ENTREPRENEURIAL ORIENTATION IN EASTERN EMERGING MARKETS:
THE IMPACT ON PROFITABILITY OF BUSINESS GROUPS AFFILIATES VERSUS INDEPENDENT FIRMS IN INDIA

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Abstract

We focus on the linkages between entrepreneurial orientation and business performance in the context of eastern emerging markets. Combining existing knowledge to match local needs and conditions may replace innovation as a key driver of business performance in these contexts, and taking risks may worsen rather than performance because insufficient financing is available to smooth cash flows. Within business groups, entrepreneurial orientation affects performance in a different way: managerial strategies based on risk taking may lead to higher performance, but the impact of proactiveness may be attenuated compared with independent companies. In our empirical counterpart we utilize Indian firm-level data.
Entrepreneurial Orientation in Eastern Emerging Markets: The Impact on Profitability of Business Groups Affiliates Versus Independent Firms in India

Since Miller (1983) introduced the concept into business research, entrepreneurial orientation (EO) has become a highly influential model of western strategy-making which bridges different areas of management; in particular entrepreneurship and strategy (Miller and Friesen, 1982; Covin and Slevin, 1991; Lumpkin and Dess, 1996). Traditional EO theory incorporates three core dimensions; risk-taking, pro-activeness and innovativeness (Covin & Slevin, 1989). The extent to which an organization is entrepreneurial, in the sense of taking risks and creating new products, manufacturing techniques and markets (Schumpeter, 1934), has been found to have significant and beneficial consequences for the performance of a large variety of western firms (Rauch, Wilklund, Frese & Lumpkin, 2009) and business units (Wales, Monsen & McKelvie, 2011). EO represents a dimension of corporate strategy making that can depend on, for example, the structure of the firm (Covin & Slevin, 1989) or the personality of the CEO (Begley & Boyd, 1987). Thus the construct of EO has proved to be exceptionally resilient and has become one of the most researched topics in western management, jointly with the related theme of ‘corporate entrepreneurship’ (e.g. Yiu, Lau & Bruton, 2007).²

² Thus according to Slevin & Terjesen (2011), the five seminal contributions of the field have each accumulated more than 1000 citations and the core dimensions of EO –risk-taking, innovativeness and proactiveness- remain
We propose a new application of the EO construct; to focus on the strategic behaviour of "eastern" firms; that is, companies founded or operating in the emerging markets of Asia. As is well known, these are often but not always embedded within business groups, and may have a significant degree of family control (Khanna & Palepu, 2000; Khanna & Yafeh, 2005). The analysis of the relationship between EO and the performance of firms in this context enables us to provide a point of comparison with "western" EO strategies (e.g. Miller & Le Breton Miller, 2011).

The effects of EO on company performance are not always the same in western firms and eastern emerging markets. Importantly, the different components of EO may have differential impacts on firm performance in emerging markets, making it impossible to think of EO as the integrated construct which has become stylised in the EO literature based on western contexts. Consider first risk taking; one of the three core elements of the EO concept. Greater corporate risk taking is usually associated in western firms with enhanced company performance, but in the eastern emerging market context, capital markets are weak and business environment is volatile. As a consequence, managers who adopt risky strategies are exposed to relatively greater downside risks, and may be unable to borrow to smooth cash flows. Hence risk taking may actually undermine rather than improve business performance in eastern emerging markets. Similarly, it is usually argued that managers who follow intensive innovation based strategies in western economies (the second core dimension of EO) will enhance the performance of their companies. However, in eastern emerging markets, firms can make significant market gains while still not operating as innovation leaders, as exemplified by the current case of Samsung competing successfully against Apple. Hence, bricolage – combining existing knowledge to match specific needs and conditions – may supplement innovation as the key driver of business performance in these business

at the heart of the research agenda today though important extensions have been proposed and validated (Covin & Lumpkin, 2011).
contexts. Relying more heavily on proactiveness, the third element of EO, may more than substitute for the weaker impact of innovativeness in eastern emerging markets. When considering corporate strategies in eastern emerging market firms, one must also take into account the greater variety of ownership arrangements compared with western economies, most significantly the widespread prevalence of business groups as well as conventional independent private firms and state owned ones.

The development of business groups is often explained using transactions cost theory, which suggests that they are formed to address the organisational problems caused by institutional voids (Khanna & Palepu, 1997). The approach builds on Coase (1937), who first suggested that when markets are deficient, organisations need to grow bigger to substitute internal hierarchies for expensive market relationships. Business groups thus internalize market transactions and create internal networks of value, sharing valuable (and often scarce) resources and capabilities. This suggests that in an emerging market context, where the market system is less developed (Wright et al, 2005), the benefits for firms of business group membership will be greater than in developed economies, where there are fewer such institutional voids (Khanna & Palepu, 2000). Business groups are especially prevalent in eastern emerging markets (Chacar & Vissa, 2005). Parallel to this, the impact of an entrepreneurial orientation in business groups in emerging markets may be radically different from that in independent firms that dominate either in eastern or in the western business contexts. Leff (1978) argued that entrepreneurship within business groups is facilitated by structures, as opposed to gifted individuals, so that scarce entrepreneurial capacity is used to its full potential within the group. Moreover, information flows are

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3 Extant research on entrepreneurial orientation focuses on the underlying theory and on empirical validation of the dimensions of EO, and investigates its sources as well as its implications for business performance, predominantly in the context of developed market economies (Miller & Le Breton Miller, 2011), but also for alternative institutional contexts of emerging markets and for different types of firms (Covin & Lumpkin, 2011).
increased, thereby reducing uncertainty associated with investment and production decisions (Carney, 2008; Steier, 2009). Business groups also provide a structure within which risks can be shared and mitigated, largely by way of flow of resources (Estrin, Poukliakova & Shapiro, 2008; Friedman, Johnson & Mitton, 2003; Khanna & Yafeh, 2005). This ability to offer implicit insurance increases the ability of affiliated firms to bear the risks that are an integral component of entrepreneurship. However, the same risk mitigation mechanisms, which implies control over scarce financial and non-financial resources, and which reduces or eliminate risk of bankruptcy, may adversely affect the quality of entrepreneurship within business groups, leading managers to seek internal rents rather than innovate (Fogel, 2006; Morck & Yeung, 2004; Carney, 2008). Innovation within individual firms associated with business groups may also be negatively affected by other factors such as diversification of these groups (Chang, Chung & Mahmood, 2006).

