Does Judicial Efficiency affect Corporate Investment?*

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Abstract

I provide evidence that de facto implementation of the law is important. I construct an index of judicial efficiency and show that firms reduce corporate investment more in states with low judicial efficiency. Moreover, I find that the effect is predominant for financially constrained firms. Furthermore, I exploit the exclusive relationship with foreign and private banks during the 2008 U.S. financial crisis. These firms experienced exogenous financial shocks during the 2008 U.S. financial crisis. I show that such firms operating in regions of high judicial inefficiency exhibit lower investment. To address endogeneity, I use two approaches. Using the 2006 Information and Technology (ICT) adoption as an instrument for better judicial quality, I show that financially constrained firms increase investment post ICT adoption. Secondly, I use direct British rule in the 19th century as an instrument for current institutional quality. The princely states of India under indirect British rule were better governed as they were under constant threat of being deposed if misruled. I find that the subset of financially constrained firms located in districts under direct British rule reduce investment more. The results are robust in multiple specifications including quantile regression, propensity score matching models, and a battery of falsification tests.

JEL Classification: K40, K42, N65, O33
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1 Introduction

The investment policies of firms are an important area of study in corporate finance (e.g.,Stein (2003)). Rajan and Zingales (1998) argue that the primary role of the financial sector is to direct resources towards the most productive investment opportunities. Financing frictions can impede investments of firms as well as the optimal reallocation of capital (Banerjee and Duflo (2005); Banerjee and Moll (2010); Hsieh and Klenow (2009)). A separate section in the law and finance literature argues that legal environment is a key determinant of corporate finance (La Porta et al. (1997); Demirgüç-Kunt and Maksimovic (1998) Levine (1998)). The literature points out that the nature of the legal system, primarily the de jure law, a product of long history of jurisprudence, is an important determinant of corporate finance policy.

In this paper, I study the role played by de facto enforcement of law in India, an environment where enforcement issues are first order. As background, I note that India, like many countries, is attempting to rewrite bankruptcy law because enforcement is regarded as weak and important. As Phadnis and Prabhala (2015) write in their review, India's bankruptcy law has been amended about every decade in an effort to obtain time-bound enforcement. These efforts have met with little success, and even legally prescribed time lines for resolution are not met. The culmination of these efforts is India's 2016 bankruptcy law that essentially sidesteps the current legal system to create a parallel process. Such issues are not local to India. Dakolias (1999) finds that judiciary suffers from weak enforcement especially in developing nations, and is characterized by limited expertise and long delays.

I provide an empirical analysis of the effects of the divergence of de facto implementation from the de jure law as they relate to firms' investment policies. The Indian context is particularly interesting because Indian states exhibit a significant degree of homogeneity in law and simultaneously, heterogeneity in court enforcement. For instance, all Indian states had at least one Debt Recovery Tribunal (DRT) by 2000 but their implementation of essentially the same law varies. I note that most of the staff training, recruitment process, and general procedures in the new quasi-judicial bodies are often similar to the ones used by the courts in that state. In many cases, the presiding officers in these quasi-judicial bodies were either retired or deputed officers from courts in that state.

Judicial inefficiency can significantly impede corporate investment. Honouring of a contractual obligation is conditional on the efficiency of the state to implement the contract. Slow courts reduce the incentives for the counterparty, and lowers the punishment value. Klein et al. (1978) argue that when the search cost for finding a new supplier is high and once the investment costs are sunk, the suppliers can engage in rent extraction. Judicial in-

efficiency in implementing supplier contracts increases suppliers incentives for expropriation from firms. Hence, reducing firms investment incentives.

Several studies suggest that law enforcement is an important determinant of financial development (La Porta et al. (1997); Levine (1998); Djankov et al. (2003)). Rajan and Zingales (1998) show that industrial sectors more in need of external finance develop disproportionately faster in countries with more-developed financial markets. Similarly, Demirgüç-Kunt and Maksimovic (1998) and Ayyagari et al. (2008) suggest that firms that rely on external finance grow more in countries with better law and order condition. Hence, weak law enforcement impedes the growth of firms.

Alternatively, following Klein et al. (1978) one could argue that if courts are slow, firms themselves can engage in an opportunistic behaviour, and extract rents from suppliers and other contractors. This makes studying the impact of weak judicial efficiency on corporate investment an empirical matter.

I construct a dynamic model of the firm incorporating a delay between relaization of costs and revenue receipts. The setup of the model is very similar to Chan (2014). This delay in revenue receipts generates a demand for working capital. The demand can be broken down into liquidity demand to cover costs of operation and precautionary demand to meet future expected rent extraction demand by capricious suppliers. The firms can use the internally generated revenues or borrowing to meet its working capital needs. The financially constrained firms face impediments to external borrowing and hence must choose between allocating internal funds for investment or working capital requirements. Hence, financially constrained firms must trade off future production for current production. The working capital constraint in my model is not binding for the financially unconstrained firms as they are operating away from their borrowing limit. However, the same is binding for financially constrained firms. Hence, in periods of high current demand financially constrained firms forgo investment when expected future rent extraction from suppliers is likely to be high.

Using state-level data on civil cases under consideration by local courts, I construct a new measure of court enforcement. My measure is relatively straightforward: it is the ratio of cases pending at the start of the year to the cases cleared during the year. I call this measure as duration. It is a forward-looking measure, indicating the number of years courts will take to clear their backlog if they continue operating at the same efficiency. My measure of duration captures both time-varying and cross-sectional heterogeneity, and thus proceeds in the direction suggested by Rajan and Zingales (2003) that the law and finance literature would benefit from incorporating metrics that vary in the time dimension. My measure

reflects the ability of the state to implement other contracts involving firms such as supplier contracts, contracts with other contractors, land legislation issues, and environmental issues.

Combining the state-wise measure of judicial enforcement with the data on firm-level outcomes, I show that firms that experience financial constraints cut back investment less when the judicial efficiency is high. On a conservative end I find, the investment growth rate of financially constrained firms to be 18% lower in areas with low judicial efficiency. The specifications control for firm specific factors such as size, age, asset tangibility, profitability, leverage, interest coverage, Tobin's Q and firm growth, along with state specific factors - GDP per capita, credit to GDP ratio, and government expenditure to GDP ratio. Additionally, I control for firm fixed effects and time varying industry fixed effects. All my variables are winsorized annually at 1% on both ends, and standard errors are clustered at state level.

Furthermore, I find evidence of a non-linear relationship between investment and duration. I run a quantile regression to assess the impact of duration on financially constrained firms' capital expenditure at different quantiles. Low judicial efficiency results in 33% lesser capital expenditure by financially-constrained firms at the 25th percentile, 36% lower capital expenditure by financially-constrained firms at the 50th percentile and 25% lower capital expenditure by financially-constrained firms at the 75th percentile.

The above results do not necessarily reflect a causal link between judicial efficiency and firm-level outcome because of endogeneity in financing constraint and judicial efficiency, unobserved omitted variables, and selection-choice bias of firms. I use several approaches to disentangle causality.

First, to rule out the issue of self-selection, I qualitatively analyse the geographic distribution of all firms, and do not find any prima-facie evidence supporting a location-selection hypothesis. Univariate analysis does not show any difference in distribution of financially constrained firms or corporate investment across judicially efficient and inefficient states. To completely rule out selection bias, I run a two-stage Average Treatment Effect (ATE) model. I generate the conditional probability of assignment of a firm to a judicially inefficient state given firm characteristics as in Everitt and Skrondal (2010). In the second stage I estimate the ATE of judicial quality on the capital expenditure of financially constrained firms by weighing with the inverse of probability computed in the first stage (Guo and Fraser (2014)). The results from the weighted least square regression are qualitatively similar to the baseline results, therefore dismissing selection-bias.

Next, to eliminate the issue of omitted variable bias and firmly establish causality, I propose an identification strategy exploiting the quasi-experiment which improved the efficiency,

or the future expected efficiency, of Indian courts. In 2006 a massive Information, Communication, and Technology (ICT) investment was announced. The technology adoption, due to the ICT investment, raised the expected future efficiency of courts. I argue that that this measure is a valid instrument for expected judicial efficiency, and is uncorrelated with firm or state characteristics prior to the reform. Taking data three years before and after the ICT adoption, I find results consistent with the baseline model. The results indicate a 24% increase in investment by financially constrained firms after the announcement. No such effects were found for financially unconstrained firms. Furthermore, these results appear to be concentrated in regions with low judicial efficiency.

Third, I restrict my sample to the crisis period (2008-2010) and use single banking relationships with the foreign and private bank to further assess firm financing constraints. The foreign and private banks suffered an exogenous supply shock during the Global Financial Crisis (GFC) as there was a flight to safety from foreign and private banks to state-owned banks (Acharya and Kulkarni (2012)). Firms in a single-banking relationship with these banks faced a supply shock, similar to what Mian (2003) discusses. Consistent with the preliminary hypothesis, I show that firms in a single-banking relationship with a foreign (private) bank experienced a 34% (25%) decline in capital expenditure growth in judicially inefficient regions.

Next, I exploit the fact that some firms are located in districts which were under direct British rule and others in districts with indirect British Rule during the colonial period. Iyer (2010) discusses this approach. The Governor-General of India, Lord Dalhousie, implemented the policy of Doctrine of Lapse under which he annexed several states where the incumbent ruler died without a natural heir. I exploit the death of the incumbent ruler as an identifying assumption, as it is likely to be a matter of chance and unrelated with post-colonial outcomes

The long-term effects of divergence between direct and indirect British rule originate from the fact that the rulers of native princely states with indirect British rule were under constant threat of being annexed in a case of a misrule. This left a sword hanging on the neck of native rulers to provide better governance and institutions. Secondly, the native states had between four to five rulers during 1858-1947, whereas the states under direct British rule were governed by 24 Governor-Generals during the same period (Iyer (2010)). The longer tenure of native rulers resulted in them having higher incentives in engaging in long-term investment. Also, Allen and Dwivedi (1984) document election of several former princes to federal and state-level political offices. I show that financially constrained firms located in districts under direct British rule had 19% lower investment levels as compared

to financially constrained firms in districts ruled by native rulers during the colonial period. The results are robust in a Fama-Macbeth set up, and not influenced by the negative effects of landlord tenure system in the districts under direct British rule.

Finally, I show that my results are robust to a falsification test, and my identification strategy for ICT adoption satisfies the pre-reform parallel trend assumption. Additionally, the statistical significance of the estimated coefficients is not affected when I allow standard errors to be correlated at different levels such as industry, and state.

This paper is related to the extensive literature on law and finance. The seminal work of La Porta et al. (1997) presents evidence that strong law enforcement results in financial development. The works of Levine (1998), Djankov et al. (2003) among others echo similar results. The results presented in this paper are consistent with the propositions of the law and finance literature, and contribute to the literature in a sense, that I provide evidence for the asymmetric effect of law enforcement across firm types. Earlier studies such as Demirgüç-Kunt and Maksimovic (1998) and Beck et al. (2004) also document the asymmetric effect of law enforcement based on firms dependence on external finance and size respectively. However, both these studies rely on cross-country evidence and survey data. The current paper identifies the asymmetric effect of law enforcement on investment within-country, circumventing the empirical issues associated with cross-country studies and is based on actual balance sheet and profit and loss measures. Secondly, by exploiting the quasi-natural experiment, I am better able to tease out the causal linkage.

This paper is also related to the literature on law and investment. Acharya and Subramanian (2009) show that leveraged firms reduce innovation investment when bankruptcy codes are creditor friendly. Acharya et al. (2011) also identify adverse consequences of strong creditor rights. They show that substantial creditor rights affect corporate investment choice by reducing corporate risk-taking. My work is closest to Chemin (2010), and Ponticelli and Alencar (2016). Unlike Chemin (2010), and Ponticelli and Alencar (2016), I do not concentrate on small firms; rather I focus on examining the asymmetric effect of court congestion on corporate investment. Also, I do not specifically consider the effect of bankruptcy reform on Indian firms. Earlier works that examine the effects of bankruptcy reform on firm outcomes in India include Visaria (2009), Lilienfeld-Toal et al. (2012), Vig (2013), Gopalan et al. (2016), and Bhue et al. (2015).

The paper contributes to the burgeoning literature on economic growth relating to history and finance.[1] Similar to the works of La Porta et al. (1997), Levine (1998), Acemoglu et al.

[1]Refer to DAcunto (2015) for a detailed review of the nascent field of History and Finance.

(2001), Djankov et al. (2003), Beck et al. (2004), Acemoglu and Johnson (2005), among others, I show that the institutions of the past affect current economic outcomes via long-term persistence. The setting I exploit is similar to Iyer (2010). However, unlike Iyer (2010) I look at more recent asymmetric firm specific investment outcomes.

The rest of the analysis unfolds as follows. Section 2 presents the theoretical model. Section 3, describes the functioning of Indian judiciary and details of the British rule in India. In section 4, I describe the data on the judicial system, bank loans and manufacturing firms. In section 5, I discuss the identification strategy and set out the empirical results. This is followed by several robustness checks and the final section elucidates certain policy concerns.

