# Divergent and Convergent Effects of Business Group Affiliation on Firm Performance in International Strategic Alliances

**Divya Mishra [i], ✉ (iD) and Amita Mital [ii] ✉ (iD)**

## Abstract

Business groups (BGs), a prevalent organizational form in many economies are exhibiting evolutionary fitness and are no longer considered an organizational anomaly. We extend the traditional debate around strategic choice and performance paradigm by assessing differential performance effects of BG affiliation in international strategic alliance (ISA) formation choices—(alliance scope, alliance governance structure, and alliance orientation). This study integrates the resource-based view and institutional perspective to explore the initial divergence in performance of a BG affiliated firm (BGAF) and non-BG affiliated firm (NBGAF) leading towards convergence later when partner complementarity and institutional evolution shifts from lower to the higher end of the spectrum. Contrasting the effect of different ISA choices on firm's performance the hypotheses were developed and tested on a panel dataset of 1816 ISAs formed by 224 BGAFs and 242 NBGAFs over a span of 19 years. Findings suggest that the influence of BG affiliation on firm's performance is more pronounced when alliance scope is broader, alliance governance structure is contractual and alliance orientation is exploratory and that this divergence in performance between BGAFs and NBGAFs weakens as the alliance partner's complementarity increases and institutions evolve in the economy.

**Keywords:** business groups; international strategic alliances; alliance scope; alliance structure;

## I.   Introduction

### Research background

How do Business Groups (BGs) augment or create value? This question has been at the center of research on BGs, an organizational form that predominates competitive landscape of emerging economies. BG is a "collection of legally independent firms that are linked by multiple ties, including ownership, economic connections (such as inter-firm transactions), and /or social relationships (family, kinship, friendship)" (Chung & Chan, 2012). Through these links the BGAFs coordinate to achieve mutual objectives. BG affiliation affects not only the internationalization choices like ISA configurations but also the performance outcomes borne out of these strategic choices.

---

[i] (Dr.) Indian Institute of Management Lucknow, India

✉ fpm17015@iiml.ac.in (Corresponding Author)

(iD) https://orcid.org/0000-0001-5493-7104

[ii] Indian Institute of Management Lucknow, India

✉ amita@iiml.ac.in

(iD) https://orcid.org/0000-0001-7817-3858

While ISA and performance relationship has been of great interest to scholars this study extends the extant research by comparatively analyzing this relationship for BGAFs and NBGAFs. Increasing pro market reforms have made it easier for many firms to enter and expand into foreign markets (Holmes et al., 2018). This has led to surge in internationalization activities by many EEFs through various modes of entry such as exports, licensing, franchising, alliances, joint ventures and wholly owned subsidiaries (Child & Rodrigues, 2005). In this study, focus has been to examine the ISA as a mode of internationalization of BGAFs and NBGAFs for several reasons. First, with continuously increasing globalization, importance of emerging economy (EE) BG firms is increasing in the global economy and their strategic decision like ISAs have consequences for the firms in the developed economies (Gopal *et al.,* 2021). Second, the domestic institutional environment of emerging economies is quite distinct from that of the developed economies (Vahlne & Johanson, 2020) which impacts the financial performance outcomes of thus formed ISAs.

**Gap in Literature**

The exploration of performance outcomes of BG affiliation and impact of ISAs on a firm's performance has been of great interest to scholars. However, the various configurations of ISAs e.g. scope, governance structure and orientation which the BGAFs prefer for enhancing their performance outcomes have received scant attention. This remains as a critical research gap in both ISA and BG literature. Understanding this impact of BG affiliation is important for various reasons. Firstly, vast geographical expanse of BGs covering south and south-east Asia, Latin America, Turkey and Russia. Secondly, BGAFs constitute an important segment of the Indian corporate sector—with one-third of the total number of firms, and over two-thirds of the total revenues and profits (Chittoor et al., 2015). Thirdly, while BGAFs are increasingly adopting strategic alliances as a strategy for growth and the literature captures various nuances of strategic alliances, there is scant research on ISA characteristics of BGs. Fourthly, literature about BGs and their internationalization (Gaur et al., 2019) has significantly built on in the last ten years, however, study at the Interface of BGAFs' ISA mode of internationalization and performance is scant. Finally, there have been negligible studies on comparison of ISA attributes of BGAFs and NBGAFs. This study fills this research gap by putting forth theoretical arguments and their empirical testing to validate the findings.

**Aim and Originality of this study**

The broad objective of this study is to examine the effect of BG affiliation on the relationship between alliance formation choices—(Alliance scope, alliance governance structure, alliance orientation) and performance. Our theoretical motivation for this study is rooted in the exploration of institutional theory and resource based view to explore how institutional evolution in an economy along with enhanced ISA partner complementarity will reduce the initial performance divergence between BGAFs and NBGAFs. This study also resonates with the current developments in the Indian corporate sector which is increasingly getting populated with startups, venture capitals and unaffiliated firms cohabiting the business landscape with large BGAFs. This paper makes an important contribution to the ISA and BG literature as the extant literature doesn't suggest how the advantages and disadvantages of the group affiliation in a domestic context translates into similar advantages or disadvantages when the domestic firms enter into foreign markets through alliances with cross border partners.

## II. Literature Review and Development of Hypotheses

An overview of the prior research on internationalization of BGAFs reveals an ambiguous and inconclusive result as scholars have found positive (Delio & Beamish, 1999; Hitt et al., 2006), negative (Denis & Yost, 2002; Geringer et al., 2000), inverted U shaped (Hitt, Hoskisson & Kim, 1997) and U shaped (Lu & Beamish, 2001) relationship between internationalization and firm performance.

Group activities dominate large part of economic activities in emerging economies (Khanna & Rivkin, 2001). For example, BG are extensively found in economic landscape of India (Khanna & Palepu, 2000a). BG affiliation provides several benefits to the firms by filling the institutional voids and thereby helping their affiliates in circumventing the problems arising on account of weaker institutional environment. When a BG affiliated firm forms ISA with foreign partner the performance effects are higher as its knowledge stock through prior alliances by affiliate firms, presence of complementary resources, higher absorptive capacity and focused supervision from the top management helps it to overcome the costs associated with such activity (Aguilera et al., 2020). In this study we try to explore how interactions between alliance formation choices, partner characteristics and institutional characteristics affect firm performance.

Based on these arguments our research question is, how does the fit between alliance formation choices, partner characteristics and institutional characteristics affect firm performance? Our theoretical framework is presented in figure 1. In this conceptual diagram three alliance formation choice variable i.e. ISA scope, ISA governance structure and ISA orientation are the explanatory variables whereas, firm performance is dependent variable. BG dummy is used as a moderator to enable a comparative study between BGAFs and NBGAFs. The convergent effect variables i.e. partner complementarity and institutional evolution are used to enable a three way interaction effect. The diagram shows the initial divergent or different performance of BGAFs and NBGAFs at lower value of these variables and subsequent convergence at higher values.

-----------------------------------
Insert Figure 1 about here
-----------------------------------

## Theoretical Background

### Resource based view on ISAs

RBV focuses on management of internal resources that are heterogeneously distributed across firms to achieve competitive advantage. This perspective illuminates a distinct rationale for inter-organizational relationships such as strategic alliances as not only means for increasing accessibility to other firms' resources but also as an agency for rent maximization via firm's own internal resources (Lin et al., 2009). Resource dependence theory is more focused on external resources as a means for accessing resources critical to the survival and prosperity of an organization (Pfeffer & Salancik, 1978).

In contrast to resource dependence theory the RBV presents a distinct rationale for strategic alliances as alliances are not only viewed as means for providing access to other firms' resources but also a vehicle for the maximization of rents via firm's own internal resources. In the strategic alliance literature scholars have used RBV for assessing the alliance partner's characteristics (Teng & Das, 2008). RBV suggests that motive of alliance formation is value creation through pooled resources (Hitt et al., 2000). For instance, developed market firms form alliances with partners which are endowed with complementary resources such as distribution channel accessibility and knowledge of local market whereas EEFs form alliances with partners to enhance their access to financial and technical resources and to increase their strategic position in the marketplace.

RBV's reliance on economic perspective for providing a rationale for alliance partner selection leads to insufficient consideration of external influences by institutional contexts (Oliver, 1997; Zineldin & Ismail, 2016) which greatly affects BGAFs and NBGAFs in emerging economies and might impose serious theoretical problems. We believe that this gap can be bridged by complementing RBV with the institutional perspective.

### Institutional perspective on ISAs

Institutional economists have argued that firms' strategies, performance and benefits vary with countries due to differences in their economy, rules, regulations and business atmosphere (North, 1990). Therefore, the institutional context of a country directly influences firm performance as it affects certain input and output exchanges (Wan & Hoskisson, 2003). To understand the institutional context in granularity studies have been done on the influence of rules and regulations on market products and factors such as labor and capital (Khanna & Palepu, 1997).

These studies show that BGs are a very efficient response to the institutional context of a country. It emphasizes more on the conditions and limitations under which these BGs flourish (Dau et al., 2021). From the viewpoint of corporate governance, the institutional theory suggests that the governance mechanisms followed in a BG or BGAF are highly influenced by the institutional set up prevalent in the economy. For instance, the shift in policies of BGs after the Asian financial crisis due to changes in institutional mechanisms confirms the arguments put forward by this perspective (Kim et al., 2004).

A firm's behavior is conditioned by the general environment in which it operates—political, economic, technological and socio-cultural context and so will be its ISAs and its response to environmental constraints is translated into requirement of recognition, legitimacy and competency (Dowling & Pfeffer, 1975). Further the scholars of institutional void theory have argued that financial, legal, and human resource voids do not affect all firms equally (Khanna & Palepu, 1997, 2000a). Rather, these voids have a negative impact on stand-alone firms because of a lack of mutual assistance, which is predominant form of interaction among the affiliated firms. As the institutional void increases the relation between affiliation and performance of an affiliated firm also increases.

**Theoretical integration**

The synthesis of RBV and institutional perspective suggest the motives and objectives for international strategic alliances by BGAFs and NBGAFs. However both have a very different emphasis. The institutional perspective is more concerned with the organizational and institutional alignment while RBV focuses on developing unique resource bundles.

Both the theories differ in the way they view the environment as RBV views it as a place where products and services of an organization are exchanged to gain competitive advantage and institutional perspective views it as an embodiment of rules and regulations to which firms need to conform to gain support and legitimacy. According to RBV alliances are a means to develop and resources and capabilities to sustain competitive advantage, while the institutional perspective views alliances as a source of attaining legitimacy, recognition and alignment with environments. RBV emphasizes economic rationality and institutional view emphasizes on normative rationality.

It might seem that these two perspectives are at odds but both are not mutually exclusive and therefore their integration is possible to explain the ISAs. Complementarity between both the theories can be found as resource availability and accessibility is greatly influenced by the institutional environment in which the firms operate (Barney, 1991).

## Hypotheses Development

The Resource-based view highlights a firm as a portfolio of core competencies (Prahalad & Hamel, 1990) where one partner can internalize the skills and competencies of the other(s) for the creation of next-generation competencies. A firm's knowledge is more often than not tacit knowledge which remains difficult to be diffused across the organizational boundaries. Alliances are a mechanism to actualize this transfer of knowledge (Kogut, 1988). Alliances reduce the transaction costs while enhancing the appropriability through leveraging the capability heterogeneity between partners (Hennart, 1988).

While alliances provide several advantages to firms either by providing access to upstream and downstream resources, reducing cost and risk, developing new competencies (Dhir & Mital, 2013). Business Group Affiliated firms have certain unique characteristics, which provide a motivation to study ISA formation by them. First, BGAFs in emerging economies grow in an environment with underdeveloped infrastructure and institutions and political and regulatory uncertainties (Ramamurti, 2012). The coping strategies that these firms develop despite the adversity give them an 'adversity advantage' over the NBGAFs which are stymied by the challenges when they form ISAs with developing country partners (Khanna & Palepu, 2006).

Second, BGAFs gain advanced technologies and other competencies necessary to overcome the liabilities of foreignness through a process of 'Linking, leveraging and learning' (LLL) (Matthews, 2006). Proponents of this view argue that BGAFs gain access to advanced firm specific resources through linking with them via ISAs and leveraging these resources by combining them with their own and by repeated exercise of linking and leveraging they develop learning to absorb the knowledge.