Building on these insights, we investigate how EO affects firm performance in eastern emerging markets, as a point of comparison with the literature on the effects on EO on western firms. We therefore add to the understanding of EO in emerging market contexts (Bruton, Ahlstrom & Obloj, 2008). We also examine how these effects may be moderated by business group affiliation. The specific context of our analysis is India, where business groups are common, but unaffiliated private firms are also present in large numbers. Since the 1950s, industrial policy in India was characterized by government control over financial and other resources, protection against competition from imports, and the so-called licence raj that provided incumbent firms with protection from intense domestic competition (Khanna, 2011). The abandonment of the licensing system in 1991, together with much greater autonomy for the (mostly state-owned) banks (Bhaumik & Dimova, 2004), ushered in an era of pro-competition reforms (Douma, George & Kabir, 2006). As a consequence, the emphasis of business strategy has had to shift from investment in institutional relatedness that
offered advantages with respect to access to scarce resources (Peng, Lee & Wang, 2005; Peng, 2006) to greater focus on value-enhancing strategies, including issues such as core competence (Kedia, Mukherjee & Lahiri, 2006). The Indian post-liberalisation context, therefore, permits both a meaningful analysis of EO as a managerial strategy, and a comparison of the impact of EO on performance of business group affiliates and independent private firms.

ENTREPRENEURIAL ORIENTATION IN THE EASTERN EMERGING MARKET CONTEXT AND THE MODERATING EFFECTS OF BUSINESS GROUPS

Strategic decisions within firms relate to a wide range of activities such as planning, organizational decision making processes and strategic management (Hart, 1992; Rajagopalan, Rasheed & Datta, 1993). It is therefore common in considering western firms to identify the relevant dimensions of strategy; of which EO is a key component. Lumpin & Dess (1996) view EO as being characterised by a "fundamental set of strategy-making processes" (pp. 139) and it is stylized that an entrepreneurial firm "engages in product market innovation, undertakes somewhat risky ventures, and is ... 'proactive' ... beating competitors to the punch" (Miller, 1983, pp. 77). Following Miller (1983), it is conventional to create a composite index of EO from these three dimensions of strategy (Miller & Le Breton-Miller, 2011). However, combining these strategic dimensions to a single indicator is only feasible conceptually if they each have similar implications for firm’s performance, i.e., if risk taking, proactiveness and innovation all have the same (positive) effect on corporate outcomes. This has been established for firms in western economies (Miller, 1983; Miller and le Bruton Miller, 2011) but may not be the case in eastern emerging markets. For example, while innovation may have only a small positive impact on firm performance and risk taking may
have an adverse impact 

on account of due to, imperfect (or missing) capital and insurance markets. In contrast, proactiveness may have stronger positive effect than in western economies. Indeed, Lumpkin and Dess (1996) have suggested that "[t]he dimensions of an entrepreneurial orientation .... may vary independently of each other in a given context" (ibid., pp. 151), and that the impact of EO on performance itself is context specific. We, therefore, individually discuss the impact of each of the dimensions of EO on firm performance in eastern emerging markets.

Risk taking

The standard view is that risk-taking is one of the three key elements of EO, and one that enhances company profitability (Miller, 1983; Miller & Le Bruton-Miller, 2011). It is associated with the willingness of managers to act in a bold and decisive manner in the face of uncertainty. However, we would argue that this plays out somewhat differently in eastern emerging markets. Deficiencies in capital markets and more generally absence of efficient institutions that reduce transactions costs (Khanna & Yafeh, 2007) mean that, while potential entrepreneurial gains can be high, the downside risks are high as well because the firm is less able to draw on external finance in case of temporary shocks to cash flow resulting from following risky strategies. Moreover, these downside risks are relatively higher than in western market economies because of the absence of well-functioning insurance markets and associated financial products. This prevents eastern companies from hedging these risks. In India, for example, despite growth in the foreign exchange and interest rate derivatives market, "by global standards it is still in its nascent stage" (Gopinath, 2010, pp. 69). If there are unexpected shocks to revenues or costs, the external finance needed to smooth cash flow may not be easily available in eastern emerging markets and this will particularly affect the
performance of managers who adopt risky strategies. The performance of those managers and entrepreneurs that take risks in emerging market contexts may therefore be affected negatively. There may be an immediate negative impact on performance when an unhedged or uninsured risk results in a negative shock. Moreover, the volatile earnings associated with risk may lead to periods of inadequate financing, where companies need to rebuild reserves; as a result, risk-taking firms may also miss out on some potential opportunities for investment.

In such environments, an advantage of business group affiliation is that it can cushion affiliated companies that take risks. This may offset the negative impact of risk taking in this environment provided the business group as a whole is able to distinguish between worse performance which results from suboptimal strategic choices taken by managers and external temporary shocks. The gain arises because business groups can replace market-based finance, in an environment of institutional voids, with “internal capital markets”. This ability to hedge against downside risks using internal capital markets is enhanced by the widespread use of diversification strategies by business groups in eastern emerging markets (Khanna & Palepu, 2002; Khanna & Rivkin, 2001). While the empirical evidence does not consistently confirm the universality of mutual support and insurance within business groups, evidence for such support is strong among Asian countries (Khanna & Yafeh, 2005; Gopalan, Nanda & Seru, 2007). Thus, one may consider this as a specifically Asian facet of business groups.

It implies that:

**Hypothesis 1a:** In an eastern emerging market context, managerial risk taking will have a negative effect on company performance.
Hypothesis 1b: Managerial risk taking has less of a negative impact on the performance of business group affiliated companies than of independent private companies in this context.

Proactiveness

The arguments from the western literature on the importance of proactivity (Miller, 1983) apply with similar force in eastern emerging markets. Firms that develop and implement clear managerial strategies to succeed in their markets are more likely to perform well, and this can be measured by the extent to which profits are retained and reinvested back into the business (Miller & le Breton-Miller, 2011). However, membership of business groups can exercise a restrictive moderating influence on this relationship. This is because, as with any insurance, there is a trade-off resulting from business group affiliation which creates a form of agency problem. To be precise, the insurance element of business group membership which moderates the impact of risk taking has a negative effect on the incentives of managers (Morck, Wolfenzon & Yeung, 2005).

Consistent with the argument above, markets may be too harsh in punishing managers of independent businesses who are take risks and face temporary shocks in a business environment which is volatile and uncertain. However, managers operating independently on the market have the possibility of increasing their returns when outcomes are abnormally positive. As we have seen, in the environment of underdeveloped external finance that typically applies in eastern emerging markets, aggressive growth strategies are driven primarily by retained earnings. However, in business groups, we have seen that there will be internal redistribution to support the smoothing of income flows or to alleviate unexpected hikes in costs, such that some share of earnings in successful affiliates will get redistributed
to other companies in the group. Hence for managers in firms affiliated to business groups, upside gains are attenuated and therefore the incentives to engage in managerial strategies of aggressive investment are diminished. As a consequence, the motivation for accumulating resources within the affiliated firm is reduced which implies that the link between retained earnings and subsequent performance will be weaker for business group affiliates.

