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Does Judicial Quality Shape Economic Activity? Evidence from a Judicial Reform in India

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Abstract:

This paper investigates the impact of judiciaries on firms' contracting behaviour and economic performance. In 2002, the Code of Civil Procedure Amendment Act was enacted in India to facilitate speedy disposal of civil suits. Some State High Courts had already enacted some of the amendments contained in this reform a long time ago. This spatial variation in the reform's implementation is used to identify the effect of judicial quality on firm's behavior. Using small informal firm data, I find that the reform led to fewer breaches of contract, encouraged investment, facilitated access to finance, and expanded rental markets.

Keywords: Law and economics, Institutions, Courts, Contracts, Industrial Organization, Economic Growth, Industrial Performance

JEL Classification: K0, K12, K40, K42, O12, O17, L14, D23, C72

This paper provides new evidence on the impact of slow judiciaries on economic performance using a unique data set assembled after a major Indian judicial reform implemented in 2002. The existing literature does not provide a clear assessment of the empirical effects of slow judiciaries on economic activity because it is hard to find a source of variation in judicial efficiency that would help identify the latter's impact on firms' behavior. The Indian judicial reform studied in our paper seeks to simplify and shorten the procedural handling of court cases as specified in the Code of Civil Procedure. It is composed of 88 Code amendments, all of which have been carefully examined and classified in this paper. Several amendments had previously been implemented in some States due to the latter's right to locally amend the Code of Civil Procedure. Thus, cross-State variation in reform implementation can be used to isolate the impact of the judiciary on economic activity. The cross-State variation in reform implementation is related to the contracting behavior of 520,000 small informal non-agricultural firms measured in detail in the 2000 and 2002 Rounds of India's National Sample Survey. A difference-in-differences approach allows a comparison of outcomes of both judiciaries and firms prior to and after 2002 in States which have passed several of the 2002 Act's amendments and States which have not. One amendment intended to simplify procedures, among 38 such amendments contained in the 2002 Amendment Act, improved firm performance by 1.7 percent. The total cross-State variation in this reform implementation caused an improvement in firm performance by 9.7 percent.

Slow judiciaries may significantly influence the contracting behavior of firms. First, incentives to cooperate in a contractual agreement might weaken because slower judiciaries make the discounted value of punishment from deviation lower. Second, incentives to invest might decrease if there is a possibility of post-contractual opportunistic behavior by a firm's partner once the investment costs are sunk (Klein et al, 1978). Third, slow judicial enforcement increases the opportunistic behavior of borrowers. Creditors might respond to this strategic behavior by reducing the availability of credit (Pagano et al, 2002). Fourth, if enforcing a rental agreement takes time, it gives renters bargaining power, which they can use to reduce future rents. Anticipating this, owners may ration

their supply of rental goods (Casas-Arce et al, 2005). Of course, individuals often find ways of altering the terms of their formal and informal contracts to avoid the adverse effects of weak contracting institutions (Acemoglu et al, 2005). The magnitude of the impact of slow judiciaries on economic outcomes is therefore an empirical matter. The 2000 and 2002 Rounds of India's National Sample Survey contains detailed information on the occurrence of contract breaches, investment decisions, credit access and production goods ownership of small informal non-agricultural firms. The impact of judiciary's speed on these four dimensions may therefore be measured by comparing firms in States having previously passed many of the 2002 Act's amendments, in contrast to firms in States not having passed any, before and after the reform.

Djankov et al (2003) have made an important contribution to the study of courts. They measured judicial formalism in 109 countries around the world. They found judicial formalism greater in countries with civil rather than common law systems and that it is associated with a lack of consistency, honesty and fairness in judicial decisions. Endogeneity concerns were addressed by using legal origin as an instrument for judicial formalism. Acemoglu et al (2005) use the same data to relate judicial efficiency to economic outcomes using legal origin as an instrumental variable. They find that contracting institutions have no impact on economic performance once property rights institutions are controlled for. This paper differs from Acemoglu et al (2005) in two ways. First, it uses a within-country analysis of India. By limiting myself to one country, I am able to control for a range of factors and influences that cannot be as convincingly controlled for in cross country data. This allows me to identify the effect of judicial efficiency independently from that of laws, legal origins, and other country-wide characteristics. Second, it generates clear policy implications regarding the desirability of reforms to the Code of Civil Procedure.

In the literature attempting to measure the impact of judiciaries on economic performance, none of the papers deal with the potential endogeneity of the judicial inefficiency measures. Much of the literature exploits spatial variation in the quality of a particular institution to identify its effect on economic activity. Knack and Keefer (1995)

relate professional country risk measures provided by business experts to judicial quality measures, which is the amount of contract-intensive money (the difference between M2 and cash). However, it may be, for example, that States having generally better policies are also more likely to have efficient judiciaries. If this is the case, judicial quality merely reflects better economic policies and in itself may be insignificant in driving better economic outcomes. Jappelli et al (2005) present a model of the effect of judicial enforcement on credit markets and then test it using panel data from Italian provinces. The authors found, among other things, that the duration of civil trials (measured by actual duration in the past) as well as the stock of pending civil trials per inhabitant are negatively correlated with loans granted to domestic companies and positively correlated with measures of credit constraints. Cristini et al (2001) relate differences in judicial efficiency across Argentinean provinces to the size of provincial credit markets. Castellar Pinheiro et al (2001) perform a similar analysis in Brazil. In none of these papers is there an attempt to deal with the potential endogeneity of the judicial inefficiency measures. My paper, in contrast, examines a particular reform made to the Code of Civil Procedure and its implementation variation across States in order to account for potential endogeneity in the judicial system.

One notable exception is Visaria (2006) where a difference-in-differences strategy based on two sources of variation (the monetary threshold for claims to be eligible for these tribunals and the staggered introduction of tribunals across Indian states) is used to show that the establishment of tribunals reduces delinquency in loan repayment by between 3 and 11 percent. This paper differs from Visaria (2006) in two ways. First, I show explicitly the link between the reform and increased judicial speed. Second, I relate the reform to credit access but also to other outcomes such as the occurrence of contract breaches, investment decisions and production goods ownership.

The main findings of this paper can be summarized as follows. One amendment simplifying or shortening the procedural handling of court cases decreased by 676 the number of cases pending per judge in the Lower Courts, which represents 35 percent of a workload. This indicates that the reform was successful in reducing case backlog. An

extra amendment decreases the probability of experiencing a breach of contract by 12 percent, increases the probability of investing in plant and machinery assets (as well as tools, other fixed assets, transport and equipment assets) by 13 percent, the probability of obtaining a loan from a formal financial institution by 8 percent, the probability of renting tool assets by 17 percent. Experiencing less breaches of contract, investing more, having a better access to financial markets and to thicker rental markets may positively affect economic performance. This paper shows that moving a firm from the State that had already passed the most amendments, and consequently with the weakest effect of the 2002 Amendment Act, to the State that had passed no amendments improved firm performance by 9.7 percent.

The structure of this paper is as follows. Section 1 explores the channels through which judicial quality affects firms' economic performance. I examine four prominent aspects in the life of a firm: breaches of contract, investment decisions, access to credit markets and ownership of production goods. Section 2 describes the 2002 Amendment Act and details the paper's identification strategy. Section 3 provides background on the 55th and 57th rounds of India's National Sample Survey on non-agricultural informal enterprises. Section 4 presents the paper's empirical method. Section 5 exposes results pertaining to firms' behavior. Section 6 discusses the effects on firm performance. Section 7 concludes.

1 Related literature

In this section, the theoretical literature on the potential impact of slow judiciaries on firms' contracting behavior is briefly summarized. Four possible mechanisms are described: breaches of contract, investment decisions, access to credit markets and ownership of production goods. As India's National Sample Surveys contains detailed firm-level information on these four mechanisms, their empirical relevance will be tested in the empirical section.

1.1 Breaches of Contract

Many exchanges occur instantly and simultaneously. In this type of exchange, there is little reason for promises and enforcement means. Promises are made in cases of deferred exchanges. The enforceability of promises encourages exchange and cooperation among people. For example, the judiciary is an important deterrent to any fraud that might be more economically attractive in the short run. The probability of harsh punishment in monetary or non-monetary terms heavily dissuades opportunistic agents to default ex-post on previous agreements. Slower judiciaries lower the discounted value of punishment, thereby weakening incentives to cooperate.