Third, BGAFs use ISAs as a 'spring board' to enhance their competitive positioning (Luo & Tung, 2007). It suggests that ISAs by BGAFs are not just a result of search for sources of advantage but a question of motivation (Bucheli et al., 2019).

In this section we develop hypotheses to investigate the performance effects of BG affiliation in ISA formation choices. Pivotal to our study is examination of interaction effects and boundary conditions rather than the role of each. Extant theoretical frameworks have explained ISAs as mode of obtaining resource complementarity for the BGAFs which derive significant social, financial and political capital from their institutional environment. Huge network capital of BG affiliated firms point towards the relative disadvantage faced by the NBGAF due to lack of the same. This lackness gets aggravated when institutions are less developed and partners have less incentive to cooperate and collaborate.

BGAFs with huge inherent diversity of BG may find more complementarity with their ISA partner which in turn could lead to repeated ties and significant value creation (Belenzon et al., 2019). However, NBGAFs with less diversity of business may find it difficult to form ISA with broad scope of activities. Our study has investigated this phenomenon of predominance of BGs in EE context to complement the RBV and institutional theory by showcasing how partner characteristics and institutional evolution may shift the flow of resource stream to more competent player that derives strength from rapidly changing policy led reforms and dovetails its resource base with that of a suitable ISA partner for upgrading its organizational outcomes in terms of better strategic choices, refined structural configurations and enhanced performance effects.

## Divergence Effects

In this section we have explored the divergence between the performance of BGAFs and NBGAFs when they opt for different alliance formation choices like alliance scope, alliance governance structure and alliance orientation. This divergence is caused by lack of or low level of ISA partner complementarity as well as lower degree of institutional evolution in the early stages of economic liberalization in emerging economies. For instance, due to low institutional evolution there could be a large divergence of financial performance between a BGAF and a NBGAF across the spectrum of alliance scope from broader to narrower scope activities in the value chain.

## Alliance Scope

Alliance scope defines the scope of joint activities between the collaborating firms. When the activities covered under the alliance are more broad, extensive, loosely defined, interdependent, complex and uncertain there will be greater potential risk of opportunism (Kogut & Zander, 1992). Alliances with larger scope require more coordination which raises monitoring and partner behavior assessment cost (Oxley & Sampson, 2004).

Scope of alliance or joint activity can vary considerably among different type of alliances. For example, in upstream or downstream alliances the activities which are part of single value chain are performed in collaborative manner. Prior research has established that the scope of the collaborative activities between partners influences the performance of the alliance function (Oxley, 2004). Alliances can be formed with narrow scope with only one activity such as unilateral licensing contracts, long-term supplying agreements, and R&D agreements or broad scope with higher number of activities such as technology collaboration, cross-licensing agreements, joint research contracts, and joint ventures (Oxley, 2004).

Since we are exploring resource complementarity, we have taken functional or 'vertical' scope of the alliance, which is the extent to which partners share several combinatory and sequential value chain activities of the alliance, such as R&D, production and/or marketing. Expansion in vertical scope of alliance escalates the complexity of the collaboration as well (Reuer, Zollo, & Singh, 2002).

*Transaction cost theory*, proposes that parent firms forming ISA face complications in property rights specification and face ex ante coordination related uncertainties in alliances of broader scope as more heterogeneous functions and resources are combined leading to a struggle between their obligations to the alliance and their legitimate entitlements on it over time (Reuer et al., 2002; Gebrekidan & Mukhtar, 2017).

With increasing scope of international alliances the costs associated with its maintenance also increases which can have adversely affect performance of the parent firm. However, these systemic costs are borne by BGAFs either through their vast networks, or through cross subsidization benefits (Chittoor et al., 2015). But such advantages are not enjoyed by the NBGAFs which leads to decline in performance with increasing alliance scope of ISA. We therefore posit,

> H₁: The performance effects of BG affiliation will be more pronounced when scope of the ISA is broader relative to ISAs with narrower scope.

## Alliance Governance Structure

Alliances are formed with varying governance structures such as joint ventures, minority equity alliances, and contractual alliances (Teng & Das, 2008). It is one of the critical determining factor of alliance performance. Alliance structure choice influences several facets of alliance such as operational procedures, control functions, and even exit scenarios. Scholars have been studying alliance structure especially from the view of *transaction cost economics* (Oxley, 2004). According to this view alliance structural choice is the expression of the requirement of managing behavioral unpredictability i.e. opportunism and reduction of inter-partner transaction costs.

Based on the *institutional perspective,* equity arrangements are used when the risk of opportunism is significant between the partners. Joint ventures are entities which are individually incorporated and jointly owned by the partners and are the most integrative form of alliances with centralized control and collaboration. Minority equity alliances refer to an arrangement where equity shares have been acquired by either one or more partners and exhibit modest level of structural integration. In contrast to the above structural types contractual alliances do not require equity agreements or incorporation of a new entity in the arrangement. These alliances are separated from each other in the dimension of hierarchical control (Gulati & Singh, 1998).

Equity arrangements guarantee that the interest of the partners are intertwined which discourages opportunistic behavior. ISAs are exposed to international risk based on country level differences in laws, culture,

business practices and norms. High degree of resource heterogeneity in ISA partners necessitates higher resource integration activities in alliance and an equity sharing governance structure acts as a mutual hostage for partners. Firms operating in different institutional environment follow different operational norms. However, BGAFs enjoy the reputational benefits owing to which a deterrence of opportunistic behavior is predicted. Hence they can benefit from less hierarchical alliance governance structure as compared to NBGAFs which may suffer from lack of interfirm trust in their alliances. Hence, we posit that,

> $H_2$: The performance effects of BG affiliation will be more pronounced when governance structure of the ISA is more contractual relative to ISAs with hierarchical structure.

## Alliance Orientation

Firm's strategic intent and organizational learning serves as a key determinant in choosing between exploration and exploitation in alliance orientation (Yamakawa et al., 2011). Entering into an exploratory ISA requires a firm's intent to search for new opportunities via acquisition of knowledge, skills, resources and capabilities which are novel to the firm to achieve competitive advantage to adapt to the environment. Exploitative alliances on the other hand are formed with an intent to leverage existing resources and capabilities; the ultimate objective is to complement the existing competencies with external resources which lie beyond the boundary of the firm.

Firms generally have differential ISA preferences which are contingent on the constrained resources and dynamic environmental conditions. Firm specific returns in case of exploitative ISAs are more certain, stable, and less risky compared to exploration alliances (Yamakawa et al., 2011). The performance impact of exploitation alliances is predicted to be higher particularly in short term whereas the in case of exploratory alliances it is more likely to bring indirect and long term payoffs to the parent firm. BGAFs will navigate better in such uncertain situations with greater network embeddedness, group network resources, different ownership structures and socio-political capital. However, NBGAFs will benefit more from immediate returns through ISAs. Thus, we posit that,

> $H_3$: The performance effects of BG affiliation will be more pronounced when learning orientation of the ISA is towards exploration relative to ISAs with learning orientation towards exploitation.

## Convergent Effects

In this section we have explored the convergence between the performance of BGAFs and NBGAFs when they opt for different alliance formation choices. This convergence after the initial divergence is caused by fair and equal opportunities to all firms at higher level of ISA partner complementarity as well as higher degree of institutional evolution in emerging economies which provides level playing field to all firms. For instance, due to higher institutional evolution there could be a parity of financial performance between a BGAF and a NBGAF across the spectrum of alliance orientation from exploitation to exploration for joint value creation.

The divergence of yesteryears was manifested in the Indian business landscape being largely dominated by business group affiliated firms like Tata, Reliance, Adani group etc. and marginal space for young startups or foreign firms. However, with liberalization and globalization in Indian economy, the space for ISAs has been growing bigger. A direct benefit of these ISAs is increasing FDI and collaboration of resources which has built and augmented capacity of NBGAFs. The India as world's 3rd largest startup ecosystem in the world and with 30 million MSME units (NITI Aayog) to its credit, shows the convergence of performance between the big BGAFs and relatively smaller NBGAFs. Therefore, it is posited that the initial divergence between performance of BG affiliated and unaffiliated firms across the spectrum of divergent alliance formation choices which tend to converge with evolved institutions and matured markets[3] as the Indian economy liberalized since 1990s.

## Partner Complementarity and Convergence of BG Effects

The fundamental reason for firms combining their resources is to create value in pursuit of realizing their potential synergy. RBV has been applied extensively to study the role of alliances in leveraging resource, capabilities and knowledge to obtain strategic objectives. The ISA partner complementarity has been defined in various ways in the extant literature. Some scholars have referred to it as the degree of similarity between organizational variables of two

---

[3] India currently ranks 63rd out of 190 countries in World Bank's Ease of Doing Business (EODB) report, 2020. It has improved its ranking by 79 positions in the last 5 years.

ISA partners along with convergence of their economic intent and at times as 'compatibility' (Park & Ungson, 1997). However, for this study we have used ISA partner complementarity, as the degree to which two firms' resources are interdependent and mutually supportive while being different from one another.

When two firms have more resource complementarity they are more likely to form an alliance as it enables them to learn through co-exploration and co-exploitation with lesser probability of economic disputes in competitive areas. The complementarity between ISA partners also indicate unfamiliarity which may lead to information asymmetries. Such conditions provide for an ISA to reduce redundancies while maximizing advantages. An ISA function is deeply affected by the partner level compatibility. In the Hypotheses 1, 2 and 3 we have argued for a divergence in the performance of BGAFs and NBGAFs when they opt for different alliance formation choices.

However, extant literature suggests that relative advantage of BGAFs in entering exploratory, broader scope and contractual ISAs may dampen with increase in partner complementarity. Institutional theory highlights the role of institution level factors, that may work against NBGAFs. Nevertheless, RBV supplements this theoretical gap by taking recourse to resource complementarity between partners which manifests in marginal costs of entering into an ISA and the liability of foreignness being compensated by the higher complementarity between ISA partners.

Above argument applies to BGAFs when they have to make choices between dichotomous ISAs. However, as the partner's complementarity grows the differential impact of alliance formation choices on BGAFs and NBGAFs may become lesser on performance. In other words, increase in partner's alliance related complementarity may reduce the alliance choices' effects on firm's performance. Consequently, the divergence of BG affiliation effect on performance in dichotomous alliance formation choices, as hypothesized above, will start converging as focal affiliate's alliance management competency increases. Hence, we posit that,

H$_4$: The divergence of the BG affiliation effect on the firm performance between dichotomous ISA formation choices (in terms of scope, structure and orientation as stated in Hypothesis 1, 2 and 3 respectively) weakens with the increase in partner complementarity.

**Institutional Evolution and Convergence of BG Effects**

Institutional perspective highlights the role of social, economic and political institutional environment in determining the resource accessibility for firms. This directly concerns the resource based view's emphasis on access to technological, marketing, social, financial and political resources for value creation. ISA mode of internationalization provides one of the best ways to obtain the critical resources in uncertain institutional context of emerging economies with immature and under-developed institutions and markets.

Emerging economies are characterized by wide scale labor, capital and land related reforms which intend to minimize the role of government and maximize the rule of invisible hand of market forces. In the early phase of evolution trajectory of institutions in an economy, the existence of institutional voids lead to relative arbitrage disadvantage for smaller or unaffiliated firms like NBGAFs as they lack the social network, political capital or financial resources to navigate through complex overregulated business ecosystem.

In the similar spirit, the 1991 LPG reforms in India (liberalization, privatization and globalization) have made playing field more equitable for both BGAFs and NBGAFs. The institutional evolution in this sense plays a diluting effect on the earlier lop-sided and skewed advantages enjoyed by BGAFs. Many laws such as Competition Commission Act (2002), Insolvency and Bankruptcy Code (2016) and Labor Code on Wages (2019) are paving the way for fair and equal opportunity to all the business players, be it BGAF or NBGAF.