A related issue concerns limits to information and bounded rationality. The central level managers of the business group may not fully know where the best opportunities are, and cannot utilise localised knowledge of the affiliate companies in full, as the latter may be distorting the information on investment opportunities for opportunistic reasons. Thus the business group can make errors in its allocation of resources around the group’s member firms. This represents a transaction cost of the integrated organisation, in the form of uncertainty faced by managers of business group affiliates. Hence, the affiliate company managers may hedge against internal uncertainty by having less of a surplus to share, even if we assume no opportunism in redistribution and no redistribution to the genuine long-term losers (i.e. no soft budget constraints; see Kornai, Maskin & Roland, 2003) at the central managerial level of the business groups.

In addition, if the affiliate companies perceive good growth opportunities, they can aim to convince the centre to shift resources to them; so again, they are less dependent on their own retained earnings. This is a further reason for them to be less concerned about accumulating resources themselves and why therefore the link between retained earnings and performance will be weaker for business group affiliates.

As a result, we posit:

**Hypothesis 2a:** In an eastern emerging market context, managerial strategies to retain profits will have a positive impact on performance.
**Hypothesis 2b:** There will be a weaker link between retained earnings and profitability for business group affiliates compared with independent private companies in this context.

Taking these arguments together, we posit that business groups protect the affiliates against external risks but that this comes at the cost of some inefficiency in the allocation of financial resources. Extant research makes the point that in the context of institutional voids characterising eastern emerging economies, an internal capital markets as represented by business groups may lead to a more efficient allocation of resources (Khanna & Palepu, 2000, Gedaljovic & Shapiro, 2002). We suggest that this argument can be refined analytically, distinguishing between the two conflicting channels that affect the behaviour of managers of affiliate companies, and therefore their performance. On the one hand, by providing insurance against external risks, business group membership makes taking risks a more effective managerial strategy. On the other hand, internal redistribution within the business group has a negative impact on managerial incentives by breaking the link between accumulated surplus and performance. This is due to imperfect sharing of information within the business group and imperfections in the process of redistribution. Which of these effects is stronger is an empirical question, but it is beneficial to separate the discussion of these two effects because the risk-insurance element and redistributive element cannot be represented as a simple linear trade-off. Managers of each affiliate face a different set of opportunities. For some, risk taking may be critical; for others, risks may be lower, but the capacity to follow aggressive investment strategies ahead of the rivals may be a decisive factor in performance. Hence we propose that they should be discussed separately and specify hypotheses 1 and 2 accordingly.

Risk implies that the insurance element dominates and the optimum redistribution should be based on competencies at the central management of the business group related to adequate distinction between the temporary external shocks and outcomes of inefficient local
strategies. However, inefficient identification may simply cross-subsidize the weaker members of the business group (Chacar & Vissa, 2005). In turn, focusing on accumulation and investment, current incomes and the capacity to retain earnings may be correlated with future opportunities and one could envisage business groups’ strategies, where the companies that are able to accumulate, are also receiving additional support. In that case, the link between retained earnings and performance would be stronger not weaker. Thus, in our Hypothesis 2 above, we assume that the insurance effect dominates the effect of concentrating resources on the most promising investments.

**Acquisition of knowledge**

We follow Lévesque & Minniti (2010) in arguing that innovativeness is the dimension of entrepreneurship that should be seen as context-specific; in particular, its significance is conditional on the level of development. Eastern emerging markets are characterised by institutional voids, and the impact of innovation on firm performance may be affected negatively by limited institutional support (Li & Athuahene-Gima, 2001). Further, while innovativeness is a critical dimension of entrepreneurship in mature market economies, it may be less so for firms that can make significant efficiency gains while still not operating on the technological frontier (Acemoglu, Aghion & Zilibotti, 2006). In the latter case, useful knowledge acquisition may take different forms; new knowledge creation being only one of them. Companies in the emerging market environment may successfully invest in their own research and development programmes, but may also get some significant gains from securing existing external knowledge via various channels. Accordingly, entrepreneurial identification of opportunities may come not from globally new, created knowledge (that is, from innovation in a narrow sense of the term), but from bricolage: from combining the
already existing knowledge in a selective way, to match local needs and conditions best. This imported knowledge may for example take a form of licences, using information that has been already standardized and applied in mature market economies. Here, the gain in performance comes not from innovations of a global character, but from managerial drive and the ability to identify, select, import and apply these elements of knowledge that fit local conditions. Yet, in dynamic contexts such as eastern emerging market economies, where the strategic needs of companies change rapidly, identifying the right mix of new knowledge may not always be possible. Further, the translation of acquisition of new knowledge into (enhanced) firm performance may be adversely affected by "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends" (Cohen & Levinthal, 1990).

Thus, considering the entrepreneurial use of knowledge in emerging markets brings us closer to Kirzner’s stress on entrepreneurial "alertness to hitherto unnoticed opportunities" (Kirzner 1973, p. 39). This perspective highlights entrepreneurial uses of already existing resources, including the knowledge resources generated by others. Entrepreneurial firms are not necessarily radical innovators, especially in eastern emerging markets; they are firms that are able to apply existing resources in a more effective way in a given local context.

Moreover, we posit that business groups accumulate knowledge, which they share internally. This produces efficiency gains: group affiliated firms benefit from sharing tangible and intangible resources that can include technology and knowledge generated internally or obtained from external sources (Chang & Hong, 2000). However, it also implies that investment in acquiring knowledge by managers of affiliate companies produce effects that are (partly) shared within the business group. A combination of these two aspects implies that managers of the affiliates can to some extent free ride on common pool of knowledge
resources and has less motivation to make their own investment in knowledge acquisition most efficient.

In addition, the absorptive capacity of a firm may be influenced by its governance structure (Filatotchev et al., 2003). In the context of eastern emerging markets, a key distinction is between the governance structure of independent and group affiliated firms. Absorptive capacity relates to the ability of managers “to recognize the value of new information, assimilate it, and apply it to commercial ends” (Cohen & Levinthal, 1990: 128). Hierarchical organisational structures typical for business groups may lead to lower strategic flexibility of managers, affecting their capacity to absorb new knowledge and to respond with rapid adaptation. This problem will be exacerbated in the turbulent environments typify eastern emerging markets (Filatotchev, Isachenkova & Mickiewicz, 2007).

We argue here, therefore, that within the eastern emerging market context, the focus should be on the wider process of knowledge acquisitions rather than only innovations. Further, consistent with Baumol (2010), we argue that there are limits to significant value enhancement from innovations within subsidiaries of large companies as compared with independent companies. Our argument mirrors that made with respect to retained earnings above. Just as eastern emerging market firms are more reliant on internal resources than on external finance, so also they are reliant on externally acquired knowledge than on internally developed knowledge, and the use of both these resources are less efficient within business groups than among private independent firms.

