquisition of new knowledge-based resources and productive assets as a route to changing competencies and effecting a concomitant change in a firm's product-market domains (Floyd and Lane 2000). In recognizing how firms adapt themselves over time through capability building and new product-market entry (Danneels 2002), the notion of renewal mirrors the dynamic capabilities literature which argues that fast changing environments require firms to engage in activities that enable them to reconfigure their resource configurations, and thereby engage in path-dependent and dynamic capability acquisition processes (Teece et al. 1997, Eisenhardt and Martin 2000).

In other words, notions of renewal and dynamic capabilities focus attention on the need for organizations to develop the ability to engage in 'continuous morphing,' or a continuous and comprehensive process of change in products, resource, capabilities, and modes of organizing to generate competitive advantage as an antidote to technological and market discontinuities in fast-evolving markets (Rindova and Kotha 2001). However, given the dramatic rise in global eminence of firms from protected economies that are undergoing the process of economic liberalization, it is surprising that there has been little study on how these firms responded to the institutional and regulatory shifts that radically transformed their competitive milieu. Our paper is a step towards filling this research lacuna, in that we focus on the Indian pharmaceutical industry where fundamental changes in the regulatory framework unleashed free market forces on Indian domestic firms. We study how these firms undertook strategic renewal, and in the face of fundamental transformations in their competitive environment, re-invented themselves as emerging multinationals.

Internationalization as Strategic Renewal

At the outset, we ask the question, does internationalization of the Indian pharmaceutical firms qualify as strategic renewal? Strategic renewal involves developing and utilizing new knowledge to bring about either a change in the organization's core capabilities and/or a change in its product market domain (Floyd and Lane 2000). As we demonstrate, internationalization involves both development of new capabilities and changes in product market domains.

First, internationalization of product markets requires at least some amount of foreign sales which necessarily means a change in the product market domain. The fact that the average internationalization level of the sample firms nearly doubled in the ten year period post-liberalization (Figure1), clearly illustrates that they have undergone renewal in output domains. Second, in the specific context of Indian pharmaceutical firms, exploitation of foreign markets requires development of some new, very specialized firm-specific capabilities, e.g., R&D capabilities to develop specific products suited to the targeted markets, manufacturing competence, marketing and distribution capabilities and technical/regulatory knowledge (Joshi 2003). Internationalization also mandates acquiring new knowledge and capabilities about foreign markets that the firm proposes to enter (Johanson and Wiedersheim-Paul 1975). Extensive diversity between countries with regard to regulations, cultures, business practices, currency, accounting practices, and political environment imply a steep learning curve for internationalizing firms (Shenkar and Luo 2004). Third, recent arguments about the rise of meta-nationals suggest that the fragmentation of clusters have created a new imperative on firms to create value by searching out and mobilizing untapped pockets of technology and market knowledge that lies dispersed across the globe (Doz, Santos and Williamson 2003). Together, these imply that internationalization of resources and product markets is a powerful, yet under-investigated engine of strategic renewal.

In addressing these issues, we propose that a fundamental difference underlies 'internationalization' process of firms from developing economies, as compared to their developed economy counterparts. The dominant paradigm within which past research on internationalization has

progressed rests on the assumption that internationalization progresses incrementally through a systematic process of learning-by-doing. This path-dependent model argues that firms accrue internationalization capabilities to deal with cultural diversities and operational uncertainties of operating in foreign markets through an *endogenous* process of experiential learning. According to this view, much of the tacit knowledge required to compete in unfamiliar international environments can only be attained through organizational learning which is largely experiential in nature and occurs *in situ* (Johanson and Wiedersheim-Paul 1975, Johanson and Vahlne 1977). This illustrates one fundamental assumption typical of Western models of international expansion: that the firm in question already possesses the technology and product-related knowledge it needs in order to meet the needs of the foreign markets, and the act of internationalization is undertaken in order to exploit this stock of existing know-how (Hitt et al. 2006). Internationalization is thus viewed as a process of transferring a firm's knowledge across borders, whether it is knowledge underlying technology, production, marketing or other activities (Kogut and Zander 1992, Tsang 1999). However, an alternative *exogenous* model of internationalization would suggest that even prior to firms moving into international markets, they would need to upgrade their technological and scientific know-how so as to be able to offer products commensurate with the more advanced needs of the international markets. Many times, inward internationalization can act as a starting point to international activity (Korhonen, Luostarinen and Welch 1996), and provides the critical knowledge and resources necessary for expanded operations in outward internationalization. The importance of knowledge infusion from inward internationalization as a precursor for outward internationalization is much more pronounced in the context of emerging economies (Hoskisson et al. 2000) and in the case of knowledge-intensive businesses such as the pharmaceutical sector. It is plausible that the knowledge hurdle preceding any form of internationalization of these firms would be technology or product related. In our specific context, we propose that Indian pharmaceutical firms engaged in 'inward' internationalization of resource and asset bases prior to product market internationalization. We therefore present an exogenous model of international growth, which is distinct from the dominant endogenous paradigm of internationalization.

In developing our model, we consider two key factors of critical importance in high technology knowledge intensive industries, namely access to technological know-how and capital markets. While scientific breakthroughs are at the fountainhead of product developments in pharmaceutical industries, an industry well known for its extremely high levels of R&D intensity, a striking feature of this industry is also the growing importance of marketing activities (Ling, Berndt and Kyle 2002, Narayanan, Desiraju and Chintagunta 2004). According to Posen (2005), over the last 20 years, marketing intensity (relative to sales) has been on average three times that of R&D intensity (0.35 versus 0.12). In other words, two critical enablers of internationalization of product-markets appear to be access to international technology markets, as well as capital markets that enable organizations to develop the infrastructure necessary to develop commercialization capabilities. Accordingly, we consider the inward internationalization of two key firm level resources, namely technology and capital, as precursors to product market internationalization. Technology imports include tangible resources such as capital equipment, raw materials, spares and finished goods; and/or intangible resources such as know-how and licensing in patented knowledge. Capital imports include financial capital in the form of both debt and equity.

In emerging economies, the quality of technology accessed from domestic sources is often found to be inadequate to succeed in international markets, thus necessitating import (Hoskisson et al., 2000). Further, technology imports also facilitates continuous interaction with foreign suppliers, which over time could help develop knowledge about foreign markets and development of a network of valuable contacts, which in turn could lead to an overseas sales effort at a later date (Korhonen et al., 1996).

Similarly, commercial expansion into foreign product markets is contingent upon availability of financial resources. For example, even if 25% of gross sales of a firm from an emerging economy are invested in R&D, its R&D budget would be miniscule compared to that of a global firm. The R&D budget of an average-sized global pharmaceutical firm is larger than the gross sales of many Indian pharmaceutical firms (Joshi 2003). Access to overseas capital, listing of firms in international stock exchanges, issue of GDRs/ADRs, raising of foreign currency debt can therefore be a second critical international input to facilitate outward internationalization. Raising overseas capital has other indirect

benefits such as the reputation effect, signaling of quality to customers and corporate governance benefit, which will have a positive impact on the product market internationalization (Khanna and Palepu 2004). In other words, it appears that inward internationalization of both technology and capital resources would precede outward internationalization. Therefore,

H1: Accessing international technology inputs is positively related to product market internationalization in the Indian pharmaceutical industry.

H2: Accessing international financial inputs is positively related to product-market internationalization of firms.

