Firms of a Feather Merge Together: Information Flows, Familiarity Bias and M&A Outcomes

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Abstract

We show that cultural proximity between two firms' boards leads to a higher likelihood of the two firms entering a merger and acquisition (M&A) deal in India. This phenomenon may indicate firms' reliance on culture, as measured by caste, as an informal channel of information when making critical investment decisions with imperfect information. However, it may also be driven by familiarity bias leading to sub-optimal investments. Indeed, caste-proximate M&A deals are value destroying for both acquirer and target, as well as the merged entity. There is also no transfer of value from acquirers to targets, and no significant reduction in time to completion, indicating that potential trust among directors with similar caste identities does not benefit the negotiation process. Overall, our findings show that familiarity bias in favor of culturally proximate agents can lead to sub-optimal investment decisions.

JEL Classifications: G11, G14, G34, Z10

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1 Introduction

The success of investment decisions hinges on the amount and quality of information available to investors. Thus, in environments characterized by information asymmetry, agents often rely on informal channels of information. For example, banks rely on their relationships with firms to obtain soft information before giving them loans, investors invest in geographically proximate firms, and venture capitalists select startups founded by individuals ethnically similar to themselves.[1] An important corporate investment decision especially plagued by information asymmetry is whether to merge with or acquire another firm.[2] A recent Harvard Business Review report puts the failure rate of merger and acquisition (M&A henceforth) deals between 70% and 90%, attributing a large number of failures to poor information leading to inaccurate assessment of potential gains from such deals. Studies have shown that firms considering M&A deals try to overcome information frictions by relying on alternative channels such as cultural values, geographical proximity of firms, social ties of their directors, and ethnic similarity of their locations.[3]

However, relying on such informal channels can also be costly. For example, while social networks can aid information flows, they can also lead to sub-optimal investments by creating familiarity or in-group bias, groupthink, pressure for social conformity, and by reducing the choice set for investments. For example, Ishii and Xuan (2014) show that social connections between directors and senior executives of firms entering M&A deals lead to value destruction. Similarly, French and Poterba (1991) show that home bias in investments leads to under-diversification of individuals' asset portfolios. Thus, it becomes an empirical question whether the positive information benefits of relying on these informal channels are strong enough to offset the negative bias effects.

In this paper, we examine the role of a hitherto unexplored informal information channel in firm's M&A decisions – the cultural similarity between directors of firms that merge. We choose the setting of Indian firms and investigate the extent to which firms engaging in M&As

[1] See, among others, Rajan and Zingales (1995) for reliance on bank-firm lending relationships, Coval and Moskowitz (1999) for home bias in investments, and Hegde and Tumlinson (2013) for venture capitalists' startup selections.

[2] See Eckbo et al. (1990).

[3] See Ahern et al. (2015), Uysal et al. (2008), Cai and Sevilir (2012), Ishii and Xuan (2014), Rousseau and Stroup (2015), and Shi and Tang (2015).

Table 1: Composition of Actual Deals by Dominant Varnas of Acquirer and Target

Acquirer \ Target	Brahmin	Kshatriya	Vaishya	Shudra	Dalit
Brahmin	47.2	12.9	23.6	16.4	0
Kshatriya	29.4	30.1	18.9	21.7	0
Vaishya	23.9	12.3	52.6	10.6	0.6
Shudra	22.4	13.8	17.6	45.7	0.5
Dalit	50	0	0	0	50

in India rely on the cultural construct of the caste system to make M&A decisions, and whether it creates net information gains or familiarity bias. India serves as a useful laboratory to study this question for several reasons. First, India's caste system stratifies the majority Hindu society into endogamous groups and has persisted since c. 1300 B.C. [4] It influences myriad aspects of economic outcomes and people feel strong affinity to members of their own caste groups. As such, the caste system can both serve as a conduit for information flows[5] and cause in-group bias.[6] Second, India has witnessed rapid growth in the number of M&As in recent years. While in the year 2000, only 595 M&A deals were announced, the number of deals more than doubled to 1208 by 2017. Third, just like other economies, economic transactions in India are characterized by information frictions.[7]

A first examination of the data reveals that a high proportion of M&As in India are between firms with boards dominated by the same caste. In Table 1, we show the percentages of firms dominated by a given *varna* that acquire a target firm whose board is dominated by a given *varna* (rows add to 100%). The percentages on the diagonal, which represents same dominant-*varna* deals, are remarkably high. For example, 51.4% of all firms whose boards are dominated by *vaishyas* acquire targets whose boards are also dominated by *vaishyas*. The same is true for other *varnas*. Rigorous analysis shows that this is not coincidental. We take that as indicative

[4]Caste system of India divides the society into four hierarchical groups called *varnas* - *Brahmins*, *Kshatriyas*, *Vaishyas*, and *Shudras* – in that order, and a fifth de facto lowest varna of *Dalits*. Within the five varnas, there are thousands of sub-castes or jatis. In this institution, an individual belongs to a certain jati and varna based on her lineage. This association is assumed to be hereditary and invariant. Historically, castes are endogamous and have been associated with occupations. As a result, caste has strongly influenced the socio-economic status of individuals.

[5]See Munshi (2011) and Bonte and Filipiak (2012).

[6]See Bhagavatula et al. (2018), Damaraju and Makhija (2018) and Acharya et al. (2015).

[7]See, Allen (2014) and David et al. (2016).

of the presence of systematic incentives for firms to enter M&A deals with other caste-proximate firms. In particular, such deals could be driven by greater information flows or familiarity bias. Further analysis suggests that the bias more than offsets any potential information gains from caste-proximate mergers. We find that caste-proximate deals are value destroying for both acquirer and target firms, as well as the merged firm. We also do not see any evidence that the negotiation process (takeover premium and time to completion) is aided by potentially greater trust between directors with similar caste identities. However, we do find that in cases when information opacity may be especially severe, the market penalty on same-caste mergers is lower, suggesting the presence for information gains through caste proximate directors. Nonetheless, overall evidence indicates that the familiarity bias is a stronger force driving M&As in India and leading to sub-optimal investment outcomes.

We build a novel database of mergers and acquisitions in India during 2000-2017 by combining data from several sources. We obtain data on M&As from Thomson One SDC and Prowess, a database of large Indian firms. The latter also provides us with data on corporate directors and firms' financial information. The caste (*varna/jati*) identities of directors are assigned using the last name to caste mapping developed by Bhagavatula et al. (2018).

We conduct our analysis in four steps with four key takeaways. We first assess whether a firm pair with caste proximate boards is more likely to enter an M&A deal than others. To this end, we compare the percentage of mergers in our sample that are between caste proximate firms to the corresponding percentages in several simulations wherein we choose a hundred random samples of firm pairs that are matched subject to a range of conditions. For each simulation, we find that the percentage of realized caste-proximate M&A transactions in our sample is substantially higher than the corresponding mean percentages across the hundred random samples. These results indicate that firms with boards dominated by the same caste tend to enter deals systematically more often than firms with boards dominated by different castes. The result holds for several measures of caste proximity – an indicator for whether the dominant caste on the two boards is the same, the proportion of same-caste director pairs among all possible director pairs, and the distance between castes based on *varna* hierarchy. We analyze results for both *varna* and *jati* proximity and find stronger results for the former. The same result also holds under multivariate regression analysis that examines the influence

of caste proximity on the likelihood of mergers by stacking the sample of observed deals with synthetic non-merging firm pairs. We also use changes to board composition in response to a corporate governance reform as an exogenous source of variation in caste proximity of boards to examine the causal effect of caste on the likelihood of M&As. Results remain qualitatively similar.

Next, we examine how M&A deals between firms with caste-proximate boards affect firm values. We measure firm value by looking at the cumulative abnormal returns (CARs) of acquirer, target, and merged firms around the time of deal announcement. Results of this analysis show that caste proximity of boards of transacting firms destroys value – CARs are significantly lower for mergers between caste-proximate relative to caste-distant firms. This is true for both acquirer and target, and consequently for the merged entity. This analysis shows that the market reacts negatively to merger announcements between firms whose directors have similar caste backgrounds.

This perverse outcome does not appear to mask underlying benefits of caste similarity of directors during the negotiation process. We infer this from results for the third step in our investigation where we examine how takeover premiums and time to deal completion are associated with caste proximity of the two firms' directors. We find that neither *varna* nor *jati* similarity of directors have any robust association with the takeover premiums paid by acquirers to targets. Further, if familiarity stemming from similar caste backgrounds creates trust among directors, we ex ante expect it to ease the negotiation process, making it quicker. Consistent with this expectation, we do find that the time to deal completion is shorter for M&As between firms with caste-proximate boards. However, this association is not statistically significant.

Thus far, evidence indicates that the familiarity bias among directors of similar caste backgrounds leads to sub-optimal M&A decisions. However, we want to assess whether the possibility of obtaining greater information plays any role, albeit small, as an incentive for firms to rely on directors' caste proximity when making these important investment decisions. For this purpose, we examine cases where information asymmetry may be particularly pronounced due to factors such as small target firm size and few disclosures. We find that in these situations, the market imposes a smaller penalty (measured as smaller declines in CARs) on caste-proximate deals. We take this evidence to suggest that caste proximity between directors of merging firms

does serve as a conduit for information flows and the market recognizes this.

The paper relates to the broad literature on how culture affects economics outcomes. While a thorough review of this literature is beyond the scope of this paper, we highlight a few strands of this research. Papers have shown that cultural norms and values affect a vast range of economic phenomena such as female labor force participation, growth, public good provision, etc.[8] Closer to our study, some papers consider how agents' cultural identity and group membership affects their economic decisions. For example, Fisman et al. (2017) show that cultural proximity affects loan outcomes. Coval and Moskowitz (1999) (among many others) show that investors are biased towards domestic assets. Research collaborations also are more likely to occur among scholars with similar cultural backgrounds (Freeman and Huang, 2015). We contribute to this strand of work by documenting that caste similarity of corporate directors can affect cross-firm investment decisions.

Researchers have only recently begun examining how culture affects firm decisions. Bloom et al. (2012) and Bloom et al. (2014) show that countries' cultural values affect firms' management practices and organizational structures. Several papers show that board composition along traits such as gender, culture, or country of origin affects firm performance (see, for example, Ahern and Dittmar (2012), Bernile et al. (2018), Green and Homroy (2018), among others). Closest to our paper are the few recent studies that document the influence of socio-cultural and geographical factors in merger and acquisition decisions of firms. Uysal et al. (2008) show that firms tend to acquire geographical proximate firms. Cai and Sevilir (2012) and Ishii and Xuan (2014) show that board interlocks and directors' social connections, respectively, increase the likelihood of M&As between firms. Rousseau and Stroup (2015) show that historical board interlocks also increase the likelihood of M&As. Shi and Tang (2015) show that firms located in counties with residents of similar religious compositions are also more likely to enter M&A deals. Ahern et al. (2015) similarly show that cultural distance between nations where firms are located affects the likelihood of cross-border M&As and the value created by them. A few other papers show that cultural heritage of CEOs and corporate culture also affect M&A

[8]See, among others, Alesina et al. (2013), Fernandez (2013, 2007), Fernandez and Fogli (2009, 2006), Guiso et al. (2003), McCleary and Barro (2003, 2006), Noland (2005), Ashraf, Galor (2007), Tabellini (2010), Fernandez (2010), Alesina and Giuliano (2010), Campante and Yanagizawa-Drott (2015), Alesina et al. (2016), Benjamin et al. (2010), and Alesina et al. (1999).

decisions (see, for instance, Malmendier and Tate (2005)). To the best of our knowledge, we are the first to consider cultural proximity of directors as a potential factor affecting M&As. We show that this in fact constitutes a highly influential factor underlying M&As, and leads to perverse outcomes.

There is a large literature examining the interplay between caste and socio-economic outcomes in India. Most previous studies have examined how individuals belonging to disadvantaged caste groups fare compared to relatively advantaged castes in terms of education, intergenerational mobility, political representation, etc. (see, among others, Hnatkovska et al. (2012, 2013), Ghani, Kerr, and O'Connell (2014), Damodaran (2011), Thorat et al (2012), Jodhka (2010), and Varshney (2012)). Instead, we focus on how agents' economic decisions are influenced by their affinity towards others of similar caste backgrounds, regardless of whether those castes are disadvantaged or not. Only a few recent studies have examined caste through this lens. Munshi (2011) shows that information flows among individuals of the same caste help overcome occupational traps. Fisman et al. (2017) show that the likelihood of loans being made and repaid is higher when loan officers and borrowers belong to the same caste. Damaraju and Makhija (2018) show that corporate directors tend to hire CEOs of the same caste as themselves. Bhagavatula et al. (2018) show that corporate boards are characterized by high levels of caste homophily. We contribute to this recent strand of the literature by showing that the extremely important corporate investment decision of whether to merge or acquire another firm is also affected by caste considerations, with perverse consequences.