2 Conceptual Framwork

I construct a dynamic model of the representative firm which is a simplified version of Chan (2014). The model is characterized by a time lag between incurring of costs and receipt of revenue. This generates a need for working capital. The working capital in my model is financed primarily by interally generated funds and any deficit is financed via borrowing. Let $F(.)$ denote the production function of the reprsentative firm, where $F(.)$ is continously differentiable and bounded. Production requires capital and labor as factor inputs. $F(K, L)$ is strictly increasing and strictly concave in both K and L. Labor is a short-term input and is perfectly elastically supplied. Capital is a durable factor that evoles according to equation 1. It depreciates at a constant rate δ, such that $\delta \in [0, 1]$. Capital can be installed instantenously, and has no adjustment costs. Intertemporal financial resource trtansfer can occur either via bonds or capital assets.

$$K_{t+1} = (1 - \delta)K_t + I_t \tag{1}$$

A representative firm chooses its inputs K, and L so as to maximize the discounted value of the return function over an infinite horizon. The representative firm maximization problem is given by equation 2:

$$\max_{K_t, L_t} \mathbf{E_0}[\sum_{t=o}^{\infty} \beta^t(\beta P_t F(K_t, L_t) - w_t L_t - p_t^I I_t)] \tag{2}$$

The discount factor $\beta \in (0,1)$ is equal to $\frac{1}{1+r}$. The price of investment p^I, labor wage w, and the interest rate r are assumed to be exogenous. The firm maximizes 2 subject to the budget constraint given by 3, where b_t denotes bond holding in period t. The cost of labor, investment and bonds are borne by the return from bonds held over last period, and the revenue receipts received this period from production in the last period. Without loss of generality I normalize the price of bond in the current period to 1. Also, the firm earns no interest on its trade credit. Let $\theta(\eta_t)$ denote the amount required to meet the rent extraction demands put forth by the capricious suppliers as in Klein et al. (1978), where η_t denotes judicial inefficiency at time t, and is exogenously given. The function $\theta(.)$ is continously differential, bounded, and strictly increasing and strictly concave in η. Each period firm spends $\mu\theta$ amount and carries forward the remaining amount costlessly to the next period. Also, this amount earns no interest. Moreover, $\mu \in (0,1]$ is such that it is set as close to 1 as possible.

$$w_t L_t + p_t^I I_t + b_t + \theta(\eta_t) = P_{t-1} F(K_{t-1}, L_{t-1}) + (1+r) b_{t-1} + (1-\mu)\theta(\eta_{t-1}) \tag{3}$$

The firm maximizes 2 subject to 3 such that $b_t \geq b_c$, and $\lim_{t\to\infty} b_t = 0$, and K_0, b_0, and θ_0 are given. b_c denotes borrowing constraint. It is an exogenous parameter such that $b_c \in (-\infty, 0]$. Cash in hand is described as the sum of revenue receipts from the previous period, and the principal and the return from the bond holdings held in the previous period as described in equation 4, and the associated trasition equation of wealth over time is described in equation 5. Also, equation 4 denotes all the financial resources available to the firm and it must satisfy the constraint in equation 6.

$$X_t = P_{t-1} F(K_{t-1}, L_{t-1}) + (1+r) b_{t-1} \tag{4}$$

$$X_{t+1} = (1+r)[X_t - w_t L_t - p_t^k I_t] + P_t F(K_t, L_t) - (1+r)[\theta(\eta_t) - \theta(\eta_{t-1})(1-\mu)] \tag{5}$$

$$X_t \geq w_t L_t + p_t^I I_t + b_c + \theta(\eta_t) - \theta(\eta_{t-1})(1-\mu) \tag{6}$$

The price P_t is a stochastic variable, where $P_t = \bar{P} + \epsilon_t$, such that $\epsilon \sim \mathcal{N}(0, \sigma_\epsilon^2)$, and is iid. Similarly η_t is also a stochastic variable such that $\eta \sim \mathcal{N}(\bar{\eta}, \sigma_\eta^2)$ and is iid. To solve the infinite horizon sequence problem described above, I formulate the Bellman equation as in 7, subject to equations 5, and 6.

$$\nu(X, k_{-1}, P, \eta) = \max_{K,L} \beta P F(K, L) - wL - p^I(K - (1-\delta)K_{-1}) + \beta \mathbf{E}[\nu(X', K, P', \eta')] \tag{7}$$

Let λ denote the multiplier on equation 6, then the first order conditions are as described in appendix 1. The first order consitions for unconstrtained firms (with $\lambda = 0$) are as follows:

$$\begin{aligned} \beta PF_L(K, L) &= w \\ \beta PF_K(K, L) &= p^I \frac{r + \delta}{1 + r} \end{aligned} \tag{8}$$

For unconstrained firms equation 6 is not binding and hence the amount of cash is irrelevant to them, whereas it binding for financially constrained firms. Hence, the first order conditions for constrained firms with μ being sufficiently close to 1 are as follows:

$$\begin{aligned} \frac{\beta PF_L(K, L)}{w} &= \frac{\beta PF_K(K, L)}{p^I} + \frac{1 - \delta}{1 + r} \\ X - \theta(\eta) &= wL + p^I(K - (1 - \delta)K_{-1}) + b_c \end{aligned} \tag{9}$$

Thus it follows from the above first order conditions that firm level investment is a function of η only for constrained firms, as these firms are operating under the constrained optimum and are bound by conditions described in equation 9.

3 Institutional Climate: Judiciary and British Rule in India

3.1 Indian Judiciary

Following the Westminster system, the Indian Constitution provides for three branches of the State - the legislature, the executive, and the judiciary. I will explain the third branch of the state, the judiciary, in this section. The Indian judiciary is based on the common law system of legal jurisdiction, and is empowered by the Constitution to act as its watchdog. Jois (2004) highlights that the current Indian judicial system is very similar to the legal system established by the British colonial power and the princely states.

The Indian judiciary comprises of various levels, with varying degree of power vested in each court based on a strict hierarchical system. At the top is the Supreme Court of India, which is the highest judicial authority in the country. Each state has a High Court, as the highest judicial power in the state. Furthermore, district and other judges preside over District Courts, and lower courts respectively. The Indian Constitution allows the judiciary to be independent of the other two branches of the government. The appointment

and transfer of Indian judges come under the purview of an independent body called the collegium. The independence of the judiciary is imbibed in the Indian constitution and crucial to eliminate any conflict of interest between the executive and the judiciary.

All cases appearing before the courts in India are divided into civil and criminal cases. Similar, to the United States, in a criminal case the accused is charged in an indictment for committing a crime. Civil cases, on the other hand, are a result of private disputes between persons and/or organizations. The civil matters are adjudicated based on First in First Out (FIFO) methodology. FIFO implies that greater the existing backlog of a given court, more time the court will take to arrive at a judgement on a new case.

The firms in India are incorporated, regulated, operated and dissolved under the Companies Act 2013. Companies Act, 2013 was introduced to replace the erstwhile Companies Act originally enacted in 1956. Under the Companies Act, if a firm enters into a dispute with another party, it can petition the court in the state in which the business is registered unless the contract specifies otherwise. Alternative mechanisms have been established to cater to firms mainly to expedite civil cases involving businesses and financial institutions. I direct readers to Phadnis and Prabhala (2015) for a detailed historical evolution of the bankruptcy reforms in India. As Phadnis and Prabhala (2015) write in their review, India's bankruptcy law has been amended about every decade in an effort to obtain time-bound enforcement, such as Debt Recovery Tribunals (DRT).[2]

These efforts have met with little success and even legally prescribed time lines for resolutions are not fulfilled. The culmination of these endeavours is India's 2016 bankruptcy law that essentially sidesteps the current legal system to create a parallel process. However, for all other matters firms need to approach the civil court system for remedial measures. Though Company Law cases are directly adjudicated in High Courts, several cases that involve businesses do not necessarily come under the purview of the Company Law. Additionally, the workload of High Courts is conditional on the workload of subordinate district courts.

3.2 British Rule in India

With over 200 years of legacy, the British rule over the Indian subcontinent began in 1757 and lasted till 1947. After the decline of the Mughal and the Maratha Empire, India was divided into several small states ruled by royal families, referred to as princely states. The

[2]DRTs are quasi-judicial bodies set up for faster dissemination of bankruptcy cases. Refer to Visaria (2009) for a more detailed discussion of the issues surrounding the setting up of the new quasi-judicial body.

East India Company started its rule in India after defeating the erstwhile Nawab of Bengal, in the Battle of Plassey, in 1757. By 1773, the Company became involved in the direct administration of the areas of present day West Bengal, Bangladesh, and Bihar, with the appointment of the first Governor-General, Warren Hastings.

The British annexed several Indian states, under two broad policies of annexation namely Subsidiary Alliance and the Doctrine of Lapse. The ring-fence period between 1765 and 1818, was the first wave of British annexation, under the leadership of Lord Wellesley, the British Governor-General of India between 1798 and 1805. Ring-fence was the period of Subsidiary Alliance. Under Subsidiary alliance British East India Company entered into a contract with the princely states, to provide the latter with the subsidiary militia for protection, in lieu of a payment. In the event of default by the Indian ruler, a part of their territory was confiscated by the Britishers. The states of Hyderabad (1798), Mysore (1799), Awadh (1801), Peshwa (1802), Bhonsle and Scindia (1803), Udaipur, Jodhpur, and Jaipur (1818) were annexed under the Subsidiary Alliance.

The second wave of British annexation, subordinate isolation, began in 1818, lasting till the Indian Mutiny of 1857. This phase was marked by the policy of Doctrine of Lapse, under the leadership of its Chief architect, Lord Dalhousie, the British Governor-General of India between 1848 and 1856. Under the Doctrine of Lapse, any subordinate princely state would automatically lapse to the British East India Company if the ruler died without a natural male heir. The states of Satara (1848), Sambalpur (1849), Baghat (1850), Jaipur of Bundelkhand (1849), Udaipur of Rajputana (1852), Jhansi (1853) and Nagpur (1854) were annexed under Doctrine of Lapse.

While the subcontinent was initially under the control of the British East India Company, a transfer of power happened from the Company to the British Crown after the Indian Mutiny of 1857.[3] The annexation policy of British colonial power underwent a significant change following the Revolt of 1857. The year of 1857 marked the end of the British annexation with the Queens proclamation of 1858, announcing the end of British annexation in India. As a result, princely states already annexed came under the Direct British rule, and the existing princely states were allowed to administer themselves. Iyer (2010) notes that the princely states constituted approximately 45% of the total geographic area of present day India, and 23% of total population in 1911. Additionally, she notes the presence of princely states across India with a high concentration in central and western India. The Foreign office

[3]It is refereed as the Government of India Act, 1858, under which the British Government nationalized the East India Company. The British monarch now had supreme authority over the India working, power and possessions of the East India Company.

recognized about 680 Indian princely states in the year 1910.

The Crown entered into a contract with princely states providing them with military assistance and necessary defense. The princely states had varying degrees of legal autonomy, ranging from first-class, wherein the state could try criminal cases to third-class states whereby only small civil cases could be adjudicated by the ruler. Although the Queens proclamation of 1858, ruled out any future annexation, the Governor-General did retain the power to interfere in the internal matters of the princely states in case of a misrule. Ashton (1982) documents an active interference by the British colonial power in the internal affairs of princely states. Lord Curzon, the Governor-General of India from 1899 to 1905 forced fifteen rulers to abdicate, during his tenure.

After the Indian Independence in 1947, the areas under Direct British rule were directly handed over to the Indian sovereign. The princely states, on the other hand, could choose to join the Indian Union or remain independent. Employing various methods, the then Prime Minister Jawahar Lal Nehru and the Home Minister Sardar Vallabhbhai Patel, integrated all princely states into the Indian Union by 1950. The rulers of princely states no longer functioned as the sovereigns but continued to play a major role in post-independence politics. Allen and Dwivedi (1984) document election of several former princes to federal and state-level political offices.

4 Data and Variables

The research draws data from three sources. The Prowess database maintained by the Centre for Monitoring Indian Economy (CMIE) is the primary data source employed in the study. Prowess is a repository of about 27,000 Indian firms with a total book value of assets between INR 0.1 million ($\approx$ USD 1,540) and INR 3.1 trillion ($\approx$ USD 477,400). Similar to Compustat database in the US, Prowess sources its data from publically available annual reports and other disclosures by the firm. Previous studies (Visaria (2009); Lilienfeld-Toal et al. (2012); Vig (2013); Gopalan et al. (2016)) have used this data source to examine the effect of an increase in contract enforcement on firm outcomes and banking relationship.

I use the Prowess database to extract information on profit and loss, and balance sheet variables for listed manufacturing firms for the period 2001 to 2015 with the book value of assets greater than INR 1 million ($\approx$ USD 15,400). Also, I extract data on daily stock market capitalization. I use the stock market capitalization as on the last accounting date of the firm financials. In the case of non-availability of stock price data on the last accounting date, I

use the stock market data as on the closest date before last accounting date for which stock market information is available. Furthermore, I extract data on banking relationship for each firm-year between 2001 and 2015. I identify the number of state-owned banks, private banks and foreign banks the firm is in a relationship each year as in Bhue et al. (2015). The Companies Act, 1956 states that High Court and district courts under the concerned High Court situated in the state of the registered office of the company have jurisdiction over the firm. Hence, it is reasonable to assume that it is the judicial efficiency in the state where the company is registered that matters. I extract firm-level identity information from Prowess; I match each firm to a state where the company is registered. This information is present in the first two digits of the Registrar of Companies (ROC) registration code.

My second data source is the Database on Indian Economy (DBIE) maintained by the Reserve Bank of India. DBIE provides state-level information on key financial, and banking variables. I extract state-level information on real GDP per capita, nominal GDP, nominal government expenditure and nominal credit extended by banks. Furthermore, I retrieve information on the number of civil cases pending in each state at the start of the year and the number of civil matters cleared during a year, from the States of India (SoI) database maintained by the CMIE.

The judicial dataset in SoI comes from NCRBs Annual Crime in India. It records state-level data on the number of total cases pending at the start of the year, and the number of cases cleared in a particular year. I define judicial inefficiency or Duration as the ratio of total cases pending at the start of the year to the number of cases cleared in that year. This ratio is a state-specific forward-looking measure of court inefficiency. Simply put, this ratio indicates the number of years the courts in a state would take to complete 100% of their backlog conditional on constant operational efficiency. This ratio is different from the indicator of legal capability used in the prior literature (Visaria (2009); Lilienfeld-Toal et al. (2012); Vig (2013); Gopalan et al. (2016)). All these studies use an improvement in de-facto law as an indicator of contract enforcement, whereas my measure gauges the de-jure law given the de-facto law. Chemin (2010) constructs a similar measure of judicial efficiency. Köhling (2002) shows that judicial efficiency is indispensable for economic development. Using state level data between 1971 and 1996, he finds trial duration to be an important indicator of judicial efficiency, which affects economic development.

The data reported in table 1 shows that Indian district courts on average will take 6.4 years to complete their backlog. However, there is a significant degree of heterogeneity among states. The least average time required to clear all backlog is of 1.7 years in Tamil Nadu,

whereas the district courts in West Bengal will take an average of 16.7 years to complete their entire backlog.

I merge the state level dataset with the firm dataset using firm headquarter location and financial year as the key. The dataset thus formed comprises of 29,378 firm-year observations between 2001 and 2015. Next, I construct an important indicator of firms financial constraint, KZ Index as defined in the appendix 2. Due to missing information, KZ Index could be created for only 18,531 firm-year observations.

In table 2, I present median, mean and standard deviations of the variables used in the analysis. I note a significant dispersion in all important variables. The average natural logarithm of capital expenditure for all firms is 3.5, with a standard deviation of 2.6. The average size of the firm measured as the natural logarithm of the book value of total assets is 7.4, with a standard deviation of 1.8. On average 63% of the firm assets in my sample are tangible assets. The average sales growth for sample firms is 7.4%, and the median is 10.5%. Firm profitability measured as EBITDA/Assets, has an average value of 12%, with a standard deviation of 11%.