Contingency Impact of Time and Business Group Affiliation

Organizational resources and capabilities tend to be dynamic (Helfat and Peteraf 2003) and as a firm attains critical levels on a given capability, its marginal returns from that capability may decline necessitating a need to build other complimentary capabilities (Ethiraj, Kale, Krishnan and Singh 2005). Following this, we argue that the impact of the inward international inputs on product market internationalization is dynamic in nature and evolves over time. We first examine the changing impact of international technology inputs on internationalization.

In knowledge-intensive industries, a fundamental resource of the firm is its technological base (Helfat and Raubitschek 2000). Firms' efforts to upgrade their capabilities in response to changes in the external environment depend on their existing stock of complementary know-how. With the drastic changes in the domestic environmental context, Indian pharmaceutical firms lost dual advantages: their protected domestic market and the core advantage related to reverse engineering. Although these firms had an access to a pool of scientific manpower, jump-starting strategic renewal through product market internationalization required different types of technological resources. Hence, accessing international technology constitutes a basic necessity or a 'must have' for Indian pharmaceutical firms to ramp up their technological capabilities and to compete in the international markets. Due to this, the impact of technology inputs on internationalization is stronger in the period immediately after the economic liberalization. However, as all the firms in the industry upgrade their internal technical capabilities over

time and they reach critical levels, the marginal impact of international technical inputs on product market internationalization declines over time.

On the other hand, as the impact of technology inputs is leveling off, the need for building other complementary capabilities increases. Development of such capabilities requires deliberate and sustained investment of financial and managerial resources (Ethiraj et al. 2005). There is evidence in the international business literature that as firms go through stages of internationalization, their level of involvement increases. For instance, in the internationalization stages model, the first foray into international markets is usually through low involvement/low-cost approach entailing use of indirect exports to tap international markets. Over time, firms move towards more direct exports involving setting up dedicated distribution channels and even own sales subsidiaries in foreign markets (Johanson and Vahlne 1977, Aulakh and Kotabe, 1997). High involvement modes of entry require greater financial resources. Furthermore, sustained growth in internationalization requires moving up the value chain and increasing the depth and width of foreign market penetration. This in turn requires investment in development of indigenous capabilities in manufacturing, marketing and selling, in addition to R&D. Access to international finance at this stage facilitates such investments and hence the impact of international financial resources on product market internationalization is stronger towards the latter period of post-liberalization. Thus:

H3: The impact of international technology inputs on product market internationalization is stronger in the earlier period of the post-liberalization era, while the impact of international financial inputs on product market internationalization is stronger in the latter period of the post-liberalization era.

A rich body of work now establishes the fact that business groups form a significant part of the socio-economic landscape of most emerging economies (Keister 1998, Ghemawat and Khanna 1998, Khanna and Palepu 1997, Amsden 1989, Strachen 1976). Known by different names, ranging from Korean *Chaebols*, Turkish *families*, Latin American and Spanish *grupos* to Indian *business groups*, they have been defined as “a set of firms which, though legally independent, are bound together by a constellation of formal and informal ties and are accustomed to taking coordinated action”. (Khanna and

Rivkin 2001: 47). We examine both the direct and contingent role of business group membership on the relationship that resource internationalization has on product market internationalization.

The predominant theoretical explanation offered is that business groups emerge in response to market imperfections in emerging economies (Khanna and Palepu 2000a, Khanna and Rivkin, 2001). Here, due to information asymmetries, poor contract enforcement and imperfect regulatory structures, institutional voids tend to develop in product, labor and capital markets. The absence of intermediary institutions further increases transaction costs related to acquiring inputs such as technology, finance and managerial talent. Business groups fill these voids by performing the role of missing institutional intermediaries and by generating their own internal markets for financial capital and managerial talent. Member firms of a group benefit from lower transaction costs in acquisition of inputs leveraging on their group's scale, scope, track record and reputation.

While findings indicate that group affiliation positively impacts financial performance, some associated costs have also been identified (Keister 1998; Khanna and Palepu 2000a). For example, member firms can suffer from conflict of interests between controlling (typically family) shareholders and minority shareholders. Bertrand et al. (2002) found evidence that controlling shareholders of Indian business groups engage in *tunneling*, or moving profits from firms where they have low cash flow rights to those where they have high cash flow rights. Further, driven by lack of internal equity and nepotism, inefficient compensation systems tend to develop across group companies, with detrimental effects on market for talent. Coupled with security that group affiliation offers, managers of group-affiliated firms may have weak incentives to run their firms efficiently (Khanna and Rivkin 2001). Finally, business groups tend to be characterized by interference in both tactical as well as strategic decision making from the controlling family. As strategic variety of the businesses within the group increases, the dominant logic of the traditional businesses within the group may prove to be increasingly inadequate leading to sub-optimal decisions and organizational inertia.

In terms of the ability of firms to strategically respond to disruptive institutional changes, agency issues within management and organizational inertia become particularly important. Strategic renewal is

an intensely social process where managers' involvement is crucial (Floyd and Lane 2000). The relative lack of professionalism and preference for status quo of managers from group firms may translate into a lower ability of these firms to renew themselves through internationalization as compared to that of independent, non-affiliated firms. Similarly, interference by the dominant power coalition within the group may impede entrepreneurial decision making, thus acting as a strong impediment to developing new capabilities required for internationalization. Evidence that group affiliates tend to pursue more conservative strategies (Nakatani, 1984) indicate that they are less likely to pursue high risk-reward strategies such as internationalization. Hence, we propose that,

H4: Affiliation with a business group is negatively related to product market internationalization.

Groups are characterized by internal markets for products, capital and management talent. Consider the case of capital markets. As the rights of minority shareholders and creditors are usually poorly protected in emerging economies, it translates into higher costs of capital. In fact, markets for some forms of capital, such as venture capital, are virtually non-existent. Groups are able to overcome such problems by transferring capital within the group, or by underwriting capital issues by leveraging the group's reputation. For example, there is evidence that internal capital markets operated within *keiretsus* (Lincoln, Gerlach and Ahmadjian 1996), as well as that of Indian groups directing funds from existing affiliates to new ventures (Khanna and Palepu 2000a).

Therefore, the fact that group firms have access to resources from their internal markets which non-group firms do not have implies that the need to access international capital markets is critical for non-affiliated firms. Once they are able to do so, however, non-affiliated firms are likely to be more efficient in exploiting those resources due to their inherent structural advantages over group firms, namely lower organizational inertia, and faster response to external changes. Further, it is plausible that the relative ease with which affiliated group firms can access resources from internal capital markets, and lack of professional accountability to external institutions, is likely to encumber group-affiliated firms with higher profligacy. Finally, given their inclination for conservative strategies, group affiliates may be

more likely to utilize the financial inputs to strengthen their position in the domestic markets than towards achieving internationalization. These arguments, in tandem, suggest that:

H5: The impact of international technology inputs as well as international financial inputs on product market internationalization is stronger for non-affiliated firms than for group-affiliated firms.

Our core argument in this paper is that internationalization is a manifestation of strategic renewal. This is true only if internationalization leads to superior performance of the firms in question, which is not an easy assumption to make. The relationship between internationalization and performance has been tested extensively in the context of firms from developed economies and the findings ranged from a linear effect (Kim, Hwang and Burgers 1989) to an inverted U relationship (Hitt, Hoskisson and Kim 1997, Hitt et al. 2006). In one of the few studies testing this relationship in an emerging economy context, Aulakh, Kotabe and Teegen (2000) hypothesized an inverted U relationship between internationalization and performance, arguing that it will lead to better performance until a certain point of maturity, after which the costs of internationalization will outweigh benefits. While we are in broad agreement with this view, Indian pharmaceutical firms are relatively small and still have significant scope and size economies to gain from internationalization before they reach the point of diminishing returns. Hence we hypothesize,

H6: Internationalization of product markets is positively related to firm performance.