Therefore,

**Hypothesis 3a:** In an eastern emerging market context, managerial decisions to invest in building knowledge have a positive impact on performance.
Hypothesis 3b: Managerial strategies to accumulate knowledge have more of a positive impact on the performance of independent private companies than business group affiliated companies in this context.

EMPIRICAL COUNTERPART: VARIABLES AND METHODS

Data

Our sample consists of 4,904 Indian firms across 70 industrial sectors (3-digit classification). The data comes in a form of unbalanced panel spread over the 2001-2011 time period, resulting in 31,313 firm-year observations. Financial information about these companies, as well as information about ownership and industry affiliation, was obtained from the Prowess database provided by the Centre for Monitoring of the Indian Economy. Prowess is widely used for firm-level research on India. See, for example, Bertrand et al. (2002) and Gopalan et al. (2007).

Dependent variable

The dependent variable for our empirical analysis is returns to assets (ROA). It has been widely argued that profit after tax (PAT) is an imperfect measure of performance because it is influenced by factors such as depreciation that are influenced by accounting rules, by exogenous interest payments and by measurement of intangible factors like goodwill (see, e.g., Meeks, 1977). It is therefore conventional to use profit before interest payment and taxes (PBIT) (e.g., Cuervo-Cazzura & Dau, 2009; Bhaumik & Selarka, 2012); our measure is the ratio of PBIT to total assets.
Independent variables

Entrepreneurial orientation

Following Miller & Breton-Miller (2011), we derive the three measures of EO dimensions (proactiveness, risk taking and innovativeness) from accounting data. Also in the context of eastern emerging markets we replace innovativeness with a wider concept of knowledge acquisition.4

Risk taking reflects a firm's propensity to make bold moves and embrace the associated uncertainty. These can be reflected in actions such as mergers and acquisitions, risky product launches, and entry into risky markets. If capital markets are efficient, then the idiosyncratic risk associated with these actions would be reflected in a firm's share price, such that the volatility of the share price can be used as the measure of risk taking (Fama, 1968). Miller & le Breton-Miller (2011) build on this approach and take share price volatility to measure this dimension of EO. However, their approach has problems, especially in eastern emerging markets. Share price volatility might be caused by factors other than managerial risk taking, for example strikes and work stoppages, the loss of key managerial personnel and even localised natural disasters. Moreover, capital markets in eastern emerging economies are rarely efficient (for evidence on India, see Sarkar & Mukhopadhyay, 2005) and hence the assumptions underlying this methodology for measuring risk are not met. Instead we propose that a firm's cash flow volatility over a period of time will reflect the risk it undertakes strategically in an emerging market. Accordingly we use the average volatility of cash flows for period $t-5$ to $t-1$ (i.e. again moving average) as the measure of risk taking for each period $t$ (see Stein et al., 2001).

A company can be said to be proactive if it actively engages in building the business (Miller, 1983), and this is reflected in the use of its profits. Miller & Breton-Miller (2011)

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4 Alternatively we could use "information acquisition" if the emphasis was placed on tangible aspects (Mudambi and Navarra, 2004). "Knowledge" implies both tangible and intangible facets.
argue that proactiveness can be measured by the percentage of profits reinvested in the
company over a lengthy period of time. This is a better measure than current investment
which is affected by past strategies, by tactical responses to the current economic
environment (Kaplan & Zingales, 1997), and, in the context of eastern emerging markets, by
bottlenecks encountered by managers. Proactiveness is indicated by the percentage of
earnings retained by a firm (and hence available for reinvestment), taken as a moving average
of the past five years.

Firms that invest more in product and process development are generally regarded as
more innovative, so spending on research and development (R&D) is taken as a measure of
innovativeness by Miller & le Breton-Miller (2011). In an eastern emerging market context
however, the stress should not only be on innovation but also on the wider process of
knowledge-acquisition. The latter might involve development of new products and process, –
and the adoption of technology, products and processes developed by other (generally
western) firms. Hence, our measure of innovation includes a firm’s expenditure on both R&D
and licensing fees and royalty payments to access externally developed technologies,
products and processes. Our measure of innovation is therefore the sum of expenditures on
internal R&D and those on externally sourced technologies, products and processes, divided
by sales and scaled by sectoral averages (constructed in the same way). As with the other two
dimensions of EO we use this as moving average over the five year period.

Ownership

The Prowess database distinguishes between: (i) independent private domestic-owned
firms that are unaffiliated with business groups, (ii) firms affiliated with domestic business
group, (iii) state-owned firms, (iv) independent foreign firms and (v)
subsidiaries of foreign firms in India. The distribution of these ownership groups is reported
in Table 1. Business group-affiliated Indian companies (33.8%) and independent Indian companies (56.8%) are the largest categories. We also retain in our sample independent foreign firms (5.15%), group affiliated foreign firms (0.98%) and state-owned firms (3.11%) but exclude the other ownership categories. Our sample accounts for 99.85% of the 31,348 firm-years for which data are available.

Our (b) hypotheses concern how ownership arrangement, specifically membership of business groups, moderate the impact of the different components of EO on firm performance. To test these, we interact each component of EO with the ownership categories in the sample. The omitted category in our analysis is independent domestic firms. Hence, the interactions are between the EO components and dummy variables that account for group affiliated Indian firms, independent foreign firms, group affiliated foreign firms and state-owned firms.

**Control variables**

We control for firm age and firm size, the proxy for the latter being (tangible) assets. Since the impact of the different components of EO on firm performance may depend on a firm's age (Wiklund & Shepard, 2003), we also interact the three measures of EO with firm age. In addition, we control for the debt to equity ratio, which is an important determinant of agency costs (Jensen, 1986) and for ownership effects. Further, we generate eleven year-indicator variables (dummies) to control for unobserved year-specific factors that may have affected firm performance (2001 is the omitted year) and dummy variables representing 70 (3-digit) sectors.

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5 These are mixed state-private, cooperative, owned by non-residents, each of which account for too few firm-years -- between 9 and 20 -- for meaningful comparison with the included ownership categories.

6 Robustness checks show that the results that are related to the hypotheses are unaffected by the inclusion of the firms of the three excluded ownership categories in the sample.
The definitions of variables are presented in Table 1 and in Table 2 we report
descriptive statistics and the correlations among the variables. Ignoring the obvious
correlations among the dummy variables that capture ownership categories, the correlation
coefficients among the explanatory variables are quite low, implying multicollinearity is of
limited concern for this study.