5 Estimation Strategy

I examine the effect of de-facto law implementation by comparing the capital expenditure levels of financially constrained firms, and financially unconstrained firms in regions with varying judicial efficiency. I construct a measure of financial constraint for each firm-year as in Kaplan and Zingales (1997) (henceforth, KZ Index). I define a firm to be financially constrained if the value of KZ Index for the firm is above the median value of KZ Index of the industry-year to which the firm belongs, else I code the firm-year as financially unconstrained. I define a region to have a high degree of judicial inefficiency if the value of duration in the state is greater than the median value of duration in that year. The firms are thus classified as either financially constrained or not, and further based on location if they are located in judicial efficient or inefficient regions.

Table 3 compares the key financial metrics of firms in the two-by-two set up described above. Prima facie evidence suggests that financially constrained firms located in judicially inefficient regions have lower investment level as against financially constrained firms in regions with high judicial efficiency. Financially constrained firms in regions with high judicial inefficiency have marginally smaller size as against their peers in judicially efficient regions, with similar levels of profitability, firm age, sales growth and Tobin's Q. The key financial

metrics including capital expenditure for financially unconstrained firms reported in Panel B have similar values. It is to be noted that debt ratio is higher for both financially constrained and unconstrained firms located in regions of high judicial efficiency.

Figure 1 shows the bin scatter plot for capital expenditure against duration. Firstly, the figure shows that financially constrained firms have lower investment level as against financially unconstrained firms. The curve for capital expenditure against duration for financially unconstrained firms is relatively flat, whereas the same curve for financially constrained firms in downward sloping. Table 2 and Figure 1 taken together validate the key point that duration is negatively related to capital expenditure only for the financially constrained firm.

Next, I move to a multivariate setup. To evaluate the effect of judicial efficiency, I estimate the following regression specification using firm-level data:

$$\begin{aligned} LN(1+CapEx)_{it} = \beta_1(Constrained_{it} * Judicially - Inefficient_{st}) + \beta_2 Constrained_{it} \\ + \beta_3 Judicially - Inefficient_{st} + X_{it} + Z_{st} + \alpha_i + \theta_{jt} + \epsilon_{it} \end{aligned} \tag{10}$$

where i indexes for firms, t for time, and s for state in which the firm operates; $LN(1+CapEx)_{it}$ is the dependent variable of interest; α_i and θ_{jt} refer to time-invariant firm fixed effects and time-varying industry fixed effects. Firm fixed effects control for firm-specific unobserved heterogeneity. Time-varying industry fixed effects control for changes in investment opportunities across industries in the manufacturing sector over time. $Constrained_{it}$ is a dummy variable taking a value of 1 if the firm is financially constrained, and zero otherwise. $Judicially - Inefficient_{st}$ is a dummy variable taking a value of 1 if the firm is located in a judicially inefficient region, and zero otherwise. X_{it} and Z_{st} denote firm (e.g., size, age, asset tangibility, profitability, leverage, interest coverage, sales growth, and Tobins Q) and state (e.g., per capita GSDP, Credit to GSDP, and government expenditure to GSDP) specific control variables. ϵ_{it} is the error term. The variable of interest β_1, is the interaction term of constrained and judicially inefficient.

6 Results

In Table 4, I report the results of the baseline regression following equation 10. We divide firms into buckets of financially constrained and unconstrained based on KZ Index, and as located in judicial inefficient and efficient regions based on the measure of duration. Columns (1) and (2) report the point estimate of the coefficient of interest. Financially constrained firms located in judicially inefficient regions exhibit a 22% lower investment growth. This

estimate is both economically, and statistically significant. In columns (3) and (4), I control for firm-specific factors, and in columns (5) and (6), I control for state-specific variables. The point estimate of β_1 in all specifications is negative, and statistically and economically significant. My most conservative estimate indicates that financially constrained firms in judicially inefficient regions exhibit 18% lower investment growth.

Furthermore, I run quantile regression to verify my baseline results. The reason for running quantile regression is two-fold. Firstly, as in Koenker and Hallock (2001), I am interested in identifying a non-linear relationship between judicial inefficiency and capital expenditure. Secondly, it is likely that the overall mean results are driven by a specific set of observations. If the coefficient of interest across all quantiles is qualitatively similar to the mean value, I can rule out the possibility of my results being driven by a set of observations. Furthermore, I run quantile regression separately for the sample of constrained and unconstrained firms. The coefficient of interest in this regression is the point estimate of Judicially Inefficient in both the samples. The results for the quantile regression are reported in Table 5. Columns (1)-(5) report results for the different quantile for the sample of financially constrained firms, and columns (6)-(10) report for the sample of financially unconstrained firms. The coefficient of judicially inefficient for the sample of unconstrained firms in both small in magnitude and statistically insignificant. However, the point estimate for the same coefficient for financially constrained firms is both large, and statistically significant. Financially constrained firms at the 25th percentile of capital expenditure exhibit 32% lower growth in capital expenditure, 36% for financially constrained firms at the 50th percentile, and 24% for financially constrained firms at 75th and 90th percentile. Similar to baseline specification, I control for firm and state-specific factors. Additionally, I control for industry, state and year fixed effects.

6.1 Self Selection Bias in Firms

An obvious critique of my results is the self-selection of firms. It is likely to be the case that firms with higher capital expenditure appetite get registered in states with better judicial efficiency, and are less financially constrained. To rule out the first reason for self-selection, I compare the capital expenditure of all firms located in regions with high and low judicial efficiency. Figure 2a compares the cumulative distribution function (CDF) of the natural logarithm of capital expenditure of firms located in states with efficient and inefficient judiciary. There seems to be no difference in the capital expenditure of firms located in the two regions. Next, I compare the KZ Index of firms located in the two regions to identify if firms

located in states with high judicial inefficiency are more financially constrained. Figure 2b reports the CDF of KZ Index for the two regions. If firms in judicially efficient states are less constrained, the KZ Index for these firms must show first order stochastic dominance over the KZ Index CDF of firms located in states with low judicial efficiency. Moreover, the spatial distribution of firms do not show any clustering of firms in regions with high judicial efficiency (refer, figure 3). This observation is consistent with Chakraborty (2016), wherein he finds industries within the manufacturing sector to be spread across various states.

To further rule out the issue of self-selection I run a two-stage Average Treatment Effect (ATE). I generate the conditional probability of assignment of a firm to a judicially inefficient state given firm characteristics as in Everitt and Skrondal (2010) in the first stage. In the second stage I estimate the ATE of judicial quality on the capital expenditure of financially constrained firms by weighing with the inverse of probability computed in the first stage (Guo and Fraser (2014)). The results for the weighted least square regression estimating ATE are reported in Table 6. The point estimate of Constrained*Treatment is negative and statistically significant in columns (1)-(3). The results from Table 5 suggest that financially constrained firms in regions with high judicial inefficiency have 33% lower capital expenditure growth.

6.2 Establishing Causal Linkage

The above results do not necessarily reflect a causal link between judicial efficiency and firm-level outcome, as the results are likely to be affected by omitted variable bias. To address the issue of omitted variables, I exploit a quasi-experiment in India that involves improvement in judicial efficiency.

6.2.1 National Policy and Action Plan for Implementation of Information and Communications Technology (ICT) in the Indian Judiciary

Despite some attempts of computerization of Indian judiciary in 1990, the Indian judicial system was largely manual. Given this lack of technology penetration in the Indian judicial system, a need was felt to adopt the available ICT. The objective of this initiative was to bring about the changes in the existing management practices by re-engineering the judicial processes to enhance the judicial productivity. (Supreme Court E-committee Report, 2005). To achieve this objective an E-committee was set up by the Ministry of Law and Justice under the chairmanship of Dr Justice G.C. Bharuka (henceforth, Bharuka Committee (2004)), a retired judge of the High Court of the state of Karnataka. The report was accepted by

the Chief Justice of the Supreme Court of India, Chief Justices of all the High Courts, Bar Council of India, and all concerned ministries of the Government of India in 2005, and implemented across India in December of 2005. Bharuka Committee found that the earlier waves of computerization of judiciary were not clearly perceived or appreciated by the policy makers in the judiciary. The Committee observed that the earlier waves had no real effect on the judicial speed. As a result, advanced ICT infrastructure was created in Phase 1 of the implementation of the Bharuka Committee suggestions. Moreover, to increase the real usage of the ICT infrastructure, the Chief Justices of the High Court were personally and closely involved with the details of the project, with active training for the court staff, technicians, nodal agencies and the vendors.

The involvement of the staff in the project was not a mere suggestion but a mandate. At the local level, a central project coordinator of the rank of District Judge was appointed to co-ordinate the implementation of the various modules of the project. Also, a supervision committee was designated to monitor the implementation of the project at the district level. Furthermore, qualified teams were created to oversee the project implantation at the sub-division (taluka/tehsil). The ICT infrastructure included not a mere introduction of computers in courts, but also up gradation with additional servers, power infrastructure, data cabling, and maintenance of a centralized database, library system, video-conferencing, and installation of biometrics system to prevent identity frauds. The Bharuka Committee noted that the existing application generation softwares were not based on scientific analysis, but on the whims and fancies of the developer making the entire process more mystifying. As a result, a homogeneous application generation system based on rigorous analysis of the law was introduced across the courts of India. Special provisions were made for post-operational maintenance. A total of INR 935 crore (approx. $145 million) has been spent on the project by March 2014. The 2006 computerization wave is by far the biggest technology adoption movement in the history of Indian judiciary. The Phase-II of this initiative was approved by the E-Committee of the Supreme Court of India in January 2014 as a successor to the 2006 wave.

Though the ICT adoption was phased and was implemented over time, it was evident after the Law Ministers Conference at Simla in June of 2005, that a nation-wide adoption of ICT in the judicial processes was imminent. A simple Google trend search reveals a growing interest in e-courts after January of 2007.[4] The adoption of ICT by Indian judiciary was

[4]Based on data accessed on 5 July, 2017 on google Trends platform. The search word used was e-courts. The search was confined to India for the period starting Jan 1, 2004.

widely publicized and praised by the Indian media, and garnered a positive expectation regarding the future judicial efficiency, from the Indian corporates.[5]

6.2.2 Technology Adoption and Improvement in Judicial Efficiency

Katz et al. (1963) describe the process of diffusion and adoption of technology as an essential ingredient of technical, and social change. Growth literature suggests that productivity growth is achieved through generation, and adoption of new technology (Romer (1990); Aghion and Howitt (1992)). Barney (2001a) and Barney (2001b) finds that organizational resources are critical to understanding its performance and competitiveness. Using data on small businesses, Black and Lynch (2001) find a positive effect of workplace practices and adoption of information technology on productivity. The introduction of new technology and management practices results in improvement in productivity (Bloom et al. (2013); Cole and Fernando (2014)). Using data from member states of the European Union between 2006 and 2010, Lorenzani et al. (2014) find a positive impact of ICT adoption by courts on efficiency of civil courts. A recent OECD report (2013) found investment in the computerization of courts to be associated with shorter trial length and higher productivity of civil court judges.

6.2.3 Identification Strategy

In this section, I examine the effect of improvement in judicial productivity. As mentioned above the e-committee report was accepted in 2006, and was set to be implemented across all High Courts and District Courts in India. Because the ICT adoption happened at the country level and was applied to all firms simultaneously, I code the years after 2006 as the post-reform period. As shown earlier judicial inefficiency impact only the financial constraint firms, I code financially constrained firms as my treatment group whereas financially unconstrained firms are taken as the control group.

I begin by reporting the results from a simple pre and post analysis by taking simple time averages before and after the reform. This ensures that the standard errors are robust to the Bertrand, Duflo, and Mullainathan (2004) critique. The results are reported in table 7. It can be seen that the capital expenditure grew by 65.3% after the reform. The capital expenditure of the financially constrained firms grew by 54.6% and that of financially unconstrained firms by 75.2% on average. It is to be noted that these are unconditional differences. Furthermore, I compare the cumulative distribution function (cdf) of capital expenditure before and after

[5]Mr. C. P. Gurnani, CEO of Tech Mahindra went on record to say that with ICT, India's 300 year case backlog can be reduced to three years, in a span of only three years.

the ICT reform. As is clearly evident from figure 4a the post-reform cdf of capital expenditure first order stochastically dominates the pre-reform cdf. Figure 4b and 4c compare the pre and post-reform capital expenditure cdfs for financially constrained and unconstrained firms. Similar to figure 4a they too report similar results and echo the findings of table 7. To evaluate the effect of ICT adoption in the judiciary, I estimate the following regression specification at the firm-level:

$$LN(1 + CapEx)_{it} = \beta_1 Post_t + X_{it} + Z_{st} + \alpha_i + \theta_s * t + \epsilon_{it} \tag{11}$$

where, i indexes for firms, t for time, and s for state in which the firm operates; $LN(1 + CapEx)_{it}$ is the dependent variable of interest; α_i and $\theta_s * t$ refers to firm fixed effects and state-specific trend respectively. Firm fixed effects control for firm-specific unobserved heterogeneity. This regression is estimated separately for financially constrained and unconstrained firms. X_{it} and Z_{st} denote firm (e.g., size, asset tangibility, profitability, etc.) and state (e.g., per capita GSDP, Credit to GSDP, etc.) specific control variables respectively. ϵ_{it} is the error term. I expect the coefficient of interest β_1 to be positive and statistically significant for financially constrained firms.

To evaluate the effect of ICT adoption, I take data for three years before and after the implementation of ICT. The results are reported in table 8. Column (1)-(3) report the results for financially constrained firms, and columns (4)-(6) report the results for financially unconstrained firms. As expected the coefficient for Post is positive and statistically significant only for financially constrained firms. The coefficient of Post for financially unconstrained firms is significant only in column (4) and disappears when firm and state specific controls are added to the model. Financially constrained firms show a 23% higher growth in capital expenditure post ICT adoption by courts. An interesting observation in Table 6 Panel B is that the reforms do not affect the financially unconstrained firms. As shown earlier, the state of judicial efficiency is irrelevant for financially unconstrained firms. Such firms are therefore operating at optimal investment levels, and do not benefit from the judicial reforms.

The results reported in table 8 can be interpreted as causal conditional on the existence of a parallel trend between financially constrained and unconstrained firms before ICT adoption. To test the assumption of parallel trend, I run specification 11 and report the results in a graphical format in figure 5. The plots for the treatment and the control group are parallel before the year 2006, and I observe a structural rise in the investment level for financially constrained firms after 2006, but no such structural change is observed for financially unconstrained firms.

Furthermore, I explore if the advantage of technology adoption in Indian judiciary accrue primarily to financially constrained firms in judicially inefficient regions. The results reported in table 9 suggest that maximum increase in investment post 2006 occurs for financially constrained firms in judicially inefficient regions. On a conservative note financially unconstrained firms located in judicially inefficient regions exhibit a 30% growth in investment post ICT adoption. The point estimate is significant at 10% while controlling for firm specific and state specific controls, firm fixed effects and state specific controls.

