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Impact of Macro-economic Environment on Diversification-performance Relationship: A Cross Country Study of India and Japan

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Abstract

Integrating the impact of resources and institutional factors, this study compares and contrasts the dynamic relationships between product diversification, business group affiliation and firm performance in two major economies in Asia. India and Japan have been chosen as they represent different macroeconomic conditions in which firms operate. Research following Rumelt (1974) implicitly assumed that the diversification-performance relationship is consistent, regardless of the macro-economic context. This study questions this assumption by examining the relationship among firms operating in two different macroeconomic environments. Further, studies linking diversification with firm performance have been carried out mainly in relatively stable environments. This study examines the impact of diversification on firm performance in contrasting macroeconomic conditions in India and Japan during periods of scarcity. The study also examines the moderating influence of group affiliation on the diversification-performance relationship during conditions of scarcity. The study finds that while the impact of diversification on performance changes from positive to negative when the macro environment changes from munificent to scarce, the moderating influence of business group affiliation remains constant, irrespective of the macro-environment.

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Impact of Macro-economic Environment on Diversification-performance Relationship: A Cross Country Study of India and Japan

Saptarshi Purkayastha[*]

1.   Introduction

Diversification and its linkages to firm performance has been one of the most widely researched areas both in advanced and emerging economies. Although this area of inquiry falls short of consensus (Palich, Cardinal & Miller, 2000), several studies in emerging economies propose that highly diversified firms are likely to be more profitable as compared to focused firms (Guillén 2000; Khanna & Palepu, 1997; Kock & Guillén, 2001).   On the contrary, in advanced economies, focused firms are more profitable than highly diversified firms because the latter are difficult to manage (Grant, Jammine & Thomas, 1988) since diversification results in increased monitoring costs, co-ordination costs, and costs related to other diseconomies (Markides,1992).

Research following Rumelt (1974, 1984) implicitly assumed that the diversification-performance relationship is consistent, regardless of the general environmental context (Coplan, 2008). It assumed that the specific matching of intra-firm resources and capabilities with micro-economic and competitive prospects, ultimately determine the financial performance of the enterprise. By overlooking the effects of larger exogenous forces, previous researchers suggested that the relationship between diversification and financial performance remains consistent, even when environmental conditions change (Geringer, Tallman & Olsen, 2000). A few recent studies (Chakrabarti, Singh & Mahmood, 2007; Coplan & Hikino, 2005; Mayer & Whittington, 2003), however, have concluded that the relationship between strategic choices and financial outcomes are dynamic and contingent on the environmental context.

My study goes beyond past research by analysing the relationship between diversification and business group affiliation, and firm performance by integrating macroeconomic conditions. Specifically, the study has three objectives. First, my study argues that the exogenous macro environment plays a critical role in influencing this relationship. Japan and India have very different macroeconomic environments. Japan, being a developed nation, has highly developed institutions like the capital market, product market and labour market, necessary to do business, while in India such institutions are either emerging or are absent (Khanna & Palepu, 1997). Our paper compares the diversification-performance relationship under contrasting macroeconomic environments. Second, the study questions the boundaries of diversified operations. As the world

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economy passes through troubled times, with declining growth rates, what would be the impact of diversification on the performance of firms? Will the diversification-performance relationship remain stable or will it change under a scarcity environment? Except for a few studies (Colpan, 2008; Chakrabarti, el al., 2007; Lim, Das & Das, 2009), most of the previous literature has examined the diversification-performance literature under stable macroeconomic conditions. To the best of our knowledge, this study will be the first to compare the diversification-performance relationship under scarcity conditions in a developed country (Japan) and an emerging economy (India). The final issue relates to business groups. Business groups act as internal markets for affiliated firms, thus enhancing their performance. These benefits of business group affiliation have been examined mostly in stable environments (see for example, Khanna & Palepu, 2000a, 2000b; Chang & Hong, 2000, 2002). This study examines whether the advantages of group affiliation would also be available when the economy is characterised by scarcity and instability.

In this paper, we make several contributions. First, the study contributes to the body of work that has investigated the relationship between changes in macro-environment and firm outcomes by focusing on two specific issues, diversification and business group affiliation. Prior studies investigated how macroeconomic shifts affect strategic reconfiguration, such as growth and survival (Randolph & Dess, 1984), strategic changes (Koberg, 1987; Yasai-Ardekani, 1989) and decision-making (Goll & Rasheed, 1997). Our work adds to these findings by examining whether environmental changes affect the diversification-performance relationship and business group affiliation-performance relationships. Second, our research responds to rising criticisms of the static version of institutional (Chakrabarti et al., 2007) and resource based perspectives of the firm (Colpan, 2008) by integrating the environmental context into the relationship. We argue that the efficiency of internal institutions built by diversified firms to substitute inefficient external institutions will depend upon the macroeconomic environment. From a resource-based perspective, we argue that market conditions ultimately determine the competitive value of a resource. Managers often fail to realise that an existing resource may fail to provide competitive advantage when macroeconomic conditions change. Finally, the paper employs two measures of diversification and three different measures of performance, in contrast to the usual one measure, which often leads to the criticism that the results are driven by the idiosyncratic measure (Robins & Wiersema, 2003). Our results, thus, are stronger than single-measure studies.