The literature on M&As in India or by Indian firms is sparse. Nayyar (2008) and Athreye and Kapur (2009) have documented the rise in acquisitions by Indian firms across industries and countries. Banerjee et al. (2014), Chakrabarti (2008), Zhu and Malhotra (2008), Gubbi et al. (2010), Dixit (2011), and Kohli and Mann (2012) show that Indian acquirers realize positive market returns. However, no paper examines how firms attempt to overcome information asymmetry in these deals and whether informal channels such as caste connections and board interlocks influence them. To the best of our knowledge, we are the first to examine how caste proximity among directors affects M&As in India.

The rest of the paper is organized as follows. Section 2 describes our data sources and presents summary statistics. In section 3, we show that firms with caste-proximate boards are

systematically more likely to enter M&A transactions. Section 4 demonstrates that cumulative abnormal returns for acquirer, target, and merged entity are negatively associated with the announcement of M&A deals between caste-proximate firms. In section 5, we document that key measurable aspects of the negotiation process are also not aided by directors of merging firms belonging to same caste. While these analyses show that the bias effects of caste dominate, Section 6 investigates whether there is any role of caste connections in aiding information flows between firms. Section 7 concludes.

2 Data and Descriptive Statistics

2.1 Data Sources

We combine data from three main sources: Thomson One SDC, Prowess, and last names to caste mapping developed by Bhagavatula et al. (2018). We describe each of these sources below.

Thomson One SDC: The Deals database of Thomson One SDC is our main source for M&A deals among Indian firms. To use these data, we start with the population of all M&A deals during 2000-2017 where both acquirer and target are Indian firms. Next, we collect several deal related variables – announcement date, effective date, deal status, deal attitude (hostile, friendly, or neutral), transaction value, percentage of shares acquired, percentage of transaction value paid in cash, toeholds, and the time taken to complete the deals.[9,10]

Prowess: Prowess is a database of large public, private, and government owned firms that account for about 84% of India's GDP. The data are sourced mainly from annual reports, quarterly financial statements, and profit and loss accounts of firms. Thus, information on all listed companies that are reasonably active on the major stock exchanges of India is available in the database. Though the database includes mostly publicly listed firms, a smaller number of unlisted firms are also included. The reason for smaller coverage of these firms is that they are not required to disclose their financial statements. The sample period we consider is 2000-2017,

[9]Occasionally, we see the same firms entering multiple deals on the same day, although they have different SDC deal numbers that uniquely identify deals. In these cases, we randomly choose only one deal.

[10]We only take completed and pending deals.

as the number of firms covered by Prowess is much smaller prior to 2000. We use detailed data on several financial variables and other characteristics of these firms – size (real assets), export status, state of incorporation, industry (National Industrial Classification (NIC) 2008), public and listing status, operating cash flow relative to assets, debt-to-assets ratio, Tobin's Q, and return on assets (sales - operating expenses).[11]

We gather additional M&A deals from Prowess. As in SDC, here we have information on three kinds of deals – mergers, acquisitions, and sale of assets.[12] For each deal, we can identify the acquirer and target firms. Further, we see several events related to a deal, such as first media announcement, stock exchange announcement, high court approval, etc., along with their respective dates. We take chronologically the first event with the word "announcement" to identify the announcement date of the deal.

Using data on firm characteristics, we create several deal related variables. Deals are classified as horizontal when the firms belong to the same two digit industry and vertical when they belong to industries that have a producer-supplier relationship.[13] The remaining deals between firms belonging to different industries that do not appear in the same supply chain are classified as unrelated. We also calculate the size of the acquiring firm relative to that of target, and measure acquirer's stock performance and volatility in the year prior to the deal.[14] We additionally identify whether a deal occurs between firms in the same state or between states speaking predominantly the same language.

Three deal specific variables of interest that we consider are: announcement period cumulative abnormal returns (CAR) for acquirer, target and merged entity, takeover premiums, and time to completion. The CAR for a given firm's stock is defined as the difference between the return on the stock over the announcement window minus the corresponding return on the market index. Specifically, we first calculate the abnormal daily return as $ar_{i,t} = r_{i,t} - r_{m,t}$, where $r_{i,t}$ and $r_{m,t}$ represent the daily returns, in logs, on firm i' stock and on the index portfolio

[11] Tobin's Q is calculated as $\frac{\text{book value of debt + book value of preferred stock + market value of common stock}}{\text{book value of total assets}}$.

[12] Prowess only records deals for which at least one of the transacting firms is already covered in its sample.

[13] Prowess provides information on products produced and inputs used by firms. Combining this information with their two digit NIC classifications, we are able to determine whether two industries have an upstream-downstream relationship. Alternatively, we use the input-output tables available from the Ministry of Statistics and Programme Implementation to cross validate our classification.

[14] We can observe stock related information only for target firms that are publicly traded. Since only a small proportion of targets in our sample of deals are public firms, we do not control for their stock related information in our regressions.

(Bombay Stock Exchange (BSE) Sensex or BSE 500), respectively.[15] [16] Then, we calculate the *cumulative* abnormal return, CAR, for firm i in time period t, by summing the daily abnormal returns over the event window as follow: $CAR_{it} = \sum_{\text{event window}} ar_{i,t}$, where the event windows we consider are $[0, 1]$, $[-1, 1]$, and $[-2, 2]$ centered on $t = 0$, the day of the deal's public announcement. The CAR for the merged entity is calculated as the weighted sum of the CARs of the acquirer and target firms where the weight is the market capitalization of the acquirer (target) relative to the sum of the market capitalizations of both firms 43 trading days prior to the announcement date. Takeover premium is defined as the transaction value divided by the percentage of shares acquired times market capitalization of the target 43 trading days before announcement.

Finally, we obtain information on firms' boards of directors. The main variable of interest with regard to boards is their caste composition, as this is needed to calculate caste proximity between boards of firms entering an M&A deal. For this purpose, we use the last name to caste mapping developed by Bhagavatula et al. (2018) to assign directors their most likely *varna* and *jati*. The procedure for identifying *varna* and *jati* is described below. We also calculate several corporate governance measures. In particular, we consider the size of the board and the percentages of directors that are independent or non-executive.Additionally, we consider how busy the directors are; busyness is defined as the mean number of other directorships held by board members. We also measure diligence of directors as their mean attendance rate at board meetings (i.e., board meetings attended/total meetings held in a year). We create an indicator for CEO duality, i.e, whether the chairperson of the board is also the CEO of the firm. Finally, we measure board interlocks between firms entering an M&A deal. For this purpose, we use unique director identification numbers (DINs) (or names when DINs are unavailable) and see whether there are any individuals with the same DINs or names serving on the boards of both firms. We create an indicator that takes the value of one when there is at least one such member and zero otherwise.[17]

[15] While the majority of firms are traded on BSE, some are traded on the National Stock Exchange (NSE). For these firms, we use the NSE NIFTY 50 index.

[16] Note that the daily return is adjusted for corporate actions like stock splits, bonus and dividend declarations.

[17] Matching of director names between boards is done manually.

Last name to caste mapping: To measure caste proximity between firms entering an M&A transaction, we first need to identify castes of directors serving on the two boards. To that end, we use the probabilistic mapping of last names to *varna* and *jati* developed by Bhagavatula et al. (2018). While the authors describe the methodology underlying this mapping in detail in their paper, we provide a brief summary here. The mapping exploits two aspects of the caste system in India: (a) caste is endogamous and (b) last names are indicative of caste. Data are taken on profiles of six million individuals registered on three matrimonial websites which contain information on individuals' last names and their self-identified religion, *varna*, and *jati*. All spelling variations of a last name are grouped together and considered as one last name. Since the same last name may not always belong to the same caste, the authors probabilistically assign castes (*varnas* and *jatis*) to all last names in the group. The probability for a last name belonging to a given caste equals the proportion of times the users with that last name self-identify as belonging to that caste. We use this last name to caste mapping to assign a caste to each director based on his/her last name. However, we assign a director as uniquely belonging to the most likely caste for his/her last name from the mapping.[18] Further, we are unable to find all directors' last names in the Bhagavatula et al. (2018) mapping. As a result, there are several firms for which we cannot assign caste to all their directors across all years. Requiring 100% caste assignment for a firm's board in every year severely reduces the sample size. Thus, we retain all firm-year observations for which we can identify caste for at least 85% of the directors.

Other sources: We additionally obtain information from several other data sources. To calculate the cumulative abnormal returns after deal announcement, we get the S&P Bombay Stock Exchange (BSE) Sensex and S&P BSE 500 index from the BSE website, and the NIFTY 50 index from the National Stock Exchange (NSE) website. In our regressions, we control for whether a deal is between firms located in states that speak the same language. Language information is gathered from the population census. To construct the Clause 49 based instrumental variable we use the Prime database to classify directors as independent or otherwise when the same information is not available in Prowess. We corroborate our classification of deals as vertical or horizontal by alternatively using the input-output tables available from the Ministry of

[18]The likelihood of the most likely caste is quite high (73% for *varna* and 59% for *jati*).

Statistics and Programme Implementation. Finally, we deflate nominal values by the all-India CPI for industrial workers series available from the Reserve Bank of India (2001=1).

Appendix B provides all variable definitions.

2.2 Building The Sample of M&As

To build our final sample of M&A deals, we begin with the population of M&A deals in SDC and later combine additional deals from Prowess. However, all deals are ultimately matched across both data sources since neither database alone provides all the information about deals and firms that we need for our analyses. To match deals between SDC and Prowess, we first use ticker symbols of firms traded on BSE and NSE. However, these are not available for many firms. Therefore, we next use firm names to do string matching between the two data sources.[19] In matching deals between the two sources, we also match on the announcement dates besides firm names. Here, we observe that the announcement dates are not exactly the same for some deals. In cases of discrepancy we allow a difference of up to 30 days between SDC and Prowess announcement dates for a deal to be retained in the sample. In our analysis, we use SDC announcement dates even when there is a discrepency between announcement dates in SDC and Prowess. We also drop all M&A deals that occur between the same corporate entity. For all deals thus obtained, we combine them with data on the financial, board, and other characteristics of the acquirer and target firms as described in section 2.1. To get board and financial information of firms, we go back at most one year from the date of deal announcement.

Note that requiring data on all variables needed for our analysis quickly leads the sample size to shrink. In particular, we lose observations mainly because of two factors. Targets are often private firms that we are unable to find financial and board information for since they are not required to publicly disclose such information. Also, any variables that are based on market trading activities cannot be calculated for private firms. Second, we are unable to find caste identity for all directors' last names using the Bhagavatula et al. (2018) mapping. We retain deals only among those firms for which we could identify caste for at least 85% of their directors.[20] In our final sample, we have 1255 M&A deals for the period 2000-2017.

[19] We use all name matches with a Stata match score of at least 0.85 and manually check all matches below a score of 1.

[20] Requiring caste assignment for 100% of directors for every firm severely reduces the sample size.

Measures of caste proximity: We define the cultural proximity between any two firm boards in a three distinct ways. Our first measure of cultural proximity is an indicator variable that takes on the value of 1 if the two boards have the same dominant *varna* (*jati*). Second, we define a continuous variable which returns the percentage of same *varna* (*jati*) pairs among all possible pairwise combinations of directors between the two boards. Finally, we define a measure which calculates the distance between the dominant *varnas* of the two boards using the hierarchy of the castes, so that pairs of dominant *varnas* which are close in the hierarchy are assigned smaller values than pairs of dominant *varnas* that are farther apart in the hierarchy. Appendix A provides examples that illustrate these measures of cultural proximity.

2.3 Sample Statistics

Table 2 presents basic summary statistics for the final sample. Panel A presents basic firm characteristics for the two end points of our sample – 2000 and 2017. We note that the average size of firms, as measured by real assets, has grown considerably over the sample period. Also, a large proportion of firms are public, although it is higher at the beginning of the period. Panel B presents characteristics specific to M&A deals in the sample. The majority of deals are between public firms. Slightly less than half of the deals are among firms located in the same state or with directors who dominantly speak the same language. Nearly 74% of all deals are cash financed. Further, as expected, acquirers are larger than targets, and a larger proportion of them are public. Acquirers have higher returns on assets, are less leveraged, have less tangible assets, and have lower Tobin's Q. Panel C presents caste-proximity characteristics for merging firms. We see that 39% (21%) of all deals are among firms whose boards are dominated by the same *varna* (*jati*). The mean *varna* overlap is 23% and the mean *varna* hierarchy indicates that, on average, the dominant caste of acquirer boards is over three caste categories higher than the dominant caste of the target board.