6.3 Cross-sectional tests

In this section, I devise an exogenous measure for financing constraint. I restrict my sample to the period of the global financial crisis (2008-2010[6]) and use single banking relationships with foreign and private banks during this period as a proxy for being financially constraint. The foreign and private banks suffered an exogenous supply shock during the global financial crisis (hereafter, GFC). There was a flight to safety from foreign and private banks to state-owned banks (Acharya and Kulkarni (2012)), i.e., the depositors withdrew their money from private and foreign banks while depositing in state owned banks. Eichengreen and Gupta (2013) report a 30% increase in deposit growth at SBI and associates, and 25% at other state-owned banks during 2008. The foreign banks and private banks, on the other hand, had a deposit growth rate of only 9% and 12% respectively during the same period.[7] Hence, firms in single banking relationship with these banks faced an exogenous credit supply shock, similar to what Mian (2003) discusses.

I report the results in table 10. The key variable of interest is the interaction term of private banker and foreign banker with judicial inefficiency. The coefficient of the two interaction terms is relative to the firms in a relationship with state-owned banks. The magnitude of the interaction terms is negative and statistically significant, echoing the baseline results. The results indicate that firms in single banking relationship with foreign and private banks experience a 34% and 25% lower growth as compared to firms in a relationship with state-owned banks.

[6]This period is taken based on Eichengreen and Gupta (2013) definition of the crisis in the Indian banking industry.
[7]The average deposit growth rate for SBI Associates and Other state owned banks during 2004-07 was 13% and 19% respectively. While that for private banks and foreign banks was 28% and 22% during the same period.

6.4 Long-Term Effects of Direct British Rule

Next, I move to enquiring about the long-term effects of the British Rule. I exploit the fact that some of the firms are located in districts which were under direct British rule and others in areas with indirect British rule during the colonial period. Iyer (2010) discusses this approach. The Governor-General of India, Lord Dalhousie, implemented the policy of Doctrine of Lapse under which he annexed several regions where the incumbent monarch died without a natural heir. I exploit the death of the incumbent ruler as an identifying assumption, as it is likely to be a matter of chance and unrelated with post-colonial outcomes.

The long-term effects of differences between direct and indirect British rule originate from the fact that the rulers of princely states with indirect British rule were under constant threat of being annexed in the case of a misrule. *"Annexation on Misrule"* was a grandfather clause that left a sword hanging on the neck of the rulers of princely states to provide better governance and institutions. Secondly, princely states had between four to five rulers during 1858-1947, whereas the states under direct British rule were governed by 24 Governor-Generals during the same period (Iyer (2010)). The longer tenure of native rulers resulted in them having higher incentives in engaging in long-term investment. The data shows that average trial duration in regions with direct British rule is 10.2 years as against an average of 6.5 years in princely states.

I hypothesize that direct British rule affected early institutions, and early institutions persisted and formed the basis of current institutions. The first institutions created under the colonial rule are likely to persist as setting up institutions that restrict the power of post-colonial ruling elites is costly. If the costs of building these institutions have been sunk by the colonial powers, then it may not pay the elites at independence to switch to extractive institutions. However, when the new elites inherit an extractive institutional environment, they may not invest in improving the institutional climate, as extractive institutions are extremely beneficial to them (Acemoglu and Verdier (1998); Acemoglu et al. (2001); Acemoglu and Robinson (2005)). To test the theory of institutional persistence and its effect on the institutional climate, I estimate the following regression specification at the firm-level:

$$LN(1 + CapEx)_{it} = \beta_1 Direct - British - Rule_j + X_{it} + Z_{st} + \alpha_i + \theta_s * t + \epsilon_{it} \qquad (12)$$

where, i indexes for firms, t for time, j for district of firm location and s for state in which the firm operates; $LN(1 + CapEx)_{it}$ is the dependent variable of interest; α_{jt} and α_{st} refer to time-varying industry and state fixed effects respectively. This regression is estimated

separately for financially constrained and unconstrained firms. X_{it} and Z_{st} denote firm (e.g., size, asset tangibility, profitability, etc.) and state (e.g., per capita GSDP, Credit to GSDP, etc.) specific control variables respectively. ϵ_{it} is the error term. The coefficient of interest β_1, is expected to be negative and statistically significant for financially constrained firms. Gallup et al. (1999), and Hall and Jones (1999) document a positive association between distance from the equator and economic performance of regions. Hence, I also control for the latitude and longitude of the firm location.

The results for specification 12 are reported in table 11. Column (1)-(2) report the results for financially unconstrained firms, whereas column (3)-(4) report the results for financially unconstrained firms. In addition to firm and state specific variable, I also control for the latitude and longitude of the firm location. I find that financially constrained firms operating in regions that were historically under Direct British rule have 19% lower capital expenditure growth as compared to firms operating in princely states. This measure is both economically and statistically significant. The point estimate of British province for financially unconstrained firms is small and statistically insignificant.

Next, I re-estimate the specification 12 year by year in the spirit of Fama and MacBeth (1973) after dropping the year dummies, θ_t. I do this as I expect the presence of a time effect, i.e., observations to be correlated on different firms in the same year. If my proposed long-term persistence hypothesis is true this is likely to happen as investment by multiple firms in the same district will be correlated with each other in the same year itself. I average the annual coefficients to arrive at the Fama-Macbeth model. Heteroscedasticity and autocorrelation consistent Newey and West (1987) standard error estimates, adjusted to two lags are reported. The results are reported in table 12. Column (1)-(3) report results for financially constrained firms whereas column (4)-(6) report results for financially unconstrained firms. The point estimate for financially constrained firms is statistically significant and close to the ones reported in table 11. Similar, to table 11, the point estimates for financially unconstrained firms are small and statistically insignificant.

Despite, high correlation between trial duration and direct British rule, it can be argued that my results are driven by the bad performance of few areas under direct British rule that were under the Zamindari land tenure system. Segregating districts under direct British rule by land tenure systems, Banerjee and Iyer (2005) find significantly lower agricultural investments and productivity in areas where the property rights in land were given to the landlords as against areas where land rights resided with the cultivators. It is very likely that my results are driven by the weak institutional climate specific to the landlord tenure

system and not the direct British rule per se.

To discard this counter-argument, I re-run specification 12 only for firms located in regions with direct British rule. Here, I use landlord dummy. This takes a value of 1 if the region was under the landlord tenure system and zero otherwise. To accept the counter argument, the coefficient for the landlord dummy must be statistically significant for both financially constrained and unconstrained firms. The tables are reported in table 13. As expected the coefficient for the landlord dummy is statistically insignificant. Hence, I argue that historical institutions under direct British rule and princely states, shape current institutional climate. This, in turn, affects the capital expenditure by financially constrained firms.

6.5 Falsification Tests and Robustness

As a falsification test, I randomly allocate firms to judicially efficient and inefficient regions. I re-run specification 10 with the new randomly generated judicial efficiency binary variable (reported in table 14), and randomly generating both KZ Constraint and the judicial efficiency binary variable (reported in table 15). In this test, the interaction term of constrained and judicially efficient has no meaning as I randomly distribute firms across judicially efficient and inefficient states. As expected the interaction term is both statistically and economically insignificant. Thus, the falsification test by randomly allocating firms into judicially inefficient and efficient states provides additional support for my hypothesis, and the results presented in the paper are not spurious.

Next, I randomly assume another year (prior to the actual reform) to be the year of the introduction of the ICT reform and use the data three years before and after the randomly assigned year. I replicate table 8 using the new sample and the randomly assigned ICT reform date. Given, that the term Post here has no meaning, I expect the coefficient to be insignificant. The results are reported in table 16, and as expected the coefficient of Post is statistically insignificant. Thus, the falsification test by randomly ICT reform year provides additional support for my hypothesis, and the results presented in the paper are not spurious.

7 Conclusion

I provide empirical evidence showing the impact of judicial efficiency on corporate investment. Specifically, I show an asymmetric effect of judicial efficiency on corporate investment, based on the level of financial constraint the firm faces. To identify this impact I exploit

the introduction of ICT in Indian Judiciary, variation in judicial efficiency across Indian states, and the historical ruling system prevalent across Indian districts. Moreover, I use the single banking relationship with foreign and private banks as an exogenous measure of firm financial constraint. Supporting the predictions from the theoretical model presented, all results suggest a negative relationship between investment and judicial efficiency for financially constrained firms.

Furthermore, I present results on long-term persistence effects of historical institutions on corporate investment. I use direct British rule in the 19th century as an instrument for current institutional quality. The princely states of India under indirect British rule were better governed as they were under constant threat of being deposed if misruled. Exploiting the difference in governance between districts under direct British rule and princely state, I find that financially constrained firms located in districts with direct British rule have lower investment level.

The paper contributes to the literature on law and finance; the importance of institutions for economic development; the literature on misallocation of factors of production across firms due to the presence of frictions; the literature studying the impact of historical circumstances on modern institutions and current firm-level outcomes; and on the literature on the relationship between technology adoption and growth.

Additionally, I also contribute to the ongoing debate on the importance of ease of doing business in India. India has recently embarked on an ease of doing business at the state-level, akin to the World Bank Doing Business indicators. Based on a 98-point action plan, simplifying regulatory burdens on business is a key component. One important ingredient of the process is enforcing contracts (Area 8). My work informs policy makers on the importance of Area 8 and its differential impact on specific firm-types. Finally, I show that an efficient judiciary is a necessary condition for the successful implementation of new reforms and hence inform the policy makers on sequencing of crucial economic reforms.

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Figure 1: Capital Expenditure, Judicial Efficiency and Financing Constraint

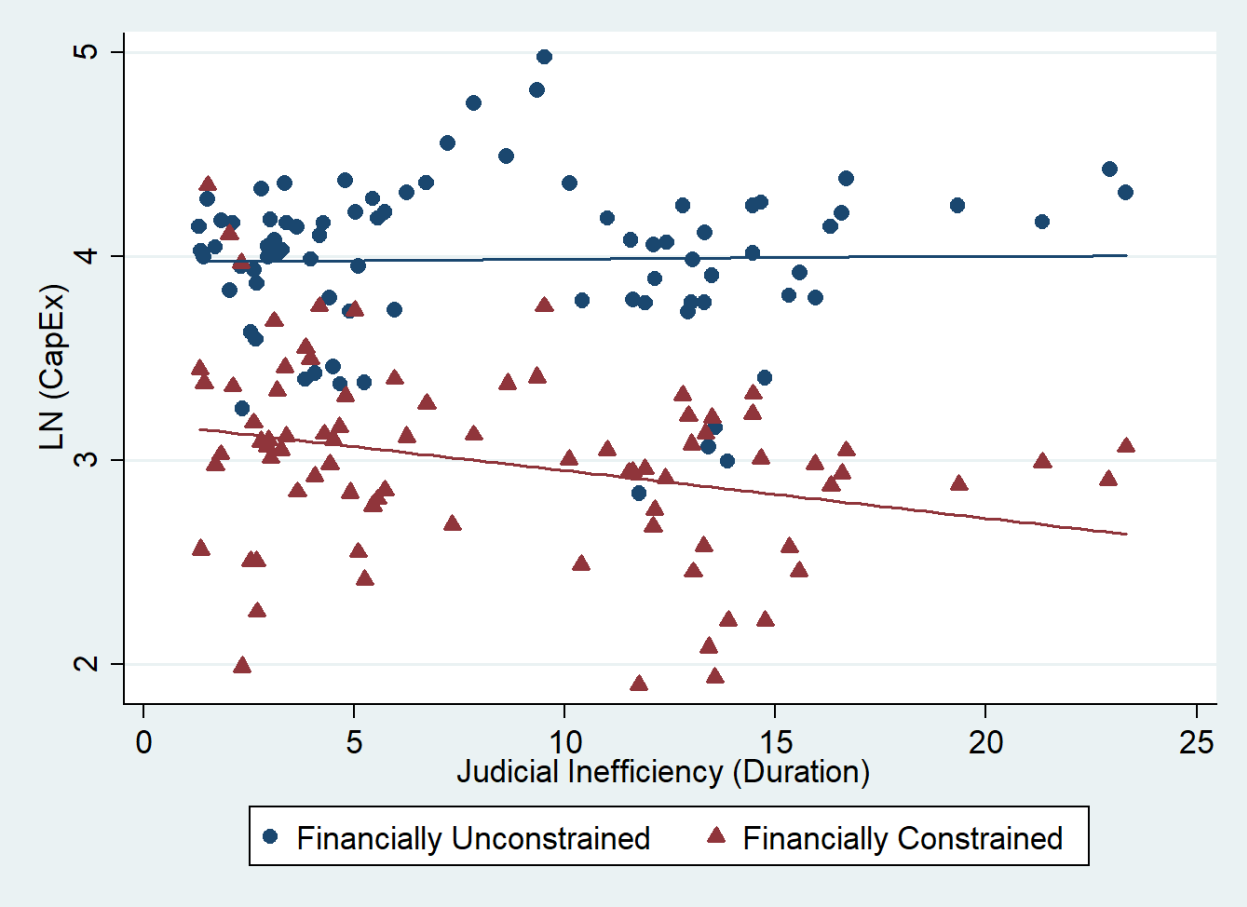
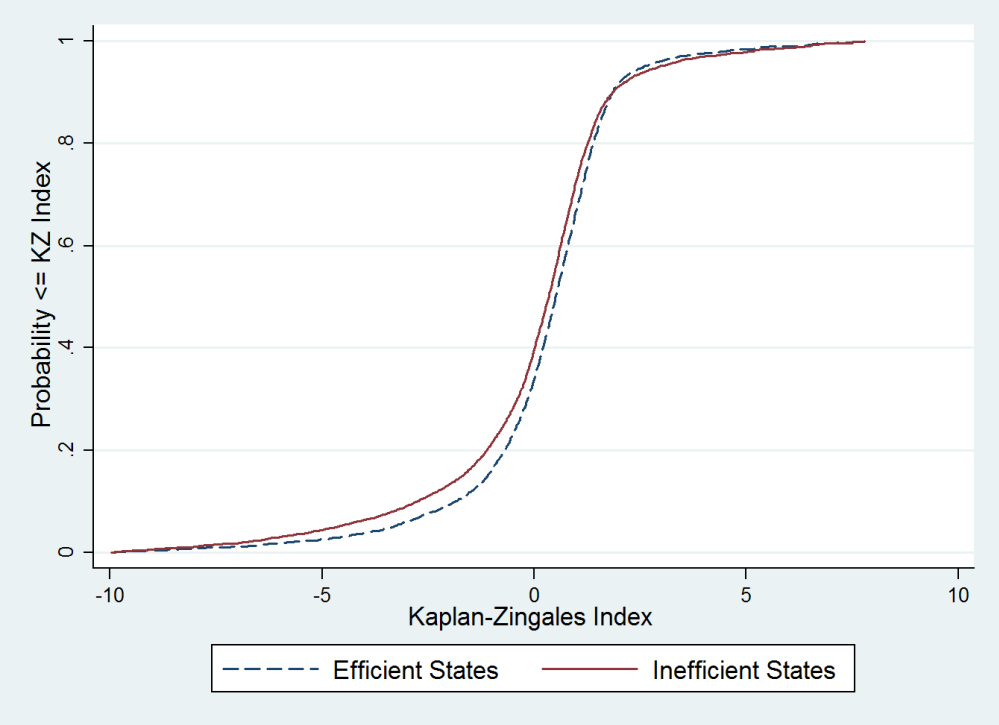


Figure 2

(a) Are financially constrained firms concentrated in judicially inefficient regions?