As the institutions evolve, firms are compelled to enter into a new configuration of rules which can potentially alter its historical and future comparative and competitive advantages (Kim et al., 2010). Recent studies have shown how qualitative differences in incumbent institutional context influence the performance effects of BG affiliation (Carney et al., 2018). BGs substitute the deficiency in external markets for capital, labor, and other inputs by offering internal alternatives. (Castaldi et al., 2019). While forming international strategic alliances BGAFs enjoy superior performances with less devolved institutions. However, as the capital, labor markets and other institutions develop this divergence in performance due to affiliation status will diminish (Hu et al., 2019). Hence, we should expect that:

H$_5$: The divergence of the BG affiliation effect on the firm performance between dichotomous ISA formation choices (in terms of scope, structure and orientation as stated in Hypothesis 1, 2 and 3 respectively) weakens with the institutional evolution in the economy.

## III. Methods and Strategy of Inquiry

### Sample and Data Collection

Data was gathered from corporate announcements, press releases, India Business Insight Database (IBID), corporate annual reports and the CMIE Prowess database[4]. The SDC Platinum data was used to supplement the data related to the announcement of ISA and deal text obtained from the aforementioned sources. However, reliance on SDC data for ISA related information poses a challenge as it does not contain information of all the alliances (Lavie & Rosenkopf, 2006) and the termination dates of alliances is also not available (Schilling, 2009). Therefore, the reliance on multiple sources for data gathering addresses this limitation.

The financial data is taken from the Prowess database maintained by CMIE (Chittoor & Aulakh, 2015). The historical alliances were tracked back to the year 1995 in order to ensure the coverage of active alliances. The five-year window is in line with the standard regarding the typical duration of alliance (Lavie & Miller, 2008). Hypotheses were tested on the dataset which contained 466 firms out of which 224 were BGAFs and 242 were NBGAFs from India which formed bilateral ISAs with foreign partners. To be certain about the status of BG affiliation the data was supplemented from CMIE[5] with publically available information. CMIE is a reputed and comprehensive dataset that has coverage of firms accounting for 70% of India's industrial GVA and 75% of corporate taxes.

In line with the previous studies those firms which are operational in financial services and in whose ownership government has a stake were excluded (Chari & David, 2012) due to inconsistent comparability of returns from this industrial segment with the other segments of the economy (Khanna & Palepu, 2000a). The first criteria employed for sample selection was that the ISA should have been in existence for at least one year as some ISAs do not take off after announcement. The second criteria was on shortlisting only bilateral alliances with one partner in India and the other from a foreign country. This was done as the multilateral partnerships across international markets add another level of complexity to the analysis.

The sample includes 850 ISAs and an unbalanced panel dataset with 1816 firm-year observations from 2000 to 2018. Total alliances obtained from the SDC Platinum, IBID, press releases and corporate websites were 5342 which reduced to 3665 on removing the alliances with incomplete status. The multi-party alliances were excluded with retention of only bilateral alliances which reduced the sample size to 2554 out of which only 1476 were ISAs. After removing entries with no corresponding data in PROWESSdx, final ISA count for empirical analysis was 850. These were formed by 466 firms of which 224 were BGAFs and 242 were NBGAFs. The sample had a total of 187 unique BGs corresponding to 224 BGAFs in India. Further 380 firm observations were also eliminated as their ROA was more than 4 standard deviations away from sample mean, which could most likely be mistakes or misrepresentations (Khanna & Rivkin, 2001). The final sample in this study is an unbalanced panel of 1816 firm-year observations corresponding to 850 ISAs.

Since the last two decades post 1991-Balance of payment crisis Indian economy has underwent significant structural changes such as in financial, legal, labor and regulatory regimes and has also seen significant improvement in its economic institutions which provides an interesting context to test the hypothesized arguments (Chari & David, 2012). For the purpose of this study post-liberalization period i.e. 2000-2018 has been selected as during this period India witnessed significant global linkages via various modes of internationalization one among which is this study's focus i.e. ISA. The BGAFs with sales of less than $ 1 Million were dropped (Berger & Ofek, 1995). On an average there were more than 1 firm in each BG spread across three 2-digit SIC industries. The dependent variable has been capped at 1st and 99th percentile values.

## Measures

### Dependent Variables

**Performance (return on assets).** Profitability was taken as the financial performance measure based on prior research where performance consequences of international operations are studied (Contractor et al., 2003). This measure is also consistent with net benefit analysis of internationalization through ISAs. Profitability has been operationalized as returns on assets (ROA) which is commonly used in financial performance studies. Where,

---

[4] The data from the aforementioned sources was picked up manually on case to case basis. ISAs with bilateral partnerships in between 2000-2018 were shortlisted.

[5] Though a BG is not a legal contract, CMIE takes into account a variety of sources to classify firms into groups.

$$ROA = \frac{\sum \begin{array}{c} Operating\ profit\ before\ depreciation, taxes, \\ interest \\ and\ other\ amortization\ charges \end{array}}{\sum Total\ assets}$$

rather than alternative measures of profitability such as return on equity, which is also susceptible to capital structure differences among firms and return on sales that are based on revenue figures which are less relevant due to its limitation of being an effective measure for comparing firms in the same industry whereas in this sample 11 different two-digit SIC industries are used. However, for the validity and reliability of ROA as a measure these three measures were found to be positively correlated (p<0.001) in the sample. This variable captures the overall performance of the BGAFs in terms of its alliance function and the derived benefits from it and the favorability of institutional arrangements and reverse accumulative effect of value captured by members affiliated to it in comparison to NBGAFs.

**Market based measure of firm performance (Tobin's q).** In the additional analysis to check the robustness of our results we have used Tobin's Q as our dependent variable as presented in Table 4. Since the ISA formations lead to organizational learning which affects firm's performance outcomes. Such outcomes can be better captured by marketing based measure apart from accounting based measure (Lavie et al., 2011). It also provides benefit of capturing not just the current performance of the firm but also assessment of the future prospects. Chung and Pruitt (1994) have suggested the Tobin's q formula as:

$$Tobin's\ q = Market\ value\ of\ equity + Book\ value\ of\ preferred\ stock + Book\ value\ of\ debt/Total\ assets$$

However, to remove potential bias due to inclusion of accounting based measure MVA (Market value of assets) is calculated as the sum of market value of equity, book value of preferred stock and book value of debt while including total assets as the control measure in the market valuation equation (Lavie et al., 2011). MVA and total assets are standardized for getting their mean equal to zero and standard deviation equal to one for uniformity of unit of measurement.

**Independent Variables**

**Alliance formation choice variables**

This study aims at analysis of moderating effect of BG affiliation on the 'alliance formation choice–performance' relationship. In this study we have used binary classification of alliance formation choice variables like alliance scope, alliance governance structure and alliance learning orientation. Such a choice of variable was preferred over a continuous scale variable for the subsequent split sample analysis for conducting three-way interaction between BG dummy, alliance formation choice and convergent variables (i.e. partner complementarity and institutional evolution). However, in subsequent tests all the three binary alliance formation choice variables can be operationalized as a continuous variable as well with construction of spilt sample based on the median value of these variables as a standard splitter.

       **Alliance scope[6].** Based on ISA related information in SDC database, we created a dummy variable to measure the vertical scope of activities included in alliance. Scope equals 1 when alliance activities have a broader scope i.e. two or more than two activities are included in alliance— manufacturing, marketing, R&D, distribution etc. It is set to 0 when only 1 alliance activity is to be carried out (Oxley & Sampson, 2004).

       **Alliance governance structure[7].** Based on ISA related information in SDC database, we created a dummy variable to measure the governance structure of alliance. It is set to 0 when alliance is organized by contract and 1 when it is more hierarchical i.e. by equity joint venture (Oxley, 2004).

---

[6] The ISAs for this explanatory variable were coded manually. In order to eliminate the potential subjectivity of the single coder, inter-rater reliability test was conducted on randomly selected, around 13% of the (111) of the ISAs of the sample firms relying on the judgment of the two coders to identify ISAs as being with broader and narrower scope (Cohen. 1960; Uotila et al., 2009). The Cohen's kappa statistics indicate that the inter-rater reliability of the coding process was 0.861 (p < 0.001).

[7] Similar to alliance scope, the Cohen's kappa statistics indicate that the inter-rater reliability of the coding process was 0.804 (p < 0.001).

**Alliance learning orientation[8].** We created dummy variable which equals 0 when alliance learning orientation is exploitation and 1 for exploration (Yamakawa et al., 2011). We examined the alliance description in SDC database to code the alliances. The alliances with existing partners and for the purpose of marketing and resource sharing— licensing, advertising, and supplying were coded exploitative. Whereas, the alliances with new partners and focused on research, development and new technology were coded exploratory in nature (Yamakawa et al., 2011).

**Moderating variables for evaluation of divergent effect**

**Business group affiliation** (BG). Following previous research we operationalized firm's affiliation to a BG by a dummy variable, which equals 1 if the firm is affiliated to a BG and 0 otherwise, based on CMIE[9] classification (Khanna & Palepu, 2000b).

**Moderating variable for evaluation of convergent effect**

**Partner complementarity.** We operationalized it based on comparison of SIC codes between focal firm and its partner in alliance relation. It is based on the extant literature that more complementary value chain activities will be more frequently combined between a focal firm and its ISA partners (Wang & Zajac, 2007). This can be measured by using degree of complementarity between two SIC codes as a proxy for the degree of business complementarity between two ISA partners with these two primary SIC codes. The complementarity score measurement between a pair of SIC code $i$ and $j$ is performed in the following way:

$$Partner\ complementarity_{ij} = \frac{\vartheta_{ij} - \mu_{ij}}{\gamma_{ij}}$$

where,

$$\vartheta_{ij}\ is\ the\ number\ of\ times\ two\ SIC\ code\ will\ appear\ in\ one\ firm.$$

$$\mu_{ij} = \frac{n_i \times n_j}{F}$$

where, $n_i = Number\ of\ firms\ in\ SIC\ code\ i$; $n_j = Number\ of\ firms\ in\ SIC\ code\ j$;

$$F = Total\ number\ of\ firms$$

$$\gamma_{ij} = \sqrt{\mu_{ij} \times (1 - n_i/F) \times (F/(F-1)) \times (1 - n_j/F)}$$

**Institutional Evolution.** Based on prior studies it is operationalized through indicators of reforms index[10] (Chari & David, 2012) to determine the magnitude of market oriented reforms. This index captures the market oriented

---

[8] Similar to alliance scope, the Cohen's kappa statistics indicate that the inter-rater reliability of the coding process was 0.787 (p < 0.001).

[9] CMIE uses various sources to classify the firms based on their ownerships through continuous monitoring of firm's shareholding, new announcements, and a qualitative assessment of Groupwise behavior of firm's individually. However, CMIE's BG identification has certain limitations pertaining to its updation of the affiliation data which is done retrospectively leading to non-recording of year-by-year historical changes.

[10] Shareholder protection, Creditor Protection and Labor regulation were measured through *Ease of Doing Business Ranking* (World Bank) and *Global Competitiveness Report* by World Economic Forum (WEF). IPR protection index of Chari and David (2012) is used with corresponding trends in *World Intellectual Property Indicators* released by World Intellectual property Organization. *Tariff rate* trends were compiled from data released by World Trade Organization. FDI openness is measured through *FDI Regulatory Restrictiveness Index* released by Organization for Economic Co-operation and Development (OECD). We constructed a composite reforms index measure by using factor score derived from the above 5 indicators which were correlated to a large extent. Principal components factor analysis with varimax rotation was employed which gave a single factor score with an eigenvalue of 7.221 and a

facilitations in the economy by using an index of relaxations for foreign direct investment, lowering of tariffs, gradual alignment of intellectual property laws with global standards, and reforms in labor laws (Chari & David, 2012; Manikandan & Ramchandran, 2015).

