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Diversity in Corporate Boards and Firm Outcomes

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Abstract

We examine firm performance effects of mindset diversity among corporate directors, prox-ied by diversity along religion and caste, a deep-rooted institution that divides India's Hindu society into hundreds of communities. To identify directors' caste, we build the first data-driven mapping of last names to religion and caste at different levels of granularity. Indian corporate boards strikingly lack diversity during 1999-2015. Lower board diversity worsens firm performance and value. The strongest negative effects are for the finest caste measure, along which mindsets are likely most similar. This shows that the estimated effects of diversity depend upon the granularity of its measure.

1 Introduction

In recent years, the lack of diversity in corporate boards has garnered considerable attention. Several measures have been proposed to diversify corporate boards, with a key principle being that diversity of identities and backgrounds brings diversity of perspectives and mindsets.[1] However, research on the effects of mindset diversity on firm performance faces the challenge that directors' mindset is not directly measurable. Much prior work has used gender as an instrument for mindset diversity (Adams (2016); Adams and Ferreira (2009)). Yet, individuals' mindsets could differ due to other deeply impactful cultural markers that are often more difficult to measure (Page (2007); Phillips and O'Reilly (1998)). Indeed, a newly proposed requirement by the NASDAQ that publicly traded U.S. firms diversify their boards with at least one woman and one under-represented minority (by race or sexual orientation) acknowledges that mindset diversity often involves facets other than gender.[2]

Our paper measures mindset diversity using a relatively unexplored instrument which relates deeply to people's sense of identity. In particular, we focus on diversity of both religion as well as caste - an informal social institution that divides India's Hindu society into hundred of communities. We find that India's corporate boards are characterized by strikingly low levels of religion and caste diversity. We then ask how this lack of mindset diversity (proxied by religion and caste diversity) impacts firm outcomes and show that firm value and performance are negatively affected by high caste homogeneity of boards. These negative effects are strongest for our narrowest measure of identity. This suggests that the granularity with which board diversity is measured affects firm performance estimates.

Caste membership is a compelling instrument to measure mindset differences in the boardroom as it is a deeply rooted and temporally stable structural aspect of Indian society. Although

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[1]There are several notable examples of such measures. Since 2008, Norway has required public and state-owned companies to have 40% of their boards be constituted by females. As of the end of 2019, California requires all public companies to have at least one female director. Since 2013, India has required large public companies to have at least one female director.

[2]Refer to this link for more details

there are multiplicity of views on the precise historical origins of the caste system, there is schol-arly unanimity that it is an important societal feature of the contemporary Indian nation-state – a democracy since 1950 and a market economy since 1991. Caste has been shown to affect educa-tion (Hnatkovska et al. (2012),Hnatkovska et al. (2013)), intergenerational occupational mobility (Munshi and Rosenzweig (2013)), lending (Fisman et al. (2017)), and more. As Munshi (2019) puts it, "Caste plays a role at every stage of an Indian's economic life." [3]As India becomes a more important constituent of the global economy, understanding the role of caste in corporate governance of Indian firms is imperative.

Caste can be measured coarsely as five categories (termed *varnas*) or finely as hundreds of categories (termed *jatis*). However, most previous studies on caste use a binary measure of "upper" and "lower" caste, in part, because there is no systematic documentation enabling researchers to identify individuals' coarse-grained caste (*varna*) and fine-grained caste (*jati*). We use a novel computational methodology to develop a data driven mapping of last names to religion and caste at varying levels of granularity (i.e. religion, coarse- and fine-grained caste). In doing so, we exploit the facts that individuals' last names are indicative of their caste, and that marriages are predominantly intra-religion and, among Hindus, intra-caste. We obtain data from three prominent matrimonial websites on the names of nearly six million registered users and their self-reported caste. Since the mapping between last name and religion/caste is not always one-to-one, we use these data to assign probabilities with which a last name belongs to each caste (at coarse- and fine-grained levels). This method helps us map 16,637 unique last names into eight religions, five coarse-grained castes, and 471 distinct fine-grained castes. We apply this mapping to directors of large public and private firms, whose names are taken from an annual firm-level database.

We use these data to develop a rich set of stylized facts about religion and caste diversity in Indian corporate boards during 1999-2015. We assess if mindset diversity (measured as the inverse

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[3]The strong influence of caste carries beyond India. In June 2020, California's Department of Fair Employment and Housing charged two Indian-origin managers at Cisco Systems, Inc. for discriminating against another Indian-origin engineer on the basis of caste.

of religion and caste Herfindahl-Hirschman index (HHI)) depends on how coarsely or finely directors' identity is defined and find extremely low diversity at all granularity levels. This low diversity is pervasive across states and industries throughout the sample period. We further show that the low diversity in boards is not simply coincidental or driven by low diversity in the supply pool of directors. However, it varies systematically across firm types indicating that higher performance and better corporate governance are associated with greater diversity in boards.

Next, we investigate the effects of diversity in boards on firm performance. Ex ante, these effects are unclear. On one hand, homogenous board members may not bring a wide range of perspectives to bear upon the decisions they make for the firm, worsening their advisory and monitoring roles. On the other hand, socially homogeneous directors may have greater trust or fewer differences in opinions, reducing conflicts in the boardroom and improving firm performance. However, they may also be more prone to cronyism, hurting the firms they serve.

Regression analysis, therefore, provides us with estimates of the net effect of these mechanisms. We use several instrumental variable strategies to examine how religion and caste diversity of boards affects key measures of firm performance (operating income, operating cash flow, profitability) and market related variables (market to book ratio, Tobin's Q, and volatility). To instrument for diversity, we use the diversity of a firm's director supply pool, measured as the set of directors in the firm's state or industry. In a second approach, we additionally use as instruments the distance of a board's religion/caste composition from that of the supply pool composition. In a third strategy, we exploit a change in corporate governance requirements that induced changes in board memberships during our sample period. Results from all three analyses show that lower diversity on corporate boards negatively affects firm value and performance. Importantly, we find the strongest negative effects on firms when we use the fine-grained measure of caste, followed by the coarse-grained caste measure. The results are weakest for religion diversity.[4] This is consistent with the reality of India's social fabric, wherein marriages, residence, occupations, voting patterns, public good provision, etc. are all influenced by the fine-grained measure (Joshi et al.

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[4]This result may be driven by the fact that we observe low levels of variation in religion diversity of boards.

(2018), Kumar et al. (2017), Beteille (1996), Srinivas (1995)). We take this finding to indicate that, as researchers investigating the effects of diversity on economic outcomes, we need to consider that level of identity along which people feel the most affinity toward others. It is this identity that would most strongly influence group dynamics. We also note that there is insufficient variation in boards' gender diversity in our data.

Several studies have focused on how socio-cultural identity shapes networks (see, for example, Currarini et al. (2009)), hiring (Åslund et al. (2014), Giuliano et al. (2009), Giuliano and Ransom (2013), and Petersen et al. (2000)), and economic exchange in dyads such as lender-borrower, manager-employee, venture capitalist (VC)-entrepreneur, VC partners, research collaborators, and teacher-student (see Gompers et al. (2016), Glover et al. (2017), Shayo and Zussman (2011), Fisman et al. (2017), Bengtsson and Hsu (2015), Hegde and Tumlinson (2013), Claes and Vissa. (2020)), Freeman and Huang (2015), Dee (2005) and Fairlie et al. (2014)). Our paper is different from all of these in that we analyze the effect of mindset diversity in teams of multiple agents and their joint decisions in high stakes economic settings.

The literature on corporate governance has also analyzed the effects of board diversity, but the dimension examined is almost exclusively gender (see, for example, Adams and Ferreira (2009), Ahern and Dittmar (2012), Kim and Starks (2016), Sila et al. (2016), and Bertrand et al. (2018). (Terjesen et al. (2009) provide an excellent review.). A few exceptions include Giannetti and Zhao (2019) who use ancestral origins, Arnaboldi et al. (2018) and Bernile et al. (2018) who develop a multidimensional diversity index, and Kramarz and Thesmar (2013) who use shared alma maters of directors. We add to this body of work by considering the mindset diversity of directors, as measured by the traditional institutions of caste and religion. The impact of such deep rooted traditional institutions on board composition and firm performance has not been previously explored.

This paper also contributes to the literature examining the economic effects of caste. Previous studies mainly compare socio-economic outcomes of disadvantaged castes to those of advantaged upper castes (see, among others, Hnatkovska et al. (2012), Hnatkovska et al. (2013), Iyer et al.

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(2013), Ghani et al. (2014), Damodaran (2008), Thorat and Neuman (2012), Jodhka (2010), and Varshney et al. (2012). However, we approach the economic effects of caste through a different lens – does shared caste identity influence economic outcomes, regardless of whether the caste itself is underprivileged or not? Only a few studies have taken a similar approach (see Fisman et al. (2017) and Munshi and Rosenzweig (2013, 2016). Besides examining a different economic outcome, we differ from these studies in a few important respects. First, while they focus on rural areas, specific cases, or traditional businesses, we show that caste influences economic outcomes nationally, even in urban, elite, and high-stakes corporate environments. Our focus on board com-position and firm performance also distinguishes us from Chen et al. (2015) who consider caste proximity between equity analysts and CEOs and Damaraju and Makhija (2018) who consider caste proximity between CEOs and firm owners or chairpersons.

The rest of the paper is organized as follows. In section 2, we describe our data. Section 3 presents stylized facts about religion and caste diversity in corporate boards. In section 4, we describe our empirical strategy to identify the causal effect of religion and caste diversity on firm performance. Results are presented in section 5. Section 6 explores the mechanisms underlying our results. Section 7 concludes.

2   Building the Database

We combine data on names and religion and caste identity from matrimonial websites with data on Indian firms and their boards, as described below.

2.1   Firm Level Data

We obtain firm-level data for 1999-2015 from Prowess, a database provided by the Centre for Monitoring the Indian Economy (CMIE). The data provide information on financials and corpo-rate governance of large firms, as reported in their annual reports, quarterly financial statements, and profit and loss accounts. Though the database includes mostly publicly listed firms, a smaller

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number of unlisted firms are also included.[5] While the database does not cover the universe of all firms, those included account for a substantial proportion of economic activity; in 2009, they contributed 84% of GDP, 55% of exports, 70% of imports, 47% of the total output of non-agricultural and non-government services sector, and 58% of all corporate taxes and all excise taxes collected by the government. Although the database follows firms longitudinally, most firms appear in the data only for a few years. Thus, for most of our analyses, we treat these annual data as repeated cross sections of firms.

To identify the religions and castes of firms' directors, we match their last names to those in the matrimonial data, assigning each matched director last name the same probabilistic distribution over religions and castes as that constructed using the matrimonial data. We retain only those firm-year observations for which we can (probabilistically) identify the religion/caste of all board members.[6] We also consider only those firm-years that have at least two directors serving on their boards. In our matched sample, we have 23,819 unique firms with a total of 576,579 directorships.[7]

Table 1 profiles the religion and caste mapping for directors. For religion, we see that 69% of directors' last names are associated with a single religion, and 92% names are associated with up to two religions. As expected, the mapping for coarse- and fine-grained caste is noisier, with 45% (40%) last names associated with a single coarse-grained caste (fine-grained caste) and 85% (65.5%) last names associated with up to five coarse-grained castes (fine-grained castes). Although the mapping is probabilistic, the probabilities are front loaded. The top two most likely religions account for 99.5% of the total likelihood, on average. Similarly, the top five most likely coarse-grained castes (fine-grained castes) account for 99.3% and 89% of the total likelihood, on average.

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[5]As of 31 March, 2009, 7,86,774 companies were registered with the Registrar of Companies, an administrative arm of the Ministry of Company Affairs. Of these, 82,058 were public limited companies and 704,716 were private limited companies. Of the 82,058 public limited companies, Prowess contains information on about 24,000 companies.

[6]There are a few directors whose names suggest that they may not be of Indian origin. We are unable to match these names with those in the matrimonial database. These directors are assigned a religion, coarse-, and fine-grained caste category of "NA."

[7]As a percentage of firms and directors in the Prowess database over 1999-2015, we are able to fully match 63.52% of firm-year boards and 57.11% of all directorships.

Table 1: Religion, Coarse and Fine-Grained Caste Mapping for Names of Directors

Number of classifications	% last names with up to that number of classifications	Average cumulative probability associated with classifications
Religion		
1	68.6	95.3
2	92.2	99.5
3	98.0	99.9
4	99.6	100
5	100	100
Coarse-Grained Caste		
1	45.1	78.5
2	58.3	90.6
3	68.5	95.8
4	76.9	98.1
5	85.1	99.3
Fine-Grained Caste		
1	39.7	67.0
2	49.8	77.8
3	56.5	83.2
4	61.5	86.5
5	65.5	88.8

Source: Matrimonial and Prowess data. This table provides the religion, coarse- and fine-grained caste distribution of director last names. For space considerations, the table only shows the distribution for last names associated with up to five fine-grained castes.