2.   Theory & Hypotheses:

2.1   *Role of institutions and resources in developed and emerging economies*

This study employs the institutional (Khanna & Palpeu, 1997) and resource based perspectives (Dosi, Coriat & Pavit, 2000) of the firm, as these approaches are directly relevant to managerial choices, especially with respect to product diversification and business group affiliation. Institutional perspective research in emerging economy environments argue that highly diversified firms provide greater benefits as compared to less diversified or focused firms (Chang

& Hong, 2002; Hoskisson, Eden, Lau & Wright, 2000; Khanna & Palepu, 1997). This is because of the institutional context in which firms in emerging economies operate. For example, in a developed economy like Japan (Table 1 presents macroeconomic statistics for India and Japan), the institutional context is characterised by well functioning capital, labour and product markets. In contrast, in emerging economies like India, China or Brazil, there is a variety of market failures. The financial markets are characterised by inadequate disclosure, and weak corporate governance and control. Intermediaries such as financial analysts, mutual funds, investment bankers and venture capitalists are not fully evolved. Finally, contract enforcement through the judicial process is either weak or time-consuming. (See Khanna & Palepu, 2000a for a comparison of the institutional context in India and Japan). These market imperfections make it costly to establish a quality brand image in the product market, to acquire necessary inputs such as finance, technology and management talent and to establish contractual relationships with international joint ventures. In this context, an enterprise may be pursued profitably as part of a large diversified firm that can act as an intermediary between individual entrepreneurs and imperfect markets. For example, a diversified firm can use their track record and reputation in established lines of business to gain credibility in new ventures among suppliers and customers. A developed economy such as Japan, on the other hand, has well-developed and efficient market intermediaries. Focused firms can profitably conduct open market operations to match the advantages of the internal markets of diversified firms. Slack resources can be traded perfectly because of developed market institutions while the reduction in shareholder risk by diversified firms can be offset by less diversified firms because of developed external capital markets. In general, the potential returns from diversification decreases in markets where external developed institutions are present.

Table1: Macroeconomic environmental conditions in India and Japan

Indicators (2008)	India	Japan
GDP (Billion, $)	1217.5	4909.3
GDP Per Capita ($)	1,068	38,442.6
Gross savings (% of GDP)	35.8	27.9[a]
Inflation, consumer prices	8.3	1.4
Total reserves (Billion, $)	257.4	1,030.8

a - 2006 data

Source; http://www.icrier.org/indojapan/socialeco/monetary_indicator.html

The resource-based view suggests that developing a diversification strategy in a developed economy should be based on inputs that are characterised as valuable, durable, inimitable and non-substitutable (Markides & Williamson, 1994). Such inputs can only be firm specific and can be exploited if firms diversify in limited or related industries (Collis & Montgomery 1995; Perry 1998). A firm in a developed economy should thus diversify into product markets where it can

leverage its strategic resources and firm-specific capabilities. The situation is the opposite in the case of emerging economies. The emerging economies of East Asia, Latin America and Southern Europe developed in the late 1960s and 1970s, mostly by entering into mature industries such as simple assembled goods, electrical appliances, rubber, transportation equipment, steel and chemicals (Haggard 1990). The native governments of these countries encouraged local entrepreneurs to participate in the economy by protecting them from foreign competition. These local entrepreneurs leveraged local and foreign contacts to obtain foreign technology and resources to serve the local market. Thus, resources such as political and bureaucratic contacts and connections are important for firm performance in such environments (Kock & Guillén, 2001). Contacts, as a type of human knowledge, are costly to create initially but are less costly to apply to additional tasks (Teece, 1982), suggesting a potential for scope economics. As contact capabilities are not product specific and it requires time and resources to build them, firms would leverage them across diverse product-market combinations (Weidenbaum & Hughes, 1996; Luo & Chung, 2005). Diversified firms, therefore, would be profitable in emerging markets.

Hypothesis 1a: The more institutionally developed an economy, such as Japan, the lesser are the benefits for diversified firms

Hypothesis 1b: The less institutionally developed an economy, such as India, the greater the benefits for diversified firms

2.2 *The role of the munificent and scarce macro-economic environment in developed and emerging economies*

A key argument of this paper is that the forecast performance outcome of strategic adaptation is contingent on the macroeconomic setting. By macroeconomic setting, we refer to macroeconomic munificence and scarcity. A munificent environment is defined as one where there is resource abundance with slack and capacity to support growth (Dess & Beard, 1984; Lim, et al., 2009). In a munificent market, as consumer income rises, they become less sensitive to prices, which create expanding markets (Coplan, 2008). A less munificent or scarce environment is characterised by instability and volatility (Lim, et al., 2009). In a scarce environment, price rise leads to fall in consumer income, making them price sensitive and leads to decline in sales volumes. This results in lower performance of firms. The paper argues that in environments characterised by scarcity, diversified firms in developed economies will have a poorer performance as compared to focused firms. Our argument is based on a couple of reasons. The scarce environment (1)reduces the internal market benefits from diversification and (2) increases management and organisational costs more for diversified firms than for focused firms (Chakrabarti et al., 2007). The privileged access to resources and internal transfers, which diversified firms enjoy during periods of munificence, provides relatively fewer benefits during periods of economy wide scarcity. When many or all of a diversified firm's markets are affected by scarcity, it will not be able to shift resources from strong to weak businesses. Businesses that

were viable because of resource transfers will suffer in their absence or reduction. Thus, firms that position themselves in diversified markets will not be able to sustain their profitability, because they lack the core competencies that the established market leader posses in each of the individual markets that they operate in. A typical example is Kanebo Ltd. of Japan, a once prominent textile firm that filed for bankruptcy in 2004. The company had deliberately adopted a business model of technologically unrelated diversification since the 1970s but could not compete with the market leaders in its diverse portfolio stretching into cosmetics, real estate and housing, finance, food and electronics, when domestic demand in those markets slumped.

