

Are They Efficient in the Middle? Using Propensity Score Estimation for Modeling Middlemen in Indian Corporate Corruption

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Abstract Corrupt regulatory environment encourages firms to deploy middlemen for speedy and assured acquisition of different services from regulatory agencies. Using a World Bank dataset of 2210 Indian manufacturing firms, this article examines how firms with middlemen deal with corrupt governmental agencies for its operational efficiency. Our results demonstrate that deployment of middlemen by the firms is often accompanied by a substantial increase in operational delay, relatively trigger more consumption of senior management's time on regulatory disentanglement, enhance the likelihood/tendency to pay bribe, and likely to face more court cases as a means of restitution of legal rights. As firm-specific attributes may contaminate our preliminary results, we utilized the propensity score framework to examine relationships among variables of interests. Our study contributes to the *inconspicuous* part of the corruption literature by attempting to present a comprehensive but indirect assessment of the functions of middlemen that predominantly remained unattended except some scattered descriptive, case-based anecdotal presentations.

Keywords Middlemen corruption · Indian manufacturing · Propensity score estimation · Regulatory constraints · Corporate governance

Introduction

Corruption is widespread phenomena virtually present in all countries, especially visible in transition and emerging

economies (Porta and Vannucci 1999; Hoskisson et al. 2013; Khanna and Johnston 2007; Uhlenbruck et al. 2006; Rose-Ackerman 1999). Therefore, firms, those who operate in emerging economies like India, have a high likelihood to have a close encounter with corruption. Management scholars have paid particular attention to identify various causes and consequences of the corruptible engagement among business enterprises (Staw and Szwajkowski 1975; Baucus and Near 1991; Pinto et al. 2008; Trevino and Brown 2004). While these studies made significant contributions to advance our understanding of corporate corruption, we do not find adequate representative studies that have captured as to how corporate bodies deal with corrupt regulatory agencies with the help of the middlemen. This is a significant omission in the relevant literature; we address it in our paper. We attempt to find answers to the following questions: Whether firms with middlemen induce to avoid/confront the formal justice system for restitution of rights if violated? Whether firms with middlemen demand for more time from senior management and corporate executive for regulatory dealings than firms without middlemen? Whether firms with middlemen pay bribe to the bureaucrats and police personnel than firms without middlemen? Whether firms with middlemen secure operational and import licenses swiftly than firms without middlemen? We attempt to answer these questions using World Bank data on the Indian manufacturing industry.

The firm's dealing with a corrupt system unlawfully is risky, vulnerable to stakeholders' scrutiny, potentially carries economic consequences, and even may face criminal as well as civil proceedings. Therefore, firms adapt to corrupt environment in a number of ways, such as having non-equity mode of market entry (Uhlenbruck et al. 2006), bringing ex-politician on the corporate board (Hillman et al. 1999; Hillman 2005), installing a buffering shield

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(i.e., middlemen) (Baker and Faulkner 1993; Bray 2005). To avoid negative consequences arising out of corrupt dealings, business enterprises implement buffering strategy by deploying middlemen for subsequent denial and thereby assures of shielding the inner core of the top management from diverse harmful consequences. When middlemen have been adequately portrayed in the literature as a buffer between the management and the corrupt bureaucrats (Baker and Faulkner 1993; Bray 2005), we attempt to advance the discourse on corrupt intermediaries by introducing middlemen in its multiple roles that remained unattended till now.

Besides, corruption studies are predominantly captured at the macro-level that potentially explains the emergence and maintenance of corruption in the society. For example, some of these macro-level variables include wealth (Joireman 2004), religions (Barro 2000), British colonial tradition (Porta and Vannucci 1999), communist past (Hoff and Stiglitz 2004). Whereas macro-level realities indeed provide important perspectives and potentially provide policy guidance, micro-foundation of corruption studies essentially provide insights into grass-root level realities without losing individual meaning under aggregated frames. Macro-level approach reveals relatively little about how middlemen engage with the corrupt ecology to deliver its performance. Our research focus upon enterprise level actors dealing with the corrupt networks existing in Indian economic space, thus our work shares the spirit of ‘micro-foundation studies’ (Foss 2009), or ‘economic microscope’ (Birch 1979, p. 24).

A few of the corruption studies that deal with the middlemen are predominantly case based or anecdotal (for example, Manor 2004; Lambsdorff 2002a, b; Lambsdorff et al. 2004; Reddy and Haragopal 1985a, b; Zelekha and Werner 2011). Case based studies are potentially capable of providing adequate insights into the inner working of the middlemen; however, generalization from these cases is relatively difficult and carries a concern regarding methodological rigor (Daft and Lewin 1990; March et al. 1991; Gomm et al. 2000). Hence, the readers are required to exercise adequate caution while generalizing from all those accounts. We almost failed to record any study that deals with the effectiveness of middlemen, specially focused on Indian corporate context. Our study goes beyond merely deploying *quantitative substantiation*. We achieve this by deploying *counterfactual* framework to derive causal estimations among variables of interest. Counterfactual arguments stand for potential outcome that might have occurred in the absence of cause (Shadish 2002). Our research explores whether firms that deploy middlemen could achieve similar outcomes if those firms would not have deployed middlemen. Counterfactual frames allow causal estimation of simultaneous observations of one observation under different type of exposures. As the event is mutually exclusive, a firm could not be

observed under two different exposures: with middlemen and without middlemen. We use the propensity score framework that allows estimation of causal effect, out of comparison of potential outcomes.

Our research facilitates viewing middlemen in its multiple manifestations: as a time saving device, as a secure agent for transacting bribe, as an agent for assuring informal justice, as a speed agent. Because of the secrecy involved in the corrupt dealings among manufacturing firms, intermediaries and government bodies, most of the functions of the intermediaries are not available for public scrutiny. In case of public disclosure due to scams or by investigating agencies, some parts of their network activities emerge in the newspapers/public media. We speculate that due to this reason, the operational efficiency of the middlemen has not been examined beyond anecdotal examples. So we contribute to such *inconspicuous* part of corporate governance that remained unattended due to the secrecy involved in the deals and unfolds far from the public scrutiny.

The context of our study also differs significantly from the available literature on middlemen that captures, for example, bribe distribution among bureaucrats, politicians and middlemen (Bussell 2013), driver’s license (Bertrand et al. 2007), informal broker between citizen and bureaucrats (Khanna and Johnston 2007; Reddy and Haragopal 1985a, b). The context of our study is to examine whether Indian manufacturing firms with middlemen are more efficient in dealing with regulatory constraints. It is alleged that the Indian regulatory enforcement system is often marred with corruption. Indian manufacturing firms deploy middlemen to deal with multiple regulatory agencies for swift and assured acquisition of various licenses and permits. In case of any alleged violations of regulatory provisions, these middlemen liaise with the regulatory agencies for satisfactory and speedy resolution. We examine as to how these involvements of middlemen make a difference to Indian manufacturing enterprises while dealing with corrupt regulatory infrastructure.

We stitched our arguments together with a number of theoretical frames, such as Culturist (Przeworski 2003; Warren 2001; Putnam 1995), rationalist (Rose-Ackerman 1978; Klitgaard 1988; De Graaf 2007) and resource dependency frames (Pfeffer and Salancik 1978; Hillman et al. 2009). These models are deeply intertwined in these pre-existing theories and collectively reinforced by our findings. We utilized these theoretical frameworks, whenever appropriate, to build our arguments for the development of hypotheses in later paragraphs.

We have organized the remaining part of the paper as follows: We review relevant literature to derive our arguments on various substantive roles played by the middlemen and develop a few plausible hypotheses about their effectiveness in delivering various services to the Indian

manufacturing firms. Subsequently, we explore methodological difficulties associated with the study and present arguments in favor of a propensity score framework that had been used in our study. We analyzed the data to examine the merit of our hypotheses. Finally, we present a brief discussion on the implication of the outcome.

Research Setting

Brief Snapshot

Here we give a very brief snapshot of Indian corruption to contextualize our research. The prevalence of corruption in India is widespread (Bussell 2013; Debroy and Bhandari 2012; Doh et al. 2003; Kohli and Singh 2013). Since Independence, India is often marred with the allegations of multiple large scale ‘big ticket corruption’ scandals. In most of the cases, it remained marked as an ‘allegation’ in the history of corruption studies as the investigation and enforcement system collectively failed to provide any decisive direction in all those cases (Kohli and Singh 2013). For example, Satyam case, where then-company-Chairman issued a disclosure letter stating that falsification of books of records has been made to glorify the books of records. Till today (at the time of writing this paper), after spending almost half a decade, Indian collective law enforcement system awaits to acquire fresh direction from the Court. During the last few years, the Indian politicians are allegedly blamed for a number of cases. It is alleged that while constructing facilities for the 2010 Commonwealth Games in Delhi, books were falsified, adding an unjustifiable hike in the contract cost. Similarly, an apartment building in Maharashtra state, constructed to serve war veterans, is allegedly allocated to a powerful segment of the society. Even the coffin box purchased to carry out the last ritual for the Martyr of Kargil war is not free from allegation of bribery. It is also alleged that national resources such as second generation mobile communications spectrum and coal reserves are being allocated on a ‘throw away prices’. Knowledge of repeated violations of the law in public places without accompanying any punishment within a reasonable time span takes away the incentives for the common people to obey the law. This creates a vicious cycle of non-compliance and mass imitation that touches every sphere of social life. Thus, non-compliance with the provision of law becomes perfectly new normal and rational choice for the behavior of the firm (Bergman 2009).

Corruption Studies in India

Charron (2010) examined various macro-dynamic issues and found that Indian states those provide better education,

relatively wealthier, decentralized and fiscally independents are relatively less corrupt. Bhavnani (2009) estimated changes in wealth among elected politicians against those who *are not elected, but ran again in the next election* and reportedly found gross misuse of public office by politician for personal economic gain. Bussell (2012) derived grand corruption index based upon the Government of India Report on the Member of Parliament Local Area Development Scheme and found corruption in procurement and government contracting practiced by elected representatives for personal gain. Exchanging ‘favor’ among close network members in some Asian countries is a common phenomenon and has been studied recently (for example, Puffer et al. 2013a, b). The weak legitimacy of formal institutions in emerging market environments is compensated by exchange of favor among corporate executives. Middlemen complement when these favor exchange networks fall short.