Table 1 of the Online Appendix provides the religion and caste composition of directors for the first and last years of our sample.[8]

A few key firm-level characteristics are provided in Table 2. We note that the highest propor-

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[8]Looking at coarse-grained caste, in both years, *Vaishyas* dominate the sample, accounting for 26.6% and 28% of directors, respectively. Looking at fine-grained castes, *Agarwals*, who belong to the coarse caste category of *Vaishyas*, are the most represented, constituting just over 11% of directors in both years.

tions of firms at both the start and end of our sample period belong to manufacturing, and finance, insurance and real estate sectors. Under half of them are listed on India's stock exchanges and about half are members of business groups. The mean real assets of these firms were about Rs. 18 million in 1999 and Rs. 23.3 million in 2015. The average board size is about 5.4. Note that although we report the percentages of firms with dual CEOs and the mean percentages of independent directors, this information is sparse. Specifically, we can identify whether CEOs are dual for only 46.14% of our sample, and calculate the percentage of independent directors on boards for only 21.38% of the sample. Therefore, we are unable to use these board characteristics in our empirical analyses.

Homophily Index: To measure the degree of diversity we calculate the Blau index for coarse- and fine-grained caste for every board.[9] The Blau index for a board is the sum of squared shares of directors belonging to the various identities represented on the board. For example, consider a board with five board members – three Hindus and one each with the most likely religion as Muslim and Christian. The religion Blau index of this board is $0.44 (= (0.6)^2 + 2*(0.2)^2)$. Continuing with this example, suppose that of the three Hindu board members, the most likely coarse-grained caste of two of them is *Brahmin* and the other is *Kshatriya*. The coarse-grained caste Blau index (replacing coarse-grained caste by the religions of non-Hindu directors) for this board is $0.28 (= (0.4)^2 + (0.2)^2 + 2(0.2)^2)$. Finally, suppose that the two *Brahmin* directors have the fine-grained castes *Brahmin Iyer* and *Pandey*, and the *Kshatriya* director has the fine-grained caste *Khatri*. In this case, the fine-grained caste Blau index (replacing fine-grained caste by the religions of non-Hindu directors) for this board is $0.2 = 5*(0.2)^2$.

A higher Blau index with respect to an identity represents lower diversity, or greater homophily, in a board. This example illustrates that for the same board composition, measure of concentration reduces as the lens of identity becomes finer from religion to fine-grained caste.

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[9]This measure is based on the Gini-Simpson index which is also known as the Blau or Hirschman-Herfindahl Index (Hirschman (1945), Herfindahl (1950)).

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Table 2: Summary Statistics

Panel A: Sectoral Distribution of Firms (Percentages)		
	1999	2015
Agriculture, Forestry and Fishing	2.46	1.50
Mining, Utilities and Construction	6.47	12.02
Manufacturing	41.42	23.32
Trade	11.74	12.86
Transport, Accommodation	3.41	4.66
Information & Communication	4.01	4.90
Finance, Insurance & Real Estate	23.02	26.25
Professional, Technical and Admin. Services	3.86	6.95
Education & Health	0.50	1.29
Arts, Recreation & Others	0.85	5.23
Diversified	2.26	1.02

Panel B: Firm Characteristics		
	1999	2015
Total Firms	1994	5597
% Listed	47.94	40.16
% Exporters	35.91	21.65
% Group Firms	57.37	48.92
Mean Age	20.22	19.73
Mean Assets (Rupees Millions)	17.99	23.33
Mean Profits (Rupees Millions)	2.16	2.41
Mean Sales (Rupees Millions)	13.34	15.20
Mean Net Tangible Asset Intensity	0.32	0.25
Mean Leverage	0.45	0.45
Mean Return on Assets	0.05	0.04
Mean Asset Turnover	0.97	0.83
Mean Tobin's Q	1.02	1.72
Mean Market to Book Ratio	1.41	2.77
Mean Risk	0.11	0.04

Panel C: Board Characteristics		
	1999	2015
% with CEO Duality	15.05	15.15
Mean % Independent Directors	20.26	2.22
Mean Board Size	5.44	5.44

Source: Prowess. This table provides basic summary statistics for firms in our sample that have at least two directors and for which we can assign a caste identity for all directors on the boards.

2.2 Indian Boards Database

Prowess does not identify unique individuals serving as directors. Since more than one director may have the same name, Prowess can not be used to identify unique directors. To do this, we use the Indian Boards Database, maintained by the Prime database group, which provides a unique identification code for each individual serving as a director, along with the firms on which he/she serves, for the period 2012-2015. This helps us measure the degree of interlocks across boards. Using these data, we have information on 17,608 unique directors across 1,501 firms. All nominal data are deflated by all-India CPI (2001=100).

3 Diversity in India's Corporate Boards

We present several stylized facts about diversity in Indian corporate boards. While Section 3 presents results for fine-grained caste, those for religion and coarse-grained cast are similar and are included in the Online Appendix.

3.1 Diversity in Corporate Boards is Systematically Low

India's corporate boards are not diverse – the average homophily index is high, at 0.87 for religion, 0.56 for coarse-grained caste and 0.45 for fine-grained caste. To assess if this is simply a result of the caste or religion composition of the entire pool of directors, we compare the observed diversity levels to those in several random simulated samples. In the first method, we consider all directors across all firms in a year as the potential pool of directors available to each firm in that year. From this "supply pool" of directors, we randomly assign directors to each firm, equal in number to its observed board size. We create hundred such simulated samples of boards for each year, calculate the mean board homophily for all boards across the hundred iterations, and compare it to the corresponding mean in the observed data. In the second (third) method, we define the director supply pool for a firm in a year as the set of all directors in that year across all firms in the same
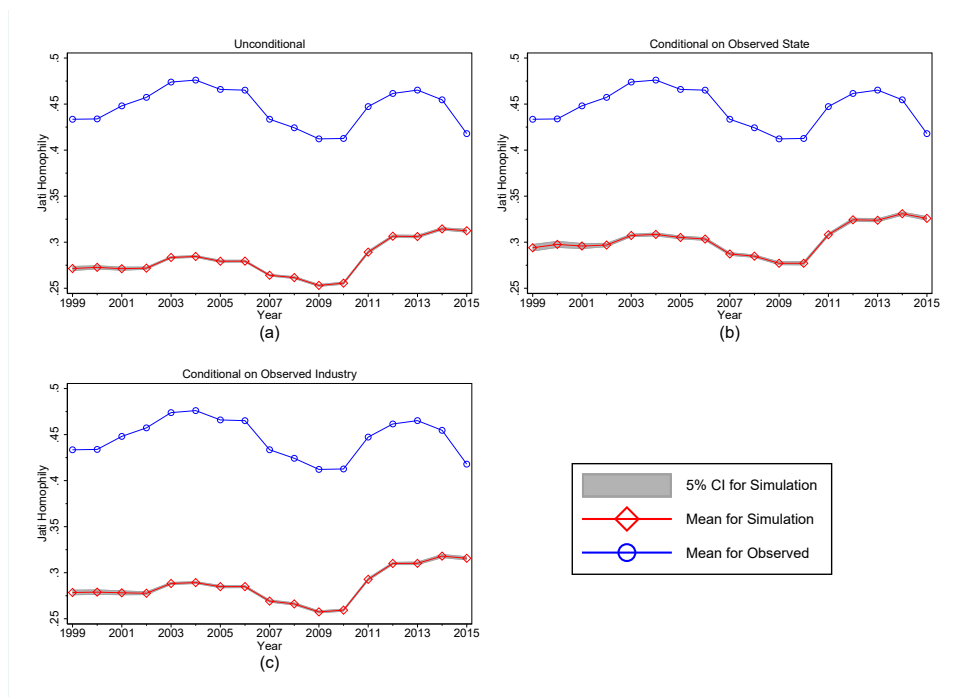
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Figure 1: Observed vs. Simulated Average Fine-Grained Caste Homophily[a]

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[a]Source: Prowess, matrimonial data. The three graphs in the figure present the mean fine-grained caste homophily across firms each year in the observed and simulated samples for three distinct simulation criteria: unconditional, conditional on firm's state and on firm's industry. Details about the simulation methods are provided in Section 3.1.

state (two-digit industry) as that firm.[10]

Figure 1 shows the yearly means of firms' fine-grained caste homophily for the observed and simulated samples. For the simulated means, we also present the 5% confidence intervals. The figure presents these means for all three approaches described above: unconditional, conditional on firms' state, and conditional on firms' industry. In all cases, we see that the mean observed fine-grained caste homophily of boards is significantly higher than the corresponding simulated mean in every year. Similar results are presented for coarse-grained caste and religion in Figures

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[10]As mentioned earlier, we cannot identify individual directors since we do not have unique identification codes for them. So, we do the simulations by defining the supply pool in two ways. In one approach, we consider every name as a distinct director, i.e., we consider directorships rather than directors. Alternatively, we consider all occurrences of the same name as the same individual director. We present results from the first approach in the paper. Results from the second approach are extremely close and available upon request.

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1 and 2 of the Online Appendix. Table 2 of the Online Appendix also presents hypothesis tests for comparisons of observed and simulated homophily means. The t-statistics are large, indicating that the observed mean homophily is significantly different from the simulated means.

Further results presented in the Online Appendix show that diversity in boards has been persistently low over time across states and sectors. Figures 3, 4, and 5 of the Online Appendix respectively present state-wise mean fine-grained caste, coarse-grained caste, and religion Blau indices for the first and last years of our sample. While the average homophily stayed high in most states over the sample period, states did change their relative quartile positions in the overall distribution. Sectoral average board diversity also stays low over the sample period (Figure 6 and Figure 7 of the Online Appendix). The sectors of professional, technical, and administrative services, and arts and recreation have the highest homophily levels, while the information, communication, and real estate, diversified, and health and education sectors have the least homophily.

Such persistent lack of diversity on boards is remarkable. Our sample period (1999-2015) witnessed unprecedented economic change and rapid growth, with the country attracting considerable amount of foreign investment and offshored activity, and becoming more integrated with the rest of the world. Yet, corporate boards remained homogeneous.

3.2   Diversity is Higher in Higher Quality Firms

Figure 2 shows that larger firms have more diverse boards. Panels a, b, and c of Figure 2 show the evolution of average fine-grained caste homophily in firms across assets, sales, and profits quartiles, respectively. We see a systematic pattern of higher diversity (lower homophily) as we move from lower to higher quartiles of assets and sales. For profits, the second quartile firms have lower diversity (higher homophily) than firms in the first quartile. However, both have a lower diversity (higher homophily) than the average of firms in the third quartile which, in turn, have lower diversity (higher homophily) than firms in the fourth quartile. As before, the differences across quartiles in all three panels are small in magnitude, and the fluctuations over time within each quartile are negligible. Similar results hold for diversity along coarse-grained caste and religion (see Figure 8

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of the Online Appendix).

Figure 3 demonstrates that older firms have board members from more diverse fine-grained caste backgrounds. Figure 4 shows that exporting firms have significantly more diverse boards, on average, than non-exporting firms. Finally, we observe lower fine-grained caste diversity, on average, among firms that do not belong to business groups relative to those that do. This is noteworthy since one might expect that business groups in India, that are often dominated by a single extended family, would tend to hire directors from among their kin. In that case, family ties would drive the lower caste diversity on the board. However, we see the opposite. This may be suggestive of the greater productivity, size, and prominence that is associated with business groups, enabling or incentivizing these firms to have more diverse boards. We see little difference in average board homophily across other firm characteristics such as public versus private firms and government versus non-government firms. Results for religion and coarse-grained caste homophily are presented in the Online Appendix (Figure 9, 10, and 11).

3.3   Corporate Governance and Diversity

Figures 5 shows the association between fine-grained caste and two features of corporate governance: size of the board and proportion of independent directors on the board. Figure 5(a) presents average fine-grained homophily for firms with different board sizes, grouped into four quartiles. We take larger board sizes as indicative of better governance. We see that firms with larger corporate boards have higher caste diversity among their directors. Figure 5(b) shows a negative association between average board caste homophily and the average proportion of independent directors across listed firms in one-digit sectors in the year 2015. Sectors with the highest fine-grained caste homophily levels such as trade and finance also have the lowest proportions of independent directors in their corporate boards. Results for religion and coarse-grained caste homophily are presented in the Online Appendix (Figure 12 and 13).

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Figure 2: Average Fine-Grained Caste Homophily by Firm Size[a]

[a]Source: Prowess, matrimonial data. Figures (a), (b), and (c) show the average fine-grained caste homophily levels in firms falling in the four quartiles of assets, sales, and profits, respectively.

