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International Search Behavior of Business Group Affiliated Firms: Scope of Institutional Changes and Intragroup Heterogeneity

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This paper investigates whether and when affiliation to business groups enables or constrains firms' international search behavior during institutional transitions. We theorize that given the unique structure and complex form of business group organizations, the search behavior of affiliated firms is influenced by the degree of (mis)alignment in outlook at the group and affiliate levels of management. We identify the scope of institutional changes, business group attributes, and affiliate characteristics as sources of such (mis)alignment. The results from panel data on 298 firms from the Indian pharmaceutical industry for the 1992–2007 period show that the constraining effects of business group affiliation are observed only when institutional changes are specific to the affiliates' industry and not when broad institutional changes affect the business group as a whole. Moreover, we observe heterogeneity in the search behavior of group affiliated firms. First, the degree of misalignment is greater in the case of affiliates belonging to older business groups and those that are more distant in terms of age and industry since the group's founding. Second, by contrast and suggesting an alignment in outlook, we find that affiliated firms that occupy a prominent position within a group or industry are able to bargain for and receive attention and support from the business group to undertake international search. Our findings have implications for research on the role of business groups in a changing institutional context and for the strategic adaptation of firms embedded in complex organizational and institutional settings.

Keywords: business groups; institutional logics; institutional change; search behavior; internationalization; organizational adaptation; pharmaceutical industry
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Introduction

A large body of research has focused on understanding organizational adaptation to changes in the external environment. Anchored in a variety of theoretical traditions, a number of studies have uncovered important firm-level characteristics, such as firm age and size, founding conditions, corporate culture, and performance aspirations, that impact organizations' ability to adapt to external discontinuities (e.g., Hannan and Freeman 1984, Boeker 1989, Kelly and Amburgey 1991, Ranger-Moore 1997, Sørensen 2002). Although this body of research has provided important insights, there are still gaps in our understanding of how firms embedded in multibusiness and networked decision-making structures adapt to changing contexts (Gavetti et al. 2007, Kim et al. 2006). These organizations are subjected to conflicting pressures emanating from differential perceptions of the institutional context across interconnected units and the constrained discretion to make independent strategic decisions. Therefore, decision-making can be challenging, and a better understanding of the mechanisms through which these organizational units reconcile the competing forces arising from the complexity of internal decision-making and external pressure to change has the potential to enrich organizational theory (Gavetti et al. 2012, Greenwood et al. 2011).

We advance this body of research by studying organizational adaptation to institutional changes by firms embedded in a unique organizational context, that of business groups. Business groups, which are defined as legally independent firms "bound together by a constellation of formal and informal ties" (Khanna and Rivkin 2001, p. 47) and that are coordinated by a central or core entity (Leff 1978), emerged as a consequence of the institutional conditions prevailing in many developing economies (e.g., Granovetter 1995, Guillén 2000, Khanna and Palepu 2000). As some of these economies initiate a wide variety of market reforms, the

relevance of business groups in a changed institutional context as well as their ability to cope with disruptive changes remains unclear (Khanna and Yafeh 2007, *Economist* 2009). Prior research suggests that exogenous shocks associated with institutional transitions in developing countries necessitate second-order organizational learning by indigenous firms, which is accomplished through distant searches in knowledge bases, product markets, and organizational practices (Kriauciunas and Kale 2006, Newman 2000). However, the literature provides contrasting possibilities of the effects of business group affiliation on member firms' external search behavior.

One stream of literature on organizational adaptation and change (Hannan and Freeman 1977, 1984; Greenwood and Hinings 1988, 1996) suggests that the intricacies of the business group organizational form, such as the need to conform to pressure from the controlling entity (Yiu et al. 2007), the coordination demands of operating within a network (Kim et al. 2006), and the continuous search for the reproducibility and legitimacy of context-specific routines (Hannan and Freeman 1984), may create structural inertia that constrains affiliated firms' ability to adapt to environmental discontinuities through the search for "alternate routines, technologies, and purposes" (Sørensen 2002, p. 76; March 1991). Consistent with this reasoning, Chittoor et al. (2009) find that business group affiliation constrains member firms' external search behavior in response to institutional changes. By contrast, another stream of research that highlights the numerous benefits of interfirm networks suggests that the group's reputation, political and economic capital, preferential access to scarce resources, cross-sharing of practices and information with other affiliates (Chang and Hong 2000, Mahmood and Mitchell 2004, Mahmood et al. 2011), and persistent interorganizational ties (Granovetter 1995) can promote search behavior among member firms. In line with this reasoning, Vissa et al. (2010) find that business group affiliated firms are more sensitive and responsive to declining performance and hence more likely to undertake external search.

Given the plausible theoretical rationale and associated empirical findings related to both the constraining and enabling effects of business group affiliation on search behavior, in this paper, we reconcile the opposing effects of group affiliation by further probing and identifying the specific conditions that trigger each of these effects. Specifically, we evoke two characteristics of business groups: (1) the existence of a controlling or core entity of a business group that coordinates the strategic decisions and resource allocation of its multiple affiliates, and (2) a business group's presence in multiple industries whereas an affiliate is focused on a single industry. Being embedded in both the group and industry contexts, affiliated firms need to conform to

the expectations of both. When there is an exogenous shift in an affiliate's immediate environment, the organizational response is subjected to competing forces. By drawing from the literature on power distribution, bargaining and attention in interconnected organizational units (e.g., Greenwood et al. 2011, Ocasio 1994, Pache and Santos 2010), we theorize that, in the context of business groups, the resolution of decision-making complexity related to the management of multiple expectations is influenced by the degree of (mis)alignment in interests and the outlook of both the group's controlling body and that of the affiliate's management. A misaligned outlook amplifies the constraining, inertial forces related to the structural configuration of business groups, whereas greater alignment tempers the inherent inertial forces and/or triggers enabling aspects of business group affiliation. We propose that the degree of (mis)alignment in interests and the outlook of both the group's controlling body and that of the affiliate's management are shaped by sources that are both external and internal to the focal firm.

One source of (mis)alignment is the *scope of institutional changes* in developing economies; certain institutional changes target one or only a few industries (i.e., *narrow scope*), whereas other institutional changes are more fundamental and affect all or most of a country's industrial sectors (i.e., *broad scope*). Given that business groups span multiple industries, although each affiliate firm typically operates in a single industry (Ghemawat and Khanna 1998, Vissa et al. 2010), we anticipate that the inertial pressures of group affiliation are activated under narrow-scope institutional transitions but not under broad-scope transitions. Moreover, the degree of alignment also depends on certain internal attributes of business groups, such as its age and the relative difference in age and the degree of relatedness between the focal and founding affiliates of the business group. These attributes reflect the core entity's organizational rigidity and embeddedness to a particular institutional context and, thus, constrain affiliates' search behavior in response to institutional transitions.

Furthermore, we evoke insights from the intraorganizational power (Pfeffer and Salancik 1978, Astley and Sachdeva 1984) and attention (Bouquet and Birkinshaw 2008, Ocasio 1997) literature to propose that the degree of (mis)alignment between the core entity and a particular affiliate is influenced by the resource and structural positions of individual affiliates within the group. In particular, we identify affiliates' *internal stock of resources* and *position within the group and its industry* as sources of bargaining power to either overcome business group related inertial pressures (i.e., constraining aspects) or to receive the necessary attention and support from the core entity (i.e., enabling aspects) to facilitate an external search.

We test the hypotheses in the context of the international search behavior of 298 firms in the Indian pharmaceutical industry for the 1992–2007 period. Internationalization is considered an important medium for second-order learning for firms in developing economies (Luo and Tung 2007, Nelson 2005) and is specifically a nontrivial and costly decision for pharmaceutical firms given the high international standards required for product quality and manufacturing processes, systems and routines (Anand et al. 2012). We tested our model in the context of the Indian pharmaceutical industry because the industry consists of business group affiliated and independent firms and, more importantly, experienced both broad-scope and narrow-scope institutional transitions during the study period.