(b) Do firms invest more in judicially efficient regions?

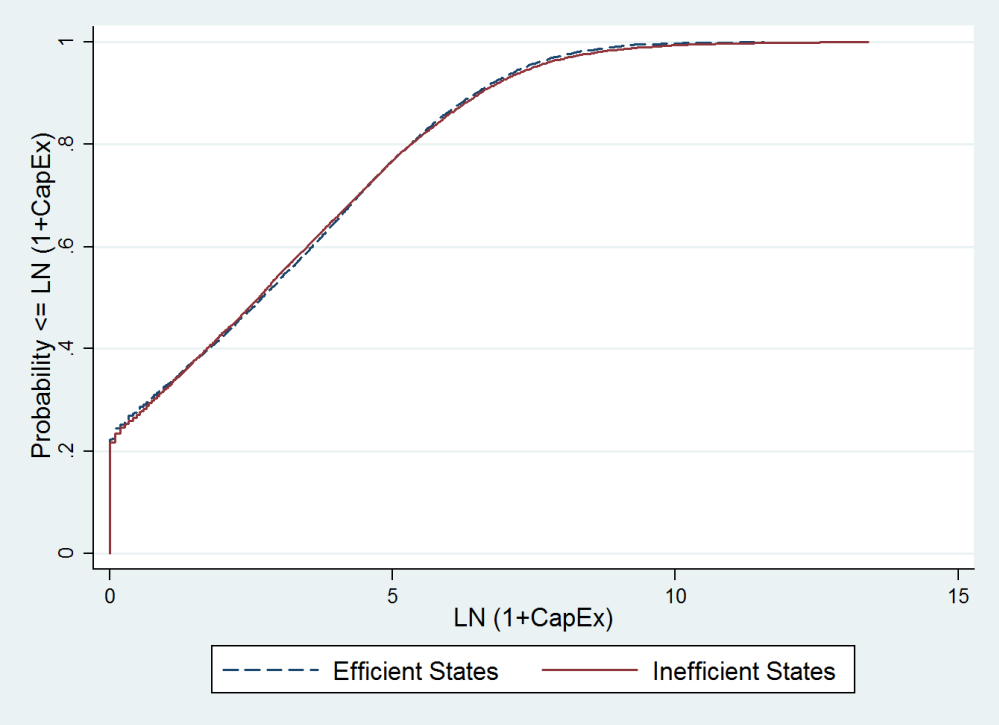


Figure 3: Location of sample firms across states of India. The color of Indian states indicate the average value of duration in the states between 2002 and 2015. The black dots denote the location of firm headquarters. The map has been developed using open source software and used only for presentation purposes. The actual geographical boundaries are not confirmed.

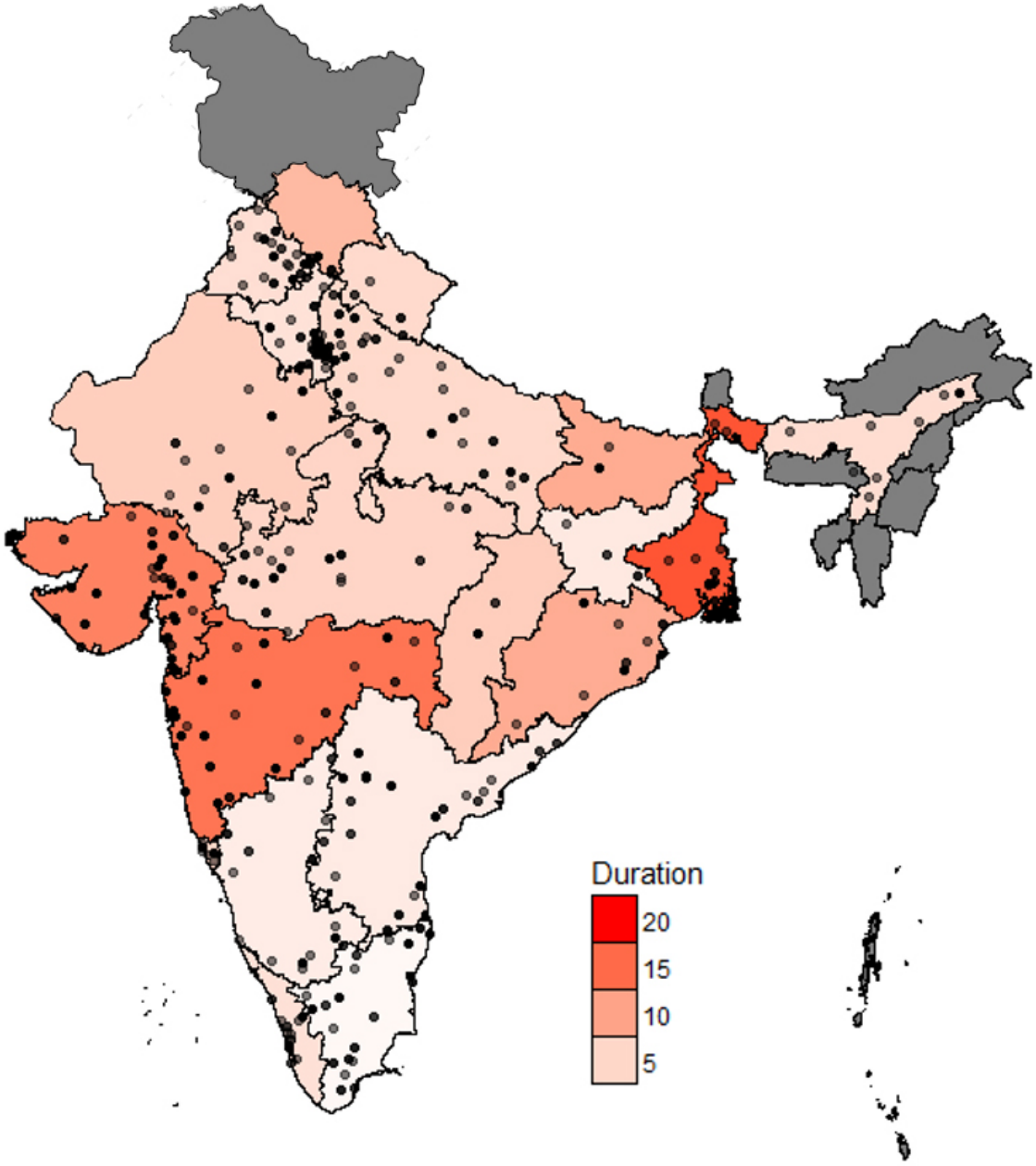
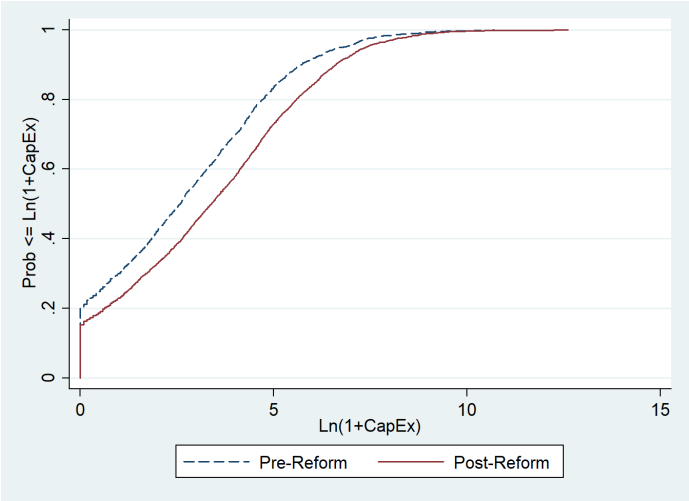
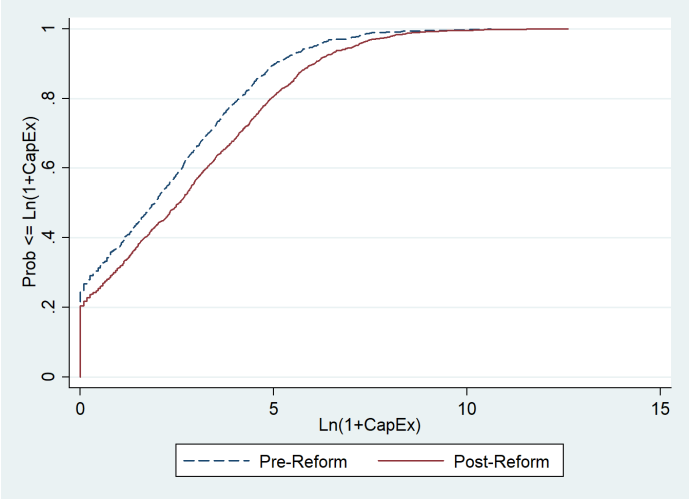


Figure 4

(a) All Firms



(b) Financially Constrained Firms



(c) Financially Unconstrained Firms

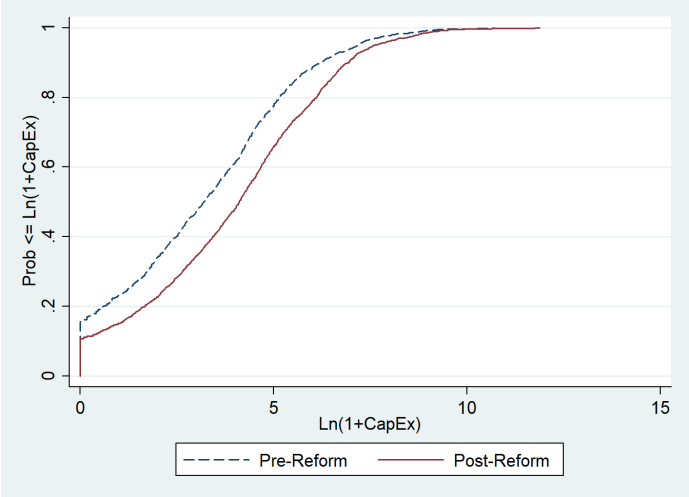


Figure 5: Capital Expenditure, Financing Constraint and Improvement in Judiciary

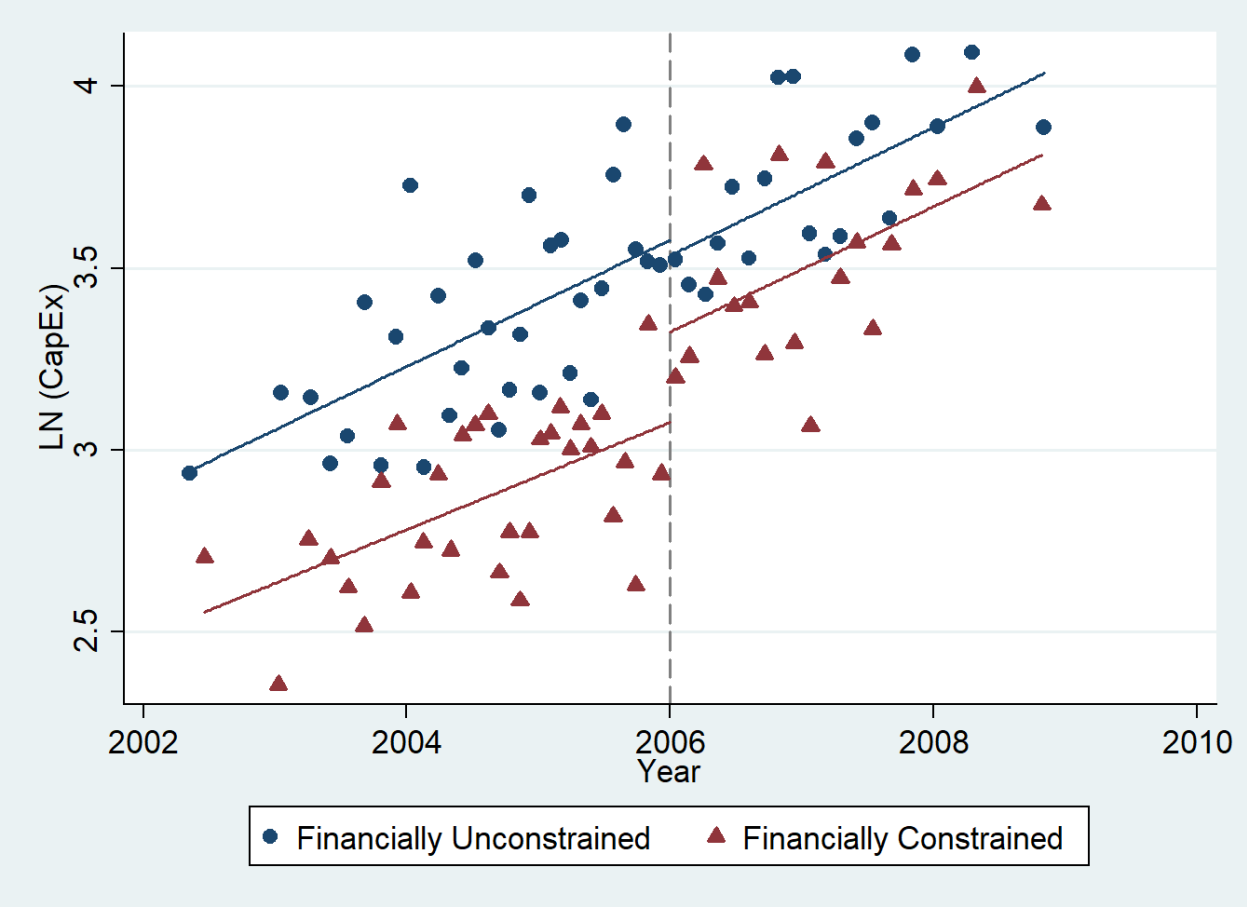


Table 1: State-wise description of duration (in years)

State	p25	p50	p75	Mean
Andhra Pradesh	2.598	2.956	3.188	3.067
Assam	3.625	4.443	5.052	4.385
Bihar	8.165	9.118	9.746	9.226
Chandigarh	2.996	3.742	4.239	3.788
Chhattisgarh	4.953	5.910	6.559	5.873
Dadra & Nagar Ha	7.302	11.640	15.886	12.536
Daman & Diu	3.667	4.739	5.745	4.876
Goa	4.423	5.615	6.237	5.227
Gujarat	11.907	12.973	13.571	12.948
Haryana	3.357	3.936	4.192	3.848
Himachal Pradesh	6.086	7.550	10.229	7.861
Jharkhand	2.463	2.926	3.821	3.198
Karnataka	2.634	2.710	3.117	2.854
Kerala	3.679	3.933	4.245	3.968
Madhya Pradesh	4.689	5.110	5.280	5.145
Maharashtra	12.810	13.936	15.345	14.144
NCT of Delhi	5.456	7.350	9.406	7.309
Odisha	7.728	9.315	9.756	9.140
Puducherry	1.233	1.419	3.254	2.387
Punjab	3.886	4.234	4.707	4.268
Rajasthan	5.162	5.870	6.178	5.771
Tamil Nadu	1.411	1.597	2.049	1.702
Uttar Pradesh	4.309	4.840	5.071	4.735
Uttarakhand	3.910	4.743	5.148	4.701
West Bengal	12.349	16.376	21.086	16.657
Total	3.588	4.943	7.913	6.405

The table reports the state-wise p25, median, p75 and mean value of trial duration for the period between 2002 and 2015. The measure is winsorized at 5% on both the ends. Duration is as defined in Appendix 2.