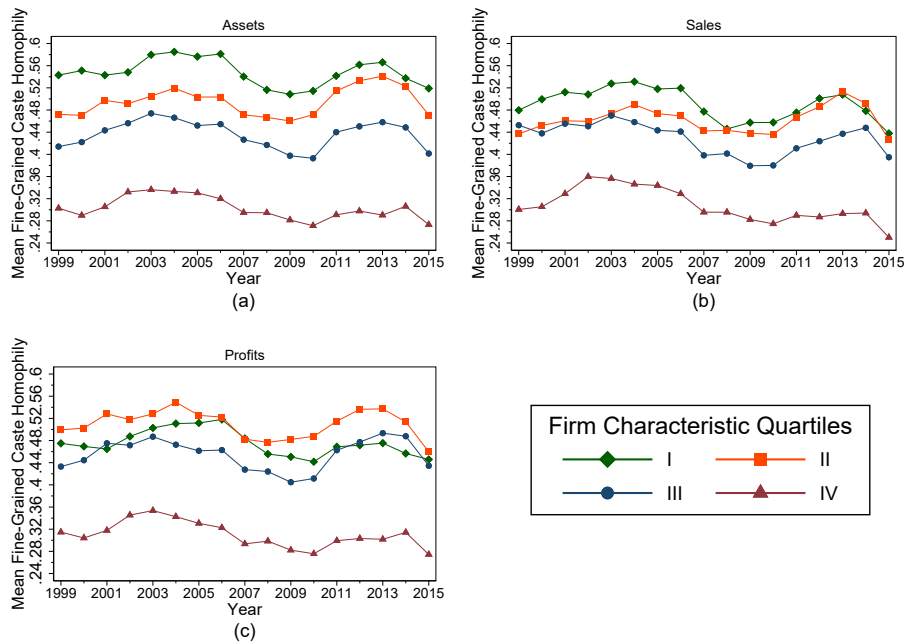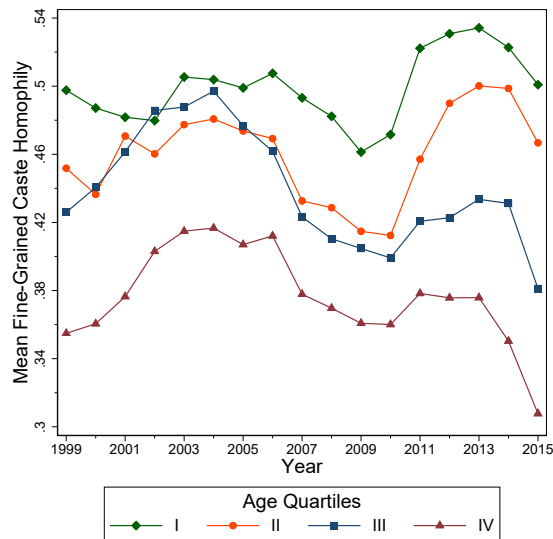**Figure 3:** Average Fine-Grained Caste Homophily by Firm Age[a]

[a]Source: Prowess, matrimonial data. The figure shows the average fine-grained caste homophily levels in firms falling in the four quartiles of age.

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(a) Exporting Status   (b) Business Group
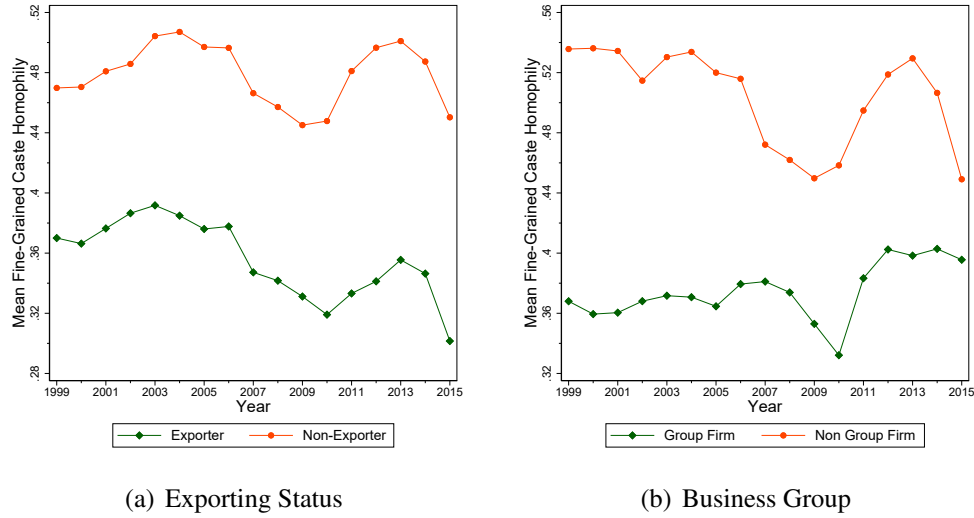
Figure 4: Fine-Grained Caste Homophily by Exporting Status and Business Group[a]

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[a]Notes: Source: Prowess, matrimonial data. In panel (a), homophily is averaged over all exporting and non-exporting firms separately. Panel b does the same for all firms that belong to a business group and the ones that do not.

4 Empirical Strategy

Next, we examine whether and to what extent low caste diversity in firm boards impacts key measures of firm performance. In this section, we describe our empirical strategy.

Consider the following regression equation:

$$P_{ijt} = \beta_0 + \beta_1 H_{it} + \beta_2 X_{it} + \beta_3 B_{it} + \delta_1 I_j + \delta_2 T_t + \varepsilon_{ijt} \tag{4.1}$$

where P_{it} denotes the value and performance of firm i in year t, H_{it}, the key variable of interest, is the religion, coarse- or fine-grained caste homophily (Blau index) of firm i's board in year t, X_{it} is a vector of time varying firm characteristics, B_{it} is a vector of time varying board characteristics, I_j denotes a vector of two-digit industry (National Industrial Classification (NIC) 2008) fixed effects, and T_t is a vector of year fixed effects. We cluster the standard errors by industry and correct them for arbitrary heteroskedasticity.

Our dependent variables (P_{ijt}) are performance variables including operating income, operating

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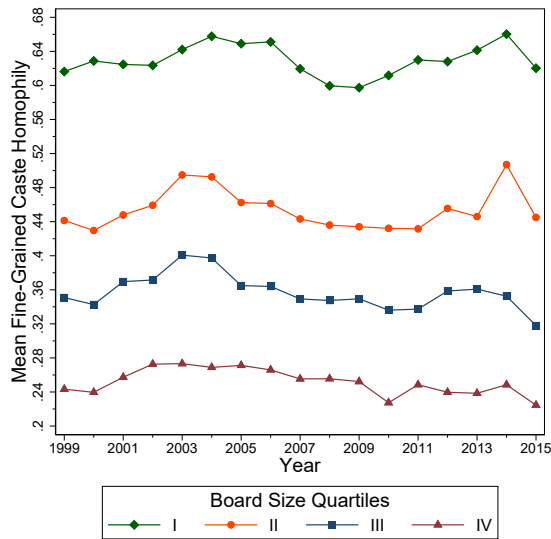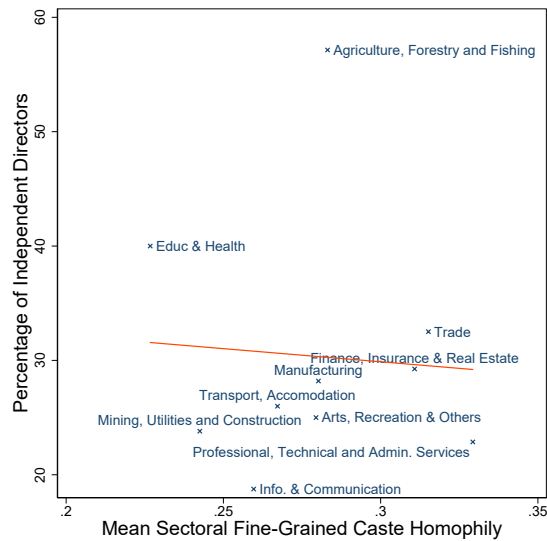
(a) Board Size

(b) Pct. Independent Directors

Figure 5: Average Fine-Grained Caste Homophily by Board Size and % Independent Directors[a]

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[a]Notes: Source: Prowess, matrimonial data. In panel a, homophily is averaged over all firms in each quartile of the board size distribution. Panel b plots the average sectoral fine-grained caste homophily against the average sectoral percentage of independent directors in firms' boards in the year 2015.

cash flow, and profits (all in natural logs), and market based indicators including market to book ratio, Tobin's Q, and firm volatility. Operating income is defined as the difference between sales and operating expenses. Operating cash flow is the cash flow from operating activities before depreciation. Market to book ratio is defined as the ratio of market price per share to book value per share. Tobin's Q is calculated as the market value of a company divided by the replacement value of the firm's assets. Volatility is measured as the standard deviation of the returns on a firm's security over a year.[11] Firm level control variables (X_{it}) include firm age, firm size, tangibility, book leverage, and indicators for whether the firm is listed on the stock market, whether it belongs

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[11]We measure market to book ratio, Tobin's Q, firm volatility in two ways. One uses stock prices of the entire year between two annual reports and the other uses stock prices for a month around the reporting date. We present results for the former but results remain close for the latter method. Majority of firms are traded on Bombay Stock Exchange (BSE), and some are traded on the National Stock Exchange(NSE). Throughout the paper we only consider firm returns at BSE. Results using NSE returns are close

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to a business group, and whether it is an exporter. We define a firm's age as the number of years since incorporation of the firm. Firm size is measured by real assets. Tangibility is defined as the fraction of tangible assets in the total assets of a company. Book leverage is calculated as the ratio of the total debt of a company and the total assets.[12] Board characteristics (B_{it}) include size of the board, i.e., number of directors on the board of a firm.

In the above regression, β_1 captures the association between religion or caste homophily and firm performance. However, this coefficient is not a causal estimate since homophily is an endogenous regressor. The endogeneity can result from both omitted variable bias and reverse causality. An unobservable time varying firm characteristic (for example, adoption of new management practices) can drive both homophily and firm outcomes. Firm performance can also influence homophily. For instance, as a firm's value grows, it may become increasingly prestigious for directors to serve on its board. This can influence board composition.

To overcome this endogeneity, we employ three instrumental variable strategies. In the first approach, we use two instruments: (1) the religion/caste Blau index for all directors in the two-digit industry that the firm belongs to,[13] (2) the religion/caste Blau index for all directors in the state where the firm is located.[14] These two variables provide us a measure of the religion/caste composition of the set of directors that constitute the firm's "supply pool," as described in Section 3.1. In the second approach, we augment our list of excluded instrumental variables with: (3) the

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[12]All financial variables are winsorized at 1% and 99% for the entire sample period.

[13]A more disaggregated classification is unsuitable for two reasons. First, directors may not serve on closely competing firms' boards due to conflict of interest. Second, the narrower the classification level, the fewer the number of firms in each industry so that the influence of each firm in determining the overall pool of directors in the full industry may be high, invalidating the instrument. A less disaggregated classification level, on the other hand, is undesirable as it will not yield enough variation in the industry level homophily index.

[14]We measure homophily of state and industry level directors in two ways. In the first approach, each name is considered to represent a distinct director. In doing so, we effectively measure the homophily of directorships rather than unique directors. In the second method, we assume that all occurrences of the same name represent the same unique director and measure homophily using unique names in a state/industry. In the paper, we present results using the first approach. Results using the second approach are extremely close.

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Euclidean distance of the vector representing the board's religion/caste composition from that of the full set of directors in the corresponding industry, and (4) the Euclidean distance of a board's religion/caste composition vector from that of the full set of directors in the corresponding state. In the third approach, we exploit changes in board memberships necessitated by a set of requirements announced by the Securities and Exchange Board of India (SEBI), commonly referred to as "Clause 49."

The intuition for using the instruments in the first two approaches is that a firm's board composition may be similar to that of other firms in the same industry or state. Previous studies have shown that both geography and industry influence the supply of directors that firms can choose from (see Knyazeva et al. (2013) and Dass et al. (2013)). We show that this holds in our setting too by documenting that (a) a non-negligible proportion of directors on a board are also directors of other firm(s) in the same industry and state, and (b) the religion/caste composition of directors on firm boards is very similar to that in the industry or state. Table 3 documents within-industry board interlocks for one-digit industries for the year 2015.[15] To identify these interlocks, we use the Indian Boards Database which, unlike Prowess, allows us to identify unique directors, albeit for a smaller sample of firms. Using these data, we identify a within-industry interlock if a director on a firm is currently, or has been in the past, a director on at least one other firm that belongs to the same industry. We then calculate the percentage of all directors in a firm that are interlocked within-industry. We observe that the average interlocks range from 0% to 31% across these broad industries, while the maximum degree of interlocks can be as high as 100%. Looking at two-digit and three-digit industries, we see that interlocks are present even at these narrower levels, albeit to a smaller degree. The mean interlock in two-digit industries in 2015 is 5.2% (3.4% in three-digit), although the maximum interlock is over 80% in many industries.