Our study makes several contributions. First, we contribute to the growing literature on business groups as a distinct organizational form. This stream of literature has primarily focused on understanding how business group affiliated firms differ from stand-alone firms in terms of strategic choices in response to institutional changes and performance shortfalls. By focusing on two unique characteristics of business groups that increase decision-making complexity, we extend this line of inquiry by demonstrating heterogeneity in the search behavior of group affiliated firms that is shaped by external contingencies and both group and affiliate characteristics. Isolating the intrabusiness group variations allows us to reconcile the conflicting findings related to search behavior (Chittoor et al. 2009, Vissa et al. 2010). Second, by articulating the concept of alignment of interests and outlook as a key mechanism by which interconnected organizational units cope with decision-making complexity and institutional changes and identifying the sources of this alignment, our study addresses the call for research that links "a Carnegie School conception of organizational processes with an open-system perspective of organizations embedded in their larger social context" (Gavetti et al. 2007, p. 531, 2012; Greenwood et al. 2011). Third, we contribute to the body of research on organizational adaptation, which has identified various firm-level characteristics that impact organizations' ability to adapt to external discontinuities. Our paper empirically demonstrates that, in addition to the firm-level factors identified in prior research, the nature of interfirm networks and the extent of embeddedness within these networks influence organizational adaptation to a variety of institutional changes. Some of our findings related to inertia and organizational adaptation for group affiliated firms contrast with those found in prior studies of stand-alone firms and thus offer opportunities to rethink and extend some of the fundamental tenets of existing theory.

Theory and Hypotheses

A large body of research has identified the conditions that give rise to business groups as a distinct organizational form in certain economies (see Guillén 2000, Granovetter 1995, and Yiu et al. 2007 for reviews of this stream of literature). One theoretical approach emphasizes the genesis of business groups as a response to strategic factor market imperfections (Khanna and Palepu 2000, Leff 1978). A second set of studies regard business groups "as a device of the state to achieve both political and economic policy objectives" (Yiu et al. 2007, p. 1557), whereby certain firms are granted rent-seeking opportunities to enter strategic industries (Guillén 2000, Khanna and Yafeh 2007). Third, business groups are considered an organizational form that reflects social institutions such as symbolism, legitimacy, prestige, and power that shape economic exchanges by influencing the general pattern of cooperation between organizations in a society (Granovetter 1995, Yiu et al. 2007).

Despite the different explanations for the origin of business groups, the above-mentioned literature converges on the proposition that the business group as an organizational form is primarily a function of the institutional conditions that are prevalent in different countries (Khanna and Yafeh 2007). These contextual characteristics not only shape the nature and form of business groups but also influence their internal functioning and structure (Yiu et al. 2007). The legally independent firms in a business group are linked by numerous "axes of solidarity" such as ownership and economic and social ties (Granovetter 1995), and the links between firms are coordinated by a core or central entity through common administrative, financial, or managerial controls (Leff 1978, Khanna and Rivkin 2001). This coordinating entity, which may be a founding member, family group, or a professional team, "has greater structural autonomy and control over resources and information and thus increased potential to influence other member firms in the social network" (Yiu et al. 2007, p. 1553). In addition to institutional embeddedness and the control and coordination of legally independent firms by a core entity, business groups are characterized by another distinct feature. Although each affiliate in a business group typically operates in a single industry, by owning many such firms, the group itself can be relatedly or unrelatedly diversified to operate in several sectors of the economy (Vissa et al. 2010). These features of business groups, we argue, have important and contrasting consequences for affiliated firms' search behavior.

One explanation extends from the structural inertia arguments of organizational ecology and institutional theories (e.g., Hannan and Freeman 1977, 1984; Greenwood and Hinings 1988, 1996). According to Hannan and Freeman (1984, p. 151), "structures of organizations have high inertia when the speed of reorganization is much lower than the rate at which environmental conditions change." These inertial forces may stem from the "proliferation of rules, routines and internal organizational arrangements" (Guillén 2002, p. 511) that reinforce an organization's given course of action (Hannan

and Freeman 1984). The constraining logic would imply that relative to stand-alone firms (beyond those arising from firm-level factors such as firm size, age, founding characteristics, identity, and culture), business groups' entrenchment and their intricate relationships with prevailing institutions render them more resistant to external environmental changes and less inclined to pursue an external search as a response to environmental discontinuities. Moreover, the presence of an apex body or core entity that is not only empowered with financial or administrative control over the member firms but also serves to coordinate managerial actions across legally independent firms, implies that beyond each affiliate's culture and founding imprints, such firms are also subjected to the core entity's culture and founding imprints. Thus, any explicit effort by an affiliate to manipulate the fine balance between dual organizational identity can be problematic and difficult (Tripsas 2009). Additionally, the presence of persistent operational and personal ties across legally independent firms through consensual transactions of products (services) and resources, cross-shareholding, interlocking directorates, and social relations (Yiu et al. 2007) foster the development of relation-specific assets such as institutionalized routines and human assets over time, and any attempt to adapt by reconfiguring existing linkages will likely generate inertia (Ghemawat and Khanna 1998, Kim et al. 2006).

In contrast to the constraining logic, an alternative perspective views the distinctive features of a business group as an enabling mechanism to promote search behavior. For instance, Vissa et al. (2010, p. 697) suggest that a controlling family "may act like activist shareholders … that can spur change in [affiliated] firms that may otherwise be inert" in responding to exogenous pressures. In addition to being a trigger for change, the coordinating feature of the core entity plays an important intermediation role for the network by facilitating access to capital, knowledge, and labor that may be essential for fostering exploratory search behavior (Chang and Hong 2000, Mahmood and Mitchell 2004). Furthermore, the diversity of available information and managerial knowledge bases within a group and mutual competitiveness among affiliates may promote better preparedness—and perhaps even better positioning—to anticipate, influence, and respond to changes in the external environment and growth opportunities (Lamin 2013, Manikandan and Ramachandran 2014, Miller and Chen 1994).

The above discussion suggests that, whereas business group affiliation offers member firms the possibility to access group infrastructure such as capital, talent, and know-how as well as the use of the groups' political connections to pursue new opportunities, their ability to implement search activities will depend on the extent to which the core entity acquiesces to their search initiatives. In essence, although group affiliation can provide the wherewithal for an international search during institutional change, it can also constrain affiliates' discretion because the strategic and financial control resides with the core coordinating entity of the business group as a whole. We propose that the constraining or enabling aspects of business group affiliation are contingent on the alignment of interests between the core entity and a given affiliate with respect to specific search behaviors. In the following sections, we identify factors that may influence the extent of interest alignment between affiliates and the core entity.

Scope of Institutional Changes and Business Group Effects on Search Behavior

One important contingency that is widely discussed in the literature and that shapes organizational responses to institutional change is the nature of the change, namely, whether it is incremental or discontinuous (e.g., see Greenwood and Hinings 1996, Meyer et al. 1990, Newman 2000). Another largely ignored feature of institutional change that is unique to economies experiencing transition is the scope of the change. Certain institutional changes are broad in scope and affect all or most industries, whereas others are narrow in scope and affect only a few sectors or affect specific sectors more than others. For instance, China's 1978 economic reforms and India's 1991 reforms are examples of broad-scope institutional transitions because they encompassed fundamental changes in the way that economic activity was organized in those countries. By contrast, the deregulation of the US air carrier industry in 1978, the enforcement of the National Environment Policy Act and its impact on the US chemical industry in the 1970s, and, in the context of this study, the adoption of the Trade-Related Aspects of Intellectual Property Rights (TRIPS) framework and the Drugs (Price Control) Order for the Indian pharmaceuticals industry in 1995 are examples of narrow-scope changes. Thus, institutional transitions can vary along a continuum from being broad in scope (i.e., influencing a number of industries) to being narrow in scope (i.e., industry specific).

Broad-scope institutional changes such as economy-wide reforms radically alter the rules of the game for all organizational actors (Newman 2000). However, industry-specific institutional changes lead to different sets of institutional logics across sectors. Differential institutional changes across sectors can lead to sector-specific logics or principles that prescribe "how to interpret organizational reality, what constitutes appropriate behavior, and how to succeed" (Thornton 2004, p. 70). Therefore, the presence of multiple logics and the extent of a firm's interconnectedness can shape the firm's search behavior. If the key decision maker is situated outside the scope of immediate influence and change, the urgency and need for adaptation is likely

to be low. The unique organizational form of a business group that comprises several independently operating firms located in different sectors of economic activity implies that broad-scope changes affect the group as a whole, whereas narrow-scope changes have a greater impact on particular affiliates. Therefore, compared with broad-scope institutional changes in which the authority of a core entity or group can prevail over all affiliates to align and respond, an affected affiliate may be left to fend for itself in the case of narrow-scope institutional changes, thus creating dissonance between the affiliate's management and the group-level management.