Middlemen Studies

Khanna and Johnston (2007) presented intimate portrayal of India’s middlemen as ‘connecting by corrupting’. The roles of middlemen have been documented in the diverse literature such as in canal water distribution in a South Indian state (Wade 1985), in the acquisition of drivers’ license in Delhi (Bertrand et al. 2007), in land deal (Oldenburg 1987).

Theory and Hypothesis Development

In trying to understand as to how firms with middlemen distinctively differ from those firms who do not deploy middlemen, scholars have utilized a number of theoretical frameworks such as Culturist viewpoints, rationalist view points, and resource dependency theory. These theoretical frameworks support to comprehend as to how the involvement of middlemen enacted in and performed within structured governance of the firms.

Culturist viewpoints suggest that adherence to the law must be sourced from the collective aspiration reflected into the intimate fabric of the society (Przeworski 2003). A relational view of the society provides a “dense social infrastructure enabling pluralistic societies to attain a vibrant creativity and diversity within a context of multiple but governable conflicts” (Warren 2001, p. 3). *Civic culture theory of democracy* states that ‘an active civic life encourages interpersonal expectation’ (Cleary and Stokes 2006, p. 5). When cultural context carries a civic culture that make adherence to the rule of law as societal norms, it builds “public spirited citizenry, by egalitarian political relations, by a social fabric of trust and co-operation”

(Putnam 1995, p. 15). On the other side, when culture is based upon collective non-compliance supplemented by poor governmental enforcement that becomes ‘cursed with vertically structured politics, a social life of fragmentation and isolation, and a culture of distrust’ (Putnam 1995, p. 15). Cultural explanations for an enduring democracy could be extended to advance our understanding about the behavior of the firm. Social norms play a significant role to guide law abiding behavior among business enterprises. Law abiding behavior among firms will be normative if societal norms, currently active in the society nourish and encourage in doing so. Mullery et al. (1995) found that all firms adopt a similar pattern of behavior such as an equal amount of political campaign contribution to deal with regulatory constraints. In the absence of civic norms that promote mutual trust and objective enforcement of rules, individual firm will attempt to maximize their gain by defeating the rest of the social system, believing that other competing firms might be doing the same. Therefore, some of the Indian firms attempt to achieve truncated access to regulatory services through middlemen for operational efficiency.

Law abiding behavior arises out comparative estimation of institutional incentives and penalties, currently operational in the country (Rose-Ackerman 1978; Klitgaard 1988; De Graaf 2007). Using *the rationalist framework*, rational actors make a calculated move while dealing with the regulatory agencies. Law abiding behavior among Indian firms arises when it is worthwhile to do so. In other words, attributing lower payoff associated with the law abiding behavior, Indian firms will refrain from ethical engagement. Therefore, some of the Indian manufacturing firms view that corrupt engagement through middlemen is calculated to be more beneficial in terms of operational efficiency than otherwise.

Using *resource dependence* theoretical framework, we argue that in order to reduce uncertainty and dependence, firms actively engage to have a conducive regulatory environment by undertaking political action “to alter the condition of the external environment” (Pfeffer and Salancik 1978, p. 190). But bringing down changes in the external regulatory landscape depends upon the relative power of the firm (Austin 1990). When the firm has substantial political resource at its disposal i.e., ex-politician on the corporate board (Hillman et al. 1999; Hillman 2005) and imposed regulatory constraint is having a significant impact on its performance, the firm will attempt to *alter* the condition of the external environment (Austin 1990). When a firm does not have adequate political resources available at its disposal and the regulatory constraint has significant bearing on its performance, the firm may ally with (a) the like-minded stakeholders equally affected by the regulatory constraints, (b) attempt to deal with the situation through

middlemen capable of providing assuage from the implication of the regulatory constraints. We utilize the spirit of resource dependence theory to argue that firms may not necessarily engage in corporate political action by altering the regulatory landscape, because in many cases, they are not capable to do so, but to ally indirectly with the representative of regulatory agencies with the help of suitable middlemen. This indirect relationship should provide adequate buffers for denial and traceability of such relationship from the public gaze. While presenting an exhaustive review on its 30th Anniversary of Resource Dependence Theory, Hillman et al. (2009) urged that resource dependence theory should demonstrate how dependencies with external environment are reduced. We address this question by demonstrating the usage and modus operandi of the middlemen.

Why Middlemen?

Middlemen occupy a central position in corruption studies. Middlemen work as a ‘well-connected outsider’ (Bray 2005), ‘guarantor’ (Bayar 2005; Lambsdorff 2002a, b; Porta and Vannucci 1999), ‘brokers,’ ‘touts,’ ‘scribes,’ ‘consolidators,’ ‘helpers,’ bankers’ (Oldenburg 1987), lower transaction costs of the corrupt deals (Lambsdorff 2002a, b). Middlemen in corruption studies are known as ‘fixer,’ ‘shadow copy of official institution’ (Zelekha and Werner 2011). Middlemen play crucial role as ‘enablers of the democratic process’ (Manor 2004, p. 61). Using a case study approach, Fjeldstad (2003) found that in order to remove corruption from the government, the Tanzanian government fired all corrupt bureaucrats. However, these fired bureaucrats were immediately absorbed in the private business houses for dealing with the new level of insider contacts. Thus, intermediaries are deeply hooked into the corruption network. Middlemen are present everywhere and called differently such as *blat* in Russia, *despachantes* in Brazil, *coyotes* in Mexico, *machers* in Israel, *tramitadores* in El Salvador, *dalal* in India and *pyraveekars* in some rural parts of India. In India, middlemen also carries local flavor while referring it in their local language. For example, ‘Towel over armpit’ in Kannada language (local language of an Indian State) indicates freelance political fixers, who operate to liaise with administrative bodies for accessing various governmental services to public (Manor 2004). They are familiar with ‘the art of approaching officials in favor and making the wheels of administration move in support of such favor’ (Reddy and Haragopal 1985b, p. 1149).

Managing legitimacy in the eye of the stakeholders is crucial as it assures endorsements and support for requisite resources. Relevant literature endorses the view that firms could attract a number of benefits by maintaining

legitimacy in the society (Baum and Oliver 1992; Podolny and Phillips 1996). Legitimacy works as a base level foundation for building and maintaining organizational reputation (Stewart 2005; Zhou 2005). On the other side, commission of unethical act takes away legitimacy and associated benefits. Firm's alleged involvement in unethical/illegal acts brings a number of serious consequences such as negative publicity and durable damages to the reputation (Baucus and Baucus 1997; Karpoff and Lott 1993), diminished capability for the creation of shareholders' wealth (Bhagat et al. 1998; Frooman 1997). This risk of engagement with the wrong side of the law implies increased level of uncertainty leading to source of future financial fluctuation (Orlitzky and Benjamin 2001), negative movement of share price (Gunthorpe 1997), negative shareholders' dividend potential (Bhagat et al. 1998), between 1 to 6 % reduction in sales (Schnatterly 2003; Touby 1994), destabilize earning potential with lower credit rating (Reichert et al. 1996), lower employee morale (Zahra et al. 2005), unnecessary distraction to top management (Langus and Motta 2010). Squeezing between these two boundaries of benefits and risk arising out of ethical/unethical acts, firms attempt to position itself in such a manner where the risk could be minimized while increasing the magnitude of the benefits. Direct engagement with the corrupt regulatory agencies may increase the risk of being caught. Besides, senior management may lack criminal competence to deal with the varied corrupt incidence. They may not have previous experience to put a reasonable price tag to their corrupt deal with the regulatory agencies. It is argued that deploying the middlemen provides a number of operational efficiencies to the deploying firms. Deployment of middlemen to deal with corrupt regulatory infrastructures, Indian business enterprise saves transaction cost, compensates for criminal indemnity, and maintains reputation by managing anonymity.

Middlemen as a Mean for Informal Justice (H1)

Court system provides flesh and spirits to the abstract rights of the business enterprises (Blake 2009). A stable regulatory framework that assures disbursement of legal benefits, rights and punishment prevents ad-hoc expropriation by the corrupt few (Henrekson 2007; Shane 2003). For assured restitution and enforcement of rights, "courts are crucial for the rule of law" (Bailey 2009, p. 71). Court system enforces the rule of the law, reinforcing mutual social trust (Rothstein and Uslaner 2005). However, corruption serves as an active discouragement and signal for alternative avenues for settlement, skipping the formal justice system. Dysfunctional courts stand for 'little hope for the rest of the system' (Bailey 2009, p. 71). We witness a similar situation across emerging or transition economies, where incapability of the court and the police in delivering and

enforcing legal rights within a specific time frame incubated corruption (Hoskisson et al. 2013). For example, in Russia, in spite of having adopted well developed legal framework similar in line with developed economies, formal grievance redressal through court and police services are found to be inefficient (Aidis et al. 2008; Smallbone and Welter 2001). Besides exorbitant time and cost associated with the formal court system, the management perceives the court system as an instrument in the hand of the rivals to deal with competition. Therefore, only a few of the Russian firms utilized the services of the Arbitration Courts to settle their business dispute (Radaev 2004).

We argue that Indian firms prefer to informal redressal of their grievances rather than accessing the Court as a solution. Even judiciary is not free from corruption (Nariman 2006). As per several estimations, some part of the judiciary is involved with corruption. For example, Global Corruption Report 2007 states that of about 77 % of the respondents considered the Indian judiciary system as corrupt (Global Corruption Report 2007: Corruption in Judicial System). Most of the Court system in India takes years to deliver the judgment on issues of business interest. Waiting for years for judgment carries incalculable loss—a complete mismatch against the current competitive business scenario. Dhillon (2011) observed that "Indian courts tend to be too ponderous, and the trials, slow-moving and time-consuming, permitting numerous adjournments on the slightest pretext..." (p. 31). It seems that justice administration disregards the time value of money (Malhotra 2008). Overall direction of the arguments suggests that deployment of middlemen in the Indian corporate world is directed to source an informal redressal of the grievances of the business firms.