Nonetheless, there are several firms with no directors that serve (or have served in the past) on other firm(s) in the same broad industry. However, even across these firms, the religion/caste

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[15] For space considerations, we present this evidence only for 2015. Similar results hold in other years of our sample period.

Table 3: Within-Industry Board Interlocks

NIC	Within-Industry Board Interlocks			
	Mean	Minimum	Maximum	% Firms with interlocks
Agriculture, Forestry and Fishing	0.05	0.00	0.20	39.29
Mining, Utilities and Construction	0.10	0.00	0.83	44.53
Manufacturing	0.31	0.00	1.00	76.60
Trade	0.09	0.00	1.00	27.08
Transport, Accomodation	0.17	0.00	0.80	63.16
Information & Communication	0.13	0.00	1.00	46.67
Finance, Insurance & Real Estate	0.20	0.00	1.00	66.07
Professional, Technical and Admin. Services	0.00	0.00	0.11	4.17
Education & Health	0.03	0.00	0.31	11.76

Source: Indian Boards database. This table presents proportions of directors of firms that also serve on at least one other firm's board, currently (2015) or in the past (2012-2014), with that firm belonging to the same one-digit industry.

composition of directors is similar to that of directors in the industry. We show this by comparing the distribution of directors in firms that have below (and above) median interlocks to that of the industry using two Kolmogorov-Smirnov tests (K-S tests).[16] In the first test, we compare the distribution of the top religion/caste of all the unique directors in the pool of firms with interlocks below-median to that of the entire industry. We repeat this exercise and compare the distribution of the top religion/caste of all the unique directors of firms with above-median interlocks to that of the entire industry. In the second set of K-S tests we compare the distribution of the dominant religion/caste of firms with below (and above) median interlocks to that of all the firms in the entire industry. Results for fine-grained caste composition from these tests are presented in Table 3 of the Online Appendix. The table shows that for one-digit industry, we are unable to reject the null hypothesis that the samples of directors in firms below (and above) median and the aggregate industry are drawn from the same distribution. The same conclusion is reached when we alternatively look at the samples of firms according to their dominant coarse-grained caste and religion.

In our second instrumental variable approach, we additionally use the distance between a firm

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[16]The Kolmogorov-Smirnov test (K-S test) examines the null hypothesis that two samples are drawn from the same continuous, one dimensional probability distribution.

and its industry/region with regard to their religion/caste composition. Note that several different compositions can yield the same homophily index. So whether a firm's board composition is similar to that in its industry/state can be determined not only by comparing its overall homophily index with that of the industry/state but also its underlying composition. The larger this distance, the less similar is the firm's director composition to that in the industry. Since these additional Euclidean distance based measures vary across firms (and over time), instead of only across industries or states, the relevance of our set of instruments also increases. Table 4 demonstrates that Euclidean distances between firms and industry/state level fine-grained caste composition of directors vary considerably, but are generally quite small. Panel A of the table shows key moments of the distances between firms' director composition and industry director composition for four years over the sample period. We see that the distribution of these distances is quite stable over time. In all years, the mean distance is slightly larger than the median, indicating that the distribution has a heavier right tail. Relative to the magnitudes of these distances, the standard deviation is quite large, suggesting considerable variation within years. Similar patterns are evident for distances between firms' and state director compositions (Panel B).

The validity of our set of instruments is plausible for several reasons. First, to the extent that industry and state level homophily indices are associated with some unobservable characteristics of the industry or state that can have an independent effect on firm performance, that possibility is controlled for by including state and industry fixed effects. Note, however, that we are unable to include both sets of fixed effects simultaneously, in addition to year fixed effects and other time-invariant firm characteristics including listing and export status. This is because, the number of firms within the resulting cells is often small so that we do not have enough variation left in a large proportion of cells in the samples. Second, as explained above, we define the industry broadly at the two-digit level. The number of firms in a two-digit industry tends to be large, so that any single firm is unlikely to strongly influence homophily among the set of directors in the entire industry. Analogous intuition applies to the state-level homophily index. Third, we also include several firm and board characteristics besides homophily in our regression. This accounts

Table 4: Distance Between Firm and Industry/State Director Fine-Grained Caste Composition

Year	10th Percentile	50th Percentile	90th Percentile	Mean	Standard Deviation
Panel A: Distance Between Firm and Industry Director Composition					
1999	0.32	0.32	0.87	0.54	0.19
2004	0.34	0.34	0.88	0.58	0.2
2009	0.32	0.32	0.82	0.54	0.18
2015	0.31	0.31	0.83	0.54	0.19
Panel B: Distance Between Firm and State Director Composition					
1999	0.3	0.3	0.84	0.52	0.19
2004	0.32	0.32	0.88	0.55	0.2
2009	0.3	0.3	0.77	0.5	0.18
2015	0.29	0.29	0.77	0.52	0.19

Source: Matrimonial data, Prowess. This table shows moments for the Euclidean distances between the fine-grained caste composition of firms' directors and that of the set of directors in the same two-digit industry (Panel A) or state (Panel B).

for mechanisms through which any one firm may influence the state or industry level homophily. Thus, we expect that given all the fixed effects and control variables included in the regressions, the state and industry level homophily only affect firm performance through their influence on the firm's board homophily.

The Euclidean distance between a board's religion/caste composition and that of the aggregate set of directors in the corresponding industry or state also meets the exclusion criterion. The three reasons described above for the validity of the state and industry-level homophily indices also apply to the distance measures. There is an additional reason why this distance of a board's composition from that of industry or state composition is valid. Consider the following example. Suppose an industry's directors belong to three different castes – 50% are caste A, 25% are caste B and another 25% are caste C. A firm in this industry may have ten directors, eight of whom are of caste A and two are of caste C. Now, if this firm replaces two of its caste A directors with two caste B directors, then the firm's director composition becomes closer to the industry-level

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composition. The only way that this distance can affect firm outcomes is through the endogenous regressor (board homophily). There is no reason to expect, ceteris paribus, that simply replacing two caste A directors on the board with two of caste B would have any independent effect on firm performance, i.e, there is no reason to expect a pure caste effect.

In a third approach, we exploit board membership changes induced by firms complying with Clause 49 of a new set of corporate governance regulations announced by the Securities and Exchange Board of India (SEBI) that went into effect in February 2000. Among other things, the new requirement was for firms to have at least 50% of their board be comprised of non-executive members. The compliance deadlines differed for different groups of firms; March 31, 2001 for the largest firms (Group A companies listed on the Bombay Stock Exchange (BSE), and National Stock Exchange (NSE) S&P CNX Nifty Index companies), March 31, 2002 for other companies with paid-up share capital of at least Rs. 100 million, or net worth of at least Rs. 250 million, at any time in the company's history, March 31, 2003 for firms with paid-up share capital of at least Rs. 30 million, and any newly listed or re-listed firms at the time they get listed. To construct the instrument, we exploit the variation in the timing of the deadlines by when different groups of firms had to comply with the new requirements and whether they needed to change their boards in order to comply. Specifically, our instrument is defined as $I(\text{eligible}) * I(\text{below threshold})$, where a firm is considered eligible to comply with the new requirements if they fall into any of the above-described groups of firms and we observe them after February 2000. A firm is considered to be below threshold if in any year it has fewer than 50% of its directors who are non-executive. We build a longitudinal sample of firms for the period 1999-2007 such that we can observe a firm for at least two consecutive years. We cut off the sample period in 2007 since in 2008, a new requirement around independent directors was included in the amended Clause 49 which would induce other changes in board membership that would be correlated with the changes we are focusing on.

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5 Homophily and Firm Performance

5.1 Diversity Positively Correlated with Firm Performance – Fixed Effects Regression Results

We first present fixed effects regression results for associations between firm performance measures and fine-grained caste homophily of boards of directors in Table 5. Corresponding results for religion and coarse-grained caste homophily are in Appendix C. Columns (1)-(3) present results for the association between homophily of boards and firm performance measures – log (operating income), log (operating cash flow), and log (profits), respectively. Columns (4)-(6) present analogous results for homophily and firm value measures – market to book ratio, Tobin's Q, and volatility, respectively. We observe that firm performance and value are lower in firms with less diverse boards, i.e., those with higher homophily. A one unit increase in fine-grained caste homophily reduces operating income by 0.48 log points and profits by 0.41 log points, on average. Market to book ratio falls by 0.97 points for a one unit increase in fine-grained caste homophily. Tobin's Q is also negatively associated with homophily but the estimated coefficient is statistically insignificant. Higher board homophily is also correlated with greater stock market volatility for the firm. A one unit increase in fine-grained caste homophily is associated with a 0.01 increase in the standard deviation of the firm's stock market returns, on average. The corresponding associations between coarse-grained caste homophily and firm outcomes are similar, but the estimated coefficients are smaller in magnitude in all cases (Refer to Table Appendix C.1). The results for religion homophily show that firm performance measures are positively associated with religion homophily of boards and firm value and volatility do not vary with it. Most coefficients are small and statistically indistinguishable from zero (Refer to Table Appendix C.2).

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Table 5: Fine-Grained Caste Homophily and Firm Outcomes: Fixed Effects

Variables	(1) Log(Operating Income)	(2) Log(Operating Cash Flow)	(3) Log(Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Fine-Grained Caste Homophily	-0.477***	-0.622***	-0.407***	-0.968***	-0.144	0.010***
	(0.098)	(0.090)	(0.081)	(0.360)	(0.123)	(0.002)
Firm Age	-0.003**	-0.002*	-0.001	0.007**	0.001	-0.000***
	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)	(0.000)
Board Size	0.182***	0.170***	0.198***	-0.039**	-0.016*	-0.001***
	(0.009)	(0.008)	(0.011)	(0.019)	(0.009)	(0.000)
Leverage	-0.115***	-0.109**	0.053	1.101***	1.190***	0.002***
	(0.038)	(0.051)	(0.071)	(0.303)	(0.059)	(0.001)
Assets	0.009***	0.009***	0.010***	0.001	-0.000	-0.000***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Tangibility	0.162	0.191	0.016	-0.069	-0.381***	0.004***
	(0.137)	(0.149)	(0.166)	(0.278)	(0.095)	(0.001)
I(Listed)	-0.261***	-0.349***	-0.240***			
	(0.069)	(0.046)	(0.070)			
I(Group Firm)	0.602***	0.668***	0.729***	0.339**	0.015	-0.005***
	(0.045)	(0.052)	(0.099)	(0.144)	(0.062)	(0.001)
I(Export Status)	1.162***	0.998***	1.240***	-0.390**	-0.135*	-0.006***
	(0.057)	(0.059)	(0.059)	(0.159)	(0.075)	(0.001)
Constant	1.402***	1.562***	-3.261***	1.485***	0.818***	0.126***
	(0.103)	(0.073)	(0.100)	(0.312)	(0.148)	(0.005)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	46,809	39,056	68,398	26,901	29,206	28,811
R-squared	0.420	0.409	0.424	0.032	0.181	0.474

Notes: This table presents results for fixed effects regressions of several firm outcomes on board fine-grained caste homophily and other control variables. The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. Control variables include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)-(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses.

*** p<0.01, ** p<0.05, * p<0.10

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5.2 Diversity Positively Affects Firm Performance – Instrumental Variable Analysis

As explained in Section 4, religion/caste homophily of the board is an endogenous regressor. To examine the causal effects of homophily on firm performance, we instrument for it using the homophily among directors of all firms in the state or industry of the firm. In another specification, we also include the Euclidean distance between the religion/caste composition of firm boards and of all directors in the state or industry. In a third approach, we exploit board composition changes induced by firms' compliance to the Clause 49 requirement of having at least 50% of the board be constituted by non-executive directors.

Table 6 presents the first stage results for all three instrumental variable (IV) specifications, when the first stage dependent variable is fine-grained caste homophily of boards. Since the samples differ somewhat due to missing observations of the dependent variables, there is a different first stage regression equation estimated for each of the six dependent variables that we consider. For space considerations, we do not show all six first stage equations across the three IV approaches. Instead, Table 6 presents the first stage results for two dependent variables: log(profits) (columns 1, 3, 5) and market to book ratio (columns 2, 4, 6).[17] The table also shows coefficients only for the excluded instruments. The excluded instruments in columns 1 and 2 are the fine-grained caste homophily levels of the two director supply pools for a given firm. The supply pools are the set of directors serving in all firms in the same industry as the given firm, and the set serving in all firms in the same state. The excluded instruments in columns 3 and 4 are the fine-grained caste homophily levels of the two director supply pools and the distance of fine-grained caste composition of the firm's board from that of the two supply pools. The excluded instrument in columns 5 and 6 is the product of a variable indicating whether the firm is eligible to comply with Clause 49 and a variable indicating whether it is below the 50% non-executive directors threshold required under the Clause. Table Appendix C.3 presents similar first stage results when the first stage dependent variable is coarse-grained caste homophily of boards

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[17]Other results are available upon request.

