Information Networks Within Business Groups: Evidence from India*

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Abstract

Most explanations for the dominance of business groups in emerging markets rely on the idea that interactions between divisions within the group generate value that stand alone firms do not have access to. Yet despite the theoretical importance of these interactions, we have little evidence quantifying their existence. We document that sharing information across divisions appears to be one important type of interaction. We hypothesize that business group firms likely generate valuable information about the future performance of their industry, and can therefore help the asset management company within the group by sharing this information. Consistent with this hypothesis, we find that business group owned mutual funds earn substantially more on their investments in industries where the group has significant real operations. On average, business group mutual fund owned stocks in related industries outperform business group mutual fund owned stocks in unrelated industries by 6 percent per year; this out-performance increases to 16 percent per year in over-weighted stocks. Our results suggest that information sharing within business groups constitute an important source of value.

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1 Introduction

Diversified business groups constitute a large share of formal economic activity in emerging markets. Yet despite their importance, we have little empirical evidence on the specific benefits of group affiliation. Understanding the benefits of group affiliation is of clear relevance to investors attempting to forecast the future performance of firms associated with business groups. It is also of interest to policy makers considering regulation that bans the entry of diversified business groups into certain sectors. For example, India recently announced that new licences would be granted to firms wishing to enter the banking sector. One of the major policy debates surrounding this issue is whether diversified business groups should be allowed to enter banking. [1]

The standard explanation for the prevalence of business groups in emerging markets, as discussed in (Khanna and Palepu, 2000), is that labor, capital and product markets in emerging economies are characterized by important information asymmetry problems due to underdeveloped intermediary institutions. For example, the absence of financial analysts, credit bureaus, and other information generating institutions makes it difficult for entrepreneurs to raise money directly in the capital market. However, a new venture started within a business group leverages the reputation of the existing divisions within the group to attract capital. In a sense, the older divisions of the firm share their reputation with the newer divisions of the firm, and in the process generate value for the business group as a whole. Similar arguments are made for why business groups have advantages in labor and product markets. [2]

[1] See `http://articles.timesofindia.indiatimes.com/2013-02-26/edit-page/37308520_1_new-banks-bank-licenses-foreign-banks` for a sample of this discussion.

[2] For example, in the labor market, the absence of quality educational institutions makes it difficult for firms to distinguish high and low ability workers (Khanna and Palepu, 1997). Business groups train new managers and share information about their quality across the firm, therefore internalizing the sorting and evaluation functions achieved by the education system in developed countries. In the product market, new ventures within a business group take advantage of the reputation of older divisions within the group to

A key component of this standard explanation for business groups is that groups generate value through *interactions* between divisions within the group. Assets such as information or reputation generated by one division of the firm are valuable to other divisions of the firm, and this makes group affiliation valuable as a whole. However despite the importance of these theorized interactions between divisions within business groups, we have little empirical evidence documenting how specific interactions generate value.

In this paper, we conduct a direct test of one specific type of interaction between the divisions of business groups. We argue that the operational divisions within business groups are likely to generate valuable information about the future prospects of their industry beyond publicly available knowledge about industry trends. If the divisions of business groups interact in a way to maximize value, then mutual funds owned by business groups should do particularly well when they invest in industries where the business group has real operations. For example, mutual funds run by Reliance (one of India's largest business groups) should do particularly well when they invest in stocks in the Utilities, Telecom, or Finance industries, which are industries where Reliance has major real operations. Mutual fund managers within the business group have preferential access to the management of firms within the business group, and the management of firms within the business group have an incentive to share private information about industry trends with group affiliated fund managers. In a sense, the mutual fund manager within a business group has a "research" department that actually operates in specific industries, and therefore is likely to have non-public information on future industry trends. These benefits should be particularly large in the Indian context where formal information institutions, such as financial analysts, a financial press, and institutional investor advisory services, are all less mature than those in developed markets.

We begin our analysis by focusing on the portfolios of stocks held by business group owned

increase consumer trust in new products.

mutual funds. Throughout the paper, we define stocks within these business group mutual fund portfolios as "Same Industry" if the stock is in the same industry as one of the business group's real operations.[3] For example, if a Reliance owned mutual fund owns the stock Bharti Airtel (an Indian telecom company), then Bharti Airtel would be classified as a Same Industry stock, as Reliance has a substantial real presence in the telecom industry. We define a stock as "Different Industry" if the stock's industry is different from all of the industries where the business group operates. If our hypothesis that fund managers within business groups receive proprietary information from managers in other divisions of the group is true, then we would expect Same Industry stocks to outperform Different Industry stocks in a predictable manner. Consistent with our hypothesis, we find that a value weighted portfolio of Same Industry stocks outperforms a value weighted portfolio of Different Industry stocks by 6 percent per year; our most conservative estimate of this difference, where we adjust by industry returns, is 2.04 percent per year, although adjusting by industry returns may in fact "over-control" for our effect of interest if business group information networks provide private information at the industry level.

These differences in performance represent the average across all Same and Different industry stocks held by business group owned mutual funds. We would expect the difference to be even larger in cases where the manager has chosen to over-weight the Same Industry stocks. When we focus on a sample of Same and Different industry stocks in the top five percentile in terms of how much the manager overweights the stock, we find the Same Industry stocks outperform the Different Industry stocks by 16.1 percent per year in terms of raw value weighted returns. In this sample of over-weighted stocks, we find that a portfolio of Same Industry stocks earns 9.0 percent more per year even in our most conservative estimate where we adjust by industry returns. These performance differences are economically large and statistically significant,

[3]We categorize a business group as having operations in an industry if more than five percent of its real assets are in that industry.

and suggest that business group owned mutual funds have substantial stock picking skills in industries where the group has real operations.

We next examine how much of the performance gain in Same Industry stocks is driven by the information released surrounding earnings announcements. If the mechanism driving the high performance of Same Industry stocks is that business group owned fund managers have earlier access to fundamental information, we expect a disproportionate amount of the out-performance of Same Industry stocks to be concentrated around earnings announcements. We estimate that 22 percent of the quarterly excess returns earned by Same Industry stocks accrues in just the three days around earnings announcements.[4] Corroborating the information networks story, we also find that financial analysts systematically under-estimate the earnings of Same Industry stocks relative to Different Industry stocks.

In further results we find that the out-performance of Same Industry stocks in business group mutual funds has meaningful impacts on business group mutual fund performance overall. We construct an index to measure the degree of concentration a specific fund has within the industries where its business group operates, and show that funds with higher levels of this index indeed earn significantly higher returns. Funds in the top quintile of our "Business Group Index" outperform funds in the bottom quintile by approximately 21 basis points per month. We find evidence of this out-performance both in a simple portfolio returns comparison, as well as in a holdings based comparison, where we fix a fund's holdings at the beginning of the month and measure returns on those fixed holdings.

We explore whether alternative explanations can explain our results. In our stock level analysis we find that business groups earn more in their Same Industry holdings even after adjusting for size, industry, and risk (as measured by a four-factor alpha) of holdings. We also

[4]Given that quarters typically include 60 trading days, this implies that 22 percent of the abnormal returns are generated in a (0,2) day window around earnings announcements which are only 5 percent of the trading days within a quarter.

find that these Same Industry holdings out-perform relative to non-business group owned mutual funds' returns on those same holdings, suggesting that the business group information advantage is not driven by information in the mutual funds industry generally. In our regression analysis we find that our results are robust to the inclusion of the direct effect of the industry concentration of the fund as in Kacperczyk et al. (2005). By including owner fixed effects, we can also control for time invariant differences across business groups, such as average manager quality; we find that our results are not driven by simple variation across groups. Our results are also robust to the inclusion of fund characteristics that have been shown to predict performance (as in Chen et al. (2004)). We show that our results are not driven by unobserved trading within the month by re-estimating our results using returns based on the holdings at the beginning of the month. The results also do not appear to driven by a small portion of sample; we find strong results for all Same Industry holdings in the first half of our sample, and significant results for the over-weight Same Industry stocks in the second half of our sample.

To date, two strands of the literature have empirically studied the interactions of divisions within business groups. One strand of the literature has focused on how interactions within business groups destroy value. Business groups are typically characterized by controlling shareholders who own greater control rights than cash flow rights; this wedge between control and cash flow rights creates an incentive for firms to "tunnel" profits from affiliated firms with low cash flow rights to firms with high cash flow rights. Previous studies have found tunneling to be an important empirical phenomenon in India, China, Hong Kong, Bulgaria, and South Korea.[5] Access to internal capital markets can also have a negative impact on

[5]Bertrand et al. (2010) studied Indian business groups and showed that profit shocks to firms lower in the ownership pyramid show up as profits to firms at the top of the pyramid where the owning family has greater ownership. This evidence is consistent with controlling shareholders using pyramidal structures to expropriate minority shareholders. However, Choudhary and Siegel (2011) re-analyze the data used in Bertrand et al. (2010) and find less strong evidence of tunneling. Jiang et al. (2010) find that firms in China make loans to controlling shareholders at subsidized rates that are often never paid back. Cheung et al. (2006) find that Hong Kong listed companies earn significant negative returns around the announcement of

value, if managers choose to cross-subsidize poor performing business lines at the expense of strongly performing lines (Meyer et al., 1992). In general, this strand of the literature does not empirically test for ways in which interactions across divisions within business groups *generate* value.

A second strand of the literature attempts to estimate the net benefits of group affiliation, without specifically identifying the mechanism by which interactions between business groups generate or destroy value. The approach in this strand has been to compare the performance of group affiliated and stand alone firms after controlling for as many observable factors as possible (Berger and Ofek (1995), Comment and Jarrell (1995), Stulz (1990), Servaes (1996), Lins and Servaes (2002)). The main advantage of this approach is that the estimated effects encompass all of the positive and negative impacts that diversification may have on performance. In the Indian context, Khanna and Palepu (2000) conduct such a comparison and find evidence for a u-shaped relationship between diversification and performance. Business segments within low and medium diversified groups perform less well than stand-alone comparisons; however segments within highly diversified business groups have higher estimated performance than stand-alone comparisons.[6] Our focus on one specific type of benefit also allows us to avoid some of the challenges inherent in comparing stand alone versus business group owned firms as discussed in Campa and Kedia (2002) and Graham et al. (2002).[7]

a connected transaction between a controlling shareholder and the firm. Atanasov et al. (2010) finds evidence that legal reforms in Bulgaria were successful in reducing expropriation of minority shareholders. An earlier set of papers finds that firms in business groups where the owner has larger cash flow rights have higher valuations (Bianchi et al. (2001), Claessens et al. (2000), Claessens et al. (2002)). A related literature studies the idea of "propping," where firms within business groups transfer resources in the opposite direction of tunneling, i.e. from a low high cash flow rights firm to a low cash flow rights firm (Bae et al., 2008).

[6]Given that the business groups that own mutual funds in India are all large diversified groups, our findings are consistent with the findings in Khanna and Palepu (2000). Our paper complements this literature by adding a specific mechanism, information sharing within business groups, that appears to constitute substantial value.