{Tables 1 and 2}

**Model**

Our empirical model involves regressing firm performance (profitability) on the
different components of EO -- risk taking, pro-activeness and acquisition of knowledge -- as
well as its interactions with business groups (and other ownership categories) and a number
of control variables. These include both time varying firm characteristics -- firm age, firm
size (also interacted with EO variables) and leverage -- and year- and industry- fixed effects.
Hence, our regression specification is given by

\[
\text{Profitability}_{ij,t} = \beta_0 + \beta_1 \times \text{retained earnings}_{ij,t} + \beta_2 \times \text{cash volatility}_{ij,t} + \beta_3 \times \text{knowledge acquisition}_{ij,t} + \beta_4 \times \text{independent foreign firm}_{ij,t} + \beta_5 \times \text{affiliate domestic firm}_{ij,t} + \beta_6 \times \text{affiliate foreign firm}_{ij,t} + \beta_7 \times \text{state owned firm}_{ij,t} + \beta_8 \times \text{retained earnings}_{ij,t} \times \text{independent foreign firm}_{ij,t} + \beta_9 \times \text{retained earnings}_{ij,t} \times \text{affiliate domestic firm}_{ij,t} + \beta_{10} \times \text{retained earnings}_{ij,t} \times \text{affiliate foreign firm}_{ij,t} + \beta_{11} \times \text{retained earnings}_{ij,t} \times \text{state owned firm}_{ij,t} + \beta_{12} \times \text{cash volatility}_{ij,t} \times \text{independent foreign firm}_{ij,t} + \beta_{13} \times \text{cash volatility}_{ij,t} \times \text{affiliate domestic firm}_{ij,t} + \beta_{14} \times \text{cash volatility}_{ij,t} \times \text{affiliate foreign firm}_{ij,t} + \beta_{15} \times \text{cash volatility}_{ij,t} \times \text{state owned firm}_{ij,t} + \beta_{16} \times \text{knowledge acquisition}_{ij,t} \times \text{independent foreign firm}_{ij,t} + \beta_{17} \times \text{knowledge acquisition}_{ij,t} \times \text{affiliate domestic firm}_{ij,t} + \beta_{18} \times \text{knowledge acquisition}_{ij,t} \times \text{affiliate foreign firm}_{ij,t} + \beta_{19} \times \text{knowledge acquisition}_{ij,t} \times \text{state owned firm}_{ij,t} + \beta_{20} \times \text{knowledge acquisition}_{ij,t}
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affiliate foreign firm_{ij,t} + \beta_{10} \times knowledge acquisition_{ij,t} \times state owned firm_{ij,t} + \beta_{20} \times firm age_{ij,t} + \beta_{21} \times retained earnings \times firm age_{ij,t} + \beta_{22} \times cash volatility \times firm age_{ij,t} + \beta_{23} \times knowledge acquisition \times firm age_{ij,t} + \beta_{24} \times asset size_{ij,t} + \beta_{25} \times debt-equity ratio_{ij,t} + year_t \Gamma + sector_j \Delta + firm_i \Omega + \epsilon_{ij,t},

where i, j, and k identify firms, industries, and years, respectively. \Gamma denotes vector of coefficients on annual dummies, \Delta corresponds to coefficients on sectoral dummies, \Omega stands for firm-level random effects and finally \epsilon represents the iid error term.

We estimate the model using both random effects and fixed effects estimators. In the baseline model, we estimate a truncated model without any ownership effects using the random effects estimator. In this baseline model, we control for year effects but not industry effects to test for \textit{H1a}, \textit{H2a}, and \textit{H3a}. Next, we include the interactions between EO components and ownership categories, and EO components and firm age, which gives the estimates for testing \textit{H1b}, \textit{H2b}, and \textit{H3b}. Once again, we control for year effects but not industry effects. We then include industry effects in this expanded random effects model. Finally, we estimate a fixed effects model in which time invariant ownership dummies and industry affiliation of the firms are dropped from the regression specification. The random effects models are estimated using the maximum likelihood estimator and the fixed effects model applies the within regression estimator.

\{Table 3\}

RESULTS

Table 4 reports the coefficient estimates. The estimates of the random effects model are reported in Columns (1), (2) and (3), while the estimates of the fixed effects model are
reported in Column (4). The baseline specification in Column (1) includes the EO components and control variables without any ownership terms. The ownership dummies and interactions between EO components and ownership categories are introduced in Column (2). The specifications in Columns (1) and (2) control for year effects, and that in Column (3) control for industry effects as well. The Breusch and Pagan Lagrangian multiplier test for random effects suggests that random and fixed effects estimators are more suitable for estimating the model than the ordinary least square estimator. Reassuringly, the regression estimates are remarkably robust across random and fixed effects estimations, in terms of both sign and statistical significance. Also, the likelihood-ratio test of a null hypothesis that the between firms standard deviation of the random effect is zero is highly significant suggesting the need for use of the effects models as applied.

For the differences that we found significant, we plot Figures 1 and 2 (based on specification (2)). The figures present the marginal effects on profitability of change in retained earnings (Figure 1) and in our risk measure (Figure 2) between their values one standard deviation down from the mean value to one standard deviation up from the mean values, for all the five ownership categories separately, represented by five lines on the graphs correspondingly. These effects are calculated by averaging across the values of all other predictors. We have integrated the interpretations of these figures with the discussion of the regression estimates and their implications for the hypotheses.

{Table 4; Figures 1-2}

.**Eastern firm performance, risk taking and group membership (H1a & H1b)**

We predicted that, unlike for firms in developed market economies, the adoption of risk taking strategies will worsen company performance in an eastern emerging market
(H1a). However, this negative impact on performance would be offset by affiliation to a business group (H1b). Within the regression framework, H1a implies that the overall estimated impact of cash flow volatility would be negative and statistically significant in Column (1) of Table 4. Consistent with H1b, we expect the sign on the interaction between cash flow volatility and the Indian group affiliation dummy variable to be positive and statistically significant in Columns (2) - (4). The results reported in the table indicate that there is strong support for H1a. The coefficient for volatility of cash flows, our proxy for managerial risk taking, has a negative coefficient of -0.07 in model (1) and this effect is highly significant at the 1‰ level. There is also strong support for H1b. The coefficient of the interaction between cash flow volatility and the dummy for business group affiliation is positive -- 0.05 in the random effects models (2) and (3) and 0.08 in the fixed effects model (4) -- and is also highly significant at the 1% level.

The regression estimates permit us to calculate the corresponding estimates of the impact of the risk taking component of EO on performance of independent private firms and of group affiliated firms. Since the omitted ownership category in our regression models (2)-(4) is domestic private independent firms, the coefficient of the cash flow volatility variable itself gives us the impact of risk taking on the performance of independent domestic firms. The random effects estimates (in models (2) and (3)) is -0.06. By contrast, the overall impact of risk taking on the performance of group affiliated firms is around zero; the negative coefficient of cash flow volatility is nearly offset by the positive 0.05 coefficient of the interaction between cash flow volatility and the dummy variable for group affiliated firms. These effects correspond to slopes of lines presented at Figure 1: the slope for the business group affiliates is close to zero, yet it is negative for domestic independent firms. On the left hand side of Figure 1, with no risk taking, there is also no difference in predicted profitability levels between these two ownership groups. On the right hand side, with significant risk
taking, the results diverge: profitability of business groups affiliates remain at the same level, but decreases for independent Indian companies.