The table shows that homophily of directors at the state and industry level are strongly positively associated with an average firm's board homophily. Greater distance from the state/industry caste composition of directors is also associated positively with an average firm's board homophily. Finally, the estimated coefficients on the instrument exploiting Clause 49 indicate that board membership changes induced by firms complying with the new requirements reduce caste homophily on an average firm's board. All first stage F-statistics are well above 10, indicating that the instruments explain a significant proportion of variation in the endogenous regressor, the homophily of firm boards.

Table 7 presents second stage results for the first IV approach where the excluded instruments are the fine-grained caste homophily of the set of directors in the same two-digit industry or state as the firm. The estimated coefficients on fine-grained caste homophily show that lower diversity in boards leads to statistically significant declines in key measures of firm performance and firm value. A one unit increase in fine-grained caste homophily leads to almost 3 log points drop in all three balance sheet performance measures – operating income, operating cash flow and profits. Additionally, a one unit increase in fine-grained caste homophily reduces an average firm's market to book ratio by 8.8 points and Tobin's Q by 3.4 points. Volatility also increases, but the estimate is statistically insignificant. Increases in coarse-grained caste homophily similarly cause declines in firm performance and value, but note that all coefficients are smaller in absolute value (Table Appendix C.4). Comparing these results to those for religion homophily in boards (Table Appendix C.5), we find that changes in religion homophily do not have as large, consistent, or statistically significant effects on firm performance and value.

Next, we consider results from our second instrumental variable approach, in which the excluded instruments are the homophily of state and industry level director supply pools as well as the distance between the composition of the supply pools and that of individual boards. Results are presented in Tables 8 for fine-grained caste homophily and in Table Appendix C.6 for coarse-grained caste homophily. We find similar results as in the first instrumental variable strategy. Specifically, we see that fine-grained caste homophily reduces firm balance sheet performance

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and market value indicators by large and statistically significant magnitudes. Firm volatility also increases significantly due to an increase in fine-grained caste homophily. Greater coarse-grained caste homophily also worsens firm outcomes to a slightly smaller extent. As before, religion homophily does not appear to affect firm value and volatility. However, firm balance sheet performance indicators increase with an increase in religion homophily (see Table Appendix C.7.)

Finally, we discuss results from the third IV approach, which exploits board composition changes resulting from firms' compliance with Clause 49 requirements. We again find that firm performance as measured by all three balance sheet variables worsens due to increases in fine and coarse-grained caste homophily (Tables 9 and Appendix C.8). However, our coefficients appear inordinately large. Volatility also increases significantly when caste homophily increases. However, inconsistent with our previous findings, we see that market to book ratio and Tobin's Q increase. Table Appendix C.9 presents results from the third IV approach for religion.

On the basis of all our regression results, we conclude that lack of diversity has negative effects on key firm outcomes. An understanding of how important diversity may be for firms, however, depends on the granularity with which diversity is measured. Our results demonstrate the strongest negative effects when diversity along our narrowest measure, fine-grained caste, is low, followed by coarse-grained caste, in turn followed by religion.

Table 6: Instrumental Variable Regressions: First Stage (First Stage Dependent Variable: Fine-Grained Caste Homophily)

Second Stage Dependent Variable	(1) State and Industry Homophily	(2)	(3) State and Industry Homophily and Euclidean Distance	(4)	(5) Clause 49	(6)
	Log(Profits)	Market to Book Ratio	Log(Profits)	Market to Book Ratio	Log(Profits)	Market to Book Ratio
State Fine-Grained Caste Homophily	0.958***	0.765***	0.677***	0.599***		
	(0.070)	(0.144)	(0.077)	(0.092)		
Industry Fine-Grained Caste Homophily	0.711***	0.228	1.163***	0.789***		
	(0.094)	(0.148)	(0.093)	(0.171)		
Distance from State Director Fine-Grained Caste Composition			0.369***	0.349***		
			(0.063)	(0.057)		
Distance from Industry Director Fine-Grained Caste Composition			0.981***	0.853***		
			(0.065)	(0.058)		
Clause 49 Based Instrument					-0.011**	-0.020***
					(0.004)	(0.005)
Observations	68,318	26,900	68,318	26,900	32,502	11,543
First stage F-statistic	128.25	17.15	8943.41	3881.86	10.88	16.98

Notes: This table presents first stage results for instrumental variable regressions of log(profits) (columns 1, 3, 5) and market to book ratio (columns 2, 4, 6) on board fine-grained caste homophily and other control variables. The excluded instruments in columns 1 and 2 are the fine-grained caste homophily levels of the two director supply pools for a given firm. The supply pools are: the set of directors serving in all firms in the same industry as the given firm, and the set serving in all firms in the same state. The excluded instruments in columns 3 and 4 are the fine-grained caste homophily levels of the two director supply pools and the distance of fine-grained caste composition of the firm's board from that of the two supply pools. The excluded instrument in columns 5 and 6 is the product of a variable indicating whether the firm is eligible to comply with Clause 49 and a variable indicating whether it is below the 50% non-executive directors threshold required under the Clause. Control variables (not shown) include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. *** p<0.01, ** p<0.05, * p<0.10

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Table 7: Fine-Grained Caste Homophily and Firm Outcomes: Second Stage, IV Approach 1

Variables	(1) Log (Operating Income)	(2) Log (Operating Cash Flow)	(3) Log (Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Fine-Grained Caste Homophily	-3.003***	-3.158***	-3.563***	-8.815***	-3.387***	0.008
	(0.714)	(0.757)	(0.547)	(2.827)	(0.999)	(0.018)
Firm Age	-0.004***	-0.002*	-0.002*	0.005	0.000	-0.000***
	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.000)
Board Size	0.092***	0.090***	0.080***	-0.213***	-0.089***	-0.001***
	(0.025)	(0.027)	(0.021)	(0.066)	(0.022)	(0.000)
Leverage	-0.130***	-0.131**	0.028	0.943***	1.150***	0.002***
	(0.044)	(0.052)	(0.072)	(0.296)	(0.058)	(0.001)
Assets	0.009***	0.009***	0.010***	0.000	-0.000	-0.000***
	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Tangibility	0.136	0.166	-0.015	-0.234	-0.426***	0.004***
	(0.152)	(0.150)	(0.180)	(0.320)	(0.099)	(0.001)
I(Listed)	-0.431***	-0.465***	-0.445***			
	(0.093)	(0.064)	(0.094)			
I(Group Firm)	0.385***	0.483***	0.431***	-0.047	-0.146	-0.005***
	(0.081)	(0.085)	(0.109)	(0.223)	(0.094)	(0.001)
I(Export Status)	1.082***	0.924***	1.153***	-0.602***	-0.225**	-0.006***
	(0.052)	(0.056)	(0.057)	(0.201)	(0.092)	(0.001)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	46,753	39,025	68,318	26,900	29,204	28,809

Notes: This table presents second stage results from instrumental variable regressions of several firm outcomes on board fine-grained caste homophily and other control variables. The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. The excluded instruments are the fine-grained caste homophily levels of two director supply pools for a given firm. The supply pools are: the set of directors serving in all firms in the same industry as the given firm, and the set serving in all firms in the same state. Control variables include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)-(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. *** p<0.01, ** p<0.05, * p<0.10

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Table 8: Fine-Grained Caste Homophily and Firm Outcomes: Second Stage, IV Approach 2

Variables	(1) Log (Operating Income)	(2) Log (Operating Cash Flow)	(3) Log (Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Fine-Grained Caste Homophily	-0.609***	-0.748***	-0.497***	-0.882**	-0.137	0.010***
	(0.106)	(0.103)	(0.096)	(0.413)	(0.140)	(0.002)
Firm Age	-0.003**	-0.002*	-0.001	0.007**	0.001	-0.000***
	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)	(0.000)
Board Size	0.177***	0.166***	0.195***	-0.037*	-0.016*	-0.001***
	(0.009)	(0.009)	(0.011)	(0.019)	(0.009)	(0.000)
Leverage	-0.113***	-0.108**	0.055	1.103***	1.190***	0.002***
	(0.039)	(0.051)	(0.070)	(0.300)	(0.059)	(0.001)
Assets	0.009***	0.009***	0.010***	0.001	-0.000	-0.000***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Tangibility	0.158	0.186	0.014	-0.067	-0.381***	0.004***
	(0.138)	(0.149)	(0.165)	(0.275)	(0.094)	(0.001)
I(Listed)	-0.271***	-0.355***	-0.246***			
	(0.067)	(0.046)	(0.069)			
I(Group Firm)	0.590***	0.660***	0.720***	0.343**	0.015	-0.005***
	(0.043)	(0.052)	(0.100)	(0.145)	(0.063)	(0.001)
I(Export Status)	1.157***	0.995***	1.237***	-0.388**	-0.135*	-0.005***
	(0.057)	(0.059)	(0.059)	(0.159)	(0.075)	(0.001)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	46,753	39,025	68,318	26,900	29,204	28,809

This table presents second stage results from instrumental variable regressions of several firm outcomes on board fine-grained caste homophily and other control variables. The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. The excluded instruments are the fine-grained caste homophily levels of two director supply pools for a given firm, and the Euclidean distances of the firm's board fine-grained caste composition from those of the two supply pools. The supply pools are: the set of directors serving in all firms in the same industry as the given firm, and the set serving in all firms in the same state. Control variables include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)-(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. *** p<0.01, ** p<0.05, * p<0.10

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Table 9: Fine-Grained Caste Homophily and Firm Outcomes: Second Stage, IV Approach 3

Variables	(1) Log (Operating Income)	(2) Log (Operating Cash Flow)	(3) Log (Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Fine-Grained Caste Homophily	-48.974**	-60.531	-48.753***	11.377**	4.774**	0.548***
	(22.796)	(38.532)	(18.785)	(5.792)	(1.958)	(0.185)
Firm Age	-0.009	0.003	-0.007	0.012***	0.001	0.000
	(0.009)	(0.011)	(0.008)	(0.004)	(0.002)	(0.000)
Board Size	-1.566*	-1.717	-1.646**	0.270*	0.116**	0.011**
	(0.824)	(1.217)	(0.718)	(0.146)	(0.052)	(0.005)
Leverage	-0.836*	-0.970	-0.656*	1.969***	0.997***	0.014***
	(0.442)	(0.691)	(0.395)	(0.408)	(0.050)	(0.005)
Assets	0.016***	0.012***	0.016***	0.002***	0.001	-0.000***
	(0.003)	(0.002)	(0.002)	(0.001)	(0.001)	(0.000)
Tangibility	-0.562	-1.043	-0.705	-0.328	-0.102	0.013
	(0.852)	(1.093)	(0.719)	(0.441)	(0.137)	(0.011)
I(Listed)	-2.847**	-1.985*	-2.488***			
	(1.238)	(1.139)	(0.949)			
I(Group Firm)	-3.561*	-3.708	-3.657**	1.075***	0.342***	0.020*
	(1.941)	(2.886)	(1.734)	(0.350)	(0.125)	(0.011)
I(Export Status)	-0.410	-0.930	0.014	0.323	0.139	0.007
	(0.781)	(1.297)	(0.517)	(0.228)	(0.089)	(0.007)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	22,381	17,737	32,502	11,543	12,750	12,494

Notes: This table presents second stage results from instrumental variable regressions of several firm outcomes on board Fine-Grained Caste homophily and other control variables. The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. The excluded instrument is the product of indicators for whether a firm is required to comply with Clause 49 in a year and whether it is above or below the 50% threshold for non-executive directors. Control variables include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)-(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. *** p<0.01, ** p<0.05, * p<0.10

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6 Mechanisms

Diversity among directors on a board affects boardroom group dynamics which, in turn, affect firm performance. On one hand, homogeneous directors may get along better and have fewer interpersonal conflicts (O'Reilly et al. (1993); Smith et al. (1994)). This may help boards in their decision making, benefitting firm performance. On the other hand, homogenous boards may be characterized by cronyism, worsening board decisions and firm performance. Additionally, they may also have less access to novel information and may not monitor the management well, which can also worsen their decisions and firm outcomes. The relative strengths of these channels determine the net effect of board diversity on firm performance. In this section, we present evidence that can be viewed as consistent with both cronyism and fewer interpersonal conflicts. Data limitations prevent us from investigating access to information and monitoring by directors.[18] Nonetheless, our results in the previous section demonstrate that the net effect of board homophily is negative for firms, indicating that cronyism, along with lack of superior monitoring and absence to novel information are stronger channels.