In a legally fragile environment, fiduciary position of middlemen among its dealing members' networks provides *legal appearance of the deal*. Middlemen built bridges between business enterprises and regulatory agencies to execute the corrupt deals. Corrupt deal, being illegal in the eyes of Law, requires mutual trust that is manufactured by the unique position that middlemen occupy. Middlemen, though a flawed answer to the problem faced by the Indian manufacturing firms, are embedded in the corrupt network in such a way that works as a guarantor for the corrupt deal in a rotating bureaucratic setup. Legal sanction of the court is replaced by informal hosts (middlemen) that facilitate mutual gainful exchanges between the actors of the corrupt deal. It implies that the deployment of middlemen reduces the necessity and occasion to access the formal courts for redressal of grievances of the business enterprise (Lambsdorff et al. 2004). Informal institutions could complement or substitute the formal institutional arrangements (Helmeke and Levitsky 2003; Axelrod 1986). When informal institutions create, strengthen and incentivize the ecology for

due adherence and compliance with the formal rules, it enhances the overall achievement of the society by bringing down the co-ordination cost (Baumol 1990). When middlemen restrict its services only to help for compliance with the system such as helping companies for compliance with new accounting standards, it is complementary. Similarly, when informal institution works as a substitute and incompatible with the spirit of the formal institution, this creates infrastructure for informal institution. This kind of informal substitute flourishes in a relatively weak society where the formal institution routinely fails to enforce its own directives (North 1990). For example, in China, Guanxi networks among business enterprises and government official forms parallel economy to substitute formal legal infrastructure (Ahlstrom and Bruton 2006; Bruton et al. 2005; Xin and Pearce 1996). Similarly, in Russia, to circumvent the formal processes, private firms developed extensive networks for exchange of benefits and resources on the basis of reciprocity (Ledeneva 1998, 2006). Thus, middlemen work as an alternative informal institution that provide efficient, timely, assured positive favorable services to the business firms in a corrupt business environment.

Though courts inherits “limited requirement for publicity” (Ericson et al. 1989, p. 54) unlike police department, investors react sharply to the public disclosure of impending court cases against the firms. News implicating senior management personnel and such other public information has significant bearing on the stock price of the company. Accommodating public information into the stock price is an important consideration (Stoll and Whaley 1990) and depth of its impact on information saliency (i.e., Palomino et al. 2009). Information salience is more for negative news than the positive news (Akhtar et al. 2012). Pending or implication into court cases for a firm does not need substantiation for investor’s fragile sentiment. But the controversial action by the firms may trigger mass exodus of stakeholders and their supports (Elsbach 1994; Elsbach and Sutton 1992). Even mere allegation of fraud may lead to substantial loss of shareholders’ wealth (Murphy et al. 2009). Sentiment works as a behavioral base for irrational reaction of the investors. Pending corporate court cases, potentially fuse investors’ sentiments that may not necessarily have any linkage to firm’s economic potential/fundamental outlook (Bodie et al. 2010).

The government and its regulatory constraints are considered one of the most difficult propositions that create the highest amount of environmental dependencies for business firms (Aharoni et al. 1981). Dealing with these regulatory constraints becomes one of the most critical functions of the top management. But where formal court is perceived to be inefficient and corrupt, most of the firms follow corrupt practices to offset regulatory constraints,

without harming the reputation of the firms, and deploys middleman.

Hypothesis 1 Firms with middlemen will face less litigation than firms without middlemen.

Middlemen as a Time Saving Device (H2, H3, H4)

A recent *global* survey on time management pattern among 1374 corporate executives at the level of general manager or above across regions, industries, company size, form of ownership and functional specialties, conducted between November 8–18, 2011 by *McKinsey & Company* (Bevins and Smet 2013) found that of about 52 % felt that the way they spend their time largely matched their organization’s strategic goal. This implies that of about 50 % of the executives were not investing their time sufficiently on the strategic content and direction of the business. Leaders time is limited and getting it squeezed further with the advent of a world of ‘always-on-communication,’ increasing degree of business complexity, and long economic uncertainty (Bevins and Smet 2013). Perlow (1999) termed this sense of scarcity of time as ‘time famine,’ indicating executives’ ‘feeling of having too much to do and not enough time to do it’ (p. 57). Recent research indicates that time management shares curvilinear relationship with organizational citizenship performance and task performance—it implies that effective time management carries significant impact on organizational performance (Rapp et al. 2013). Therefore, saving time from regulatory engagement could be a great productivity tool by contracting it out to the middlemen for regular engagement, and setting aside time only for a few significant interactions with the bureaucrats.

Time management is the process that enables individual to accomplish tasks, to control over the timing and the content of what one’s does, of what could be accomplished with time (Schuler 1979; Onacken and Wass 1985). The time management style of the executive exerts influences the relationship between work and family relationships that significantly influences job dissatisfaction and health complaints (Adams and Jex 1999). Time mismanagement could potentially interrupt the temporal flow of the work and involves high co-ordination costs (Rogelberg et al. 2013). The appropriate management of attention within the firm is an important, scarce, valuable and strategic resource; hence requires deliberate and active handling (Valliere and Gegenhuber 2013). Senior management takes responsibility for the management of legal aspects of the business, therefore, needs to demonstrate to the stakeholders that they possess adequate legal astuteness to deal with regulatory agencies. Legal astuteness implies the ability of the top management to recognize and follow opportunity given in any legal system to enhance the value

captured from the local ecology (Bagley 2008). Based upon data on Eastern Europe, Fries et al. (2007) found that senior management executive spends relatively a good amount of executive time dealing with public officials. Corrupt officials in government bureaucracy often generate adequate processes to legitimize the quota of lien on the total bribe amount. Deployment of middlemen provides a third party solution to the maintenance of relationship with regulatory infrastructure. Maintenance of the regular relationship between regulatory agencies and middlemen saves time for the executives. Regular visits consumes considerable amount of time for showing formal courtesy to the powerful bureaucrats. Execution time is considered one of the prime resources that could alternatively be deployed to bring out the solution of the firms.

Does the corrupt deal involve the senior management? It is well accepted arguments that development and upholding of ethical frames inside the organization is the responsibility of the top management. Legal jurisprudence also accepts these viewpoints and entrust legal responsibility to the senior management for adherence to regulations. Therefore, bribery decisions could not be made without their active or connive participation. Control Risk Group (2002) survey reported that the senior management is most likely to be involved when bribery occurs.

Middlemen also need to justify their presence in the system, especially to the senior management, by formally involving them to the whole process of negotiation with the regulatory agencies. Middlemen familiarize the senior management team with the complexity of the issue; thereby de-risk itself from the potential failure, should middlemen fail to acquire required services from the regulatory agencies. Senior management also needs visibilities and lime-light as *Saviour*. Senior management needs to demonstrate their legal astuteness, a qualifying criteria to be in the top management team. Demonstratively engaged in regulatory dealings, while creating under the table arrangements far away from public scrutiny, it may reinforce and uphold a picture of smart strategists, hence successfully create a persona that suggests excellent potent materials for the top management position. Thus, the mutually gainful relationship apparently triggers *more consumption of executive time*. Therefore, we argue that senior management of firms those deploys middlemen are relatively spending more time on management of relationship with regulatory agencies. We concur with the argument that the middlemen will be deployed in all those critical regulatory services such as tax administration where corruption is relatively high (Purohit 2007).

Hypothesis 2 Firms with middlemen demand more time (compared to the industry average) from its senior

management for regulatory dealings than firms without middlemen.

Hypothesis 3 Firms with middlemen will undertake more number of visits (compared to industry average) to the government offices than firms without middlemen.

Hypothesis 4 Firm with middlemen will undertake more number of visits (compared to industry average) to the Tax Inspectorate than firms without middlemen.

Middlemen as a Bribe Facilitator (H5 and H6)

Bribery is considered to be “a quicker and perhaps more effective, strategic instrument for going through the regulatory process” (Luo 2005, p. 141). Porta and Vannucci (1999) presented a thick description of corrupt exchanges of the networks of actors. Bribery facilitates preferential treatment from government officials (Krueger 1974; Martin et al. 2007; Tullock 1996), relief from red tape and rogue interpretation (Rose-Ackerman 1999), and share privileged information useful for the firm (Porta and Vannucci 1999). Bribery is a major issue faced by corporate executives responsible for dealing with regulatory agencies. A number of opinion surveys highlighted this problem as a serious obstacle (Control Risks 2006; Price Waterhouse Cooper Report 2008; Transparency International 2008). Stock market remunerates heavily to all business deals having a significant amount of business. For example, US firms received on average \$14.8 of benefit per dollar of bribe they pay compared to non US firms those earn only \$ 5.9. The stock market reacts sharply to the news of contract award to the US firms compared to firms from the rest of the world. The market discounts the probability of detection even if the anti-bribery enforcement is stronger. Market could not believe or suspect the existence of the bribe in the deal (Cheung et al. 2012). Deployment of the middlemen does not indicate an automatic replacement of bribe from the system. Rather middlemen work as a conduit for giving bribes, offering associated anonymity and secrecy of the exchange. Having middlemen in the work system automatically provides an indication of having a high probability of payment of bribes. Middlemen do not necessarily invent new strategies that might reduce the amount of bribes, but having middlemen in the system provide adequate assuage from the unreasonable demand from the bureaucrats. Middlemen are familiar about the market rate of the bribe for different types of works. Sharp deviation from the market rate will invite unnecessary complications in the system, including the transfer of the incumbent bureaucrat. Powerful middlemen lobby exerts significant political pressure to the system. Thus, middlemen might be inventive to source a specific solution to the problem raised by the bureaucrats—overall strategy to deal

with delinquent system is the language of bribe. The middlemen are experienced to deal with regulatory constraint by facilitating suitable arrangements, according to the type and the quality of the work, while assuring anonymity. Though the middlemen potentially provide strategic insights and suitable execution pathway for the deal, the predominant language of the deal remains to be bribe.

Hypothesis 5 Firms with middlemen are more likely to pay bribe than firms without middlemen.

In terms of quality and availability of public services, usually police service is ranked the lowest/worst among essential services such as water board, public health, public education, electricity and national telecommunication services (Kwanashie 2002). A visit to policemen office is important for general well-being of the firm. By increasing or decreasing or threatening to increase or decrease the supervision activities with the local criminal activities, the policemen could potentially increase/reduce the transaction costs for the firm (Borner and Schwyzer 1999). Besides, a good relationship is a kind of potential insurance of future deals, which may arise during the course of business. Having good relationship demonstratively also assures and works as a sufficient condition for protection from criminals.

Hypothesis 6 Firms with middlemen are more likely to gift police personnel than firms without middlemen.