METHODOLOGY

Data

We used the *Prowess* database from the Centre for Monitoring Indian Economy (CMIE) which is being increasingly used by strategy researchers (e.g., Khanna and Palepu 2000, Khanna and Rivkin 2001, Chacar and Vissa 2005) for large sample studies on India. CMIE *Prowess* contains detailed financial data on over 9,300 Indian firms comprising all companies traded on India's major stock exchanges and several others including the central public sector enterprises. The database covers most of the organized industrial activity in India and the companies covered in *Prowess* account for 75 per cent of all corporate taxes and over 95 per cent of excise duty collected by the Government of India. As of now, there are totally 346

firms available in the Prowess database under the industry classification (four-digit) of Drugs and Pharmaceuticals. When we considered the companies for which yearly data was available for the ten years (1995 – 2004) beginning FY1995 (which marked the onset of major reform in the Indian pharmaceutical sector), we found the data to be quite noisy and as many as 187 firms needed to be eliminated from the sample due to missing data and firm mergers and acquisitions. After eliminating subsidiaries of foreign multinationals (35) and firms for which drugs and pharmaceuticals constituted less than 50% of the total sales revenues (53), we were left with *71 firms with ten years of data*, which constituted our final sample.

Measures

Dependent Variables. *Product market internationalization* of a firm was measured as the ratio of foreign sales to total sales, the most common measure of internationalization in literature (Ramaswamy, Kroeck and Renforth 1996). Measuring the degree of internationalization of firms is a widely debated but largely unresolved issue in international business research (Ramaswamy et al. 1996, Sullivan 1994). We chose the ratio of foreign sales to total sales over other possible measures such as growth in foreign sales, foreign direct investment or international geographical spread, as it is consistent with prior research on the causes and consequences of internationalization of firms and thus facilitates direct comparability. In addition, the validity of a measure has to be assessed based on its potential explanatory power in the context of the theoretical assumptions on which it is based (Hassel, Hopner, Kurdelbusch, Rehder and Zugehor 2003). Given that a majority of firms from emerging economies are still in the early stages of the internationalization process with exporting being the dominant mode of international expansion (Aulakh et al. 2000), the chosen measure for internationalization is contextually appropriate.

Firm Performance: Performance is a complex concept to measure (Keats and Hitt, 1988).

Following the lead of various studies which report that financial measures are highly correlated with other measures of performance (Chakravarthy, 1988), we chose two of the most commonly used financial measures of performance - Return on Sales (ROS, measured as profit before interest and tax divided by

total sales) and Return on Assets (ROA, measured as profit before income and tax divided by average total assets), both adjusted for non-recurring transactions.

Independent and Moderator Variables. *International Technology Inputs:* As is typical of many closed economies, many government regulations and controls prevailed and continue to prevail in India on all transactions involving foreign exchange. Due to these, all Indian companies registered under the Indian Companies Act have to record and disclose in the annual report to shareholders detailed accounts of foreign exchange spending. We found that annual foreign exchange spending was reported under four specific categories related to inflows of international technology: a) foreign exchange spending on raw materials; b) foreign exchange spending on stores and spares; c) foreign exchange spending on capital goods; and d) foreign exchange spending on royalty and know-how. While the inclusion of the last three categories of spending is self-explanatory, the rationale for inclusion of foreign exchange spending on raw materials is as follows. Indian pharmaceutical firms historically possessed significant cost advantages in raw materials and manufacturing processes, which constituted their core competitive advantage. In such a scenario, import of any raw materials from international markets would only be in areas in which they are technologically deficient and hence can be treated as one of the means of obtaining technology inputs. Therefore, in this specific context, it is reasonable to include import of raw materials as part of inflow of international technology resources. Thus our measure of international technology inputs is the sum total of its annual foreign exchange spending on raw materials, stores and spares, capital goods and royalty and know-how, as a percentage of its total annual sales.

International Financial Inputs: Inflow of international financial resources into firms in India can occur through two broad means – issue of new equity shares on international stock exchanges; and raising foreign exchange debt through issue of debt securities and/or through foreign exchange loans. To raise foreign exchange through equity, Indian companies typically issue equity securities such as American Depository Receipts (ADRs) or Global Depository Receipts (GDRs) which can be traded on international stock exchanges such as the New York Stock Exchange (NYSE) or the London Stock Exchange (LSE) or among financial institutions such as international banks. Similarly, Indian companies raise foreign

exchange in debt through issue of debt instruments such as Eurobonds, Eurodollar bonds or by means of plain foreign currency loans. Once a firm raises international finance through such equity or debt issue, it typically utilizes the funds over a period of few years depending on the size of the funds raised, before going for its next issue. The sum of such foreign financial resources raised by a firm by means of equity and debt instruments constitutes the inflow of international financial resources for the firm. Year-wise, firm-wise listing of all such foreign exchange equity and debt issues made by Indian firms is available in CMIE *Prowess*, which formed the data source for this measure. We have constructed a measure for international financial inputs by calculating the sum of foreign exchange resources raised by a firm through equity and debt as a proportion of its annual sales, as shown below.

$$(\text{International Financial Inputs})_{it} = \frac{\{\sum_{t=1 \text{ to } T} (\text{Forex equity} + \text{Forex debt})_{i,t}\}}{\text{Sales}_{it}}$$

Business Group Membership: We operationalized a firm's membership in an Indian business group through a dummy variable which took the value of one if the firm was affiliated to a business group and zero if it was not. For identifying group affiliation, we adopted CMIE *Prowess*' classification of firms into groups following Khanna and Palepu (2000a) and Bertrand et al. (2002). CMIE uses a variety of sources to classify firms into groups and is based on "continuous monitoring of company announcements and a qualitative understanding of the group-wise behavior of individual companies".

Post-liberalization Time-clock: To capture the dynamic effects of international technology and financial inputs on product market internationalization over the post-liberalization ten-year period considered in our study, we created a time-clock variable (Amburgey, Kelly and Barnett 1993, Baum, Korn and Kotha 1995). The liberalization in the Indian pharmaceutical industry kicked off with India agreeing to introduce product patents by becoming a signatory of GATT (later, WTO) in late 1994. The time-clock variable assumes positive integer values of one to ten corresponding to the ten years of the data used in this study (1995-2004). We refer to this variable as the post-liberalization time-clock, which serves to capture the increase or decrease in the size of the main effects over time.

Control Variables. A comprehensive set of variables were included to control for possible confounds. The size of the firm constitutes a critical control variable, as it can be argued that larger firms are more advantageously positioned to access international resources whether in technology or in finance as well as internationalization of their product markets. *Firm size*, measured as natural logarithm of total sales, was used to control for size effects. The second critical set of control variables pertain to the endogenous pool of knowledge, resources and capabilities that are unique to each firm and that are expected to account for a significant part of the variance in internationalization levels of the sample of firms considered. We attempted to capture these heterogeneous resources and capabilities of firms using three of variables related to the stock of technical, marketing and experiential capabilities. Accordingly, *R&D intensity* was measured using the percentage of annual research and development (R&D) expenses to sales. To measure marketing capabilities, a sum of all annual expenses related to marketing was calculated, which included all advertising, sales promotion and sales and distribution expenditure. *Marketing intensity* was operationalized as the percentage of these total annual marketing expenses to sales. The *age* of each firm since it was founded, in years, was used as a measure of experience. Finally, it can be argued that Indian firms are interested in achieving reasonable profitability in their domestic operations first and only then would they be motivated to embark on international expansion. Alternatively, it can be argued that only firms with reasonably high profitability levels will be able achieve internationalization. To account for

these arguments, we used the *firm profitability*, ROS of the firm lagged by one year, as our last control variable. As the entire data set pertains to a single industry, no industry controls are needed.