Figure 6 shows that boards with high homophily (low diversity) have higher meeting attendance rates. In Figure 7a, we further show that directors that share their fine-grained caste with the dominant fine-grained caste of the board have greater attendance than the directors that do not. Fig-

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[18]As a board's diversity increases, the novelty of information available to the board increases because directors that are drawn from diverse backgrounds have access to non-redundant information. Novel information, in turn, enables experimentation and complex problem solving. To test whether diverse boards encourage management to undertake riskier projects or engender more innovative outcomes, studies have used measures such as number of patents. We are unable to find similar information in our data. An R&D variable is sparsely populated; of the firms in our sample, 92% do not have information on R&D, rendering any meaningful analysis impossible. More diverse boards may also be better able to monitor the management. Better monitored managers may be less fraudulent and perform better. The literature typically measures the monitoring function of the board by looking at CEO turnover and compensation sensitivity to firm performance. In our data, of over 20,000 firms and CEOs, only 181 CEOs resign, of which only 8 resign after poor firm performance (measured as firm sales below average of the industry in the past one or three years). We also do not have compensation data for the majority of CEOs in our sample.

ure 7b indicates that the difference in attendance of the dominant and non-dominant fine-grained caste directors increases with board homophily. These patterns suggest that directors belonging to dominant castes are more willing to attend meetings. These findings are consistent with cronyism as well as directors getting along better in less diverse boards.

We also find that boards where at least one director has resigned have lower homophily (i.e., are more diverse) than the ones with no director resignations (Figure 8(a)). Additionally, firms with higher homophily see a smaller fraction of directors resigning (Figure 8(b)). Both findings again suggest that more homogeneous boards are either more prone to cronyism or have less conflict.

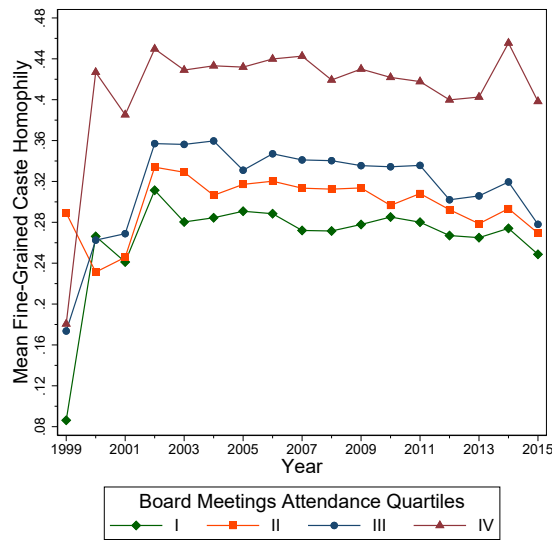**Figure 6:** Fine-Grained Caste Homophily and Attendance of Board Meetings[a]

[a]Notes: Source: Prowess, authors' last name to caste mapping using matrimonial data. Homophily is averaged over all firms in each quartile of the attendance of board meetings distribution. Attendance of board meetings in a year is calculated as the average attendance of board members across all board meetings of a board in a year.
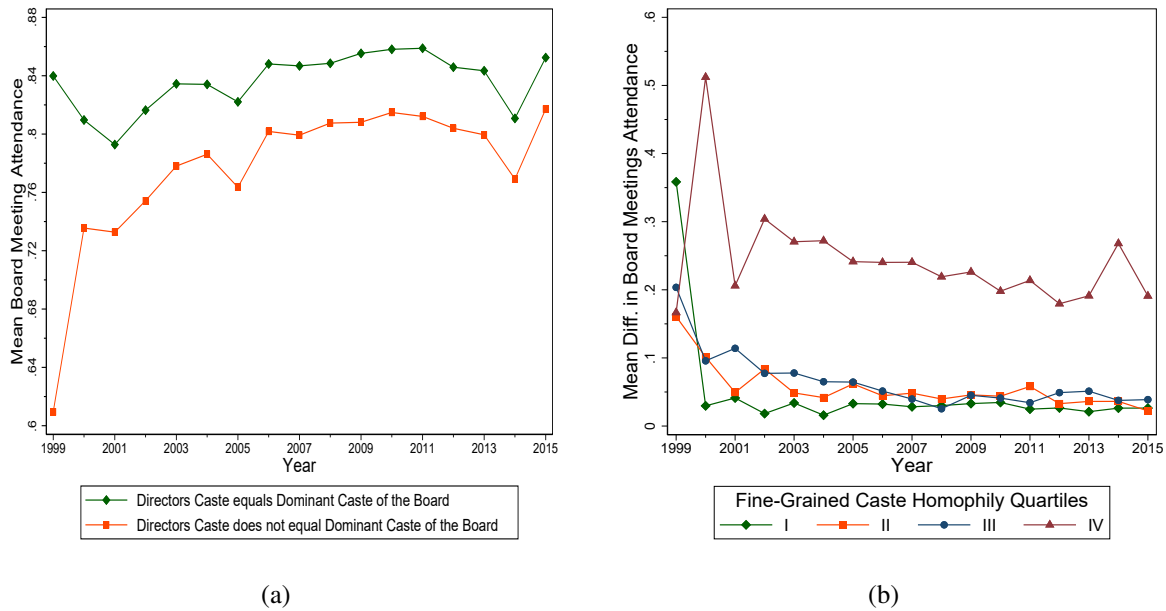
(a)

(b)

Figure 7: Board Meeting Attendance by Dominant Status of Director Caste[a]

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[a]Notes: Source: Prowess, authors' last name to fine-grained caste mapping using matrimonial data. In Figure (a) mean board meeting attendance is averaged over all directors with the same fine-grained caste as the dominant caste in the board and ones without. In Figure (b), difference in board meetings attendance rates between directors with the same fine-grained caste as the dominant caste in the board and ones the ones without is averaged over all firms in each quartile of the fine-grained caste homophily of the board.

Next, we assess if directors of dominant castes on boards serve disproportionately more on important sub-committees of directors, as indicative of cronyism or in-group favoritism. Table 10 show some evidence of this. The first row shows the percentage share of directors that belong to the most, second-most, and third-most dominant caste on the board, averaged over all firms for the sample period. The subsequent rows depict the ratios of share of committee chair positions or memberships held by directors belonging to the dominant fine-grained caste relative to the share of the entire board constituted by that fine-grained caste. We observe that this ratio is 0.99 for the chairs of all committees belonging to the most dominant fine-grained caste. Being less than 1, this does not indicate a disproportionality. However, the fraction is indeed greater than 1 for the second- and third-most dominant fine-grained castes on the board, indicating that they are over-represented in chair positions. We find a similar over-representation when we consider memberships in a

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(a)   (b)
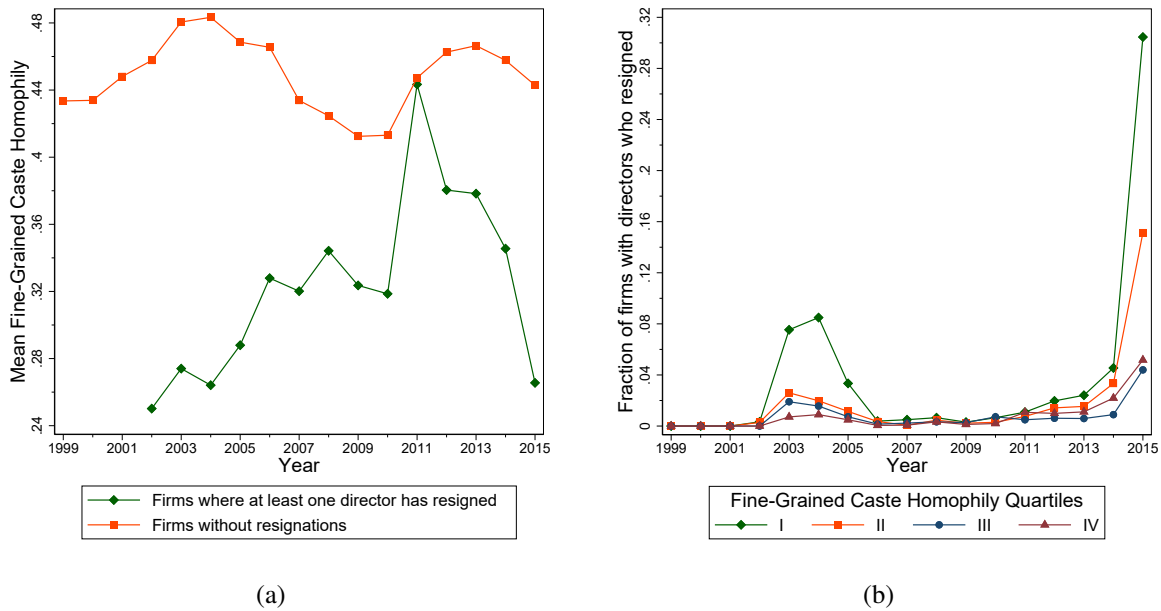
Figure 8: Fine-Grained Caste Homophily and Resignation of Board Members [a]

few important committees in particular – audit, remuneration, and shareholder grievance. Similar results for coarse-grained caste is available in Table 4 of the online appendix.

Finally, as further evidence of cronyism, we observe that firms with less diverse boards are more likely to have the CEO belong to the dominant fine-grained caste in the board. This is evident in Figure 9 (Figure 14 of the Online Appendix) which shows that throughout the sample period, firms which have the CEO belonging to the dominant fine-grained caste (coarse-grained caste) in the rest of the board have substantially higher average caste homophily than others.

Taken together, these results paint a picture wherein less diverse boards are prone to cronyism or get along better with each other. However, results in section 5, demonstrate that the potential beneficial effects of fewer boardroom conflicts on firm performance are more than offset by the negative effects of cronyism (as well as diminished information access and monitoring).

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Table 10: Committee Chair & Membership Shares Held by Dominant Fine-Grained Caste

	Dominant Caste	Second Most Dominant Caste	Third Most Dominant Caste
% of directors in nth dominant caste of board (denominator for subsequent rows)	52.29	22.15	11.93
Ratio of share of committee chairs of *n*th dominant caste to share of all directors of *n*th dominant caste	0.99	1.29	1.32
Ratio of share of audit committee members of *n*th dominant caste to share of all directors of *n*th dominant caste	0.88	1.11	1.15
Ratio of share of remuneration committee members of *n*th dominant caste to share of all directors of *n*th dominant caste	0.84	1.17	1.22
Ratio of share of grievance committee members of *n*th dominant caste to share of all directors of *n*th dominant caste	1.02	1.02	1.03

Source: Prowess, matrimonial data. The table shows, by dominance status of a fine-grained caste, proportions of particular positions occupied by directors of that caste, relative to their share in the full board. A fraction greater than 1 indicates over-representation.

7 Conclusion

We build a unique dataset that allows us to map Indian last names to religion and, more significantly, caste. Since caste is deeply rooted in Indian society and influences myriad outcomes from
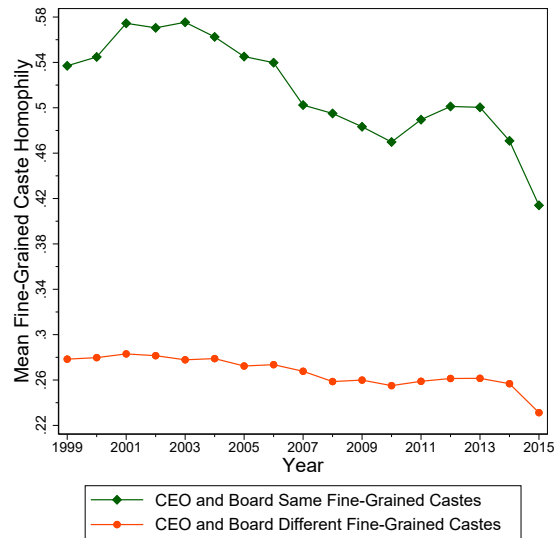
Figure 9: Caste Homophily for Firms with & without CEO of Board's Dominant Fine-Grained Caste[a]

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[a]Notes: Source: Prowess, matrimonial data. Homophily is averaged over all firms in a year that fall into either of two groups: those that have their CEO belonging to the same fine-grained caste as the dominant caste in the rest of the board, and those where the CEO belongs to a different fine-grained caste.

marriages to intergenerational educational mobility, we argue that Indians' caste identities shape their mindsets. As such, we use caste diversity among directors in a firm's board as a measure of their mindset diversity. We show that Indian corporate boards persistently and systematically lack in diversity. Our results demonstrate that this lack of diversity has a detrimental effect on key measures of firm value and performance. We find the strongest negative effects for the fine-grained measure of caste, indicating the ground reality that people feel stronger affinity with those who share their caste identity along this dimension relative to the coarse-grained dimension or religion.