Moreover, if we focus on the fixed effects model (4) instead, the impact of risk taking on profitability of domestic group affiliates is actually positive, even as the impact remains negative for independent private firms. Thus, regardless of the estimator, our results provide unqualified support for H1b. As predicted, therefore, risk taking has a smaller negative impact on the performance of group affiliated firms, or indeed a slight positive one (depending on the model), even though it adversely affects the performance of private independent firms.

**Eastern firm performance, proactiveness and group ownership (H2a & H2b)**

Hypotheses 2a and 2b relate to retained earnings. We predicted that this variable would have a positive influence on company performance (H2a), but that this effect will be weaker for business group affiliated firms (H2b). This implies that the overall estimated impact of retained earnings would be positive and statistically significant in Column (1) of Table 4, but that the sign on the interaction between this and the group affiliation dummy variable would be negative and statistically significant in Columns (2) - (4). There is strong support for both parts of the hypothesis in the regression estimates reported in Table 4. The coefficient of retained earnings is positive -- 0.23 in model (1) -- and highly significant at the 1% level. At the same time, the coefficients of the interaction between retained earnings and the group affiliation dummy are negative -- -0.09 for the random effects models (2)-(3) and -0.06 for the fixed effects model (4) -- and highly significant at the 1% level as well.

The coefficient of the retained earnings variable gives us the impact of proactiveness on performance of private independent firms in models (2)-(4), while the interaction between retained earnings and the dummy for business group affiliation gives us the moderating effect
of group affiliation on the impact of this EO component on firm performance. In random effects models (2) and (3), this implies that the impact of proactiveness on firm performance is weaker for group affiliated firms (0.13 = 0.22 - 0.09) than for the private independent firms (0.22). This corresponds to the steeper positive slope for independent domestic firms compared with domestic group affiliates depicted in Figure 2. Similar difference between the impact of proactiveness on firm performance in group affiliated (0.09 = 0.15 - 0.06) and private independent firms (0.15) is also reflected by the fixed effects estimates. Hence we find strong support for Hypothesis 2b; there is a weaker positive link between retained earnings and performance for group affiliated firms than for private firms.

**Eastern firm performance, knowledge acquisition and group ownership (H3a & H3b)**

In Hypothesis 3, we predicted that knowledge acquisition will have a positive impact on the performance (H3a), though less so for group affiliated companies compared with independent firms (H3b). However the coefficient of the knowledge acquisition variable is in fact highly insignificant in model (1). Similarly, while the coefficient of the interaction between knowledge acquisition and the dummy variable for domestic group affiliated firms is negative in models (2)-(4), and these estimates are statistically insignificant as well. Thus, we do not find empirical support for H3a and H3b.

**Controls**

The most interesting controls concern the additional ownership variables and their interaction with the three EO factors. These findings help to cast light on the results concerning the hypotheses, discussed above. Commencing with proactivity, the interactive terms for all the ownership categories are highly significant in both model (2) and (3) and remain significant in all but one case in model (4). Based on these, we can deduce that
retained earnings, our measure of proactivity, have stronger effects on the performance of foreign companies than on domestic firms, and we may note that the scale of these effects is similar for the foreign group affiliated and foreign independent companies – these two lines are very steep in Figure 1. Interestingly, retained earnings also improve the performance of state-owned firms more than in case of independent domestic companies, though the difference is small; in Figure 1, those state-owned firms that engage in an aggressive strategy of retaining earnings still perform worse than private independent companies, but the distance between the two is less.

Turning to risk taking, the impact on independent foreign companies is also negative and even stronger than for domestic private companies (based on all three models). In contrast, for foreign affiliates the differential effect is blurred (the difference with domestic independent firms is always insignificant). Thus, for risk taking, the contrast between domestic and foreign companies is dominated by the contrast between independent and affiliate firms; the logic of these differences is consistent with our theoretical argument.

We can also calculate the impact of risk taking on state-owned firms, taking into consideration both the coefficient of cash flow volatility and the coefficient of the interaction between cash flow volatility and the dummy variable for state ownership. The latter is -0.034 (models (1) and (2)), and is highly significant. The overall impact of risk taking on performance of state-owned firms is therefore -0.092. However, the fixed effects model (3) indicates a positive and significant effect of risk taking for state companies, so the overall results are ambiguous.

For knowledge acquisition, the differences between foreign and domestic companies dominate differences between individual and group affiliated firms. The differential effects
for foreign effects become weakly significant for the fixed effects estimator (model (4)). The logic of these effects is consistent with our argument related to business groups. Foreign owned companies have access to a wide pool of knowledge from abroad, developed countries in particular. Therefore, spending on knowledge acquisition yields less in terms of increased performance. Given that most of the results are insignificant, we do not present them graphically.

Finally, the coefficients in columns (1) - (3) suggest that older firms perform better, which is consistent with the institutional void perspective. In eastern emerging markets, there is a premium to experience. 

though the significance of this effect decreases for firms that have high retained earnings and for risk-takers, as suggested by the signs and the significance of the corresponding interactive effects in columns (2) and (3). 7 There are no significant effects related to debt-equity ratio and to the size of company as measured by tangible assets but the industry and time dummies are both jointly significant.

DISCUSSION

We consider the impact of entrepreneurial orientation on company performance in eastern emerging markets, as well as the moderating influence of business group affiliation. The important aspect of underdeveloped financial markets as pertain in India is that, with more difficult access to finance, independent companies are not able to insure themselves against unexpected shocks to cash flow. That in turn makes the managers more hesitant to take risks, and decreases returns to risk taking. Similarly, it is difficult to acquire cash quickly to realize opportunities when they emerge. In this context, business group membership can yield advantages in that it increases the returns to risk taking, by hedging affiliate companies

7 However, the coefficient on the interactive effects of retained earnings changes sign in column (4) suggesting that the results are sensitive to the estimator used.
against the detrimental impact of volatility in cash flow. Our results show that, in contrast to the situation in western economies, risk-taking does indeed have a significant negative effect on performance of independent companies in eastern emerging markets. However, we also find evidence for the positive moderating effect of business group membership; risk taking either has no negative effect on performance of business group affiliated firms or a positive effect on performance, conditional on which of the estimators we use.