MODEL SPECIFICATION AND RESULTS

We tested hypotheses 1, 2 and 4 using random-effects generalized least squares panel estimation over the entire ten year data modeling product market internationalization as a function of international technology and finance inputs, business group membership, R&D intensity, marketing intensity, firm size, age and firm profitability. We lagged by one year the focal independent variables - international technology inputs, international finance inputs, R&D intensity, marketing intensity and firm profitability. Hypotheses 3 and 5 were tested by adding moderator variables to the above model – interaction term between technology inputs and group membership; interaction term between finance inputs and group membership; post-liberalization time-clock; interaction term between technology inputs and time-clock; and finally, the interaction term between financial inputs and time clock. The individual variables were mean-centered before computing the interaction terms.

For both the analyses, we used Heckman selection correction models to account for any sample selection bias (Heckman 1979). In general, sample selection bias refers to problems where the dependent variable is observed only for a restricted, non-random sample. Heckman procedure attempts to correct this by using either ML estimation or two-step estimation where in the first stage the probability of the selection is predicted by a probit model and in the second stage the inverse Mills' ratio is included as a regressor. We implemented the Heckman procedure by splitting the sample into firms that have internationalized and firms that have not (internationalization = 0), predicting the probability of internationalization in the first stage and by including the Mills' ratio as a regressor in the second stage.

Finally, Hypothesis 6 was tested by using a two-stage least squares (IV) regression: in the first stage, product market internationalization was modeled as a function of international technology inputs, international financial inputs and firm size. In the second stage, performance was modeled as a function of the newly created variable from the first stage and all other independent variables. The IV procedure improves our estimation of the coefficient of internationalization, which can be argued to be endogenous.

We performed two robustness checks on all models given the nature of the dependent variable, which is a proportion. A logit transformation is widely used to model proportions (Greene, 1997) and we cross-checked our results by logit transforming the dependent variable in all models. We also cross-checked the results by estimating models using heteroscedasticity-consistent White standard errors. We used STATA 9.0 to estimate all models.

Table 1 reports the descriptive statistics and product-moment correlations for all the variables. We ran collinearity diagnostics and multicollinearity was not an issue based on these tests. The mean product market internationalization level reached by an Indian pharmaceutical firm in our sample in terms of the percentage of its foreign sales to sales is 21%. In comparison to this, the average firm absorbed international technology resources to the order of 13.4% of sales and international financial resources amounting to 6.7% of sales. The R&D intensity for the average firm in the sample stood at 1.4% and marketing intensity at 6% of sales. Twenty nine out of the balanced panel of seventy one firms were members of a business group.

INSERT TABLE 1 HERE

The results related to the determinants of product market internationalization are provided in Table 2. While we do not report the results of the estimations employing the logit transformation of the dependent variable, they are identical to those reported in terms of the signs and statistical significance of the coefficients. The main effect hypotheses testing results are provided in Model 1 in Table 2. The overall model is significant (Wald chi-square = 134.91, $p < .001$) and the set of predictors and control variables explain 25% variance in product market internationalization for the sample of firms in the Indian pharmaceutical industry. In terms of individual hypotheses, the coefficient for international technology inputs is positive and significant ($b = 0.21$, $p < .001$) thus supporting H1. H2 is also supported as the coefficient for international financial inputs is positive and significant ($b = .09$, $p < .01$). Our third main effects hypothesis (H4) was related to the impact of business group affiliation on product market internationalization. The negative and significant coefficient (-0.13 , $p < .001$) supports H4, thus

suggesting that non-affiliated firms in the sample are more likely to embark on product market internationalization in light of institutional transformation than firms affiliated with business groups.

INSERT TABLE 2 HERE

Hypotheses 3 and 5 examine the moderating role of the post-liberalization era time-clock and business group affiliation on the impact of international technology and financial inputs on product market internationalization. As shown in Table 2, Model 2, the overall model is significant (Wald chi-square = 154.44, $p < .001$) with 29% explained variance. The change in Wald chi-square between the models is significant ($p < .01$) thus pointing towards significant interaction effects. In H3, we proposed that international technology inputs will have a stronger impact on product market internationalization in the early post-liberalization era and international financial inputs will have a stronger impact in the latter part of the post-liberalization era. Support for this hypothesis requires a negative estimate for the interaction term between international technology inputs and post-liberalization time clock, and a positive estimate for the interaction term between international financial inputs and the time-clock variable. As shown in Model 2 of Table 2, we find support for H3. The coefficient for the international technology inputs - time clock interaction variable is negative and weakly significant ($b = -0.01$, $p < .10$) while the coefficient for international financial inputs – time clock interaction is positive and significant ($b = .02$, $p < .05$). Thus, we find support for our argument regarding time variant impact of different inputs during the strategic renewal process of the Indian pharmaceutical firms as they respond to institutional transformations emanating from economic liberalization and intellectual property regime changes.

In H5, we proposed that the impact of international technological and financial inputs on product market internationalization would be greater for non-business group affiliated firms than for business group affiliated firms. This hypothesis is partially supported with interesting results. The beta coefficient for the international technology input – business group interaction is negative ($b = -0.14$, $p < .10$) thus weakly supporting our contention of the greater importance of international technology inputs for non-affiliated firms. However, we find that international financial inputs play a much greater role in product market internationalization of firms affiliated with business groups than non-affiliated firms thus refuting

the hypothesized relationship ($b = 0.16, p < .05$). We discuss this finding in greater detail in the next section and conjecture on the possible reasons behind this finding.

INSERT TABLE 3 HERE

Table 3 presents the results related to the impact of product market internationalization on firm performance (H6). Here we had argued that strategic renewal through product market internationalization would have positive performance implications for firms in the Indian pharmaceutical industry. Accordingly, we regressed two variants of performance (ROA and ROS) on product market internationalization while controlling for other effects. As shown in Table 3, both models are significant and the impact of product market internationalization on ROA ($b = 9.68, p < .05$) and ROS ($b = 6.70, p < .01$) are positive and significant, thus supporting H6. These results and their implications are discussed in more detail in the next section.

DISCUSSION AND CONCLUSIONS

In this paper, we explore how internationalization has served as an engine of strategic renewal for Indian pharmaceutical firms; which faced a survival-threatening institutional shift in 1995, yet bounced back and within a decade have come to typify a class of firms termed as emerging multinationals. Our approach reflects the general idea that retrospective understanding of competitive successes and failures help provide a firmer foundation for theoretical and normative development (Helfat 2000). We make two central arguments in our attempt to understand the strategic renewal of these firms: First, echoing the idea that resource transformation both precedes and enables product market changes, we suggest that the internationalization of their resources, both technological and capital, facilitated their product market internationalization (H_{1-2}); and second, that the effect of the ‘internationalized’ component of their technological and capital resources is conditioned both by time (H_3) and by organizational genesis (H_{4-5}). We also demonstrate the performance implications of product-market internationalization (H_6).