## Control Variables

A broad spectrum of variables are included in this study to account for possible confounding effects of the main explanatory variables of this study (Khanna & Palepu, 2000a; Manikandan & Ramchandran, 2015). Prior studies have suggested that these variables may affect firm performance (Lavie et al., 2011; Yang et al., 2014). Therefore, by controlling for these variables alternative explanations of firm performance can be accounted for. We controlled for *Firm Size*, which is measured as the natural logarithm of the firm's net sales revenue for each year to control its effect on the competitive dynamics and potential to dominate partners in alliance (Baum et al., 2000). Further for the robustness tests using tobin's q as the performance measure, standardized value of *total assets* is used as a control variable in firm size which is in accordance with the q theory (Lavie et al., 2011). *Firm age*, is operationalized by subtracting the year of firm's incorporation from the alliance event year (Chittoor et al., 2015; Manikandan & Ramachandran, 2015). It is controlled because age differential can have a potential influence on alliance outcome.

we controlled for *firm leverage*, which is operationalized using debt-equity (net worth) ratio to control for the effect of capital structure configuration on the firm's ISA choices (Carney et al., 2011). R&D and marketing intensity expresses the firm's capability to venture into new technological and market segments, respectively which could affect firm's performance (Wang & Zajac, 2007). *R&D intensity* is operationalized as proportion of total expenses to revenue. *Marketing intensity* is operationalized by as proportion of $\sum$(marketing, advertising and distribution) expenses to revenue. To control for BG effect causing performance differences in firms two BG variables are also included. For BGAFs *BG size*, is calculated by the natural logarithm of the total assets of a firm's respective BG (Hu et al., 2019). *BG diversification*, is operationalized by the counting the SIC two digit equivalent industries in which the BG is operational (Khanna & Palepu, 2000a). Further to control for effect of previous domestic and international alliances *prior alliance experience* is operationalized by using count variables accounting for all alliances done by the BGAFs and NBGAFs in the last 5 years preceding the alliance completion year (Lavie & Miller, 2008).

## Statistical Method

We have used panel data regression for testing our hypotheses as our data has cross−sectional and longitudinal form. Our key variables of interest such as BG affiliation and some important control variables do not exhibit any variation with time and display a condition of very low within−panel variation in comparison to across−panel variation. In such type of dataset use of random effect specification over fixed effects is recommended as fixed effect model would also sop up most of the expository power of the variables which are changing slowly (Leiblein & Madsen, 2009). Therefore, results of *random effect specification* are reported here as fixed effect estimator in such cases could be inconsistent.

**Model Specification.** Our sample has multiple observations of ISAs of the BGAFs and NBGAFs. We used the *cross-sectional time-series regression models with random effect* to control for the reciprocality among groups (Lin et al., 2009). The equations used to test hypotheses 1 to 5 have the general form:

$P_{i,t} = \alpha_i + \beta_1$ [controls$_{i,t}$] $+ \beta_2$ alliance_formation_choices $+ \beta_3 BG_{i,t} + \beta_4 BG_{i,t} \times$ alliance_formation_choices $+ \beta_5$ Partner_complementarity $\times BG_{i,t} \times$ alliance_formation_choices $+ \beta_6$ Institution Evolution$\times BG_{i,t} \times$ alliance_formation_choices $+ u_i + \varepsilon_{i,t}$

in the above equations, first subscript is referring to firm i at time t, P denotes the firm performance, alliance_fomation_choices refers to the independent variables—alliance scope, structure and orientation. u represents the unobserved effect for individual firm and $\varepsilon_{i,t}$ refers to the error.

---

standardized Cronbach alpha of 0.956. The resultant API measure was centered with the mean equal to 4.98 and standard deviation equal to 0.56. High value of reform index indicates institutional evolution in the economy.

## IV. Results

### Descriptive statistics

Table 1 contains the means, standard deviations and the correlation matrices for all the variables of this study comprising both BGAFs and NBGAFs. We centered the explanatory and moderating variables for the interaction terms. On testing the collinearity analysis we found that for all the variables variance inflation factors (VIF) is less than 6 with mean VIF at 3.75, which suggests that multicollinearity is not an issue in this study.

----------------------------------
Insert Table 1 about here
----------------------------------

### Tests of Hypotheses

Table 3 reports the results of our random effect panel models. Model 1 includes all the control variables in this study and the baseline model. We find positive and significant coefficients for the variables related to alliance formation choices—alliance structure ($\beta= 0.55$, $p<0.05$) and alliance learning orientation ($\beta= 0.01$, $p<0.05$) whereas, for alliance scope the coefficient is negative and significant ($\beta= -0.22$, $p<0.05$). It shows that with increase in the vertical scope of activities due to increase in unrelated transactions the performance could decline for a firm. It suggests that alliance formation choices have a significant effect on performance of focal firms. Model 2 reports the result of interaction between BG dummy and alliance formation choices. Equations below are representative of hypotheses 4 and 5:

$$\Psi_{111} - \Psi_{011} > \Psi_{110} - \Psi_{010} \text{ (Convergence effect with increased partner complementarity)}$$
$$\Phi_{111} - \Phi_{011} \geq \Phi_{110} - \Phi_{010} \text{ (Convergence effect with increased institutional evolution)}$$

in the above inequality equations, $\Psi$ refers to the convergence of performance between BGAFs and NBGAFs with increase in partner complementarity and $\Phi$ refers to the convergence of performance between BGAFs and NBGAFs with increase in institutional evolution in the economy of India. The first subscript in both the equations is referring to BG affiliation status (1 if affiliated, 0 is not); the second subscript is referring to ISA formation choices (1 if alliance scope is broad/alliance structure is hierarchical/alliance orientation is exploratory, and 0 if otherwise) and the third subscript is referring to partner complementarity and institutional evolution (1 if the partner complementarity /institutional evolution is high, 0 otherwise).

The Model 2 shows the divergence or difference in financial performance of BGAFs and NBGAFs by exhibiting interaction effect between variables of alliance formation choice and BG dummy. These coefficient's significance confirms the theoretical arguments about divergence or difference between performance of BGAFs and NBGAFs as posited in hypotheses 1, 2 and 3. The coefficient of interaction term between BG dummy and alliance scope ($\beta= 0.23$, $p<0.001$) and orientation ($\beta= 0.19$, $p<0.001$) is positive and statistically significant showing that firms affiliated with BG will exhibit higher performance than non BG firms when the scope of their ISAs is broader and the learning orientation is more towards exploration.

This result supports Hypotheses 1 and 3 and also confirms the divergence of performance between BGAFs and NBGAFs. However, in case of governance structure of alliance the BG affiliated firms perform better than NBGAFs in contractual form of alliance ($\beta= -2.44$, $p<0.01$) which supports hypotheses 2. On testing above equations in Models 3−6 we find support for our theoretical arguments. Hypotheses 4 predicts that the divergence of performance between BGAFs and NBGAFs will reduce as the alliance partners' complementarity increases, leading to a convergence between performance of both BGAFs and NBGAFs.

We test this hypothesis through two sets of *split sample random effect panel models*. In the first set we compare alliances with low partner complementarity and high complementarity for which the results are reported in Model 3 and 4, respectively. If increased partner complementarity weakens the divergence between BGAFs and NBGAFs, we may expect to see a smaller and less significant interaction between BG and alliance formation choices in sub-sample of high partner complementarity.

Model 3 shows the interaction mentioned above remains positive and significant for alliance scope ($\beta= 1.26$, $p<0.01$), structure ($\beta= 0.29$, $p<0.01$) and orientation ($\beta= 0.21$, $p<0.001$) indicating that the alliance formation choices' influence that differentiates BG affiliation effect on firm performance is strong among ISAs with low complementarity partners. Model 4 (High partner competency subsample), however, returns a nonsignificant interaction for BG $\times$ ISA scope ($\beta= 0.35$, $p=0.81$); BG $\times$ ISA structure ($\beta= 3.36$, $p=0.77$); and BG $\times$ orientation ($\beta= 0.11$, $p=0.14$) showing that

NSWRCA

when partner's relative complementarity, absorptive capacity and experience increases the alliance choice influence diminishes. This result supports hypotheses 4. We have also conducted a z–score difference test on the interaction term coefficients between model 3 and 4 which resulted in test statistic (Z–score) is 2.01 which is significant (p= 0.01) and further supports hypotheses 4.

To test hypotheses 5 sample was split again into high degree of institutional evolution and low degree of institutional evolution, and the results are reported in model 5 and 6 respectively. To split the sample we arranged the firms in ascending order with ISAs in time period from low to high pro market reforms and found out the median value (Qian et al., 2010). If our convergence prediction holds, we expect to see that institutional evolution in an economy will weaken the divergent BG effect on firm's performance under ISA formation choices.

The coefficient of interaction term in low institutional evolution subsample shows positive and significant BG effect; BG × ISA scope (β= 2.16, p<0.001); BG × ISA structure (β= 0.56, p<0.05); and BG × orientation (β= 0.27, p<0.01). However, with increase in pro market reforms we expect to see this effect to be diminished. Model 6 shows that BG × ISA scope (β= 0.23, p<0.05); BG × ISA structure (β= 0.51, p=0.18) which is a nonsignificant interaction and BG × orientation (β= 0.34, p<0.05) which is significant. It supports our prediction for alliance structure and alliance scope strongly but for ISA orientation we find only moderate support. Hence, hypotheses 5 is moderately supported.

-----------------------------------
Insert Table 2 about here
-----------------------------------

**Robustness checks.** We performed a series of supplementary analysis to ascertain robustness of our results. In table 3 we have reported the results of our robustness analysis using generalized least square (GLS) panel regression method with inverse mills ratio to account for potential self-selection bias. GLS models offer correction for the presence of autocorrelation or heteroscedasticity in a pooled time-series data. It not only provides an opportunity to examine the intra cross-sectional unit variation but also variations within units over time. An underlying assumption is that regression parameters are time-invariant and also do not vary among various cross-sectional units which increases the reliability of the coefficients estimates. Wald test was conducted to ascertain the significance of the inclusion of each additional variable.

**Addressing endogeneity concerns.** The sample selection criteria of at least one active ISA of the firm between 2000-2018 introduces a potential bias where the observations may not be independent of the outcome variable along with possibility of some unobserved time variant factors such as familiarity or repeated ISA ties (Gulati & Singh, 1998). This may make the explanatory variable endogenous. To account for this potential selection bias, Heckman's (1979) two-stage procedure has been followed. In the first stage, we estimated a probit model which captures the decision to organize ISA activities under various ISA formation choices. In the second stage, firm's performance is estimated as the function of identified variables which will correct for self-selection using an index generated from the probit results. This index is referred to as the inverse mills ratio *(IMR) = f(z)/F(z),* where $z$ is the estimated value from the first stage ISA formation choice model, $f$ is standard normal density and $F$ is cumulative distribution function. The estimates from the second stage are generalized least square (GLS) estimates corrected for possible selection bias via inclusion of IMR as presented in Table 3.

*Is BG affiliation endogenous?* We examined the possibility that firms' BG affiliation could be self-selected either due to market power or superior prior performance which makes the BG variable potentially endogenous. Theoretically this possibility is not high as firms are not selected into BG on a yearly basis rather their affiliation status remains stable over time. However, to eliminate this possibility empirically we conducted endogeneity correction procedures with firm's market power and prior performance as instrument variables and the results are qualitatively consistent with results reported in Table 2 (Models 1 and 2).

-----------------------------------
Insert Table 3 about here
-----------------------------------

**Supplementary test.** Table 4 reports the additional tests we conducted with split samples of ISA scope (Models 1–2), ISA governance structure (Models 3–4) and ISA orientation (Models 5–6). Here, we have used Tobin's q as an alternate specification of dependent variable to view the impact of main variables and moderators on the market based measure of financial performance. Results remain qualitatively similar to those in Table 2 and 3. Figure 2 shows the 3-Dimensional interaction effects between main explanatory variables.

```
----------------------------------
        Insert Table 4 about here
----------------------------------

----------------------------------
        Insert Figure 2 about here
----------------------------------
```

## V. Discussion

Our understanding of BG is rooted in their institutional advantage. In this paper we augment it with organizational advantage by examining the value creating potential of ISAs formed by BG affiliated firms. Our study shows that BGAFs had a historical advantage over NBGAFs due to immature and underdeveloped institutional architecture. It is reflected in the initial divergence in the performance of BGAFs and NBGAFs owing to asynchronous and skewed resource allocation and inaccessibility. However, with ongoing corporate reforms this initial divergence is diminishing and is paving way for convergence in performance.

This shows the emergence of a level playing field for BGAFs and NBGAFs. Prime facie it may appear that BGAFs may lose relevance or traditional advantage over newer and smaller firms that are working in niche business domains with specific target customer. These apprehensions get emboldened with the creative destructions caused by disruptive technologies of industrial revolution 4.0. Though it lies beyond the scope of our study but current strategic shifts by BGAFs exhibit an evolutionary fitness where they are investing more in new startups and are shifting in strategic business areas like coal, mining, infrastructure development etc. Future research can be oriented to explore the possibility of this adaptability of BGAFs in a changed environment. Our study could be extended to show that BGs are not just substitutes of institutional voids but also how they are enhancing their evolutionary fitness in emerging market contexts.