We suggested that these insurance benefits of business group membership may come at the cost of reducing returns to independent investment. While the returns to proactive strategies, measured by the retention of earning, are positive for eastern emerging markets, as has previously been found for western economies (Miller, 1983), they increase at lower rate than for independent companies. Accordingly, at a low level of retained earnings, business group affiliates outperform independent companies, but at higher levels, this relationship is reversed (Figure 2). We have proposed that this may be because the allocation of retained earnings within business groups is not be done on the basis of marginal productivity of capital (Gopalan et al., 2007). Moreover, if information about available projects is "soft" and cannot be transferred costlessly between layers of management, then the hierarchy of-management structures within business groups may inhibit the choice of projects that could enhance firm performance (Stein, 2002). Taken together, these factors would explain the weaker impact of retention of earnings on firm performance in business groups because the internal redistribution process reduces the marginal gains from manager’s accumulation of resources within a company.

A similar logic can be applied to the impact of knowledge acquisition on firm performance in eastern emerging markets, though our empirical results are for the most part statistically insignificant. Looking at the signs of the coefficients, we observe that returns to knowledge acquisition are positive for independent companies, but less so for business
companies affiliates (models (2)-(4)). In the same way as for retention of earning, business
group members benefits from sharing tangible and intangible resources (Chang & Hong,
2000), but the incentives to improve performance by knowledge acquisition may be blunted.

The interesting result is that knowledge acquisition, itself a broader concept that
innovation as is used in the western EO literature, has not been found to affect firm
performance in eastern emerging markets. This stands in stark contrast to the results in
Western economies, in which entrepreneurship and innovation are usually taken
together as key determinants of company performance (Miller and le Breton-Miller, 2011).
One explanation may relate to the way that the impact of knowledge acquisition on
performance will depend on the company’s absorptive capacity (Tsai, 2001). This may be
fairly weak in eastern emerging markets where firms may find it difficult to assimilate --
analyze, process, interpret and understand – the information obtained from external sources.
Moreover, they may not have the capability to combine existing and newly acquired (or
internally developed) knowledge, these being two important dimensions of absorptive
capacity (Zahra & George, 2002). Absorptive capacity in group affiliated firms may also be
adversely affected by the hierarchical governance structures (Filatotchev et al., 2007) and
moral hazard issues noted above.\footnote{These arguments apply even more strongly to state-owned firms.}
The wider implication is that it is the better use of
knowledge, in a sense of transforming it into better performance that remains one of the core
managerial advantages of developed market economies’ firms as against the firms from
emerging markets.

Context and generalizability

There are many common features of eastern emerging markets but also some important
differences within the region. In particular, the pattern of corporate growth in India, which, as
in much of Asia, is driven by independent firms and business groups, is likely to differ from
that of state capitalism as in China, with state owned companies or partly privatised
companies at its heart. This difference is reflected in the globalisation patterns of the two
countries. While China's internationalisation thrust is dominated by state-owned companies in
the natural resources and infrastructure sectors, India's is dominated by private independent
firms in the ICT and pharmaceutical sectors and large business group conglomerates such as
the Tata Group and the AV Birla Group. While China is the second largest economy in the
world and therefore is an interesting subject of research on its own, its business and
managerial experience may be less easy to generalise. A few other countries follow a similar
path of development, including Vietnam, but taking the broad spectrum of emerging markets
into account suggests a pattern of business activity based on growth driven by domestic firms
and business groups is ubiquitous, and therefore our findings may be generalizable to all
these cases. Business groups are also prevalent in other countries that drove the development
process in Asia in the second half of 20th century, including Japan and South Korea.

Limitations

We introduced new accounting-based empirical measures for the three dimensions of
EO, which better fit the reality of emerging markets. However, to obtain a more direct East-
West comparison, it would be interesting to apply the same measures in the context of a
developed market economy, US in particular, and compare the results to those reported by
Miller and Breton-Miller (2011).

We follow Miller and Breton-Miller (2011) in utilising accounting data to capture the
three core dimensions of entrepreneurial orientation. That provides us with an opportunity of
applying strong estimators to test our hypotheses but also prevents us from investigating
empirically any additional dimensions that are not in the data and could only be introduced by using surveys. This methodology has been employed in much of the EO literature and would be an important follow up to our study. In particular, while we could not find significant support on the differential performance effects of knowledge acquisition, directionally the results suggest that the difference between affiliated and independent companies may be as expected. This is an important area in which refined survey instruments could help to capture the aspects of knowledge acquisition strategies better.

**Implications for managerial practice**

We have addressed questions about how performance is affected by the various elements of entrepreneurial orientation in different types of companies. Managers typically take the core ownership features of their companies as given, and then shape the strategies their firms adopt. Thus, it is important to ask how the effectiveness of a fundamental strategic dimension, such as taking risks to innovate, or aggressive accumulation of resources and its investment, impacts on performance in eastern emerging markets, compared with western ones, and how the results differ conditional on both group affiliation and on the market environment within which the firm operates. Our results suggest that managers of business group affiliates should utilize the competitive advantage that the governance structure offers by involving in entrepreneurial risk taking. The head offices of business groups should also explore how to ameliorate the weakening of incentives to managers who are proactive or innovative. In contrast, proactiveness based on retained earnings and investment is always at the core of successful entrepreneurial orientation of independent companies. However, we found no evidence that increasing spending on knowledge acquisition results in better performance. This result should not be read as suggesting that innovativeness and quest for
knowledge is not important in the context of emerging markets. Rather, our results should be read alongside those of Miller and Breton-Miller (2011) who found - using the methodology comparable with ours – that the innovativeness dimension is critical for US companies’ performance. Taken together, this implies that effectiveness in use of new knowledge is the critical advantage that the western companies have compared with their Asian emerging markets counterparts. In turn, managers of companies from emerging markets should not concentrate on increasing spending on knowledge acquisition, but on learning how to make the process more effective, by enhancing the absorptive capacity of their companies. In that sense, our contribution is to point to what is the main remaining challenge that the eastern emerging markets companies face in their aspiration to match the performance of top western companies.
References