Table 2: Descriptive Statistics

	# Obs	Median	Mean	St Dev
LN (1+CapEx)	18,506	3.509	3.498	2.558
Size	18,531	7.369	7.441	1.817
LN(Age)	18,531	3.258	3.307	0.540
Debt Ratio	18,530	0.472	0.559	1.141
ICR	17,586	2.836	34.161	152.453
RoA	18,531	0.115	0.120	0.111
Asset Tangibility	18,531	0.561	0.630	0.430
g(Sales)	18,531	0.105	0.074	0.510
Tobin's Q	18,184	0.728	1.038	1.022

This table reports the summary statistics (number of observations, median, mean and standard deviation) for the variables in the analysis. All variables are defined in Appendix 2. The sample period is 2002 to 2015, comprising of all listed manufacturing firms.

Table 3: Comparison of Key metrics

Panel A: Financially Constrained Firms						
	High Judicial Ineffecicncy			Low Judicial Ineffecicncy		
	# Obs	Median	Mean	# Obs	Median	Mean
LN (1+CapEx)	5,602	2.621	2.863	3,331	3.082	3.159
Size	5,614	7.018	7.109	3,331	7.285	7.290
LN(Age)	5,614	3.219	3.277	3,331	3.219	3.239
Debt Ratio	5,614	0.619	0.789	3,331	0.654	0.839
ICR	5,361	1.745	8.924	3,178	1.606	8.149
RoA	5,614	0.095	0.093	3,331	0.096	0.094
Asset Tangibility	5,614	0.628	0.716	3,331	0.681	0.747
g(Sales)	5,614	0.089	0.038	3,331	0.084	0.042
Tobin's Q	5,459	0.705	0.909	3,239	0.724	0.895

Panel B: Financially Unconstrained Firms						
	High Judicial Ineffecicncy			Low Judicial Ineffecicncy		
	# Obs	Median	Mean	# Obs	Median	Mean
LN (1+CapEx)	6,391	4.153	3.994	3,182	4.146	3.976
Size	6,400	7.677	7.742	3,186	7.539	7.577
LN(Age)	6,400	3.296	3.377	3,186	3.258	3.292
Debt Ratio	6,399	0.315	0.317	3,186	0.352	0.350
ICR	6,064	5.448	64.135	2,983	4.685	46.296
RoA	6,400	0.134	0.146	3,186	0.133	0.140
Asset Tangibility	6,400	0.453	0.506	3,186	0.559	0.604
g(Sales)	6,400	0.120	0.109	3,186	0.110	0.103
Tobin's Q	6,337	0.754	1.213	3,149	0.736	1.054

This table reports the summary statistics (number of observations, median and mean) for the variables in the analysis. All variables are defined in Appendix 2. The sample period is 2002 to 2015, comprising of all listed manufacturing firms. Panel A compares the key variables for financially constrained firms located in regions with and low judicial inefficiency. Panel B compares similar statistics for financially unconstrained firms.

Table 4: Relation between Judicial Efficincy and Cpaital Expenditure

	(1)	(2)	(3)	(4)	(5)	(6)
KZ Constraint*Judicially Ineffecient	-0.2193***	-0.2288***	-0.1726***	-0.1825***	-0.1675***	-0.1816***
	(0.073)	(0.076)	(0.055)	(0.058)	(0.056)	(0.059)
KZ Constraint (=1)	-0.3792***	-0.3672***	-0.2572***	-0.2714***	-0.2596***	-0.2754***
	(0.062)	(0.060)	(0.046)	(0.047)	(0.048)	(0.048)
Judicially Ineffecient	0.0631	0.0330	0.0085	-0.0068	-0.0242	-0.0549
	(0.084)	(0.107)	(0.071)	(0.087)	(0.067)	(0.079)
Big Firm (=1)			0.1370***	0.1462***	0.1345***	0.1428***
			(0.044)	(0.049)	(0.042)	(0.046)
Log(Age)			-0.4547**	0.0311	-0.4977***	0.0020
			(0.176)	(0.253)	(0.145)	(0.216)
Debt Ratio, lagged			-0.0612***	-0.0457**	-0.0608***	-0.0456**
			(0.020)	(0.019)	(0.020)	(0.019)
ICR, lagged			0.0001	0.0001	0.0001	0.0001
			(0.000)	(0.000)	(0.000)	(0.000)
RoA, lagged			1.1332***	0.9190***	1.1455***	0.9179***
			(0.139)	(0.125)	(0.141)	(0.130)
Asset Tangibility, lagged			-2.0467***	-1.9289***	-2.0080***	-1.8915***
			(0.183)	(0.174)	(0.179)	(0.173)
g(Sales)			0.5977***	0.6057***	0.5976***	0.6045***
			(0.042)	(0.045)	(0.042)	(0.046)
Tobin's Q, lagged			0.2172***	0.2020***	0.2049***	0.1887***
			(0.043)	(0.050)	(0.037)	(0.045)
Per Capita GDP, lagged					0.0706	-0.0579
					(0.605)	(0.545)
Gvt Exp/GDP, lagged					-0.3244	-0.5213
					(1.214)	(1.456)
Credit/GDP, lagged					0.2212	0.2568*
					(0.177)	(0.144)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Industry*Year FE	No	Yes	No	Yes	No	Yes
Observations	18,392	18,329	17,508	17,423	16,903	16,816
R-squared	0.649	0.680	0.672	0.699	0.675	0.703

The table reports the results for the baseline regression as in equation (1). The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. All variables are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2002 and 2015. Standard errors are reported in parentheses and clustered at state level. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Quantile Regression

	Financially Constrained Firms					Financially Unconstrained Firms				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	p10	p25	p50	p75	p90	p10	p25	p50	p75	p90
Judicially Ineffecient	-0.0000	-0.3247***	-0.3575***	-0.2452***	-0.2376*	0.2514	0.0437	0.0558	0.1027	-0.0822
	(1.943)	(0.122)	(0.110)	(0.090)	(0.130)	(0.186)	(0.130)	(0.089)	(0.112)	(0.065)
Big Firm (=1)	0.0000	1.4407***	2.0509***	2.1954***	2.2320***	1.4475***	2.2313***	2.3386***	2.2670***	2.1912***
	(1.276)	(0.063)	(0.045)	(0.040)	(0.045)	(0.101)	(0.045)	(0.041)	(0.038)	(0.032)
Log(Age)	0.0000	-0.0295	0.1492***	0.0876**	0.0507	-0.2968***	-0.0430	0.0850**	0.1654***	0.1842***
	(0.922)	(0.060)	(0.049)	(0.041)	(0.050)	(0.080)	(0.045)	(0.038)	(0.036)	(0.028)
Debt Ratio, lagged	0.0000	-0.0829***	-0.1101***	-0.1115***	-0.1005***	0.2041	0.6871***	0.9696***	0.9140***	0.7929***
	(0.553)	(0.019)	(0.016)	(0.016)	(0.021)	(0.146)	(0.122)	(0.100)	(0.093)	(0.121)
ICR, lagged	-0.0000	-0.0002	-0.0000	-0.0001	-0.0007*	-0.0006*	-0.0004***	-0.0003**	-0.0004***	-0.0005***
	(0.021)	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
RoA, lagged	-0.0000	3.5945***	4.9843***	4.5342***	3.9595***	1.0103**	2.4700***	2.8227***	2.5350***	2.2117***
	(3.670)	(0.265)	(0.212)	(0.167)	(0.350)	(0.463)	(0.269)	(0.217)	(0.170)	(0.187)
Asset Tangibility, lagged	0.0000	-0.4081***	-0.6079***	-0.8305***	-1.0864***	-0.3788***	-0.2029***	-0.3205***	-0.4498***	-0.4519***
	(1.682)	(0.062)	(0.044)	(0.049)	(0.081)	(0.104)	(0.078)	(0.074)	(0.073)	(0.059)
g(Sales)	0.0000	0.5741***	0.7338***	0.6852***	0.6620***	1.1212***	1.3669***	1.2751***	1.0716***	0.8569***
	(0.963)	(0.052)	(0.036)	(0.039)	(0.041)	(0.084)	(0.051)	(0.058)	(0.054)	(0.056)
Tobin's Q, lagged	0.0000	-0.1014**	-0.0299	0.1657***	0.3958***	0.1604**	0.3062***	0.3706***	0.4050***	0.4233***
	(1.360)	(0.041)	(0.048)	(0.038)	(0.082)	(0.064)	(0.027)	(0.024)	(0.025)	(0.020)
Per Capita GDP, lagged	-0.0000	-0.5247	-0.4110	0.6012	-0.1471	-1.3291	-0.0601	0.5210	0.3683	0.3289
	(67.758)	(0.542)	(0.491)	(0.435)	(4.552)	(0.869)	(0.499)	(0.419)	(0.407)	(0.354)
Gvt Exp/GDP, lagged	-0.0000	0.4867	0.2254	0.2400	-1.6556	1.1266	-1.4184	-0.7484	0.2010	1.5253
	(162.108)	(1.932)	(1.675)	(1.378)	(4.280)	(2.871)	(1.688)	(1.419)	(1.272)	(1.247)
Credit/GDP, lagged	0.0000	0.0464	0.5616**	-0.0210	-0.4166	0.6461*	0.1417	0.2580	0.2348	0.6159***
	(8.280)	(0.267)	(0.234)	(0.177)	(0.622)	(0.392)	(0.208)	(0.200)	(0.173)	(0.218)
Industry FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	8,262	8,262	8,262	8,262	8,262	8,768	8,768	8,768	8,768	8,768

The table reports the results for the baseline regression as in equation (1). The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. All variabes are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2002 and 2015. Standard errors are reported in parantheses and clustered at state level. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Weighted Least Square regression using inverse probability weights from propensity score matching

	(1)	(2)	(3)
KZ Constraint*Judicially Ineffecient	-0.3716***	-0.3372***	-0.3376***
	(0.097)	(0.091)	(0.090)
KZ Constraint (=1)	-0.2884***	-0.1802*	-0.1793*
	(0.092)	(0.092)	(0.092)
Judicially Ineffecient	0.0800	0.0519	0.0424
	(0.117)	(0.102)	(0.103)
Big Firm (=1)		0.1753***	0.1754***
		(0.032)	(0.032)
Log(Age)		0.0333	0.0338
		(0.429)	(0.427)
Debt Ratio, lagged		-0.0546**	-0.0546**
		(0.020)	(0.020)
ICR, lagged		0.0000	0.0000
		(0.000)	(0.000)
RoA, lagged		1.0543***	1.0549***
		(0.117)	(0.118)
Asset Tangibility, lagged		-2.0643***	-2.0632***
		(0.236)	(0.236)
g(Sales)		0.7068***	0.7070***
		(0.090)	(0.091)
Tobin's Q, lagged		0.1726***	0.1727***
		(0.025)	(0.025)
Per Capita GDP, lagged			0.1327
			(0.447)
Gvt Exp/GDP, lagged			-0.5963
			(1.357)
Credit/GDP, lagged			-0.0146
			(0.127)
Firm FE	Y	Y	Y
Industry*Year FE	Y	Y	Y
Observations	17,703	16,816	16,816
R-squared	0.751	0.771	0.771

The table reports the results for weighted least square regression. The inverse probability weights produced by propensity score matching are used as weights in the regression. The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. All variabes are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2002 and 2015. Standard errors are reported in parantheses and clustered at state level. *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Effect of ICT Adoption by Courts on Corporate Investment

	All Firms		Financially Constrained Firms		Financially Unonstrained Firms	
	Mean	Median	Mean	Median	Mean	Median
Pre	2.7209	2.5802	2.2244	1.9315	3.1819	3.1946
Post	3.3736	3.3911	2.7705	2.5572	3.9339	4.1125
Difference	(0.6527)***	(0.8109)***	(0.5461)***	(0.6257)***	(0.752)***	(0.918)***
# Obs	6521	6521	3140	3140	3381	3381
% Change	65.27%	81.09%	54.61%	62.57%	75.20%	91.80%

TThe table reports the results for effect of ICT adoption. The variable is the natural logarithm of capital expenditure winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2003 and 2008. *** p<0.01, ** p<0.05, * p<0.1.