Table 2: Summary Statistics

Panel A: Firm characteristics

Characteristic	2000	2017
N	2473	5448
Mean real assets (rupees million)	2928.84	15401.47
Mean return on assets (ROA)	0.05	0.02
Mean leverage	0.47	1.57
Mean tangibility	0.37	0.27
Mean Tobin's Q	0.51	0.71
% Public	91.3	81.8

Panel B: Deal characteristics (financial and other)

Characteristic	Value
N	1255
% public-public	85.6
% same state	45.1
% same language	48.2
Mean takeover premium	-0.29
Mean time to completion	108.91
Mean transaction value (rupees million)	6162.26
Mean % cash financed	72.20
% public acquirers	95.94
% public targets	89.08

Characteristic	Acquirer	Target
Mean real assets	178523.19	16563.04
Mean ROA	0.09	0.05
Mean leverage	0.28	0.39
Mean tangibility	0.26	0.33
Mean Tobin's Q	0.30	0.44
Mean board size	10.31	8.14
Mean % independent directors	44.33	38.42
Mean % non-executive directors	74.29	74.29
% dual CEOs	37.69	23.98
Mean CAR	0.009	0.031

Panel C: Deal characteristics (cultural)

Characteristic	Value
% same *jati*	21.35
% same *varna*	38.96
Mean *jati* overlap	9.00
Mean *varna* overlap	23.34
Mean *varna* hierarchy	0.96

3 Caste Proximity Increases Likelihood of M&A

The first question that we examine is whether caste proximity between two firms' boards increases the likelihood of them entering an M&A deal. In this section we describe our empirical strategy to answer this question followed by results.

3.1 Empirical Approach

We use three different approaches to address this issue- (a) Univariate approach (b) Multivariate approach and (c) Instrument variable analysis

Univariate Approach: The main challenge that we face in addressing this question is that the data are censored, i.e., we do not observe firm pairs that did not engage in M&A deals. To overcome this challenge, in this approach we compare the sample of observed M&A deals to different subsets of firm pairs that could *potentially* have merged. For every sample of *potential* mergers created, we test whether the average caste proximity of firm pairs that are observed to engage in M&A deals every year is statistically different from the corresponding yearly average across one hundred simulated samples in which firm pairs are *randomly selected*. The null hypothesis is that firms pair by chance, while the alternative is that firms are more likely to pair through M&A deals if they are caste proximate. We employ three broad methods to create synthetic samples of *potential* mergers.

In the least limiting case, we allow the pairing of firms to be random. For every observed merger in a year we draw a completely random acquirer and a completely random target from the set of firms for which we have financial and board information in that year. We refer to this sample as the unconditional simulated sample. For the next simulation in this case, we condition our choice of random firms on the industry pairs observed in the sample of actual M&A deals. Specifically, for every observed merger deal in every year, we randomly draw from the sample of all firms, one firm from the acquiring firm's industry and one firm from the target firm's industry. Under this approach, we are able to compare the average observed incidence of caste proximate deals to that in the conditional simulated sample, while controlling for the distributions of castes of directors across industries and the distribution of industry pairings among the observed deals. We refer to this sample as the industry-pair conditionally simulated

sample. Next, we condition our selection of random firms on the state pairs appearing in the sample of observed M&As. Specifically, for every observed deal, we randomly draw one firm from the acquiring firm's state and one firm from the target firm's state from the sample of all firms in that year. Here, a comparison of the caste proximity of observed deals to those in this conditional simulated sample of deals controls for the caste distribution of directors across states and the state-pair distribution in the observed deals sample. We refer to this sample as the state-pair conditionally simulated sample. Refer to Appendix for examples.

In the second broad method, we condition our simulated samples on the identity of acquirers and targets. In the acquirer conditional simulated samples, we draw a random target firm for each observed acquiring firm. We create three acquirer conditional samples by varying the criterion used for drawing the random target. We draw the random target (1) from the set of all firms in a given year, (2) from the set of firms in the industry of the observed target, and (3) from the set of firms headquartered in the same state as the observed target. Similarly we create target conditional sample, where we draw a random acquirer firm for each observed target firm using the same three criteria: (1) from the set of all firms, (2) from the set of firms in the observed target firm's industry, and (3) from the set of firms headquartered in the observed firm's state. Refer to Appendix for examples.

Finally, we create a simulated sample conditional on observed participation in the M&A market. For this simulation, we take as our universe of firms to be the subset of observed acquirers and targets. We randomly pair a target to an acquiring firm from this universe. In the observed M&A participant conditional sample, we effectively control for any unobserved characteristics that make firms likely to engage in this type of deal.

For each of these simulation methods, we draw 100 random samples. The number of simulated pairings in each sample is equal to the number of observed M&A deals in a given year. We then test whether the average caste proximity in the simulated pairings is statistically lower from the corresponding average for the observed M&As. The results are described in section 3.2.

Multivariate Regression Analysis: In an alternative approach following Bena and Li (2014), we estimate multivariate linear probability models to examine the association between caste proximity of two firms' boards and the likelihood of M&A between them. The dependent

variable takes the value 1 when the pair of firms is observed to have entered an M&A deal. It takes the value 0 for all the synthetic firm pairs that did not merge. Similar to the approach in Bena and Li, we choose the synthetic pairs in the following way. In the first method, for every observed merger in a year, we choose five random targets (acquirers) conditional on the state and industry of the observed target (acquirer) and match it to the observed acquirer (target). These synthetic firm-pairs together constitute our control sample of firm pairs that potentially could but did not engage in M&As. Among other regressors we include several firm characteristics, firm-pair characteristics, and time, industry pair and deal fixed effects. Specifically, we estimate the following regression:

$$I(M_{i,j,t}) = \beta_0 + \beta_1 CP_{i,j,t} + \beta_2 X^A_{i,t} + \beta_3 X^T_{j,t} + \beta_4 X^{AT}_{i,j,t} + \beta_5 D_{i,j,t} + \eta_{i,j} + \tau_t + \gamma_{ij} + \epsilon_{i,j,t} \quad (3.1)$$

where $I(M_{i,j,t})$ is a binary outcome that takes the value 1 if the firm pair (i, j) entered into an M&A deal in year t, $CP_{i,j,t}$ represents the caste proximity of the firm pair (i, j) in year t, $X^A_{i,t}$ is a vector of time varying characteristics of the acquiring firm, $X^T_{j,t}$ is a vector of time varying characteristics of the target firm, $X^{AT}_{i,j,t}$ is a vector of characteristics of the i, j pair, $D_{i,j,t}$ represents a vector of deal characteristics other than caste proximity, $\eta_{i,j}$ denotes industry-pair fixed effects, τ_t are year fixed effects and γ_{ij} are deal fixed effects. The coefficient of interest, β_1, captures the association between board caste proximity of the firm-pair with the likelihood that the pair enters an M&A deal. The identification of this coefficient comes from cross-sectional variation.

In another regression, we estimate the relationship between caste proximity of firms and the likelihood of them entering an M&A deal by following the pairs of firms observed to enter a deal for a few years before the deal is announced. This allows us to exploit the time series variation in caste proximity. The regression specification is analogous to equation 3.1 above but the estimation sample does not include any randomly chosen synthetic firm pairs. We also additionally include firm-pair fixed effects to capture any unobservable features of the pair that may be driving both the decision to merge and the caste proximity. As a result, identification of the association between caste proximity and the likelihood of an M&A deal comes from ex-

ogenous, *within firm-pair* variation in caste proximity.

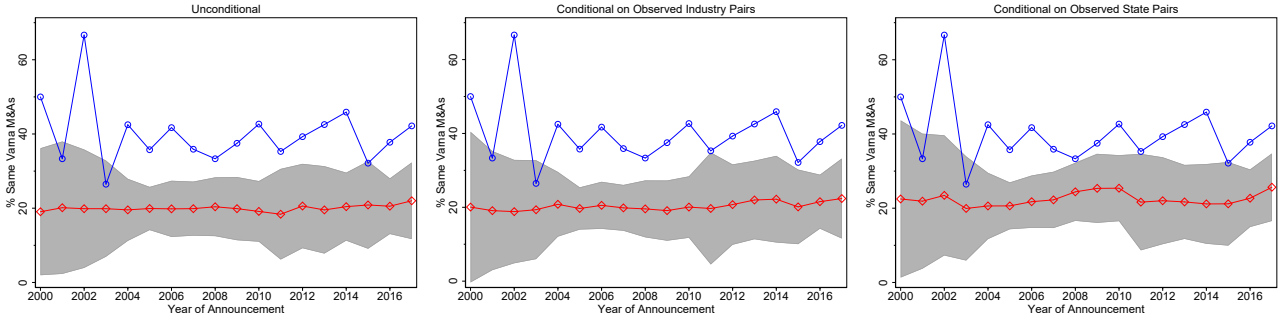
Instrumental Variable Analysis: In a third approach, we exploit exogenous changes to the board composition in response to a corporate governance reform. In January 2000, the Securities Exchange Board of India (SEBI) introduced a new listing agreement for firms to follow with the stock exchanges where their stocks were listed. One clause (number 49) of this agreement required that firms with given characteristics have some minimum proportions of their boards constituted by independent and non-executive directors by given deadlines. Details about the reform are provided in Appendix D. We instrument for the cultural proximity between two firms using their individual requirements to comply with Clause 49. We then analyze the relationship between the instrumented changes in caste proximity and the likelihood of firm pairs choosing to merge. As in the previous model, here also we use a panel dataset, following firm pairs over time and including firm-pair fixed effects in addition to other regressors as described for equation 3.1 above.

3.2 Results

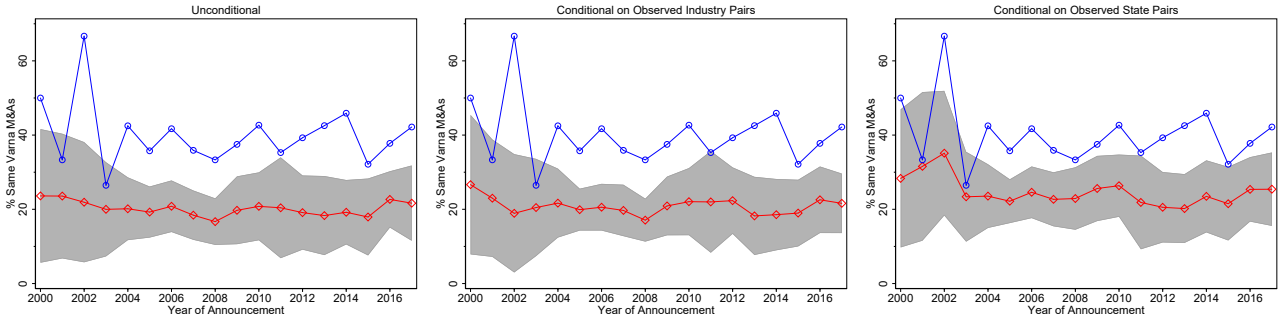
Figure 1 presents comparisons of the percentages of caste (*varna*) proximate M&A deals in our sample to corresponding percentages in the simulations described above. The figure is organized into four panels. Panel A presents results for simulations where we randomly choose both acquirer and target firms. Panel B presents results for simulations where we choose a random target for each acquirer firm in our sample. Panel C presents results for simulations where we choose a random acquirer for each target firm in our sample. Panel D presents results from simulations where we choose random targets and acquirers from our observed sample of firms engaged in M&A deals. For panels A, B, and C, the three graphs are for simulations that are: (a) unconditional, (b) conditional on observed state-pairs, and (c) conditional on observed industry-pairs. It is clear that in all comparisons the percentage of observed caste-proximate M&As among all deals is systematically higher than the corresponding percentages in simulated samples. The same results hold for caste measured as *jati* presented in Appendix D.