Middlemen as an Invisible Hand for Operational Speed (H7 and H8)

Red tape in governmental bureaucracy is one of the primary problems for business enterprises (De Soto 1989). Global level competition among firms made it absolutely necessary to bring out a timely resolution. This makes red tape an attractive instrument for corrupt bureaucrats who put a price tag around speedy delivery of services. Then, “their bribed transactions are executed with greater efficiency” (Fishman and Gatti 2006, p. 134). Djankov et al. (2002) found that firms need of about 32 business days for successful completion of the registration process. Rigidity of the bureaucracy could be made nimble with the help of monetized consideration. Thus, it is common belief and practice that bribery will often work as a lubricant and bring coveted speed into the functioning of the bureaucrats. It is known in the corruption literature as the “grease-the-wheels” and has been deliberated extensively by Leff (1964), Kleinrock (1967), Huntington (1968), even modeled as priority purchasing in a queuing framework (Lui 1985). They argued that paying bribe promotes efficiency and growth by removing rigidities from the bureaucratic

system. Intuitively, it appears to be simple to agree with the arguments that those firms who pay bribe should experience shorter wait times for regulatory permission and licenses. But a number of research works starting from Myrdal (1968), Tanzi (1998), Shleifer and Vishny (1993, 1994, 1998); Frye and Shleifer (1997), Kaufmann and Wei (1999), the very design of bribe directed to produce speedy services may backfire, making space for corrupt bureaucrats to exploit delays as a negotiating tactic for the legitimization of the bribe. Bribery works as ‘sand in the machine’ that eventually foster more administrative delay (Ades and Di Tella 1997). ‘When rules can be used to extract bribes, more rules will be created’ (Tanzi 1998, p. 582). But all bureaucrats are not available for bribery. Bose and Gangopadhyay (2009) found that information regarding weak bureaucrats becomes a crucial consideration for deployment of middlemen in a corrupt economy. Intermediaries are relatively cheap and provide a formal set up for *one stop shops* (Stone et al. 1996). Delivery and distribution of public services are a democratic dividend, which otherwise remained unavailable or unreachable. Corrupt government officials and middlemen become the potential architect for further intentional delay in the administrative process (Myrdal 1968). Kaufmann and Wei (1999) argued that bribe payers are forced to experience greater harassment.

Hypothesis 7 For operational license, firms with middlemen are likely to wait more than firms without middlemen.

Hypothesis 8 For import license, firms with middlemen are likely to wait more than firms without middlemen.

Research Method

Data

The World Bank and The Confederation of Indian Industry (CII) jointly conducted the survey in the year 2005. The Firm Analysis and Competitiveness Survey of India 2005 Questionnaire consist of two parts: the first part consists of a history of the organization, market conditions, supplies and access to technology, bank credit skilled manpower, infrastructure, government policies and business’ economic environment. The second part of the questionnaire captures production, human resources and financial configuration of the business. Our study, having limited mandate, utilized only a part of the data. These data have been used by a number of researchers. For example, Sato (2012) utilized these data to compare China and India for their respective external openness and firm productivity. Similarly, Honorati and Mengistae (2010) utilized the same data and found

that excessive labor regulation, power shortages, and problems of access to finance are significant influences on industrial growth in India. Ramdani and Van Witteloostuijn (2012) utilized similar data source for examining ownership characteristics and its impact on the likelihood of firm bribery across 51 nations. However, to the best of our knowledge, the said data have never been used to examine the research question, mooted by us.

Measures

Independent Variable

Firm's usage of facilitator/consultants for permits and licenses has been measured in dichotomous terms.

Dependent Variables

We have measured eight dependent variables: Three of these variables are dichotomous and five of the remaining variables are continuous in nature. Dichotomous variables are *Court cases* ('during last 3 years'), *Bribery* ('Establishment in your sector make gifts or informal payments'), *Police Gift* ('Gift expected with police visits'), whereas continuous variables are *Time Spent by Senior Management on Regulatory Dealings* ('percent of senior management's time spent on government requirements'), *Government Office Visit* ('total number of required visits with government officials'), *Time for Tax Inspectorate* ('number of required visits with a tax inspectorate'), *Wait for Operating License* ('number of days to wait for operating license'), and *Wait for Import License* ('number of days to wait for import license'). We used dichotomous variables in its current form. However, we transformed continuous variables into dichotomous variables. To transform the variable, *Time Spent by Senior Management on Regulatory Dealings* into dichotomous, we subtracted firm-specific value from the industry average, lower than the average coded as 0 and more than the average coded as 1. Likewise, to transform the variables *Government Office Visit*, *Time for Tax Inspectorate*, *Wait for Operating License*, *Wait for Import License*, we subtracted firm-specific values from the industry average, then we coded the result as 0 if it is lower than the average, otherwise marked as 1.

Pool of Covariates

We used a number of covariates that potentially works as confounders into our model. We considered 'Female Leadership in Top Management,' 'Female Leadership in Executive Management Position' (Atakan et al. 2008; Ruegger and King 1992), 'Firm Created by Current

Leadership' (Cuervo-Cazurra 2006; Hannafey 2003), 'Log value of Firm Age' (Bruderl and Schussler 1990), 'Principal Leader's Educational Qualification (Olken 2009; Guerrero and Rodríguez-Oreggia 2008), 'Firm's Capacity Intention for Next Two Years' (Barringer et al. 2005), 'Pressure from Domestic Competition' (Shleifer 2004), 'Anticompetitive/Informal Practice,' 'Loan from Financial Institution,' 'Problem from Legal System,' 'Problem from Power Supply,' 'Problem with Acquisition of Land,' 'Problem for Business Permission and Licenses,' 'Access to Finance,' 'Problem from Regulations (Specific to Industry), 'Access to Foreign Technology' (Rose-Ackerman 1997), 'Problem from Local Crime, Theft, Disorder' (Debroy and Bhandari 2012).

Control Variables

We used 'Legal Status of the Firm,' 'Industry,' 'City,' and 'Market Characteristics' as control variables when we ran logistic models for our preliminary analysis reported in Table 2a and b.

Sample

We utilized a reduced sample of 2120 Indian manufacturing firms consisting of industries like textiles, garments, pharmaceuticals, electrical goods, electronics, auto-components, metal products, plastic and plastic products, food and agro processing etc. We reduced the sample size due to the considerable amount of missing data.

Research Results

Descriptive Statistics and Correlations

Table 1 presents the descriptive statistics for all the focal variables included in the research. Table 1 shows that the deployment of middlemen shares statistically significant positive correlation with *Court cases*, *Police Gift*, *Bribery*, *Government Office Visit*, *Time for Tax Inspectorate*, and *Wait for Operating License*. On the other hand, *Time Spent by Senior Management on Regulatory Dealings* and *Wait for Import License* become statistically not significant. We had expected negative relationship between Court Cases and deployment of middlemen. Contrary to our expectation, we find a statistically significant positive relationship between them. We process this information in our subsequent analysis. We also checked our data for multicollinearity issue; however, multicollinearity test suggests that our data are not affected by it (variance inflated factor values remained below 1.63)

Table 1 Descriptive statistics

No.	Variables	N	Mean	SD	1	2	3	4	5	6	7	8
1	Court cases (during last 3 years)	2,023	0.12	0.32								
2	Police gift	859	0.60	0.49	0.0168							
3	Bribery	2,104	0.50	0.50	0.160***	0.473***						
4	Government office visit	1,772	0.37	0.48	0.0716**	0.0447	0.197***					
5	Time spent by senior management on regulatory dealings	1,772	0.29	0.45	0.0935***	-0.0634	0.0748**	0.0677**				
6	Time for tax inspectorate	2,042	0.33	0.47	0.124***	-0.0713*	0.190***	0.614***	0.120***			
7	Wait for operational efficiency	515	0.52	0.50	-0.0847	0.317***	0.149***	0.0105	-0.139**	-0.134**		
8	Wait for import license	313	0.30	0.46	-0.11	0.184	0.09	0.0614	-0.0837	-0.0421	0.771***	
9	Middleman deployed	2,088	0.26	0.44	0.139***	0.160***	0.250***	0.115***	0.0352	0.0816***	0.143**	0.0839

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Logistic Regression

Our research inherits a unique problem that we need to address. Before we introduce these methodological dynamics, we ran an initial set of logistic regressions to explore the relationship between deployments of middlemen and *Court Cases*, *Time Spent by Senior Management on Regulatory Dealings*, *Government Office Visit*, *Time for Tax Inspectorate*, *Bribery*, *Police Gift*, *Wait for Operating License*, *Wait for Import License*. Table 2 shows these logistic models (please refer to Table 2a, b). We included the control variables and considered it as a base model for evaluating the hypothesis. We advanced a number of hypotheses that predicted that the usage of middlemen (Usage vs. non-usage of middlemen) by Indian manufacturing firms share positive relationship with *Court Cases* (odds ratio 1.79, $p < 0.01$: hypothesis 1), *Time Spent by Senior Management on Regulatory Dealings* (odds ratio 1.13, ns: hypothesis 2), *Government Office Visit* (odds ratio 1.36, $p < 0.10$: hypothesis 3), *Time for Tax Inspectorate* (odds ratio 1.21, ns: hypothesis 4), *Bribery* (odds ratio 2.50, $p < 0.001$: hypothesis 5), *Police Gift* (odds ratio 1.67, $p < 0.05$: hypothesis 6), *Wait for Operating License* (odds ratio 2.38, $p < 0.01$: hypothesis 7) and *Wait for Import License* (odds ratio 1.10, $p < 0.10$: hypothesis 8). We noted that *Time for Tax Inspectorate* and *Time Spent by Senior Management on Regulatory Dealings*, though share positive relationship with the deployment of middlemen, remained statistically non-significant.

Referring to the odds ratio, it implies that compared to firms without middlemen, firms with middlemen is of about 1.79 times more likely to face formal justice system (*Court Cases*), of about 1.36 times more likely to visit governmental offices than the industry average (*Government Office Visit*), of about 2.5 times more likely to offer bribe

(*Bribery*), of about 1.67 times more likely to offer gift to police (*Police Gift*), of about 2.38 times more likely than the industry average to have spent in waiting for operating license (*Wait for Operating License*), and of about 1.10 times more likely than the industry average to have spent in waiting for import license (*Wait for Import License*) (please refer to Table 2a, b). At this outset, we restrict our interpretations to all those situations where we found statistically significant relationship. *Time Spent by Senior Management on Regulatory Dealings* and *Time for Tax Inspectorate* do share relationship with the deployment of middlemen but not statistically significant. This view could be maintained if the deployment of the middlemen is exogenous.