All the problems of diversified firms in developed economies discussed above are also present in firms in emerging economies. Privileged access to resources and internal transfer may not be available and the benefit of spreading risks through diversification may not apply in times of macroeconomic scarcity. However, we argue that the internal intermediate institutions that diversified firms in emerging economies have built would help them offset to some extent the problems of macroeconomic scarcity. Since these institutions are controlled directly by the firms, they would have greater flexibility in moulding these institutions to cope with a dynamic situation better. For example, diversified firms might profitably exploit the internal labour market by concentrating labour in areas of greater concern. Moreover, the umbrella branding of diversified firms would help them obtain debt at lower costs as compared to focused firms. Although environmental uncertainties increase the cost of debt financing across the board for all borrowers (Lim, et al., 2009), debt holders may be willing to lend at lower rates to diversified firms as compared to focused firms as they are more confident of recovering capital and interest from their investments. This might be because most diversified firms, especially in India, are affiliated to business groups, which, because of their size and market power, are likely to have a lower probability of bankruptcy (Purkayastha, 2009).

Hypothesis 2a: In a developed economy, such as Japan, the more diversified a firm, the greater the decline in its performance during periods of macroeconomic scarcity.

Hypothesis 2b: In an emerging economy, such as India, the more diversified a firm, the lesser the decline in its performance during periods of macroeconomic scarcity.

2.3 *The moderating impact of business group affiliation on the diversification-performance relationship*

Business groups have become ubiquitous in Asian and other emerging economies (Purkayastha, 2009). This unique organisational form has a significant impact on the economies of emerging countries. For example, the top 30 business groups contributed 40 per cent of Korea's total industrial output in the year 1996 (Chang & Hong, 2000). For the year 2000, business groups in China contributed close to 60 per cent of the nation's industrial output (Yiu, Bruton & Lu, 2005)

whereas in Taiwan, the top hundred business groups contributed 45 per cent of the country's industrial output (Chu, 2004). In India, in 2000, business groups controlled about 75 per cent of the total industrial output in the private sector (Purkayastha, 2009).

To explain their prevalence and dominance in different emerging economies, researchers adopting various theoretical perspectives have argued that business group ties have performance-enhancing benefits for affiliates (Yiu, Lu, Bruton & Hoskisson, 2007). Taking up the theme of business groups as a response to market failures, Khanna and Palepu (1997) reasoned that affiliation benefits firms because these groups function as efficient internal capital and labour markets. From a resource-based perspective, Guillén (2000) argued that recurring transactions between business group affiliates lead to richer flow of information that improve resource allocation among affiliates. Transaction cost theorists have argued that scarce skilled labour and managerial talent can be developed and shared among affiliate firms more efficiently because of transaction recurrence (Chang & Choi, 1988; Chang & Hong, 2000). From a social network perspective, studies have emphasised the benefits arising from enduring and multiple relations between business group affiliates (Gerlach, 1992; Granovetter, 2005). They argue that network embeddedness provides firms with rich formal and tacit information about each other, which offers benefits in terms of uncertainty reduction, contract enforcement and opportunity identification (Granovetter, 2005). Gerlach (1992) and Keister (1988) reasoned that business groups reduce uncertainty for affiliates through the co-ordination of investment decisions and by assuring supply of intermediate goods. Weidenbaum and Hughes (1996) attributed the success of business groups to their informal contract enforcement capacities, thus lowering the possibility of contractual disputes. Business groups, thus, can be seen as a mechanism through which intra-group transaction costs are lowered, efficient resource allocation is done, superior information about affiliate firms is obtained and the possibility of contractual disputes is reduced. Collectively, these factors may improve the outcomes for affiliated firms.

Researchers in emerging economies have argued that group affiliation moderates positively the relationship between diversification and firm performance (Chang & Hong 2000; Purkayastha, 2009). Group-affiliated firms are able to mobilise resources at lower costs because group affiliation provides reputation benefits and privileged access (Chakrabarti, et al., 2007). However, few researchers have examined whether the positive moderating impact of group affiliation buffers the negative impact of macroeconomic scarcity. We argue in this paper that the spill over benefits from sharing resources within emerging economy, diversified business groups are likely to decline substantially during an economy wide shock as all affiliated firms within a group are likely to be affected by such a crisis. Firms, which depend on internal resource transfers, will be affected if transfers dry up because of resource shortages. Firms that did not require resource transfers might be required to bail out brethren firms by sharing the excess resources. Moreover, negative reputation effects from poorer group performance may cause affiliated firms to lose the privileged access that they enjoyed to external resources as a result of their group affiliation (Carney, Gedajlovic, Heugens, Essen, & Oosterhout, 2011; Kim,

Hoskisson, & Wan, 2004). Independent firms, on the other hand, face similar challenges of exposure to economy wide scarcity, though without the burden of group affiliation.

Business groups or *keiretsus* in Japan, unlike business groups in India, have a "main bank", which has strategic ties with its affiliated firms (Miyazaki, 1980; Morikawa, 1992). The "main bank" functions as a convenient substitute for intra-firm resources by offering necessary finances when the afflicted firms do not generate enough resources to implement their growth strategies (Colpan, 2008). *Keiretsu* financing can then serve as a source of semi-internal resources. Some authors claim that because of this privileged credit access, *keiretsu* financing exhibits positive effects on the performance of affiliated firms, as the banks infuse loans for operating companies and then monitor them for effective management of resources (Akoi, 1994; Berglof & Perotti, 1994). Although main banks usually do not commit themselves to the core strategic decisions of affiliated firms including diversification, they influence those strategic decisions by accepting or rejecting loan applications (Kang, Shivdasani & Yamada, 2000; Kim, et al., 2004). Thus, as long as *keiretsu*-affiliated firms relied on the main bank for borrowings, the capabilities of firms tended to be focused in operational and other functional competencies rather than on financial capabilities, thus resulting in their superior performance over independent competitors.