Table 8: Effect of ICT Adoption by Courts on Corporate Investment

	(1)	(2)	(3)	(4)	(5)	(6)
	Financially Constrained Firms			Financially Unconstrained Firms		
Post (>=2006)	0.3556***	0.2470**	0.2344**	0.2734***	0.1330	0.1434
	(0.102)	(0.105)	(0.115)	(0.100)	(0.103)	(0.110)
Big Firm (=1)		-0.0633	-0.0498		-0.1158	-0.1260
		(0.130)	(0.133)		(0.128)	(0.128)
Log(Age)		0.1643	0.1808		-0.4063	-0.3308
		(0.836)	(0.857)		(0.726)	(0.728)
Debt Ratio, lagged		-0.0406*	-0.0403*		-0.4621*	-0.5016*
		(0.021)	(0.021)		(0.266)	(0.266)
ICR, lagged		-0.0003	-0.0003		0.0001	0.0002
		(0.001)	(0.001)		(0.000)	(0.000)
RoA, lagged		0.8713***	0.8568***		1.3656***	1.4108***
		(0.260)	(0.263)		(0.463)	(0.465)
Asset Tangibility, lagged		-1.9309***	-1.9066***		-3.7106***	-3.5837***
		(0.206)	(0.208)		(0.427)	(0.430)
g(Sales)		0.4305***	0.4346***		1.0354***	1.0328***
		(0.055)	(0.055)		(0.155)	(0.158)
Tobin's Q, lagged		0.4099***	0.3967***		0.2932***	0.2862***
		(0.102)	(0.103)		(0.065)	(0.066)
Per Capita GDP, lagged			0.1113			0.2134
			(1.048)			(1.084)
Gvt Exp/GDP, lagged			-0.7975			-0.0763
			(1.862)			(1.947)
Credit/GDP, lagged			0.0391			0.1796
			(1.036)			(0.939)
Firm FE	Y	Y	Y	Y	Y	Y
State*Trend	Y	Y	Y	Y	Y	Y
Observations	3,551	3,410	3,339	3,877	3,691	3,579
R-squared	0.872	0.884	0.883	0.918	0.927	0.927

The table reports the results for effect of ICT adoption. The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. All variabes are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2003 and 2008. Standard errors are reported in parantheses and clustered at state level. *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Effect of ICT Adoption by Courts on Corporate Investment

Panel A: Financially Constrained Firms						
	(1)	(2)	(3)	(4)	(5)	(6)
	Judicially Inefficient			Judicially Efficient		
Post (=1)	0.3527***	0.2799**	0.2914*	0.1857	0.0184	-0.0104
	(0.133)	(0.138)	(0.163)	(0.182)	(0.185)	(0.184)
Firm Controls	N	Y	Y	N	Y	Y
State Controls	N	N	Y	N	N	Y
Firm FE	Y	Y	Y	Y	Y	Y
State FE*Trend	Y	Y	Y	Y	Y	Y
Observations	2,181	2,083	2,037	1,291	1,249	1,228
R-squared	0.865	0.877	0.876	0.893	0.906	0.904

Panel B: Financially Unconstrained Firms						
	(1)	(2)	(3)	(4)	(5)	(6)
	Judicially Inefficient			Judicially Efficient		
Post (=1)	0.2463*	0.1095	0.1529	0.3502**	0.1931	0.2318
	(0.131)	(0.133)	(0.177)	(0.170)	(0.180)	(0.187)
Firm Controls	N	Y	Y	N	Y	Y
State Controls	N	N	N	N	N	Y
Firm FE	Y	Y	Y	Y	Y	Y
State FE*Trend	Y	Y	Y	Y	Y	Y
Observations	2,465	2,340	2,259	1,333	1,276	1,257
R-squared	0.915	0.922	0.921	0.931	0.941	0.941

TThe table reports the results for effect of ICT adoption. Panel A and B report the results for financially constrained and unconstrained firms. The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. All variabes are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2003 and 2008. Standard errors are reported in parantheses and clustered at state level. *** p<0.01, ** p<0.05, * p<0.1.

Table 10: Banking Relationship, CapEx and Institutional Climate

	(1)	(2)	(3)
Foreign Bk*Judicially Inefficient	-1.7809***	-0.9790***	-1.0092***
	(0.370)	(0.211)	(0.205)
Pvt Bk*Judicially Inefficient	-1.1531***	-0.6140***	-0.6290***
	(0.199)	(0.158)	(0.163)
Foreign Bk	1.5626***	0.6472***	0.6647***
	(0.081)	(0.071)	(0.073)
Pvt Bk	0.7385***	0.3604***	0.3745***
	(0.155)	(0.076)	(0.077)
Judicially Inefficient	-0.2143	-0.2587	-0.3036
	(0.186)	(0.254)	(0.275)
Big Firm (=1)		1.9213***	1.9164***
		(0.095)	(0.098)
Log(Age)		0.0144	-0.0143
		(0.054)	(0.038)
Debt Ratio, lagged		-0.0079	-0.0085
		(0.037)	(0.038)
ICR, lagged		-0.0011***	-0.0011***
		(0.000)	(0.000)
RoA, lagged		2.6202***	2.8050***
		(0.535)	(0.554)
Asset Tangibility, lagged		-1.1245***	-1.0946***
		(0.165)	(0.165)
g(Sales)		1.2720***	1.2728***
		(0.106)	(0.108)
Tobin's Q, lagged		0.2695***	0.2516***
		(0.050)	(0.047)
Per Capita GDP, lagged			0.9219
			(1.085)
Gvt Exp/GDP, lagged			0.5913
			(2.578)
Credit/GDP, lagged			-0.8370*
			(0.421)
Industry*Year FE	Y	Y	Y
State FE	Y	Y	Y
Observations	4,516	3,743	3,642
R-squared	0.280	0.494	0.499

The table reports the results for effect of judicial inefficiency on capital expenditure of firms in relationship with foreign and private banks relative to firms in relationship with state owned banks. The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. All variabes are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2008 and 2010. Standard errors are reported in parantheses and clustered at state level. *** p<0.01, ** p<0.05, * p<0.1.

Table 11: Long-Term Effect of British Rule

	(1)	(2)	(3)	(4)
	Financially Constrained Firms		Financially Unconstrained Firms	
British Province (=1)	-0.1851*	-0.1925*	-0.0256	-0.0573
	(0.111)	(0.113)	(0.088)	(0.083)
Latitude	0.0018	0.0019	-0.0016	-0.0014
	(0.004)	(0.004)	(0.003)	(0.003)
Longitude	0.0167	0.0176	-0.0078	-0.0077
	(0.023)	(0.022)	(0.017)	(0.017)
Big Firm (=1)	0.8695***	0.8744***	0.9640***	0.9658***
	(0.024)	(0.024)	(0.021)	(0.021)
Log(Age)	-0.1347*	-0.1466**	-0.2324***	-0.2488***
	(0.073)	(0.073)	(0.067)	(0.065)
Debt Ratio, lagged	-0.0898***	-0.0925***	0.4769***	0.3954***
	(0.021)	(0.020)	(0.115)	(0.117)
ICR, lagged	0.0004	0.0004	-0.0007***	-0.0007***
	(0.001)	(0.001)	(0.000)	(0.000)
RoA, lagged	3.3100***	3.2339***	2.2008***	2.0705***
	(0.328)	(0.330)	(0.342)	(0.338)
Asset Tangibility, lagged	-0.4200***	-0.3907***	0.1692*	0.1828*
	(0.089)	(0.089)	(0.101)	(0.100)
g(Sales)	0.7492***	0.7483***	1.1322***	1.1266***
	(0.042)	(0.041)	(0.118)	(0.116)
Tobin's Q, lagged	-0.0003	-0.0095	0.1009***	0.0918***
	(0.062)	(0.061)	(0.035)	(0.034)
Per Capita GDP, lagged		-0.5062		0.1310
		(0.560)		(0.512)
Gvt Exp/GDP, lagged		0.0099		-1.3975
		(1.609)		(1.520)
Credit/GDP, lagged		-0.2446		0.3754*
		(0.261)		(0.227)
Industry*Year FE	Y	Y	Y	Y
State FE	N	Y	N	Y
State*Year FE	Y	N	Y	N
Observations	8,240	7,968	8,799	8,512
R-squared	0.568	0.557	0.624	0.618

The table reports the results for the long-term effect of the Direct British rule on the current investment climate. The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. All variabes are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2002 and 2015. Standard errors are reported in parantheses and clustered at firm level. *** p<0.01, ** p<0.05, * p<0.1

Table 12: Long-Term Effect of British Rule (Fama-Macbeth Regression)

	(1)	(2)	(3)	(4)	(5)	(6)
	Financially Constrained Firms			Financially Unconstrained Firms		
British Province (=1)	-0.2467*	-0.1982*	-0.2074*	0.0228	-0.0297	-0.0540
	(0.117)	(0.111)	(0.108)	(0.083)	(0.045)	(0.042)
Latitude	-0.0095***	0.0024	0.0033	-0.0033	-0.0006	-0.0006
	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Longitude	-0.0455***	0.0158	0.0231	-0.0714**	-0.0007	-0.0006
	(0.014)	(0.020)	(0.023)	(0.024)	(0.017)	(0.017)
Big Firm (=1)		0.8619***	0.8648***		0.9549***	0.9556***
		(0.048)	(0.048)		(0.023)	(0.023)
Log(Age)		-0.1280**	-0.1362**		-0.2077***	-0.2186***
		(0.057)	(0.052)		(0.035)	(0.041)
Debt Ratio, lagged		-0.1001***	-0.0996***		0.4234***	0.3576***
		(0.019)	(0.019)		(0.120)	(0.115)
ICR, lagged		-0.0005	-0.0007		-0.0014**	-0.0015**
		(0.001)	(0.001)		(0.001)	(0.001)
RoA, lagged		3.9103***	3.9016***		2.9408***	2.8750***
		(0.579)	(0.550)		(0.687)	(0.694)
Asset Tangibility, lagged		-0.3756***	-0.3446***		0.1593*	0.1827**
		(0.060)	(0.064)		(0.076)	(0.067)
g(Sales)		0.7164***	0.7281***		1.2463***	1.2453***
		(0.035)	(0.035)		(0.148)	(0.149)
Tobin's Q, lagged		-0.0403	-0.0545		0.0761**	0.0717**
		(0.060)	(0.057)		(0.027)	(0.026)
Per Capita GDP, lagged			-0.6200			-0.5696
			(0.598)			(0.408)
Gvt Exp/GDP, lagged			0.0000			0.0000
			(0.000)			(0.000)
Credit/GDP, lagged			0.4032			0.3266*
			(0.326)			(0.163)
State FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y
Observations	8,788	8,425	8,127	9,452	8,965	8,663
R-squared	0.278	0.576	0.579	0.267	0.631	0.633

The table reports the results for the long-term effect of the Direct British rule on the current investment climate in a Fama-Macbeth (1973) setup. The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. All variabes are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2002 and 2015. Heteroscedasticity and autocorrelation consistent Newey-West (1987) standard error estimates are reported in parantheses. *** p<0.01, ** p<0.05, * p<0.1

Table 13: Are the results for British Rule driven by landlord tenured provinces?

	(1)	(2)	(3)	(4)
	Financially Constrained Firms		Financially Unconstrained Firms	
Lanlord (=1)	0.5658	0.5999	-0.0175	-0.0435
	(0.396)	(0.388)	(0.332)	(0.341)
Big Firm (=1)	1.9523***	1.9627***	2.2568***	2.2469***
	(0.093)	(0.092)	(0.097)	(0.097)
Log(Age)	0.0842	0.0730	0.0624	0.0573
	(0.099)	(0.097)	(0.106)	(0.106)
Debt Ratio, lagged	-0.1181***	-0.1242***	0.8548***	0.8198***
	(0.031)	(0.030)	(0.173)	(0.175)
ICR, lagged	0.0007	0.0007	-0.0009***	-0.0009***
	(0.001)	(0.001)	(0.000)	(0.000)
RoA, lagged	4.1211***	4.0301***	2.2055***	2.0639***
	(0.478)	(0.474)	(0.528)	(0.526)
Asset Tangibility, lagged	-0.7519***	-0.7271***	-0.1518	-0.1200
	(0.115)	(0.116)	(0.148)	(0.148)
g(Sales)	0.7188***	0.6956***	1.1547***	1.1364***
	(0.057)	(0.055)	(0.154)	(0.150)
Tobin's Q, lagged	-0.0376	-0.0526	0.2896***	0.2821***
	(0.094)	(0.092)	(0.063)	(0.064)
Per Capita GDP, lagged		-2.2700***		0.5451
		(0.875)		(0.813)
Gvt Exp/GDP, lagged		-4.6337*		-0.8825
		(2.564)		(2.455)
Credit/GDP, lagged		-0.1301		0.3955
		(0.373)		(0.324)
Industry*Year FE	Y	Y	Y	Y
State*Year FE	Y	N	Y	N
State FE	N	Y	N	Y
Observations	5,494	5,326	6,249	6,086
R-squared	0.514	0.502	0.523	0.511

The table reports the results for the long-term effect of the landlord tenure system on the current investment climate. The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. All variables are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2002 and 2015, operating in regions that were historically under direct British rule. Standard errors are reported in parentheses and clustered at firm level. *** p<0.01, ** p<0.05, * p<0.1

Table 14: Flasification Test - I

	(1)	(2)	(3)	(4)	(5)	(6)
KZ Constraint*Judicially Ineffecient	-0.0095	0.0263	-0.0082	0.0351	-0.0160	0.0311
	(0.055)	(0.058)	(0.049)	(0.051)	(0.049)	(0.053)
KZ Constraint (=1)	-0.5092***	-0.5210***	-0.3595***	-0.4017***	-0.3557***	-0.4040***
	(0.048)	(0.058)	(0.045)	(0.051)	(0.047)	(0.054)
Judicially Ineffecient	0.0283	0.0195	0.0383	0.0197	0.0464*	0.0222
	(0.020)	(0.020)	(0.023)	(0.022)	(0.026)	(0.024)
Big Firm (=1)			0.1361***	0.1449***	0.1341***	0.1416***
			(0.044)	(0.049)	(0.042)	(0.046)
Log(Age)			-0.4632**	0.0245	-0.5086***	-0.0109
			(0.172)	(0.251)	(0.141)	(0.216)
Debt Ratio, lagged			-0.0606***	-0.0452**	-0.0602***	-0.0450**
			(0.020)	(0.019)	(0.021)	(0.019)
ICR, lagged			0.0001	0.0001	0.0001	0.0001
			(0.000)	(0.000)	(0.000)	(0.000)
RoA, lagged			1.1215***	0.9079***	1.1326***	0.9045***
			(0.139)	(0.125)	(0.140)	(0.129)
Asset Tangibility, lagged			-2.0528***	-1.9354***	-2.0140***	-1.8984***
			(0.184)	(0.174)	(0.179)	(0.173)
g(Sales)			0.5985***	0.6066***	0.5983***	0.6054***
			(0.041)	(0.045)	(0.042)	(0.046)
Tobin's Q, lagged			0.2170***	0.2021***	0.2053***	0.1896***
			(0.043)	(0.050)	(0.038)	(0.045)
Per Capita GDP, lagged					0.1225	0.0069
					(0.599)	(0.554)
Gvt Exp/GDP, lagged					-0.0928	-0.2005
					(1.220)	(1.491)
Credit/GDP, lagged					0.1642	0.1787
					(0.169)	(0.142)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Industry*Year FE	No	Yes	No	Yes	No	Yes
Observations	18,392	18,329	17,508	17,423	16,903	16,816
R-squared	0.649	0.680	0.672	0.698	0.675	0.703