This situation can be modelled as an agency game. The first player, the principal, decides to put a valuable asset under the control of a second player, the agent. The agent decides whether to cooperate (produce, give back the valuable asset and share the trade surplus) or appropriate (keep the valuable asset). Cooperation is productive whereas appropriation is redistributive. In the absence of any contract enforcement, the agent's best move is to appropriate. Consequently, the principal's best move is to not partake in this game. No activity is undertaken in the absence of enforcement means.

If a contract is signed between the two parties and is enforceable before a court, payoffs are radically modified. If the agent breaches, the principal receives compensatory damages from the agent. If compensatory damages in case of a breach are such that it is the agent's best move to cooperate, then the principal's best move is to invest. The purpose of enforcement is to enable people to cooperate by converting games with non cooperative solutions into games with cooperative solutions. It is interesting to note that the prospect of a distant fine due to a slow judiciary reduces incentives to cooperate.

However, the judiciary is not the only means by which to enforce contracts. The fear of damaging one's reputation may induce parties to adhere to contracts (Bernstein, 1992; Greif, 1993, Klein et al, 1981). A repeated agency game is used to model this situation. A grim-trigger strategy played by the principal induces the agent to cooperate. An enduring relationship does not necessarily require an effective legal system.

This is true in cases of enduring relationships having infinite horizons. However, most

business relationships are open-ended. Open-ended relationships have no predetermined end. They can persist indefinitely or end unexpectedly. They dissolve and reform easily as circumstances change. Assume that there is an indefinite amount of players, who form themselves into pairs to play each round of the previous agency game. At the end of each round, relationships continue into the next round or dissolve due to two reasons: unforeseeable changes or appropriation by the agent. When a relationship dissolves, players must search for another partner. This may be costly.

Agents can follow two strategies. First, they can cooperate until the relationship is dissolved by an unforeseeable event, therefore obtaining low and steady payoffs. Second, they can appropriate and search for another partner, therefore deriving high but irregular payoffs. In a competitive equilibrium, both strategies must earn the same payoff. Another condition for a competitive equilibrium is that a principal looking for a partner must be willing to invest, knowing that he will be matched with a certain probability with appropriating agents or with cooperating agents, whose relationship has just been dissolved due to unforeseeable changes. Such an equilibrium exists under reasonable assumptions (Cooter et al, 2003).

The power of principals to exit from agency relationships makes some cooperation possible even in open-ended games. However, an efficient judiciary may increase the amount of cooperation. The low discounted value of a remote punishment given by slow courts does not act as a deterrent to appropriation. In contrast, by swiftly punishing breachers, an efficient judiciary raises the agent's payoff of cooperation. It is interesting to note that as cooperation is productive, economic production rises. This simple model predicts that a more efficient judiciary is associated with fewer breaches of contract and higher economic output.

1.2 Investment

The previous section demonstrated that more contracts are breached when judicial quality is poor. But one could also expect judicial quality to affect investments undertaken by firms. I will now consider the case in which a firm undertakes an investment in order

to supply another with a particular asset. As Klein et al (1978) have emphasized, the possibility of post-contractual opportunistic behavior arises. In order to induce a supplier to invest, a firm can either write a long-term contract whose terms are favorable to the supplier or guarantee exclusivity rights. However, once investment costs are sunk, there is an immediate incentive for the firm to renege on its contract and capture the suppliers' rents. Alternatively, if the search costs for finding new suppliers are high, there is an immediate incentive for the supplier to use its monopoly power to impose higher prices. These frictions may reduce investment incentives; in such cases, as Klein et al (1978) have concluded, vertical integration will supersede market systems. Another way of limiting post-contractual opportunistic behavior is to establish efficient judicial systems which enforce contracts swiftly.

1.3 Access to credit markets

We may also believe that judicial systems impact on firms' debt contracts. As Pagano et al (2002) explain:

"The key function of courts in credit relationships is to force solvent borrowers to repay when they fail to do so spontaneously. By the same token, poor judicial enforcement increases the opportunistic behavior of borrowers: anticipating that creditors will not be able to recover their loans easily and cheaply via courts, borrowers will be more tempted to default. Creditors respond to this strategic behavior of borrowers by reducing the availability of credit."

A direct implication of this is that faster judiciaries, by imposing higher discounted values of fines paid by borrowers, foster credit supply. A corollary concerns alternative financing means. The model of repeated game agency predicts that individuals will seek long-run relationships in the absence of adequate State protection. Long term relationships require commitment. Traditional forms of commitment include friendship or kinship. Some firms do in fact obtain loans from relatives or business partners. The

advantage of such creditors over formal financial institutions is that they better monitor borrowers' actions and reduce the information asymmetry between the two parties. On the other hand, interest rates can be prohibitive. The model predicts that as the courts become more efficient, borrowers will turn away from personal relationships in favor of formal financial institutions, which are more likely to offer credit.

1.4 Rental Markets

Another consequence of judicial inefficiency concerns its impact on allocating ownership rights (Casas-Arce et al, 2005). In the absence of transaction costs, agents will efficiently allocate these rights in a way that maximizes welfare. This may involve certain individuals acquiring ownership over the assets they use, while others will purchase access from a separate owner on an occasional basis. But when the control transfer is costly to enforce, in other words when the judiciary is inefficient, we may see departures from that optimal allocation. Market participants in particular may decide to avoid contractual disputes by relying less on control transfers in favor of choosing market structures that rely on more direct ownership by the final user.

Casas-Arce et al (2005) apply this reasoning to the housing market. In contrast, I will examine the prevalence of those entrepreneurs who rent their means of production¹. The intuition here is similar and can be briefly summarized. A user faces the following trade-off: when renting, he faces risk in fluctuating rental prices; when owning, he avoids risk by holding on to the production good, but faces price risk if he decides to sell it. This leads to a theory of rental market size. The user likely to keep producing the same good in the future will own the production good, while the user likely to modify his activity will want to rent and avoid the good price risk. It is possible to extend this model to study the effects of efficiency in judicial systems. Enforcing a rental agreement, for example, by repossessing production goods in cases where renters threaten to withhold payment, takes time. This gives renters bargaining power, which they may use to reduce future rents. In anticipation of this, investors, that is, owners of the production good to be rented, ration their supply if they can discriminate between users. This may have

important welfare consequences for Indian firms. In the presence of liquidity constraints, a functional rental market may help poor entrepreneurs start businesses. A broad rental market may also facilitate mobility across sectors and across regional labor markets, thus “greasing the wheels” of the economy.

To conclude the theoretical component of this paper, I expect inefficient judiciaries to be associated with more breaches of contract, less investments, more difficulty accessing credit markets, and smaller rental markets. These predictions are testable using the dataset I will analyze in the following sections. I will now describe the judicial reform in India that is at the source of judicial speed variation.

2 The Judicial Reform

This paper aims to relate judicial speed to firms’ behavior. One cannot simply relate the efficiency of the courts to firms’ performance without considering the risk that State heterogeneity might drive the results more than judiciary’s efficiency per se. The 2002 Amendment Act will be used as a source of variation in the quality of the judiciary. I will now describe this reform and then explain how spatial variation in its cross-State implementation may be used to identify the effect of judicial speed on economic activity.