[7]The literature taking alternative approaches to measuring the benefits of firm diversification is small relative to the literature using the comparison approach. Our approach is perhaps most closely related to Schoar (2002), who directly estimates the total factor productivity of manufacturing plants before and after they enter a diversified conglomerate. Our approach is also related to prior work that tests whether institutional investors within financial conglomerates exploit information from other parts of the firm. See

Our paper also contributes to the broader literature on mutual fund performance. A large literature has tested whether mutual fund managers have stock-picking ability overall. The results appear to depend on the method of analysis; Jensen (1968), Malkiel (1995), Gruber (1996) and Carhart (1997) find little evidence that actively managed funds beat passive benchmarks overall. However, studies that focus on the specific trading behavior of actively managed funds find that managers do have information (Grinblatt and Titman (1989), Grinblatt and Titman (1993), Grinblatt et al. (1995), Wermers (1997)). More recent work has attempted to identify specific fund manager characteristics that drive fund manager ability such as school based connections to company managers (Cohen et al. (2008)), managerial intelligence as proxied by SAT scores (Chevalier and Ellison (1999)), and managerial knowledge of local companies (Coval and Moskowitz (1999), Coval and Moskowitz (2001)). Our paper extends this literature by focusing on a mutual fund company level characteristic, i.e.whether the fund is owned by a business group, and testing whether that fund company level characteristic drives fund performance.

2 Background

The Indian mutual fund industry started in 1964 with the formation of a government owned mutual fund entitled the "Unit Trust of India."[8]The Unit Trust of India was the only mutual fund firm in operation over the period from 1965 through 1987. In 1987 the government allowed entry by a small number of state owned banks and state owned life insurance companies. In 1993 the mutual funds industry was opened to the private sector, and a specific

Griffin et al. (2012) for a recent review. In a contemporaneous paper, Ghosh et al. (2013) studies Indian business group owned mutual funds. They focus more on a fund's ownership of companies within the own group. In our data we find that funds only invest approximately 3 percent in own group companies, so instead focus on the performance of investments in related industries.

[8]See `http://www.amfiindia.com/showhtml.aspx?page=mfindustry` for additional details on the history of the Indian mutual funds industry.

set of regulations were created to govern the industry.

Indian mutual fund assets in December 2012 amounted to approximately U.S.$157 billion. India's total assets under management are comparable to the total assets under management in the U.S. mutual fund industry of $134 billion in 1981.[9] While the size of the Indian mutual fund industry may be only 1/100th the size of the US mutual fund industry today, assets under management in India have grown by 445 percent since 2003, which is large relative to the 56 percent growth in the U.S. mutual fund industry over the same time period.

There are approximately 10 million mutual fund investors in India (Halan, 2010) and about 40 asset management companies. Assets in Indian equity-oriented mutual funds constitute approximately seven percent of the market capitalization of the Bombay Stock Exchange. In the past five years the sector has seen a number of new regulations passed regarding the level and types of fees that mutual funds could charge, although no major regulation regarding the investment decisions of funds were passed during our study period.[10]

Business groups have played an important role in the industry since it was first opened to the private sector in 1993. All of the business groups we study in this paper entered the mutual fund industry within the first two years after the sector was opened to private firms. Including investments in all asset classes (debt, equity, etc.), business group affiliated funds hold 30 percent of the total industry assets under management as of December 2012.

[9]These data come from the 2012 Investment Company Fact Book produced by the Investment Company Institute (the trade association of mutual funds and other asset management companies in the United States).

[10]For details on major fee regulations passed in the Indian mutual funds sector see Anagol and Kim (2012) and Anagol et al. (2013).

3 Data

Our sample construction begins with all of the India based open-end mutual funds included in the Morningstar Direct database. Morningstar includes both existing funds as well as historical information on funds no longer in existence, so our results should not be affected by survivorship bias. We drop any funds that only invest in fixed income securities by excluding those whose Morningstar Global category is Asian Fixed Income or India Fixed Income. A large number of the open-end funds in India are debt oriented funds that firms use for short term cash management. We also drop funds that have more than 30 percent of assets in non-equity securities to ensure our sample primarily represents equity funds. Our sample covers the period January 2003 through June 2013.

One unique feature of the Indian mutual funds market is that almost all mutual funds offer investors two types of payout options. The "Growth" option is similar to standard open-end funds where gains in the fund are realized at the time of sale of the units. The "Dividend" option is a payout option where the mutual fund company periodically announces "dividends" that it returns to investors in the mutual fund. These "dividends" are in reality simply the mutual fund company returning the investors money back to them; they are not based on any actual dividend payments made by the stocks held in the fund's portfolio. The assets in the "Growth" and "Dividend" options are invested in the same securities, and there is no difference in the returns earned by these two options. Thus, we also exclude the dividend options of funds from our analysis as they essentially provide the same information as the Growth option.

For each of our funds, we download monthly portfolio holdings and returns data through the Morningstar Direct system. Morningstar also provides the name of the fund's benchmark, so we download monthly returns for the fund's benchmark as well. For each fund company

represented in the Morningstar data, we visited the fund company's website and collected information on the fund company's sponsor. These sponsors fall in to four general categories: Indian business group, Indian financial company (insurance or investments), Indian Bank, or foreign financial company. We take each of these sponsor firms and collected information from the Prowess database on their historical profits, sales and assets as well as the historical profit, sales and assets information for each of their group affiliated firms.[11]

A key decision in designing this analysis is how to define which industries business groups are likely to have proprietary information on. Given the multiple possible ways that industries might be defined in this setting, we choose to "tie our hands" on this issue by defining the industries as closely as possible to the 10 industry definitions used in Kacperczyk et al. (2005).[12] We get the SIC code of each stock traded on the Indian stock market from the Compustat Global database. Similarly, we get the Indian industry classification code (NIC) for each business group affiliated firm for the seven business groups in our sample from the Prowess database and match these NIC codes to the corresponding SIC codes. Next, we match each SIC code to one of the Fama and French 48 industries using the industry definitions provided on Kenneth French's website. Finally, using the classification table from Kacperczyk et al. (2005), we map the Fama and French industries to one of the 10 industry groups.

Table 1, Panel A presents summary statistics for our main variables on business group affiliated funds. We have a total of 5,973 fund*month observations, and an average of 48 unique business-group affiliated equity funds per month. The mean assets under management for these group affiliated funds is 4,322 million rupees, which is approximately 86.4 million

[11]The Prowess database, produced by the Center for Monitoring the Indian Economy, is the Indian equivalent to Compustat and has been used in a large number of studies including Bertrand et al. (2010), Choudhary and Siegel (2011), and Khanna and Palepu (2000).

[12]The industry classification in Kacperczyk et al. (2005) is in turn based on the Fama-French 10 industry classification available here: `http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_10_ind_port.html`.

dollars (assuming an exchange rate of 50 rupees per dollar). Assets under management are skewed, with the median fund*month having approximately 27 million dollars assets under management, and the largest fund*month observation having 1.6 billion dollars in assets under management. The average fund is 5.7 years old and has an expense ratio of 2.22 percent per year. The average monthly return is 1.25 percent per month, however, the average return after subtracting out the market's return in the same month is 0.06 percent per month. The BGI variables measure the exposure of the business group fund in a given month to the industries where the business group operates, and the ICI (Industry Concentration Index) measures the concentration of the business group in an industry (Kacperczyk et al. (2005)). We define these variables formally later.

Panel B presents summary statistics on the number of funds and assets under management both in the full sample of equity oriented funds in the Morningstar Direct data, as well as for the sub-sample of business group owned funds. Both series show a large increase in both the number of funds and the amount of assets in these funds over time. In terms of the number of funds, group affiliated funds have constituted between 28 and 41 percent of total equity fund assets. Business group have been a stable 31 to 32 percent of the total number of funds.

Table 1, Panel C, presents the breakdown of business group real assets by different industry groups at the beginning of our sample (March 2003) and at the end of our sample (March 2012).[13] Business groups are well diversified with Manufacturing (31.9 percent), Utilities (13.7 percent), Telecom (15 percent), Finance (20 percent) and Consumer Durables (9.5 percent) as the major sectors of business operations in the fiscal year ending in March 2012. Comparing the last three rows in Panel C, investment or aggregate portfolio weights of both the business group and non-business group affiliated funds across different industries are

[13]These statistics are presented for March as March 31 is the end of the Indian financial year.

similar to each other and also to the industry weights in the Indian stock market.

4 Results: Holdings of Same Industry Stocks

We begin our empirical analysis by testing whether business group owned funds are more likely to over-weight industries where the business group has real operations. Table 2 presents these results. The unit of observation in these regressions is the fund*industry*month level. For example, if the Reliance Equity Growth Fund owned 12 percent in the utilities industry in March 2012, then the value of the Reliance Equity Growth Fund*Utilities Industry*March 2012 observation would be 6.1 percent (12 percent minus the market weight of 5.9 percent). We use two different independent variables as measures of the business group's presence in the industry. The first is the variable BGroupIndwt, which is the fraction of real assets in that business group within the industry of the observation at the end of the previous financial year. For example, in the case of Reliance in July 2012, this variable would be equal to 40 percent for the Utilities industry (Table 1, Panel C). This provides a continuous measure of how exposed a business group is to a particular industry. We also report specifications with a dummy variable BGROUP, which takes a value of one if the business group has at least five percent of its real assets in the industry of the observation at the end of the previous financial year, and zero otherwise.

In Column (1) we find that a one percent increase in a group's assets in an industry is correlated with that business group's mutual funds over-weighing that industry by .09 percent. This correlation is significant at the 5 percent level. In Column (2) we find that a holding in an industry where the business group has at least 5 percent of assets is correlated with 2.3 percent over-weighting in the industry. Column (3) adds industry fixed effects. On the one hand, controlling for industry fixed effects may "over-control" for part of the effect we are

testing for, in the sense that business groups may specialize in particular industries which leads to over-weighting even on average for that industry. On the other hand, controlling for industry fixed effects removes any omitted variables bias that would cause certain industries to be over-weighted by funds in general. Including the industry fixed effects does reduce the coefficient on BGROUP Dummy; however, the coefficient is still large and statistically significant, suggesting that even when we focus on variation within industries, business group owned funds make greater investments in industries where they have real operations. Column (4) adds month fixed effects to control for any time trends in overall concentration levels; the results are similar.

One weakness of the model in Columns (1) through (4) is that holdings in large funds are weighted equally to those in small funds. If a business group has a small fund that strongly over-weights related industry stocks, then we would find a significant correlation, but this might not have much economic significance given the size of the fund. Columns (5) and (6) aggregate the holdings across all funds owned by the business group as a way to weight larger funds more significantly. In Columns (5) and (6) an observation is at the business group*industry*month level. For example, suppose Birla Aditya business group owned two funds, the Birla Growth Fund and the Birla Manufacturing Fund, and that the Birla Growth Fund was twice as large as the manufacturing fund. Further suppose that the Birla growth fund over-weighted Utilities by 1 percent, while the Birla Manufacturing Fund over-weighted Manufacturing by 10 percent. The holdings of both of these funds would be combined, so the over-weighting of the Manufacturing industry would be the weighted average of the over-weightings in each of these funds, where the weighting is by the size of the fund (Diffwt ind would equal $(\frac{2}{3}1 + \frac{1}{3}10)$). We find that aggregating holdings up to the business group level does not meaningfully change our estimates (Columns (5) and (6) vs. Columns (1) and (2)), suggesting that these results are not driven by a small set of heavily over-weighted funds.