Figure 1: Percentage of Same-Varna Deals in Observed and Random Simulations

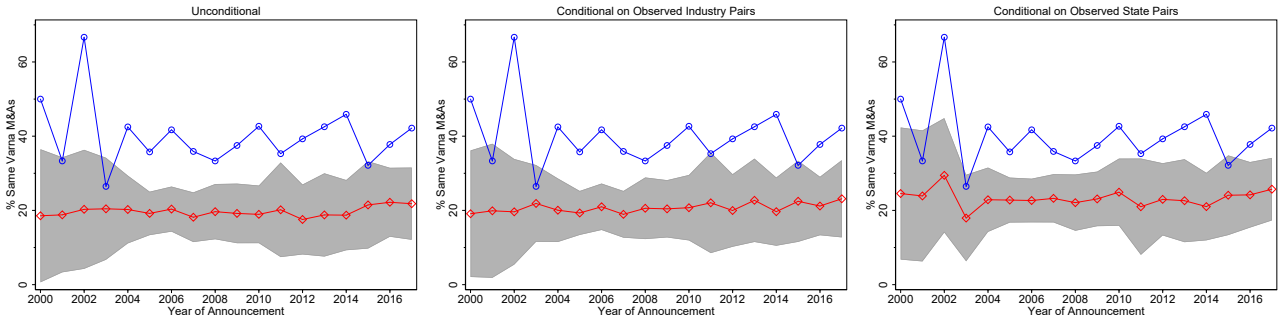
Panel A: Unrestricted Random Sampling



Panel B: Random Targets & Observed Acquirers



Panel C: Random Acquirers & Observed Targets



Panel D: Random Pairing of Observed Acquirer & Target

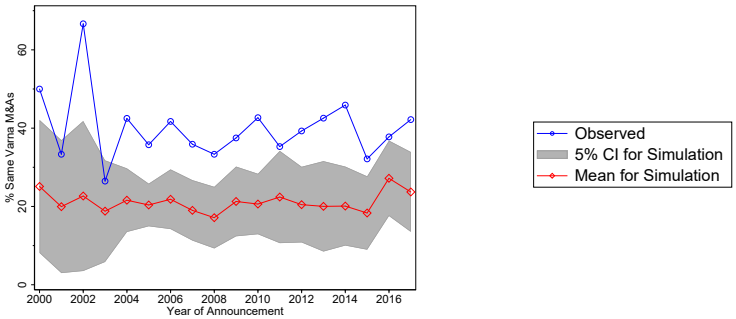


Table 3: Comparison of Percentage Same-Varna Deals in Observed and Random Simulations

Percentage of Same-Varna Mergers in Observed Sample: 38.96%			
Simulation Criteria	(1) Mean Percentage of Same-Varna Mergers in 100 Simulated Samples	(2) Diff. Observed Percentage - Simulation Percentage	(3) t-stat
Unconditional	20.00%	18.96%	-140.37***
Conditional on Industry Pairs	20.31%	18.65%	-135.38***
Conditional on State Pairs	22.46%	16.50%	-113.00***
Observed Acquirer Random Target (Unconditional)	20.24%	18.72%	-134.63***
Observed Acquirer Random Target (Conditional on Industry)	20.85%	18.11%	-130.17***
Observed Acquirer Random Target (Conditional on State)	24.71%	14.25%	-88.45***
Observed Target Random Acquirer (Unconditional)	19.70%	19.26%	-143.02***
Observed Target Random Acquirer (Conditional on Industry)	20.71%	18.25%	-137.69***
Observed Target Random Acquirer (Conditional on State)	23.29%	15.67%	-111.69***
Random Pairing of Firms Conditional on Participation in M & A Market	21.14%	17.82%	-122.10***

Notes: This table presents comparisons of sample mean percentages of same-varna M&A deals in simulated samples to the percentage of same-varna M&A deals in the observed sample. Simulations are created by randomly selecting a pair of firms for each observed merger using ten different sets of criteria for the randomly selecte population. Column 1 presents the mean over 100 simulated samples of the precentage of same-varna mergers for each of the ten different sets of criteria for random selection. Column 2 shows the difference between the percentage of same-varna mergers for each of the ten different sets of criteria for random selection. Column 2 shows the difference between the percentage of same-varna deals in the observed sample and the average percentage of same-varna deals in the simulated sample. Column 3 displays the t-statistic for a comparison of means test with the null hypothesis that the mean percentage in a simulated sample equals the percentage observed in the actual sample of M&A deals. The ten simulation criteria are described in detail in section 3.1. *p<0.01, **p<0.05, *p<0.10

Table 3 shows the overall comparison across all years of the percentages of caste-proximate M&A deals in the observed and simulated samples. In the top row we present the percentage of same-*varna* mergers in the observed sample (38.96%). Column 1 presents the average over all years of the mean percentages of same-*varna* deals across a hundred random samples for each type of simulation. In column 2 we present the difference between the observed percentage and the average percentage in the simulated sample. In column 3, we present the t-statistics for a test of whether the observed mean percentages of same-*varna* deals are statistically higher than the corresponding simulated means. The table shows that compared to each type of simulation, the observed proportion of same-*varna* M&As are significantly higher than the corresponding simulated means by a wide margin. Results in Figure 1 and Table 3 together demonstrate that caste-proximate mergers do not occur by chance in the Indian economy. Firms are systematically more likely to choose to enter M&A deals with other firms when their boards are dominated by directors belonging to the same castes.[21]

[21]Results analogous to those in Table 3 also hold for comparisons of observed versus simulated means of proportions of same-*jati* deals. See Appendix D.

Table 4: Percentage of Same-Varna Deals in Simulations, Controlling for Same-State or Same-Language

	(1)	(2)	(3)	(4)
Panel A: Same-State Merger Subset				
Simulation Criteria	Mean Percentage of Same-Varna Mergers in 100 Simulated Samples	Percentage of Same-Varna Mergers in Observed Sample	Diff. Observed Percentage - Simulation Percentage	t-stat
Random Acquirer, Random Target	24.49%	48.41%	23.92%	-58.71***
Observed Acquirer, Random Target	23.36%	48.41%	25.05%	-64.39***
Observed Target, Random Acquirer	23.11%	48.41%	25.30%	-62.87***
Panel B: Same-Language Merger Subset				
Simulation Criteria	Mean Percentage of Same-Varna Mergers in 100 Simulated Samples	Percentage of Same-Varna Mergers in Observed Sample	Diff. Observed Percentage - Simulation Percentage	t-stat
Random Acquirer, Random Target	25.18%	46.94%	21.76%	-58.91***
Observed Acquirer, Random Target	24.53%	46.94%	22.41%	-63.20***
Observed Target, Random Acquirer	24.02%	46.94%	22.92%	-63.47***

This table presents comparisons of sample mean percentages of same-varna M&A deals in simulated samples to the percentage of same-varna M&A deals in the observed sample. In Panel A, we compare the average percent of same-varna deals in one hundred simulated trials to the percent of same-varna deals observed in the actual M&A sample *for the subset of mergers taking place between two firms headquartered in the same state.* In Panel B, we compare the average percent of same-varna deals in one hundred simulated trials to the percent of same-varna deals observed in the actual M&A sample for the subset of mergers taking place between two firms whose directors dominantly speak the same language. In Panel A (B), Column 1 presents the mean over 100 simulated samples of the percentage of same-varna mergers in the subset of same-state (same-language) mergers for each of the three different sets of criteria for random selection. Column 2 shows percentage of same-varna mergers in the observed sub-sample of same-state (same-language) mergers. Column 3 presents the difference between the average percentage in the simulated sample and the observed percentage. Column 4 displays the t-statistic for a comparison of means test between the observed and simulated samples. Simulations are created by randomly selecting a pair of firms for each observed merger using three different sets of criteria for the randomly selected population. The simulation criteria are described in detail in section 3.1. ***p<0.01, **p<0.05, *p<0.10

Further, we show that caste has an independent role to play in increasing the likelihood of M&A deals even after controlling for other informal cultural channels of information or sources of bias. In particular, Table 4 presents the proportion of caste-proximate mergers, in simulated versus observed samples, for two relevant sub-samples: (1) when the firms that actually merge are headquartered in the same state and (2) when the directors of the two boards dominantly speak the same language.State and language also have a bearing on agents' cultural identities, and hence may constitute alternative groups along which they share information or display biases. In both sub-samples, and for each different set of criteria for generating the simulated set of firm-pairs, the proportion of same-*varna* mergers in the observed sample is statistically significantly higher than that in the simulated sample, as evidenced by the positive and statistically significant t-statistics for the difference in means tests displayed in column 4. This shows that even when other informal information channels exist, for example common language and proximate location, caste-proximity still systematically influences deal likelihood. Further, we also conclude that caste is a salient cultural factor influencing this important investment decision since it continues to play a role in M&A deals even after controlling for two other possible cultural proximities between firms – same state and same language. Similar results hold for *jati* and are available upon request.

To provide additional evidence that M&As between caste proximate firms are systematic, we estimate a multivariate linear probability regression model as in equation 3.1 on a stacked sample of observed mergers and synthetically created pairs of firms which do not merge. We simulate the synthetic non-merging pairs in two different ways – choosing a random target for an observed acquirer and choosing a random acquirer for an observed target. The results for random target and observed acquirer are in Table 5. The coefficient on caste proximity, displayed in the first row of the table, is statistically significant for most measures of caste proximity. Specifically, column 1 shows that when the boards of directors of the target and acquirer have the same dominant *varna*, the likelihood of merger between them increases by 8.3% relative to when boards of the firms do not have the same dominant *varna*. Similarly, when caste proximity is measured using the fraction of all possible director pairs across the two boards that are of the same *varna*, we see that the coefficient on caste proximity is again positive and statistically significant (column 3). Finally, in column 5 we note that the larger the

hierarchal distance between the dominant *varnas* of the acquiring and target firms' boards, the lower is the likelihood of the two firms merging. A similar result emerges when caste proximity between two boards is measured with respect to jati (Column 2 and 4).

A similar result emerges when examining the synthetic sample for a given acquirer and randomly picking target firms. Caste proximity between the boards of the acquirer and target firms increases the likelihood of merger between the two firms. In Table 6, we see a positive and statistically significant coefficient on the caste proximity variable in columns 1, and 3 for varna and 2 and 4 for jati.

Table 5: Likelihood of Merger and Caste Proximity: Linear Probability Model Estimates on Observed and Simulated Samples – Random Acquirers

	(1)	(2)	(3)	(4)	(5)
Caste Proximity Measure	Same Varna	Same Jati	Overlap Varna	Overlap Jati	Varna Hierarchy Distance
Caste Proximity	0.109***	0.258***	0.420***	1.030***	-0.045***
	(0.022)	(0.035)	(0.071)	(0.139)	(0.011)
Size (A)	0.070***	0.070***	0.071***	0.071***	0.078***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Size (T)	0.002	-0.007	0.013***	-0.019***	-0.125***
	(0.004)	(0.005)	(0.005)	(0.007)	(0.013)
I(Vertical Merger)	-0.433***	-0.466***	-0.436***	-0.452***	-0.445***
	(0.106)	(0.107)	(0.108)	(0.101)	(0.117)
I(Horizontal Merger)	-0.187*	-0.226**	-0.198*	-0.219**	-0.236*
	(0.113)	(0.114)	(0.115)	(0.108)	(0.125)
I(Exporter A)	0.033	0.031	0.039*	0.031	0.029
	(0.020)	(0.020)	(0.021)	(0.020)	(0.026)
I(Exporter T)	0.102***	0.154***	0.197***	0.534***	0.081**
	(0.034)	(0.029)	(0.029)	(0.052)	(0.034)
I(Same Language)	-0.559***	-0.542***	-0.656***	-0.543***	-0.098***
	(0.032)	(0.032)	(0.037)	(0.020)	(0.016)
I(Same State)	0.605***	0.587***	0.632***	0.064	-0.316***
	(0.030)	(0.029)	(0.031)	(0.043)	(0.044)
Age (A)	0.001**	0.001*	0.001**	0.001**	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age (T)	-0.004***	-0.005***	-0.006***	-0.005***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Operating CF Ratio (A)	-0.020	-0.027	-0.028	-0.023	-0.017
	(0.051)	(0.050)	(0.051)	(0.050)	(0.061)
Leverage (A)	-0.032**	-0.036***	-0.032**	-0.029**	-0.038**
	(0.013)	(0.014)	(0.013)	(0.014)	(0.016)
Relative Size	0.000	0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
I(Same Business Group)	-0.310***	-0.210***	-0.215***	-0.231***	-0.364***
	(0.040)	(0.034)	(0.035)	(0.034)	(0.053)
Constant	0.990***	1.065***	1.237***	1.016***	0.962***
	(0.145)	(0.142)	(0.141)	(0.193)	(0.187)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Deal Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	3,296	3,296	3,296	3,296	2,403
R-squared	0.331	0.346	0.333	0.351	0.369