2.1 The 2002 Amendment Act

India’s judicial institutions are identical across courts and States. They operate according to three levels: a single Supreme Court at the federal level; High Courts at the State level; and, at lower levels, district judges for civil cases and sessions judges for criminal cases. The Code of Civil Procedure regulates the functioning of Civil courts by laying down the rules according to which they are to function. These rules may be summarized as follows: procedures for filing civil cases, court powers to pass various orders, court fees and stamps involved in filing cases, parties’ rights to cases, namely plaintiff and defendant, the jurisdiction and parameters within which civil courts must function and specific rules for case proceedings of a case, right of appeal, review or reference. Data

from 2000 on cases pending indicated that there were 3.1 million cases pending in 21 High Courts and 20 million in subordinate courts². Examples of judicial slowness are striking:

the highest court in the country, the Supreme Court, took 11 years to acquit the headmaster of a school on the charge of taking a bribe for signing the salary arrears bill of his school. In another case of judicial delay, the victim was former Union Law Minister, Dr. B.R.Ambedkar. The judgement came in his lifetime but it took 47 years for the Maharashtra government to execute the decree passed in his favour against illegal encroachment of his land by Pakistani refugees. By then he was dead.³

To remedy this situation, Parliament enacted the 2002 Amendment Act to the Civil procedure Code of 1908 in order to make litigation more efficient. The reform can be summarized in five main points. First, it encourages out-of-court dispute settlement. According to Section 89, a court may, by itself, proactively refer disputes to alternative dispute resolution methods (arbitration, conciliation, lok adalats, mediation) when elements of a settlement appear to exist, which may be acceptable to both parties in the dispute. Second, judicial discretion is restricted in allowing unnecessary delays. The Amendment Act imposes mandatory time limits on plaintiffs and defendants at each stage of the litigation. An example may be found in Section 27: "**Summons to defendants.**-Where a suit has been duly instituted, a summons may be issued to the defendant to appear and answer the claim and may be served in manner prescribed *on such day not beyond thirty days from the date of the institution of the suit*". The part in italics was added by the 2002 Amendment Act. Third, the 2002 Amendment Act reduces frivolous litigation. Order 16, Rule 16, Sub-rule 4 is inserted: "**Verification of pleadings.**-(4) The person verifying the pleadings shall also furnish an affidavit in support of his pleadings". This was conceived to curtail frivolous litigation and thus increase judicial speed. Fourth, commissions are introduced. Order 26, Rule 4A states that a commission can be sent by any court to interrogate any person within the local

limits of a court's jurisdiction. Before the amendment, commissions, designed to collect evidence and declarations rapidly, were reserved for persons outside the State or not physically able to attend the court. Fifth, adjournments are reduced. Order 17, Rules 1 and 2 state that the court shall not grant more than three adjournments to either party in the suit. Adjournments shall only be granted once the party requesting the delay shows sufficient cause. In each adjournment, the court shall make an order specifying the costs assumed by the other party as a result of the adjournment. The court may also award higher costs if it deems fit.

It is interesting to note that lawyers initially resisted the reform. The 2002 Amendment Act was originally written in 1999 and had even secured Presidential assent. However, lawyers opposed to a number of the Bill's provisions resisted its notification in February 2000 by resorting to a country-wide strike. In Tamil Nadu, court functioning was paralyzed for more than 10 days. Lawyers argued that the amendments would not only increase litigation costs, but increase delays. In New Delhi, lawyers were lathi-charged⁴ during a demonstration. As a result of the protests, then Union Law Minister Ram Jethmalani, decided to keep the Act in abeyance. The 1999 Act provoked protests mainly because Jethmalani showed little sensitivity to the lawyers' objections. Another criticism was that it facilitated the recording of evidence by commissioners as opposed to the examination of witnesses in open court. As a commissioner could be anyone, be he a retired judicial officer or a practising lawyer—the 1999 Act did not provide precise criteria—this was an obvious infringement on lawyers' authority. Jethmalani's successor, Arun Jaitley, introduced a fresh amendment Bill later in 2000, taking into account suggestions from bar representatives, political parties and the Law Commission⁵. The act was met with little resistance⁶ and came into effect in 2002.

The 2002 Amendment Act contains 89 amendments. I examined each one and found 57 likely to influence judicial speed. Codifying an amendment as +1 if it is thought to increase speed and -1 if it is thought to reduce speed gave me a figure of +38, which allowed me to conclude that the Act is likely to increase judicial speed.

Figure 1 shows the number of cases pending per judge in India's Lower Courts between 2000 and 2004. It shows a sharp reduction in the number of cases pending after 2002. This is not obvious: when judicial efficiency improves, people seek judicial help under the belief that it will be forthcoming. An increase in solved cases resulting from the reform could be accompanied by an increase in filed cases, which suggests greater public confidence in the judiciary. The impact on overall duration of case treatment would be ambiguous. A decrease in cases pending per judge in 2002 followed by an increase in 2003 would be consistent with the explanation according to which it took one year for people to file more cases due to their renewed confidence in the judiciary.

This analysis cannot however disentangle the reform's effects from other changes having occurred in 2002. I will now describe a particular feature of this reform which implied that there was some spatial variation in its implementation.

2.2 Identification strategy

2.2.1 Description

The paper's identification strategy relies on the fact that several of the 89 amendments of the 2002 Amendment Act had previously been enacted in a number of States. Under Section 122 of the Code of Civil Procedure, High Courts have power to amend, by rules, procedure laid down in Code orders. If a given State had already enacted a particular amendment later contained in the 2002 Amendment Act, then this particular amendment must have had no effect in that State in 2002 compared to the rest of the country. I therefore read every order of the Code of Civil Procedure, verified whether it had been amended by the 2002 Amendment Act, codified its likely impact on speed (+1 if thought to increase speed and -1 if thought to reduce speed), and verified whether any of India's States had previously passed the same amendment. The total impact of the 2002 Amendment Act for a particular State will be decreased by one if that State had already passed a positive amendment of it⁷.

A concrete example can be found in Order 26 Rule 4A. Rule 4A was added by the 2002 Amendment Act:

"Commission for examination of any person resident within the local limits of the jurisdiction of the court.-Notwithstanding anything contained in these rules, any court, may in the interest of justice or for the expeditious disposal of the case or for any other reason, issue commission in any suit for the examination, on interrogatories or otherwise, of any person resident within the local limits of its jurisdiction, and the evidence so recorded shall be read in evidence."

The same amendment was enacted in Rajasthan in 1973. Commissions have therefore been in use there for any person resident within local limits of court jurisdiction from 1973 onwards. This amendment of the 2002 Amendment Act will have no impact in Rajasthan in 2002 as compared to other Indian States. The question arises as to why Rajasthan already passed such an amendment. It might indicate that Rajasthan was simply more "advanced" as a State. This unobserved heterogeneity will lead to a spurious correlation between the reform and economic outcomes. I will respond to this claim in two ways. First, I will use a difference-in-differences analysis, comparing States less influenced by the 2002 Amendment Act to the other States, before and after the reform. This empirical strategy accounts for any time-constant State heterogeneity. The only remaining concern of such an analysis is the assumption of common time effects: "treated" and "untreated" States should evolve in similar fashion. The question is therefore whether amendments enacted in the past have any bearing on the evolution of judicial quality in 2002, coinciding with the 2002 Amendment Act. This is the identification assumption: secondly, I will assume that previously enacted amendments were potentially responsive to economic and political conditions of the time but had no bearing on the evolution of judicial quality in 2002, except through their attenuation of the 2002 Amendment Act. In other words, they were enacted so long ago that they can be considered predetermined. This is confirmed by their time distribution. I found 106 State amendments in the Code of Civil Procedure identical to the 89 amendments of the 2002 Amendment Act⁸. They were enacted on average in 1969 (standard error of 17). The last State amendment was enacted in 1994. Figure 2 shows their distribution over

time. It is clear from this figure that most were enacted quite some time ago. In other words, they may be considered predetermined.

Other amendments are less straightforward. A peculiar example is Order 20, Rule 1. This describes when a judgement is to be pronounced. A court must pronounce judgement 15 days from the date on which the case hearing was concluded, or 30 in exceptional circumstances. The 2002 Amendment Act changed these two numbers to 30 and 60 respectively. This goes against the objective of facilitating swift disposal of cases and is thus codified as a -1. However, Tamil Nadu, Pondicherry and Andhra Pradesh States passed an amendment in 1930 specifying that no time limits are to be imposed on courts. As the 2002 Amendment Act overrules all previous legislation, the impact in these three States will be positive as time limits are now imposed, whereas the impact of the reform in other States will be negative as longer time limits are imposed. I therefore place a +2 for these three States in order to specify that the overall impact on them should be positive (-1+2) as opposed to all others which receive a -1.