5 Results: Same Industry Stock Returns

We now turn to the main results of our paper. We hypothesize that the performance of stocks held by business group owned mutual funds will be correlated with whether the stock is an industry where the business group itself has a real presence. We argue the abnormal returns earned on these "Same Industry" stocks reflect information that the fund managers of business group owned funds have access to. Table 3, Panel A, compares the returns of stocks in industries where the business group has a presence versus industries where the business group does not have a presence. At the beginning of each month, stocks in each mutual fund portfolio are assigned to one of two portfolios: Same Industry or Different Industry. A stock would be classified as being in the Same Industry group as long as there is one business group owned fund that owns that stock and has a presence (i.e. greater than 5 percent of real assets) in that stock's industry. Note, however, that if only one business group owned fund owns that stock that it will likely have a small weight in the overall portfolio, as we weight the holdings based on their dollar values. Stocks where the business group owned funds take larger positions will be weighted more heavily. Analogously, the Different Industry stocks belong to industries where the business group does not have a presence. All the stock positions of business group owned mutual funds are then pooled within one of these two portfolios and returns for the two portfolios are calculated. The stocks within each portfolio are value weighted by the combined dollar holdings of all the business group affiliated funds. We calculate the following return measures: Value weighted raw returns, value weighted size-adjusted returns (where the size-adjustment is done by subtracting the average return on stocks with similar market caps), value weighted industry adjusted returns, Carhart 4-factor alpha estimated from the value weighted raw returns, equal weighted size adjusted returns, and market cap weighted size adjusted returns.

The results are reported in Table 3, Panel A. Column (1) shows the average number of

stocks in the Different Industry and Same Industry portfolios at the beginning of the month. Column (2) shows that the stocks in the Same Industry portfolio outperform the Different Industry portfolio by 57 basis points per month. This difference is significant at the 5 percent level. The difference in size adjusted returns, presented in Column (3), is similar at 55 basis points per month. In column (4), we subtract the average industry returns from the raw stock return to get the industry adjusted return. The difference in industry adjusted return between the same industry and different industry stocks decreases to 25 basis points per month and is statistically significant at the 10 percent level. Note that this industry adjustment is testing whether business groups investing in Same Industry stocks do well because they pick specific stocks within the industry; the fact that our results are weaker here suggests that the main advantage business group owned funds have is a better sense of how the industry will do in general, as opposed to information about which specific firms within industries will do well. In column (5), we report the Carhart 4 Factor Alpha which is positive at 0.45 percent per month and significant at the 5 percent level.

Columns (6) and (7) explore alternative methods of weighting the holdings across different funds within the Same and Different Industry portfolios. Column (6) weights holdings across funds equally, as opposed to based on their dollar value. The result here is somewhat close to significant at the 10 percent level, although the magnitude is smaller at 20 basis points per month. This result suggests that the value weighted results are not being completely driven by a few very large funds. The fact that this result is smaller also suggests that the effect is larger when bigger dollar value investments are made; there is important information in the size of the investments funds make in Same Industry Stocks. Column (7) weights holdings across funds based on the market cap of the stock. We include this measure because when we look at Same Industry Stocks that are under-weighted, it does not make sense to weight the holdings by the dollar amount of invested. Using market cap weighting is a simple way to choose portfolio weights if an investor wanted to replicate a strategy of under-weighting

Same Industry stocks in a similar way that business group owned mutual funds under-weight Same Industry stocks. Market cap weighting produces similar returns on Same and Different Industry stocks as the equal weighting portfolios.

Column (8) uses non-business group funds as a comparison group to confirm that our effects are driven by business group fund behavior. In this column we adjust the value weighted Same Industry stock returns by the returns on a portfolio of the Same Industry stocks weighted by the dollar value of holdings in non-business group affiliated mutual funds. This adjustment allows us to test the hypothesis that non-business group owned funds have the same information on Same Industry stocks that business group owned funds do. We find that the weighting of Same Industry stocks in business group owned funds confers a 32 basis point advantage per month over the weighting of the same set of stocks in the non-business group owned mutual funds; this difference is significant at the 5 percent level. The weightings of business group owned funds do not seem to contain information when we look at Different Industry stocks.

Our analysis so far has compared the performance of all Same versus Different Industry stocks. It is reasonable to expect, however, that the largest differences in performance across these two groups will appear once we condition on how much the funds overweight each particular stock; i.e. we expect business group funds to do particularly well in the Same Industry stocks where they take large positions.

Table 3, Panel C explores the relationship between a fund's over-weighting of Same and Different industry stocks. At the beginning of each month we again separate all stocks held by business groups in to the Same and Different industry portfolios. Within each of those portfolios, we then rank stocks based on how over-weighted the business group funds are towards that stock. In the case of the Different Industry Stocks portfolio, there are 36 stocks in the top 5 percentile of the over-weight ranking. In the case of Same Industry stocks, there

are on average 24 stocks in the top 5 percentile of the overweight rank.

Once we focus on stocks that are over-weighted by business group owned funds, we now find that the difference in performance between the Same and Different Stocks portfolios is substantially larger. Based on simple value-weighted returns, highly over-weighted Same Industry stocks earn 131 basis points more per month than heavily over-weighted different industry stocks. The magnitude declines slightly when we adjust for size, industry, risk factors, or different weighting schemes, but even our smallest estimate suggests that funds earn 72 basis points more per month when they strongly over-weight Same Industry stocks versus Different Industry stocks. The differences in returns are always significant at the 5 percent level.

An analogous prediction is that Same Industry stocks owned by business group funds that are under-weighted should under-perform Different Industry stocks that are under-weighted, as we expect business groups to have more information about Same Industry stocks. We find some evidence consistent with this prediction in Panel C of Table 3. In this table we weight stocks within the Same and Different industry portfolios according to their market cap; this is because weighting by dollar values is not sensible when looking at under-weighting. Same industry stocks in the bottom fifth percentile of the over-weight distribution earn between 17 and 43 basis points less than different industry stocks in the bottom fifth percentile of the over-weight distribution. While these differences are not typically significant at the 10 percent level, the sign and magnitude of the coefficients are similar across the specifications. We suspect that the reason we find less strong results amongst under-weighted stocks is that Indian mutual funds typically do not short sell stocks, and thus the under-weighting here is perhaps more reflective of over-weighting in other parts of the portfolio as opposed to an active strategy of under-weighting certain stocks. The results are qualitatively similar in the lower panel of Panel D, where we look at the bottom 10 percent of the over-weight

distribution.

Table 3, Panel D, explores the persistence of the informational advantage embedded in the Same Industry versus Different Industry stocks, focusing on the value weighted size adjusted returns. The difference in performance of these two groups persists four months before declining towards zero by 12 months (results not reported). The long persistence of this advantage suggests that the informational efficiency of the Indian market is less developed than the US market, where advantages of this sort typically only persist for a few months.

Given that fund managers in business groups likely have the most information about the future performance of the firms within their groups, one might also suspect that business groups would do particularly well in their holdings of firms within the business group. On the other hand, business group owned fund managers may be hesitant to trade on private information regarding their own business group firms as this is more likely to attract the regulator's attention. It is also possible that business group owned mutual funds do worse in their investments in own group firms because the group uses the funds to "prop" up the stock price in bad times (Bae et al., 2008). Table 3, Panel E, tests this hypothesis. At the beginning of each month we pool all of the holdings of business group owned mutual funds, and then pick out the stocks where the business group is also the owner of the firm. On average, there are only 15 own group firms owned by business group mutual funds per month, leaving us a with a small sample. We find some evidence of positive abnormal returns. The value weighted size adjusted returns of this own group firms portfolio is 35 basis points per month, although this is not close to significant at the 10 percent level. Even when we focus on the own group firms where the over-weighting is large (above 10th percentile in terms of over-weighting), we do not find evidence of significant abnormal performance. These results suggest that our main results on the out-performance of Same Industry stocks is not being driven by out-performance of own group company stocks.

5.1 Results: Same Industry Stock Returns Around Earnings Announcements

So far we have documented that Same Industry stocks out-perform Different Industry stocks, and that this outperformance is largest when business group owned funds overweight Same Industry stocks. Table 4 conducts a similar analysis to Table 3, however we now focus on returns earned on the Same and Different industry stocks specifically around earnings announcements. If the out-performance that business group owned mutual funds display in Same Industry stocks is driven by an information advantage on fundamental news, then we would expect a disproportionate amount of the out-performance to be concentrated around earnings announcements. This test is motivated by Baker et al. (2010), who use performance of mutual fund held stocks around earnings announcement as a measure of informed trading.

The sample of stocks represented in Table 4 are those in the Same Industry stock portfolio that fall within the top five overweight percentile. We calculate cumulative abnormal returns within a three day window around the earnings announcement (day zero through day two), and compare this to the average quarterly return of the Same Industry portfolio. We find that the Same Industry stock abnormal returns around earnings announcements account for a disproportionate amount of the Same Industry's stocks' abnormal returns throughout a quarter. For example, the value weighted size adjusted difference between Same and Different portfolios around earnings announcements of 146 basis points represents 37 percent of the total quarterly abnormal Same minus Different Industry portfolio (Column 8). Given that the three days around earnings announcements are only approximately five percent of the total trading days in a quarter, these results suggest that much of the out-performance of the same industry stocks is generated around the news releases associated with earnings announcements. The quantitative size of this estimate is consistent with the finding in Baker et al. (2010) that between 18-51 percent of the abnormal returns of a portfolio of

stocks traded by mutual funds occur specifically around earnings announcements.

5.2 Results: Same Industry Stock Returns and Analyst Forecast Errors

Another way of testing whether business groups have private information about Same Industry stock holdings is to see if analysts systematically under-estimate their earnings. Table 5 reports the results of regressions where an observation is an earnings announcement by a stock held by a business group mutual fund. Note that an earnings announcement of a particular stock in a particular month may appear multiple times in our sample, if that stock was held by multiple business group owned mutual funds.[14] The dependent variable is the mean forecast error across analysts for that particular earnings announcement, where mean forecast error is defined as the difference between the actual earnings per share minus the forecasted earnings per share, divided by the firm's stock price lagged by two quarters.[15] Note that positive values of this mean forecast error indicate analysis on average under-estimated earnings (i.e. there were positive surprises). The BGroupIndwt variable is the fraction of the business group's real assets in the industry of the stock represented by the observation at the end of the previous financial year. The BGROUP Dummy variable is an indicator for whether that particular holding is in the Same Industry. The DIFFWT variable measures the difference between the fund's weight of the holding minus the market weight of the holding. We expect the analyst forecast errors to be largest when the fund over-weights the fund more.

Column (1) regresses the mean forecast error across analysts for each earnings announce-

[14]We cluster our standard errors at the quarter level to account for the fact that each of these earnings announcements should not be treated as an independent observation.

[15]We divide by the stock price to account for the fact that stocks with higher stock prices will have mechanically higher earnings per share.

ment on the BGROUP_Dummy variable and the weighting variable. Analysts systematically under-estimate earnings for stocks in the same industry by 20 basis points. So, for example, analysts would on average forecast earnings of 1.8 rupees per share for a company with a stock price of 100 and actual earnings per share of 2 rupees. Column (2) interacts the weighting of the stock (DIFFWT) with the BGROUP_Dummy. This coefficient on this interaction term indicates that for stocks in the same industry where the business group has operations, a 10 percent over-weighting is correlated with a mean forecast error greater by 64 basis points. Column (3) uses the continuous variable BGroupIndwt as a measure of the business group's exposure to the industry of the stock; here we find that the effect of the weighting (DIFFWT) variable is strongest for stocks where the business group owner has greater exposure to the industry.