Methodological Difficulties

However, these results and its associated interpretations could be challenged on the ground that the presence of middlemen in the organizational eco-system to deal with regulatory constraints, is endogenous. Firms, who put a high value on operational efficiency, tend to recruit middlemen, but the statistical relationship between recruitment of middlemen and operational efficiency may be attributed to some unobserved firm-specific characteristics, such as weak leadership, legal structure of the firms, poor ethical orientation etc. Under this scenario, unobserved firm-specific attributes contaminate the relationship between middlemen and bribery events. In other words, the probability of recruitment of middlemen is likely to be statistically related to a third factor that influence the propensity for middlemen's efficacy. Both deployments of middlemen as well as efficacy of middlemen could be correlated with a number of unobserved firm-specific variables that make the

Table 2 Logistic regression

	Means for informal justice				Middleman as a time saving device															
	H1		H2		H3		H4													
	Court Cases (during last 3 years)		Time Spent by Senior Management on Regulatory Dealings		Government Office Visits		Time for Tax Inspectorate													
(a)																				
Firm's legal status	0.53	0.04***	0.58	0.06***	0.87	0.05**	0.93	0.07	0.90	0.05*	0.94	0.07	0.84	0.05***	0.90	0.06				
Industry control	1.00	0.01	1.00	0.02	1.02	0.01**	1.01	0.01	0.99	0.01	0.99	0.01	0.99	0.01	1.00	0.01				
Region control	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.01	0.0***	1.01	0.00**	1.01	0.00***	1.01	0.00***				
Market scope	1.16	0.09*	1.10	0.11	1.14	0.06**	1.14	0.08*	2.28	0.14***	2.23	0.17***	1.86	0.10***	1.77	0.12***				
Middleman deployment			1.79	0.33**			1.13	0.18			1.36	0.22†			1.21	0.17				
Female leadership			1.45	0.34*			0.74	0.15			1.02	0.21			1.02	0.18				
Female leadership in executive management			0.86	0.16			0.57	0.08***			1.15	0.17			1.15	0.15				
Firm created by current leadership			1.22	0.26			0.73	0.11**			1.06	0.18			1.24	0.19				
Age of the firm (log)			1.91	0.26***			0.98	0.08			1.08	0.09			1.21	0.10**				
Anticompetitive/informal practice			1.12	0.11			1.09	0.09			0.86	0.07*			1.08	0.08				
Owner's highest education			1.07	0.08			1.04	0.05			1.22	0.07***			1.14	0.06**				
Capacity intention for next 2 years			0.80	0.15			0.73	0.10**			0.99	0.14			1.18	0.15				
Upgraded existing product during last 2 years			1.19	0.23			1.17	0.17			1.40	0.20**			1.83	0.25***				
Pressure from domestic competition			0.91	0.08			1.04	0.07			1.06	0.16			0.92	0.12				
Loan from financial institution			0.86	0.16			0.85	0.12			1.27	0.09***			1.25	0.08***				
Pressure from legal system/conflict resolution			1.27	0.14**			0.90	0.09			0.79	0.08**			0.88	0.08				
Pressure from electricity supply			0.99	0.06			1.03	0.05			1.17	0.05***			1.05	0.04				
Problem for acquisition of land			1.19	0.10**			0.90	0.06*			1.10	0.07			1.13	0.07**				
Problem for business licenses and permission			0.85	0.09*			1.18	0.09**			1.14	0.09*			1.12	0.08*				
Problem for access to financial support			1.24	0.11**			1.24	0.08***			0.93	0.07			0.92	0.06				
Problem from crime, theft and disorder			0.83	0.08*			1.07	0.07			1.02	0.07			0.93	0.06				
Problem from regulation (specific to focal firm's industry)			0.82	0.10*			0.69	0.08***			1.11	0.12			0.95	0.09				
Problem for foreign technology access			1.15	0.15			1.26	0.15**			1.15	0.14			0.98	0.10				
_cons	0.61	0.23	0.08	0.07***	0.42	0.12***	0.70	0.42	0.09	0.03***	0.01	0.00***	0.15	0.04***	0.01	0.01***				
Log likelihood	-657.68		-461.58		-1031.69		-735.00		-974.36		-694.53		-1155.13		-824.92					
Pseudo R ²	0.07		0.16		0.01		0.06		0.14		0.19		0.09		0.13					
No. of obs.	1,971		1,479		1,728		1,305		1,728		1,305		1,994		1,499					



Table 2 continued

	Middleman as a bribe facilitator				Middleman as an invisible hand for operational speed										
	H5		H6		H7		H8								
	Bribery	Police Gift	Wait for Main Operating License		Wait for Import License										
(b)															
Firm's legal status	0.93	0.05	0.95	0.06	1.10	0.11	1.52	0.16***	1.25	0.19	1.73	0.28***	2.28	0.99	1.90
Industry control	1.00	0.01	0.99	0.01	0.99	0.02	1.06	0.02***	1.06	0.02***	1.10	0.03***	1.80	0.41**	
Region control	1.00	0.00	1.00	0.00	1.01	0.00***	1.01	0.01	1.00	0.01	1.03	0.01***	1.10	0.04***	
Market scope	1.47	0.07***	1.38	0.09***	0.88	0.07*	0.83	0.08*	0.72	0.11**	1.20	0.18	1.03	0.01***	
Middleman deployment			2.50	0.35***	1.67	0.36*			2.38	0.66**			1.10	0.22†	
Female leadership			1.26	0.22	2.15	0.75**			1.30	0.53			1.03	0.52	
Female leadership in executive management			1.52	0.19***	1.44	0.29*			1.02	0.29			0.66	0.29	
Firm created by current leadership			1.81	0.25***	1.11	0.26			2.49	0.87***			1.95	1.05	
Age of the firm (log)			1.04	0.08	0.91	0.10			0.89	0.15			1.19	0.35	
Anticompetitive/informal practice			1.21	0.09***	1.02	0.12			1.04	0.18			1.10	0.30	
Owner's highest education			1.06	0.05	1.00	0.07			1.06	0.10			0.95	0.14	
Capacity intention for next 2 years			1.71	0.21***	1.49	0.28**			1.42	0.39			1.02	0.45	
Upgraded existing product during last 2 years			1.41	0.17***	0.88	0.17			0.30	0.08***			0.53	0.22	
Pressure from domestic competition			1.27	0.07***	1.15	0.10*			1.23	0.16*			1.28	0.25	
Loan from financial institution			0.79	0.10**	0.72	0.15*			1.07	0.29			0.77	0.32	
Pressure from legal system/conflict resolution			0.96	0.08	1.06	0.15			0.79	0.17			1.09	0.30	
Pressure from electricity supply			1.06	0.04	0.95	0.06			1.45	0.12***			1.38	0.18**	
Problem for acquisition of land			1.06	0.06	0.99	0.08			1.08	0.13			1.33	0.23*	
Problem for business licenses and permission			0.92	0.06	1.11	0.11			0.87	0.12			1.24	0.24	
Problem for access to financial support			1.02	0.06	1.03	0.10			1.06	0.14			0.90	0.17	
Problem from crime, theft and disorder			0.98	0.06	1.14	0.10			1.22	0.17			1.08	0.22	
Problem from regulation (specific to focal firm's industry)			1.17	0.11*	0.95	0.14			1.16	0.21			0.96	0.24	
Problem for foreign technology access			1.08	0.11	1.06	0.18			0.95	0.19			0.56	0.17*	
_cons	0.46	0.11***	0.03	0.02***	1.17	0.46	0.22	0.11***	0.04	0.05***	0.01	0.01***	0.00	0.00***	
Log likelihood	-1373.05		-931.80		-559.82		-311.72		-195.15		-143.15		-92.76		
Pseudo R ²	0.04		0.13		0.01		0.07		0.23		0.19		0.28		
No. of obs.	2,055		1,543		835		486		369		299		222		

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

statistical relationship between these two variables a mere incidental.

Acknowledging the above constraints, our analysis needs to stand against the diverse range of tests to demonstrate the validity of our arguments. One of the most obvious ways for handling endogeneity issues is to use instrumental variables. But it is difficult to find an instrument for middlemen while measuring its efficiency. We address this problem by using propensity score matching analysis. To deal with the potential bias due to unobserved heterogeneity, propensity score matching estimation is appropriate.

What is Propensity Score?

Propensity score is stated to be a single number summary of a set of covariates that potentially distorts the relationship between treatment and outcome. Propensity score is the probability to receive treatment given the set of observed characteristics concurrently affecting outcomes as well as treatment. To have counterfactually robust causal argument, propensity score analysis is widely recommended. Propensity score analysis, followed in the current study, involves two distinct phases: First phase involves accommodating all relevant covariates that work as potential confounders to the treatment assignments and produces a single propensity score. Second phase constitutes estimation of causal effects between the deployment of middlemen by Indian manufacturing firms and various performance related parameters such as *Court Cases*, *Government Office Visits* etc. The propensity score analysis assumes that relevant potential confounders have been utilized in the modeling and is known as ‘strongly ignorable treatment assumption’ (Rosenbaum and Rubin 1983). Predominantly propensity score matching estimation is done using logistic regression. Propensity score frameworks have been used in corporate strategy (Kapoor and Lee 2013; Svetina 2012), business ethics (Salazar et al. 2012), epidemiology (Austin et al. 2005), program evaluation (Imbens 2003; Kluve et al. 2012), education (Henderson and Chatfield 2011), labor market (Bryson 2002; Heckman et al. 1997; Dehejia and Wahba 1999; Lechner 2002a, b), marketing (Hitt and Frei 2002).

Model Specification

The propensity score analysis assumes that the model is correctly specified by accommodating all the confounders, their interaction terms if any. We reviewed relevant literature and utilized covariates having theoretical and empirical justifications. The properties of the propensity score has to satisfy a number of assumptions such as:

(a) *Overlap* Overlap signifies that the extent of the data range is the same across treatment groups. Lack of

overlap presents a number of problems. (i) The data will be limited to provide explanation only in the region of overlap. Statistical adjustment provides hardly any consolation to cure this particular deficiency (ii) Counterfactuals will not be available for some observations, leading to matching problem.

- (b) *Imbalance* Imbalance in the data generally signifies the difference in averages among covariates but also indicate to general differences in distributions across groups. Presence of imbalance could be traced from different means and standard deviation. Imbalanced data limit our reliance on the data and enhance reliability on model specification. Imbalance and lack of overlap makes comparisons difficult and brings complexity in its treatment. When control and treatment group are not well balanced, difference between control group and treatment group ($\bar{y}_1 - \bar{y}_0$) is not the true reflection of average treatment effects. Hence, lack of complete overlap and imbalance are critical issues in the causal analysis.
- (c) *Positivity* Distribution and presence of covariates between exposed and unexposed outcome are prerequisites to arrive causal arguments under potential outcome approach. In other words, covariates, which may potentially work as confounders should have overlap between the exposed and unexposed. This ensures positive probability of being exposed or unexposed.