Notes: This table presents coefficient estimates from linear probability regression models of the likelihood of a pair of firms completing an M&A deal on caste proximity, and firm and firm-pair level controls. The sample includes completed M&A deals with Indian acquirers and targets in the sample period 2000 - 2017. The sample includes one observation for each completed deal as well as up to five synthetic pairs for each observed deal. The synthetic pairs are formed by randomly selecting five potential acquirers for each observed target; the synthetic acquirers are drawn randomly from the state and industry of the observed acquirer in the deal. In column 1 (2), caste proximity is measured as an indicator variable that takes the value 1 when the acquirer board and target board have the same dominant varna (jati). In column 3 (4), caste proximity is measured as the total number of same-varna (jati) pairs of acquirer-target board members as a fraction of the number of all posible acquirer-target board member pairs. In column 5, caste proximity is calculated as the hierarchal distance between the dominant varna of the acquirer and target board. Size is defined as the log of total assets; relative size is defined as the ratio of total assets of the acquirer to total assets of the target. All specification include year fixed effects, deal fixed effects, state pair fixed effects, and industry pair fixed effects. All continous independent variables are winsorized at the 1% level. Robust standard errors clustered by deal are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 6: Likelihood of Merger and Caste Proximity: Linear Probability Model Estimates on Observed and Simulated Samples – Random Targets

	(1)	(2)	(3)	(4)	(5)
Caste Proximity Measure	Same Varna	Same Jati	Overlap Varna	Overlap Jati	Varna Hierarchy Distance
Caste Proximity	0.124***	0.195***	0.432***	0.979***	-0.040***
	(0.020)	(0.031)	(0.064)	(0.123)	(0.010)
Size (A)	-0.008**	-0.012**	-0.009***	-0.015***	-0.068***
	(0.003)	(0.005)	(0.003)	(0.003)	(0.008)
Size (T)	0.034***	0.035***	0.035***	0.036***	0.036***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
I(Vertical Merger)	-0.561***	-0.574***	-0.609***	-0.614***	-0.619***
	(0.110)	(0.106)	(0.106)	(0.099)	(0.143)
I(Horizontal Merger)	-0.293***	-0.309***	-0.344***	-0.343***	-0.358**
	(0.112)	(0.108)	(0.109)	(0.101)	(0.148)
I(Exporter A)	-0.011	0.310***	0.050**	-0.026	0.227***
	(0.024)	(0.009)	(0.023)	(0.021)	(0.014)
I(Exporter T)	0.035*	0.032	0.038*	0.033	0.079***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.025)
I(Same Language)	0.445***	-0.204***	0.427***	0.440***	0.084***
	(0.041)	(0.028)	(0.038)	(0.037)	(0.018)
I(Same State)	-0.484***	0.532***	-0.414***	-0.505***	0.286***
	(0.051)	(0.043)	(0.049)	(0.046)	(0.026)
Age (A)	-0.000	-0.005***	-0.001***	-0.002***	-0.004***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Age (T)	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Operating CF Ratio (A)	-0.545***	0.199***	-0.607***	-0.591***	0.879***
	(0.136)	(0.028)	(0.132)	(0.124)	(0.031)
Leverage (A)	-0.573***	-0.398***	-0.711***	-0.701***	0.333***
	(0.075)	(0.033)	(0.077)	(0.073)	(0.028)
Relative Size	0.000**	0.000**	0.000***	0.000***	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
I(Same Business Group)	-0.235***	-0.252***	-0.261***	-0.296***	-0.305***
	(0.035)	(0.023)	(0.022)	(0.028)	(0.020)
Constant	0.920***	0.366*	1.017***	0.971***	1.064***
	(0.124)	(0.219)	(0.113)	(0.111)	(0.232)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Deal Fixed Effects	Yes	Yes	Yes	Yes	Yes
State Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	3,832	3,832	3,832	3,832	2,796
R-squared	0.134	0.139	0.135	0.150	0.160

Notes: This table presents coefficient estimates from linear probability regression models of the likelihood of a pair of firms completing an M&A deal on caste proximity, and firm and firm-pair level controls. The sample includes completed M&A deals with Indian acquirers and targets in the sample period 2000 - 2017. The sample includes one observation for each completed deal as well as up to five synthetic pairs for each observed deal. The synthetic pairs are formed by randomly selecting five potential targets for each observed acquirer; the synthetic targets are drawn randomly from the state and industry of the observed target in the deal. In column 1 (2), caste proximity is measured as an indicator variable that takes the value 1 when the acquirer board and target board have the same dominant varna (jati). In column 3 (4), caste proximity is measured as the total number of same-varna (jati) pairs of acquirer-target board members as a fraction of the number of all posible acquirer-target board member pairs. In column 5, caste proximity is calculated as the hierarchal distance between the dominant varna of the acquirer and target board. Size is defined as the log of total assets; relative size is defined as the ratio of total assets of the acquirer to total assets of the target. All specification include year fixed effects, deal fixed effects, state pair fixed effects, and industry pair fixed effects. All continous independent variables are winsorized at the 1% level. Robust standard errors clustered by deal are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

4 Caste Proximity Reduces Deal Value

In this section, we examine the role of caste proximity of the target and acquiring firm boards on market's valuation of M&A deals. We first discuss the empirical approach under taken to address this question followed by results.

4.1 Empirical Approach

To assess the relationship between caste proximity and market's valuation of the M&A deal, we analyze abnormal firm returns (acquirer, target, and combined firm) in a small window centered around the date of announcement of the deal. We use the sample of observed M&A deals as described in section 2.2. Specifically, we include in our sample all announced deals during 2000-2017 whose deal status is recorded as either completed or pending in the SDC database, and for which we have data on all relevant variables. The variable of interent, cumulative abnormal return is defined as the return on a firm's stock over a window of (0,1) days centered on the announcement date of the deal minus the return on the BSE Sensex Index over the same window.[22]

We estimate the following model:

$$CAR_{i,j,t} = \beta_0 + \beta_1 CP_{i,j,t} + \beta_2 X^A_{i,t} + \beta_3 X^T_{j,t} + \beta_4 X^{AT}_{i,j,t} + \beta_5 D_{i,j,t} + \eta_{i,j} + \tau_t + \epsilon_{i,j,t} \qquad (4.1)$$

where $CAR_{i,j,t}$ is the cumulative abnormal return observed upon announcement of a merger between firms i and j in year t. All other variables are defined as in equation 3.1. The coefficient of interest is β_1; it captures the association between caste proximity of dealing firms' boards and the market's valuation of the deal upon announcement. We estimate equation 4.1 for acquirer, target, and combined firm CARs.

[22]Note that our results are robust to the definition of the announcement window and hold for windows of (-1,1) and (-2,2) days centered on the announcement date.

4.2 Results

Results from regression equation 4.1 are presented in Tables 7, 8, and 9 for acquirer, target, and combined firm CARs, respectively. The coefficient on caste proximity in the regression of acquirers CARs, is statistically significant for most measures of caste proximity as indicated in Table 7. Specifically, column (1) shows that when boards of directors of target and acquirer have the same dominant *varna*, the CAR of the acquirer upon announcement of the deal is 1.2% lower than if boards of directors of the pair of firms were not caste-proximate. Similarly, when caste proximity is measured using fraction of possible board-member pairs across the two boards that are from the same varna, we see that the coefficient on caste proximity is again negative and statistically significant (column 3). Finally, in column (5) we note that larger the hierarchal distance between the dominant varna of the acquiring firm's board and that of the target firm's board, larger the observed acquirer CAR.

A similar result emerges when examining CARs of target firms around the announcement of M&A deals: caste proximity between boards of acquirer and target firms reduces market's valuation of the target. In Table **??**, we note a negative and statistically signficant coefficient on caste proximity variables for varna as indicated in columns 1, 2 and 4. Taken together with results on acquirer CARs, we conclude that market's reduced valuation of caste-proximate M&A deals reflects a net reduction of value, and not a transfer from the target to the acquiring firm.

This net reduction in value of caste-proximate M&A deals is confirmed when we examine CARs of the combined entity in Table **??** below. Note that CAR of the combined firm is a market value weighted average of the acquirer and target CARs.[23] Note that the caste proximity variable is significant using most of the caste proximity measures for varna. In column 1 of Table **??**, we note the negative and statistically significant coefficient on same-varna measure: if the acquirer and target firm boards share the same dominant varna, then the announcement day CARs of the combined firm are on average 2.2% lower than for mergers in which the two boards do not share a dominant varna. Similarly, using the continous distance measured based on fraction of possible board member pairs across the two boards that share a *varna*, we see

[23]The market value is measured 43 days prior to the announcement of the deal.

Table 7: Announcement Day Acquirer CARs and Caste Proximity

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: Acquirer Firm Abnormal Announcement Day Return				
Caste Proximity Measure	Same Varna	Same Jati	Overlap Varna	Overlap Jati	Varna Hierarchy Distance
Caste Proximity	-0.009***	-0.004	-0.036**	-0.028	0.003
	(0.003)	(0.006)	(0.015)	(0.022)	(0.002)
Size (A)	-0.003**	-0.003**	-0.004**	-0.003**	-0.003**
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Size (T)	0.002	0.002	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
I(Vertical Merger)	-0.010	-0.010	-0.010	-0.010	-0.014
	(0.011)	(0.011)	(0.011)	(0.011)	(0.013)
I(Horizontal Merger)	-0.008	-0.007	-0.006	-0.006	-0.010
	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)
I(Exporter A)	0.005	0.005	0.004	0.004	-0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)
I(Exporter T)	-0.008	-0.007	-0.007	-0.007	-0.005
	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)
I(Same State)	-0.007	-0.008	-0.008	-0.008	-0.012
	(0.008)	(0.008)	(0.009)	(0.008)	(0.010)
I(Same Language)	0.011	0.011	0.013	0.013	0.014
	(0.010)	(0.010)	(0.011)	(0.011)	(0.012)
Age (A)	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age (T)	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Previous Year Stock Performance (A)	0.001	0.001	0.001	0.001	0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Previous Year Stock Volatility (A)	0.397	0.392	0.416	0.400	0.469*
	(0.255)	(0.242)	(0.246)	(0.242)	(0.228)
Operating CF Ratio (A)	-0.046**	-0.048**	-0.045*	-0.048**	-0.026
	(0.022)	(0.022)	(0.022)	(0.022)	(0.019)
Leverage (A)	-0.012	-0.014	-0.012	-0.014	-0.016
	(0.011)	(0.010)	(0.011)	(0.010)	(0.011)
Relative Size	0.000*	0.000*	0.000	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
I(Same Buiness Group)	0.001	-0.000	0.001	0.000	0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
I(All Cash Deal)	0.014*	0.014*	0.014*	0.014*	0.017**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
I(All Equity Deal)	0.009	0.009	0.009	0.009	0.008
	(0.008)	(0.008)	(0.008)	(0.007)	(0.009)
Constant	-0.033	-0.034	-0.027	-0.030	-0.037
	(0.032)	(0.030)	(0.032)	(0.031)	(0.033)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	734	734	734	734	595
R-squared	0.134	0.128	0.134	0.130	0.144

Notes: This table presents coefficient estimates from a multivariate regression of announcement day acquirer CARS on caste proximity, firm level controls, and deal level controls. The sample includes M&A deals with Indian acquirers and targets in the sample period 2000 - 2017. The announcement day acquirer CAR for a given M&A deal is calculated as the return on the acquirer firm's stock minus the return on the market return over a window of (-1,0) days around the first public announcement of the deal. In column 1 (2), caste proximity is measured as an indicator variable that takes the value 1 when the acquirer board and target board have the same dominant varna (jati). In column 3 (4), caste proximity is measured as the total number of same-varna (jati) pairs of acquirer-target board members as a fraction of the number of all posible acquirer-target board member pairs. In column 5, caste proximity is calculated as the hierarchal distance between the dominant varna of the acquirer and target board. Size is defined as the log of total assets; relative size is defined as the ratio of total assets of the acquirer to total assets of the target. The dependent variable and all continous independent variables are winsorized at the 1% level. Robust standard errors clustered by year are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 8: Announcement Day Target CARs and Caste Proximity