Both from a phenomena as well as theoretical perspective, our understanding of emerging multinationals (EMNCs) is at its infancy. As a phenomenon the rise of EMNCs continues to be striking, prompting Boston Consulting Group to declare that “A revolution in global business is under way” (BCG

2006). As noted by the OECD, the number of Fortune 500 companies headquartered outside the Triad increased from 26 in 1988 to 47 in 2004. While in 1998, the largest EMNC had 6.14 per cent of the foreign assets of the world's largest MNC, by 2003 this ratio has almost quadrupled to 22.84 per cent. Further, the rate of outward FDI growth by companies from emerging markets has outpaced that of companies from the industrialized countries since 2003. BCG further notes that the leading 100 EMNCs account for \$715 billion in revenue in 2004, a number that is equivalent to the entire GDPs of Russia and Mexico. Further, 28% of their revenues, or \$200 billion was generated from international sales. Given that EMNCs have become a permanent, sizeable and rising feature of the world economy, it is important to understand their intrinsic characteristics and qualities. However, "the recent literature on emerging MNCs is mostly based on few anecdotal evidence, and deduction and inference from the history of North-South capital flows, rather than on a large body of systematic research" (OECD 2006). Our paper is an initial attempt to understand, within a defined empirical context of Indian pharmaceutical firms, the strategic transformation of erstwhile domestic firms from protected economies with very little exposure to global markets on both their input and output sides, into a global force to reckon with.

Our study examines the dynamic linkages between inward and outward internationalization activities using a balanced panel of 71 firms from the Indian pharmaceutical industry over a ten-year period from 1995 through 2004 and finds support for the exogenous model of internationalization. Our results show that after controlling for various firm-level variables such as R&D, marketing capabilities, size, and age, the internationalization of technology and financial inputs drive product market internationalization. Our results provide thus evidence of a critical antecedent to the phenomenon of renewal through internationalization, as well as provide an explanation for heterogeneous performance on this dimension across our sample of firms.

We also find support for our predictions that the effects of different types of international inputs on product market internationalization change over time. First, the impact of international technology inputs is strongest in the immediate period after economic liberalization and in the early periods on internationalization. However, it tends to decrease over time as firms become more international in both

their resources and markets. According to our theorization, the ability of firms to successfully respond to disruptive institutional changes depends on their existing technological base and complementary know-how. Hence, having been insulated from global competitive forces for decades, the Indian pharmaceutical firms needed to ramp up their technical capabilities through accessing external knowledge when the protective barriers came down. Over time, however, as these firms moved up the learning curve and reached critical levels of knowledge, the marginal impact of external technology accessed from international markets on product market internationalization declined.

Concomitantly, we find that impact of international financial resources on product market internationalization increases over time along the evolutionary process of renewal. As firms ramp up their technological knowledge, the need for complimentary capabilities that enable commercialization goes up. Along with greater penetration into foreign markets, firms also feel the need to move up the value chain, and thereby increase both depth and breadth of internationalization. High involvement modes of entry require greater investment in higher order capabilities, and more complex forms of organizing, which in turn create a critical need for financial resources. Accordingly, we see that international financial inputs gain critical importance in the latter stages of the post-liberalization era. Our view is supported by recent evidence of a few Indian pharmaceutical firms pursuing accelerated internationalization through a spate of overseas mergers and acquisitions (MAPE 2006).²

We also find significant direct and moderating effects of business group membership, an important and unique strategic context of emerging economies, on product market internationalization. A large body of research has examined the historical advantages and performance implications of business group membership and also underlined the inherent constraints of this organizational form to respond to environmental changes (Keister, 1998; Ghemavat and Khanna, 1998; Khanna and Palepu, 2000a, 2000b). Our finding that business group membership is negatively related to product market internationalization adds to this literature by suggesting that organizational inertia and decision-making complexities in group

² This shift has been only since 2003 and we leave its analysis for another study.

affiliated firms in emerging economies may be inhibiting strategic change through exploring new market opportunities.

Our results also show a moderating role of business group membership on the strength of the relationships between technological and financial inputs and internationalization, although in slightly different directions than hypothesized. In particular, we find support for our hypotheses that technology inputs will have a greater impact on internationalization of non-affiliated than group-affiliated firms. However, contrary to our hypothesis, we find that financial inputs have a greater impact on internationalization of group affiliated firms than non-affiliated firms. A possible explanation could be as follows. A negative main effect of group affiliation on internationalization implies the restraining or inhibiting role of group structure. However, when a group firm does acquire international finance inputs, it reduces its dependence on the business group's internal capital market, and thereby its dependence on the group. We speculate that this could be having an 'unshackling effect' on a firm, and enables it to significantly evade group control and interference in decision making. This is indeed possible because most group firms are actually separate legal entities, often tied to a group only by means of loose, social ties (Khanna and Rivkin 2006).

Contributions

Our point of departure from existing literature is on a number of fronts: First, studies on strategic renewal have typically focused on technological disruptions. Instead, we examine how institutional transformations in emerging economies triggered morphing of domestic firms into international players. In doing so, we draw attention to how internationalization can serve as an engine of renewal for organizations, impacting both their resource and competence bases, as well as their product market domains. While firm activities, such as product development, have been identified in the past as a driver of innovation (Danneels 2002), our findings indicate that strategic choices related to geographic scope of a firm can also lead to transformations. By providing evidence of the systematic links between transformations of resources through internationalization as a prelude to product-market internationalization, and enhanced performance, our research not only directs attention to the links

between resource and organization renewal, but also suggests how international entrepreneurship has implications for knowledge accrual.

Second, we add to growing efforts within the field of strategy to identify events that cause search for new strategic paradigms, and the sources of new capabilities (Helfat 2000, Ethiraj et. al. 2004). The current study demonstrates how government induced policy changes and institutional transformations signal crisis and act as triggers that shape exploratory search, and act as a catalyst in the creation of firm-specific ownership advantages. The study thus reinforces the view of Wright et al. (2005) and Hoskisson et al. (2000) who draw attention to institutional transitions in explaining phenomena related to emerging economies. Our research also suggests that not only do different classes of resources have varying influences on renewal, but their relative impact on product-market changes also varies over time and across types of firms. Our research therefore draws attention to capability life-cycle arguments forwarded by Helfat and Peteraf (2003), and provides evidence that the relative value of resources changes along the evolutionary process of renewal.

Third, the paper adds to the growing stream of research on developing economy firms by testing some important theoretical ideas in the emerging economy context. Much of existing research here is based on case studies (Dawar and Frost 1999, Williamson and Zeng 2004). More importantly, they argue that post-liberalization, developing country firms are better off pursuing defensive strategies as they face multinationals entrants into their domestic markets. For firms following more offensive international strategies, the prescriptions are generally to take a supportive role in the global supply chain of an established multinationals or merge with a multinational (Khanna and Palepu 2002). We see in this study that the renewal of Indian pharmaceuticals firms was, in contrast to existing wisdom, an international offensive on a “go alone” strategy built on the foundations of accessing international technology and financial markets.

Finally, our work contributes to emerging ideas on strategic entrepreneurship, and extends it to the international domain (McDougall and Oviatt 2000). While scholars have argued that the distinction lies in entrepreneurship’s focus on value creation, and strategic management’s emphasis on value

appropriation (Shane and Venkataraman 2000, Zahra and Dess 2001), recent views on strategic entrepreneurship have argued the need to consider a nuanced and integrative view of the two (Hitt, Ireland, Camp and Sexton, 2001). Our conceptualization of the need to transform resources and thereby ability to create value as a precursor to be able to appropriate rents by transforming product-markets draws on the overall idea that firms need renewal in both value creation and appropriation activities in order to enhance overall firm performance.

The study provides a number of insights that have important implications for managers and policy makers. The study indicates that knowledge created through inward internationalization activities could be exploited to facilitate a firm's strategic renewal through international expansion. This implies that emerging economy firms that are effective in tapping into resources from international markets can not only face global competition in the home markets better, but also improve their outward internationalization performance by tapping global market opportunities. However, this knowledge capture and flow and resultant improvement in internationalization performance are not automatic and practitioners need to pay attention to the various organizational processes that capture, store, transfer and utilize the knowledge gained from inward operations (Karlsen et al. 2003).