The ensuing dissonance or (mis)alignment may lead to a concerned affiliate not receiving due attention from the core entity (Ocasio 1997). As the aggregator and coordinator of information and resource flows, the core entity cannot simultaneously attend to the needs and demands of all of its affiliates, which are spread across distinct areas of economic activity. Thus, there may be delays and even differences in the decision-making process. Moreover, the risk preferences of the core entity may prohibit affiliates from making decisions with uncertain outcomes and may instead favor the status quo. Studies have demonstrated that family-dominated business groups (Chung and Luo 2008) are less likely to diversify than nonfamily firms and, even when they do diversify, family firms tend to opt for domestic rather than international diversification (Gomez-Mejia et al. 2010). Thus, an affected affiliate may be dissuaded from undertaking a risky and costly search. Moreover, extensive and intricate interconnectedness between member firms means that any attempt by an affected affiliate to transform—through a sweeping overhaul of ongoing activities, resource configuration, business templates, routines, and business outlook—will be met with resistance (Mahmood et al. 2011, Kim et al. 2006).

In essence, when exogenous change is discontinuous and localized—thus affecting an affiliate's industry alone—inertial pressures of group membership are triggered that constrain the affiliate's ability to adapt to institutional changes. Based on the above arguments, we test the following hypothesis:

HYPOTHESIS 1 (H1). *The inertial effects of business group affiliation on affiliate firms' international search behavior are more pronounced under narrow-scope (specific to the affiliate's industry) than under broad-scope (spanning multiple industries) institutional changes.*

Business Group Dynamics and Affiliates' Search Behavior

Previous theorization contrasts the search behavior of group affiliated firms that are subjected to varying scopes of institutional change. However, there is no a priori reason to believe that group affiliation constraints should extend uniformly to all member firms. In other words, not only can group affiliation affect member firms differently but member firms can also be expected to respond differently. Depending on specific attributes of the affected affiliate, certain affiliates may experience greater inertial pressures than others. Affiliates may also succeed in gaining attention and support from the group's core entity in their search. In line with this proposition, the next part of our model focuses on the within-business group dynamics and attributes of affiliates that may activate the enabling or constraining features of group affiliation.

Group Attributes

In large and complex organizations, one well-recognized source of inertia is firm age. Inertial forces tend to increase with age because of greater routinization and a greater need for stability (Hannan and Freeman 1984, Kelly and Amburgey 1991). Older business groups, especially those formed significantly prior to the initiation of market reforms in developing economies, are more likely to rely on prior templates for success when they face uncertainty and when they perceive a lower need to undertake a major shift in business strategies. The greater embeddedness of older business groups in the preliberalization environment amplifies the inertial forces and leads to increased resistance to the adoption of new structures and strategies (Kriauciunas and Kale 2006). Therefore, affiliates of older business groups are likely to be more constrained in their search behaviors than affiliates of younger business groups.

Moreover, greater affiliate distance from the founding of the business group (both in terms of age and industry) is likely to generate greater constraining forces. Younger affiliates and affiliates in industries that are distant from the industry upon which the group was founded will be perceived as peripheral to the core functioning of the group. Given the limited cognitive capacity, attention span, and time available for the core entity, the peripheral firms in business groups with several affiliates are likely to receive the least support to undertake an external search. Conversely, affiliates that are closer to the business group's core at the time of founding are likely to have a shared history of responding to external contingencies, and the interests of the group and the affiliates will be more aligned both in terms of the assessment of institutional changes as well as appropriate responses, including those of search behavior (Thornton and Ocasio 1999).[1] Based on the above arguments, we test the following hypothesis.

HYPOTHESIS 2 (H2). *Among business group affiliated firms,* (a) *affiliates in older business groups,* (b) *relatively younger affiliates, and* (c) *affiliates in industries that are more distant from the founding affiliate's industry are more constrained in their international search behavior in response to institutional changes.*

Affiliate Characteristics

In the context of strategic adaptation to institutional changes, Greenwood and Hinings (1996, p. 1038) posit that "[o]rganizationally defined groups vary in their ability to influence organizational change because they have differential power. Some groups or individuals are listened to more keenly than others. Some have more potential or less potential for enabling or resisting change." Business groups may be regarded as a network of affiliated firms (Mahmood et al. 2011) that represent subunits or groups with diverse interests. Subunits exploit favorable power dependencies to promote their own interest vis-à-vis the larger system and gain attention from the organization's dominant coalitions (Ocasio 1994) or specialized decision-making structures (Gavetti et al. 2007). Extending these arguments, we identify a business group affiliate's stock of resources and the strength of its position within the group and industry as sources of power and influence to override the constraints of group membership.

Affiliate's Resources. According to Astley and Sachdeva (1984, p. 106), "organizational subunits supply resources to others in exchange for a return of resources upon which they are dependent; and asymmetry in the dependencies that underlie such exchanges explains the asymmetry in power between the actors involved." One important source of power is the control of resources (financial and nonfinancial) by a subunit (Bradley et al. 2011). Emerging evidence suggests that the resource independence of organizational subunits increases their bargaining power and thus their ability to achieve decision-making independence. For instance, Mudambi and Navarra (2004) examine the relationships between multinational corporations and their national subsidiaries and find that the extent of knowledge resources possessed by a subsidiary increases its relative bargaining power and thus its rent-seeking ability vis-à-vis corporate headquarters. Similarly, Andersson et al. (2007) suggest that slack in a subunit's budget enables it to circumvent the controls imposed by a higher coordinating authority. In addition, a greater abundance of resources promotes search behavior because of the protection that such resources provide from downside risks (Cyert and March 1963, March 1991).

In the context of business groups, with a core entity having strategic control over various affiliates operating in diverse industries, affiliates compete to access group-level resources. If an affiliate has a stock of its own resources, its dependence on the business group core is reduced, thus affording it greater autonomy in decision-making and the ability to engage in greater experimentation, risk taking, and exploration (Kim et al. 2008). Moreover, operational and strategic ties with other group members permit a more resource-endowed affiliate firm to exert its influence across several interconnected firms

and to negotiate favorably to support its strategic initiatives (Ghemawat and Khanna 1998, Kim et al. 2006). In this situation, a risk-averse business group core may not constrain the particular affiliate's search activities because the costs of such a search are borne by the affiliate and the strategic actions do not have resource implications for the rest of the system. Accordingly, we propose the following hypothesis:

HYPOTHESIS 3 (H3). *Among business group affiliated firms, a large stock of resources possessed by an affiliate facilitates its international search behavior in response to institutional changes.*

Affiliate's Position. Power emanates not only from the control of resources but also from a firm's position in a network (Astley and Sachdeva 1984). Affiliates that make a significant contribution to the business group in terms of revenue, reputation, leverage, and legitimacy are more important to the group and thus are more likely to persuade the dominant coalition to support their initiatives. Moreover, high affiliate status accords the affiliate prominence and visibility within the group network, which, in turn, provides the affiliate with greater access to critical resources such as information and financial and human capital (Kim et al. 2006). According to Vissa et al. (2010: p. 679), "[i]nformal comparison across firms is a natural result of the network connections between them, and enters as an element of the competition for resources and approval among affiliated firms." In other words, the strength of an affiliate's position within the group is self-reinforcing and confers increased bargaining power to pursue strategic initiatives over time. In the business group context, Kim et al. (2004) find that among *Kieretsu* member firms in Japan, more powerful members are allowed to pursue risky search activities such as product and geographic diversification, whereas less powerful members are required to focus on activities that are less risky and to maintain short-term profitability objectives. Therefore, when key affiliates face discontinuous institutional transitions, given their stronger position within the business group, they are more likely to receive the attention and support necessary to explore new growth opportunities.