Another example is Order 58, Rule 1. This rule specifies the duration of civil prison detention for a judgement-debtor who has not satisfied the decree against him. The changes resulting from the 2002 Amendment Act are noted in parentheses. He is to be detained for no more than three months if the decree requires him to pay a sum of money exceeding 1,000 Rs. (5,000). He shall be detained for no more than six weeks if the decree requires him to pay a sum of money between 500 (2,000) and 1,000 Rs. (5,000). This change was obviously made to adjust for the depreciation of the Rupee. However, in 2002, some judgement debtors who would have gone to civil prison under the previous code were not required to so under the 2002 Amendment Act. This incites judgement debtors to delay payment of decrees since they will not be sent to prison for doing so. I therefore codify this amendment in the 2002 Amendment Act as a -1. However, West Bengal enacted an amendment in 1967 that was harsher: judgement debtors are to be detained for six months if their payment decree exceeds the sum of 50 Rs. and six weeks in other cases. As the 2002 Amendment Act overrules previous litigation, its impact in West Bengal will be even more negative than in the rest of the

country which had softer laws. I therefore added a -1 to West Bengal compared to the other states.

These three examples give an idea of the spatial variation in the likely effect of the 2002 Amendment Act. Figure 3 shows the cumulative impact of the amendments already present in the 2002 Amendment Act for each State. An amendment is codified as +1 if it increases judicial speed, -1 if it decreases judicial speed. Figure 4 shows gives the same graph for hypothetical States 1 and 2. This figure represents State 1 which enacted some amendments already present in the 2002 Amendment Act as opposed to State 2. The impact of the 2002 Amendment Act will therefore be lower for State 1 than for State 2. Figure 5 depicts the evolution of a particular outcome of interest (for example the number of cases pending per judge) for State 1 and 2. I do not expect the outcome to be similar before the reform. Indeed, State 1 enacted amendments likely to have increased judicial speed. Though State 1 may be systematically different from State 2, the reform should equalize their outcomes, since the 2002 Amendment Act overrules past litigation. It is therefore possible to isolate the causal impact of the reform by comparing outcomes for State 1 and 2 before and after the reform. The systematic difference between both States is taken into account if the outcome of state 1 is differenced before and after the reform. It is also possible to disentangle the effect of the reform from any coincidental change by differencing between State1 and 2 after the reform (and before) as both evolve in the same macroeconomic context. This is the intuition of a difference-in-differences analysis.

It is reassuring to see an example of the hypothetical situation I described in Figures 4 and 5. Figure 6 represents the number of cases pending per judge in Lower Courts in India between 2000 and 2004. The Delhi and Uttar Pradesh examples are striking. Uttar Pradesh experienced many positive changes that became redundant with the 2002 Amendment Act, whereas Delhi experienced only one amendment, as visible in Figure 3. I expect the effect of the reform to be stronger in Delhi than in Uttar Pradesh. In Figure 6, we see that Uttar Pradesh experienced a slight flattening of its number of cases pending per judge, whereas Delhi experienced a decrease in the number of cases pending

per judge after 2002. This is graphical evidence of different cross-State implementation of the 2002 Amendment Act due to amendments having been previously enacted in certain States. I will now present statistical tests of the identification strategy.

2.2.2 Tests of the identification strategy

To relate the judicial reform to the speed of the judiciary, I perform regressions of the following sort:

$$pending_{st} = \alpha_s + \beta_t + \gamma 2002AmendmentAct_s * (post2002_t) + \delta(\alpha_s * trend_t) + \varepsilon_{st}$$

where s corresponds to the State and t to time (between 1999 and 2006). The dependent variable $pending_{st}$ is the number of cases pending per judge in Lower Courts in India in 35 states and 8 years. Cases pending in Lower Courts in India were obtained from Annual Reports, Ministry of Law & Justice & Past Issue, Govt. of India. Numbers of Judges were obtained from various Rajya Sabha and Lok Sabha questions. α_s are State fixed effects, β_t year fixed effects. The variable $2002AmendmentAct_s$ is the net impact of the 2002 Amendment Act once taken into account the fact that some states already enacted some amendments in the past. Therefore, this variable varies by state. It is interacted with $post2002_t$ equal to 1 if the year of observation is after 2002. The coefficient of interest is therefore γ . Additionally, state dummies interacted with a time trend are included. Standard errors are robust.

The main advantage of this difference-in-differences analysis is that it controls for State and year fixed effects. In other words, constant State unobserved heterogeneity and time effects are controlled for. Column (1) of Table (1) present the main result and illustrates the positive impact of the 2002 Act. One extra amendment decreased by 676 the number of cases pending per judge in the Lower Courts which represents 35% of a workload. The effect is statistically significant at 10% and indicates that the reform was successful in reducing case backlog.

To isolate the reform's causal impact, the difference-in-differences strategy relies on

the assumption of common time effects: States where the impact of the 2002 Amendment Act was minimal (due to their having previously passed the same amendments) should have evolved in the same way as States where the reform had considerable impact, had they been subjected to the same reform's impact. In other words, States in which the impact was low might evolve differently from other States. This is a critical assumption as States have made an endogenous choice when enacting amendments. Besley et al (2000) argue that State reforms are responsive to economic, political or judicial conditions within that State. It is necessary to identify and account for the forces that led to the amending of the Code of Civil Procedure if unbiased estimates of the 2002 Act's effects are to be obtained. However, as I have already argued, the amendments were enacted a long time ago (on average in 1969) and were responsive to the economic, political or judicial conditions of the time, not of 2002. They are thus predetermined. They most certainly influenced the number of cases pending before 2002, this inter-State systematic difference being accounted for in the difference-in-differences analysis. But one could argue that the past amendments have had no influence on the evolution of the number of cases pending in 2002, except through their attenuation of the 2002 Amendment Act.

This reason is not entirely satisfactory as one could easily retort that States which made these changes for themselves are probably on a different time-path than States which had to have a national-level amendment act imposed on them. One can also hypothesize the direction of the bias according to the following scenario. It is possible that States that adopted some amendments early did so since they saw increases in cases pending. Let us now assume that the 2002 Amendment Act and any amendment to the Code of Civil Procedure have no effect on the speed of the judiciary. In this case, the number of cases pending kept increasing over time in these states. The 2002 Amendment Act would have no effect on the speed of the judiciary in 2002 but a regression would still measure an impact since the time trend implies that states with a low number of 2002 amendments (due to their many past amendments) have more cases pending in 2002 than in 2001.

To counter this argument, I include state dummies interacted with time trends ($\alpha_s * trend_t$) in the regressions. This captures the different time-paths followed by States. In column (1), the impact of the reform is statistically significant when state-time trends are included.

In columns (2) to (4), I test whether the identification strategy relies on a particular set of States. One concern is about Union Territories. These territories are administered by the central government but they still possess different High Courts that could amend the Code of Civil Procedure in different ways. In column (2), Union Territories (Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Delhi, Lakshadweep, Pondicherry) are excluded and the result remains similar. Another concern is about the North-Eastern States. These States have the same High Court due to their small size and proximity. In column (3), the North-Eastern states (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura) are excluded and the result remains the same⁹. In column (4), only the 16 biggest states of India representing more than 92% of the Indian population are included. The impact of the 2002 Amendment Act is even more statistically significant.

A final test of the identification strategy is a falsification exercise. If the identification strategy is correct, then the past amendments should have no impact on the change in the number of cases pending except through their attenuation of the 2002 Amendment Act. A way to test this is to look at the impact of past amendments on the change in the number of cases pending in 2001 (before the reform). Past amendments surely had an impact at the time they were enacted but should not influence the evolution of judicial speed before and after the reform. In column (5), the net impact of the “2002 Amendment Act” per state is interacted with the 8 year dummies. Only the interaction between the past amendments and the 2002 year dummy is significantly different from 0. This directly tests the common time effects assumption: States with a low or high number of past amendments did not experience a different evolution before the reform.