Analytical Framework

We progressively analyze our data from the simple quintile of the propensity score to more restricted models such as restricted cubic splines, inverse probability of treatment weights (IPTWs).

- (a) *Quintile of Propensity Score* Stratifying firms into mutually exclusive subsets based on their estimated propensity score potentially reduce bias. In our analysis, we divided subject firms into five equal-size groups using the quintiles of the estimated propensity score (Hullsieck and Louis 2002).
- (b) *Restricted Cubic Splines* To control residual confounding, that may arises while considering propensity score as categorical variable, a 5-knot restricted cubic spline was introduced in the logit propensity score model.
- (c) *Inverse Probability of Treatment Weights(IPTW)* An inverse probability weight is the inverse of the estimated probabilities of observed exposure, conditional on confounders.
- (d) *Addressing Positivity Violations using Restriction* Using graphical measure, we highlight the extent of

positivity violations. To control positivity violation in the matched data, we reanalyze after restricting the observations within predicted probabilities of exposure.

The basic assumption of propensity score estimation is that the model is correctly specified, after controlling for the relevant confounders of the exposure-outcome relationship, as well as their interactions, non-linearity and positivity. We utilized logistic regression while computing propensity score. Table 4 presents the results of our analysis.

Checking for Interactions

At the time of constructing the model, interactions among covariates may bias the goodness of fit. Therefore, it should be screened carefully for plausible interactions among covariates. The *Hosmer–Lemeshow Statistic* is a measure of lack of fit. As per their predicted probabilities, Hosmer and Lemeshow partitions the observations into 10 equal sized groups. We estimated the goodness of fit for possible inclusion of interactions among covariates. The *Hosmer–*

Table 3 Deployment of middleman

Matching covariates	Deployment of middleman	Mean	SD	Number of observations	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Principal owner female	No	0.10	0.31	1,544	0.03	0.04	0.07	0.17	0.31
	Yes	0.18	0.38	539	0.01	0.02	0.06	0.2	0.32
Principal owner in executive management position	No	0.65	0.48	1,537	0.79	0.74	0.66	0.49	0.4
	Yes	0.56	0.50	534	0.76	0.83	0.63	0.48	0.43
Firm created by the current leadership	No	0.74	0.44	1,545	0.57	0.7	0.83	0.85	0.83
	Yes	0.80	0.40	536	0.41	0.73	0.85	0.81	0.91
Log value of firm age	No	2.53	0.79	1,535	2.19	2.44	2.61	2.7	2.81
	Yes	2.64	0.77	529	2.5	2.65	2.54	2.63	2.72
Anti-competitive/informal practices	No	0.44	0.97	1,545	0.07	0.13	0.29	0.6	1.5
	Yes	0.73	1.14	536	0.22	0.29	0.28	0.56	1.54
Owner's highest education	No	4.52	1.46	1,530	3.34	4.43	4.88	5.11	5.27
	Yes	4.86	1.21	532	3.97	4.29	4.99	5	5.11
Capacity intention next 2 years	No	1.35	0.48	1,508	1.35	1.4	1.37	1.3	1.23
	Yes	1.29	0.46	511	1.57	1.39	1.28	1.26	1.24
Upgraded existing product during last 2 years	No	0.59	0.49	1,541	0.59	0.59	0.61	0.63	0.64
	Yes	0.62	0.49	532	0.68	0.61	0.61	0.6	0.63
Pressure from domestic competition	No	2.74	0.96	1,370	2.61	2.77	2.85	2.71	2.83
	Yes	2.82	1.04	456	2.35	2.66	2.71	2.87	3.01
Loan from financial institutions	No	1.68	0.47	1,487	1.93	1.75	1.73	1.49	1.32
	Yes	1.56	0.50	518	1.86	1.71	1.6	1.58	1.39
Problem from legal system/conflict resolution	No	0.36	0.79	1,543	0.06	0.07	0.18	0.52	1.36
	Yes	0.60	0.99	535	0.19	0.2	0.22	0.59	1.24
Problem from energy supply	No	1.86	1.52	1,546	1.81	1.8	1.93	1.7	2.09
	Yes	1.95	1.55	539	1.57	1.34	1.72	2.03	2.3
Problem from access to land acquisitions	No	0.55	1.13	1,546	0.68	0.39	0.33	0.58	0.84
	Yes	0.64	1.16	538	0.41	0.44	0.33	0.45	1.09
Problem for business permission & licenses	No	0.57	0.95	1,543	0.35	0.41	0.32	0.67	1.54
	Yes	0.82	1.09	537	0.59	0.39	0.56	0.75	1.31
Access to finance	No	0.82	1.12	1,546	1.11	0.6	0.46	0.76	1.33
	Yes	0.86	1.14	538	0.97	0.71	0.74	0.74	1.14
Problem from crime, theft, disorder	No	0.66	0.97	1,547	0.7	0.53	0.47	0.66	1.11
	Yes	0.71	1.04	536	0.68	0.83	0.64	0.55	0.97
Problem from regulations (specific to industry)	No	0.30	0.76	1,544	0.04	0.07	0.14	0.4	1.23
	Yes	0.58	0.98	536	0.03	0.07	0.14	0.62	1.17
Access to foreign technology	No	0.18	0.59	1,515	0.01	0.02	0.08	0.21	0.73
	Yes	0.33	0.79	529	0	0.07	0.1	0.24	0.78

Lemeshow goodness-of-fit test indicated that the logistic model suitably fits the data well.

Checking Covariate Balance

We balance the distribution of confounding variables within each stratum of those firms who engaged middlemen and the firms those are not (Table 3). Within each quintile of the propensity score, the average value of the major confounders between these two types of firms differs relatively less. Table 3 demonstrates that covariates are balanced within quintiles of the propensity score.

Checking the Positivity Assumption

Positivity or the experimental treatment assignment assumption is one of the essential assumptions for deriving causal inferences. Positivity assumption signifies that both exposed and unexposed participants are available at every combination of the values of the observed confounder(s) in the population, currently investigated (Westreich and Cole 2010). In case of the positivity violation, it could cause incremental variance and bias in the estimation of causal effect and thus if not addressed in the model, it could threaten the validity of causal inferences (Petersen et al. 2010). Figure 1 portrays the distribution of logit propensity score. The distribution of the confounders should overlap between the firms who actively deploy middlemen and the firms those who are not. The figure shows that the firms those who do not deploy middlemen with its logit score < 0 has very few counterparts. Likewise, firms deploying middlemen with logit score > -2 has few counterparts. Therefore, while interpreting the data, we need to exercise adequate caution and control it (Fig. 1).

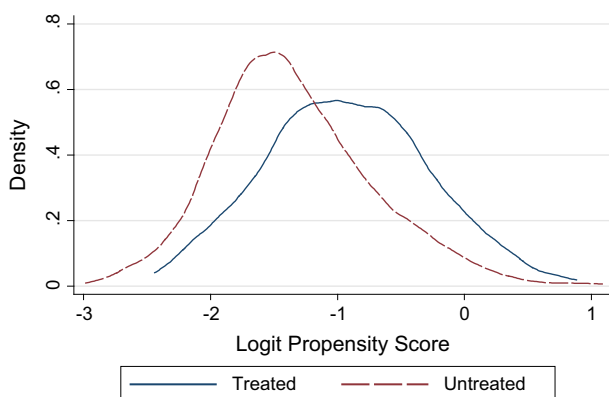


Fig. 1 The distribution of propensity scores for the treated and untreated samples

Middlemen as a Means for Informal Justice (H1)

Refer to Table 2a, the crude odds ratio between firm's deployment of middlemen and *court cases* (firm's adoption of justice system for restitution of right) is 1.79 ($p < 0.01$). But this is contrary to the Hypothesis 1. Disconfirming our Hypothesis 1, we found that the coefficient governing relationship between deployment of middlemen and court cases is positive and statistically signified. It implies that deployment of middleman will more likely to embroil the focal firm into court cases. However, relying on this estimation, drawing any conclusion may be confounded by firm-specific characteristics. We re-examine our data using the potential outcome framework. We use propensity score analysis to examine the merit our estimation. Refer to Table 4, the relationship between deployment of middlemen and adoption of an informal system of restitution of justice is positive. Using the quintile of propensity score estimation, we find the conditional odds ratio is 1.98 (95 % CI 1.56, 2.50), marginal odds ratio 1.94 and marginal risk difference 0.08 (95 % CI 0.028, 0.13). Using restricted cubic splines, after controlling for residual confounding, restricted cubic spline model provides a conditional odds ratio (2.28, 95 % CI 1.78, 2.93), marginal odds ratio (2.26) and marginal risk difference is 0.10 (95 % CI 0.04, 0.16). Likewise, we use inverse probability weight (IPTW) to examine this relationship and find that conditional odds ratio is 2.17 (95 % CI 1.58, 2.97). Refer to Fig. 1 that highlights the distribution of propensity score for the middlemen deployed firms against firms those did not deploy middlemen, we restrict the analysis to observations with logit scores between -2 and 0 . Due to this restricted approach, the conditional odds ratio got reduced to 1.81 (95 % CI 1.28, 2.54), marginal odds ratio 1.78, and marginal risk difference 0.07 (95 % CI 0.01, 0.13). We also used potential outcome estimation restricted to the exposed sub-population is 1.96 with marginal risk difference (sub-population) is 0.09 (95 % CI 0.04–0.14). Under various statistical assumptions, though the depth of relationship differs by some degree, we could safely infer that the firms with middlemen have shown a definite tendency to have more court cases than firms without middlemen.