In addition to their ability to leverage their positional prominence within the business group, affiliates can also derive power from their position within the industry. First, a dominant market position allows an affiliate to underwrite risks such as entering foreign markets in pursuit of growth. Second, from the perspective of intra-group dynamics, a dominant affiliate in its market is likely to receive greater support from the business group because of the strategic significance of the affiliate to the group. Third, as argued by Vissa et al. (2010), business group affiliated firms are more externally focused in establishing their performance goals than independent

firms. An affiliate that is a leader in an industry contributes substantially more visibility and reputation to the business group. When such an affiliate faces environmental threats and when such an affiliate is unable to adapt to maintain its dominant market position, it has the potential to generate negative reputational spillovers for the business group as a whole. In this respect, Gopalan et al. (2007) investigate the financial support that business groups in India provide to their affiliates and find that an important reason for intragroup loans to affiliates is to avoid default by group members and thus to minimize negative spillovers to the group. The preceding arguments suggest that an affiliate's strong position within a business group and its industry provides greater leverage with the controlling entity and likely garners attention to initiate appropriate strategic actions in the face of disruptive environmental changes. Accordingly, we test the following hypothesis:

HYPOTHESIS 4 (H4). *Among business group affiliated firms,* (a) *the strength of an affiliate's position within the business group, and* (b) *the strength of an affiliate's position within the industry facilitate international search behavior in response to institutional changes.*

Method

Institutional Changes and the Indian Pharmaceutical Industry

In 1991, the Indian government implemented major economic liberalization measures to establish stronger linkages with the global economy. Triggered externally by a balance-of-payments crisis, these reforms aimed to increase local productivity and international trade, attract foreign investment, and promote the global competitiveness of Indian firms (Bhagwati 1993). A few notable changes in this connection were the deregulation of industries; the abolition of import licensing for capital goods and intermediates and a significant reduction in import duties for tradable goods and services; the implementation of a flexible exchange rate regime; the reform of the capital market to liberalize equity pricing and allow access to offshore equity and debt; and the delicensing of industrial investments, thus permitting foreign ownership in numerous industries (Ahluwalia 2002). These broad-scope reforms affected most sectors of the economy, including the pharmaceutical sector. In addition to the impact of these economy-wide reforms in the early 1990s, the Indian pharmaceutical sector also experienced two highly industry-specific changes: the implementation of the new Drug (Price Control) Order (1995) and the enforcement of the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement mandated by the World Trade Organization (WTO). Whereas the former decontrolled the prices of several categories of drugs, thus rendering the industry

attractive to foreign players, the latter disallowed reverse engineering practices to manufacture and sell knockoffs of patented drugs in India once the TRIPS framework entered into force in 2005 (Agrawal and Saibaba 2001).

The above developments had serious ramifications for Indian pharmaceutical firms, including cutthroat competition from foreign players, substantial overcapacity problems, declining margins in the volume-driven bulk drugs business, industry-wide consolidation, and general threats to the survival of many firms operating in the sector (*Business Standard* 1996, *Business Today* 1998).[2] Most firms attempted to circumvent these problems by resorting to exports—where the margins were nearly four times higher than in the domestic market—and/or partnered with multinational players to form alliances and joint ventures (*Economic Times* 1997). Industry-level data indicate that a key strategic response to the institutional changes was a shift from domestic-focused strategies to increasing internationalization, wherein the average international sales as a percentage of total sales increased from 11% (1992) to 35% (2005); by 2007, more than two-thirds of export sales were in developed markets (Mazumdar 2013). Clearly, in terms of quantity, geography, and participants, the aggregate industry response to institutional changes was to search for new international product markets.

Data Sources and Sample

The main source of our data is the Prowess database maintained by the Center for Monitoring Indian Economy (CMIE) (e.g., Khanna and Rivkin 2001, Chittoor et al. 2009, Vissa et al. 2010). As of 1 January 2008, the Prowess database lists 600 registered pharmaceutical firms, including subsidiaries of foreign companies operating in India. For each firm in the sample, we cross-verified their basic information by using two other databases that are maintained by the Ministry of Corporate Affairs and the Bombay Stock Exchange. After rejecting firm-years with no data, the resulting near population sample comprised an unbalanced panel of 537 firms with 1 to 16 years of data, for a total of 4,035 firm-year observations.

We had to drop some observations to arrive at a testable sample of data. First, we filtered out firms with operational income of less than 200,000 USD. This filtering process eliminated 595 firm-year observations. Second, we eliminated firms with fewer than 5 observations over the period, consecutively or otherwise. This procedure reduced the sample size by another 378 observations. Third, we purged outliers with disproportionate values on key variables, which led to a further loss of 18 observations. As a consequence of this filtering process, the sample comprised 3,044 useful firm-year observations. Finally, because our study focuses on the strategic responses of indigenous firms, we eliminated all foreign-owned subsidiaries from the final sample, which led to

a testable sample size of 2,729 firm-year observations belonging to 298 different firms.

Dependent Variable

Our theoretical model makes predictions about a firm's international search behavior. Extant research suggests that exporting is typically the first step in firms' internationalization process; hence, we measure international search behavior using the widely used ratio of export sales to total sales. This measure is known to correlate with alternative measures of internationalization such as the count measure of diversity (Chittoor et al. 2009) and is well suited to the industry context. Exporting pharmaceutical products is by no means easy: the ingredients in pharmaceutical products need to meet the highest quality standards before national regulatory authorities permit their usage, and the processes and plants in which manufacturing is performed require regular certification and authorization (Anand et al. 2012). Thus, even though exporting is considered to be a first step in firms' internationalization process, in the case of the pharmaceutical industry, whether to export is a critical decision that carries a substantial element of risk. Accordingly, we modeled the international search behavior of Indian firms as a two-step decision process: the first step is deciding whether to export, and the second step is the extent of export sales.

For the first step in the decision process, we created a dichotomous dummy variable, *international search propensity*, which takes a value of "1" if the focal firm in a given year made export sales. Otherwise, this variable takes a value of "0." When modelling for *international search propensity*, we took into account both the exporting and nonexporting firms in the sample. For the second step, where we are primarily interested in the extent of export sales conditional on having chosen to export, we created the variable *international search intensity*, which is measured by the conventional measure of export intensity, i.e., the ratio of export sales in a year to total sales. When modelling the *international search intensity* dependent variable, we followed the Heckman (1979) procedure and included the inverse Mills ratio value calculated from the first step of the decision process. Moreover, we tested this model only with the exporting firms' sample.

Independent Variables and Controls

The Prowess database provides ownership details for each firm under the following categories: private (Indian), central government, state government, private (foreign) or foreign subsidiary (parent), and Indian business group. All of the firms in the sample that fall under the Indian business group category were identified as being affiliated with a business group. Our main variable of business group affiliation was operationalized by a dummy indicator variable (*BG affiliation*) that takes a

value of "0" or "1," which reflects the standard practice in the literature on business groups, as typically no affiliate belongs to two different business groups simultaneously (Khanna and Palepu 2000, Vissa et al. 2010). We measured a business group's age (*BG age*) by deducting the year of incorporation of the oldest affiliate of the group from the focal year. The oldest affiliate was identified by comparing the year of incorporation of all of the affiliates in a focal business group that are available in the Prowess database and then eliminating those affiliates that became group affiliates through mergers and acquisitions. The Prowess database identifies such cases by suffixing the company name with the term "merged." Once we determined the business group's age, we constructed a second measure of the age gap (*BG-affiliate age gap*) by simply subtracting the affiliate's age (*firm age*) from the *BG age*. Finally, we also measured the distance between the industry in which the business group was founded (i.e., the oldest affiliate) from the focal affiliate by referring to the 3-digit classification of industries per the National Industrial Classification system available in Prowess. The measure of industry distance (*Focal-founding affiliate industry distance*) was thus created by taking the absolute value of the difference between the 3-digit classification of the founding affiliate of the group and that of the focal affiliate in the pharmaceutical industry.

We isolated the time period when the Indian pharmaceuticals industry was subjected to a narrow-scope change (i.e., Drug Order and TRIPS agreement) from the economy-wide, broad-scope reforms of 1991. We created a dichotomous dummy variable, *industry-specific change* (1998–07), which takes a value of "0" for the 1992–1997 period (capturing the broad-scope institutional change) and of "1" for the subsequent period of the study (capturing the narrow-scope institutional change). We chose 1997 as the cutoff year for the following reasons. First, although India became a signatory of the TRIPS framework in 1995, the country was given a ten-year window to enact the framework in spirit. The agreement was officially enforced via the Patent (amendment) Act on 26 March 1999 (Agrawal and Saibaba 2001). In other words, we expected tangible changes in a firm's external search behavior to become evident at some point between 1995 and 1999. Second, the Indian government changed four times during the 1996–1999 period because of significant political instability. Thus, little was achieved in terms of policy making and enactment during these years. Nevertheless, we used a more conservative midpoint between 1995 and 1999, i.e., 1997, as the year when the effects of both industry-specific changes are likely to be reflected in firm responses. As reported below, we validated our choice of 1997 as the starting point for the narrow-scope institutional change by using alternate cutoff points to test for sensitivity.