The table reports the results for the baseline regression as in equation (1). The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. The binary variable of judicial efficiency is randly generated. All variabes are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2002 and 2015. Standard errors are reported in parantheses and clustered at state level. *** p<0.01, ** p<0.05, * p<0.1

Table 15: Flasification Test - II

	(1)	(2)	(3)	(4)	(5)	(6)
KZ Constraint*Judicially Ineffecient	0.0093	0.0175	0.0412	0.0537	0.0367	0.0436
	(0.053)	(0.049)	(0.051)	(0.051)	(0.054)	(0.053)
KZ Constraint (=1)	0.0203	0.0253	0.0127	0.0094	0.0198	0.0155
	(0.040)	(0.038)	(0.042)	(0.041)	(0.046)	(0.043)
Judicially Ineffecient	0.0022	-0.0091	-0.0198	-0.0347	-0.0194	-0.0322
	(0.036)	(0.035)	(0.034)	(0.035)	(0.035)	(0.035)
Big Firm (=1)			0.1229***	0.1302***	0.1206***	0.1261***
			(0.040)	(0.044)	(0.038)	(0.042)
Log(Age)			-0.5108***	-0.0180	-0.5449***	-0.0391
			(0.174)	(0.246)	(0.144)	(0.212)
Debt Ratio, lagged			-0.0767***	-0.0642***	-0.0755***	-0.0633***
			(0.020)	(0.019)	(0.021)	(0.019)
ICR, lagged			0.0001	0.0001	0.0001	0.0001
			(0.000)	(0.000)	(0.000)	(0.000)
RoA, lagged			1.4231***	1.2642***	1.4277***	1.2558***
			(0.139)	(0.126)	(0.140)	(0.128)
Asset Tangibility, lagged			-2.0990***	-1.9896***	-2.0566***	-1.9483***
			(0.179)	(0.168)	(0.175)	(0.166)
g(Sales)			0.6066***	0.6158***	0.6060***	0.6142***
			(0.042)	(0.045)	(0.043)	(0.046)
Tobin's Q, lagged			0.2311***	0.2208***	0.2197***	0.2091***
			(0.043)	(0.050)	(0.038)	(0.045)
Per Capita GDP, lagged					0.1490	0.0364
					(0.616)	(0.571)
Gvt Exp/GDP, lagged					-0.2089	-0.3503
					(1.228)	(1.475)
Credit/GDP, lagged					0.1537	0.1650
					(0.173)	(0.151)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Industry*Year FE	No	Yes	No	Yes	No	Yes
Observations	18,392	18,329	17,508	17,423	16,903	16,816
R-squared	0.644	0.675	0.669	0.696	0.672	0.700

The table reports the results for the baseline regression as in equation (1). The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. The binary variable of judicial efficiency is randomly generated. All variables are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2002 and 2015. Standard errors are reported in parantheses and clustered at state level. *** p<0.01, ** p<0.05, * p<0.1

Table 16: Flasification Test - Effect of ICT Adoption by Courts on Corporate Investment

	(1)	(2)	(3)	(4)	(5)	(6)
	Financially Constrained Firms			Financially Unconstrained Firms		
Post (>=Random Year)	-0.0727	0.0113	0.1972	-0.0309	0.0562	0.1493
	(0.111)	(0.113)	(0.173)	(0.098)	(0.100)	(0.150)
Big Firm (=1)		0.0610	0.0627		-0.3433**	-0.3596**
		(0.145)	(0.147)		(0.148)	(0.148)
Log(Age)		0.9484	0.9862		-0.3761	-0.3321
		(1.044)	(1.064)		(0.893)	(0.898)
Debt Ratio, lagged		-0.0295	-0.0293		-0.6350**	-0.6817**
		(0.026)	(0.026)		(0.279)	(0.279)
ICR, lagged		-0.0004	-0.0005		0.0000	0.0000
		(0.002)	(0.002)		(0.001)	(0.001)
RoA, lagged		0.8398***	0.8300**		2.2338***	2.3235***
		(0.324)	(0.324)		(0.570)	(0.576)
Asset Tangibility, lagged		-1.9767***	-1.9196***		-4.3450***	-4.1854***
		(0.242)	(0.241)		(0.480)	(0.482)
g(Sales)		0.4295***	0.4361***		0.8975***	0.8861***
		(0.064)	(0.064)		(0.160)	(0.161)
Tobin's Q, lagged		0.4764***	0.4401***		0.2763***	0.2602***
		(0.136)	(0.139)		(0.079)	(0.082)
Per Capita GDP, lagged			0.0900			-0.7519
			(1.323)			(1.435)
Gvt Exp/GDP, lagged			-0.8948			-1.3451
			(2.357)			(2.557)
Credit/GDP, lagged			2.0586*			0.9274
			(1.132)			(1.093)
Firm FE	Y	Y	Y	Y	Y	Y
State*Trend	Y	Y	Y	Y	Y	Y
Observations	2,894	2,781	2,730	3,176	3,023	2,927
R-squared	0.873	0.884	0.884	0.918	0.927	0.926

The table reports the results for falsification test of the effect of ICT adoption. The dependent variable is the natural logarithm of capital expenditure. The explanatory variables are as defined in Appendix 2. The variable Post (¿=Random Year) takes a value of 1 if the year if after the randomly assigned ICT reform year, or 0 otherwise. All variables are winsorized annually at 1% level at both ends. The sample comprises of all listed manufacturing firms with as asset size greater than INR 1 million between 2002 and 2015. Standard errors are reported in parantheses and clustered at state level. *** p<0.01, ** p<0.05, * p<0.1

Appendix 1: Details of the model

The Bellman problem of the firm is described as follows:

$$\begin{aligned}\nu(X, k_{-1}, P, \eta) = \max_{K,L} \beta PF(K,L) - wL - p^I(K - (1-\delta)K_{-1}) + \beta \mathbf{E}[\nu(X', K, P', \eta')] \\ s.t.\ \ X' = (1+r)[X - wL - p^k I] + PF(K,L) - (1+r)\theta(\eta) \\ s.t.\ \ X \geq wL + p^I(K - (1-\delta)K_{-1}) + b_c + \theta(\eta) \end{aligned} \tag{A-1}$$

Let Ω be the vector of the set of possible values of the state variables K_{-1}, X, P and η. Let $\Gamma : \Omega \to \Omega$ be the correspondence describing the fesibility constraint. I assume the Ω to be a convex subset of $\mathbf{R}^4$, and the correspondence $\Gamma : \Omega \to \Omega$ is non-empty, compact-valued and continous. Also, $F(.)$ is bounded and continuous, and $0 < \beta < 1$. Under these assumptions the sequence problem corresponding to equation A-1 is well defined, and the solutions to the sequence problem and the formulation in equation A-1 coincide exactly in terms of both the value and the optimal plans. Also, under these assumptions the setup in equation A-1 is a contraction mapping and there exists a unique solution that solves equation A-1. Furthermore, imposing the condition that $\Gamma(.)$ is monotone, and $F(K,L)$ is strictly increasing in K and L, allows the unique solution of equation A-1 to be strictly increasing. The solution is strictly concave if $F(.)$ is strictly concave in both K and L, and Γ is convex. Furthermore assuming $F(.)$ is differentiable ensures differentiability of ν. Hence, establishing the above described properties of the value function allows to write the first order conditions with respect to K and L as follows:

$$(\beta PF_L(K,L) - w)(1 + \mathbf{E}[\frac{\partial \nu(X', K, P', \eta')}{\partial X'}]) = w\lambda \tag{A-2}$$

$$(\beta PF_K(K,L) - p^I + \beta p^I(1-\delta))(1 + \mathbf{E}[\frac{\partial \nu(X', K, P', \eta')}{\partial X'}]) = p^I\lambda \tag{A-3}$$

If the firm is not constrained we have $\lambda = 0$. Hence, the FOC for the unconstrained firms based on equation A-2 and A-3 are as follows:

$$\begin{aligned}\beta PF_L(K,L) &= w \\ \beta PF_K(K,L) &= p^I \frac{r+\delta}{1+r}\end{aligned} \tag{A-4}$$

For constrained firms $\lambda = 1$ and working capital constraint becomes binding. Dividing equation A-2 and A-3 and re-arranging gives the following equation:

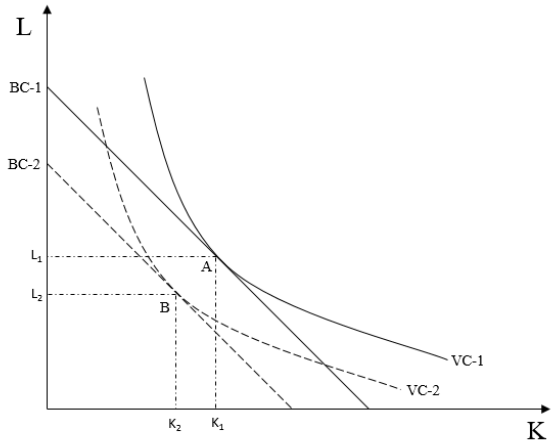
$$\frac{\beta PF_L(K,L)}{w} = \frac{\beta PF_K(K,L)}{p^I} + \frac{1-\delta}{1+r} \tag{A-5}$$

In addition to equation A-5 the dynamic behavior of a financially constrained firm is also described by the binding constraint described below:

$$X - \theta(\eta) = wL + p^I(K - (1-\delta)K_{-1}) + b_c \tag{A-6}$$

Figure A-1, depicts the changes to factor demand due to an increase in judicial inefficiency in the LK space. The curve $VC-1$ denotes the isovalue curve, and is calculated as the sum of revenue and the depreciated value of the capital. Hence a value curve is equal to $PF(K,L)+(1-\delta)K$, and denotes the labor and capital combination that generates the same value. The line $BC-1$ denotes the budget constraint $X-\theta(\eta)-b_c = wL+k^I\delta K$ at the steady state. The line $BC-1$ is tangent to the isocurve $VC-1$ at point A and

Figure A-1: Steady State Factor Response to Positive Shocks in Judicial Ineffeciency



the steady state choice variables are (K_1, L_1). An increase in η causes the binding budget constraint on the financially constraint firms to shift leftwards to $BC-2$. It is no longer feasible for this firm to operate at A. The steady state of the firm now exists at the point B where it is tangent to the lower isovalue curve $VC-2$. The new steady state choice variables are (K_2, L_2) such that $K_2 < K_1$, and $L_2 < L_1$. Therefore capital is decreasing in η, and so is investment ($I = \delta K$ at steady state). Note that the budget constraint for the financially unconstrained firms is unaffected by η and hence the steady state equilibrium for financially unconstrained firms is at a point higher than A (in figure A-1) and is unaffected by changes in η.

In the presence of positive shocks to price combined with the positive shock to η the model will predict a much greater decline in K, and the overall effect on L is not clear in the general form of the setup described above.

Appendix 2: Description of Variables

- **Duration**: Duration is defined as the ratio of court cases pending at the beginning of the year to the number of cases cleared in that year.

- **Judicially Inefficient**: Judicially Inefficient is a dummy variable taking a value of 1 if the measure of duration in that state-year is more than the median value of duration in that year, else it takes a value of 0.

- **KZ Index**: KZ Index (or Kaplan and Zingales (1997)) is based on the fivefactor model as described in Lamont et al. (2001) presented in the following equation.

$$KZ - Index = -1,002\frac{CF_t}{K_{t-1}} + 0.0283Q_t + 3.139\frac{D_t}{A_t} - 39.368\frac{Div_t}{K_{t-1}} - 1.315\frac{Cash_t}{K_{t-1}}$$

  CF: Cash flow is defined as the sum of income before extraordinary items and depreciation and amortization.

  K: K or Capital is calculated as the book value of property, plant and equipment.

  Q: Q denotes Tobins Q. It is calculated as the sum of market capitalization and total borrowings divided by the book value of assets

  D: D denotes total borrowings. This includes borrowings from banks, financial institutions, government and bond market.

  A: A denotes book value of total assets

  Div: Div denotes total value of dividends paid out to common shareholders during the year.

  Cash: Cash denotes aggregate monetary resources held by a firm. This includes cash and cheques in hand and transit.

- **KZ Constraint**: KZ Constraint is a binary variable that takes a value of 1 if the firms KZ Index is above the median value of KZ Index in that year in that industry, else it takes a value of 0.

- **Size**: Size refers to the natural logarithm of the book value of total assets.

- **Big Firm**: Big firm is a dummy variable taking a value of 1 if the size of the firm is greater than the median size of all firms in that industry-year, else it takes a value of 0.

- **Log (Age)**: Log (Age) is the natural logarithm of the total number of years of the firm since incorporation.

- **Debt Ratio**: Debt to Asset is defined as the ratio of total debt minus preference share capital to the book value of total assets.

- **ICR**: ICR denotes Interest Coverage Ratio and is defined as the ratio of firms earnings before interest and taxes to the interest expense.

- **RoA**: RoA or return to assets is defined as the ratio of earnings before interest, tax, depreciation and amortization (EBDITA) to the book value of total assets.
- **Asset Tangibility**: Following Rajan and Zingales (2005), tangibility is defined as the net fixed assets to the book value of total assets.
- **g(Sales)**: Sales growth is defined as the difference in the natural logarithm of the ratio of total sales in year t and total sales in year t-1.
- **Tobins Q**: Tobins Q is calculated as the ratio of the equity market value to the equity book value.
- **Per Capita GDP**: State GDP per capita is defined as the net state domestic product per capita at constant prices.
- **Gvt Exp/GDP**: It is the ratio of total government expenditure to total net state domestic product
- **Credit/GDP**: It is defined as the ratio of the total credit extended by all scheduled commercial banks in a state divided by the net state domestic product.
- **Post (¿=2006)**: Post is a dummy variable taking a value of 1 for years after 2006, and 0 otherwise.
- **Foreign Bk**: This is a binary variable that takes a value of 1 for a firm i which has banking relationship with only foreign banks in year t.
- **Private Bk**: This is a binary variable that takes a value of 1 for a firm i which has banking relationship with only private banks in year t.
- **British province**: Direct British rule is a dummy variable that takes a value of 1 if the district in which the firm is headquartered was under direct British rule. The data for this variable is collected as in Iyer (2010).
- **Latitude**: Numerical value of the latitude of the geometric centre of the city in which the firm is headquartered.
- **Longitude**: Numerical value of the longitude of the geometric centre of the city in which the firm is headquartered.
- **Landlord Tenure System**: Dummy variable taking a value of 1 if the Zamindari land tenure system was adopted in the direct British ruled state, 0 if the city belongs to a peasant based land tenure system in direct British ruled state