Besides developing a potentially highly useful dataset for future studies and presenting novel findings about corporate governance of Indian firms, our paper has two key takeaways. First, while much research, corporate governance laws, and recommendations emphasize gender diversity in boards, our results demonstrate that socio-cultural aspects other than gender influence firm outcomes. Recent proposals that urge firms to hire diverse directors along dimensions such as race and sexual orientation (NASDAQ, 2020), and ethnicity and backgrounds (UK's Financial Reporting Council, 2018), are, therefore, welcome developments. Second, the granularity of traits along

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which directors differ from each other matters for group dynamics in the boardroom, and through them, firm performance. Policy recommendations about boardroom diversity should consider the dimension of identity along which individuals feel the most affinity towards others.

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Appendices

Appendix A Variable Definitions

Table Appendix A.1: Variable definitions

Variables	Definitions
Panel A: Firm Variables	
Age of firm	Number of years since incorporation of firm
Export status	Indicator variable: one for exporting firms, zero otherwise
State of registration	The Indian state in which the firm is registered
Industry	Two digit NIC-2008 sector
Listing status	Indicator variable: one for firms listed either in the Bombay Stock Exchange (BSE) or the National Stock Exchange (NSE) at that point in time, zero otherwise
Assets	Book value of total assets in rupees million deflated by the all-India CPI (2001=100)
Sales	Total value of sales in rupees million deflated by the all-India CPI (2001=100)
Profits	Total value of profits in rupees million deflated by the all-India CPI (2001=100)
Operating cash flow	Cash flow from operating activities before depreciation
Leverage	Book value of debt over book value of total assets
Operating income	Sales less operating expenses
Tangibility	Net Property plant equipment over book value of total assets
Tobin's Q	Sum of book value of debt, book value of preferred stock and market value of common stock over book value of assets. The market value of common stock is measured in two ways - a. the latest market value available on or before the reporting date (Latest) b. the mean market value over the entire reporting period (Full Period)
Market to book ratio	Market price per share/book value per share. The market to book ratio is measured in two ways - a. the latest market to book ratio available on or before the reporting date (Latest) b. the mean market to book ratio over the entire reporting period (Full Period)

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| Volatility | The standard deviation of stock returns of a firm in the entire reporting period |
| Cumulative Abnormal Returns (CAR) | The difference between the return on the stock over the announcement window and the corresponding return on the market index for the firms who participated in M&As as acquirers |

Panel B: Board Characteristics

Board size	Number of directors in the board
Frequency of board meetings	Number of board meetings per year
Board meeting attendance	Mean number of board meetings attended by all members of a board over total number of board meetings
Resignation	Indicator variable: one if a board member resigns, zero otherwise
Board turnover 1Y	% of directors in a board who were not present in the previous year
Board turnover 3Y	% of directors in a board who were not present in the board three years prior to the current year
CEO duality	Indicator variable: one if the at least one CEO of a firm is also the chair.
Clause 49 based instrument	Indicator variable: I(Eligibility) $\times$ I(Below Threshold % of Non-Executive Directors)

Panel C: Measures of Homophily

Dominant coarse- and fine-grained caste and religion of a board	The coarse- and fine-grained caste and religion of the maximum number of directors of a board. In case of ties, the dominant coarse- and fine-grained caste and religion is chosen randomly from the tie.
Board coarse- and fine-grained caste and religion homophily	Coarse- and fine-grained caste and religion HHI, i.e., the sum of squared shares of all fine-grained castes (coarse-grained castes, religions) represented on the board.
Sector coarse- and fine-grained caste and religion homophily	Coarse- and fine-grained caste and religion HHI, i.e., the sum of squared shares of all fine-grained castes (coarse-grained castes, religions) of directors in an industry. The baseline approach considers each name as a distinct directorship, even if the name is same. The alternative approach considers all occurrences of the same name as one unique director.

State coarse- and fine-grained caste and religion homophily	Coarse- and fine-grained caste and religion HHI, i.e., the sum of squared shares of all fine-grained castes (coarse-grained castes, religions) of directors in a state.The baseline approach considers each name as a distinct directorship, even if the name is same. The alternative approach considers all occurrences of the same name as one unique director.
Sector coarse- and fine-grained caste and religion Euclidean distance of a board	Distance between the vector representing the coarse- and fine-grained caste and religion composition of directors in the industry and the corresponding vector for the firm board. The baseline approach considers each name as a distinct directorship, even if the name is same. The alternative approach considers all occurrences of the same name as one unique director.
State coarse- and fine-grained caste and religion Euclidean distance of a board	Distance between the vector representing the coarse- and fine-Grained caste and religion composition of directors in the state and the corresponding vector for the firm board. The baseline approach considers each name as a distinct directorship, even if the name is same. The alternative approach considers all occurrences of the same name as one unique director.

Appendix B Religion and Caste Composition of Names in Matrimonial Data

Table Appendix B.1: Religion, Coarse- and Fine-Grained Caste Composition of Matrimonial Data

Religion	% Last Names	Coarse-Grained Caste	% Last Names	Fine-Grained Caste	% Last Names
Hindu	80.69	Brahmin	18.67	Maratha	4.10
Muslim	8.00	Kshatriya	12.67	Brahmin Iyer	3.88
Christian	6.42	Vaishya	12.83	Brahmin	3.20
Jain	2.30	Shudra	32.05	Sindhi	3.02
Sikh	1.32	Dalit	1.78	Nair	2.84
Parsi	1.15	Unknown Varna	1.35	Arya Vysya	2.46
Buddhist	0.04			Agarwal	2.30
Jewish	0.01			Khatri	1.97
NA	0.08			Vannia Kula Kshatriyar	1.93
				Brahmin Deshastha	1.89
				Ezhava	1.89

Source: Matrimonial data. This table provides the religion, coarse- and fine-grained caste distribution of the last names included in the final mappings developed by the authors, as described in Section 2.1. For space considerations, the table only shows the distribution for the top ten most frequently occurring fine-grained castes out of a total of 471 distinct fine-grained castes that we can identify.

Appendix C Coarse-Grained Caste and Religion Diversity of Boards and Firm Performance – Regression Results

Table Appendix C.1: Coarse-Grained Caste Homophily and Firm Outcomes: Fixed Effects

Variables	(1) Log (Operating Income)	(2) Log (Operating Cash Flow)	(3) Log (Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Coarse-Grained Caste Homophily	-0.440***	-0.382***	-0.343***	-0.502**	-0.071	0.007***
	(0.090)	(0.072)	(0.079)	(0.234)	(0.112)	(0.001)
Firm Age	-0.003**	-0.002*	-0.001	0.007**	0.001	-0.000***
	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)	(0.000)
Board Size	0.186***	0.180***	0.203***	-0.026	-0.014	-0.001***
	(0.008)	(0.009)	(0.011)	(0.018)	(0.009)	(0.000)
Leverage	-0.113***	-0.105**	0.055	1.118***	1.190***	0.002***
	(0.037)	(0.052)	(0.071)	(0.302)	(0.059)	(0.001)
Assets	0.009***	0.009***	0.010***	0.001	-0.000	-0.000***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Tangibility	0.172	0.198	0.023	-0.040	-0.377***	0.004***
	(0.136)	(0.150)	(0.166)	(0.279)	(0.095)	(0.001)
I(Listed)	-0.265***	-0.343***	-0.241***			
	(0.069)	(0.048)	(0.070)			
I(Group Firm)	0.611***	0.691***	0.740***	0.370**	0.020	-0.005***
	(0.045)	(0.055)	(0.100)	(0.142)	(0.060)	(0.001)
I(Export Status)	1.164***	1.004***	1.241***	-0.378**	-0.133*	-0.006***
	(0.057)	(0.059)	(0.059)	(0.156)	(0.075)	(0.001)
Constant	1.403***	1.424***	-3.291***	1.241***	0.780***	0.127***
	(0.098)	(0.091)	(0.102)	(0.329)	(0.149)	(0.005)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	46,809	39,056	68,398	26,901	29,206	28,811
R-squared	0.420	0.407	0.424	0.031	0.180	0.473

Notes: This table presents results for fixed effects regressions of several firm outcomes on board coarse-grained homophily and other control variables. The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. Control variables include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)-(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. *** p<0.01, ** p<0.05, * p<0.10

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Table Appendix C.2: Religion Homophily and Firm Outcomes: Fixed Effects

Variables	(1) Log (Operating Income)	(2) Log (Operating Cash Flow)	(3) Log (Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Religion Homophily	0.086	0.144**	0.161*	0.184	0.030	0.002
	(0.088)	(0.069)	(0.092)	(0.196)	(0.088)	(0.001)
Firm Age	-0.003*	-0.002*	-0.001	0.007**	0.001	-0.000***
	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)	(0.000)
Board Size	0.199***	0.190***	0.215***	-0.017	-0.013	-0.001***
	(0.007)	(0.008)	(0.010)	(0.019)	(0.009)	(0.000)
Leverage	-0.112***	-0.105**	0.056	1.112***	1.191***	0.002***
	(0.037)	(0.051)	(0.070)	(0.302)	(0.060)	(0.001)
Real Assets	0.009***	0.009***	0.010***	0.001	-0.000	-0.000***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Tangibility	0.166	0.195	0.018	-0.053	-0.380***	0.004***
	(0.134)	(0.150)	(0.165)	(0.275)	(0.095)	(0.001)
I(Listed)	-0.226***	-0.315***	-0.207***			
	(0.071)	(0.048)	(0.072)			
I(Group Firm)	0.643***	0.714***	0.769***	0.386***	0.022	-0.006***
	(0.045)	(0.054)	(0.099)	(0.139)	(0.059)	(0.001)
I(Export Status)	1.178***	1.017***	1.253***	-0.364**	-0.131*	-0.006***
	(0.057)	(0.059)	(0.058)	(0.155)	(0.075)	(0.001)
Constant	0.970***	1.003***	-3.716***	0.769**	0.710***	0.130***
	(0.098)	(0.100)	(0.109)	(0.385)	(0.151)	(0.005)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	46,809	39,056	68,398	26,901	29,206	28,811
R-squared	0.418	0.406	0.423	0.031	0.180	0.472

Notes: This table presents results for fixed effects regressions of several firm outcomes on board religion homophily and other control variables. The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. Control variables include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)-(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. *** p<0.01, ** p<0.05, * p<0.10

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Table Appendix C.3: Instrumental Variable Regressions: First Stage (First Stage Dependent Variable: Coarse-Grained Caste Homophily)

	(1)	(2)	(3)	(4)	(5)	(6)
	State and Industry Homophily		State and Industry Homophily and Euclidean Distance		Clause 49	
Second Stage Dependent Variable	Log(Profits)	Market to Book Ratio	Log(Profits)	Market to Book Ratio	Log(Profits)	Market to Book Ratio
State Coarse-Grained Homophily	0.528***	0.504***	0.263***	0.230****		
	(0.044)	(0.069)	(0.043)	(0.080)		
Industry Coarse-Grained Homophily	0.482***	0.113	1.131***	0.704***		
	(0.076)	(0.168)	(0.040)	(0.147)		
Distance from State Director Coarse-Grained Composition			0.106***	0.107***		
			(0.029)	(0.029)		
Distance from Industry Director Coarse-Grained Composition			1.011***	0.899***		
			(0.031)	(0.034)		
Clause 49 Based Instrument					-0.015***	-0.017***
					(0.004)	(0.006)
Observations	68,318	26,900	68,318	26,900	32,502	11,543
First stage F-statistic	106.84	27.95	8380.19	828.38	12.93	8.15

Notes: This table presents first stage results for instrumental variable regressions of log(profits) (columns 1, 3, 5) and market to book ratio (columns 2, 4, 6) on board coarse-grained caste homophily and other control variables. The excluded instruments in columns 1 and 2 are the coarse-grained caste homophily levels of the two director supply pools for a given firm. The supply pools are: the set of directors serving in all firms in the same industry as the given firm, and the set serving in all firms in the same state. The excluded instruments in columns 3 and 4 are the coarse-grained caste homophily levels of the two director supply pools and the distance of coarse-grained caste composition of the firm's board from that of the two supply pools. The excluded instrument in columns 5 and 6 is the product of a variable indicating whether the firm is eligible to comply with Clause 49 and a variable indicating whether it is below the 50% non-executive directors threshold required under the Clause. Control variables (not shown) include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. *** p<0.01, ** p<0.05, * p<0.10

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Table Appendix C.4: Coarse-Grained Caste Homophily and Firm Outcomes: Second Stage, IV Approach 1