This study shows how performance heterogeneity among firms arises from its strategic decisions and its affiliation status. Integrating the literature related to RBV in ISAs and institutional perspective in BGs we focus on differential impact of BG affiliation on firm performance when it opts for different alliance formation choices. Our study shows how performance heterogeneity among firms arises from its strategic decisions and its affiliation status.

We hypothesized that ISA formation choice imposes different expectations on firms and accordingly we investigated diverging effect of BGs, through its moderating effect. Our empirical analysis of a panel of large sample of BG affiliated and non-affiliated firms provides support to our organizational and institutional contingency hypotheses. This study is conducted at the interface of ISA-BG literature to shed some light on how alliance characteristics and institutional contexts affect value creation through ISA mode of internationalization. The theoretical significance of these ISA choices is rooted in the resource based view and institutional perspective.

While ISA are formed to configure resource base and improve accessibility to hitherto unavailable resource and capabilities, the institutional context to a large extent determines this accessibility, affordability and availability of resources to firms. In this context, ISA choices by firms play a pivotal role in maximizing the learning from partner to reduce information asymmetries and enhancing its own share from the collective value creation as an outcome of alliance. ISA choice of broader or narrower scope of alliances affect the market share, market penetration and risk reduction in foreign markets.

ISA choice of governance structure addresses the potential costs of opportunism and trust deficits that often exists between ISA partners. Though ISA formation choices can be quantified on a continuous scale but to enable split sample analysis a binary scale has been taken for convenient way of operationalization. Our empirical findings that BG affiliates perform better in ISAs provides a potential answer to the interesting empirical observation of high rate of ISAs among BGs.

More generally, this work extends the traditional *strategy−structure−performance paradigm* in the strategic management literature. This study investigates the subject matter of ISAs of BGAFs and NBGAFs at the interface of strategic, structural and performance related organizational outcomes. First, in terms of strategic outcomes, the ISAs act as a mode of diversification and internationalization. BGAFs utilize capital, technological, marketing and managerial resources of the BG for diversification (Chakrabarti et al., 2007). However, the unrelated diversification driven more by the BG requirements (McGuire & Dow, 2009) might have detrimental impact on the performance outcome of BGAFs. Prior studies have also highlighted that group affiliation gets benefit from diversification only in undeveloped institutional environments (Feenstra et al., 1999).

BGAFs being larger than NBGAFs, can absorb more operational and commercial risks (George & Kabir, 2012) and benefit from internationalization (Gaur et al., 2014) using either market seeking (Luo & Tung, 2007) or asset seeking strategies (Child & Rodrigues, 2005). However, BGAFs might have lesser international orientation due

to superior home advantages and strong internal network resource embeddedness (Uzzi, 1997). Second, structural aspect is highlighted when an organization's structure informs its strategic choice of ISAs with partners embedded in different institutional contexts. The ISA choice difference between hierarchically structured large BG affiliated firms is observed to be different from the unaffiliated firms. Such difference of strategy and structure also affects the performance consequences. Third, the performance of both BGAFs and NBGAFs is a function of their strategic choices and organizational structure. Higher financial outcomes of NBGAFs with increased partner complementarity and institutional evolution signifies the complementarity between their strategic choices and structural efficiencies.

We advanced the extant research of baseline influence of BG affiliation on performance consequences which remains a topic of interest and debate specifically. The influence of BG affiliation on different ISA formation choices leads to a divergence in performance and the convergence of this effect when ISA partner's complementarity as well as the institutional environment in an economy strengthens. Finally, the main aspiration and contribution of this paper is to show how ISAs of BGs are creating more value with pro market reforms and to move beyond the argument that BGs are largely an organizational anomaly.

**Contribution to the BG and ISA research.** Our study makes various contributions to the extant allied areas of research. First, we contribute to the BG literature, as much of the existing literature on BGs has focused on emergence of this organizational form as a systemic response to the institutional voids, however, there is less research on strategic choices and associated performance implications. Carney et al. (2011) cautioned scholars about ''drawing broad conclusions regarding institutional development'' and called for an approach of alternative mechanisms to explain the efficacy of BGAFs.

Our study contributes to this line of research by identifying how institutional development influences the organizational outcome in BGAFs. We have demonstrated that BG affiliation results in differential resource allocation mechanisms due to the home institutional environment's heterogeneity and results in diverse strategic choices when they form ISAs to internationalize. Second, by reviewing the existing BG literature and discussing important findings in key research areas of internationalization of BGAFs, it identified the gap area at the interface of ISA formed by BGAFs to internationalize. Third, it shows the impact of ISA formation choices on performance through a comparative account of both BGAFs and NBGAFs. Fourth, it enriches the resource based view by providing empirical evidence of different resource allocation mechanisms opted by BGAFs and NBGAFs to maximize their value creation.

Fifth, it augments the extant literature on institutional perspective by showing how BGAFs and NBGAFs are responding to evolving institutions in an EE like India. Sixth, this study sheds light on the impact of BG characteristics on the relationship between internationalization of BGAFs led by ISAs. It provides insightful examination of the ISA mode of Internationalization to assess its impact on the financial performance, thus enabling a holistic understanding of the corporate strategies and their impact on the internationalization and performance of the firms with a peculiarity of BGAFs and assists in the development of an agenda for future research. Finally, empirically this study contributes in several ways by taking into consideration the interdependent structure between a firm's ISA features and its BG affiliation status in explicating the BGAF performance and how the diverse institutional expectations alter associated legitimacy requirements to influence organizational strategies.

**Managerial and Public Policy Implications.** It apprises practitioners regarding the internationalization outcomes of their dichotomous alliance formation choices and suggests ways and means imperative for enhanced overseas outreach with financially sound outcomes. The practitioners working in these firms whether BGAF or NBGAF will get significant information on the behavior characteristics of their firms with respect to alliance, which will help in optimizing resource allocations, deal contracts and will show promising areas for forming ISA with their partners.

The benefits associated with learning how BGAFs navigate through institutional voids can be extended to other emerging economies, but emphasis should be given on how resource allocation functions and ISAs will react to the differences. As BGAFs internationalize, their performance persistence will change depending upon the institutional context of foreign markets and the role of coordinated resource prioritization will increase even more. For policymakers, it provides potential areas to create an enabling regulatory and facilitative business ecosystem for the flourishing of both BG and non-BG firms in emerging markets.

## VI. Conclusion

BGs have a striking presence in the competitive environment of many economies across the globe. This study had twin objectives. First, it aimed to look at ISA-performance behavior of BGAFs and NBGAFs through comparative analysis. Second, it examined how the initial divergence between the ISA-performance behavior of a BGAF and NBGAFs will start converging on increase in the levels of ISA partner complementarity and evolution of institutions

in an EE. The empirical studies were conducted to test the aforementioned theoretical arguments which support that BG affiliation effect is more pronounced when ISA's scope is larger, ISA's orientation is towards exploration and ISA's governance structure is contractual. Furthermore, the initial divergence between BGAFs and NBGAFs on account of different outcomes of their ISA formation choices starts converging on increase in partner complementarity and institutional evolution. ISAs formed by the firms are a mode of internationalization for mobilizing resources and developing capabilities across the firm's boundaries as per resource-based view. However, the subject matter of this study is BGAF which operate generally in late industrializing or emerging economies e.g. India. This operating space of BGAFs is coexistent with immature institutions. Extant studies have generally called BGs an anomaly particular to EE context. Contribution of this study is to shed light on this argument by extending theoretical arguments and testing of data of firms pertaining to 19 years which proves that BGAFs and NBGAFs are existing along with the phenomenon of evolution of institutions e.g. Indian case of flourishing BGAFs and NBGAFs after 1991 economic reforms. In conclusion, despite the aforementioned limitations, this analysis offers theoretical arguments and evidence about distinct ISA-performance relationship of BGAFs. More critically, we show that strategic choices for internationalization such as ISAs in a BG deserve independent scholarly attention.

**Limitations and Future Research Directions**

We acknowledge several limitations of our study which also provides basis for potential future research. Replication studies in other institutional environment could be carried to address the limitation of single country empirical context to confirm our expectation of generalizability and external validity. The descriptive comparative approach we adopted has benefits of possibility of theory development but also has limitations in terms of small number of comparative cases and the complexity of isolating the theorized mechanisms. Firm performance being multidimensional construct future research can explore the influence of BG affiliation on other aspects of firm performance such as innovative performance (Aggarwal & Kapoor, 2019). Constraint regarding data reliability can be overcome by more refined and robust data (Hu et al., 2019). Future work can use more granular measure than the BG dummy to reflect the linkage between BG and its affiliates. BG affiliation effect is susceptible to change with time as the essence of this effect is itself changing.

**REFERENCES**

Aggarwal, V.S., Kapoor, M. (2019). Knowledge transfer among international strategic alliance partners and its impact on innovation performance. *International Journal of Strategic Business Alliances*, 6(4), 203 – 216.
Aguilera, R. V., Crespí-Cladera, R., Infantes, P. M., Pascual-Fuster, B. (2020). Business groups and internationalization: Effective identification and future agenda. *Journal of World Business*, *55*(4), Article 101050.
Barney, J.B. (1991). Firm resources and sustainable competitive advantage. *Journal of Management*, 17, 99-120.
Baum, J. A. C., Calabrese, T., Silverman, B.S. (2000). Don't go it alone: alliance network composition and startups' performance in Canadian biotechnology. *Strategic Management Journal*, 21, 267-294.
Belenzon, S., Hashai, N., Patacconi, A. (2019). The architecture of attention: Group structure and subsidiary autonomy. *Strategic Management Journal*, *40*(10), 1610–1643.
Berger, P.G., Ofek, E. (1995). Diversification's effects on firm value. *Journal of Financial Economics*, 37, 39-65.
Bucheli, M., Salvaj, E., Kim, M. (2019). Better together: How multinationals come together with business groups in times of economic and political transitions. *Global Strategy Journal*, *9*(2), 176–207.
Carney, M., Gedajlovic, E.R., Heugens, P.P.M.A.R., Van, E.M., Van, O.J.H. (2011). Business group affiliation, performance, context, and strategy: A meta-analysis. *Academy of Management Journal*, 54(3), 437-460.
Carney, M., Van Essen, M., Estrin, S., Shapiro, D. (2018). Business Groups reconsidered: Beyond paragons and parasites. *Academy of Management Perspectives*, *32*(4), 493–516.
Castaldi, S., Gubbi, S., Kunst, V. E., & Beugelsdijk, S. (2019). Business group affiliation and foreign subsidiary performance. *Global Strategy Journal*, 9(4), 595-617.
Chakrabarti, A., Singh, K., Mahmood, I. (2007). Diversification and performance: Evidence from East Asian firms. *Strategic Management Journal*, 28,101-120.
Chari, M. D. R., David, P. (2012). Sustaining superior performance in an emerging economy: An empirical test in the Indian context. *Strategic Management Journal*, 33(2), 217-229.
Chen, I.F., Chang, S.C. (2016). The intra business group effects of alliance network extensions. *Management Decision*, 54(6), 1420-1442.

Child, J., Rodrigues, S.B. (2005). The internationalization of Chinese firms: A case for theoretical extension? *Management and Organizational Review*, 1, 381-410.

Chittoor, R., Aulakh, P. S., Ray, S. (2015). What Drives Overseas Acquisitions by Indian Firms? A Behavioral Risk-Taking Perspective. *Management International Review*, 55(2), 255-275.

Chittoor, R., Kale, P., Puranam, P. (2015). Business groups in developing capital markets: Towards a complementarity perspective. *Strategic Management Journal*, 36,1277-1296.

Chung, H.M., Chan, S.T. (2012). Ownership structure, family leadership, and performance of affiliate firms in large family business groups. *Asia Pacific Journal of Management*, 29, 303: 329.

Chung, K.H., Pruitt, S.W. (1994). A Simple Approximation of Tobin's q. *Financial Management*. 23(3), 70-74.