Under conditions of macro-economic scarcity, we argue that *keiretsu* affiliation would positively moderate the relationship between diversification and firm performance. This might be because of a number of reasons. First, under scarcity conditions, when the bad loans troubles of most banks might have forced them to be selective and deliberate in credit allocation, affiliated firms, in spite of their poor performance, might have avoided the credit crunch because of "relational lending" (Miwa & Ramseyer, 2001). Second, lending by the main bank, especially in periods of macroeconomic scarcity, would lead to a high level of monitoring by the bank, resulting in the efficient use of resources. Finally, large commercial banks would assist affiliated fund-raising for the internationalisation of affiliated firms (Klein, Peek & Rosengren, 2002). This becomes particularly important in times of domestic scarcity when fund raising from international sources becomes a necessity. Thus, for either product or international diversification, affiliated firms with long-term bank ties would function positively, especially in times of macroeconomic scarcity as the main bank functions as a secured source of external financing when firms cannot generate enough internal funds to grow.

Hypothesis 3a: In India, business group affiliation does not have positive moderating effects on the relationship between product diversification and financial performance during periods of economic scarcity.

Hypothesis 3b: In Japan, *keiretsu* affiliation has positive moderating effects on the relationship between product diversification and financial performance during periods of economic scarcity.

3.   Research design and methodology

3.1   Identification of macroeconomic conditions of munificence and scarcity

To analyse firm performance in munificent and scarce environments, the major economic factors affecting the investment patterns of individual enterprises were examined. In the case of Japan, following Colpan and Hikino (2005) and Colpan (2008), we use the period of 1996-2000 as a period of munificence. Although growth rates in 1996-2000 were lower than in the boom period in the 1980s, growth rates were higher than in the period 1991-95 (Table 2).

Table 2: Growth of Japanese domestic market demand in different industries within the manufacturing sector

Industry	1991-95	1996-2000
Chemicals	-0.69	1.04
Petroleum and coal products	-3.10	4.65
Electrical machinery and equipment	-0.72	2.13
Transportation equipment	-2.04	0.13
Instruments	-4.85	1.32

Data Source: Worldscope Fundamental database from Thomson Reuters

In the case of India, the period 1996-2000 was a period of prosperity when economic growth performance remained sound with industrial production growing by almost 6 per cent, except for the year 1998-99 where it grew by 4 per cent. GDP growth rate for all these years was above 6 per cent, with the exception of 1997-98 where it was 5 per cent (Economic Survey of India, 1999-2000). Inflation remained at low levels of less than 4.0 per cent on an average in the period 1996-2000. Further, a wide variety of reforms to boost the economy took place in this period. The Information Technology Bill to create a legal framework to facilitate electronics commerce was passed in this period. In order to bring in more FDI, except for a negative list, sectoral limits, and a few explicitly defined constraints, all other FDI was brought under the RBI automatic system. Non-resident Indians were also permitted to invest under the automatic route in all items, barring a few Indian companies, which were allowed to access AGR/GDR markets through the automatic route, subject to specified norms and post-issue reporting requirements. This resulted in resource munificence in this period. Comparing the growth rates of a cross-section of industries for period 1996-2000 with 1991-95 also confirms this contention (Table 3).

Table 3: Growth of Indian domestic market demand in different industries within the manufacturing sector

Industry	1991-95	1996-2000
Chemicals	3.15	5.90
Petroleum and coal products	3.13	13.63
Electrical machinery and equipment	1.12	8.71
Transportation equipment	1.41	6.77
Instruments	0.97	5.48

Data Source: Worldscope Fundamental database from Thomson Reuters

Countries across the globe were struck by the economic slowdown in the years 2008 and 2009. After growing at a healthy rate of 5.2 per cent in 2007, global GDP growth rate fell to 3.2 per cent in 2008 and posted a negative rate of 1.3 per cent in 2009 (World Economic Outlook, 2009). Moreover, the growth rate of 3.2 per cent in 2008 was possible because of the growth rate of 6.1 per cent in emerging economies; developed economies grew by only 0.9 per cent (World Economic Outlook, 2009). Foreign investments pulled out; access to funds was curtailed, many firms defaulted, shut down or reduced their operations, and many jobs were lost (Chakrabarti, el at., 2007). In Japan, GDP growth declined to -1.2 per cent and -6.3 per cent in 2008 and 2009 respectively. FDI fell by 52 per cent from 2008 to 2009, showing characteristics of acute macroeconomic scarcity. Domestic savings as a percentage of GDP fell by 3 per cent, creating further pressure on the availability of resources (World Bank, 2011).

In the case of India, the situation was not very different. Economic growth decelerated in 2008-09 to 6.7 per cent. This represented a decline of 2.1 per cent from the average growth rate of 8.8 per cent in the previous five years (2003-04 to 2007-08). With the exception of the beverages tobacco, and machinery industries, growth in all sectors of the economy was below 5 per cent, with a large number of sectors such as wood, rubber, textiles and food showing negative growth. Inflation stagnated at high levels at over 8 per cent for the period 2008-2009, even rising to double digits in June 2008, which was the highest in the decade. The growth rate of exports in rupee terms plummeted to 0.6 per cent in 2008-09 while the growth rate in imports showed a negative growth rate of 0.8 per cent in the same period. The period 2008-2009, therefore, represents the "scarce" environment. As we use a short window for both periods, our study design partially controls for the endogenous effects of firm adaption and external institutional change, allowing us to focus exclusively on the impact of diversification on firm performance.