In Columns (4) and (5) we focus on sub-samples of stock holdings where the over-weighting of the stock holding was in the top 10 percent of over-weightings overall. In Column (4) we find that amongst these highly over-weighted positions there is a larger analyst forecast error for stocks in the same industry as the business group (50 basis points). Column (5) uses the continuous measure of the group's exposure to the stock industry; here we find a 10 percent increase in the weight of the business group's assets in the industry of the stock is correlated with an 8 basis point larger forecast error. In Columns (6) and (7) we test whether the business group exposure variables predict analyst forecast errors when the business group owned fund under-weights the stock. We would expect that if business groups were purposefully under-weighting stocks where they had private information of future poor performance, then the business group variables would predict negative mean forecast errors. We find that among under-weighted stocks the business group variables do not significantly predict forecast errors, and the point estimates are positive rather than negative. This confirms our earlier finding that business groups primarily exploit the private information they have about the future performance of related industries through over-weighting, rather

than under-weighting, specific stocks.

5.3 Results: Same Industry Stock Returns Over Time

In Appendix Table 1 we separately estimate the Same Industry stock returns presented in Table 3 in the first half of our sample (March 2003 - March 2008) and the second half of our sample (March 2008 - May 2013). Panel A presents results for the full sample of stocks, and Panel B focuses on stocks in the top five percent of the over-weight distribution. In Panel A we estimate that in terms of value-weighted returns Same Industry Stocks out-performed Different Industry stocks by 88 basis points per month in the first half of the sample. The magnitude of the difference is similar when we size-adjust the returns (84 basis points), but is smaller when we risk-adjust the returns with a four-factor model. The magnitude of the difference between Same and Different Industry stocks during the second half of our sample is 25 basis points per month, but is not significant at the ten percent level. Only when we adjust for the four factor alpha do we find a significant difference during this period. Overall, when we look at the full set of Same and Different Industry stocks we find that the returns performance appears stronger in the first half of our sample.

In Appendix Table 1, Panel B, we present the Same Industry Stock returns where we focus on holdings in the top five percent of the weighting distribution. Similar to our previous results, when we focus on over-weighted stocks we find larger differences between the Same and Different Industry stock portfolios. In terms of value-weighted returns, over-weighted Same Industry stocks earn 161 basis points more per month in the first half of our sample. The results are similar for value weighted size-adjusted returns, although smaller when we look at industry adjusted or 4 factor alpha returns. The size of the returns in the over-weight group is smaller and further from statistical significance in the second half of the sample. Among those stocks in the top five percent of the over-weight distribution we find

Same Industry stocks earn 101 basis points more in value-weighted returns per month in the second half of the sample, and similar abnormal returns in value-weighted size adjusted returns, and four factor alpha. Given that funds do appear to have been able to earn abnormal returns amongst their over-weight stocks during the second half of the sample, we argue that it is unlikely that our full sample effect is driven only by a business group advantage in the first half of the sample.

The results suggest that the business group advantage existed, at least in the over-weighted sample of Same Industry stocks, in both periods. However, the results appear to have been stronger in the first half of our sample versus the second half. What explains this difference across time periods? Given that the overall market returns were substantially higher in the first half of our sample versus the second half, one explanation is that the set of stocks that business group owned mutual funds had positive proprietary information about was larger in the first half. This explanation is consistent with the finding that the value-weighted returns are larger than the equal and market weighted returns in the second half of our sample. Another potential explanation is that analysts began to learn about this advantage over time, and so more of the proprietary information owned by business groups gets disseminated in to the market. Given the short length of our sample and the fact that market returns different substantially over this period, it is difficult to fully explain this in the current setting.

6 Results: Portfolio Returns

We now test whether this informed trading drives business group owned funds to have better performance overall. We first introduce a fund level measure, the Business Group Index (BGI), which is a quantitative measure of how much the fund focuses on Same Industry

stocks. Our Business Group Index is calculated as follows:

$$\text{BGI}_{i,j,t} = \sum_{j=1}^{10} \gamma_{i,j,t} |w_{i,j,t} - \bar{w}_{j,t}| \tag{1}$$

$\gamma_{i,j,t}$ is an indicator variable for whether the business group that owns fund i had greater than 5 percent of its total capital stock in industry j at time t. We use the 5 percent cut-off to avoid defining business groups as having a presence in an industry where they have a very small level of assets. $w_{i,j,t}$ is the value weight of fund i in industry j at time t. $\bar{w}_{j,t}$ is the market weight in industry j at time t. Note that we take the absolute value of the difference between the fund's weight and the market's weight; this causes fund's that purposefully either over-weight or under-weight certain industries where they have a presence to have a higher BGI index. Overall, our BGI index will be larger for a fund if the fund invests in industries where the business group has a presence, and will be larger in the case where the fund strongly over-weights or under-weights (relative to the market) industries where the business group has a presence. We are interested in testing whether having a higher BGI index is correlated with stronger return performance.

Table 6, Panel A, presents summary statistics on the performance of group affiliated funds. The rows in Panel A refer to different subsets of funds. All Financial Sector Affiliated Funds refers to funds that are owned by a firm that is in the banking, life insurance, or asset management sectors. Business group affiliated funds only include funds that are part of a firm that has at least some interests outside of the financial industry. The first column is the average monthly return in each of these groups. All of these groups have had an approximate 2 percent month return over our sample period. The second column is the monthly return minus the risk-free rate. The third column is the monthly return, subtracting out the return

on the S&P CNX 500, which is an index representing the top 500 stocks in India. The main result here is that none of these groups of funds earns excess returns after adjusting for market returns. This continues to hold when we estimate the fund's α using a CAPM model or when we use the Carhart four factor model. Overall, business group funds do not appear to outperform in general.

Table 6, Panel B, presents our main fund level test. At the end of each month, funds affiliated with business groups are sorted into quintiles based on their BGI index (see Equation (1) for the definition of the BGI index) and average returns are calculated over the next one month. The rows refer to the average returns earned by funds in each quintile of the BGI index. Funds classified in the BGI quintile 5 are funds that are the most over-weighted towards industries where the business group has operations. Column (1) presents the average monthly return of funds in these different quintiles of the BGI index. The bottom row shows the difference between the monthly return in quintiles 1 through 5 of the BGI index. We find that funds in the 5th BGI quintile earn approximately 21 basis points more per month than funds in the 1st BGI quintile. This difference is close to significant at the 10 percent level.

Column (2) calculates monthly excess returns by subtracting out the risk-free rate. The gap between BGI quintile 5 and 1 funds remains the same at 21 basis points, with the same level of significance as Column (1). Column (3) adjusts the monthly returns by subtracting out the returns on the S&P CNX 500 index; the difference between 5th and 1st quintile funds remains at 21 basis points. Column (4) adjusts for the investment style of the fund, by subtracting out the average returns in the same month for the funds following the same size and book to market based styles as classified by Morningstar; the difference between the top and bottom quintile funds increases to 44 basis points per month (significant at 10 percent level). In Column (5) we control for the market risk factor by calculating the fund's alpha. Controlling for this market risk factor we find that the difference between the 5th and 1st

quintile BGI funds is 17 basis points. Controlling for the four factors as in Carhart (1997), the difference in returns is 13 basis points per month.

While the results in Panel B of Table 6 are not significant at standard levels, the point estimates are reasonably consistent across specifications and suggest there is some fund level performance benefit of concentrating on stocks in the business group's related industry. Unfortunately our sample size is not large enough to confidently reject that these fund level differences are greater than zero. One possibility is that we are imperfectly measuring the business group exposure of the funds because we only have data on holdings at the beginning of each month. If funds make trades during the month that change their exposure to the groups industry, the returns on these trades would be reflected in the our measure of returns, but we would have measurement error on the firm's intra-month BGI. In the next Section we look at the returns earned specifically on the holdings at the beginning of the month as a way to isolate the information in the beginning of the month holdings as separate from trades that happen during the month.

6.1 Holdings Based Portfolio Returns

In Panel A, Table 7, we use a holdings based return measure to examine the effect of the business group concentration index on mutual funds' stock selection skills. Each month we sort the business group affiliated funds into quintiles based on their BGI measure. We then calculate that month's return as the return on the portfolio holdings at the beginning of the month. Table 7, Panel A reports the average holding-based returns for the funds in different BGI quintiles. Column (1) reports the gross holdings return for a fund calculated as the weighted sum of the monthly returns for different stocks held at the beginning of the month where each stock is weighted proportionally to the amount held by the given fund. Column (2) reports the size adjusted holdings-based abnormal return calculated as the weighted sum

of the size adjusted return for stocks held at the beginning of the month. The size-adjusted return for a stock is calculated as the difference between a stock's return and the average return of all the Indian stocks in the same size quintile. Similarly, Column (3) reports the industry adjusted return as the weighted sum of the industry adjusted return for stocks held by a fund where industry adjusted return is the stock return in excess of the average return earned by stocks in the same industry group.

The results are consistent with the previous results on portfolio returns Table 6; stock holdings of the funds in the top BGI quintile outperform the holdings of the funds in the bottom BGI quintile by 26 basis points per month, and this difference is significant at the 10 percent level. In column (2), the corresponding difference in size-adjusted performance is 27 basis points per month. The most conservative estimate of stock selection skills is the industry adjusted return in column (3), which controls for the overall performance of all the same industry stocks in a given month. This measure captures the stock selection skills of a mutual fund manager within an industry. The high BGI funds outperform the low BGI funds by 15 basis points per month after adjusting for the overall industry returns.

Table 7, Panel B, decomposes the abnormal holdings based returns earned by portfolios with different BGI levels in to abnormal performance of Same Industry stocks in the portfolio versus Different Industry stocks in the portfolio. Recall, we define a stock as "Same Industry" if it is in an industry where the business group mutual fund owner has at least five percent of its real assets. Column (1) gives the percentage of the portfolio in Same Industry stocks. Funds in the fifth quintile of the BGI index hold approximately 30 percent more of their portfolio in Same Industry stocks versus funds in the 1st quintile of the BGI index. Column (2) shows the raw holdings based returns earned in the Same Industry stocks, and Column (3) shows the size-adjusted abnormal returns in the Same Industry stocks. Column (4) shows industry adjusted returns for the Same Industry stock portfolio. Column (5) shows

the percent of the portfolio held in Different Industry stocks, and Columns (6), (7) and (8) show raw, size adjusted, and industry adjusted returns on the non-industry affiliated stocks.

The main result in Panel B, Table 7 is that the holdings based raw returns and size adjust abnormal returns for Same Industry stocks are substantially larger than the respective returns on Different Industry stocks (i.e the difference between Column (2) and Column (6)). The difference ranges between 30 to 60 basis points. This is evidence that business groups do particularly well when they invest in stocks where they have a real presence. The second result is that the advantage that business groups have when they invest in these affiliated industries appears both for low BGI funds (i.e. funds that do not focus on related industries) and high BGI funds. This suggests that fund managers always use information related to these connected stocks to improve their decision making, regardless of whether the fund specifically focuses on the industry.