Variables	(1) Log (Operating Income)	(2) Log (Operating Cash Flow)	(3) Log (Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Coarse-Grained Homophily	-1.056	-1.252*	-2.294***	-7.896***	-2.239***	0.005
	(0.885)	(0.666)	(0.774)	(1.975)	(0.548)	(0.009)
Firm Age	-0.003**	-0.002*	-0.001	0.005	0.001	-0.000***
	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)	(0.000)
Board Size	0.169***	0.158***	0.147***	-0.155***	-0.052***	-0.001***
	(0.027)	(0.016)	(0.021)	(0.039)	(0.015)	(0.000)
Leverage	-0.111***	-0.106**	0.053	1.077***	1.163***	0.002***
	(0.037)	(0.051)	(0.072)	(0.288)	(0.061)	(0.001)
Assets	0.009***	0.009***	0.010***	0.000	-0.000	-0.000***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Tangibility	0.177	0.196	0.036	0.086	-0.333***	0.004***
	(0.138)	(0.150)	(0.172)	(0.356)	(0.100)	(0.001)
I(Listed)	-0.315***	-0.396***	-0.398***			
	(0.083)	(0.064)	(0.073)			
I(Group Firm)	0.568***	0.640***	0.582***	0.124	-0.053	-0.005***
	(0.075)	(0.058)	(0.082)	(0.193)	(0.065)	(0.001)
I(Export Status)	1.145***	0.979***	1.185***	-0.571***	-0.187**	-0.006***
	(0.048)	(0.056)	(0.063)	(0.189)	(0.077)	(0.001)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	46,753	39,025	68,318	26,900	29,204	28,809

Notes: This table presents second stage results from instrumental variable regressions of several firm outcomes on board coarse-grained caste homophily and other control variables.The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. The excluded instruments are the coarse-grained caste homophily levels of two director suppy pools for a given firm. The supply pools are: the set of directors serving in all firms in the same industry as the given firm, and the set serving in all firms in the same state. Control variables include board religion homophily firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)-(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. ***p<0.01, ** p<0.05, * p<0.10

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Table Appendix C.5: Religion Homophily and Firm Outcomes: Second Stage, IV Approach 1

Variables	(1) Log (Operating Income)	(2) Log (Operating Cash Flow)	(3) Log (Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Religion Homophily	1.101**	0.263	0.410	-1.442*	-0.301	0.006
	(0.456)	(0.498)	(0.521)	(0.858)	(0.340)	(0.005)
Firm Age	-0.003*	-0.002*	-0.001	0.007**	0.001	-0.000***
	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)	(0.000)
Board Size	0.207***	0.191***	0.217***	-0.023	-0.014	-0.001***
	(0.009)	(0.008)	(0.009)	(0.018)	(0.009)	(0.000)
Leverage	-0.114***	-0.103**	0.057	1.186***	1.192***	0.002***
	(0.035)	(0.052)	(0.070)	(0.316)	(0.059)	(0.001)
Assets	0.009***	0.009***	0.010***	0.001	-0.000	-0.000***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Tangibility	0.158	0.190	0.013	-0.010	-0.371***	0.004***
	(0.131)	(0.148)	(0.160)	(0.271)	(0.097)	(0.001)
I(Listed)	-0.187***	-0.311***	-0.196***			
	(0.065)	(0.053)	(0.069)			
I(Group Firm)	0.651***	0.716***	0.771***	0.390***	0.023	-0.006***
	(0.046)	(0.052)	(0.094)	(0.137)	(0.059)	(0.001)
I(Export Status)	1.186***	1.019***	1.255***	-0.370**	-0.131*	-0.006***
	(0.055)	(0.057)	(0.057)	(0.156)	(0.075)	(0.001)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	46,753	39,025	68,318	26,900	29,204	28,809

Notes: This table presents second stage results from instrumental variable regressions of several firm outcomes on board religion homophily and other control variables. The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. The excluded instruments are the religion homophily levels of two director supply pools for a given firm. The supply pools are: the set of directors serving in all firms in the same industry as the given firm, and the set serving in all firms in the same state. Control variables include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)-(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses.

*** p<0.01, ** p<0.05, * p<0.10

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Table Appendix C.6: Coarse-Grained Caste Homophily and Firm Outcomes: Second Stage, IV Approach 2

Variables	(1) Log (Operating Income)	(2) Log (Operating Cash Flow)	(3) Log (Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Coarse-Grained Caste Homophily	-0.670***	-0.570***	-0.501***	-0.503*	-0.055	0.008***
	(0.106)	(0.089)	(0.092)	(0.262)	(0.111)	(0.001)
Firm Age	-0.003**	-0.002*	-0.001	0.007**	0.001	-0.000***
	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)	(0.000)
Board Size	0.180***	0.175***	0.199***	-0.026	-0.014	-0.001***
	(0.009)	(0.009)	(0.011)	(0.019)	(0.009)	(0.000)
Leverage	-0.110***	-0.104**	0.057	1.118***	1.191***	0.002***
	(0.037)	(0.052)	(0.070)	(0.299)	(0.059)	(0.001)
Assets	0.009***	0.009***	0.010***	0.001	-0.000	-0.000***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Tangibility	0.172	0.194	0.022	-0.040	-0.378***	0.004***
	(0.136)	(0.151)	(0.165)	(0.277)	(0.094)	(0.001)
I(Listed)	-0.284***	-0.355***	-0.254***			
	(0.067)	(0.048)	(0.069)			
I(Group Firm)	0.595***	0.681***	0.726***	0.370***	0.020	-0.005***
	(0.044)	(0.054)	(0.100)	(0.140)	(0.060)	(0.001)
I(Export Status)	1.157***	0.999***	1.237***	-0.378**	-0.133*	-0.006***
	(0.057)	(0.058)	(0.059)	(0.156)	(0.075)	(0.001)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	46,753	39,025	68,318	26,900	29,204	28,809

Notes: This table presents second stage results from instrumental variable regressions of several firm outcomes on board coarse-grained caste homophily and other control variables. The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. The excluded instruments are the coarse-grained caste homophily levels of two director supply pools for a given firm, and the Euclidean distances of the firm's board coarse-grained caste composition from those of the two supply pools. The supply pools are: the set of directors serving in all firms in the same industry as the given firm, and the set serving in all firms in the same state. Control variables include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)-(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. *** p<0.01, ** p<0.05, * p<0.10

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Table Appendix C.7: Religion Homophily and Firm Outcomes: Second Stage, IV Approach 2

Variables	(1) Log (Operating Income)	(2) Log (Operating Cash Flow)	(3) Log (Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Religion Homophily	1.007***	0.778***	0.825***	0.427	0.104	-0.001
	(0.196)	(0.142)	(0.181)	(0.293)	(0.098)	(0.002)
Firm Age	-0.003*	-0.002	-0.001	0.007**	0.001	-0.000***
	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)	(0.000)
Board Size	0.207***	0.194***	0.220***	-0.016	-0.013	-0.001***
	(0.008)	(0.008)	(0.010)	(0.019)	(0.009)	(0.000)
Leverage	-0.113***	-0.105**	0.056	1.101***	1.191***	0.002***
	(0.035)	(0.050)	(0.068)	(0.302)	(0.059)	(0.001)
Assets	0.009***	0.009***	0.010***	0.001	-0.000	-0.000***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Tangibility	0.158	0.185	0.008	-0.060	-0.382***	0.004***
	(0.132)	(0.150)	(0.163)	(0.273)	(0.096)	(0.001)
I(Listed)	-0.191***	-0.293***	-0.178**			
	(0.067)	(0.048)	(0.069)			
I(Group Firm)	0.650***	0.717***	0.776***	0.385***	0.022	-0.006***
	(0.046)	(0.053)	(0.098)	(0.138)	(0.059)	(0.001)
I(Export Status)	1.185***	1.022***	1.259***	-0.363**	-0.132*	-0.006***
	(0.056)	(0.058)	(0.056)	(0.154)	(0.075)	(0.001)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	46,753	39,025	68,318	26,900	29,204	28,809

Notes: This table presents second stage results from instrumental variable regressions of several firm outcomes on board religion homophily and other control variables. The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. The excluded instruments are the religion homophily levels of two director supply pools for a given firm, and the Euclidean distances of the firm's board religion composition from those of the two supply pools. The supply pools are: the set of directors serving in all firms in the same industry as the given firm, and the set serving in all firms in the same state. Control variables include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)-(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. *** p<0.01, ** p<0.05, * p<0.10

Table Appendix C.8: Coarse-Grained Caste Homophily and Firm Outcomes: Second Stage, IV Approach 3

Variables	(1) Log (Operating Income)	(2) Log (Operating Cash Flow)	(3) Log (Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Coarse-Grained Caste Homophily	-32.694***	-39.489**	-35.550***	13.789**	5.988**	0.703**
	(12.077)	(17.196)	(9.271)	(6.960)	(3.052)	(0.277)
Firm Age	-0.008	0.001	-0.006	0.013***	0.002	0.000
	(0.006)	(0.007)	(0.005)	(0.004)	(0.002)	(0.000)
Board Size	-0.726**	-0.755*	-0.809***	0.247*	0.109*	0.011**
	(0.349)	(0.415)	(0.277)	(0.129)	(0.058)	(0.005)
Leverage	-0.447**	-0.453**	-0.222	1.691***	1.018***	0.016***
	(0.201)	(0.230)	(0.212)	(0.464)	(0.057)	(0.006)
Assets	0.011***	0.010***	0.013***	0.002***	0.001	-0.000
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.000)
Tangibility	0.542	-0.079	0.078	-0.695	-0.269*	-0.008
	(0.658)	(0.687)	(0.573)	(0.496)	(0.154)	(0.012)
I(Listed)	-2.561***	-2.139***	-2.623***			
	(0.815)	(0.792)	(0.623)			
I(Group Firm)	-1.720**	-1.535	-2.000***	0.966***	0.298**	0.015
	(0.873)	(1.031)	(0.735)	(0.281)	(0.130)	(0.012)
I(Export Status)	0.121	-0.376	0.201	0.449	0.180	0.013
	(0.401)	(0.600)	(0.299)	(0.329)	(0.128)	(0.010)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	22,381	17,737	32,502	11,543	12,750	12,494

Notes: This table presents second stage results from instrumental variable regressions of several firm outcomes on board coarse-grained caste homophily and other control variables. The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. The excluded instrument is the product of indicators for whether a firm is required to comply with Clause 49 in a year and whether it is above or below the 50% threshold for non-executive directors. Control variables include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)–(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. *** p<0.01, ** p<0.05, * p<0.10

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Table Appendix C.9: Religion Homophily and Firm Outcomes: Second Stage, IV Approach 3

Variables	(1) Log (Operating Income)	(2) Log (Operating Cash Flow)	(3) Log (Profits)	(4) Market to Book Ratio	(5) Tobin's Q	(6) Volatility
Religion Homophily	-256.512	258.149	-169.337	-104.645	-24.030	-2.268
	(802.867)	(969.554)	(305.414)	(351.488)	(47.275)	(3.335)
Firm Age	-0.060	0.049	-0.030	-0.031	-0.010	-0.001
	(0.185)	(0.184)	(0.060)	(0.121)	(0.017)	(0.001)
Board Size	-2.014	1.831	-1.197	-0.514	-0.117	-0.012
	(6.859)	(6.237)	(2.503)	(1.646)	(0.211)	(0.015)
Leverage	0.397	-1.155	0.443	6.589	0.885***	0.000
	(2.163)	(3.933)	(1.127)	(16.191)	(0.241)	(0.025)
Assets	0.025	-0.004	0.028	0.011	0.002	0.000
	(0.045)	(0.054)	(0.030)	(0.031)	(0.004)	(0.000)
Tangibility	4.274	-0.492	2.905	2.782	0.595	0.082
	(12.837)	(4.442)	(5.004)	(11.513)	(1.454)	(0.117)
I(Listed)	-9.469	7.527	-6.913			
	(28.945)	(29.221)	(12.088)			
I(Group Firm)	-1.350	0.854	-0.865	0.696	0.238	0.006
	(6.887)	(1.460)	(3.382)	(1.199)	(0.386)	(0.031)
I(Export Status)	-1.868	4.493	-1.119	-1.481	-0.217	-0.027
	(9.903)	(12.806)	(4.621)	(5.136)	(0.465)	(0.030)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	22,381	17,737	32,502	11,543	12,750	12,494

Notes: This table presents second stage results from instrumental variable regressions of several firm outcomes on board religion homophily and other control variables. The dependent variables are: log(operating income), log(operating cash flow), log(profits), market to book ratio, Tobin's Q, and volatility. The excluded instrument is the product of indicators for whether a firm is required to comply with Clause 49 in a year and whether it is above or below the 50% threshold for non-executive directors. Control variables include firm age, leverage, real assets, tangibility, listing status, export status, whether the firm belongs to a business group, and board size. Columns (4)-(6) omit listing status since the samples for those regressions include only listed firms. All financial variables are winsorized at the 1st and 99th percentiles over the sample period (1999-2015). All variables are defined in Section 4 and Appendix A. All regressions include two-digit industry and year fixed effects. Robust standard errors, clustered by industry, are in parentheses. *** p<0.01, ** p<0.05, * p<0.10

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