We considered two broad categories of firm-level resources: financial and nonfinancial. We measured *firm financial resources* in terms of the liquid assets that are possessed by a firm in the form of cash, bank balances, and marketable securities, normalized with respect to total sales.[3] *Firm nonfinancial resources* were operationalized as the ratio of selling, general, and administrative (SGA) expenses (minus R&D expenses, which were explicitly controlled for in all of the models) to total sales. SGA expenses include overhead costs related to marketing, sales, distribution, managerial, and administrative activities. An affiliate's *intragroup position* was measured in terms of the affiliate's annual contribution to business group revenues, i.e., as a simple ratio of the total sales of the affiliate to that of the entire business group in any given year. A firm's standing in its industry is a consequence of consistent firm performance or realized effective managerial action leading to enhanced credibility, market power, brand image, and reputation. We operationalized a firm's standing in the industry as *market position*$_{(t-1)}$, which is calculated as the firm's previous relative market share, that is, the one-year lag of the firm's market share relative to the industry leader (the firm's total sales divided by that of the industry leader). Thus, the industry leader in a specific year receives a value of 1, and each of the other firms takes values ranging from 0 to less than 1 unless there was more than one industry leader with identical sales figures.

In the models, we included several control variables that are likely to influence firms' international search behavior. We controlled for *firm size*, which is operationalized as the natural logarithm of total assets owned by the firm. As an alternative to firm size, we also used the logarithmic value of sales in the domestic market (*domestic sales*) as a measure of size. *Firm age* was computed as the difference between the focal year and the firm's year of incorporation. In line with the internationalization literature (e.g., see Hitt et al. 2006), we controlled for product and/or process innovation by using *firm R&D intensity*, which is calculated as the ratio of investments in R&D to total sales. Wherever applicable, we controlled for prior export performance by using the ratio of export sales to total sales (*lagged export intensity*). Features of a business group such as group size, which is measured in terms of the logarithmic value of total sales (*BG size*), may influence affiliates' search behavior, and macro-level factors such as the local currency conversion to US dollars (*currency conversion*) may affect exports in particular. We accounted for such predictors in addition to time-period effects dummies (*Year dummies*).

In addition to the above-mentioned variables, we controlled for an affiliate's prior performance. Performance-feedback theory conceptualizes declining performance

as a major source of managerial risk-taking, thus inducing searches outside of the existing comfort zone (Cyert and March 1963, Greve 2003). The behavioral theory of the firm suggests that problemistic search involves managers drawing on the firm's historical performance or social comparisons with similar organizations to form aspirations regarding major organizational objectives and strategies (Gavetti et al. 2012, Vissa et al. 2010). To isolate the effects of institutional changes on firms' search behavior, we included performance aspirations as controls in all of our models. In particular, we operationalized social and historical performance gaps as follows:

$$\begin{aligned} \text{Performance aspiration (social)}_{i,t} \\ = \text{Firm performance}_{i,t-1} \\ - \text{Median firm performance}_{(4\text{-digit industry-level})t-2} \end{aligned}$$

$$\begin{aligned} \text{Performance aspiration (historical)}_{i,t} \\ = \text{Firm performance}_{i,t-1} \\ - 3\text{-year average firm performance}_{i,t-1}, \end{aligned}$$

where "i" and "t" denote the firm and the year, respectively.

In both cases, firm performance was measured by the ratio of profits after taxes to total assets (ROTA). To distinguish between firms performing above and firms performing below aspiration levels, we introduced these variables as a spline function, i.e., in each case, we included two variables in the model. For example, the first variable *Social* $(P - A > 0)_{t-1}$ denotes firms outperforming the median firm in the industry, whereas *Social* $(P - A < 0)_{t-1}$ denotes firms underperforming the median firm in the industry. Similarly, we constructed two variables for performance aspirations (historical), viz. *Historical* $(P - A > 0)_{t-1}$ and *Historical* $(P - A < 0)_{t-1}$.

Results

Descriptive statistics and correlations for the variables in our models are presented in Tables 1(a) and 1(b). Our theoretical models examine two categories of differences in search behavior: (1) differences between business group affiliates and stand-alone firms and (2) differences among affiliates of business groups. Thus, we provided the corresponding details of the variables in the two models separately. Correlations in excess of 0.7 are reported in bold font. We addressed variables with high correlations by ensuring that they are not considered in the same model.

To test our first Hypothesis (H1), in which we compare the international search behavior of business group affiliated firms with that of stand-alone firms during the two types of institutional changes, we used the dependent variable *international search propensity*.[4] Here, we

Table 1(a)   Descriptive Statistics and Correlations—Full Sample ($N = 2{,}729$)

	Mean	S.D.	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) *International search propensity*	0.71	0.45	0.00	1.00	1.00										
(2) *Firm age*	21.27	16.85	0.00	106	0.20	1.00									
(3) *Firm size*[a]	145.23	437.52	0.43	7,964	0.18	0.16	1.00								
(4) *Domestic sales*[a]	82.36	177.33	−0.12	1,949	0.23	0.29	**0.84**	1.00							
(5) *Social* $(P - A > 0)_{(t-1)}$	0.04	0.08	0.00	1.83	0.04	0.09	0.10	0.16	1.00						
(6) *Social* $(P - A < 0)_{(t-1)}$	−0.03	0.12	−3.34	0.00	0.12	0.02	0.05	0.08	0.14	1.00					
(7) *Historical* $(P - A > 0)_{(t-1)}$	0.03	0.11	0.00	2.32	−0.11	−0.02	−0.04	−0.05	0.68	0.00	1.00				
(8) *Historical* $(P - A < 0)_{(t-1)}$	−0.02	0.08	−1.56	0.00	0.07	0.01	0.01	0.03	0.08	0.67	0.09	1.00			
(9) *Firm RD intensity*$_{(t-1)}$	0.01	0.03	0.00	0.42	0.17	0.07	0.07	0.42	0.38	0.09	0.05	−0.04	0.02	1.00	
(10) *Firm financial resources*$_{(t-1)}$	0.07	0.14	0.00	1.88	0.01	0.01	0.13	0.12	0.04	0.02	−0.03	−0.02	0.11	1.00	
(11) *Firm nonfinancial resources*$_{(t-1)}$	0.14	0.10	0.00	1.55	−0.03	0.18	0.08	0.08	−0.09	−0.20	−0.06	−0.11	0.09	0.05	1.00
(12) *BG affiliation*	0.31	0.46	0.00	1.00	0.13	0.18	0.29	0.36	0.03	−0.03	−0.01	−0.01	0.17	0.01	0.02

Note. Values greater than 0.04 in magnitude are significant at 5%.
   [a] Million USD.

utilized the full sample of 2,729 observations belonging to 298 firms. We employed a panel data probit technique with random effects to test our sample because the dependent variable takes only two values. Because of high correlations between the social and historical performance aspiration measures, we report the results with these measures separately (Table 2). In the corresponding results reported in Table 2, the suffix "*a*" following a model number denotes that the social performance aspiration has been used as a control, and the suffix "*b*" indicates that historical performance aspiration has been used as a control. The results reported under Model 1 correspond to the controls-only group of variables. In Model 2, we introduced the group affiliation variable, and, under Model 3, we added the interaction with the industry-specific change variable.

In Model 2, in the absence of moderating effects, we observed a negative but nonsignificant direct effect of business group affiliation on *international search propensity* over the entire period of study. In Model 3, the coefficient for the interaction was significant and negative ($b = -1.327$, $p < 0.01$ with social performance aspiration controlled and $b = -1.309$, $p < 0.01$ with historical performance aspiration controlled). Therefore, we found prima facie support for our first hypothesis. We tested for sensitivity by replacing some of the one-year lagged control measures in the model with their 3-year average values (current plus previous two years). We also tried several alternatives for firm size as a control. As shown in Table 1(b), *firm size*, *domestic sales*, and *market position*$_{(t-1)}$ are highly correlated. Hence, we retested by including these controls in separate models. The reported results were robust to alternate specifications and measures.