Contractor, F. J., Kundu, S. K., Hsu, C. (2003). A three- stage theory of international expansion: The link between multinationality and performance in the service sector. *Journal of International Business Studies*, 34, 5–18.

Dau, L. A., Morck, R., Yeung, B. Y. (2021). Business groups and the study of international business: A Coasean synthesis and extension. *Journal of International Business Studies*, 52(2), 161-211.

Delios, A., Beamish, P.W. (1999). Ownership strategy of Japanese firms: transactional, institutional and experience influences. *Strategic Management Journal*, 20(10), 915-933.

Denis, D.J., Denis, D.K. and Yost, K. (2002). Global Diversification, Industrial. *The Journal of Finance*, 5,1951-1979.

Dhir, S., Mital, A. (2013). Asymmetric motives in Indian bilateral cross-border joint ventures with G7 nations: impact of relative partner characteristics and initial conditions. *International Journal of Strategic Business Alliances*, 3(1),69 – 92.

Dowling, G., Pfeffer, J. (1975). Organizational legitimacy: Social values and organizational behavior. *Pacific Sociological Review*, 18,122-136.

Feenstra, R., Yang, T. H., Hamilton, G. G. (1999). Business groups and product variety in trade: evidence from South Korea, Taiwan and Japan. *Journal of International Economics*, 48,71–100.

Gaur, A. S., Kumar, V. (2009). International Diversification, Business Group Affiliation and Firm Performance: Empirical Evidence from India. *British Journal of Management*, 20, 172-186.

Gaur, A. S., Kumar, V., Singh, D. (2014). Resources, institutions and internationalization process of emerging economy firms. *Journal of World Business*, 49(1), 12-20.

Gaur, A. S., Pattnaik, C., Singh, D., Lee, J. Y. (2019). Internalization advantage and subsidiary performance: The role of business group affiliation and host country characteristics. *Journal of International Business Studies*, 50(8), 1253–1282.

Gebrekidan, D.A., Mukhtar, S.M. (2017). Determinants of the international strategic alliance process and alliance failure: learning from the Volvo-Renault break-up. *International Journal of Strategic Business Alliances*, 6, 86 – 110.

George, R., Kabir, R. (2012). Heterogeneity in business groups and the corporate diversification–firm performance relationship. *Journal of Business Research*, 65, 412-420.

Geringer, J.M., Tallman, S., Olsen, D.M. (2000). Product and international diversification among Japanese multinational firms. *Strategic Management Journal*. 21, 51-80.

Glaister, K. W., Buckley, P. J. (1997). Task related and partner-related selection criteria in UK international joint ventures. *British journal of Management*, 8, 199-222.

Gopal, S., Manikandan, K. S., Ramachandran, J. (2021). Are There Limits to Diversification in Emerging Economies? Distinguishing between Firm-Level and Business Group Strategies. *Journal of Management Studies*, 58(6), 1532-1568.

Gulati, R., Singh, H. (1998). The architecture of cooperation: Managing coordination costs and appropriation concerns in strategic alliances. *Administrative Science Quarterly*, 43, 781-814.

Heckman, J. (1979).  Sample selection bias as a specification error, *Econometrica,* 47,153–162.

Hennart, J.F. (1988). A transaction costs theory of equity joint ventures. *Strategic Management Journal*, 9(4) ,361–374.

Hitt, M. A., Bierman, L., Uhlenbruck, K. Shimizu, K. (2006). The importance of resources in the internationalization of professional service firms: the good, the bad, and the ugly. *Academy of Management Journal*, 49,1137–1157.

Hitt, M., Hoskisson, R., Kim, H. (1997). International diversification: Effects on innovation and firm performance in product-diversified firms. *Academy of Management Journal,* 40(4), 767–798.

Hitt, M.A., Dacin, M.T., Levitas, E., Arregle, J.L.,Borza, A. (2000). Partner Selection in Emerging and Developed Market Contexts: Resource-Based and Organizational Learning Perspectives. *Academy of Management*, 43(3), 449-467.

Holmes, R. M., Hoskisson, R. E., Kim, H., Wan, W. P., Holcomb, T. R. (2018). International strategy and business groups: A review and future research agenda. *Journal of World Business*, *53*(2), 134–150.

Hu, H. W., Cui, L., Aulakh, P. S. (2019). State capitalism and performance persistence of business group-affiliated firms: A comparative study of China and India. *Journal of International Business Studies*, 50,193–222.

Khanna, T., Palepu, K. (1997). Why focused strategies may be wrong for emerging markets? *Harvard Business Review*, 75(4), 41–51.

Khanna, T., Palepu, K. (2000). Is group affiliation profitable in emerging markets? An analysis of diversified Indian Business groups. *Journal of Finance*, 55(2), 867-891.

Khanna, T., Palepu, K. (2000). The future of business groups in emerging markets: Long run evidence from Chile. *Academy of Management Journal*, 43(3), 268-285.

Khanna, T., Palepu, K. (2006). Emerging Giants: Building world-class companies in developing countries. *Harvard Business Review*, 84(10), 60–69.

Khanna, T., Rivkin, J.W. (2001). Estimating the performance effects of business groups in emerging markets. *Strategic Management Journal,* 22(1), 45–74.

Kim, H., Hoskisson, R. E., Wan, W. P. (2004). Power dependence, diversification strategy and performance in keiretsu member firms. *Strategic Management Journal*, 25, 613–36.

Kim, H., Kim, H., Hoskisson, R. E. (2010). Does market-oriented institutional change in an emerging economy make business-group affiliated multinationals perform better? An institution-based view. *Journal of International Business Studies*, 41,1141-1160.

Kogut, B. (1988). Joint ventures: Theoretical and empirical perspectives. *Strategic Management Journal*, 9(4), 319-332.

Kogut, B., Zander, U. (1992). Knowledge of the firm, combinative capabilities and the replication of technology. *Organization Science*, 3, 383-397.

Lavie, D., Kang, J., Rosenkopf, L. (2011). Balance within and across domains: The performance implications of exploration and exploitation in alliances. *Organization Science*, 22, 1517-1538.

Lavie, D., Miller, S. (2008). Alliance portfolio internationalization and firm performance. *Organization Science*.19, 623-646.

Lavie, D., Rosenkopf, L. (2006). Balancing exploration and exploitation in alliance formation. *Academy of Management Journal.* 49(4), 797-818.

Leiblein, M. J., Madsen, T. (2009). Unbundling competitive heterogeneity: incentive structures and capability influences on technological innovation. *Strategic Management Journal*, 30(7), 711-735.

Lin, Z. J., Yang, H., Arya, B. (2009). Alliance partners and firm performance: Resource complementarity and status association. *Strategic Management Journal*, 30, 921-940.

Lu, J.W., Beamish, P.W. (2001). The internationalization and performance Of SMEs. *Strategic Management Journal*. 22, 565-586.

Luo, Y., Tung, R. (2007). International expansion of emerging market enterprises: A springboard perspective. *Journal of International Business Studies*, 38(4), 481-498.

Manikandan, K. S., Ramachandran, J. (2015). Beyond institutional voids: Business groups, incomplete markets, and organizational form. *Strategic Management Journal*, 36, 598-617.

Mathews, J. A. (2006). Dragon multinationals: New players in 21st century globalization. *Asia Pacific Journal of Management*, 23(1), 5-27.

McGuire, J. B., Dow, S. (2009). Japanese keiretsu: Past, present, future. *Asia Pacific Journal of Management*, 26, 333-351.

North, D.C. (1990). Institutions, Institutional Change and Economic Performance. Cambridge University Press.

Oliver, C. (1997). Sustainable competitive advantage: combining institutional and resource-based views. *Strategic Management Journal*, 18(9), 697-713.

Oxley, J. E., Sampson, R. C. (2004). The scope and governance of international R&D alliances. *Strategic Management Journal*, 25, 723-749.

Park, S. H., Ungson, G. R. (1997). The effect of national culture, organizational complementarity, and economic motivation on joint venture dissolution. *Academy of Management Journal*, 40, 270–307.

Pfeffer, J., Salancik, G. (1978). The External Control of Organizations: A Resource-dependence Perspective. New York: Harper & Row.

Prahalad, C. K., Hamel, G. (1990). The core competence of the corporation, *Harvard Business Review*, 79-91.

Ramamurti, R. (2012). What is really different about emerging market multinationals? *Global Strategy Journal*, 2,41-47.

NSWRCA

Reuer, J. R., Zollo, M., Singh, H. (2002). Post-formation dynamics in strategic alliances. *Strategic Management Journal*, 23(2), 135-151.

Teng, B. S., Das, T.K. (2008). Governance structure choice in strategic alliances. *Management Decision*, 46(5), 725-742.

Uzzi, B. (1997). Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative Science Quarterly*, 42(1), 35-67.

Vahlne, J.-E., Johanson, J. (2020). The Uppsala model: Networks and micro-foundations. *Journal of International Business Studies*, *51*(1), 4–10.

Wan, W.P., Hoskisson, R. (2003). Home country environments, corporate diversification strategies, and firm performance. *Academy of Management Journal*, 46(1), 27–45.

Wang, L., Zajac, E. J. (2007). Alliance or acquisition? A dyadic perspective on interfirm resource combinations. *Strategic Management Journal*, 28, 1291-1317.

Yamakawa, Y., Yang, H., Lin, Z. J. (2011). Exploration versus exploitation in alliance portfolio: Performance implications of organizational, strategic, and environmental fit. *Research Policy*, 40, 287-296.

## About Authors

**Dr. Divya Mishra,** fpm17015@iiml.ac.in, Indian Institute of Management Lucknow, India (Corresponding Author)
Divya Mishra is a PhD Student, Indian Institute of Management Lucknow, India in the Strategic Management area. She is a Bachelor of Technology (B.Tech.) and also has 3 years industrial experience as Operations Manager. Her research interests include international strategic alliances, internationalization, emerging economy firms (EEFs) and business groups. She has presented in leading conference proceedings nationally and internationally.

**Amita Mital,** amita@iiml.ac.in, Indian Institute of Management Lucknow, India

Dr. Amita Mital is a Professor in the Strategic Management Group at IIM Lucknow since 2006. Prior to joining academics, she worked for over 18 years with Indian Oil Corporation, India's largest company with a turnover of Rs. 4.5 trillion. She has several publications including articles and books. Apart from teaching and research, she is a prolific case writer who has published 39 case studies from varied industries across India and Europe in the field of strategic management with Ivey, European Case Clearing House (now Case Center) and other reputed publishers. Her teaching and research interests are in strategic management, strategic alliances, strategic change, and management of change and transformation.

Table 1

Descriptive Statistics and Correlations

| Variables | Mean | S.D. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROA | 0.05 | 0.18 | 1.00 | | | | | | | | | | | | | | |
| Firm size | 3.18 | 1.92 | 0.21 | 1.00 | | | | | | | | | | | | | |
| Firm age | 20.21 | 18.73 | 0.03** | 0.02 | 1.00 | | | | | | | | | | | | |
| Leverage | 0.85 | 2.61 | 0.05 | 0.15* | −0.02* | 1.00 | | | | | | | | | | | |
| Marketing intensity | 0.04 | 0.05 | −0.06* | 0.06* | 0.06** | 0.01 | 1.00 | | | | | | | | | | |
| R&D intensity | 0.00 | 0.02 | 0.05* | 0.17** | 0.05 | 0.00 | 0.07 | 1.00 | | | | | | | | | |
| BG size | 1.56 | 4.41 | 0.27 | 0.34* | 0.03* | 0.04 | −0.03* | 0.02** | 1.00 | | | | | | | | |
| BG diversification | 2.13 | 3.35 | 0.01 | 0.18 | 0.12* | 0.00 | 0.02 | 0.03 | 0.50* | 1.00 | | | | | | | |
| BG (dummy) | 0.32 | 0.47 | 0.02 | 0.27* | 0.15 | 0.01 | 0.07 | 0.08** | 0.45* | 0.65 | 1.00 | | | | | | |
| Prior alliance experience | 3.35 | 4.42 | 0.28 | 0.36 | 0.47* | 0.38 | 0.21 | 0.33* | 0.03* | 0.07 | 0.15* | 1.00 | | | | | |
| Alliance scope | 0.37 | 0.84 | −0.05* | 0.07** | 0.10* | 0.23** | 0.20* | 0.34 | 0.06** | 0.05* | 0.01** | 0.03* | 1.00 | | | | |
| Alliance governance | 0.20 | 0.40 | 0.10 | 0.00 | -0.05 | 0.02* | 0.04* | 0.12* | 0.05 | −0.01 | −0.03 | 0.18* | 0.17 | 1.00 | | | |
| Alliance orientation | 0.31 | 0.67 | 0.56** | 0.04 | 0.00 | 0.06* | -0.06 | 0.37* | 0.07* | 0.03* | 0.15* | 0.06* | 0.12 | 0.06* | 1.00 | | |
| Partner complementarity | 1.56 | 6.18 | 0.03* | 0.01* | 0.02* | 0.03 | 0.09* | 0.06 | 0.00 | 0.03 | 0.02** | 0.01* | −0.06 | 0.09 | 0.21* | 1.00 | |
| Institution evolution | 4.98 | 0.56 | 0.45 | 0.07* | 0.34 | 0.10* | 0.56* | 0.41* | 0.12** | 0.27* | −0.16** | 0.06* | 0.13* | 0.25* | 0.02* | 0.05* | 1.00 |

*Note*: $N = 1816$.