7 Why Don't Business Group Owned Funds Exploit the Business Group Advantage More?

Our finding that business group owned funds appear to perform better in their holdings of Same Industry stocks in all of their funds raises an important question. Could fund managers working for business groups increase their performance by investing a greater fraction of assets in stocks in the same industry as their business group? In other words, would the additional expected returns earned by investing more in Same Industry stocks be large enough to justify the additional idiosyncractic risk? We evaluate this question as follows. For each mutual fund portfolio we calculate a monthly Sharpe ratio on a portfolio of just the Same Industry stocks, and another Sharpe ratio for the portfolio as a whole. The Sharpe ratios are calculated using the holdings based returns and the standard errors are

estimated using the methodology in Lo (2002).[16] These results are presented in Table **??**. The first row presents the mean, 25th percentile, 50th percentile, and 75th percentile of the Sharpe ratios across the 98 funds in our sample. The second row takes the portfolio of Same Industry stocks within each fund and calculates the same summary statistics on the Sharpe ratio. The third row calculates the summary statistics on Sharpe ratios for a portfolio that only included different industry stocks. Note that that the Same Industry stock Sharpe ratio is higher at the mean, 25th, 50th, and 75th percentiles than the Different Industry portfolio Sharpe ratio. This is consistent with our previous results on the out-performance of Same Industry stocks.

The fourth row subtracts the Sharpe ratios of the All Holdings portfolios from the Same Industry stock portfolios. Here we find that, on average, Same Industry stocks do not have a higher Sharpe ratio. But when we look at the median and 75 percentile of the difference, we find positive values. The fifth row summarizes this information. 52 of the 98 funds, or 53 percent of the funds, have higher Sharpe ratios in the subset of their portfolio that is focused on Same Industry stocks compared to their full portfolio. This result suggests that a large fraction of funds could increase their Sharpe ratio by investing more heavily in the Same Industry stock portfolio. Among the 52 funds that have higher Sharpe ratios, 13 have Sharpe ratios that are statistically signficantly different from the full portfolio Sharpe ratio. Columns (6) through (9) present the same calculations as in Columns (2) - (4), but now the Sharpe ratios are calculated with size adjusted abnormal returns. With the size adjusted abnormal returns, we find that 39 percent of funds have a significantly larger Sharpe ratio in their portfolio of Same Industry stocks versus their full portfolio.

[16]In particular, we use the formula Lo (2002) derives for the standard error of a Sharpe ratio estimated on a portfolio with identically and independently distributed returns.

7.1 Robustness: Regression Analysis of Portfolio Returns

We next examine the relationship between the BGI index and fund performance using multivariate regressions that allow us to control for fund characteristics known to affect future returns (e.g. Chen et al. (2004) document a negative relationship between fund size and future returns for US mutual funds). The results are reported in Table 8. We estimate monthly Fama-MacBeth regressions and report the average of the monthly coefficients. Newey-West (1987) adjusted t-statistics based on 2-lags are reported in parentheses. The dependent variable is either the excess monthly returns above the S&P 500 CNX index (Columns (1) - (4)) or size adjusted holdings-based monthly returns (Columns (5) - (7)). The independent variables are lagged by one month and include the BGI index, BGI_overweight (equal to the BGI index for over-weight positions, and zero for under-weight positions), BGI_underweight (equal to the BGI index for under-weight positions, and zero for over-weight positions), fund size (log of Total Net Assets), the expense ratio, log of Fund Age, monthly fund flows and the Industry concentration index (see Kacperczyk et al. (2005)). All of the specifications also include a fixed effect for the owner of the business group; this controls for the possibility that certain business groups have better performance overall.

The coefficient corresponding to BGI is positive and significant at the 5 percent level in Columns (1) through (3). Column (1) shows the raw correlation between the BGI index and the fund's monthly return over the index. This correlation is significant at the five percent level and economically meaningful; a one standard deviation increase in the BGI measure leads to an approximate 9 basis point increase in the fund's excess performance above the market index per month. This confirms our earlier finding that fund returns increase with increasing investment in stocks in industries where the business group owners have a significant presence. In Column (2) we add controls for the fund's size, age, expense ratio and monthly flows. Including these controls does not substantially change the coefficient

on the BGI index. Column (3) includes the industry concentration index (ICI) studied in Kacperczyk et al. (2005). We are interested in whether part of our result is driven not by the exposure to related industries, but instead simply because high BGI index funds concentrate on a smaller set of industries. We find, however, that the inclusion of the ICI control variable actually slightly increases the coefficient on the BGI variable. In Column (4) we break down the effect of the BGI index in to the effect due to over-weighting stocks in the related industries and under-weighting stocks in related industries. We find that over-weighting the related industry stocks is positively and significantly correlated with out-performance, whereas under-weighting the related industries is not. This suggests that mutual fund managers primarily take advantage of the information within business groups by over-weighting stocks where they have more information.

7.2 Additional Results: Financial Conglomerates

Our main analysis has focused on broadly diversified business groups in India, as these are the types of firms that have received attention in the broader business groups literature Khanna and Palepu (2000). Nonetheless, our hypothesis could plausibly apply to mutual fund companies owned by financial conglomerates, such as mutual fund companies that are owned by banking firms. In Table **??** we test whether a portfolio of financial stocks held by funds owned by financial companies outperforms a portfolio of non-financial stocks held by funds owned by financial companies. Panel A includes all stocks held by financial company owned mutual funds, and splits them in to two portfolios: non-financial stocks and financial stocks. We find that the financial stock portfolio earns approximately 57 basis points more, although this result is not statistically significant at conventional levels. Panel B restricts the sample within each portfolio to those stocks in the top 10 over-weight percentile. Given we are restricted to only financial sector stocks, the number of stocks in this portfolio averages

only 19 per month. This limits the statistical power of these tests. Focusing on the over-weight sample we find that the difference between financial and non-financial stocks is only 51 basis points, and again not significant at standard levels. Overall, the results suggest that mutual funds owned by financial firms do not seem to enjoy the same informational advantage that funds owned by more diversified business groups do, although we do not have the power for any strong conclusion.

8 Conclusion

Theories of business group formation and persistence rely on the idea that divisions within the group *interact* with each other in a way to generate value. For example, more reputable divisions within the group might share their brand with new ventures within the group to ease capital constraints. Yet we have little empirical evidence identifying specific interactions. We provide evidence of one such interaction: group affiliated mutual funds appear to exploit information produced by the group to perform better in their investments in industries where they have a real presence. A portfolio of "Same Industry" stocks (stocks held by business group owned funds in industries where the business group has real operations) earns on average 6.8 percent more per year than a portfolio of stocks in unrelated industries; this difference increases to 15.7 percent per year when we focus on those stocks that business group funds choose to substantially over-weight. We find these stock level results are robust to a variety of different risk-adjustment methods, and beyond any general advantage the mutual fund industry has in industries that are generally related to business groups. We find some evidence that funds focused on these related industry stocks perform better overall, although a substantial number of funds could improve their performance (as measured by Sharpe ratios) by focusing even more on Same Industry stocks. Understanding why funds do not focus more on this advantage is an interesting question for future research.

Our findings also suggest that it may be useful to think of business groups as an "information network." While we have documented the transfer of information pertaining to the future performance of certain industries, it is likely there are other important types of information shared within groups. For example, cross-firm investments within business groups are likely to be less hampered by information asymmetries; this would allow new ventures within business groups to attract seed capital much faster than stand-alone new ventures. Business groups may also effectively share information on the quality of workers, allowing firms within the group to match workers to jobs more efficiently than arm's length labor markets plagued by information asymmetries (Katz and Gibbons, 1991).[17] Connections to politicians established by one division of the firm may generate valuable information on future regulation in all of the industries where the business group participates. Quantifying these benefits and understanding their importance in explaining the prevalence of business groups in emerging markets overall appears to be an important area for future research.

Our results highlight that regulators should be cognizant of information transfer across divisions within business groups in designing the regulation of business groups. As an example, consider the current debate on whether business groups should be allowed to enter the Indian banking sector. Information transfer from the banking division to other divisions within a business group could have important welfare consequences. Most directly related to this paper, business group owned mutual funds might trade on proprietary information about borrowing behavior among borrowers of their banking division, making profits at the consequence of less informed investors. More broadly, the banking division of the business group might reveal proprietary information on the product design or capital budgeting decisions of borrowers to other divisions within the business group, giving business group divisions an opportunity to "front-run" on profitable business ideas. On the other hand, business group

[17]For example, the Hero Group, a large Indian business group, recently announced a major investment in a new university. One of the benefits mentioned of a business group opening a university is the ability to hire workers in the group's other operations (Nanda, n.d.).

owned banks may be able to allocate capital more efficiently by pooling the information on industry trends from their entire group. While we leave the specific magnitudes of these various costs and benefits to future work, our current results provide the first direct evidence of information transfer within groups, and suggest that information transfer within business groups should be considered when formulating regulation.

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Table 1 Summary Statistics

Panel A reports the total assets under management for the Indian equity funds and the proportion of these assets or funds managed by the business-group affiliated mutual funds. INR bn refers to billions of Indian rupees. Panel B presents the summary statistics for the Indian equity mutual funds in our sample. Business Group Concentration Index (BGI) is defined in equation (1) of the text: $BGI_{i,j,t} = \sum_{j=1}^{10} \gamma_{i,j,t} abs\left(w_{i,j,t} - \overline{w}_{j,t}\right)$, where $\gamma_{i,j,t}$ is a dummy variable equal to 1 if the fraction of assets that the parent company of fund *i* has in industry *j* is greater than 5% at the end of month *t* and is 0 otherwise . $w_{i,j,t}$ is the value weight of fund *i* in industry *j* at the end of month *t.* $\overline{w}_{j,t}$ is the market weight in industry *j* at the end of month *t.* Panel C presents the distribution of each business group's real assets across our 10 industry groups at the beginning of our data sample in year 2003 and at the end in year 2012.