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: Acquirer Firm Abnormal Announcement Day Return				
Caste Proximity Measure	Same Varna	Same Jati	Overlap Varna	Overlap Jati	Varna Hierarchy Distance
Caste Proximity	-0.020*	-0.028**	-0.096	-0.147**	0.007
	(0.010)	(0.012)	(0.055)	(0.064)	(0.004)
Size (A)	-0.001	-0.002	-0.002	-0.002	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Size (T)	-0.005	-0.005	-0.006	-0.005	-0.006*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
I(Vertical Merger)	0.049	0.026	0.046	0.038	0.024
	(0.041)	(0.039)	(0.040)	(0.044)	(0.036)
I(Horizontal Merger)	0.074	0.054	0.074	0.066	0.053
	(0.047)	(0.046)	(0.046)	(0.050)	(0.043)
I(Exporter A)	0.003	0.004	0.001	0.003	0.004
	(0.015)	(0.015)	(0.014)	(0.014)	(0.017)
I(Exporter T)	0.014	0.014	0.014	0.013	0.006
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
I(Same State)	-0.008	0.003	-0.008	-0.002	0.001
	(0.038)	(0.039)	(0.040)	(0.040)	(0.055)
I(Same Language)	0.007	-0.001	0.010	0.006	0.001
	(0.038)	(0.040)	(0.041)	(0.042)	(0.055)
Age (A)	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age (T)	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Previous Year Stock Performance (A)	0.000	-0.000	-0.001	-0.002	-0.001
	(0.010)	(0.010)	(0.010)	(0.010)	(0.013)
Previous Year Stock Volatility (A)	-0.740***	-0.731***	-0.702***	-0.668***	-0.526
	(0.246)	(0.218)	(0.230)	(0.200)	(0.383)
Operating CF Ratio (A)	-0.032	-0.037	-0.030	-0.044	-0.035
	(0.049)	(0.046)	(0.049)	(0.047)	(0.057)
Leverage (A)	0.001	-0.001	0.002	0.001	-0.006
	(0.024)	(0.025)	(0.024)	(0.023)	(0.029)
Relative Size	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
I(Same Buiness Group)	0.011	0.013	0.013	0.013	0.013
	(0.013)	(0.012)	(0.013)	(0.013)	(0.014)
I(All Cash Deal)	0.082**	0.080**	0.076***	0.073**	0.080**
	(0.035)	(0.031)	(0.026)	(0.033)	(0.033)
I(All Equity Deal)	0.075*	0.073*	0.068**	0.067*	0.065
	(0.039)	(0.035)	(0.030)	(0.037)	(0.040)
Constant	0.108	0.136	0.131	0.129	0.128
	(0.092)	(0.088)	(0.086)	(0.094)	(0.094)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	350	350	350	350	294
R-squared	0.239	0.242	0.238	0.240	0.271

Notes: This table presents coefficient estimates from a multivariate regression of announcement day acquirer CARS on caste proximity, firm level controls, and deal level controls. The sample includes M&A deals with Indian acquirers and targets in the sample period 2000 - 2017. The announcement day target CAR for a given M&A deal is calculated as the return on the target firm's stock minus the return on the market return over a window of (-1,0) days around the first public announcement of the deal. In column 1 (2), caste proximity is measured as an indicator variable that takes the value 1 when the acquirer board and target board have the same dominant varna (jati). In column 3 (4), caste proximity is measured as the total number of same-varna (jati) pairs of acquirer-target board members as a fraction of the number of all posible acquirer-target board member pairs. In column 5, caste proximity is calculated as the hierarchal distance between the dominant varna of the acquirer and target board. Size is defined as the log of total assets; relative size is defined as the ratio of total assets of the acquirer to total assets of the target. The dependent variable and all continous independent variables are winsorized at the 1% level. Robust standard errors clustered by year are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

the same negative and significant results in column 3. Finally, for a given increase in the hierarchal distance between the dominant varna of the acquirer and target boards respectively, the combined firm CAR also increases, as evidenced by the positive and statistically significant coefficient in column 5.

These results indicate that the market penalizes caste-proximate firm pairs. This is consistent with the market's suspicion of familiarity bias dominating any information benefits that accrue from the caste-proximity of the target and acquirer firm boards.

5 Negotiation Unaffected by Caste Proximity

In this section we look for evidence on a specific channel through which caste proximity might effect the value of an M&A deal. To this end, we examine the role of caste proximity in the negotiation process between the acquirer and target firm. We look for evidence of the effect of caste proximity on two critical negotiation outcomes: takeover premium paid by the acquiring firm and time taken to complete the deal. The takeover premium is measured by the ratio of price paid by the acquiring firm for the target firm's equity divided by the market value of the target firm's transferred equity 43 days prior to the announcement of the deal. Time to completion is measured by the days between the first public announcement of the M&A deal and the date the deal became effective. For this analysis, we use the sample of observed M&A deals described in sections 2.2. Specifically, we include in our sample the subset of completed deals in the 2000 - 2017 sample period.

5.1 Empirical Approach

We estimate the following model:

$$Y_{i,j,t} = \beta_0 + \beta_1 CP_{i,j,t} + \beta_2 X^a_{i,t} + \beta_3 X^t_{j,t} + \beta_4 X^{a,t}_{i,j,t} + \beta_5 D_{i,j,t} + \eta_{i,j} + \tau_t + \epsilon_{i,j,t} \tag{5.1}$$

Note that this is identical to equation 4.1 above with the exception of the dependent variable. $Y_{i,j,t}$ represents a negotiation outcome, either the takeover premium or the time to completion

Table 9: Announcement Day CARs of Combined Firm and Caste Proximity

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: Acquirer Firm Abnormal Announcement Day Return				
Caste Proximity Measure	Same Varna	Same Jati	Overlap Varna	Overlap Jati	Varna Hierarchy Distance
Caste Proximity	-0.022***	-0.001	-0.097***	-0.044	0.006**
	(0.004)	(0.008)	(0.029)	(0.046)	(0.003)
Size (A)	-0.006***	-0.005***	-0.006***	-0.006***	-0.005**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Size (T)	0.001	0.001	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
I(Vertical Merger)	0.010	-0.004	0.006	-0.003	0.003
	(0.024)	(0.024)	(0.024)	(0.027)	(0.030)
I(Horizontal Merger)	0.028	0.015	0.026	0.017	0.021
	(0.023)	(0.024)	(0.023)	(0.027)	(0.028)
I(Exporter A)	0.006	0.005	0.004	0.005	0.003
	(0.007)	(0.006)	(0.006)	(0.006)	(0.008)
I(Exporter T)	-0.007	-0.006	-0.007	-0.006	-0.006
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
I(Same State)	-0.012	-0.013	-0.013	-0.011	-0.017
	(0.046)	(0.046)	(0.047)	(0.046)	(0.051)
I(Same Language)	0.013	0.014	0.016	0.014	0.016
	(0.048)	(0.048)	(0.049)	(0.049)	(0.053)
Age (A)	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age (T)	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Previous Year Stock Performance (A)	-0.005	-0.005	-0.006	-0.006	-0.006
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Previous Year Stock Volatility (A)	-0.180	-0.125	-0.136	-0.118	-0.110
	(0.294)	(0.306)	(0.285)	(0.298)	(0.386)
Operating CF Ratio (A)	-0.030	-0.042	-0.030	-0.043	-0.032
	(0.023)	(0.026)	(0.025)	(0.025)	(0.020)
Leverage (A)	-0.014	-0.024	-0.014	-0.022	-0.017
	(0.018)	(0.019)	(0.018)	(0.019)	(0.022)
Relative Size	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
I(Same Buiness Group)	0.007	0.004	0.008	0.005	0.008
	(0.008)	(0.009)	(0.009)	(0.009)	(0.008)
I(All Cash Deal)	0.058*	0.056	0.051	0.054	0.067
	(0.031)	(0.037)	(0.041)	(0.038)	(0.044)
I(All Equity Deal)	0.057	0.054	0.050	0.052	0.058
	(0.036)	(0.042)	(0.046)	(0.042)	(0.050)
Constant	0.004	0.019	0.013	0.021	-0.014
	(0.041)	(0.041)	(0.042)	(0.042)	(0.043)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	346	346	346	346	290
R-squared	0.248	0.206	0.239	0.209	0.247

Notes: This table presents coefficient estimates from a multivariate regression of announcement day acquirer CARS on caste proximity, firm level controls, and deal level controls. The sample includes M&A deals with Indian acquirers and targets in the sample period 2000 - 2017. The announcement day combined CAR for a given M&A deal is calculated as the market cap weighted average return on the acquirer and target firm stocks minus the return on the market return over a window of (-1,0) days around the first public announcement of the deal. In column 1 (2), caste proximity is measured as an indicator variable that takes the value 1 when the acquirer board and target board have the same dominant varna (jati). In column 3 (4), caste proximity is measured as the total number of same-varna (jati) pairs of acquirer-target board members as a fraction of the number of all posible acquirer-target board member pairs. In column 5, caste proximity is calculated as the hierarchal distance between the dominant varna of the acquirer and target board. Size is defined as the log of total assets; relative size is defined as the ratio of total assets of the acquirer to total assets of the target. The dependent variable and all continous independent variables are winsorized at the 1% level. Robust standard errors clustered by year are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

of the deal between firms i and j in yeat t.

5.2 Results

Estimation results for equation 5.1 are presented below in Tables **??** and **??**. Table **??** presents coefficient estimates for regression of takeover premium on caste proximity and other controls. The coefficient estimates in the first row, for all caste proximity measures, are insignificant. Caste proximity, measured either through *varna* or through *jati*, does not appear to have an effect on the takeover premium agreed on by the target and acquirer firms. Further, these results confirm that the negative acquirer CARs for caste-proximate deals do not reflect a transfer of value between targets and acquirers, as would be evidenced by a sensitivity of the takeover premium to caste proximity.

Table **??** presents coefficient estimates for regressions with time to completion of deal as the dependent variable. Examining the coefficient estimates on the caste proximity variable in the first row, we find weak evidence that caste proximity leads to shorter times to completion. Note that the sign of the caste proximity coefficient is negative consistently for the *varna* (*jati*) indicator measures (columns 1 and 2) as well as the *varna* (*jati*) continuous distance measures (columns 3 and 4). This negative coefficient estimate is consistent with the increased trust, and consequent easier negotiation process, that can come with caste proximity between the two boards. Note, however, that the coefficient estimates, while consistent in sign, are not statistically significant.

6 Caste: A Conduit for Information Flows

Results thus far suggest that reliance on caste proximity for M&A deals in India leads to value destruction for the acquirer, target, and merged entity, indicative of a strong familiarity bias leading to sub-optimal investment decisions. In this section we look for evidence for presence of information channel even though bias effects may be stronger.

Table 10: Takeover Premiums and Caste Proximity

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: Takeover Premium				
Caste Proximity Measure	Same Varna	Same Jati	Overlap Varna	Overlap Jati	Varna Hierarchy Distance
Caste Proximity	-0.034	-0.016	-0.078	-0.246	0.006
	(0.024)	(0.024)	(0.078)	(0.185)	(0.005)
Size (A)	0.006	0.006	0.006	0.004	-0.003
	(0.016)	(0.016)	(0.016)	(0.014)	(0.005)
Size (T)	-0.019	-0.018	-0.019	-0.018	-0.003
	(0.021)	(0.021)	(0.021)	(0.021)	(0.004)
I(Vertical Merger)	-0.028	-0.026	-0.029	-0.032	-0.006
	(0.025)	(0.028)	(0.027)	(0.030)	(0.017)
I(Exporter A)	0.065*	0.062	0.064	0.065	0.039
	(0.036)	(0.037)	(0.037)	(0.038)	(0.024)
I(Exporter T)	-0.067	-0.068	-0.066	-0.068	-0.031
	(0.049)	(0.052)	(0.051)	(0.050)	(0.033)
I(Same Language)	0.051	0.054	0.064	0.064	0.012
	(0.066)	(0.063)	(0.071)	(0.071)	(0.023)
I(Same State)	-0.053	-0.054	-0.064	-0.058	-0.014
	(0.059)	(0.055)	(0.064)	(0.062)	(0.020)
Age (A)	-0.001	-0.001	-0.001	-0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Age (T)	0.000	0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Previous Year Stock Performance (A)	0.030	0.030	0.030	0.032	0.012
	(0.031)	(0.032)	(0.031)	(0.032)	(0.016)
Previous Year Stock Volatility (A)	-0.504	-0.585	-0.467	-0.665	-0.825
	(0.539)	(0.560)	(0.573)	(0.564)	(0.724)
Operating CF Ratio (A)	-0.273	-0.273	-0.278	-0.279	-0.075
	(0.234)	(0.245)	(0.241)	(0.242)	(0.091)
Leverage (A)	-0.072	-0.077	-0.075	-0.066	-0.041
	(0.091)	(0.094)	(0.092)	(0.084)	(0.062)
Relative Size	0.000***	0.000***	0.000***	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
I(Same Business Group)	0.028	0.027	0.027	0.029	0.001
	(0.027)	(0.028)	(0.028)	(0.031)	(0.008)
I(All Cash Deal)	0.068*	0.033	0.043	0.028	0.032
	(0.037)	(0.036)	(0.035)	(0.034)	(0.022)
I(All Equity Deal)	0.007	-0.028	-0.019	-0.025	
	(0.047)	(0.044)	(0.040)	(0.039)	
Constant	-0.932***	-0.952***	-0.930***	-0.902***	-1.005***
	(0.084)	(0.085)	(0.094)	(0.091)	(0.120)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	155	155	155	155	125
R-squared	0.616	0.611	0.611	0.615	0.611