To better understand the effect of business group affiliation before and after the occurrence of industry-specific change, we used 1997 as the cutoff point to create two subsamples. In Table 2, Model 4, for the period before the industry-specific changes took effect (1992–1997), the coefficient for business group affiliation was

marginally positive but not significant, which suggests that when the institutional changes are broad in scope and when they affect most sectors of economic activity, business group affiliation does not influence international search behavior. However, in the period after the industry-specific changes were initiated (Table 2, Model 5), the coefficient was negative and significant ($b = -0.846$; $p < 0.05$ with social performance aspiration controlled and $b = -0.881$, $p < 0.05$ with historical performance aspiration controlled). We assessed the sensitivity of our findings by using 1996 and 1998, instead of 1997, as alternate cutoff years. The results were largely similar to those reported. Overall, we conclude that H1 is supported; business group affiliated firms were less likely to undertake international search compared with stand-alone firms after the industry-specific changes occurred.

H2 to H4 predicted differences in search behavior within the sample of business group affiliated firms. For these models, we used the second dependent variable, *international search intensity*, which takes continuous positive values between 0 and 1. As mentioned above, we applied the two-stage Heckman (1979) procedure to model firms' international search behavior. In the first stage, we estimated the probability that a focal firm in the final sample will engage in exporting by using *international search propensity* as the dependent variable. We modeled this search on the variables used earlier to test Hypothesis H1, reported in Table 2. Because the Heckman specification requires a restriction clause, i.e., at least one variable must not be used in both the first and second step, we used domestic sales, currency conversion, and firm performance based on return on sales in the first step but not in the second. The estimated probabilities from the first step were then used to calculate the inverse Mill's ratio for the second step. After including the inverse Mill's ratio as a control (*Inv. Mill's ratio*) in the subsequent analysis, we only considered the sample of exporting firms, i.e., those with positive values for export intensity. To test these hypotheses, we employed

Table 1(b) Descriptive Statistics and Correlations—BG Affiliate Sample (*N* = 857)

	Mean	S.D.	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) International search intensity	0.17	0.19	0.00	0.81	1.00																
(2) Export intensity$_{(t-1)}$	0.17	0.19	0.00	0.81	0.90	1.00															
(3) Firm age	25.80	17.90	1	88	−0.06	−0.07	1.00														
(4) Firm size[b]	335.19	713.44	0.43	7,964	0.38	0.38	0.15	1.00													
(5) Domestic sales[b]	175.71	275.77	0.74	1,949	0.27	0.26	0.27	0.86	1.00												
(6) Social (P − A > 0)$_{(t-1)}$	0.04	0.05	0.00	0.45	0.07	0.04	0.10	0.18	0.30	1.00											
(7) Social (P − A < 0)$_{(t-1)}$	−0.04	0.11	−1.34	0.00	0.12	0.10	0.05	0.09	0.15	0.25	1.00										
(8) Historical (P − A > 0)$_{(t-1)}$	0.03	0.09	0.00	1.32	−0.11	−0.09	−0.02	−0.07	−0.09	0.23	−0.04	1.00									
(9) Historical (P − A < 0)$_{(t-1)}$	−0.02	0.07	−0.71	0.00	0.02	−0.01	0.05	0.02	0.07	0.17	0.76	0.12	1.00								
(10) Firm RD intensity[a]	0.02	0.03	0.00	0.21	0.34	0.31	0.05	0.62	0.59	0.23	0.17	−0.09	0.07	1.00							
(11) BG size[b]	747.35	1,364.52	1.26	21,065	0.13	0.12	0.08	0.28	0.27	−0.02	−0.01	−0.03	−0.03	0.16	1.00						
(12) BG age	41.44	33.55	3	143	−0.19	−0.20	0.59	0.01	0.13	−0.05	−0.06	0.06	0.01	−0.08	0.27	1.00					
(13) BG-affiliate age gap	15.64	27.07	−16	99	−0.19	−0.20	0.07	−0.08	−0.01	−0.12	−0.11	0.08	−0.02	−0.14	0.28	0.85	1.00				
(14) Focal-founding affiliate industry distance	111.97	187.97	0.00	649	0.15	0.15	−0.05	0.06	0.02	0.07	0.01	−0.01	0.02	0.15	0.19	0.21	0.30	1.00			
(15) Firm financial resources[a]	0.07	0.10	0.00	0.93	0.01	0.01	−0.14	0.30	0.26	0.10	0.09	−0.05	0.01	0.27	0.04	−0.13	−0.07	0.18	1.00		
(16) Firm nonfinancial resources[a]	0.14	0.08	0.01	0.59	−0.07	−0.05	0.26	0.24	0.18	0.03	−0.20	0.07	−0.14	0.21	0.05	0.06	−0.10	0.02	0.07	1.00	
(17) Market position$_{(t-1)}$	0.12	0.17	0.00	1.00	0.37	0.35	0.26	0.76	0.78	0.22	0.18	−0.09	0.10	0.46	0.21	0.08	−0.07	0.01	0.10	0.16	1.00
(18) Intragroup position	0.51	0.40	0.00	1.00	0.20	0.15	0.20	0.32	0.37	0.24	0.15	−0.14	0.10	0.30	−0.26	−0.22	−0.41	−0.22	0.08	0.24	0.38

Note. Values greater than 0.08 in magnitude are significant at 5%.
[a]Three-year average.
[b]Figures in million USD.

the Arellano-Bond (AB) linear dynamic panel estimation technique with robust error estimates. The AB technique is considered to be superior to fixed-effects panel data models when lagged values of the dependent variable are known to influence the results and when the panels are characterized by low values of time lengths relative to the panel size. By adopting the first-differencing approach, AB removes the constant terms and individual fixed effects from the equation and is known to address issues of autocorrelation and heteroskedasticity within individual units' errors (Arellano and Bond 1991, Alessandri et al. 2012). The results are provided in Table 3.

In H2, we predicted that the constraining effects of group affiliation are more pronounced for (a) affiliates in older business groups, (b) relatively younger affiliates, and (c) affiliates in industries that are more distant from the founding affiliate's industry. Each of these attributes was first entered separately into Models 2–4 in Table 3. Because the variables *BG age* and *BG-affiliate age gap* exhibit a high correlation (0.85), we modeled them separately. Additionally, because the *BG-affiliate age gap* and *focal-founding affiliate industry distance* measures uniquely identify each firm in the sample and do not change over time, both cannot be simultaneously modeled using the AB estimation technique (fixed effects are demeaned, and one out of the two invariably drops out of the analysis). Therefore, in the fully specified Model 9, we included the *BG age* and *focal-founding affiliate industry distance* variables. In Model 10, we replaced both of these variables with the *BG-affiliate age gap* variable. In Models 2–4, the direct effect in the case of each variable was negative and significant. However, in the fully specified Models 9 and 10, only the coefficient for *BG-affiliate age gap* turned out to be significant ($b = −0.025$, $p < 0.05$). Overall, we claim partial support for H2, although the direction in the case of all three measures used was consistently negative, as predicted.

In H3, we proposed that affiliate firms that possess a greater stock of resources (both financial and nonfinancial) are more likely to overcome the constraining effects of group affiliation in international searches. The results (Table 3, Models 5, 6, 9, and 10) were unexpected. Contrary to our expectations, we found that the coefficient for the financial resources variable is negative and significant ($b = −0.133$, $p < 0.05$) in both of the fully specified Models 9 and 10. However, we found no significant impact of nonfinancial resources on affiliates' international search behavior. To reconfirm, we replaced the three-year average values for both resource variables with their corresponding one-year lag values. Next, we replaced the firm financial resources measure with the conventional current ratio (the ratio of current assets to current liabilities) in the overall model. None of the above changes impacted the nature of our reported results, thus suggesting that firm resources (financial or

Table 2   Results of Panel Data Probit Random Effects Models (All Firms)