3 Data

This paper aims to show that the reform affected firms' behavior. To do this, I use two representative samples of small informal firms in India. Although there is no unique definition of informal sector, for the purpose of the Indian National Sample Survey, all unincorporated enterprises which operate on either proprietary or partnership basis are considered to constitute the informal sector. A corporation is a legal entity (technically, a juristic person) which has a separate legal personality from its members. One of the defining legal rights and obligations of the corporation is the ability to sue and be sued. This means that the firm owners considered in this sample cannot sue in the name of their firm, but they may still sue or be sued in their own name. The theoretical reasons as to why the judiciary could impact economic outcomes are valid for informal firms. There is evidence that firms use the judiciary in India. In a separate dataset from the 2001 National Sample Survey focused on consumption, I calculated that 1% of the households paid legal fees in that year. This represents 11 million persons. Additionally, data on Courts from the Annual Ministry Reports show that 3 million cases were filed in 2002. Finally but on a more anecdotal level, the witnessing of the overcrowded Tis Azari District Court in New Delhi could corroborate this statement. Even if informal firms fail to make explicit use of courts, the theoretical model presented in this paper emphasizes the fact that judiciaries influence firms' behavior thorough the perception firms have of judiciaries.

The 55th Round of India's National Sample Survey collected in 1999/2000 contains information on 170,000 small non-agricultural firms.¹⁰ The 57th round, collected in 2002, contains information on 350,000 small non-agricultural firms specializing in services (hotels and restaurants, transport, storage, communications, real estate, renting and business activities, education, health and social work). I included sector dummies in the empirical analysis in order to compare firms in identical sectors (the dataset includes the sector in which the firm operates according to the 5-digit level of the National Industry Classification). A potential problem arises from the time of the data collection. The Amendment Act was implemented in May 2002 while the dataset was collected during

2002. One might argue that it was too soon for firms in the 57th Round to file cases and experience the increased judicial speed resulting from the reform. Two comments can be made. First, the theoretical model presented in this paper emphasizes the fact that judiciaries influence firms' behavior even when firms fail to make explicit use of them. It is based on the perception firms have of judiciaries. Second, one may argue that firms were aware that the implementation of the reform was imminent and thus modified their behavior from 2002 onwards. The enactment of the 2002 Amendment Act was highly publicized due to the lawyers' strike described in the previous section.

Several characteristics of the dataset make it appropriate for use in identifying the impact of judicial delays on firms' behavior. First, a detailed list of problems experienced by the firm was collected. Each firm reported whether or not non-recovery of service charges, fees or credit hindered its operation. I interpret this problem as a breach of contract. Second, a detailed questionnaire regarding types of investment undertaken is also available, providing information on whether or not the firm added plants and machinery, tools, transport equipment or land to its assets. Third, information is provided regarding access to credit markets. Each firm was asked whether or not capital shortfalls hindered its operation. Additionally, a wealth of information on loan sources is reported. I know whether loans were granted from formal financial institutions (central and State-level term lending institutions; central, State or local governments; public sector banks or other institutional agencies), money lenders, business partners, suppliers/contractors, or friends and relatives. Fourth, information is provided on production goods ownership. I know whether or not a firm hires or owns its plant and machinery, tools, transport equipment or land. This wealth of information allows me to test each proposition made in the theoretical analysis. I will now describe the empirical method used.

4 Empirical Procedure

To relate the judicial reform to the behavior of firms, I perform regressions of the following sort:

$$y_{ijst} = \alpha_s + \beta 2002_t + \gamma 2002AmendmentAct_s * 2002_t + \delta x_{st} + \phi d_j + \varepsilon_{ijst}$$

where i corresponds to the firm, s to the State, t to time (2000 or 2002) and j the sector of the firm. The variable y_{ijst} represents the outcome variable of interest; this will first be the firm's experience of breach of contract, access to financial markets, investment, renting decisions and later its performance. In this specification, determinants of the outcome include State fixed effects (α_s), year fixed effects ($2002_t = 1$ if $t = 2002$, 0 if $t = 2000$), an interaction term between the 2002 year dummy and the variable $2002AmendmentAct_s$ (the latter is equal to the impact in particular State s of the 2002 Amendment Act calculated according to the methodology developed in Section 2.2.1), State-level controls (x_{st}), and sector-fixed effects (d_{ijst}). The coefficient of interest is therefore γ .

The main advantage of this difference-in-differences analysis is that it enables me to control for State and year fixed effects. In other words, constant State unobserved heterogeneity and time effects are controlled for. Two main problems remain: common time effects and serial correlation in the disturbance term. I will now present my corrections to these three problems.

To isolate the reform's causal impact, the difference-in-differences strategy relies on the assumption of common time effects: firms in States where the impact of the 2002 Amendment Act was minimal (due to their having previously passed the same amendments) should have evolved between 2000 and 2002 in the same way as firms in States where the reform had considerable impact, had they been in such a State. In other words, States in which the impact was low might evolve differently from other States. In section 2.2.2, I already showed that the identification strategy was robust to the inclusion of State time trends. I cannot replicate this analysis in this section as there are only two

points in time (2000 and 2002). No similar datasets. on informal firms was collected before 2000. In this section, I control for State-level changes that may have occurred at the same time and that may have blurred the impact of the reform by including State-level controls (x_{st})¹¹. I control for the per capita State-wide amount released for developing judicial infrastructure and facilities in order to account for coincidental increases in budgets allocated to the judiciary. I also control for the potential coincidental improvement in alternative dispute resolution mechanisms. I consider two institutions in particular: fast-track courts and Lok Adalats. Fast track courts are designed to expeditiously clear colossal rates of pendency in district and subordinate courts under a time-bound programme¹². I therefore include in the regressions the number of fast-track courts functioning per capita and per capita State-level financial assistance released for these fast-track courts. The other alternative dispute resolution mechanism is the Lok Adalat (people's courts)¹³. I therefore include in the regression the per capita number of cases disposed by Lok Adalats at the State-level to control for any coincidental improvement in Lok Adalats quality. I also control for police force quality which may influence contract breaches on the part of firms. I include the number of policemen for every 1000 people and total police expenditure per policemen. When outcomes concern firms' access to financial institutions, I include variables to account for the State's overall financial development such as the State-level ratio of aggregate deposits to the total credit of public sector banks and the State-level number of public sector bank offices per capita. When the outcome concerns the firms' economic performance, I include the growth rate of State-level net domestic product per capita. This allows me to control for any macroeconomic change that may have occurred between 2000 and 2002. These variables control for State-level trends that may have occurred between 2000 and 2002 and that may have influenced the outcomes under consideration.

The second problem regards serial correlation in the disturbance term (Bertrand et al, 2004). This is not a major concern, since I only consider two periods of observation. A potentially more important problem is the serial correlation for firms in the same State (Moulton, 1990). To deal with this problem, I cluster the standard errors at the

State level.

I also include sector dummies (d_j) to control for sector-specific effects. I use simple probit regressions when the outcome is a dummy variable. Rather than reporting coefficients, I report the change in the probability for an infinitesimal change in each independent variable at the mean. Multipliers, defined as the inverse of the probability that the observation is included due to the sampling design, are used as weights in the regressions in order to have a representative sample. I now discuss the results relating to the four theoretical predictions found in section 1.

5 Results

This paper seeks to relate spatial variation in the implementation of the 2002 Amendment Act to firm outcomes likely to have been influenced by judicial efficiency (or lack thereof). The theoretical section showed that judiciaries affect the probability of experiencing breaches of contract, investment incentives, access to financial markets and decisions on whether to rent or own production goods. I will now test these four predictions using the empirical methodology outlined in Section 3.