*p < .05.

**p < .01.

***p < .001.

NSWRCA

Table 2

Hypotheses Test Using Random–Effect Panel Model

| RE Models | Full Sample | | Three way interaction with convergent effect variables (partner complementarity and institutional evolution) | | | |
|---|---|---|---|---|---|---|
| | | | Partner complementarity (Low) | Partner complementarity (High) | Institutional evolution (Low) | Institutional evolution (High) |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| Constant | 8.05*** | 6.80*** | 5.92** | 9.80** | 6.46** | 11.27*** |
| | (1.85) | (1.86) | (1.96) | (0.01) | (2.10) | (2.66) |
| **Control variables** | | | | | | |
| Firm size | 0.42** | 0.45*** | 0.39* | 0.16** | 2.17* | 3.11** |
| | (0.15) | (0.15) | (0.02) | (0.03) | (0.05) | (0.11) |
| Firm age | −0.01* | −0.01* | −2.17* | −1.39 | 6.34** | 11.14* |
| | (0.02) | (0.02) | (1.45) | (1.15) | (0.06) | (2.90) |
| Leverage | 0.15*** | 0.16*** | 3.89 | 7.01* | 4.12** | 3.11 |
| | (0.03) | (0.03) | (0.09) | (0.01) | (0.04) | (0.05) |
| Marketing intensity | 0.01 | 0.01 | 2.16* | 6.15** | 0.05 | 1.16 |
| | (0.03) | (0.03) | (0.02) | (0.02) | (0.30) | (0.07) |
| R&D intensity | 0.02*** | 0.02*** | 0.07* | 0.08 | 1.15** | 2.88 |
| | (0.01) | (0.01) | (0.04) | (0.05) | (1.13) | (1.88) |
| BG size | −0.05 | −0.01 | 1.12* | 2.67** | 3.33 | 4.45* |
| | (0.03) | (0.02) | (0.06) | (1.89) | (0.02) | (0.01) |
| BG diversification | 0.06* | 0.03 | 4.15 | 5.67* | 0.23 | 1.45* |
| | (0.03) | (0.03) | (0.01) | (1.15) | (0.03) | (0.01) |
| BG | 0.30 | 0.97 | 0.89* | 1.12** | 3.11 | 4.22* |
| (BG dummy) | (0.44) | (0.68) | (1.13) | (0.05) | (0.03) | (0.09) |
| Prior alliance experience | 0.041*** | 0.043** | 0.042** | 0.044** | 0.041** | 0.040** |
| | (0.001) | (0.002) | (0.002) | (0.002) | (0.002) | (0.003) |
| **Main variables** | | | | | | |
| Alliance scope | −0.22* | −0.17 | 1.12 | −2.56* | 2.21* | 3.56 |
| | (0.36) | (0.17) | (0.03) | (0.05) | (0.11) | (0.90) |

NSWRCA

| | | | | | | |
|---|---|---|---|---|---|---|
| Alliance governance structure | 0.55* | 0.53* | 1.06 | 2.67* | 0.56 | 1.67* |
| | (0.29) | (0.35) | (0.15) | (0.20) | (0.88) | (1.67) |
| Alliance orientation | 0.01* | 0.03 | 0.67* | 1.56 | 2.89 | 3.18 |
| | (0.01) | (0.01) | (0.02) | (0.30) | (0.01) | (2.45) |
| Partner complementarity | 0.02** | 0.03 | | | 1.17 | 2.59* |
| | (0.04) | (0.04) | | | (0.05) | (0.03) |
| Institution evolution | 0.09** | 0.07** | 2.56 | 3.33 | | |
| | (0.12) | (0.21) | (0.05) | (0.01) | | |
| **Interactions** | | | | | | |
| BG × Alliance scope | | 0.23*** | 1.26** | 0.35 | 2.16*** | 0.23 |
| | | (0.03) | (0.16) | (0.81) | (0.20) | (0.09) |
| BG × Alliance governance structure | | −2.44** | −0.29** | 3.36 | 0.56* | 0.51 |
| | | (0.10) | (0.05) | (0.77) | (0.04) | (0.18) |
| BG × Alliance orientation | | 0.19*** | 0.21*** | 0.11 | 0.27** | 0.34* |
| | | (0.12) | (0.03) | (0.14) | (0.06) | (0.16) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Wald $\chi^2$ | 768.66*** | 791.00*** | 662.89*** | 167.18*** | 436.05*** | 220.60*** |
| N | 1816 | 1816 | 766 | 1050 | 850 | 966 |

*Notes:* Unstandardized regression coefficients with standard errors in parenthesis.

*p < .05.

**p < .01.

***p < .001.

NSWRCA

Table 3

Robustness Tests: Generalized least square estimation (GLS) of the panel data for performance of the firms

| Model | Baseline Model | | Multilevel models with interaction effects | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dependent variable: ROA | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 |
| Constant | 10.15*** | 10.09** | 2.20*** | 8.88*** | 9.90*** | 12.44*** | 10.12** | 9.56* | 5.43* | 6.66* |
| | (2.67) | (1.90) | (0.06) | (0.10) | (0.02) | (0.01) | (0.02) | (0.04) | (0.23) | (0.00) |
| Firm size | 2.66** | 0.52* | 0.20** | 2.10* | 2.80** | 5.55* | 3.44* | 3.88* | 3.56 | 4.50* |
| | (2.15) | (0.09) | (0.02) | (0.55) | (0.01) | (0.02) | (0.00) | (0.43) | (0.01) | (0.03) |
| Firm age | −0.23* | −1.14* | −3.31 | 2.66** | 6.60* | −0.78** | 0.65 | −0.45** | −0.40* | −0.33** |
| | (1.42) | (2.45) | (0.03) | (0.03) | (0.03) | (0.01) | (0.21) | (0.00) | (0.04) | (0.07) |
| Leverage | 0.20** | 3.78 | 5.60** | 5.77** | 0.67* | 3.56* | 2.35* | 1.13* | 1.37* | 2.25 |
| | (0.04) | (0.10) | (0.02) | (0.08) | (0.01) | (0.70) | (0.05) | (0.05) | (0.00) | (0.01) |
| Marketing intensity | 0.16 | 2.80* | 7.33** | 0.01* | 2.78* | 3.87* | 3.56* | 3.78 | 4.66 | 4.78* |
| | (1.33) | (0.01) | (0.08) | (0.36) | (0.06) | (2.66) | (0.04) | (0.56) | (0.22) | (0.08) |
| R&D intensity | 0.34** | 0.10* | 0.56* | 3.88** | 2.90* | 4.78* | 5.54 | 5.09 | 4.55 | 3.87* |
| | (0.03) | (0.06) | (0.06) | (1.00) | (1.80) | (0.01) | (0.00) | (0.00) | (0.01) | (0.04) |
| BG size | −5.55 | 2.55* | 2.00** | 0.90 | 5.00* | 5.70* | 5.05 | 4.90 | 2.67* | 3.49 |
| | (2.03) | (0.86) | (1.80) | (0.22) | (0.06) | (0.01) | (0.02) | (0.01) | (0.70) | (0.06) |
| BG diversification | 0.66* | 0.08* | 2.37* | 0.56 | 1.40* | 4.74* | 1.45 | 2.77* | 2.56 | 2.31 |
| | (1.03) | (0.08) | (2.34) | (0.09) | (1.88) | (0.03) | (0.08) | (0.00) | (0.02) | (0.05) |
| Prior alliance experience | 0.05* | 0.03* | 0.06* | 0.04* | 0.01* | 0.07* | 0.21 | 0.34* | 0.068 | 0.76 |
| | (0.051) | (0.052) | (0.052) | (0.052) | (0.052) | (0.053) | (0.04) | (0.04) | (0.00) | (0.00) |
| BG | 0.32* | 0.29* | 1.19*** | 3.33 | 5.80* | 0.80** | 0.33* | 0.51 | 0.45* | 0.032* |
| | (0.00) | (1.63) | (0.09) | (0.01) | (0.99) | (0.05) | (0.04) | (0.00) | (0.05) | (0.07) |
| Alliance scope | −2.13** | 2.67* | 3.56* | 2.90* | 3.11 | 2.46* | 2.89 | 3.55 | 4.44 | 5.56* |
| | (0.90) | (0.73) | (0.00) | (0.04) | (0.00) | (0.05) | (0.05) | (0.04) | (0.00) | (0.00) |
| Alliance governance structure | 0.50* | 3.50** | 3.67* | 4.49 | 4.47* | 3.56* | 2.48 | 2.90 | 3.12** | 3.18 |
| | (0.20) | (1.20) | (0.01) | (0.00) | (0.00) | (0.05) | (0.01) | (0.07) | (0.00) | (0.00) |
| Alliance orientation | 2.67* | 0.02 | 2.45* | 3.66* | 4.44 | 2.45* | 3.33 | 0.96* | 1.45 | 2.22 |
| | (0.11) | (0.08) | (0.00) | (0.02) | (0.09) | (0.00) | (0.65) | (0.00) | (0.00) | (0.00) |

NSWRCA

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Partner complementarity | 1.56* (0.06) | 1.40 (0.01) | 0.32 (0.09) | 0.67 (0.00) | 2.56 (0.04) | 0.45* (0.71) | 0.69* (0.00) | 0.32* (0.05) | 0.45* (0.00) | 2.34* (0.00) |
| Institution evolution | 3.55** (0.07) | 1.35* (0.04) | 1.22 (0.00) | 1.45* (0.01) | 1.38 (0.02) | 3.55** (0.07) | 3.67 (0.00) | 3.45 (0.00) | 2.45 (0.05) | 2.00 (0.00) |
| BG × Alliance scope | | 3.30*** (0.10) | 3.23* (0.00) | 2.34** (0.00) | | | | | | |
| BG × Alliance scope × Partner complementarity | | | 2.23 (0.006) | 2.37 (2.12) | | | | | | |
| BG × Alliance scope × Institution evolution | | | | 3.34 (0.009) | | | | | | |
| BG × Alliance governance structure | | | | | −0.45** (0.37) | −0.45** (0.37) | −0.45** (0.37) | | | |
| BG × Alliance governance structure× Partner complementarity | | | | | | −0.05 (0.00) | −0.04 (0.00) | | | |
| BG × Alliance governance structure× Institution evolution | | | | | | | 0.45 (0.08) | | | |
| BG × Alliance orientation | | | | | | | | 6.77*** (0.01) | 5.50* (0.05) | 5.19** (0.05) |
| BG × Alliance orientation× Partner complementarity | | | | | | | | | 4.67 (0.04) | 3.58 (0.00) |
| BG × Alliance orientation× | | | | | | | | | | 2.59* (0.06) |

| Institution evolution | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inverse mills ratio | 0.35* | 0.46* | 0.40* | 0.87** | 0.75* | 0.54 | 0.56 | 0.38* | 0.46* | 0.56* |
| | (0.01) | (0.00) | (0.03) | (0.00) | (0.03) | (0.00) | (0.05) | (0.21) | (0.02) | (0.04) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Wald $\chi^2$ | 512.30*** | 489.06** | 445.65*** | 506.13*** | 519.87*** | 418.34*** | 390.30*** | 380.44*** | 350.60*** | 356.56*** |
| N | 1789 | 1816 | 1816 | 1816 | 1816 | 1816 | 1816 | 1816 | 1816 | 1816 |

*Notes:* Unstandardized regression coefficients with standard errors in parenthesis.