It is also evident that opening up of Indian economy through economic liberalization has acted as an enabler for Indian pharmaceutical firms to tap the global resources and opportunities by resorting to greater inward and outward internationalization. These firms have got an opportunity to overcome their traditional limitations through inward internationalization and exploit their unique competitive advantage developed over the years, to succeed in the international markets. As anticipated by the policy makers in India, economic liberalization helped these firms access foreign capital, import technologies, raw materials etc. and become more globally competitive. These findings have important implications for government policies in various countries, which continue to actively discourage inward activities through tariff and non-tariff barriers while providing economic support to outward internationalization activities.

We conclude by highlighting a few limitations of the paper. As our research setting is limited to a single industry and the emerging economy context, we recognize that the conclusions drawn are only

indicative. Second, our study limits its investigation to product market internationalization and its determinants. Data limitations precluded us to examine the quality of internationalization. Ostensibly the aim of firms within the pharmaceutical industry is to become globally competitive and move up the value chain and there is evidence of that from some case studies of firms such as Ranbaxy and Dr. Reddy's Labs. Our data did not allow us to examine the target geographical markets in the product market internationalization or the nature of the product mix in this internationalization.

However, we believe that an important beginning has been made in researching a topic that goes to the very root of globalization and liberalization of emerging market economies. More such large sample studies in multiple industries and in different geographical and institutional contexts may be attempted to refine and validate our hypotheses and formulate new ones. Such studies may go a long way in throwing further light on the important linkages between changes in resource and capability configurations and outward change.

REFERENCES

- Abernathy, W.J., Utterback, J.M. 1978. The pattern of industrial innovation. *Technol. Rev.* 80 41–47.
- Amburgey, T.L., Kelly, D., Barnett, W.P. 1993. Resetting the clock: the dynamics of organizational change and failure. *Admin. Sci. Quart.* 38(1) 51-73.
- Amsden, A. 1989. *Asia's Next Giant: South Korea and Late Industrialization*. OUP. New York.
- Aulakh, P.S., Kotabe, M. 1997. Antecedents And Performance Implications Of Channel Integration In Foreign Markets. *J. Int. Bus. Stud.* 28(1) 145-75.
- Aulakh, P.S., Kotabe, M., Teegen, H. 2000. Export strategies and performance of firms from emerging economies: Evidence from Brazil, Chile and Mexico. *Acad. Management J.* 43(3) 342-361.
- Baum, J.A.C., Korn, H.J., Kotha, S. 1995. Dominant designs and population dynamics in telecommunications services: Founding and failure of facsimile transmission service organizations, 1965-1992. *Social Sci. Res.* 24 97-135.
- BCG. 2006. *New twist in the globalizing economy's competitive landscape: Emerging global companies home-grown in China, India and other rapidly developing economies (RDE's)*. Boston Consulting Group Research
- Bertrand, M., Mehta, P., Mullainathan, S. 2002. Ferreting out tunneling: An application to Indian business groups. *Quart. J. Econom.* 117(1) 121-148.
- Bertrand, M., Mehta, P., Mullainathan, S. 2002. Ferreting out tunneling: An application to Indian business groups. *Quart. J. Econom.* 117(1) 121-148.
- Bowen, H.K., Clark, K.B., Holloway, C.A., Wheelwright, S.C. 1994. Development projects: the engine of renewal. *Harvard Bus. Rev.* 72(5) 110-120
- Burgelman, R.A. 1991. Intraorganizational ecology of strategy making and organizational adaptation: Theory and field research. *Organ. Sci.* 2 239-262.
- Chacar, A., Vissa, B. 2005. Are Emerging Economies Less Efficient? Performance Persistence and the Impact of Business Group Affiliation. *Strategic Management J.* 26(10) 933-946.
- Chakravarthy, B.S. 1988. Measuring strategic performance. *Strategic Management J.* 7 110-118.
- Christensen, C.M., Bower, J.L. 1996. Customer power, strategic investment, and the failure of leading firms. *Strategic Management Journal.* 17(3). 197-218.
- Conner, K.R., Prahalad, C.K. 1996. A resource-based theory of the firm: Knowledge versus opportunism. *Organ. Sci.* 7 477-501.
- CRIS INFAC. 2004. *Pharmaceuticals Annual Review: February 2004*, CRISIL Mumbai.
- Danneels, E. 2002. The dynamics of product innovation and firm competences. *Strategic Management J.* 23(12) 1095-1121.

- Dawar, N., Frost, T. 1999. Competing with giants: Survival strategies for emerging market companies. *Harvard Bus. Rev.* (March-April) 119-129.
- Doz, Y.L., Santos, J., Williamson, P.J. 2001. *From Global to Metanational: How Companies in the Knowledge Economy*. Harvard Business School Press, Boston, MA.
- Eisenhardt, K.M., Martin, J.A. 2000 Dynamic Capabilities: What are they? *Strategic Management J.* 21(10/11) 1105-1121.
- Engardio, P. 2006. Emerging giants. *Business Week July 31 2006*. 40-49.
- Ethiraj, S.E., Kale, P., Krishnan, M.S., Singh, J.V. 2004. Where do capabilities come from and how do they matter? A study in the software services industry. *Strategic Management J.* 26(1) 25-45.
- Ficci. 2005. Competitiveness of the Indian pharmaceutical industry in the new product patent regime. FICCI Report for National Competitiveness Council, March, 2005. New Delhi.
- Floyd, S.W., Lane, P.J. 2000. Strategizing throughout the organization: Managing role conflict in strategic renewal. *Acad. Management Rev.* 25(1) 154-177.
- Ghemawat, P., Khanna, T. 1998. The nature of diversified business groups: A research design and two case studies. *J. Indust. Econom.* 46 35-62.
- Grant, R.M. 1996. Towards a knowledge based theory of the firm. *Strategic Management J.* 17 109-122.
- Greene, W.H. 1997. *Econometric Analysis*. 3rd ed. Prentice Hall, Upper Saddle River, NJ.
- Hassel, A., Hopner, M., Kurdelbusch, A., Rehder, B., Zugehor, R. 2003. Two dimensions of the internationalization of firms. *J. Management Stud.* 40(3) 705-723.
- Heckman, J.J. 1979. Sample selection bias as a specification error. *Econometrica*. 45 153-161.
- Helfat, C.E. 2000. Guest editor's introduction to the special issue: the evolution of firm capabilities. *Strategic Management J.* 21 955-959.
- Helfat, C.E., Peteraf, M.A. 2003. The dynamic resource-based view: Capability life cycles. *Strategic Management J.* 24(10) 997-1010.
- Helfat, C.E., Raubitschek, R.S. 2000. Product sequencing: co-evolution of knowledge, capabilities and products. *Strategic Management J.* 21(10/11) 961-979.
- Henderson, R.M., Clark, K.B. 1990. Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. *Admin. Sci. Quart.* 35 9-30.
- Hitt, M.A., Hoskisson, R.E., Kim, H. 1997. International diversification: Effects on innovation and firm performance in product-diversified firms. *Acad. Management J.* 40 767-798.
- Hitt, M.A., Ireland, R.D., Camp, S.M., Sexton, D.L. 2001. Strategic entrepreneurship: Entrepreneurial strategies for wealth creation. *Strategic Management J.*, 22 479-491.