3.2 Method

Following the recommendations of Sambharya (2000), we employ a variety of diversification measures. The first measure is the number of industry segments in which a firm operates. Industry segments are measured at the two-digit SIC level. The second measure is the Herfindahl

measure, which considers the degree of a firm's diversification by taking into account the relative importance of the different industries that a firm operates in. Following Montgomery (1982), it is defined as $\sum_i(P_i)^2 / (\sum_iP_i)^2$ wherein P_i is the proportion of sales in one industry to the total sales of the firm. We further correct for the inverse coding of the Herfindahl index (it is bounded between 1 and 0, with 1 being perfectly focused and 0 being completely diversified): $1-[\sum_i(P_i)^2 / (\sum_iP_i)^2]$. Through the paper, the Herfindahl measure refers to the index corrected for the inverse coding. The third diversification measure is the entropy measure of diversification (Jacquemin & Berry, 1979): $\sum_iP_i\ln(1/P_i)$.

Scholars have long recognised the multi-dimensional nature of the performance construct (Purkayastha, Manolova & Edelman, 2011). Any single measure may fail to provide a reasonably comprehensive understanding of the impact of independent variables on performance (Chakravarthy, 1986). At the same time, since this study is concerned about the effect of diversification on profitability, profitability measures become highly relevant. We, therefore, use two accounting-based measures. They are return on assets (ROA) and return on sales (ROS), which are widely used in strategy literature (George & Kabir, 2011; Gaur & Kumar, 2009; Colpan & Hikino, 2005; Zattoni, Pedersen & Kumar, 2009). However, accounting-based measures are oriented towards the past and thus may be susceptible to accounting manipulation (Chakravarthy, 1986); so, they may not reflect the expected future cash flow that a firm is likely to generate. We also use a market-based return measure, Tobin's Q. Tobin's Q is defined as (market value of equity + book value of preferred stock + book value of debt)/ (book value of assets) as considered by Khanna and Palepu (2000b). Results with ROS are consistent with those with ROA, reflecting the close association between these two measures. Results with Tobin's Q are similar to ROA, though not statistically significant. For the purpose of brevity, we only report the results with ROA. Appendix A presents the full list of variables with their definitions.

We test the all hypotheses by using the following regression specification:

$$ROA_i = \alpha + \beta DIVR_i + \lambda\, GR_i + \eta\, DIVR_i*GR_i + \delta X_i + \varepsilon_i \text{---}(1)$$

The key explanatory variable is $DIVR_i$, which refers to the diversification measure for the firm i. The variable GR_i represents a dummy variable and takes the value of '1' when a diversified firm shows business group affiliation in the case of India, or *keiretsu* affiliation in the case of Japan. The co-efficient η depicts the moderating influence of firm diversification and business group affiliation on the relationship between diversification and performance. A positive value of η indicates that business group affiliation positively moderates the diversification-performance relationship. In other words, a positive η indicates affiliated diversified firms will have superior performance than unaffiliated diversified firms.

The regression specification also includes several firm-specific variables (X_i) as control variables to isolate the impact of diversification on firm performance. Firm size, based on natural

logarithm of total sales, is controlled for size-related impact on performance. Age (in years), current ratio (current liabilities/total liabilities), leverage (debt/equity) and trade intensity (export-import)/sales) measure resource availability and constraints for each firm. As firms in our sample are diversified in multiple industries, we categorise a particular firm in a single industry depending on its sales in that industry. Each firm is grouped into a "core" industry, the "core" industry being defined as the one where the firm has the highest sales.[1]

Specification (1) is estimated using panel data regression, with ROA as the dependent variable. The use of panel data is more relevant and offers advantages over cross-sectional approaches, such as less collinearity among the explanatory variables, increased degrees of freedom, and control for firm heterogeneity (Baltagi, 2005),

3.3 Sample

The sample of firms is selected from Worldscope Fundamental database. This database is a global database of Thomson Reuters has and includes more than 57000 firms across 70 countries. We restrict the sample to only manufacturing firms as this controls for technological influences on diversification and allows better isolation of the relationship between diversification and performance. In order to maintain consistency, firms that entered the sample after the start year of 1996 and remained until the end of the period under study are included in the sample. The Indian sample consists of 186 diversified firms, of which 65 (35 per cent) are non-group firms while the remainder are group-affiliated firms. The Japanese sample consists of 224 diversified firms out of which 101 (45 per cent) are non-group firms. Only firms that were operating in more than one industry were considered. Table 4 describes the sectoral diversification of firms in our sample.

Table 4: Sectoral distribution of Indian and Japanese firms

Industry	No. of firms	
	Indian	**Japanese**
Basic industry such as mining, paper, wood, chemicals & primary metals	90	104
Capital goods industry such as industrial and commercial machinery, photographic, medical and optical goods	17	38
Consumer durable industry	21	61
Construction industry	19	52
Food & tobacco industry	42	18
Petroleum industry	5	21
Textile industry	22	48

Data Source: Worldscope Fundamental database from Thomson Reuters

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[1] The 'core' industry is the one where the firm has the highest sales. On average, for Indian firms the 'core' industry accounted for about 63% of the total sales of a firm. The second-largest industry accounted for about 12 % of sales. For Japanese firms, the core industry accounted for about 72% of the total sales of the firm.

4. Results

4.1 Firm performance measure

Table 3 shows the descriptive statistics of firm performance measures. The analysis winsorizes the variables at the 1 per cent and 99 per cent levels in order to lessen the problems of outliers. Comparing the performance of diversified firms in two contrasting time periods of environmental munificence (1996-2000) and scarcity (2008-2009), we find that the mean and median ROA for Indian firms is higher than that for Japanese firms in both periods.