Notes: This table presents coefficient estimates from a multivariate regression of takeover premiums of M&A deals on caste proximity, firm level controls, and deal level controls. The sample includes M&A deals with Indian acquirers and targets in the sample period 2000 - 2017. The takeover premium for a given M&A deal is defined as the ratio of the transaction value to the market capitalization of the target firm's shares measured 43 days prior to the announcement date of the deal. In column 1 (2), caste proximity is measured as an indicator variable that takes the value 1 when the acquirer board and target board have the same dominant varna (jati). In column 3 (4), caste proximity is measured as the total number of same-varna (jati) pairs of acquirer-target board members as a fraction of the number of all posible acquirer-target board member pairs. In column 5, caste proximity is calculated as the hierarchal distance between the dominant varna of the acquirer and target board. Size is defined as the log of total assets; relative size is defined as the ratio of total assets of the acquirer to total assets of the target. The dependent variable and all continous independent variables are winsorized at the 1% level. Robust standard errors clustered by year are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 11: Time to Completion of Deal and Caste Proximity

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: Time to Completion of Deal				
Caste Proximity Measure	Same Varna	Same Jati	Overlap Varna	Overlap Jati	Varna Hierarchy Distance
Caste Proximity	-26.510	-1.890	0.562	-50.124	15.026
	(27.451)	(27.363)	(87.187)	(79.958)	(14.885)
Size (A)	-11.665**	-11.459**	-11.363**	-11.923**	-9.991**
	(4.102)	(4.366)	(4.504)	(4.476)	(4.728)
Size (T)	3.729	3.051	2.954	3.146	5.718
	(4.901)	(5.083)	(4.966)	(5.102)	(6.367)
I(Vertical Merger)	-154.645*	-154.064	-154.222	-152.320	-162.979
	(88.202)	(89.202)	(89.118)	(90.541)	(99.074)
I(Horizontal Merger)	-158.318*	-154.982	-155.251*	-152.971	-186.974*
	(87.754)	(89.530)	(89.202)	(90.790)	(92.603)
I(Exporter A)	29.528**	26.251*	26.079*	26.669*	24.368*
	(13.186)	(13.428)	(14.049)	(13.986)	(13.784)
I(Exporter T)	10.269	12.563	12.512	12.620	25.642
	(23.710)	(24.210)	(24.278)	(24.156)	(25.426)
I(Same Language)	86.012	78.215	78.065	80.210	66.127
	(53.895)	(58.670)	(55.883)	(57.745)	(66.528)
I(Same State)	-79.468	-74.035	-74.055	-74.018	-50.135
	(60.467)	(63.888)	(62.738)	(63.896)	(71.641)
Age (A)	0.361	0.355	0.352	0.359	0.944*
	(0.484)	(0.473)	(0.476)	(0.478)	(0.542)
Age (T)	0.896	0.878	0.880	0.867	0.731
	(0.661)	(0.645)	(0.642)	(0.647)	(0.572)
Previous Year Stock Performance (A)	-33.374	-33.697	-33.711	-34.180	-41.418
	(22.782)	(23.700)	(23.691)	(23.552)	(28.005)
Previous Year Stock Volatility (A)	220.177	153.620	152.413	171.201	1,309.246
	(1,054.985)	(1,079.120)	(1,052.531)	(1,065.991)	(975.544)
Operating CF Ratio (A)	-156.521	-160.198	-160.448	-158.454	-24.521
	(93.955)	(96.893)	(93.219)	(95.929)	(91.605)
Leverage (A)	1.451	-5.875	-6.179	-4.524	8.225
	(45.252)	(40.166)	(44.622)	(41.448)	(48.425)
Relative Size	0.001	0.001	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
I(Same Business Group)	0.756	-1.714	-1.968	-0.828	-6.156
	(21.962)	(23.475)	(21.559)	(22.502)	(19.560)
DUM(All Cash Deal)	-9.707	-13.106	-12.868	-14.102	-4.081
	(38.907)	(40.799)	(41.745)	(41.902)	(40.871)
DUM(All Equity Deal)	191.718***	189.588***	189.441***	190.578***	213.134***
	(40.487)	(43.398)	(43.546)	(43.346)	(46.869)
Constant	262.256***	252.911***	252.526***	255.404***	140.656*
	(68.374)	(69.289)	(74.493)	(72.145)	(76.712)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	462	462	462	462	376
R-squared	0.270	0.267	0.267	0.267	0.324

Notes: This table presents coefficient estimates from a multivariate regression of the time to deal completion on caste proximity, firm level controls, and deal level controls. The sample includes M&A deals with Indian acquirers and targets in the sample period 2000 - 2017. The time to completion for a given M&A deal is defined as the difference (in days) between the effective date and the announcement date of the deal. In column 1 (2), caste proximity is measured as an indicator variable that takes the value 1 when the acquirer board and target board have the same dominant varna (jati). In column 3 (4), caste proximity is measured as the total number of same-varna (jati) pairs of acquirer-target board members as a fraction of the number of all posible acquirer-target board member pairs. In column 5, caste proximity is calculated as the hierarchal distance between the dominant varna of the acquirer and target board. Size is defined as the log of total assets; relative size is defined as the ratio of total assets of the acquirer to total assets of the target. The dependent variable and all continous independent variables are winsorized at the 1% level. Robust standard errors clustered by year are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

6.1 Empirical Approach

We examine the question if market penalizes same caste mergers less when other information channels are not available. For this we consider the affect of caste proximity on announcement day CARs in several different scenarios where firms can exploit alternative sources of information besides caste connections. Our hypothesis is that the market penalizes same caste mergers more if firms continue to rely on caste even in the presence of these alternate information channels.

We are able to observe several firm and firm-pair characteristics that potentially serve as formal and informal communication channels between firms. First, some firms disclose more information in their annual reports than others. We expect that the more informationally transparent a target firm is, less would be the need for an acquiring firm to rely on caste connections of its directors to acquire the target. Prowess allows us to measure a subset of disclosures that firms might make. We calculate number of these disclosures that firms make as a proxy for how transparent a firm is. Size (real assets) of a target is likely to be correlated with the amount of public information available about the firm. We use this as another proxy for informational transparency of the firm and hypothesize that the need to rely on caste to obtain information about a larger target is lower than that for smaller ones. In addition, more information is available for public than for private targets. We use the public status of a target as an indicator of the presence of alternative information channel and expect that the reliance on caste to obtain information is lower for public targets than for private targets. Finally, a firm that is looking to acquire a target in a related industry is likely to have more information about that target relative to one in an unrelated industry, reducing the need to rely on caste to obtain information. We categorize a merger to be one between firms in related industries if the merger is either horizontal or vertical. [24] To test for evidence of a role for caste proximity as an informal information channel, we add interaction terms between the caste proximity measure

[24] Note that there are other potential measures of sources of information between target and acquiring firms. For example, board interlocks between transacting firms can be a potentially useful source of information. Toeholds, or minority equity interests, form another channel through which acquirers can get information about targets. Toeholds are often observed in cases of hostile M&A deals wherein acquirers buy a minority stake in a potential target before they actually bid for control of the firm. This can reduce information asymmetry between the two firms aiding the assessment of synergies from a potential. Finally, if two firms are located in the same state or have directors that speak the same language, information asymmetry is potentially reduced. The aforementioned measures, however, could also represent sources of familiarity bias so they are inappropriate for this analysis where we need measures that capture only information.

and each of the aforementioned measures of additional information channels to our acquirer CAR regressions.

6.2 Results

The results of this analysis are presented in Table 12 below. We use the *varna*-based caste proximity measures for this analysis because the results in section 4 indicate that the market reacts more strongly to these measures than the *jati*-based measures. In Table 12, the coefficient on the interaction term between related mergers and caste proximity is significant for all three measures. The coefficient is negative for the same *varna* indicator measure as well as for the *varna* overlap measure and positive for the hierarchy measure (note that a high value of hierarchal distance reflects a large distance while a large value for the other two *varna* based measures indicates a small distance). When we look beyond the average effect of caste-proximity on CARs, we indeed find that the CAR is even more negative when information asymmetry is low (for related mergers). Using the coefficient on the interaction term in column (1) to gage economic magnitude, we observe that the same-*varna* CAR penalty (measured over a two day event window) is 4% larger when information is available through other channels, in this case because the merger is between firms in related industries. Similarly, the interaction term of target firm size and caste proximity is negative for the *varna* indicator and *varna* overlap measure, and positive for the hierarchal distance measure. The sign of this coefficient is consistent with the results for the related industry analysis: the CAR is even more negative when information asymmetry is low (target firm size is large). We note that the interaction term between firm size and caste proximity, while consistent in sign, is only significant for the *varna* overlap measure. Finally, the coefficient estimates on the interaction term between the target firm's public status and caste proximity are also consistent with an information channel role for caste, although the results are not statistically significant. Note that the coefficient interaction term of target firm public status and caste proximity is negative for the *varna* indicator and *varna* overlap measure, and positive for the hierarchal distance measure, consistent with a larger penalty for caste-proximity when information asymmetry is low.

7 Conclusion

We show that cultural proximity between two firms' boards leads to a higher likelihood of the two firms entering a merger and acquisition (M&A) deal in India. This phenomenon may indicate firms' reliance on culture, as measured by caste, as an informal channel of information when making critical investment decisions with imperfect information. However, it may also be driven by familiarity bias leading to sub-optimal investments. Indeed, caste-proximate M&A deals are value destroying for both acquirer and target, as well as the merged entity. There is also no transfer of value from acquirers to targets, and no significant reduction in time to completion, indicating that potential trust among directors with similar caste identities does not benefit the negotiation process. Overall, our findings show that familiarity bias in favor of culturally proximate agents can lead to sub-optimal investment decisions.

We are currently enhancing the analysis along a few dimensions. The next draft will examine robustness of our baseline results and also include results from causal identification of the effect of caste proximity on the likelihood of merger, using the Clause 49 corporate governance reform to instrument caste proximity.

Table 12: Announcement Day CARs: Alternate Information Channels

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Dependent Variable: Acquirer Firm Abnormal Announcement Day Return								
Caste Proximity Measure	Same Varna			Overlap Varna			Varna Hierarchy Distance		
Information Channel	Related Merger	Size (T)	Public Status (T)	Related Merger	Size (T)	Public Status (T)	Related Merger	Size (T)	Public Status (T)
Caste Proximity	0.030	-0.012	-0.005	0.091*	0.054	-0.018	-0.026***	0.005	0.004
	(0.018)	(0.011)	(0.010)	(0.048)	(0.032)	(0.017)	(0.007)	(0.004)	(0.005)
Caste Proximity x Information Channel	-0.040*	0.000	-0.005	-0.130**	-0.016**	-0.021	0.030***	-0.000	-0.002
	(0.020)	(0.001)	(0.011)	(0.054)	(0.006)	(0.016)	(0.008)	(0.000)	(0.006)
Size (A)	-0.003**	-0.003**	-0.003**	-0.004**	-0.004**	-0.004**	-0.003**	-0.003**	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Size (T)	0.002*	0.002	0.002*	0.002	0.006**	0.002	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
I(Vertical Merger)	0.007	-0.010	-0.010	0.021	-0.006	-0.010	-0.044***	-0.014	-0.015
	(0.012)	(0.011)	(0.011)	(0.017)	(0.012)	(0.011)	(0.013)	(0.013)	(0.014)
I(Horizontal Merger)	0.009	-0.008	-0.008	0.025	-0.003	-0.007	-0.039***	-0.010	-0.010
	(0.013)	(0.010)	(0.010)	(0.017)	(0.011)	(0.010)	(0.013)	(0.012)	(0.013)
I(Exporter A)	0.005	0.005	0.005	0.004	0.004	0.003	-0.000	-0.001	-0.001
	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
I(Exporter T)	-0.008	-0.008	-0.008	-0.008	-0.008	-0.007	-0.005	-0.005	-0.005
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)
I(Same State)	-0.007	-0.007	-0.007	-0.009	-0.008	-0.007	-0.012	-0.012	-0.012
	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)
I(Same Language)	0.011	0.011	0.010	0.014	0.012	0.012	0.014	0.014	0.014
	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)
Age (A)	0.000	0.000	0.000	0.000*	0.000*	0.000*	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age (T)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Previous Year Stock Performance (A)	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Previous Year Stock Volatility (A)	0.381	0.398	0.399	0.396	0.428*	0.419	0.432*	0.466*	0.468*
	(0.263)	(0.256)	(0.254)	(0.253)	(0.243)	(0.242)	(0.235)	(0.229)	(0.226)
Operating CF Ratio (A)	-0.044*	-0.046*	-0.046*	-0.045*	-0.045*	-0.044*	-0.020	-0.026	-0.026
	(0.023)	(0.022)	(0.022)	(0.023)	(0.023)	(0.023)	(0.019)	(0.019)	(0.019)
Leverage (A)	-0.012	-0.012	-0.012	-0.011	-0.011	-0.011	-0.014	-0.015	-0.015
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Relative Size	0.000*	0.000	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
I(Same Business Group)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
I(Toe Hold)	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	0.003	0.003	0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
I(All Cash Deal)	0.013	0.014*	0.014*	0.013	0.012	0.015*	0.014	0.018*	0.018*
	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)	(0.008)	(0.010)	(0.009)	(0.009)
I(All Equity Deal)	0.009	0.009	0.010	0.008	0.008	0.010	0.004	0.008	0.009
	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	734	734	734	734	734	734	595	595	595
R-squared	0.138	0.135	0.135	0.138	0.144	0.136	0.156	0.145	0.145