*p < .05.

**p < .01.

***p < .001.

Table 4

Supplementary Test using Random−Effect Panel Models

| Model dependent variable: Tobin's q | Alliance Scope (Narrow) | Alliance Scope (Broad) | Alliance governance structure (Contractual) | Alliance governance structure (Hierarchical) | Alliance orientation (Exploitation) | Alliance orientation (Exploration) |
|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| Constant | 10.36*** | 9.55*** | 7.5** | 10.33 | 5.78*** | 9.78** |
| | (2.45) | (2.66) | (0.02) | (1.15) | (5.55) | (1.13) |
| **Control variables** | | | | | | |
| Firm size | 2.34 | 0.45*** | 2.01* | 0.10** | 3.17* | 4.44** |
| (total assets) | (1.30) | (0.15) | (0.08) | (0.09) | (1.88) | (0.10) |
| Firm age | −3.67** | −0.34* | −1.14* | −1.77 | 10.78** | 11.22* |
| | (0.09) | (0.20) | (1.89) | (1.88) | (0.76) | (2.98) |
| Leverage | 3.45** | 8.67* | 3.88* | 5.55* | 8.21** | 9.22 |
| | (2.10) | (0.07) | (0.99) | (0.02) | (2.24) | (0.08) |
| Marketing intensity | 0.78 | 1.67* | 0.01* | 0.02** | 0.34 | 2.99 |
| | (0.01) | (0.02) | (0.02) | (0.52) | (0.33) | (1.67) |
| R&D intensity | 1.09* | 3.33** | 2.55* | 0.02 | 1.34** | 3.00** |
| | (0.11) | (2.24) | (1.44) | (0.02) | (1.18) | (1.11) |
| BG size | −0.09 | −0.05** | 1.23* | 4.89** | 5.33 | 5.11* |
| | (0.12) | (0.67) | (0.22) | (1.00) | (0.12) | (0.08) |
| BG diversification | 2.90** | 0.06*** | 5.10* | 2.56** | 2.78 | 1.78* |
| | (0.07) | (0.06) | (0.11) | (1.00) | (0.23) | (0.05) |
| BG | 1.13* | 2.33*** | 1.18*** | 2.67* | 2.01* | 0.03*** |
| | (0.40) | (0.06) | (0.02) | (1.05) | (0.05) | (1.16) |
| **Prior alliance experience** | 1.23* | 1.45* | 2.20 | 8.76* | 8.88 | 2.34** |
| | (0.00) | (0.04) | (0.23) | (0.01) | (0.02) | (0.00) |
| **Convergent effect variables** | | | | | | |
| Partner complementarity | 2.33 | 0.05** | 1.78* | 2.22** | 1.20 | 2.78* |
| | (0.01) | (2.45) | (0.03) | (0.44) | (0.75) | (2.03) |
| Institution evolution | 1.16* | 5.56** | 0.07** | 1.19*** | 2.56* | 1.56*** |
| | (0.10) | (0.20) | (0.89) | (0.23) | (0.33) | (0.67) |
| **Interactions** | | | | | | |

NSWRCA

| | | | | | | |
|---|---|---|---|---|---|---|
| BG × Partner complementarity | 0.45* | 0.34 | 0.22*** | 0.27* | 0.32* | 0.29 |
| | (0.05) | (0.04) | (0.67) | (0.07) | (0.45) | (0.05) |
| BG × Institution evolution | 2.31* | 2.21 | 5.55* | 5.50 | 6.21*** | 5.55* |
| | (0.00) | (0.01) | (0.09) | (0.00) | (0.04) | (0.00) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Wald $\chi^2$ | 413.23*** | 520.16*** | 438.77*** | 209.95*** | 540.15*** | 320.89*** |
| N | 716 | 1100 | 405 | 1411 | 900 | 916 |

*Notes:* Unstandardized regression coefficients with standard errors in parenthesis.

*p < .05.

**p < .01.

***p < .001.

Figure 1
Theoretical Model
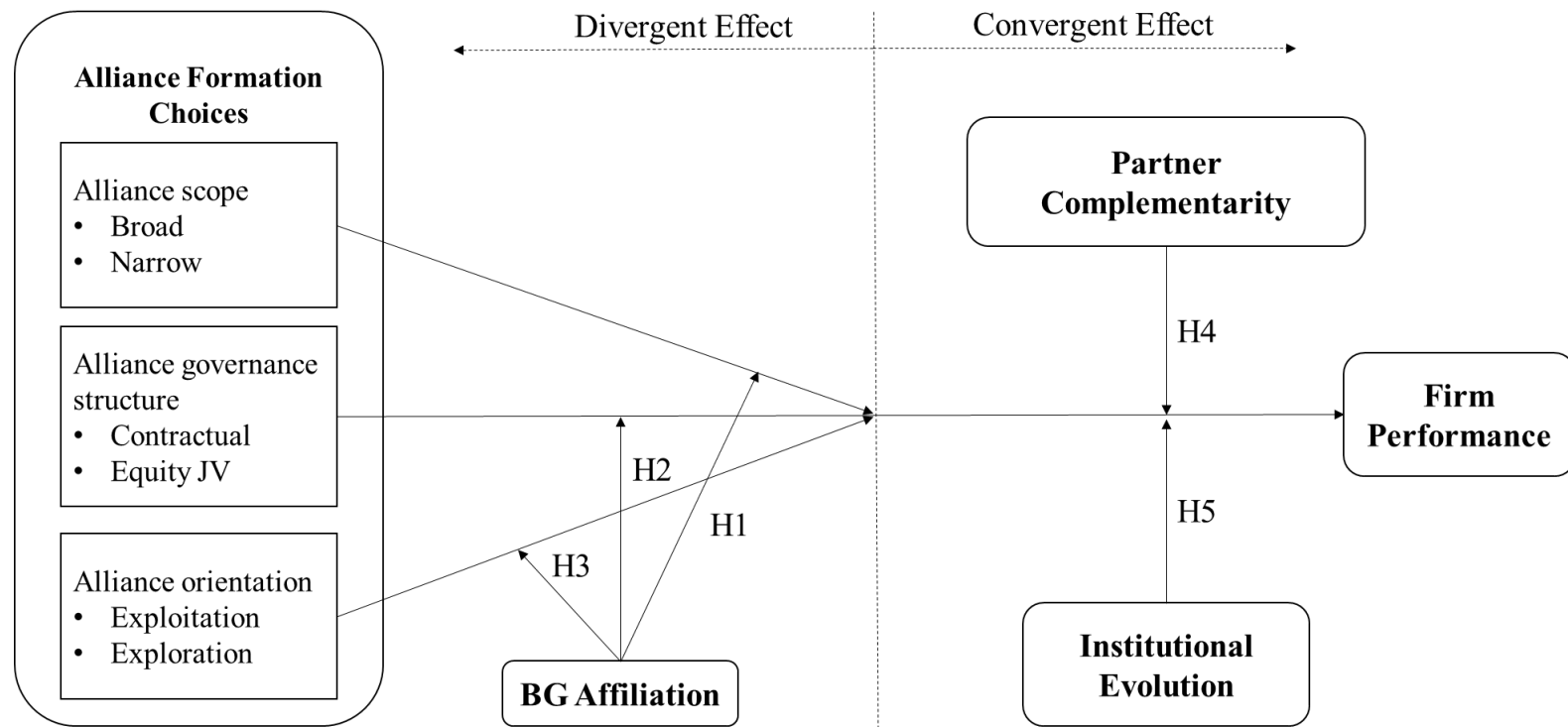


**Main variables**: alliance formation choices

**Moderators**: BG affiliation, Partner complementarity, Institutional evolution

**Dependent variable**: Firm performance

**Two way interaction effect** (*Divergence between BGAFs and NBGAFs*): Alliance scope X BG affiliation (H1);

Alliance governance structure X BG affiliation (H2); Alliance orientation X BG affiliation (H3)

**Three way interaction effect** (*Convergence between BGAFs and NBGAFs*): Alliance formation choice variables

NSWRCA

**Figure 2**

**Interaction Effects[11]**



BGAF          NBGAF

---
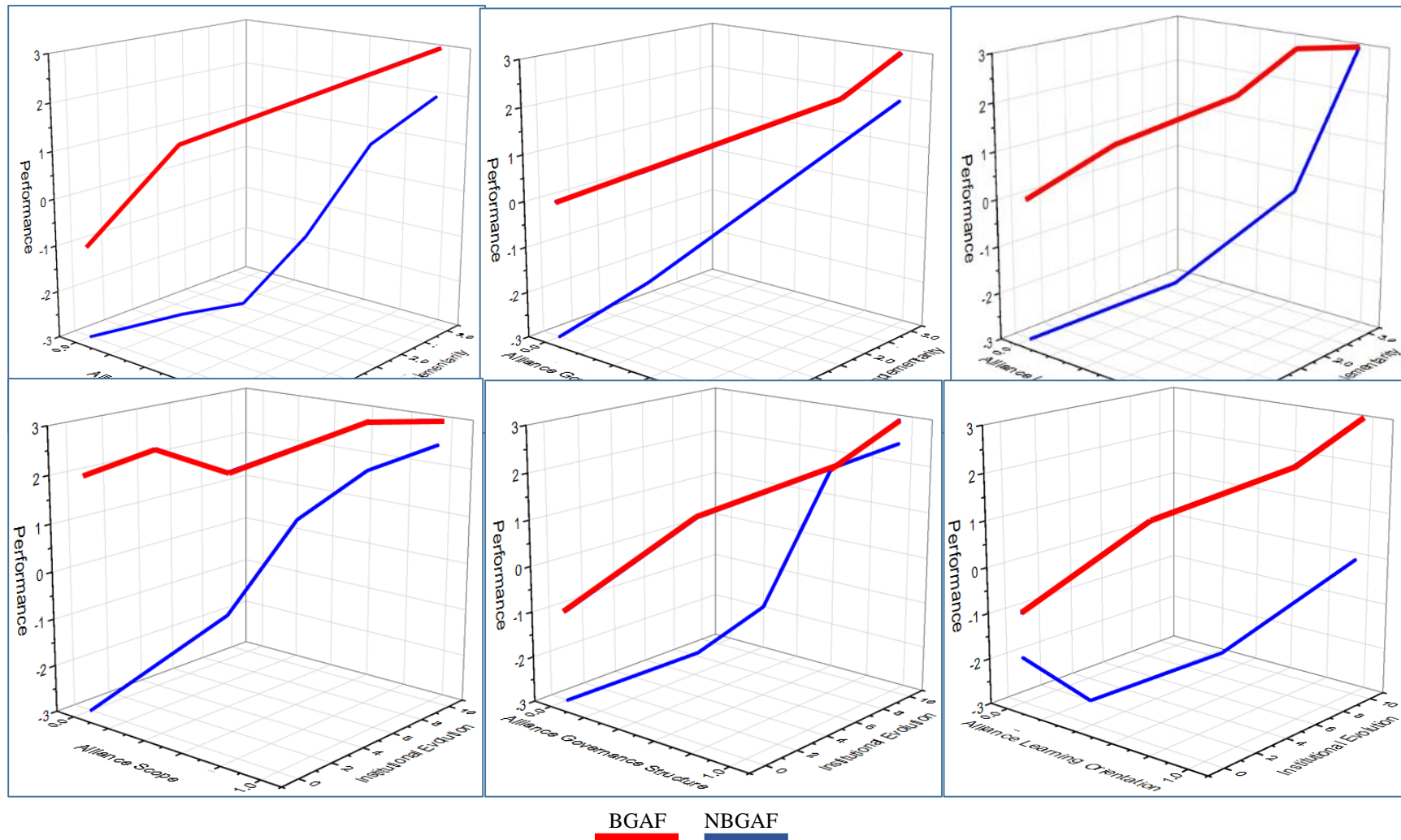
[11] The interaction graphs are drawn in Origin software.