4.2 Diversification Measures

Table 5 also shows the descriptive statistics of diversification measure for Indian and Japanese firms in the two periods. In times of environmental scarcity, Indian firms are more diversified than Japanese firms. Japanese firms are able to refocus themselves in core areas during periods of macroeconomic scarcity. Indian firms, on the other hand, increased their mean diversification levels during such periods. This may be because inefficient external market mechanisms made it difficult for Indian firms to sell their non-core businesses (Lins & Servaes, 2002).

Table 5: Descriptive Statistics

Measures	Environment munificence				Environmental scarcity			
	India		Japan		India		Japan	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Performance								
ROA	0.14	0.14	0.03***	0.05**	0.12	0.11	0.01**	0.02***
Diversification								
NSEG	4.81	3.00	4.15	3.00	5.01	3.00	4.05**	2.00**
HERF	0.38	0.31	0.36	0.28	0.41	0.34	0.31**	0.26***
ENTR	0.72	0.68	0.69	0.66	0.76	0.72	0.69**	0.64**
Firm Characteristics								
AGE	22.7	18	31.5**	27**	29.1	26	37.2**	34**
LN(SALES)	5.5	4.8	8.3***	8.1***	6.1	5.9	10.2***	9.8***
CR	2.8	2.1	3.4	3.0	3.2	3.1	3.5	3.2
LEVERAGE	0.7	0.6	0.6	0.5	0.9	0.9	0.7**	0.7**
TRADEINT	0.1	0.1	0.4**	0.3**	0.0	0.0	0.4**	0.3**

Data has been collected from Worldscope Fundamental database.

The table depicts descriptive statistics for 186 Indian firms and 224 Japanese firms. The two time-periods include environment munificence and environmental scarcity. All variables are defined in Appendix A. The equality of means and medians is tested using the t-test and Wilcoxon/Mann-Whitney test respectively. The symbols *, ** and *** denote significance at 10%, 5% and 1% level respectively.

4.3   Regression Results

Tables 6 and 7 shows the results of the OLS regression between diversification, business group affiliation and performance for Indian and Japanese firms for two different macroeconomic environments − environmental munificence and scarcity. Time dummies are used to represent the two different macro-economic environments. Model 1 presents the results of the regression without the interaction term while model 2 presents the results with the interaction term as given in specification (1). Hypothesis 1a postulates that in a developed economy like Japan, high diversification would lead to poor performance of firms. Models 1B, 1D and 1F of Table6 support hypothesis 1a as diversification has a negative impact on firm performance. The results are supported by Markides (1995), and Palepu (1985). Hypothesis 1b postulates that in a less institutionally developed country like India, the higher the diversification, the better would be the firm's performance. Models 1A, 1C and 1E of Table 6 support hypothesis 1b as diversification has a positive impact on firm performance. Our results are supported by Khanna and Palepu (2000a, 2000b), Guillén (2000), Chang and Hong (2002). Time dummies for both Japan and India are positive, which indicates that diversified firms perform better in conditions of macro-economic munificence than in conditions of macro-economic scarcity.

Table 6: Regression Results for macroeconomic munificent environment

The table presents the results of the OLS regression, with ROA as the dependent variable, using specification (1) for both the periods of environmental munificence (1996-2000) and environmental scarcity (2008-09) for diversified firms of India and Japan. A time dummy is used to differentiate between the periods. Model 1 provides the regression results without the interaction variable while model 2 provides the regression results with the interaction variable. All variables are defined in Appendix A. The data was averaged over the time-period to rule out the effects of business cycles. The regression results are corrected for heteroskedasticity using White heteroskedasticity consistent standard errors and co-variance. The symbols *, ** and *** denote significance at 10%, 5% and 1% level respectively.

Variable	Model 1						Model 2					
	(A)	(B)	(C)	(D)	(E)	(F)	(A)	(B)	(C)	(D)	(E)	(F)
	India	Japan	India	Japan	India	Japan	India	Japan	India	Japan	India	Japan
Intercept	0.05	0.16	0.08	0.15	0.01	0.11	0.08	0.01	0.06	0.02	0.07	0.01
LN(NSEG)	1.96***	-0. 36**					0.98**	-0.12				
HERF			0.63**	-0.31**					0.28**	-0.16**		
ENTR					0.81***	-0.22**					0.65	0.28
Time dummy	0.13**	0.27**	0.08**	0.14*	0.15**	0.21**	0.56**	0.14***	0.27***	0.19**	1.41**	0.27**
GR	2.72*	-0.41**	1.12**	-0.52**	0.97**	0.12	0.56**	-0.26***	0.47***	-0.10**	1.09**	-0.04**
AGE	0.45	0.00	0.32	0.11	0.12*	-0.31**	0.45	-0.24**	0.08	-0.08	0.28*	0.19
LN(SALES)	3.01***	0.06	2.14***	0.53*	1.01	0.48*	2.05**	0.54	1.19**	1.14***	1.05**	0.41***
CR	0.42**	0.51**	0.65	0.38	0.62	0.05	0.15	0.15*	0.04	0.24	0.05	0.19
LEVERAGE	-0.11	-0.08	-0.56	-0.06*	-0.09*	-0.08**	0.41	-0.06	-0.18	-0.09	0.04	-0.27
TRADEINT	0.24	0.06	0.12	0.01	0.28	0.01	0.06	0.15*	0.03	0.00	0.00	0.00
LNNSEG*Time dummy							0.21	-0.06**				
HERF*Time dummy									0.12	-0.78**		
ENTR*Time dummy											0.18	-0.67
Industry dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.35	0.31	0.30	0.32	0.37	0.34	0.38	0.32	0.36	0.29	0.21	0.24
No. of obs.	186	224	186	224	186	224	186	224	186	224	186	224

Data has been collected from Worldscope Fundamental database.