Panel A

	All Mutual Funds		Business Group Owner			
Year	Number of Funds	Total Assets (INR bn)	Number of Funds	Total Assets (INR bn)	% Assets	%Funds
2007	255	1848.94	82	551.07	30%	32%
2008	299	1046.24	95	353.37	34%	32%
2009	335	1943.40	108	702.01	36%	32%
2010	360	1900.39	116	781.07	41%	32%
2011	376	1937.78	115	581.93	30%	31%
2012	393	2144.29	123	603.58	28%	31%

Table 1, Panel B

	N	Mean	Stdev	Min	Median	Max
Total Assets (Rs million)	5973	4322.8	7886.4	0.0	1358.3	81066.2
Fund Age (year)	5973	5.73	3.89	0.08	5.08	18.33
Expense Ratio	5973	2.22	0.49	0.17	2.34	5.23
% Portfolio in Stocks	5973	86.8	7.4	70.0	87.7	100.0
Number of Funds per month	123	48	20	15	45	77
Monthly Return (%)	5973	1.25	7.63	-39.91	1.21	46.13
Monthly Abnormal Return_MktAdj (%)	5973	0.06	3.04	-32.06	0.07	28.23
Monthly Flow	5552	-0.02	0.12	-0.96	-0.01	0.60
BGI	5973	0.24	0.18	0.00	0.19	1.20
BGI_overweight	5973	0.14	0.15	0.00	0.11	0.86
BGI_underweight	5973	0.10	0.09	0.00	0.08	0.63
ICI	5973	0.11	0.18	0.00	0.05	1.06

Table 1, Panel C

March 2003

	Consumer Non-Durables	Consumer Durables	Healthcare	Manufacturing	Energy	Utilities	Telecom	Business Equipment & Services	Wholesale and Retail	Finance
Birla Aditya				73.2%	0.5%		21.1%	0.7%	1.5%	3.1%
Escorts		1.2%		79.0%				0.5%	0.3%	18.9%
Larsen & Toubro				85.5%		4.7%		1.9%		7.9%
Mahindra & Mahindra		37.2%		12.8%			0.02%	27.6%	2.5%	19.9%
Murugappa Chettiar Group	26.1%	2.1%		41.5%		0.3%			0.2%	29.9%
Reliance Group (Anil Ambani)	0.7%			0.5%		41.2%	42.5%	0.0%	0.1%	15.0%
Sahara India	80.7%		6.5%	9.4%					0.1%	3.4%
Tata	2.3%	12.6%		26.4%	0.3%	12.6%	16.5%	2.6%	5.5%	21.1%
TVS	0.4%	36.6%		3.9%			0.1%	2.7%	7.0%	49.3%
All Business Groups	1.5%	9.2%	0.02%	36.2%	0.2%	12.4%	17.7%	3.8%	3.2%	15.8%
Market Weight	6.7%	12.2%	7.4%	14.5%	24.9%	2.4%	3.3%	17.0%	0.7%	10.9%
Business Group Mutual Fund Weights	8.7%	11.7%	9.7%	17.3%	11.2%	1.1%	5.3%	15.7%	2.3%	16.9%
Non Business Group Mutual Fund Weights	7.8%	10.0%	7.5%	21.4%	15.5%	1.4%	1.4%	16.0%	0.5%	18.4%
March 2012										
Birla Aditya	0.2%			61.4%	0.03%	0.0001%	28.1%	0.5%	6.1%	3.8%
Escorts				97.4%		2.1%				0.5%
Larsen & Toubro		0.1%		65.6%	0.005%	3.2%		1.7%	0.3%	29.1%
Mahindra & Mahindra	0.0002%	38.7%		4.6%			0.02%	23.3%	3.7%	29.6%
Murugappa Chettiar Group	13.3%			39.2%		0.1%		0.02%	0.01%	47.4%
Reliance Group (Anil Ambani)	1.1%					40.0%	42.9%			16.1%
Sahara India	73.3%							2.9%	0.7%	23.1%
Tata	1.2%	15.8%		29.8%		12.0%	4.7%	10.1%	3.3%	23.1%
TVS Iyengar		32.5%		3.6%		1.5%		0.7%	5.4%	56.3%
All Business Groups	0.9%	9.5%		31.9%	0.005%	13.7%	15.0%	6.3%	2.6%	20.0%
Market Weight	6.6%	9.3%	5.1%	18.2%	17.5%	5.9%	3.8%	12.7%	2.6%	18.1%
Business Group Mutual Fund Weights	6.3%	10.6%	8.7%	19.8%	10.8%	5.4%	2.9%	12.1%	1.9%	21.6%
Non Business Group Mutual Fund Weights	7.7%	9.7%	6.7%	17.3%	10.1%	4.8%	4.4%	13.4%	0.8%	25.1%

Table 2 Business Groups Affiliation and Stock Holdings

This table presents the results of regressions of a business group owned fund's over-weighting in an industry on whether the business group is present in that industry and other controls. The fund sample includes all Indian equity funds owned by a business group in the Morningstar database over the period 2002 – 2013. The unit of observation in Columns (1) – (4) is the fund*industry*month. In the first four columns the dependent variable is *Diffwt_ind(Fund,Mkt)*, which is defined as the fund's weighting in industry *j* minus the market's weighting in industry *j* in month *t.* The BGroupIndwt variable is a continuous variable form 0 – 100 that is the fraction of the business group's real assets in industry *j* at the end of the previous financial year. The BGROUP_Dummy variable is an indicator for whether the business group has more than 5 percent of its real assets in industry *j* at the end of the previous financial year. Columns (5) and (6) pool all mutual fund holdings up to the business group level, so in those columns the unit of observation is the business group*industry*month. Pooling holdings up to the business group level is a natural way to weight larger funds more than smaller funds. Standard errors are clustered at the fund level in Columns (1) – (4) and at the business group level in Columns (5) and (6). 5% statistical significance is indicated in bold.

	Dependent Variable					
Independent Variables	Diffwt_ind(Fund,Mkt)				Diffwt_ind(Bgroup,Mkt)	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	**-0.009**	**-0.008**	0.012	0.013	**-0.010**	**-0.010**
	(-4.32)	**(-3.23)**	(0.81)	(0.82)	**(-3.84)**	**(-3.90)**
BGroupIndwt	**0.089**				**0.100**	
	(4.32)				**(3.84)**	
BGROUP_Dummy		**0.023**	**0.012**	**0.012**		**0.031**
		(3.24)	**(2.24)**	**(2.24)**		**(4.11)**
Cluster(Fund)	Yes	Yes	Yes	Yes	No	No
Cluster(Bgroup)	No	No	No	No	Yes	Yes
Month Fixed Effects	No	No	No	Yes	No	No
Industry Fixed Effects	No	No	Yes	Yes	No	No
R2 (%)	2.15	1.04	11.72	11.72	7.35	5.01
Nobs	70230	70230	70230	70230	8940	8940

Table 3 Business Group Affiliation and Information Flow: Evidence from Stock Returns

This table presents calendar time portfolio returns of Same and Different Industry stocks. The fund sample includes all Indian equity funds owned by a business group in the Morningstar database over the period 2002 – 2013. At the beginning of each month, stocks in each mutual fund portfolio are assigned to one of two portfolios: Same Industry or Different Industry. The Same Industry portfolio includes stocks in one of the industries where the business group has real operations (measured by sectors with greater than 5% of assets at the end of the previous financial year). Similarly, the Different Industry portfolio includes stocks where the business group has less than a 5% presence. All stock positions are then pooled within one of these two portfolios and returns for the two portfolios are calculated. The stocks within each portfolio are value weighted by the combined dollar holdings by all the business group affiliated funds. Value weighted raw returns is the simple return on the portfolio (we call this value weighted because the returns on each stock in the portfolio are weighted by the dollar holdings). Value weighted size-adjusted returns subtract the average return in the stock's market cap group before averaging the returns in the portfolio. Value weighted industry adjusted returns subtract the average industry (based on our 10 industry classification) return from each stock's return before averaging. The Carhart 4-factor alpha is the intercept from a regression of the value weighted portfolio return on the market (MKTRF), book to market (HML), size (SMB) and momentum (UMD) factors for Indian stocks. The equal weighted size adjusted returns take the raw average of returns in the stocks irrespective of the size of the holdings in the stock in the mutual fund. The market cap weighted size adjusted returns weight stocks by market cap within the portfolio. The Non-Business Group Adjusted Returns subtract out the value weighted return earned by non-business group owned funds in the same set of stocks in the portfolio. The results for the full sample are reported in Panel A. All the returns are in monthly percentage. 5% significance level is denoted in bold and t-statistics are given in parentheses.

Table 3, Panel A

	Avg number of Stocks	Value Weighted_Returns	Value Weighted Size Adjusted Returns	Value Weighted Industry Adjusted Returns	Value Weighted 4 Factor Alpha	Equal Weighted Size Adjusted Returns	Market Cap weighted size adjusted returns	Value Weighted Non-Business Group Adjusted Returns
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Different Industry Stocks	228	**1.95**	0.05	0.14	0.09	0.17	-0.16	0.04
		(2.75)	(0.30)	(1.19)	(0.58)	(1.11)	(-1.27)	(0.36)
Same Industry Stocks	197	**2.52**	**0.59**	**0.39**	**0.54**	0.37	0.04	**0.32**
		(2.95)	**(2.90)**	**(3.05)**	**(2.64)**	(1.95)	(0.35)	**(2.61)**
Same-Different		**0.57**	**0.55**	0.25	**0.45**	0.20	0.20	**0.28**
		(2.26)	**(2.16)**	(1.92)	**(2.08)**	(1.31)	(1.62)	**(2.34)**

Table 3, Panel B

In Panel B we focus on stocks in the Same and Different Industry portfolios that business group fund managers chose to over-weight substantially. In each month we rank stocks in the Same Industry portfolio according to how much business group mutual fund managers chose to over-weight them relative to the market. We then calculate returns of those stocks that were in the top 5 percent of this over-weighting distribution. The same procedure is used within the Different Industry stocks.

OverWeight Rank=Top 5 percentile

	Avg number of Stocks	Value Weighted_Returns	Value Weighted Size Adjusted Returns	Value Weighted Industry Adjusted Returns	Value Weighted 4 Factor Alpha	Equal Weighted Size Adjusted Returns	Market Cap weighted size adjusted returns
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Different Industry Stocks	36	**1.98**	0.08	0.19	-0.02	0.09	-0.55
		(2.82)	(0.18)	(0.60)	(-0.05)	(0.35)	(-1.51)
Same Industry Stocks	24	**3.29**	**1.43**	**0.90**	**1.16**	**1.03**	0.43
		(3.52)	**(3.94)**	**(3.15)**	**(3.13)**	**(3.54)**	(1.53)
Same-Different		**1.31**	**1.35**	**0.72**	**1.18**	**0.93**	**0.98**
		(2.29)	**(2.32)**	**(2.03)**	**(2.31)**	**(2.31)**	**(2.07)**

Table 3, Panel C

In Panel C we focus on stocks that business group mutual fund managers chose to under-weight significantly. In each month we rank stocks in the Same Industry portfolio according to how much business group mutual fund managers chose to over-weight them relative to the market. We then calculate returns of those stocks that were in the bottom 5 percent of this over-weighting distribution. The same procedure is used within the Different Industry stocks.

OverWeight Rank=Bottom 5 percentile

Avg number of Stocks	Value Weighted_Returns	Value Weighted Size Adjusted Returns	Equal Weighted Size Adjusted Returns	Value Weighted Industry Adjusted Returns	Value Weighted 4 Factor Alpha
(1)	(2)	(3)	(4)	(5)	(6)
13	**1.47**	-0.38	-0.39	-0.24	-0.30
	(2.23)	(-1.54)	(-1.67)	(-1.47)	(-1.40)
11	1.08	**-0.77**	**-0.82**	**-0.54**	-0.46
	(1.57)	**(-2.64)**	**(-2.97)**	**(-2.46)**	(-1.63)
	-0.39	-0.39	-0.43	-0.30	-0.17
	(-1.46)	(-1.46)	(-1.41)	(-1.78)	(-0.62)

Table 3, Panel D

In Panel D we calculate Value Weighted Size Adjusted Returns in the four months subsequent to portfolio formation. The Different and Same Industry portfolios are defined as above. Columns (1) – (4) focus on the stocks that were within the top 5 percent of the over-weight distribution, and Columns (5) – (8) focus on stocks that were in the bottom 5 percent of the over-weight distribution.