Notes: This table presents coefficient estimates from a multivariate regression of announcement day acquirer CARS on caste proximity, firm level controls, and deal level controls. The sample includes M&A deals with Indian acquirers and targets in the sample period 2000 - 2017. The announcement day acquirer CAR for a given M&A deal is calculated as the return on the acquirer firm's stock minus the return on the market return over a window of (0,1) days around the first public announcement of the deal. The model includes interaction terms between three measures of information asymetry with the caste proximity variable. In columns 1, 4, and 7, caste proximity is interacted with an indicator variable that takes the value 1 if the merger is between related firms (either a horizontal or a vertical merger) and 0 if the merger is between two unrelated deals. In columns 2, 5, and 8, caste proximity is interacted with the size of the target. In columns 3, 6, and 9, caste proximity is interacted with an indicator variable that takes the value 1 if the target firm is public and 0 otherwise. In columns 1-3, caste proximity is measured as an indicator variable that takes the value 1 when the acquirer board and target board have the same dominant varna. In columns 4 - 6, caste proximity is measured as the total number of same-varna pairs of acquirer-target board members as a fraction of the number of all posible acquirer-target board member pairs. In columns 7-9, caste proximity is calculated as the hierarchal distance between the dominant varna of the acquirer and target board. Size is defined as the log of total assets; relative size is defined as the ratio of total assets of the acquirer to total assets of the target. The dependent variable and all continous independent variables are winsorized at the 1% level. Robust standard errors clustered by year are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

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8 Appendix

8.1 Examples: Measures of Caste Proximity

Dominant Category

Dominant Category measures cultural proximity as an indicator variable that takes on the value of 1 if the two boards have the same dominant category- *varna* or (*jati*).

Consider the example in Table 9 of two boards that have five board members each. Board A has four members of Kshatriya varna and one of Vaishya varna. Board B, on the other has three members from Kshatriya varna and one each from Vaishya and Brahmin varna. Thus, caste proximity as measured by *Dominant Category* for these two boards is one, since both the boards have the same most popular varna.

Table 13: Measure of Caste Proximity-Dominant Varna

		Board A	Board T
Board Size		5	5
	Kshatriya	4	3
Varna of Directors	Vaishya	1	1
	Brahmin	0	1
Dominant Varna of Board		Kshatriya	Kshatriya
Same Dominant Varna		Yes	

Table 14: Measure of Caste Proximity-Dominant Varna

		Board A	Board T
Board Size		5	5
	Kshatriya	4	1
Varna of Directors	Vaishya	1	3
	Brahmin	0	1
Dominant Varna of Board		Kshatriya	Vaishya
Same Dominant Varna		No	

Now consider the example in Table 10 of two boards that have five board members each. Board A has the same board composition as before. Board B, on the other has three members from Vaishya varna and one each from Kshatriya and Brahmin varna. Caste proximity as measured by *Dominant Category* for these two boards is zero, since both the boards have different most popular varna.

Now consider the example in Table 11 of two boards that have five board members each. Board A has the same board composition as before. Board B, on the other has twi members from Vaishya and Kshatriya varna and one from Brahmin varna. Board B does not have a unique dominant varna. For such cases, of the varnas that we randomly assign a varna as a dominant varna Caste proximity as measured by *Dominant Category* for these two boards is assigned zero and one with half probability each.

Table 15: Measure of Caste Proximity-Dominant Varna

		Board A	Board T
Board Size		5	5
Varna of Directors	Kshatriya	4	2
	Vaishya	1	2
	Brahmin	0	1
Dominant Varna of Board		Kshatriya	Kshatriya (Vaishya)
Same Dominant Varna			Yes (No)

Overlap

We define a continuous measure of caste proximity with a variable *Overlap* that measures the percentage of same category- *varna* (*jati*) pairs among all possible pairwise combinations of directors between the two boards. We explain this variable with example in Table 12 and 13.

Table 16: Varna Composition of all Director Pairs

	Board T				
Board A	Kshatriya	Kshatriya	Kshatriya	Vaishya	Brahmin
Kshatriya	1	1	1	0	0
Kshatriya	1	1	1	0	0
Kshatriya	1	1	1	0	0
Kshatriya	1	1	1	0	0
Vaishya	0	0	0	1	0

Consider the case where acquirer and target board size is five each. Varna composition of the two boards is given by Table 9. Table 13 illustrates the varna composition of all director pairs. First row and coloumn indicate the varna of board members of acquirer and target boards respectively. We consider pair of board members to be connected if they belong to the same varna. Each cell takes value one if the board members of the two firms are from the same varna and zero otherwise. Two boards that have five board members each can have a maximum of twenty five possible connections or combinations of board members. This will happen when all board members are of the same varna in both the boards. In our example the two boards have thirteen connections in common. Thus, our measure of overlap is

$$\text{Overlap} = \frac{13}{25} = 0.52$$

Heirarchy

Caste system as interpreted by many is heirarchical in nature, with Brahmin at the top of the echeleon followed by Kshatriyas, Vaishyas, Shudras and Dalits in the end. We define a measure of caste proximity that calculates the distance between the dominant *varnas* of the two boards using the hierarchy of the castes. Firms that have dominant *varnas* which are close in the hierarchy are assigned lower values than pairs of dominant *varnas* differ greatly in their location in the hierarchy. We assume that each varna is equidistant from its successor and predecessor.

Consider board composition of two boards in Table 9. Since, both firms have the same dominant varna heirarchy measure is assigned value 0. For board composition in Table 10, the two firms have distinct dominant varna. The distance between the two varnas is one which is the value of the heirarchy measure.

8.2 Examples: Simulated Samples

In this section we explain a few simulations that we conduct in Section 3.1.

Unconditional Simulated Sample

To begin with we first perform an unconditional simulation in which for every observed merger, we draw a completely random acquirer and completely random target from the set of firms for which we observe financial and board information in the year of the observed merger. We explain this with the example below. Consider that in the year 2011 there are 200 unique firms and 50 mergers. To simulate the reality we randomly draw 50 pairs from the 200 firms, excluding the possibility of the possibility that both firms in the pair is the same. This can happen in 200x 199 ways. We randomly draw 50 such mergers and calculate the number of same varna mergers in this sample and repeat it 100 times. We then calculate the average number of same varna mergers over these 100 samples.

Industry-Pair Conditional Simulated Sample

In a second simulation, we condition our choice of random firms on the industry pairs observed in the sample of actual M&A deals. Specifically, for every observed merger deal, we randomly draw one firm from the acquiring firm's industry and one firm from the target firm's industry from the set of firms for which we observe financial and board information in the year

Table 17: Example

Year	2011
Actual Number of Firms	200
Actual Number of M&A	50
Simulation	
Possible Number of Mergers	200x199
Randomly draw 50 mergers	100 times

of the observed merger. Consider the same example above. The state distribution of firms and mergers in year 2011 is given by Table.. To simulate the reality we randomly draw 30 pairs such that both firms are registered in Karnataka excluding the possibility of the possibility that both firms in the pair is the same. Next, we randomly draw 12(8) pairs such that one firm is registered in Karnataka and the other in Maharashtra (Rajasthan). We then calculate the number of same varna mergers in this sample and repeat it 100 times. We then calculate the average number of same varna mergers over these 100 samples.

Table 18: Example

Panel A:Number of Firms by State

State	N
Karnataka (KA)	100
Maharashtra (MH)	60
Rajasthan (RJ)	40

Panel B: No. of M&As by State Pairs

State Pair	N
KA – KA	30
KA – MH	12
KA – RJ	8

Panel C: Simulation

State-Pair	Population	Sample Size
KA – KA	100×99	30
KA – MH	100×60	12
KA – RJ	100×40	8

Acquirer Conditional Sample

Table 19: Example

Year	2011
Actual Number of Firms	200
Actual Number of M&A	50
Simulation for every observed acquirer	
Population	198
Randomly Pick	1

Acquirer and Target Conditional Sample

Table 20: Example

Year	2011
Actual Number of Firms	200
Actual Number of M&A	50
Simulation for every observed acquires	
Population	49
Randomly Pick	1

Table 21: Variable definitions

Variables	Definitions
Panel A: Measures of M&A performance	
Acquirer Cumulative Abnormal Returns (ACAR)	The difference between the return on the stock over the announcement window and the corresponding return on the market index for the acquirer
Target Cumulative Abnormal Returns (TCAR)	The difference between the return on the stock over the announcement window and the corresponding return on the market index for the target

Merged firm Cumulative Abnormal Returns (MCAR)	Cumulative abnormal return for a value-weighted portfolio of the acquirer and the target. The weights are based on the market capitalizations of the acquirer and the target at two months (43 trading days) prior to the announcement date.
Takeover Premium	Total value of compensation paid to target shareholders divided by targets market value of equity 43 trading days prior to the acquisition announcement less one
Time to Deal Completion	The number of days between the announcement date and the date on which the entire transaction is completed and effective

Panel B: Firm and Deal Characteristics

From SDC

Transaction Value	Total value of consideration paid by the acquirer, excluding fees and expenses in million Rupees (INR)
Stock deal	Indicator variable: one for deals financed partially (more than 50%) or fully with stock, zero otherwise
Cash deal	Indicator variable: one for deals financed partially (more than 50%) or fully with cash, zero otherwise

From Prowess$_{dx}$

Firm size	Real value of total assets in rupees million
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
Public Status	Indicator variable: one for public firms, zero otherwise
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

Operating cash flow relative to assets	Cash flow from operating activities before depreciation over book value of assets
Leverage	Book value of debt over book value of 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
Operating income	Sales less operating expenses
Return on Assets (ROA)	Operating income over book value of total assets
Prior Year Stock Performance (PYSP)	Cumulative sum of natural logarithm of daily stock returns for 200 trading days starting the 264th trading day prior to deal announcement.
Prior Year Stock Volatility (PYSV)	Standard deviation of natural logarithm of daily stock returns for 200 trading days starting the 264th trading day prior to deal announcement.
Vertical Merger	Indicator variable: one if acquirer and target industries are linked by a buyer-supplier relationship, zero if they are from the same industry
Relative Size	Book value of assets of acquirer over book value of assets of target
Busyness	The mean number of other companies on which a director of the company is also a director
Diligence	Mean percentage of board meetings attended by the directors of a company
Same state	Indicator variable: one if acquirer and target are from same state, zero otherwise
Same language	Indicator variable: one if acquirer and target are from states whose dominant language is the same, zero otherwise *(Source:Census of India, 2011)*
Panel C: Caste Proximity Measures	
Same Dominant Varna (Jati)	Indicator variable: one if acquirer and target boards have the same dominant varna (jati), zero otherwise

Varna (Jati) Overlap	Percentage of same varna (jati) director pairs between the acquirer and target firms $= 100 \times \frac{\text{\# same varna (jati) director pairs}}{\text{total director pairs}}$
Varna Hierarchy distance	Absolute value of difference between varna rank of acquirer board and varna rank of target board