Hypothesis 2a states that in an institutionally developed country like Japan, diversification would have a negative impact on firm's performance when economic scarcity pervades the macro-environment. Models 2B and 2D of Table 6 show that the interaction term between time dummy and diversification is negative, suggesting that Japanese diversified firms perform worse in macroeconomic scarcity situations, thus supporting this hypothesis. Researchers like Colpan and Hikino (2005) and Colpan (2008) have also arrived at similar conclusions. Hypothesis 2b states that in an institutionally deficient country like India, higher diversification would not lead to greater decline in performance during conditions of macroeconomic scarcity. Models 2A, 2C and 2E of Table 6 show that the interaction term between time dummy and diversification co-efficient is not significant in India, which shows that there is no significant decline in performance in periods of macroeconomic munificence and scarcity. Thus, hypothesis 2b is supported.

Hypothesis 3a postulates that business group affiliation in the case of Indian firms does not have a positive moderating influence on diversification-performance relationship. The co-efficient of the interaction terms between group affiliation and diversification is a measure of the moderating influence and is positive for models 2A and 2C (Table 7). Thus, hypothesis 3a is not supported. An interesting fact to be noted from Table 7 is that diversification in the case of Indian firms is negative for models 1A, 2A and 2C. Comparing this with the co-efficient of the diversification measure (Models 2A & 2C), the moderating effect is dominated by the group affiliation effect rather than the diversification effect. Hypothesis 3b postulates that *keiretsu* group affiliation in the case of Japanese firms would have a positive moderating influence on the diversification-performance relationship. Models 2B, 2D and 2F of Table 7show that the co-efficient of the interaction term is positive and thus, hypothesis 3b is supported. As in the case of Indian firms, the co-efficient of the diversification measure for Japanese firms is negative (Models 1B, 1D, 1F, 2B & 2D) whereas the co-efficient of the group affiliation measure is positive. Thus, the moderating effect is dominated by the group affiliation measure. In summary, therefore, the results support hypotheses 1a, 1b, 2a, 2b and 3b while it does not support hypothesis 3a.

Table 7: Regression Results for macroeconomic scarce environment

The Table presents the results of the OLS regression, with ROA as the dependent variable, using specification (1) for the periods of environmental scarcity (2008-09) for diversified firms of India and Japan. Model 1 provides the regression results without the interaction variable while model 2 provides the regression results with the interaction variable. All variables are defined in Appendix A. The data was averaged over the time-period to rule out the effects of business cycles. The regression results are corrected for heteroskedasticity using White heteroskedasticity consistent standard errors and co-variance. The symbols *, ** and *** denote significance at 10%, 5% and 1% level respectively.

Variable	Model 1						Model 2					
	(A)	(B)	(C)	(D)	(E)	(F)	(A)	(B)	(C)	(D)	(E)	(F)
	India	Japan	India	Japan	India	Japan	India	Japan	India	Japan	India	Japan
Intercept	0.08	0.13	0.03	0.15	0.14	0.21	0.18	0.01	0.05	0.58	0.13	0.19
LN(NSEG)	-0.41***	-0. 24**					-0.76**	-0.38**				
HERF			0.47	-0.31**					-0.14**	-0.42**		
ENTR					0.57	-0.27**					0.22	0.09***
GR	1.62*	0.61	2.22**	0.52**	1.67**	0.16**	0.56**	0.14***	0.27***	0.19**	1.41**	0.27**
AGE	0.38***	0.54**	0.41	0.11	0.42*	-0.24	0.27	-0.35	0.17	-0.58	0.34*	0.16
LN(SALES)	2.18	0.12	1.16***	0.53*	1.24	0.17	2.41	0.19	2.11**	1.25***	0.41*	0.38
CR	0.37	0.34**	0.34	0.38	0.67***	0.09*	0.66**	0.16*	0.18	0.16	0.08	1.10
LEVERAGE	-0.21**	-0.18	-0.19	-0.06*	-0.19*	-0.06**	0.21	-0.14	-0.22	-0.41	-0.28**	-0.64
TRADEINT	0.08	0.26	0.07	0.01	0.08	0.14	0.08	0.21**	0.00	0.77	0.09	0.16
LN(NSEG)*GR							0.63***	0.06**				
HERF*GR									0.97**	0.68**		
ENTR*GR											0.18	0.55**
Industry dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.34	0.32	0.30	0.30	0.36	0.35	0.36	0.34	0.34	0.28	0.25	0.35
No. of obs.	186	224	186	224	186	224	186	224	186	224	186	224

Data has been collected from Worldscope Fundamental database.

5.   Discussion and Conclusion

The preceding analysis of the relationship between diversification strategy, business or *keiretsu* affiliation and performance of firms within the macroeconomic settings of munificence and scarcity has yielded interesting results. The principal finding is that individual strategic factors yield varying effects on financial performance as macroeconomic settings change. In the case of Indian firms, diversification, which has a positive impact on firm's performance during periods of macroeconomic munificence, has a negative impact during periods of macroeconomic scarcity. In the case of Japanese firms, group affiliation, which has a negative impact during macroeconomic munificent period, has a positive impact on firm performance in a scarcity environment.