	Dependent variable: *International search propensity*									
Period:	(1992–07)			(1992–97)	(1998–07)	(1992–07)			(1992–97)	(1998–07)
	1a	2a	3a	4a	5a	1b	2b	3b	4b	5b
BG affiliation ($X1$)		−0.326	0.602	0.403	**−0.846***		−0.365	0.558	0.328	**−0.881***
		(0.34)	(0.43)	(0.54)	(0.42)		(0.34)	(0.42)	(0.53)	(0.42)
Industry-specific change			0.095					0.027		
(1998-07) ($X2$)			(0.48)					(0.48)		
$X1 \times X2$			**−1.327***					**−1.309***		
			(0.33)					(0.33)		
Controls										
Firm age	0.016	0.017†	0.018†	0.012	0.027*	0.017†	0.018†	0.019†	0.011	0.027*
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Firm size	1.049**	1.072**	1.148**	1.170**	1.188**	1.054**	1.080**	1.151**	1.178**	1.206**
	(0.11)	(0.11)	(0.12)	(0.30)	(0.14)	(0.11)	(0.11)	(0.12)	(0.30)	(0.14)
Social	−1.448†	−1.441†	−1.559†	−2.216	−0.763					
$(P - A > 0)_{(t-1)}$	(0.79)	(0.79)	(0.81)	(2.10)	(0.98)					
Social	1.184†	1.123†	0.968	2.485	0.678					
$(P - A < 0)_{(t-1)}$	(0.65)	(0.65)	(0.66)	(2.71)	(0.70)					
Historical						−0.753	−0.737	−0.614	−2.103	−0.164
$(P - A > 0)_{(t-1)}$						(0.58)	(0.58)	(0.59)	(2.07)	(0.68)
Historical						0.383	0.36	0.315	2.993	−0.095
$(P - A < 0)_{(t-1)}$						(0.68)	(0.67)	(0.69)	(2.64)	(0.75)
Firm RD intensity$_{(t-1)}$	6.46	6.45	5.748	26.156	5.235	6.26	6.259	5.57	25.305	5.079
	(4.80)	(4.78)	(4.77)	(19.96)	(5.04)	(4.73)	(4.71)	(4.69)	(19.84)	(4.99)
Firm financial	0.15	0.137	0.203	−0.209	0.06	0.153	0.139	0.198	−0.112	0.048
resources$_{(t-1)}$	(0.50)	(0.50)	(0.54)	(0.76)	(1.11)	(0.50)	(0.50)	(0.54)	(0.75)	(1.11)
Firm nonfinancial	0.574	0.551	0.381	2.704	0.104	0.171	0.172	0.099	2.848	−0.121
resources$_{(t-1)}$	(0.71)	(0.71)	(0.73)	(3.10)	(0.80)	(0.67)	(0.67)	(0.69)	(2.97)	(0.76)
Currency conversion	0.011	0.012	0.013	−0.09	0.028	0.013	0.014	0.019	−0.07	0.033
	(0.06)	(0.06)	(0.06)	(0.19)	(0.07)	(0.06)	(0.06)	(0.06)	(0.19)	(0.07)
Constant	−3.269	−3.342	−3.642	0.207	−4.314	−3.406	−3.504	−3.892	−0.563	−4.618
Chi-square	123.74**	125.62**	128.10**	24.71*	99.61**	121.85**	124.01**	127.16**	25.01**	98.77**
N	1,898	1,898	1,898	368	1,530	1,898	1,898	1,898	368	1,530

Notes. Significance levels based on two-tailed test. Year controls included but not shown.
†$p < 0.1$; *$p < 0.05$; **$p < 0.01$.

nonfinancial) do not help business group affiliated firms in an international search. The unexpected negative and significant coefficient for *firm financial resources* is discussed later.

In H4, we predicted that the strength of an affiliate's position within a group and in its industry can either help the affiliate overcome the relevant constraints or activate the enabling features of group membership to pursue an international search. Under the fully specified Models 9 and 10 in Table 3, the coefficients for *intragroup position* ($b = 0.195$, $p < 0.01$) and *market position*$_{(t-1)}$ ($b = 0.149$, $p < 0.05$) are positive and significant, thus supporting H4. We checked for robustness by replacing the relative market share measure with the one-year lag of relative domestic market share, i.e., we replaced total sales with domestic market sales in the operationalization of the *market position*$_{(t-1)}$ variable. Next, we operationalized *intragroup position* differently by using the ratio of year-on-year change in sales of the affiliate to

that of the whole business group. Barring minor changes in the level of significance, the results remained robust to the use of alterative specifications. To check the sensitivity of our reported findings in Table 3, we replaced the social performance aspiration variable with its equivalent historical performance aspiration variable. We found the results to be largely similar to those reported in Table 3.

We validated our reported results by carrying out several other tests, such as regressing the models reported in Table 2 with *international search intensity* as the dependent variable, retesting the Table 3 models using panel data fixed effects with robust error estimates, and modeling the precondition for launch of a pharmaceutical product (i.e., product certification) on some of the hypothesized constructs. These additional results are provided in the online supplement (available at http://dx.doi.org/10.1287/orsc.2015.0990).

Table 3 Results of Arellano-Bond Dynamic Panel Model (Business Group Affiliated Exporting Firms)

Period:	Dependent variable: *International search intensity*									
	(1992–2007)									
	1	2	3	4	5	6	7	8	9	10
BG age		−**0.005*** (0.00)							−0.005 (0.00)	
BG-affiliate age gap			−**0.015**† (0.01)							−**0.025*** (0.01)
Focal-founding affiliate industry distance				−**0.002*** (0.00)					−0.001 (0.00)	
Firm financial resources[a]					−**0.090*** (0.04)				−**0.133*** (0.05)	−**0.133*** (0.05)
Firm nonfinancial resources[a]						−0.024 (0.18)			−0.244 (0.19)	−0.244 (0.19)
Market position$_{(t-1)}$							**0.237**** (0.08)		**0.149*** (0.07)	**0.149*** (0.07)
Intragroup position								**0.200**** (0.04)	**0.195**** (0.04)	**0.195**** (0.04)
Controls										
Export intensity$_{(t-1)}$	0.442** (0.11)	0.442** (0.11)	0.442** (0.11)	0.442** (0.11)	0.439** (0.11)	0.444** (0.11)	0.404** (0.11)	0.368** (0.11)	0.354** (0.11)	0.354** (0.11)
Social[b] $(P-A>0)_{(t-1)}$	0.012 (0.11)	0.012 (0.11)	0.012 (0.11)	0.012 (0.11)	−0.006 (0.11)	0.009 (0.11)	0.004 (0.12)	−0.008 (0.11)	−0.06 (0.12)	−0.06 (0.12)
Social[b] $(P-A<0)_{(t-1)}$	0.417** (0.15)	0.417** (0.15)	0.417** (0.15)	0.417** (0.15)	0.420** (0.15)	0.414** (0.15)	0.397** (0.14)	0.352* (0.16)	0.321* (0.14)	0.321* (0.14)
Firm RD intensity[a]	1.169** (0.45)	1.169** (0.45)	1.169** (0.45)	1.169** (0.45)	1.276** (0.47)	1.183* (0.49)	1.029* (0.42)	1.216** (0.43)	1.430** (0.47)	1.430** (0.47)
BG size	0.045** (0.01)	0.045** (0.01)	0.045** (0.01)	0.045** (0.01)	0.047** (0.01)	0.045** (0.01)	0.033* (0.01)	0.057** (0.01)	0.052** (0.01)	0.052** (0.01)
Inv. Mill's ratio (exporting)	0.234 (0.14)	0.234 (0.14)	0.234 (0.14)	0.234 (0.14)	0.248† (0.15)	0.235 (0.15)	0.222 (0.14)	0.308* (0.13)	0.330* (0.14)	0.330* (0.14)
Constant	−0.233* (0.10)	0 (0.00)	0 (0.00)	0 (0.00)	−0.242* (0.10)	−0.230* (0.10)	−0.180† (0.11)	−0.432** (0.11)	0 (0.00)	0 (0.00)
Chi-square	320.16**	375.07**	330.18**	355.11**	380.75**	321.45**	437.04**	503.03**	775.77**	777.14**
N	472	472	472	472	472	472	472	472	472	472

Notes. Significance levels based on two-tailed test. Year controls included but not shown. Values within parentheses are robust error estimates.

[a]Three-year average.

[b]Results with historical aspiration not shown but are similar to those above.

†$p < 0.1$; *$p < 0.05$; **$p < 0.01$.

Discussion

The broad research question that we addressed in this paper is whether and when business groups, with their central features of an interconnected network of independent firms that operate in diverse industries and that are coordinated through a core entity, enable or constrain member firms' search behavior during periods of institutional change. We addressed this question in the empirical context of the Indian pharmaceutical industry, which includes both business group affiliated and independent firms that faced a variety of institutional changes during the period of our study, 1992–2007.