Table 2 examines the relationship between contracting behavior and the 2002 Amendment Act. The dependent variable is the occurrence of contract breaches. It was obtained from a list of problems commonly experienced by firms. The ‘non-recovery of service charges/ fees/ credit’ is one such problem. It relates to cases in which a breach of contract had occurred. I thus constructed a dummy variable equal to 1 in cases where the firm experienced this type of problem as one of its main problems, and 0 if it did not. In Column (1), I included State fixed effects, year fixed effects and a term called "2002 Amendment Act" which is the interaction between the year 2002 dummy and the number of amendments likely to increase speed for each State. As outlined in Section 2.2, there is spatial variation in this index since some States had previously enacted amendments present in the 2002 Act. The coefficient indicates that an amendment likely to increase speed in the 2002 Act decreases the probability of experiencing a breach of contract by

0.73 percentage point. This coefficient is statistically significant. It is also economically significant. There are 38 amendments in the 2002 Amendment Act likely to increase speed. However, multiplying this result by 38 would extrapolate the results given by the regressions since there is little variation in the index measuring spatial variation in the implementation of the 2002 Act. Instead, it is worthwhile to compare this result to the probability of experiencing a breach of contract, which concerns 6 percent of the firms. Thus, an amendment likely to increase judicial speed in the 2002 Act decreases the probability of experiencing a breach of contract by 12 percent. In Column (2), I added NIC2 dummies. This corresponds to the National Industrial Classification, disaggregated to the second level. 42 NIC2 dummies were included to account for the fact that the 57th Round of the National Sample Survey focuses on services firms. The coefficient does not vary. In Column (3), NIC3 dummies are included. This corresponds to the National Industrial Classification, disaggregated to the third level. 119 NIC3 dummies were included. The effect remains similar. In Column (4), State-level controls, as described previously, are included. The coefficient remains remarkably similar. This result confirms the fact that the effect on the probability of experiencing a contract breach comes from procedural reform and not from coincidental changes in judicial infrastructure, the quality of alternative dispute resolution mechanisms such as the fast-track courts or Lok Adalats and police force quality. Table 2 confirms Proposition 1 stating that more efficient judiciaries are associated with less breaches of contract. Table 2 also provides a policy implication in the sense that this procedural reform affects a firm's probability of experiencing a breach of contract.

Table 3 examines the relationship between the reform and investment incentive. The explanatory variable of interest is the index that interacts the year 2002 dummy with the number of amendments likely to increase speed from the 2002 Amendment Act in a particular State. In Column (1), the dependent variable is the net addition to plant and machinery assets under ownership during last 365 days. This variable is equal to 1 if the enterprise experienced a net addition to plant and machinery assets, 0 otherwise. An extra amendment likely to increase speed in the 2002 Act increases the probability

of investing in plant and machinery assets by 0.4 percentage points. This is a sizeable impact given that only 3 percent of firms invest in plant and machinery assets. The dependent variable in Column (2) is the net addition to tools and other fixed assets owned during last 365 days (1 if the enterprise made such an investment, 0 otherwise). Another amendment likely to increase judicial speed also increases the probability of investing in tools and other fixed assets by 4 percentage points, given that 17 percent of firms invest in tools. The dependent variable in Column (3) is the net addition to transport and equipment assets owned during last 365 days (1 if the enterprise made such an investment, 0 otherwise). The effect is also quite important. The dependent variable in Column (4) is the net addition to land assets owned during last 365 days (1 if the enterprise made such an investment, 0 otherwise). The coefficient is not significant for land assets. The proposition therefore seems to hold for production goods but not for land assets.

Table 4 examines the influence of the judiciary on firms' access to credit markets. The dependent variable is information on loans and the explanatory variable of interest is the interaction between the year 2002 dummy and the number of amendments likely to have increased speed in each State. The dependent variable used in the Column (1) regression is a dummy variable equal to 1 in cases where the firm experienced a shortage of capital as one of its problems, and 0 otherwise. One amendment likely to increase efficiency in the 2002 Amendment act decreases the probability of experiencing capital shortfalls by 6 percentage points. This result is statistically significant and rather large when compared to the fact that 25% of firms experience problem of capital shortfalls. This regression includes State fixed effects, year fixed effects, NIC3 dummies and State level controls. I include the same State level controls as in Table 2, and add some variables that account for the development of the financial sector, such as the State-wide ratio of aggregate deposits to total credit of public sector banks and the State-wide number of public sector bank offices per capita. This is to control for any coincidental change in the depth of the State financial sector¹⁴. The rest of the table restricts the sample to firms having obtained loans in order to test Proposition 2, which states that more firms will

receive loans from formal financial institutions and less from friends when judicial quality increases. In Column (2), the dependent variable is the probability of obtaining loans from formal financial institutions such as government or banks. I found that with one extra amendment of the 2002 Act increasing judicial speed, the probability of obtaining a loan from a formal financial institution (conditional on obtaining a loan) increases by almost 5 percentage points. In Column (3), the dependent variable is the probability of obtaining a loan from a business friend (contractor, moneylender) if the enterprise did in fact obtain a loan. The coefficient is positive, which shows that a better judiciary is associated with more loans from contractors where an efficient judiciary is key to recovering the defaulted loans. However, the effect is not statistically significant. The dependent variable in Column (4) is the probability of obtaining a loan from a relative (or business partner) if the enterprise obtained a loan. The result is not statistically significant.

Table 5 looks at the relationship between the reform and the propensity of small informal firms to rent. The dependent variable is equal to 1 if the enterprise is renting some of its production goods¹⁵. The four categories of production goods (plant and machinery assets, tool assets, transport and equipment assets and land assets) are considered in the four columns. I find that the 2002 Amendment Act does not have any impact on the propensity to rent plant and machinery assets. However, one extra amendment increased the propensity to rent tools and other fixed assets by 0.3 percentage point. This is an economically significant result compared to the fact that 1.7 percent of the population rented tools. The effect is not so strong for transport and equipment assets and negative for land assets. But the magnitude of this coefficient is small compared to the fact that 35 percent of the population are renting land assets.

Results indicate that the four theoretical predictions obtained from the model seem to hold in the data. Considering that experiencing less breaches of contract, investing more, having a better access to financial markets and to thicker rental markets are positive determinants of firms' economic performance, I now turn to the effects of this reform on the expansion of small informal firms.

6 Effects on Firm Performance

This paper seeks to determine whether a judicial reform that seems to be correlated with an increased speed of the judiciary affect not only firm-level behavior but also firm-level performance. Table 6 examines the relationship between this reform and the performance of the firm. The dependent variable is now the growth status of the firm. It is a subjective measure since it was asked directly of firm owners. It is a dummy variable equal to one if the firm is expanding or constant, to zero if the firm is shrinking. In column (1), the explanatory variables include State fixed effects, year fixed effects and the index measuring the number of amendments effectively implemented in the State. The coefficient is statistically positively significant and indicates that one extra amendment improving the procedures of the Code of Civil Procedure increases the probability for the firm to be expanding by 1.2 percentage point. The proportion of firms saying that their firms was expanding or constant is 74 percent. This means that an extra amendment increases the proportion of firms expanding or constant by 1.7 percent. This is the effect of just one amendment of the 2002 Amendment Act. But the number of amendments passed varied between 34 and 40. Another interpretation would be to say that moving a firm from an average State with the lowest number of amendments passed to the highest number of amendments passed will increase its probability to be expanding or constant by 7.2 percentage point, in other words the proportion of firms expanding increases by 9.7 percent in a State with the highest as opposed to the lowest number of amendments passed . It is also worthwhile remembering that the 2002 Amendment Act contains 38 amendments likely to increase speed. In column (2), I control for the same State level controls I have used in section 5. The coefficient stays constant. In Column (3), I add the growth rate of the State net domestic product per capita to control for States' economic development. The coefficient remains statistically positive. This means that the effect is not just due to a coincidental State-specific macroeconomic improvement. It is also interesting to investigate the effect of the reform on the decision to start a company. An entrepreneur in a State with a speedy judiciary knows that he will suffer less from breaches of contract, be protected in case of appropriation of his investment

rents, have better access to formal financial institutions and to thicker rental markets. An entrepreneur will therefore be more willing to start his own company. The dependent variable in column (4) is now equal to 1 if the firm operated for less than 3 years, in other words a new firm, 0 otherwise. This is a measure of the new firms created in each State. One extra amendment increases the likelihood to be a new firm having operated for less than three years by 0.9 percentage point. Given that 14.9% firms in the sample were new, it means that an extra amendment increased the proportion of new firms by 6 percent. A State with the biggest impact from the 2002 Amendment Act, in other words with the most number of amendments enacted in 2002, has 36 percent more new firms than a State with the smallest impact of the 2002 Amendment Act.