Environment-led prosperity, thanks to a rapidly growing economy and rapidly rising domestic demand that emerging economies such as India and China have witnessed before the current economic slowdown, may have temporarily masked the ineffective product diversification of firms. As long as the firm had located itself in a high-growth economy, demand factors lifted profitability temporarily. Those general demand-pull factors appear to have overwhelmed the specific strategy-performance relationships since no individual business model, in terms of product diversity, functioned effectively to outperform others in this period. Most of the emerging economies in the last three decades have been growing at high rates and so, the results of studies done during this period show that high diversification has a positive impact on performance (see Chang & Hong, 2000; Keister, 1998; Khanna & Palepu, 2000a, 2000b; Li & Wong, 2003; Ma, Yao & Xi, 2006; Yiu, et al., 2005). A few studies that looked at the diversification impact on performance in times of crisis (Asian Crisis, specifically) have found that diversification is not beneficial to firm performance (Chakrabarti et al., 2007; Lim et al., 2009).

Diversified Japanese firms, on the other hand, showed an inferior performance as compared to focused firms. Such behaviour can be argued from the institutional perspective; in developed economies, external intermediate institutions, such as financial markets, stock markets and labour markets are efficient and thus, firms that seek to internalise these functions through diversification will not be rewarded in the market place (McMillan, 2008; Meyer, 2001; Tong, Reuer, & Peng, 2008). However, *keiretsu* affiliation, whose effect on firm performance was negative in munificent environments, turned positive during periods of macroeconomic scarcity. This may be because of the different organisational structure of business groups in Japan as compared to India. The "main bank" of a *keiretsu* in Japan functions as a convenient substitute to intra-firm resources by offering necessary finances when the afflicted firms do not generate enough resources to implement their growth strategies (Miyazaki, 1980; Morikawa, 1992). Under conditions of macroeconomic scarcity, *keiretsu* bank would provide loans to affiliated firms at concessional rates at a time when bad loans troubles of most banks might have forced bank to be selective and deliberate in credit allocation (Miwa & Ramseyer, 2001). Moreover,

lending by the main bank, especially in periods of macroeconomic scarcity, would lead to high level of monitoring by the bank, resulting in efficient use of resources.

Notwithstanding the different relationship between diversification, business group affiliation and firm performance among Indian and Japanese firms, the moderating effect of business group affiliation on diversification-performance relationship remains positive for both munificent and scarcity environments. The combined effect of business group affiliation and diversification results in a positive outcome for firm performance. The negative impact of diversification in a scarcity environment is dominated by the positive impact of business group or *keiretsu* affiliation. The advantages of business groups in emerging economies like India, as a response to market failures (Khanna & Palepu, 1997), such as superior allocation of resources (Guillén, 2000) and benefits of social network (Gerlach, 1992; Granovetter, 2005), outweigh the cost of affiliation such as negative reputation effects and cross-subsidisation, even in times of economic scarcity. The bank ties in the case of *keiretsu* firms acted as a relational asset, which functioned positively for Japanese firms (Lincoln & Gerlach, 2004). Such firms continued their external debt financing through their *keiretsu* banks even during times of economic scarcity.

Our paper has practical implications for policy makers. In countries as varied as China, India, Japan, Korea, Malaysia and South Korea, to name a few, policy makers are debating the future of diversified business groups. The debates have grown especially furious as a scarce macro-economic environment, coupled with a financial crisis, reshape the economic landscape of many of these countries. Some policy makers such as those in South Korea are arguing for a reduction in the diversity of business groups while others in China are encouraging them to become diversified. Yet others in South Africa are advocating a mixed stance. Others such as in India and Chile have chosen to deregulate market institutions so as to help business groups become more competitive. It is difficult to justify such variance in public policy without properly understanding the roles that business groups play in different macro-economic conditions. Our study, while not speaking directly of the wisdom of these policy initiatives, suggest that polices need to be modified not only on the basis of the institutional development of the country but also on the basis of broad macro-economic conditions.

6. Limitations and future research directions

While the present study has empirically contributed to the context-sensitive arguments of diversification and group affiliation relationships with firm's performance, the study is not without limitations, which may be improved upon by future researchers. First, in this paper, we were concerned about the short time window of our study, although this research design partially controls for the endogenous effects of firm adaptation and external institutional change, allowing us to focus exclusively on the impact of diversification on firm performance. Future researchers may wish to work with data for a longer time-period with proper control for time-varying measures.

Second, systematic empirical extensions in different geographical settings would be fruitful to generalise the arguments of this study.

Finally, the findings of our study can provide a potentially rewarding direction upon which future research can be built. Given that our analysis suggests the significance of macroeconomic factors such as munificence and scarcity in determining firm performance, future work can systematically examine the roles of strategy and industry in different macro-economic settings. That may possibly bring in critical insights to resolve the ongoing debate on the disaggregated variance of profitability.

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Appendix A. Definition of variables

Firm performance measure:

ROA: Return on assets defined as operating profit before depreciation, taxes, interest and other amortisation charges over total assets

Diversification measures:

NSEG: the number of 2-digit SIC industries in which a firm operates

HERF: $1- \Sigma_i (P_i)^2/(\Sigma i P_i)^2$, wherein P_i is the proportion of segment sales over the sum of segment sales of a firm (i.e. $sales_i / \Sigma\ sales_i$)

ENTR: $\Sigma_i P_i ln(1/P_i)$

Firm characteristics:

AGE: Years since the incorporation of the firm

SALES: Total sales of the firm (expressed in crores - ten millions - of Indian Rupees)

LEVERAGE: Leverage defined as the ratio of total debt to total assets

CR: Current ratio defined as (current liabilities/total liabilities)

TRADEINT: Trade intensity defined as the (export-import)/sales

GR: A dummy variable that takes a value of one for a group affiliated firm, and zero otherwise

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