# TABLE 1

## Variables and Measures

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measure</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability</td>
<td>Profits before interests and taxes over total assets</td>
<td>Continuous</td>
</tr>
<tr>
<td>Independent</td>
<td>Private Indian-owned companies, unaffiliated with business groups</td>
<td>1 or 0</td>
</tr>
<tr>
<td>Indian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independent</td>
<td>Private foreign-owned companies, unaffiliated</td>
<td>1 or 0</td>
</tr>
<tr>
<td>Foreign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Affiliate</td>
<td>Private Indian group-affiliated companies</td>
<td>1 or 0</td>
</tr>
<tr>
<td>Indian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Affiliate</td>
<td>Private foreign-owned companies, affiliated</td>
<td>1 or 0</td>
</tr>
<tr>
<td>Foreign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State-owned</td>
<td>Indian state owned companies</td>
<td>1 or 0</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>Retained earnings over total assets, 5-years moving average, lagged one year</td>
<td>Continuous</td>
</tr>
<tr>
<td>Cash Variability</td>
<td>Standard deviation in cash flow over assets of last 5 years, lagged one year</td>
<td>Continuous</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Expenditure on research and development, royalty, licence and technical know-how and services fees, over total sales, divided by the sector mean (3-digit) of the same measure, 5-years average, lagged one year</td>
<td>Continuous</td>
</tr>
<tr>
<td>Tangible assets</td>
<td>Plant, machinery, computers and electrical installations (in Rs. Million)</td>
<td>Continuous</td>
</tr>
<tr>
<td>Age</td>
<td>Age of the firm since year of establishment, mean-centred (at 28)</td>
<td>Continuous</td>
</tr>
<tr>
<td>Debt to equity</td>
<td>Debt to equity ratio</td>
<td>Continuous</td>
</tr>
<tr>
<td>Industry</td>
<td>Indicator of the industry of the firm at the 3-digit sectoral level (70 industries)</td>
<td>1 or 0</td>
</tr>
<tr>
<td>Year</td>
<td>Indicator of the year (10 years: 2002-2011)</td>
<td>1 or 0</td>
</tr>
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TABLE 2
Descriptive Statistics and Correlations

<table>
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<tr>
<th>Variable</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
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<tr>
<td>1. Profitability</td>
<td>5.30</td>
<td>17.22</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2. Independent Indian</td>
<td>0.57</td>
<td>0.50</td>
<td>-0.03</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Independent Foreign</td>
<td>0.05</td>
<td>0.22</td>
<td>0.05</td>
<td>-0.27</td>
<td>1.00</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4. Group Affiliate Ind.</td>
<td>0.34</td>
<td>0.47</td>
<td>0.03</td>
<td>-0.82</td>
<td>-0.17</td>
<td>1.00</td>
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<td></td>
<td></td>
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</tr>
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<td>5. Group Affiliate For.</td>
<td>0.01</td>
<td>0.10</td>
<td>0.04</td>
<td>-0.11</td>
<td>-0.02</td>
<td>-0.07</td>
<td>1.00</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>6. State-owned</td>
<td>0.03</td>
<td>0.17</td>
<td>-0.06</td>
<td>-0.21</td>
<td>-0.04</td>
<td>-0.13</td>
<td>-0.02</td>
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<td>7. Retained Earnings</td>
<td>0.28</td>
<td>17.70</td>
<td>0.38</td>
<td>0.02</td>
<td>0.02</td>
<td>0.00</td>
<td>0.01</td>
<td>-0.10</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>8. Cash Variability</td>
<td>9.60</td>
<td>21.13</td>
<td>-0.13</td>
<td>0.02</td>
<td>-0.02</td>
<td>-0.04</td>
<td>-0.00</td>
<td>0.08</td>
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<td>1.00</td>
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<td>9. Knowledge acquisit.</td>
<td>0.00</td>
<td>0.36</td>
<td>0.00</td>
<td>-0.02</td>
<td>-0.00</td>
<td>0.01</td>
<td>0.00</td>
<td>0.01</td>
<td>-0.01</td>
<td>0.00</td>
<td>1.00</td>
<td></td>
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<tr>
<td>10. Tangible assets</td>
<td>2218</td>
<td>20,263</td>
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<td>-0.10</td>
<td>-0.01</td>
<td>0.06</td>
<td>0.03</td>
<td>0.12</td>
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<td>-0.02</td>
<td>0.00</td>
<td>1.00</td>
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<tr>
<td>11. Age</td>
<td>0</td>
<td>19.90</td>
<td>0.04</td>
<td>-0.18</td>
<td>0.02</td>
<td>0.13</td>
<td>0.07</td>
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<td>-0.01</td>
<td>0.06</td>
<td>1.00</td>
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<tr>
<td>12. Debt to equity</td>
<td>3.45x10^{12}</td>
<td>6.27x10^{14}</td>
<td>-0.00</td>
<td>0.00</td>
<td>-0.00</td>
<td>-0.00</td>
<td>-0.00</td>
<td>-0.00</td>
<td>-0.00</td>
<td>-0.00</td>
<td>-0.00</td>
<td>1.00</td>
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### TABLE 3
Summary of Hypotheses

<table>
<thead>
<tr>
<th>EO component</th>
<th>Impact on firm performance on average</th>
<th>Moderating effect of business group affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk (cash flow volatility)</td>
<td>$H1a: \beta_2 &lt; 0$</td>
<td>$H1b: \beta_{13} &gt; 0$</td>
</tr>
<tr>
<td>Pro-activeness (retained earnings)</td>
<td>$H2a: \beta_1 &gt; 0$</td>
<td>$H2b: \beta_0 &lt; 0$</td>
</tr>
<tr>
<td>Acquisition of knowledge</td>
<td>$H3a: \beta_3 &gt; 0$</td>
<td>$H3b: \beta_{17} &lt; 0$</td>
</tr>
</tbody>
</table>
### TABLE 4

**Estimation Results: Determinants of Profitability**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Random effects</th>
<th>Fixed effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>0.23***</td>
<td>0.22***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Cash Variability</td>
<td>-0.07***</td>
<td>-0.06***</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Knowledge acquisition</td>
<td>-0.35</td>
<td>1.96</td>
</tr>
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<td>State-owned x Knowledge acquisition</td>
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<td>Tangible assets</td>
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<td>Debt to equity</td>
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<tr>
<td>Age</td>
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TABLE 4 (continued)

Estimation Results: Determinants of Profitability

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<td>(0.00)</td>
<td>(0.00)</td>
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<td>Age x Knowledge acquisition</td>
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<td>(0.09)</td>
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<td>Within firms standard deviation</td>
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<td>Year dummies</td>
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<td>Number of firms</td>
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<td>4,902</td>
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</table>

a Standard errors in parentheses.

b With fixed firm effects and year dummies in Model 4, age of the firm cannot be included due to perfect collinearity.

c Likewise, sectoral effects and ownership effects, which are time-invariant are already covered by firm-level fixed effects so cannot be included in Model 4.

*** p<0.001

** p<0.01

* p<0.05

+ p<0.10
FIGURE 1

Predictive Margins by Ownership Categories

Linear Prediction of Profits/Assets vs. Standard deviation of Cash Flow / Assets; over past 5 years

Legend:
- Private Indian
- Private Foreign
- Group Indian
- Group Foreign
- Government
FIGURE 2

Predictive Margins by Ownership Categories

Average Retained Earnings / Assets; average of past 5 years

Linear Prediction of Profts/Assets

Private Indian
Private Foreign
Group Indian
Group Foreign
Government