7 Conclusion

This paper has shown that the quality of judicial institutions in Indian States matters for both small firms' behavior and their economic performance. My findings are in line with an emerging, largely macroeconomic literature (Djankov et al (2002), Acemoglu et al (2001), Rodrik et al (2002), for example), underlining the importance of institutions in economic performance. The identification strategy in this paper allows me to isolate the causal impact of one type of institution, the judiciary, on firms' outcomes. I use the spatial variation in the implementation of a judicial reform, the 2002 Amendment Act, with the objective of facilitating speedy disposal of cases. This spatial variation is due to the fact that some States already enacted some of the amendments contained in the 2002 Amendment Act. These States will therefore feel a weaker effect of the 2002 Amendment Act in 2002. I argue that the amendments already enacted were passed a long time ago and can be considered predetermined. Additionally, a difference-in-differences strategy accounts for unobserved State heterogeneity.

I found that this reform was effective in the sense that it decreased the number of cases pending per judge in Lower Courts. I then used repeated cross-sections of firm-level data that contains much information on non-recovery of service charges/fees/credit, in-

vestment decisions, whether a firm is capital constrained, sources of borrowing and forms of ownership of production goods for small informal non-agricultural firms specialized in services. I found that this reform and therefore a speedier judiciary decreases the probability to experience a breach of contract, increases the incentives to invest, decreases the probability to experience shortage of capital, favors access to formal financial institutions and thickens rental markets. These results indicate that the quality of judiciaries across Indian States plays an important role in shaping economic activity in this important sector of the economy. Moreover, I found that having faster courts is positively associated with firm performance. My results are consistent with a simple game theoretic model illustrating how slower judiciaries affect agents' behavior in contracting relationships. This theory's key insights are that firm owners in slow judiciary environments are more likely to break contracts, less likely to engage in investments, more likely to be credit constrained, less likely to have access to formal credit and less likely to have access to rental markets.

This paper not only suggests that the judiciary shape economic activity but also suggests a way to improve it by modifying the procedures to treat of a case. This research leaves important questions open concerning the political economy of such a reform. It raises the question as to why this reform was not implemented earlier if it is so beneficial for small firms. An unanswered question concerns whether the effects of a slow judiciary vary across sectors of an economy. One can imagine for example that firms in India's registered or formal manufacturing sector may have fewer contracting problems than informal firms I examined in this paper. One can also imagine that some economic agents or firms could benefit from a slow judiciary by using it as a way to delay bad outcomes. These vested interests could perturb the enactment of such a reform. In future work, I plan to extend my analysis to firms in other sectors of the Indian economy as a means of testing this hypothesis.

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Notes

¹To be more precise, I will consider in the empirical section of this paper plant and machinery assets, tools and other fixed assets, land assets, transport and equipment assets.

²Law's Delays: Arrears in Courts, 85th Report, Department-related parliamentary standing committee on Home affairs, Parliament of India, Rajya Sabha. <http://rajyasabha.nic.in/>

[book2/reports/home_aff/85threport%20.htm](http://rajyasabha.nic.in/book2/reports/home_aff/85threport%20.htm)

³Krishnamoorty, Dasu, *Judicial Delays*, Indolink, editorial analysis, 2003

⁴A lathi is a 6 to 8 foot long bamboo stick tipped with a metal blunt

⁵<http://www.hinduonnet.com/fline/fl1914/19141020.htm>

⁶resistance was even weaker thanks to a Supreme Court decision on December 18, 2002, which alleged that lawyers had no right to strike, pronounce a boycott, or engage in a token strike, since these actions deny the fundamental right of access to justice on the part of the litigant public.

<http://www.dailyexcelsior.com/web1/03jan17/edit.htm#4>

⁷The complete example for Uttar Pradesh is shown in Data Appendix 1.

⁸I found only 82 State amendments identical to the 57 amendments related to speed in the 2002 Amendment Act.

⁹In the microeconomic analysis, proper weights will be used in the dataset, effectively dealing with this matter.

¹⁰See Data Appendix 2 for details on variables.

¹¹See Data Appendix 2 for some descriptive statistics and sources of the variables.

¹²An objective of the five-year experimental scheme begun in 2001 was to prioritize basis sessions and other cases involving undertrials. The scheme envisaged appointing ad hoc judges from among retired sessions or additional sessions judges with explicit productivity incentives: fast track courts are required to dispose of 14 sessions trial cases or 20 to 25 criminal or civil cases per month.

¹³The latter were established by the government in 1986 to settle disputes through conciliation and compromise. Their main condition is that the disputing parties must agree on settlement. Lok Adalat decisions are binding and its orders are capable of being executed through the legal process. No appeal lies against Lok Adalat orders. There are no court fees.

¹⁴The result is robust to a variety of specifications with and without controls but the most complete specification is shown.

¹⁵an alternative dependent variable equal to 1 if the firm was a global renter in the particular production good of interest (market value of production good hired superior to market value of production good owned) was also used and produced the same results.