Middlemen as a Time Saving Device (H2, H3, H4)

Time Spent by Senior Management on Regulatory Dealings (H2)

Refer to Table 2a, the crude odds ratio between firms with middlemen and time spent by senior management on regulatory dealings is not statistically significant. However, under propensity score framework with its different assumptions, we witness that this relationship becomes

Table 4 Propensity score modeling: middlemen efficiency

	Means for informal justice		Middleman as a time saving device		Middleman as a bribe facilitator		Middleman as an invisible hand for operational speed	
	Hypothesis 1: Court Cases	Hypothesis 2: Time Spent by Senior Management on Regulatory Dealings	Hypothesis 3: Government Office Visits	Hypothesis 4: Time for Tax Inspectorate	Hypothesis 5: Bribery Police Gift	Hypothesis 6: Wait for Main Operating License	Hypothesis 7: Wait for Import License	Hypothesis 8: License
Quintile of propensity score								
Conditional estimate	1.98	1.22	1.72	1.47	2.67	1.56	1.61	1.41
CI	1.56–2.50	0.98–1.52	0.94–3.15	0.94–2.28	1.92–3.70	1.05–2.32	1.01–2.57	1.40
Marginal odd ratio	1.94	1.22	1.70	1.46	2.60	1.55	1.61	1.40
Marginal risk difference	0.08	0.04	0.13	0.09	0.23	0.10	0.12	0.07
CI	0.028–0.13	–0.01 to 0.09	0.011–0.24	–0.002 to 0.17	0.16–0.30	0.015–0.19	0.002–0.23	–0.12 to 0.25
Restricted cubic splines								
Conditional estimate	2.28	1.22	1.76	1.55	2.87	1.64	1.58	1.43
CI	1.78–2.93	1.10–1.36	0.88–3.50	0.85–2.80	1.85–4.46	1.20–2.24	0.97–2.57	0.55–3.75
Marginal odd ratio	2.26	1.22	1.75	1.54	2.84	1.64	1.58	1.43
Marginal risk difference	0.10	0.04	0.13	0.10	0.25	0.12	0.11	0.07
CI	0.039–0.16	0.02–0.07	–0.001 to 0.27	–0.03 to 0.22	0.15–0.36	0.048–0.18	–0.01 to 0.24	–0.13 to 0.27
Propensity score as inverse probability of the treatment weights								
Conditional odd ratio	2.17	1.23	1.68	1.48	2.73	1.66	1.42	1.48
CI	1.58–2.97	1.18–1.29	0.81–3.51	0.81–2.72	1.59–4.70	1.18–2.32	0.90–2.24	0.61–3.58
Marginal risk difference	0.10	0.04	0.12	0.09	0.24	0.12	0.09	0.08
CI	0.034–0.16	0.04–0.05	–0.03 to 0.28	–0.04 to 0.22	0.11–0.38	0.05–0.19	–0.03 to 0.2	–0.1 to 0.26
Propensity score exposure interaction	0.05	0.96	0.85	0.83	0.52	0.84	0.41	0.63
Addressing positivity violations using range restriction								
Conditional odd ratio	1.81	1.14	1.61	1.43	2.54	1.57	1.87	1.54
CI	1.28–2.54	0.76–1.69	0.91–2.86	0.93–2.18	1.85–3.50	1.15–2.13	1.15–3.03	0.65–3.62
Marginal odd ratio	1.78	1.13	1.61	1.42	2.50	1.56	1.87	1.53
Marginal risk difference	0.07	0.03	0.11	0.08	0.22	0.11	0.15	0.08
CI	0.01–0.13	–0.6 to 0.11	–0.01 to 0.23	–0.01 to 0.17	0.15–0.29	0.036–0.17	0.03–0.28	–0.09 to 0.25
Potential outcome estimation restricted to the exposed subpopulation								
Conditional odd ratio	1.96	1.21	1.69	1.46	2.65	1.54	1.59	1.45
CI	1.54–2.48	0.98–1.50	0.93–3.08	0.94–2.26	1.88–3.73	1.06–2.23	1.03–2.44	0.64–3.26
Marginal odd ratio	1.78	1.13	1.61	1.42	2.50	1.56	1.86	1.53
Marginal risk difference (sub population)	0.09	0.04	0.13	0.09	0.23	0.10	0.11	0.07
CI	0.04–0.14	–0.01 to 0.09	–0.001 to 0.25	–0.01 to 0.18	0.15–0.30	0.016–0.18	0.01–0.22	–0.1 to 0.24

marginally significant at the $p < 0.10$ (refer to Table 4). The effect estimated under different methods directed to control for confounding varies from each other and are produced in Table 4. The range restricted estimation to control the threat from positivity violations produced the smallest estimated conditional odds ratio 1.14 (95 % CI 0.76, 1.69) and inverse probability of the treatment weight (IPTW) estimation yielded a conditional odds ratio 1.23 (95 % CI 1.18, 1.29). Marginal odds ratio also remained between 1.13 (under estimation restricted to the exposed sub-population) and 1.22 (under quintile of propensity score). Acknowledging these differences among our diverse estimation assumptions, consistent to Hypothesis 2, we could state that firms with middlemen in its operational system will demand significantly more time from the senior management personnel to maintain relationship with the regulatory agencies (Table 4).

Government Office Visits (H3)

Refer to Table 2a, the crude odds ratio between the firms with middlemen and the number of government visits by managerial personnel was 1.36 ($p < 0.10$). Under different methods to control for confounding covariates, the estimated odds ratio varies under different assumptions (Table 4). The conditional odds ratio under restricted cubic splines of the propensity score estimation produced 1.76 (95 % CI 0.88, 3.50), whereas range restricted estimation for controlling positivity violation produced a conditional odds ratio 1.61 (95 % CI 0.91, 2.86). Marginal odds ratio under restricted cubic splines of the propensity score is 1.75, followed by 1.7 that is under quintile of the propensity score and 1.61 under range restricted estimation for positivity violations as well as potential outcome estimation restricted to the exposed sub-population. Though estimations under these diverse assumptions produced different results, consistent with our Hypothesis 3, we could safely argue that the firms having middlemen in its operational system will demand significantly more time/visits for regulatory dealings from the corporate executive against those firms without middlemen (Table 4).

Number of Visits to Tax Inspectorate (H4)

Refer to Table 2a, earlier we found through crude odds ratio that the number of visits to Tax Inspectorate shares positive relationship with the firm with middlemen, though this relationship is not statistically significant (reported in Table 2a). We estimated alternative estimations using the propensity score framework (reported in Table 4). Under different assumptions, we witness that this relationship becomes marginally significant at the $p < 0.10$. The smallest conditional odds ratio is 1.43 (95 % CI 0.93, 2.18)

under range restricted estimation for positivity violations whereas it is 1.55 (95 % CI 0.85, 2.80) under the restricted cubic splines. Likewise, the marginal odds ratio is 1.42 produced under restricted estimation restricted to exposed sub-population, 1.54 under restricted cubic splines. Consistent to Hypothesis 4, these interpretations provide a solid ground to conclude that for accessing regulatory services, the number of visits to Tax Inspectorate is higher for firms those deploy middlemen (Table 4).

Middlemen as a Bribe Facilitator (H5 and H6)

Bribe Incidence (H5)

While examining the relationship between bribing incidence with the deployment of middlemen, earlier we found that they share a positive relationship (Table 2b). Subsequently, we measure the strength of the relationship using the propensity score framework. Using quintile of propensity score, we find that the relationship between middlemen deployment and bribing is expressed as odds ratio 2.67 (95 % CI 1.92, 3.70), marginal odds ratio 2.60 and marginal risk difference 0.23 (95 % CI 0.16, 0.30) (Table 4). Using restricted cubic splines of the propensity score, we control the confounders and produce conditional odds ratio 2.87 (95 % CI 1.85, 4.46), marginal odds ratio 2.84 and marginal risk difference 0.25 (95 % CI 0.15, 0.36). Using propensity score as inverse probability of the treatment weight, the conditional odds ratio is 2.73 (95 % CI 1.59, 4.70), the marginal risk difference is 0.24 (95 % CI 0.11–0.38). After controlling the positivity violations, we derive the conditional odds ratio 2.54 (95 % CI 1.85, 3.50), marginal odds ratio 2.50, marginal risk difference 0.22 (95 % CI 0.15, 0.29). Potential outcome estimation after restricting it to the exposed sub-population, we find the conditional odds ratio 2.65 (95 % CI 1.88, 3.73), marginal odds ratio 2.50, marginal risk difference 0.23 (95 % CI 0.15, 0.30) (Table 4). All these estimations, though differ in its magnitude marginally from each other, are consistent to our Hypothesis 5 and hence we state that deployments of middlemen are often associated with corporate bribery.

Police Gift (H6)

Refer to Table 2b, earlier we found that gifting to Police personnel is significantly positive with the firms having middlemen. Using propensity score estimation, we predominantly observed that the relationship is stable, but relatively different under various statistical assumptions (refer to Table 4). Using different methods to control for confounding provided different (conditional odds ratio) estimates ranging from 1.54 for the potential outcome estimation to 1.66 for the inverse probability of the

treatment weights (please refer to Table 4). To address the positivity violation, we also estimated treatment effect using range restriction that provided conditional odds ratio 1.57 (95 % CI 1.15, 2.13) and marginal odds ratio 1.56 along with its marginal risk difference 0.11 (95 % CI 0.036, 0.17). Similarly, we also restricted our potential outcome estimation to the exposed subpopulation, to derive a conditional odds ratio is 1.54 (95 % CI 1.06–2.23), marginal odds ratio 1.56 along with marginal risk difference of 0.10 (95 % CI 0.016–0.18) (please refer to Table 4). Accommodating these diverse outcomes, we can safely argue that firms with middlemen in its ecology will be more likely to engage in offering gifts to the Police administration than otherwise.

Middlemen as an Invisible Hand for Operational Speed (H7 and H8)

Waiting Times for Main Operating License (H7)

Using the crude odds ratio, reported in Table 2b, we found that the relationship between deployment of middlemen and waiting time for main operating license is positive and statistically significant. Under the propensity score framework different estimations corroborated our arguments that for its operating licenses, firms with middlemen wait for more time than the industry averages (Table 4). The conditional odds ratio is 1.42 (95 % CI 0.90, 2.24) is the smallest under IPTWs assumptions, whereas it is 1.87 (95 % CI 1.15, 3.03) under restricted estimation for positivity violation is the largest relative to diverse estimated results presented here. The smallest marginal odds ratio is 1.58 under restricted cubic spline estimation whereas 1.87 is the highest produced under range restricted estimation for positivity violations (Table 4). Consistent to our Hypothesis 7, control of confounders under different assumptions confirmed our arguments that firms with middlemen demand more waiting time than the firms without middlemen.