- Hitt, M.A., Bierman, L., Uhlenbruck, K., Shimuzu, K. 2006. The importance of resources in the internationalization of professional service firms: the good, the bad and the ugly. *Acad. Management J.*(forthcoming).
- Hoskisson, R., Eden, L., Lau, C-M., Wright, M. 2000. Strategy in emerging economies. *Acad. Management J.* 43 249–67.
- Huff, J.O., Huff, A.S., Thomas, H. 1992. Strategic renewal and the interaction of cumulative stress and inertia. *Strategic Management J.* 13 55-75.
- Ilinitch, A.Y., D’Aveni, R.A., Lewin, A.Y. 1996. New organizational forms and strategies for managing hypercompetitive environments. *Organ. Sci.* 7(3) 211-220.
- Johanson, J., Vahlne, J. 1977. The internationalization process of the firm – a model of knowledge development and increasing foreign market commitments. *J. Internat. Bus. Stud.* 8(1) 23-32.
- Johanson, J., Wiedersheim-Paul, F. 1975. The internationalization of the firm – four Swedish cases. *J. Management Stud.* 12 305-22.
- Joshi, N. H. 2003. Analysis of the Indian pharmaceutical industry. *Pharmaceutical Technology.* Jan.74-94
- Karlsen, T., Silseth, P.R., Benito, G.R.G., Welch, L.S. 2003. Knowledge, internationalization of the firm, and inward-outward connections. *Indust. Marketing Management.* 32 385-396.
- Keats, B.W., Hitt, M.A. 1988. A causal model of linkages among environmental dimensions, macro organizational characteristics and performance. *Acad. Management J.* 31 570-578.
- Keister, L.A. 1998. Engineering growth: Business group structure and firm performance in China’s transition economy. *Amer. J. Sociol.* 104 404-440.
- Khanna, T., Rivkin, J.W. 2006. Interorganizational ties and business group boundaries: Evidence from an emerging economy. *Organ. Sci.* 17(3) 333-352.
- Khanna, T., Palepu, K. 2000a. Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups. *J. Finance.* 55(2) 867-891.
- Khanna, T., Palepu, K. 2000b. The future of business groups in emerging markets: Long run evidence from Chile. *Acad. Management J.* 433 268–285.
- Khanna, T., Palepu, K. 2002. *Emerging giants: Building world-class companies in emerging markets.* Case 9-703-431 Harvard Business School.
- Khanna, T., Palepu, K. 2004. Globalization and convergence in corporate governance: Evidence from Infosys and the Indian software industry. *J. Internat. Bus. Stud.* 35 484-507.
- Khanna, T., Palepu, K., Sinha, J. 2005. Strategies that fit emerging markets. *Harvard Bus.Rev.* 83 63-74.
- Khanna, T., Rivkin, J. 2001. Estimating the performance effects of business groups in emerging markets. *Strategic Management J.* 22 45–74.

- Khanna, T., Palepu, K. 1997. Why focused strategies may be wrong for emerging markets? *Harvard Bus. Rev.* 75 41–51.
- Kim, W.C., Hwang, P., Burgers, W.P. 1989. Global diversification strategy and corporate profit performance. *Strategic Management J.* 10 45-57.
- Kogut, B., Zander, U. 1992. Knowledge of the firm, combinative capabilities and the replication of technology. *Organ. Sci.* 3(3) 383-397.
- Korhonen, H., Luostarinen, R.K., Welch, L.S. 1996. Internationalization of SMEs: Inward-outward patterns and government policy. *Management Internat. Rev.* 36(4) 315-329.
- KPMG. 2006. *The Indian Pharmaceutical Industry: Collaboration for Growth*. KPMG International.
- Lecraw, D.J. 1993. Outward direct investment by Indonesian firms: motivation and effects. *J. Internat. Bus. Stud.* 24(3) 589-600.
- Lee, C., Beamish, P. 1995. The characteristics and performance of Korean joint ventures in LDCs. *J. Internat. Bus. Stud.* 26 637–54.
- Lincoln, J.R., Gerlach, M.L., Ahmadjian, C.L. 1996. Keiretsu networks and corporate performance in Japan. *Amer. Sociol. Rev.* 61 67–88.
- Ling, D.C.Y., Berndt, E.R., Kyle, M.K. 2002. Deregulating direct-to-consumer marketing of prescription drugs: Effects on prescription and over-the-counter product sales. *J. Law and Econ.* 45 691-723.
- MAPE. 2006. *India Inc. goes abroad*. Mape Advisory Group Research Report, Bangalore, India.
- March, J. 1991. Exploration and exploitation in organizational learning. *Organ. Sci.*, 2 71-87.
- McDougall, P.P., Oviatt, B.M. 2000. International entrepreneurship: The intersection of two research paths. *Acad. Management J.* 43(5) 902-906.
- Nakatani, I. 1984. The economic role of financial corporate grouping. in *The Economic Analysis of the Japanese Firm*. Aoki M (ed.). North-Holland: Amsterdam. 227–258.
- Narayanan, S., Desiraju, R., Chintagunta, P.K. 2004. Return on investment implications for pharmaceutical expenditures: The role of marketing-mix interactions. *J. Marketing* 68(4) 90-105.
- Nelson, R. R., Winter, S. G. 1982. *An Evolutionary Theory of Economic Change*. Harvard University Press: Cambridge, MA.
- Newman, K.L. 2000. Organizational transformation during institutional upheaval. *Acad. Management Rev.* 25(3) 602-619.
- Nonaka, I. 1994. A dynamic theory of organizational knowledge creation. *Organ. Sci.* 5(1) 14-37.
- OECD. 2006. *Emerging multinationals: Who are they? What do they do? What is at stake?* OECD, Paris.
- Peng, M.W. 1997. Firm growth in transitional economies: Three longitudinal cases from China, 1989-96. *Organ. Stud.* 18 (3) 385-413.

- Peng, M.W. 2003. Institutional transitions and strategic choices. *Acad. Management Rev.* 28 275–96.
- Penrose, E. T. 1959. *The Theory of the Growth of the Firm*. New York: John Wiley.
- Posen, H.E. 2005. Three essays on innovation and the impact of capital markets. Unpublished doctoral dissertation, University of Pennsylvania.
- Ramaswamy, K., Kroeck, K.G., Renforth, W. 1996. Measuring the degree of internationalization of a firm: A comment. *J. Internat. Bus. Stud.* 27 167-178.
- Ray, S. 2003. Strategic adaptation of firms during economic liberalization: Emerging issues and a research agenda. *Internat. J. Management.* 20(3) 271-281.
- Reger, R.K., Duhaime, I.M., Stimpert, J.L. 1992. Deregulation, strategic choice, risk and financial performance. *Strategic Management J.* 13 189-204.
- Rindova, V.P., Kotha, S. 2001. Continuous "Morphing": Competing through Dynamic Capabilities, Form, and Function. *Acad. Management J.* 44(6). 1263-1280.
- Shane, S., Venkataraman, S. 2000. The promise of entrepreneurship as a field of research. *Acad. Management Rev.* 25(1) 217-226.
- Shenkar, O., Luo, Y. 2004. *International Business*. John Wiley & Sons. Hoboken, NJ.
- Smith, K.G., Grimm, C.M. 1987. Environmental variation, strategic change and firm performance: A study of railroad deregulation. *Strategic Management J.* 8 363-376.
- Strachen, H. 1976. *Family and Other Business Groups in Economic Development: The Case of Nicaragua*. Praeger, New York.
- Sullivan, D. 1994. Measuring the degree of internationalization of a firm. *J. Internat. Bus. Stud.* 25 325-342.
- Teece, D.J., Pisano, G., Shuen, A. 1997. Dynamic capabilities and strategic management. *Strategic Management J.* 18(7) 509-533.
- Tsang, E.W.K. 1999. Internationalization as a learning process: Singapore MNCs in China. *Acad. Management Exec.* 13(1) 91-101.
- Tushman, M., Anderson, P. 1986. Technological discontinuities and organizational environments. *Admin. Sci. Quart.* 31 439-465.
- Venkataraman, N., Ramanujam, V. 1986. Measurement of business performance in strategy research: A comparison of approaches. *Acad. Management Rev.* 11(4) 801-814.
- Welch, L.S., Luostarinen, R.K. 1993. Inward-outward connections in internationalization. *J. Internat. Marketing.* 1(1) 44-56.
- Williamson, P., Zeng, M. 2004. Strategies for competing in a changed China. *MIT Sloan Management Rev.* 45(4) 85-91.