(OverWeight: Portfolio Weight-Market Weight of the Stock)

	Value Weighted Size Adjusted Returns OverWeight Rank=Top 5 percentile				Value Weighted Size Adjusted Returns OverWeight Rank=Bottom 5 percentile			
	month+1	month+2	month+3	month+4	month+1	month+2	month+3	month+4
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Different Industry Stocks	0.08	0.03	0.24	0.14	-0.38	-0.30	-0.38	-0.34
	(0.18)	(0.08)	(0.57)	(0.37)	(-1.54)	(-1.27)	(-1.59)	(-1.42)
Same Industry Stocks	**1.43**	**1.04**	**1.09**	**1.13**	**-0.77**	**-0.94**	**-0.79**	**-0.74**
	(3.94)	**(2.95)**	**(3.47)**	**(3.20)**	**(-2.64)**	**(-2.74)**	**(-2.60)**	**(-2.62)**
Same-Different	**1.35**	1.01	0.85	**1.00**	-0.39	**-0.64**	-0.42	-0.40
	(2.32)	(1.88)	(1.48)	**(1.96)**	(-1.46)	**(-2.10)**	(-1.31)	(-1.48)

Table 3, Panel E

Panel E reports average returns for business group mutual fund holdings of firms that are directly owned by the business group. A stock enters the portfolio analyzed in this table if in month *t* the stock represents a firm that is owned by a business group, and the business group that owns that firm's stock runs a mutual fund that owns the stock. The "All Stocks" row includes all stocks that fit this definition. The "Top 10 Percentile" row includes the stocks that fall within the top 10 percent of the over-weight distribution.

	Avg number of Stocks	Value Weighted_Returns	Value Weighted Size Adjusted Returns	Value Weighted 4 Factor Alpha	Market Cap Weighted Size Adjusted Returns	Equal Weighted Size Adjusted Returns
	(1)	(2)	(3)	(4)	(5)	(6)
All Stocks	15	**2.23**	0.35	0.15	0.21	0.39
		(2.09)	(0.72)	(0.34)	(0.61)	(1.23)
Top 10 Percentile	3	1.32	-0.15	-0.11	0.01	0.82
		(0.92)	(-0.16)	(-0.13)	(0.01)	(0.99)

Table 4 Business Group Affiliation and Information Flow: Evidence from Earnings Announcement Returns

This table presents the average returns of stocks in the Different and Same Industry portfolios around quarterly earnings announcements. At the beginning of each quarter we sort stocks in to either the Same Industry portfolio or the Different Industry portfolio. The sample here includes those stocks in the top 5 percent of the over-weight distribution within these portfolios. For each stock within the Same Industry portfolio, we calculate the stock's return in the two day window [day 0, day 1, and day 2] following its quarterly earnings announcement. We then average these earnings announcement returns across all stocks in the Same Industry portfolio in the same quarter. The same procedure is used for the Different Industry stocks. All the returns are in monthly percentage. 5% significance level is denoted in bold and t-statistics are given in parentheses.

Earnings Announcement Return: (0,+2)						Average Quarterly Return		
OverWeight Rank=Top 5 percentile						OverWeight Rank=Top 5 percentile		
	Avg number of Stocks	Value Weighted_Returns	Value Weighted Market Adjusted Returns	Value Weighted Size Adjusted Returns	Equal Weighted Returns	Equal Weighted Market Adjusted Returns	Value Weighted Market Adjusted Returns	Value Weighted Size Adjusted Returns
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Different Industry Stocks	29	-0.05	-0.26	-0.32	0.24	0.06	0.63	0.23
		(-0.09)	(-0.56)	(-0.67)	(0.26)	(0.96)	(0.62)	(0.22)
Same Industry Stocks	21	**1.35**	**1.28**	**1.15**	**0.94**	**0.66**	**4.47**	**4.18**
		(2.35)	**(2.76)**	**(2.56)**	**(2.72)**	**(2.78)**	**(3.48)**	**(3.37)**
Same-Different		1.40	**1.54**	**1.46**	**0.70**	0.60	**3.84**	**3.95**
		(1.94)	**(2.47)**	**(2.38)**	**(2.31)**	(1.94)	**(2.43)**	**(2.40)**

Table 5 Business Group Affiliation and Information Flow: Evidence from Analyst Forecast Errors

This table presents regressions of the mean forecast error across analysts at the stock level on indicators for whether the holding was in an industry where the business group mutual fund owner had real operations. The unit of observation is the stock holding*fund*earnings announcement level. The sample includes all earnings announcements of stocks held by business group owned mutual funds. A stock held by multiple business group funds would appear multiple times as a different holding. The BGroupIndwt variable is a continuous measure of the fraction of real assets the business group owns in the stock's industry at the end of the preceding financial year. The BGROUP_Dummy is an indicator for whether the business group that owns the stock in the current observation also has more than 5 percent of real assets in the stock's industry. The DIFFWT variable is the difference between the fund's weighting of the stock and the market's weighting of the stock. Standard errors are clustered at the quarter level to account for the fact multiple holdings corresponding to the same earnings announcement are not independent observations. 5% significance level is denoted in bold and t-statistics are given in parentheses.

	Dependent Variable						
	All Positions			Top 10%		Bottom 10%	
Independent Variables	Mean Forecast Error						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	-0.001	0.000	0.000	0.001	**0.002**	**0.001**	**0.002**
	(-0.97)	(-0.47)	(0.23)	(1.20)	**(2.73)**	**(2.65)**	**(3.01)**
BGroupIndwt			-0.001		**0.008**		0.004
			(-0.91)		**(2.18)**		(1.21)
BGROUP_Dummy	**0.002**	0.001		**0.005**		0.002	
	(2.60)	(1.81)		**(2.58)**		(1.72)	
DIFFWT	**0.028**	0.001	0.010				
	(3.79)	(0.14)	(1.34)				
DIFFWT *BGROUP_Dummy		**0.064**					
		(2.26)					
DIFFWT *BGroupIndwt			**0.146**				
			(2.06)				
Cluster(Qtr)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2 (%)	0.87	1.11	0.50	4.24	2.10	1.46	0.71
Nobs	11664	11664	11664	1242	1242	1134	1134

Table 6 Business Group Industry Concentration and Fund Performance: Portfolio Tests

This table reports raw and risk-adjusted returns for Indian equity mutual funds from 2003 to 2013. Panel A reports the unconditional returns for different subsets of mutual funds. Panel B reports the return for the equity mutual funds conditional on their Business Group concentration index (BGI) calculated according to equation (1) of the text. At the end of each month, funds affiliated with business groups are sorted in quintiles based on their BGI index and average monthly returns are calculated over the next one month. Monthly excess return is the monthly fund return in excess of the monthly rate or yield for a 3-month Indian treasury bill. Return over CNX 500 is the return of the fund in excess to the return on S&P CNX 500 index which is a value-weighted index of 500 of the largest stocks traded on the Indian stock market. Style adjusted return is the return in excess of the average return in the same month for other funds following the same investment style as reported by Morningstar, funds are classified into different styles according to their size and book to market characteristics. CAPM alpha is the intercept obtained from regressing the mean returns of the funds in different BGI quintiles on excess return of the value-weighted market index. Similarly, Carhart alpha is obtained from regressing the mean fund returns on market (MKTRF), book to market (HML), size (SMB) and momentum (UMD) factors for Indian stocks. The factor loading for the four factors are also reported. All returns are reported in monthly percentage and t-statistics are reported in parentheses.

Panel A

	Monthly Return	Monthly Excess Return	Return over S&P CNX 500	Holdings Based Size Adjusted Return	CAPM Alpha	FF Carhart 4- Factor Alpha	MKT-Rf	HML	SMB	UMD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
All Equity Funds	**1.83**	**1.31**	0.07	0.17	0.15	0.09	**0.86**	-0.02	**0.11**	0.00
	(2.78)	**(1.98)**	(0.49)	(1.53)	(1.32)	(0.87)	**(61.75)**	(-0.98)	**(5.09)**	(0.22)
All Financial Sector Affiliated Funds	**1.82**	**1.30**	0.06	0.12	0.14	0.07	**0.86**	-0.02	**0.10**	0.01
	(2.78)	**(1.97)**	(0.42)	(1.04)	(1.27)	(0.69)	**(60.46)**	(-1.10)	**(4.47)**	(0.80)
Domestic Financial sector Affiliated Funds	**1.84**	**1.32**	0.08	0.17	0.16	0.10	**0.86**	-0.02	**0.10**	0.01
	(2.80)	**(2.00)**	(0.60)	(1.57)	(1.43)	(0.95)	**(60.67)**	(-1.20)	**(4.44)**	(0.41)
Foreign Financial sector affiliated Funds	**1.76**	1.24	0.00	-0.02	0.09	0.00	**0.85**	-0.02	**0.10**	0.03
	(2.70)	(1.89)	(0.02)	(-0.11)	(0.77)	(0.07)	**(54.08)**	(-0.84)	**(4.04)**	(1.44)
Business Group Affiliated Funds	**1.86**	**1.34**	0.10	**0.27**	0.17	0.14	**0.85**	-0.01	**0.14**	-0.02
	(2.81)	**(2.01)**	(0.68)	**(2.34)**	(1.42)	(1.26)	**(58.19)**	(-0.66)	**(5.88)**	(-1.02)

Table 6, Panel B

BGI	Monthly Return	Monthly Excess Return	Return over S&P CNX 500	Value Weighted Return Over S&P CNX 500	CAPM Alpha	FF Carhart 4-Factor Alpha	MKT-Rf	HML	SMB	UMD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	**1.83**	**1.30**	0.07	0.00	0.17	0.18	**0.82**	0.00	**0.11**	-0.04
	(2.82)	**(2.00)**	(0.39)	(0.02)	(1.22)	(1.34)	**(46.34)**	(-0.06)	**(3.69)**	(-1.72)
2	**1.75**	1.22	-0.01	0.00	0.05	0.02	**0.85**	0.03	**0.10**	0.00
	(2.63)	(1.83)	(-0.09)	(-0.02)	(0.43)	(0.18)	**(52.73)**	(1.39)	**(3.68)**	(0.06)
3	**1.79**	1.27	0.03	-0.29	0.12	0.10	**0.85**	-0.03	**0.14**	-0.03
	(2.71)	(1.91)	(0.17)	(-1.12)	(0.78)	(0.66)	**(44.57)**	(-1.27)	**(4.59)**	(-1.31)
4	**1.93**	**1.40**	0.17	0.04	0.20	0.11	**0.89**	-0.03	**0.19**	0.01
	(2.79)	**(2.02)**	(0.92)	(0.17)	(1.20)	(0.71)	**(43.5)**	(-1.23)	**(5.60)**	(0.23)
5	**2.04**	**1.52**	0.28	0.44	**0.34**	**0.31**	**0.86**	-0.03	**0.17**	-0.03
	(3.01)	**(2.23)**	(1.46)	(1.59)	**(2.03)**	**(2.01)**	**(42.42)**	(-1.08)	**(5.26)**	(-1.42)
5-1	0.21	0.21	0.21	0.44	0.17	0.13	**0.04**	-0.03	**0.07**	0.00
	(1.58)	(1.58)	(1.58)	(1.87)	(1.25)	(0.96)	**(2.30)**	(-1.16)	**(2.31)**	(0.08)

Table 7 Mutual Fund Performance: Holdings Based Returns

Panel A reports the average holding-based returns for the funds in different BGI quintiles. Column 1 reports the gross holdings return for a fund calculated as the weighted sum of the monthly returns for different stocks held at the beginning of the month and where each stock is weighted proportionally to the amount held by the given fund. Column 2 reports the size adjusted holdings-based abnormal return calculated as the weighted sum of the size adjusted return for stocks held at the beginning of the month. Size-adjusted return for a stock is calculated as the difference between a stock's return and the average return of all the Indian stocks in the same size quintile as that stock. Similarly, column 3 reports the industry adjusted return as the weighted sum of the industry adjusted return for stocks held by a fund where industry adjusted return is the stock return in excess of the average return earned by stocks in the same industry group. In Panel B, each fund portfolio is divided into two parts: stocks that belong to the industry where the fund's business group owner has a presence or non-zero assets and where it doesn't. The weighted raw returns and size adjusted returns for each group of stocks is estimated by weighting by the fund's dollar holdings. All the returns are in monthly percentage. 5% significance level is denoted in bold and t-statistics are given in parentheses.