Waiting Time for Import License (H8)

Crude odds ratio estimation from Table 2b states that deployment of middlemen is positively associated with more waiting time than the industry average, though this relationship is marginally significant. We reworked our analysis to estimate the relationship using the propensity score framework. However, throughout the analysis, this relationships, under different assumptions, remained statistically non-significant (Table 4). Due to missing data problem, our sample size for this analysis is extremely poor (222); hence it might have affected this part of our analysis.

We do not lend any undue support to any one of the method as superior for controlling confounding covariates.

We have estimated the causal effects under different adjustment conditions that bear associated assumptions. For example, to control apparent positivity violations (please refer to Fig. 1), we restricted the sample to the maximum exposed (−2 and 0 of the logit scores), it is not surprising that causal estimation was found to be different relative to other estimations. Likewise, inverse probability of treatment weights (IPTW) estimate relies upon the average effect of the treatment in the entire study population that is comprised of firms with middlemen in its ecosystem and the firms without middlemen. We also examined the possible interaction effect between the propensity score exposure and found negative score indicating no such threat to our analysis. We reported conditional odds ratio, marginal odds ratio and marginal risk difference as has been recommended in the literature (Austin and Laupacis 2011).

Discussion

We demonstrate as to how middlemen deployed by firms make various regulatory services available for their respective client firms in a corrupt setup. We draw on a basket of theories such as resource dependence theory, rationalist theory, and culturist theory to comprehend the services of the middlemen, extended to Indian manufacturing industries. We explore how firms deal with regulatory agencies that are distinctly associated with the deployment of the middlemen. Using propensity score estimation, we find that firms that deploy middlemen to acquire various regulatory services predominantly face more confrontational approach by accessing justice through formal courts in case of violation of rights (*Court Cases: H1*), necessitate more time from senior management for management of regulatory relationship (*Time Spent by Senior Management on Regulatory Dealings: H2*), executives visits more number of times to government offices for regulatory dealings (*Government Office Visits: H3*) and office of Tax Inspectorate (*Time for Tax Inspectorate: H4*), rely upon bribes to extract services from bureaucrats (*Bribery: H5*) and police (*Police Bribery: H6*), and wait for more time to acquire operational license (*Wait for Main Operating License: H7*). Only Hypothesis 8 (Wait for Import License) is not supported under propensity score estimation (may be due to missing data problem, sample size reaching to 222 for this analysis); hence refrain from any speculative estimation regarding its contribution.

Contrary to our Hypothesis 1, our study demonstrates that deployment of middlemen is positively associated with the incidence of court cases (H1). It implies that middlemen in the firms' ecology necessitate usage of the Court as remedies, disconfirming our Hypothesis 1. Earlier, we hypothesized

that deployment of middlemen leads to avoidance of confrontational approach for accessing justice in case of violation of legal rights. But our results show that the deployment of middlemen is often associated with the incidence of court cases. Firms deploy middlemen to bring efficiency and speed while dealing with regulatory bodies. However, our data suggest that recruitment of middlemen is often associated with the presence of court cases and litigation. We speculate that middlemen fail to provide amicable solutions through informal choice of justice and perhaps prone to create more confusions and legal strife in the system. It implies that the middlemen are grossly inefficient.

Data suggest that deployment of middlemen is often associated with *more* time for senior management for dealing with regulatory bodies (*Time Spent by Senior Management on Regulatory Dealings*: H2), demand more number of visits to government offices (*Government Office Visits*: H3), more executive time at Tax Inspectorate (*Time for Tax Inspectorate*: H4). This implies that the involvement of middlemen in regulatory dealings will often demand more time from the corporate executives. It is usually assumed in the literature that middlemen potentially bring operational efficiency in a weak regulatory context where bureaucrats have been given undue discretionary authorities to interpret the meaning of legal provisions. Intuitively, it is said that middlemen work as a lubricant in the clogged system of bureaucracy by bringing the speedy delivery of services (Beck and Mahler 1986; Lien 1986; Méon and Sekkat 2005; Dreher and Gassebner 2013). Our analysis demonstrates that middlemen may not necessarily work as a time saving device in a corrupt economy (H2, H3, H4). It signifies that corporate agility, which is considered to be a prime resource, will be lost with the involvement of middlemen in the system. Corporate agility is considered as a prime resource for today's organization—this could be compromised due to deployment of middlemen for regulatory dealings.

We demonstrate that middlemen in the corporate system primarily deployed in dealing with regulatory constraints, in fact increase the likelihood of bribing incidence (H5 and H6). We examined two types of briberies: bribe/informal payments for regulatory dealings (*Bribery*: H5) and bribery to police (*Police Gift*: H6). In both cases, we notice that the deployment of middlemen is often associated with the incidence of informal payment to bureaucrats and police personnel. The bribe avoidance strategy of the firms could not be executed through deployment of middlemen in the system. It implies that firms participate in a corrupt world by bringing intermediaries to deal with regulatory agencies. We speculate that middlemen work as buffer to save top management and works as a safety device for subsequent denial if the situation arises. While reported misconduct damages the financial performance of the firm (Baucus and

Baucus 1997), some research indicates that market punishment fails to deter the occurrence of corporate misconduct (Bromiley and Marcus 1989). Firms are inventive to access regulatory favor through intermediaries and achieve the dual objectives: have a clean public persona as well as accessing regulatory favors through bribes. Middlemen acquired these dual deliverables from the regulatory agencies through the language of bribe. We notice that though middlemen work as buffering agent, bribery and police gift do not offer swift services from the regulatory agencies.

We find that deployment of middlemen deployed for operational efficiency is often associated with more waiting times for main operating license (*Wait for Operational License*: H7). In line with the argument advanced earlier, we find that tactical delay in providing operational licenses is more for those firms who deploy middlemen. We do not get support to our Hypothesis 8 where we attempted to examine whether deployment of middlemen causes delay in obtaining an import license.

Are They Efficient in the Middle? That was the question of our research. According to the Merriam-Webster Online Dictionary, the term 'efficient' signifies "capable of producing desired results without wasting materials, time, or energy". Our results indicate that middlemen are grossly inefficient in delivering prompt services to its client firms. If the objective of the Indian manufacturing firm is to avoid Indian court system, our results suggest that using middlemen are in fact inviting to more legal hassles and litigations. If the objective of the Indian manufacturing firm is to save executives' time on regulatory issues, our results suggest that using middlemen automatically demand for more time from senior management, for more number of visits to government offices and Tax Inspectorate. If the objective is to bring operational speed, using middlemen implies more waiting time for operational license. When benefits of using middlemen are not evidently visible, deployment of middlemen is often associated with bribery and police gift. It implies that Indian manufacturing firms with middlemen in their operational outfit indulge in bribery and gifting to police, violating their respective publicly stated vision and mission statement of the firm. Thus, the deployment of middlemen often triggers serious breaches in the corporate accounting and governance affair, reflecting betrayal of investor trust, and risking regulatory and criminal scrutiny. Taken together, our results suggest that Indian middlemen appears to be inefficient.

Implication for Practitioners

Our research indicates that the deployment of middlemen brings about deep-rooted organizational changes that

potentially touch the very core of the top management team. With middlemen in the corporate system, senior management might allocate more time for governmental dealings, may orchestrate secretive deals with the bureaucrat in exchange of bribe, may bring more delays in the acquisition of operating licenses, enhance the likelihood of court cases. This may increase the capability of the firm to walk through the dark lanes of the corporate governance, leading to enhanced business risk. Though intuitively, the deployment of middlemen appears to be beneficial to the business enterprises, we notice that firm increases the risk of more litigation. It also increases the danger of information leakage to an outsider (middlemen), who trades on behalf of multiple firms. It also provides opportunities for monetary delinquency and malfeasance among employees and middlemen. This also increases employee dissonance arising out of the paradoxical gap between the publicly stated ethical and value statement of the firm and the actual deviation through middlemen. This opens up multiple challenges for the executives responsible for corporate governance, human resource management and other stakeholders. Risk management professionals, therefore, must pay attention to it while advising.

Our current research also contributes to forensic accounting and provides credible empirical evidence of bribery. Current research highlights that bribery decision by Indian manufacturing firms is most often accompanied by a selection of middlemen or consultants. Professionals engaged in forensic accounting practice may take our findings into cognizance while auditing firms belonging to the Indian manufacturing sector. Usage of consultants without having any third party due diligence or accompanied by difficulty associated with understanding the value of services could pose significant risk. Due to the intangible nature of services provided by the consultant, the channel is used for fund transfer and adjustment (Skalak et al. 2011). Our research outcomes, though enriched with empirical evidences, are not standalone arguments and could be corroborated with a good number of similar legal cases that has dealt by the US Justice System such as United States vs Siemens, United States v. Aibel Group Ltd., United States v. Misao Hioki. Therefore, our research also contributes to the available literature in terms of methodology for fraud detection from macro-data (For details please refer to Petrucelli 2013; Singleton and Singleton 2010; Wells 2011).

Drawing from the nascent literature, we demonstrated the modus operandi of the middlemen in a corrupt economy like India. Any stakeholder serious on the issue of controlling corporate corruption in India may find our research useful for development of appropriate policy. Our study contributes to provide an insight into the dark side of the economy. Though a number of researchers made case based arguments, our study presents, if not the first to the

best of our knowledge, an empirical substantiation in the area corruption studies that captures the modus operandi of middlemen in a corrupt ecology.

Limitations

Our research inherits a number of limitations. First, our dataset captures one snapshot and do not provide panel data. Future researchers could examine the merits of our research outcomes by using a panel dataset. Second, propensity score matching also inherits a number of subjectivity of the researcher such as accommodation of the number of covariates, analytical process (stratification, regression adjustment, inverse weighting)—this type of discretion might influence the result. Future studies may look into this dynamic and validate our research claim. Third, our data come from Indian manufacturing industries. The reader may exercise additional discretion before generalizing it for Indian service industry, though the author does not necessarily warrant the need of it, as manufacturing and service industries, with a few differences, predominantly exposed to same regulatory agencies. Hence, with all probabilities, similar tendencies could be witnessed among service industry providers. However, future studies could pay attention to this and may seek validation.

Conclusion

We attempted to capture a comprehensive view on the firms those deploy middlemen for their convenience. Although our study makes a distinctive contribution to the discourse on corruption, it joins and complements scattered, but growing literature on middlemen. We examined the merit of our research claims using the propensity score framework. Our research provides a cautionary tale to multiple stakeholders; those might have interest on this issue. Firms, those who deploy middlemen for operational efficiency, need to exercise the highest degree of caution as middlemen in the corporate ecosystem may bring serious consequences.

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