Wright, M., Filatotchev, I., Hoskisson, R.E., Peng, M. 2005. Strategy research in emerging economies: Challenging the conventional wisdom. *J. Management Stud.* 42(1) 1-33.

Zahra, S., Dess, G.G. 2001. Entrepreneurship as a field of research: Encouraging dialogue and debate. *Acad. Management Rev.* 26 8-10.

Figure 1

Average Foreign Sales Intensity of Sample Firms

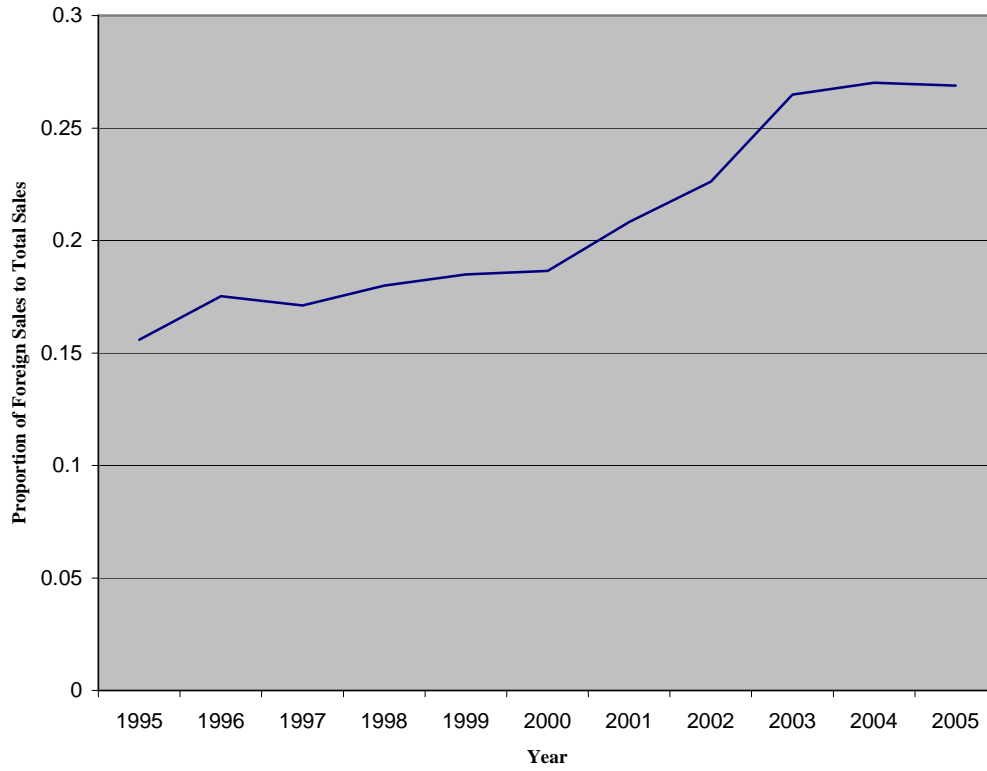


Table 1
Means, Standard Deviations, and Correlations

	Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11
1	Product Market Internationalization	0.21	0.23											
2	Return on Assets (ROA)	0.19	0.16	.11										
3	Return on Sales (ROS)	0.11	0.11	.21	.63									
4	International Technology Inputs (1 year lag)	0.13	0.16	.47	.03	.04								
5	International Financial Inputs (1 year lag)	0.07	0.21	.37	-.09	.03	.25							
6	R&D intensity (1 year lag)	0.01	0.02	.19	.22	.33	.09	.11						
7	Marketing intensity (1 year lag)	0.06	0.05	-.10	.15	.07	-.26	.02	.14					
8	Firm Size	20.04	1.62	.28	.39	.32	.16	.22	.47	.18				
9	Firm Age	23.71	19.24	-.07	.27	.08	-.13	-.02	.13	.41	.36			
10	ROS (1 yr lag)	0.06	0.09	.14	.44	.72	.02	-.05	.31	.02	.25	.04		
11	Business Group dummy	--	--	-.03	.14	.14	-.02	.04	.27	.08	.51	.15	.09	
12	Post-liberalization Time-clock	5.00	2.58	.14	.01	-.01	-.07	.16	.18	.21	.21	.12	-.12	.01

Table 2
Results of Panel Estimation with Product Market Internationalization as the
Dependent Variable^a

	Model	
	(1)	(2)
International technology inputs (1 yr lag)	0.21*** (0.05)	0.32*** (0.07)
International financial inputs (1 yr lag)	0.09** (0.03)	-0.10 (0.10)
Business Group dummy (0-non-group; 1-group)	-0.13*** (0.04)	-0.10** (0.04)
Post-liberalization time-clock		0.01*** (0.00)
Business Group x International tech. intensity		-0.14 ⁺ (0.11)
Business Group x International fin. intensity		0.16* (0.09)
Time-clock x International tech intensity		-0.01 ⁺ (0.01)
Time-clock x International fin. intensity		0.02* (0.01)
R&D intensity (1 yr lag)	0.66** (0.29)	0.52* (0.29)
Marketing intensity (1 yr lag)	0.02 (0.15)	-0.07 (0.16)
ROS (1 yr lag)	-0.13* (0.07)	-0.06 (0.07)
Firm Size	0.07*** (0.01)	0.06*** (0.01)
Firm Age	-0.00~ (0.00)	-0.00* (0.00)
Constant	-1.11*** (0.16)	-0.98*** (0.17)
 <u>Model Indices</u>		
Wald chi-square	134.91***	154.44***
Overall R-square	0.25	0.29
Rho	0.65	0.67
N	639	639

⁺ p < .10, * p < .05, **p < .01, *** p < .001 (significance levels based on one-tailed tests)

^a Unstandardized regression coefficients reported; standard errors in parentheses

Table 3
Results of IV Estimation with Performance as the Dependent Variable^a

	ROA	ROS
	(1)	(2)
Product Market Internationalization	9.68* (4.46)	6.70** (2.35)
Business Group (0-non-group; 1-group)	2.10* (1.17)	1.23* (0.63)
R&D Intensity (1 yr lag)	9.41 (28.74)	34.14* (15.27)
Marketing Intensity (1 yr lag)	15.99 ⁺ (11.41)	10.41* (6.06)
ROS (1 yr lag)	70.07*** (6.28)	75.88*** (3.36)
Firm Age	0.19*** (0.03)	0.02 (0.02)
Constant	7.26*** (1.45)	3.35*** (0.76)
<u>Model Indices</u>		
F	45.20***	118.04***
Adjusted R-square	0.29	0.53
N	625	629

⁺p < .10, * p < .05, **p < .01, *** p < .001 (significance levels based on one-tailed tests)

^a Unstandardized regression coefficients reported; standard errors in parentheses