Our key findings are as follows: First, after controlling for firm-specific factors that are identified in prior research as sources of inertia, such as firm age, size, and performance aspirations, we found that the inertial effects of business group affiliation on search behavior are activated only by narrow-scope institutional change (i.e., institutional change affecting the specific industry) and not by broad-scope institutional change that has an economy-wide impact. Lending further support to our hypothesis of a divergence in outlook toward change at the group and affiliate levels and the consequent (mis)alignment of interests, we found that heterogeneity exists in the search behavior of business group affiliated firms. Specifically, our results indicate that (a) affiliates in older business groups, (b) relatively younger affiliates, and (c) affiliates in industries that are more distant from the founding affiliate's industry are more severely constrained by group membership in undertaking an external search.

Second, our results revealed that the strength of an affiliate's position within a group and within its industry positively influences its international search behavior. Although we cannot isolate whether the position of an affiliate affords it greater bargaining power to override group-related inertial constraints or whether it garners the affiliate more support and attention to pursue an international search, we believe that an affiliate's both within-group and market positions lead to a greater alignment of objectives, thus increasing the possibility that group affiliation enables international search.

Third, we did not find support for the hypothesized relationship related to the resource position of affiliates. Moreover, the impact of financial resources on search behavior is contrary to our expectation. Possible explanations for this contradiction are that the fungible nature of financial resources attracts stronger monitoring and control by the core entity to subsidize and support weaker affiliates (Jia et al. 2013, Scharfstein and Stein 2000) or to smooth performance variation across group units through the redistribution of resources (Lincoln et al. 1996, Chacar and Vissa 2005). From a theoretical perspective, one implication of this finding, in addition to the lack of a significant relationship for nonfinancial resources, is that the bargaining power arguments extending from the ownership and control of resources (Astley and Sachdeva 1984, Bradley et al. 2011) do not appear to hold for business group affiliated firms. This finding is intriguing and thus warrants further investigation.

Overall, our study makes several contributions to related research streams. Our theory of mis(alignment) in response outlook at the affiliate and core entity levels is an original contribution that is unique to organizational arrangements such as business groups. Unlike stand-alone firms, in which disagreements in response outlook between subunits and key decision makers can be resolved by hierarchical fiat, in the case of business groups, the legal and operational independence of affiliates can make resolving differences with the core entity difficult. We have identified some conditions under which convergence or divergence in response outlook at the business group and affiliate levels is possible. By accounting for the scope of institutional changes and within-group dynamics, our study addresses the recent call by behavioral and institutional theorists (Gavetti et al. 2007, Pache and Santos 2010, Greenwood et al. 2011) to examine organizational responses in multibusiness and networked decision-making structures to changing institutional demands and stakeholder expectations.

Considerable past research on business groups has focused on the origins, internal characteristics, and performance effects of business groups against the backdrop of institutional voids and market imperfections. A few recent studies have attempted to examine how institutional changes in different national contexts affect business groups' restructuring and refocusing efforts in their domestic markets (Ghemawat and Khanna 1998, Hoskisson et al. 2004, Chung and Luo 2008). Whereas these studies provide some evidence of business group adaptation to exogenous shifts through "fine tuning the existing orientation" or "convergent change" (Greenwood and Hinings 1996, p. 1024), our understanding of how firms affiliated with business groups respond to conflicting institutional demands is limited. Specifically, certain scholars who have examined the search behavior of business group affiliated firms vis-à-vis stand-alone firms (e.g., Chittoor et al. 2009, Vissa et al. 2010) have obtained divergent findings. In addition, these studies fail to recognize the variation that can exist within a business group with respect to search behavior because of heterogeneity in resource positions, power structures, and relative importance to the group. Our research sheds light on the intragroup dynamics that affect the search behavior of firms.

We contribute to the institutional change and adaptation literature by identifying the scope of institutional change as another important parameter in the context of developing economies undergoing transitions. This contribution has important implications in the present context of global competition, in which firms increasingly opt to network with other firms that are embedded in diverse industrial, national, and other institutional contexts (Vasudeva et al. 2013). For instance, it would be interesting to compare the response of globally networked firms, especially those with high levels of interdependence at the subsidiary level, to a global phenomenon such as a recession against their response to country or region-specific difficulties. Together with the theory of network inertia (Kim et al. 2006), our findings on how network effects influence strategic adaptation in the form of geographic search activities have the potential to advance research on the formation, adaptation, and dissolution of different types of networks.

Furthermore, much of the past literature on organizational adaptation has focused on stand-alone firms' responses to either narrow-scope changes (e.g., Kelly and Amburgey 1991, Meyer et al. 1990, Ranger-Moore 1997) or variations in organizational responses due to interdependence within subunits (e.g., Bradley et al. 2011). Our paper is the first to examine variation in organizational responses to a variety of exogenous shifts between business group affiliated and stand-alone firms and among affiliated firms. In so doing, we uncover several differences from previous predictions. In particular, our results related to financial resources and affiliates' position within a group are somewhat contradictory to the prescriptions of the organizational adaptation literature. As discussed above, we find that the presence of affiliate-specific resources limits their discretionary use.

Furthermore, much of the organizational adaptation literature predicts that peripheral organizations will typically face fewer inertial constraints (Greenwood et al. 2011). However, our results for affiliated firms indicate that, because of reputational and related effects, certain affiliates that are more central to a business group are able to override inertial constraints and are potentially even more responsive than stand-alone firms under certain conditions. These findings suggest the need to further study the organizational adaptation of firms embedded in broader networks and to explicitly incorporate ownership and governance structures, decision-making processes, and discretion in resource utilization issues to refine the core prescriptions of the existing theories (Joseph and Ocasio 2012, Chung and Luo 2008).

Although our findings are promising, we acknowledge that our research has certain limitations. Although a study of an individual industry in a given national context has advantages, the findings may also be difficult to generalize to other contexts. Second, we focused on one type of search behavior, internationalization through exports. Indeed, other types of search activities exist that are related to geographic scope, such as acquisitions or interorganizational alliances, and the business group related effects involved in such search activities might differ. Third, although we differentiated between bargaining and attention-based arguments to theorize about within-group heterogeneity and inertia, we could not isolate them empirically. Because these differences are theoretically important to explaining the adaptation of business group firms, future research could explore these differences in greater detail. A fourth and related limitation is that we do not incorporate governance/ownership aspects into our theoretical and empirical models of business group search behavior, as some advocate (Chung and Luo 2008).

In conclusion, our study provides new insights into whether affiliation with business groups constrains or enables member firms' adaptation to institutional changes. Past research has tended to assume a certain equifinality concerning the future of business groups based on the assumption that business groups result from a specific context, and when the context changes, the salience of business groups will decline (Yiu et al. 2007). Moreover, the influence of business groups on affiliates has been assumed to be pervasive and uniform across all affiliates. By identifying the boundary conditions related to the enabling and constraining aspects of business groups, our research provides a more nuanced understanding of business group affiliation and helps to answer the broader questions related to the future of this organizational form.

Supplemental Material
Supplemental material to this paper is available at http://dx.doi.org/10.1287/orsc.2015.0990.

Endnotes
[1] The institutional theory perspective on central versus peripheral subunits is different from that of the attention-based view. According to Greenwood et al. (2011, p. 340), peripheral organizations "may be less aware of institutional expectations...and be less likely to receive the social nudging and policing that reaffirms existing practices." We take the view that because the search behavior of group-affiliated firms involves resource allocations and risk taking, the discretion to undertake such activities at the affiliate level will be lower for peripheral affiliates.
[2] See the online supplement for more details related to the uncertainty at the industry level.
[3] Our measure accounts for only those components of current assets with immediate usability and availability. However, we also used the more conventional current ratio measure for verification purposes.
[4] It is important theoretically to demonstrate whether there are differences between group-affiliated and stand-alone firms in their strategic choice of whether to export or to focus only on the domestic market. That is, we are interested in seeing whether business group affiliation impacts the search process (i.e., search propensity). Subsequently, we examine whether the extent of the search process (i.e., search intensity) varies among group-affiliated exporting firms. However, we did test the Table 2 models using only the exporting firms sample, and the results were largely similar.

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