Panel A

	Holdings Based Raw Returns	Size Adjusted Abnormal return	Holdings Based Industry Adjusted Returns
BGI	(1)	(2)	(3)
1	**2.04**	0.12	0.16
	(2.77)	(0.84)	(1.54)
2	**2.07**	0.14	**0.21**
	(2.77)	(1.05)	**(2.12)**
3	**2.03**	0.11	0.21
	(2.72)	(0.76)	(1.93)
4	**2.17**	**0.29**	**0.29**
	(2.77)	**(2.02)**	**(2.29)**
5	**2.29**	**0.39**	**0.31**
	(2.85)	**(2.29)**	**(2.44)**
5-1	0.26	0.27	0.15
	(1.73)	(1.87)	(1.28)

Table 7, Panel B

	Same Industry Stocks				Different Industry Stocks			
BGI	% in Same Industry Stocks	Holdings Based Raw Returns	Size Adjusted Abnormal return	Industry Adjusted Return	% in Different Industry Stocks	Holdings Based Raw Returns	Size Adjusted Abnormal return	Industry Adjusted Return
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	29.7	**2.59**	**0.64**	0.36	70.3	**1.77**	-0.13	0.03
		(2.98)	**(2.51)**	(1.76)		**(2.58)**	(-0.68)	(0.22)
2	37.9	**2.46**	**0.50**	**0.36**	62.1	**1.93**	0.03	0.12
		(2.87)	**(2.14)**	**(2.42)**		**(2.82)**	(0.16)	(0.94)
3	44.2	**2.36**	0.41	0.34	55.8	**1.90**	-0.01	0.16
		(2.70)	(1.73)	(1.94)		**(2.83)**	(-0.06)	(1.30)
4	53.6	**2.36**	**0.46**	0.21	46.4	**2.04**	0.19	**0.35**
		(2.73)	**(2.07)**	(1.27)		**(2.77)**	(0.93)	**(2.15)**
5	60.4	**2.42**	**0.49**	**0.41**	39.6	**1.99**	0.10	0.04
		(2.80)	**(2.24)**	**(2.59)**		**(2.72)**	(0.39)	(0.20)
5-1		-0.18	-0.15	0.04		0.22	0.24	0.01
		(-0.79)	(-0.71)	(0.19)		(1.05)	(1.10)	(0.08)

Table 7, Panel C

		Excess Return				Size Adjusted Abnormal Return			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sharpe Ratio	N	Mean	p25	Median	p75	Mean	p25	Median	p75
All Holdings	98	0.113	0.039	0.137	0.193	0.071	0.008	0.083	0.152
Same Industry Stocks	98	0.116	0.045	0.128	0.192	0.089	0.025	0.095	0.165
Different Industry Stocks	98	0.092	0.036	0.118	0.180	0.006	-0.055	0.031	0.099
Same Industry Stocks -All Holdings	98	0.000	-0.021	0.001	0.019	0.017	-0.043	0.013	0.059
Funds with Positive Difference	98	52(53%)				58 (59%)			
Funds with Significant Positive Difference	98	13 (13%)				35 (39%)			

Table 8 Business Group Industry Concentration and Fund Performance: Regression Evidence

This table reports the coefficients from the regressions explaining the mutual fund performance for each fund in month t+1 and includes one of the following performance measures as the dependent variable: monthly return in excess of the market return (S&P CNX 500 index return) or holdings-based size adjusted return. The independent variables are lagged by one month and include the following: Business Group concentration index (BGI, defined in equation (1) of the text), logarithm of total net assets (TNA), monthly fund flows, log of fund age, log of fund's annual expense ratio and industry concentration index (ICI). Columns 1 to 7 estimate the pooled-panel regressions and standard errors are clustered by fund or by month. 5% significance level is denoted in bold.

	Dependent Variable						
	Monthly Return-S&P 500 CNX					Holdings based size adjusted return	
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	0.000	-0.0078	-0.0077	-0.0072	-0.0078	0.0011	0.002
	(0.11)	(-0.50)	(-0.49)	(-0.44)	(-0.62)	(0.11)	(0.15)
BGI	**0.005**	**0.0059**	**0.0072**		0.0059	**0.0097**	**0.013**
	(2.60)	**(2.84)**	**(2.20)**		(1.77)	**(2.24)**	**(2.01)**
BGI_overweight				**0.0074**			
				(3.12)			
BGI_underweight				0.0022			
				(0.36)			
ICI			-0.0021				-0.006
			(-0.62)				(-1.03)
log(TNA)		0.0001	0.0001	0.0001	0.0001	-0.0001	0.000
		(0.16)	(0.10)	(0.09)	(0.18)	(-0.24)	(-0.49)
log(Fund_age)		0.0003	0.0004	0.0004	0.0003	0.0007	0.001
		(0.62)	(0.66)	(0.76)	(0.48)	(1.16)	(1.26)
Exp_Ratio		0.0018	0.0019	0.0019	0.0018	-0.0011	-0.001
		(1.30)	(1.35)	(1.36)	(1.38)	(-1.14)	(-0.99)
Monthly Flow		-0.0054	-0.0054	-0.0054	-0.0054	-0.0093	-0.009
		(-1.12)	(-1.12)	(-1.11)	(-0.83)	(-1.29)	(-1.30)
Errors Clusterd by	Fund	Fund	Fund	Fund	Month	Month	Month
Owner Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2 (%)	0.26	0.44	0.45	0.45	0.44	0.6	0.65
Nobs	5973	5552	5552	5552	5552	5481	5481
Number of Months	123	123	123	123	123	122	122

Table 9 Financial Mutual Fund Firms and Returns on Financial Stock Holdings

This table presents the calendar time portfolio returns. The fund sample includes all Indian equity funds owned by a financial firm (life insurance, bank or asset management company) in the Morningstar database over the period 2002 – 2012. At the beginning of each month, stocks in each mutual fund portfolio are assigned to one of the two portfolios: Non-financial or Financial. All stock positions are then pooled within one of these two portfolios and returns for the two portfolios are calculated. The stocks within each portfolio are value weighted by the combined dollar holdings by all the business group affiliated funds. We calculate the following return measures: Value weighted raw returns, value weighted size-adjusted returns, Carhart 4-factor alpha estimated from the value weighted raw returns, Market Cap Weighted Size adjusted returns. The results for the full sample are reported in Panel A. Panel B presents the results for those stocks in each portfolio in the top 10 percent of the over-weight distribution. All the returns are in monthly percentage. 5% significance level is denoted in bold and t-statistics are given in parentheses.

Panel A

		All Stocks			
	Avg number of Stocks	Value Weighted_Returns	Value Weighted Size Adjusted Returns	Value Weighted 4 Factor Alpha	Market Cap Weighted Size Adjusted Returns
Non-Financial Stocks	338	**1.96**	0.06	0.10	-0.10
		(2.84)	(0.43)	(0.79)	(-0.79)
Financial Stocks	44	**2.48**	0.61	0.71	0.44
		(2.55)	(1.24)	(1.40)	(1.04)
Same-Different		0.53	0.55	0.61	0.53
		(0.92)	(0.96)	(1.08)	(1.04)

Panel B

		OverWeight Rank=Top 10 percentile			
	Avg number of Stocks	Value Weighted_Returns	Value Weighted Size Adjusted Returns	Value Weighted 4 Factor Alpha	Market Cap Weighted Size Adjusted Returns
Non-Financial Stocks	100	**2.02**	0.15	0.12	-0.11
		(3.03)	(0.58)	(0.56)	(-0.56)
Financial Stocks	16	**2.32**	0.48	0.48	0.54
		(2.23)	(0.83)	(0.82)	(1.29)
Same-Different		0.30	0.33	0.35	0.65
		(0.45)	(0.48)	(0.56)	(1.21)

Appendix Table 1

This table returns to the Same and Different Industry portfolios separately for the first half of our sample (March 2003 – March 2008) and the second half of our sample (April 2008 – May 2013).

Panel A: All Stocks
March 2003-March 2008

	Avg number of Stocks	Value Weighted_Returns	Value Weighted Size Adjusted Returns	Value Weighted Industry Adjusted Returns	Value Weighted 4 Factor Alpha
Different Industry Stocks	192	**3.24**	-0.10	0.20	0.07
		(3.37)	(-0.42)	(1.10)	(0.27)
Same Industry Stocks	153	**4.12**	**0.74**	0.37	0.52
		(3.82)	**(2.46)**	(1.62)	(1.59)
Same-Different		**0.88**	**0.84**	0.17	0.45
		(2.85)	**(2.70)**	(0.76)	(1.43)

April 2008- May 2013

	Avg number of Stocks	Value Weighted_Returns	Value Weighted Size Adjusted Returns	Value Weighted Industry Adjusted Returns	Value Weighted 4 Factor Alpha
Different Industry Stocks	264	0.64	0.19	0.07	0.13
		(0.62)	(0.89)	(0.50)	(0.67)
Same Industry Stocks	242	0.89	0.44	**0.40**	**0.59**
		(0.69)	(1.60)	**(3.86)**	**(2.91)**
Same-Different		0.25	0.25	**0.33**	0.47
		(0.64)	(0.63)	**(2.50)**	(1.70)

Panel B: Top 5% Overweights
March 2003-March 2008

	Avg number of Stocks	Value Weighted_Returns	Value Weighted Size Adjusted Returns	Value Weighted Industry Adjusted Returns	Value Weighted 4 Factor Alpha
Different Industry Stocks	26	**3.52**	0.17	0.63	0.43
		(3.28)	(0.30)	(1.27)	(0.69)
Same Industry Stocks	16	**5.13**	**1.85**	**1.20**	**1.32**
		(4.18)	**(3.55)**	**(2.39)**	**(2.34)**
Same-Different		**1.61**	**1.68**	0.58	0.88
		(2.40)	**(2.46)**	(1.05)	(1.22)

April 2008- May 2013

	Avg number of Stocks	Value Weighted_Returns	Value Weighted Size Adjusted Returns	Value Weighted Industry Adjusted Returns	Value Weighted 4 Factor Alpha
Different Industry Stocks	46	0.41	-0.02	-0.26	-0.28
		(0.47)	(-0.02)	(-0.69)	(-0.59)
Same Industry Stocks	31	1.42	**0.99**	**0.60**	**1.15**
		(1.03)	**(1.99)**	**(2.21)**	**(2.41)**
Same-Different		1.01	1.01	0.86	**1.43**
		(1.08)	(1.07)	(1.92)	**(1.99)**