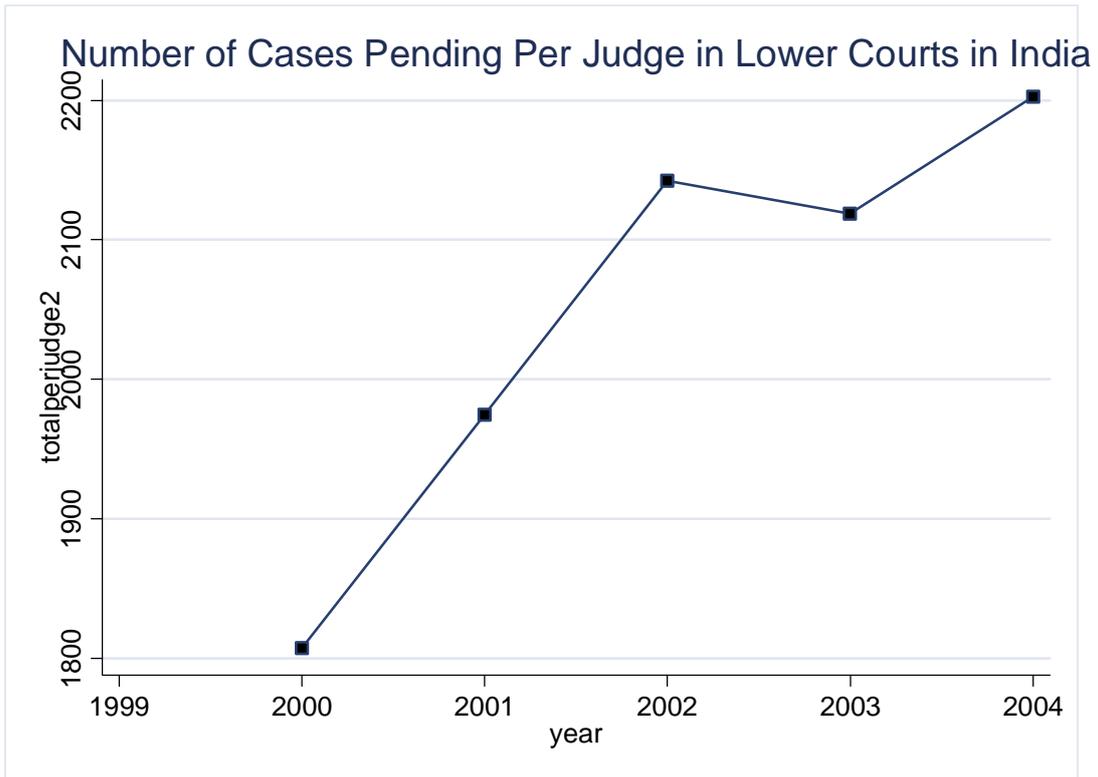


Figure 1: Number of cases pending per judge in Lower Courts in India

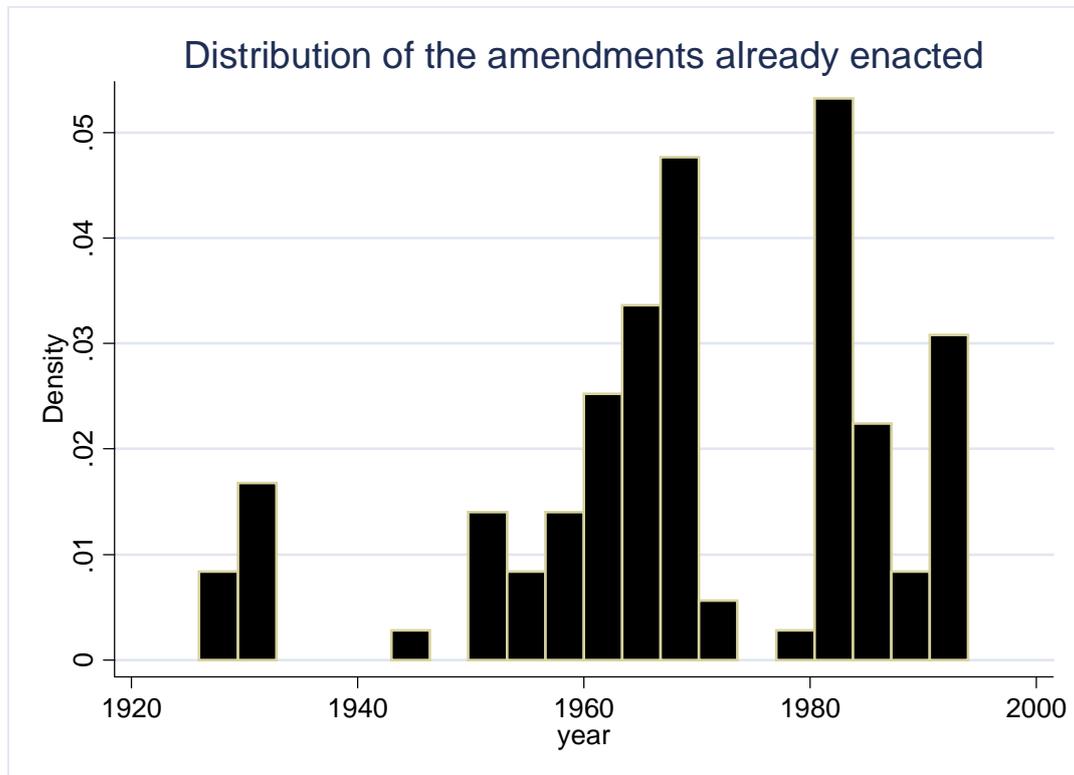


Figure 2: Distribution over time of the amendments already enacted

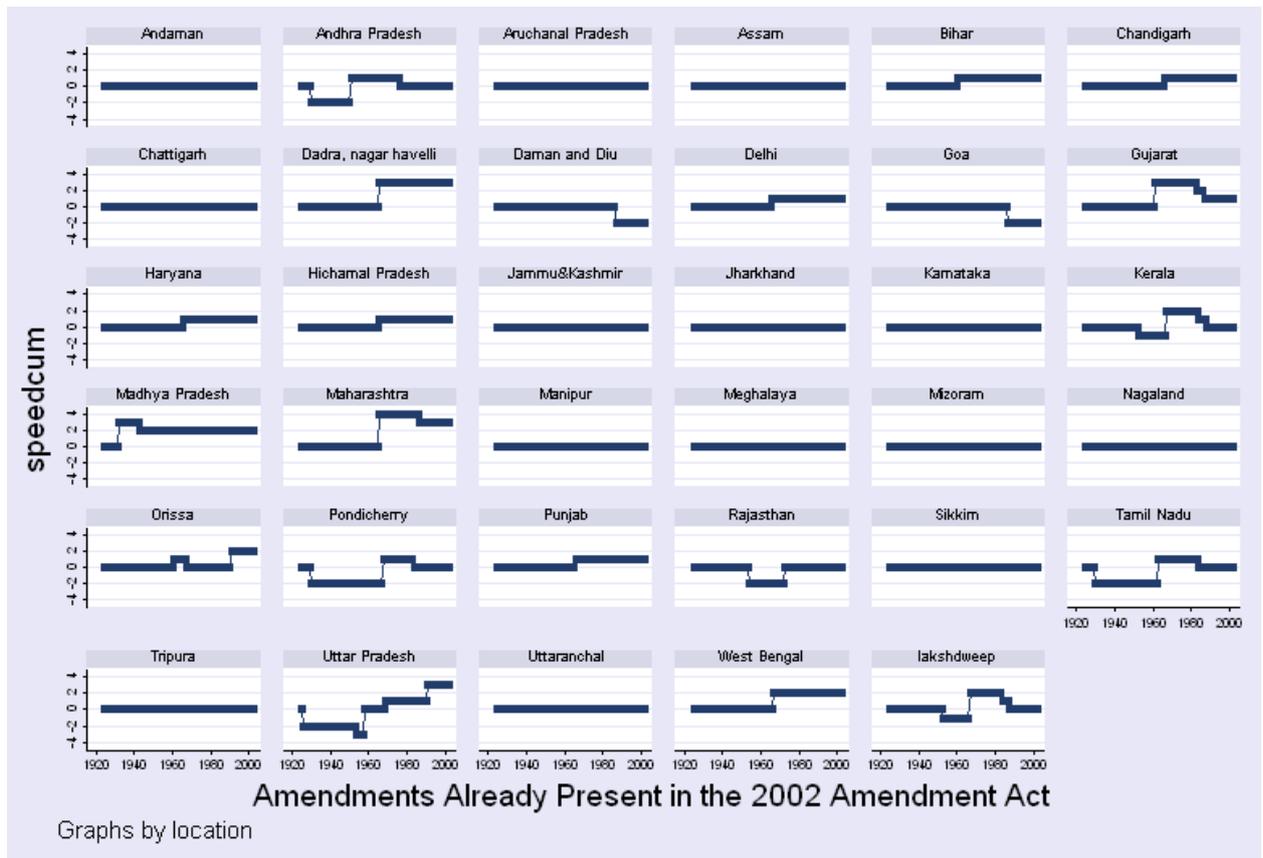


Figure 3: Amendments already present in the 2002 Amendment Act

Illustration of the identification strategy

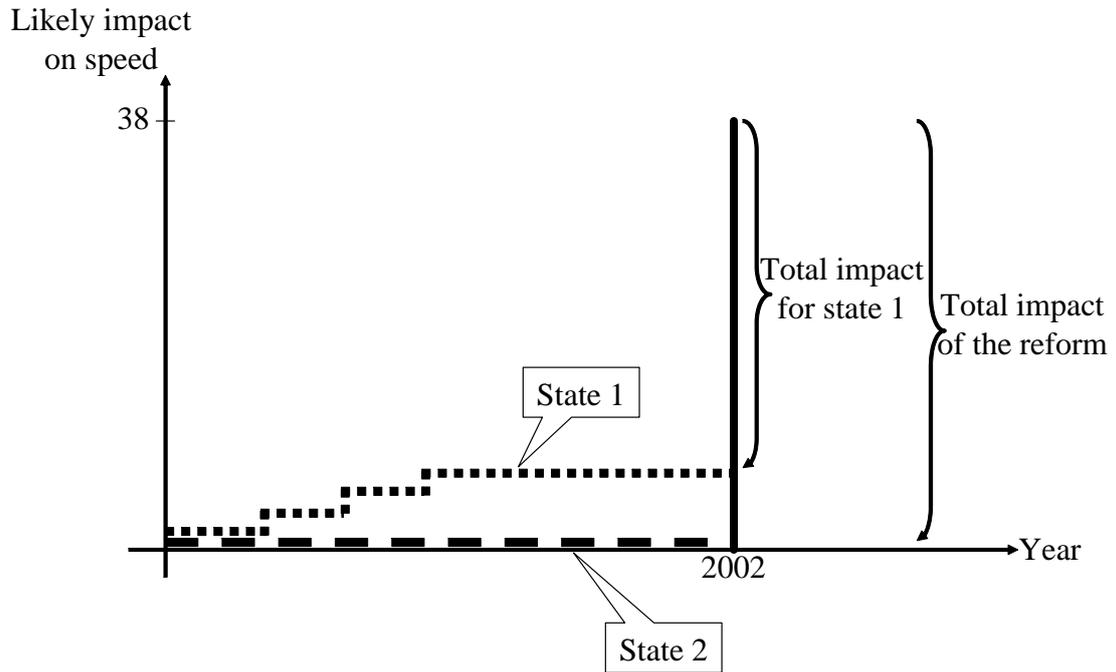


Figure 4: Illustration of the identification strategy

Outcome for state 1 and 2

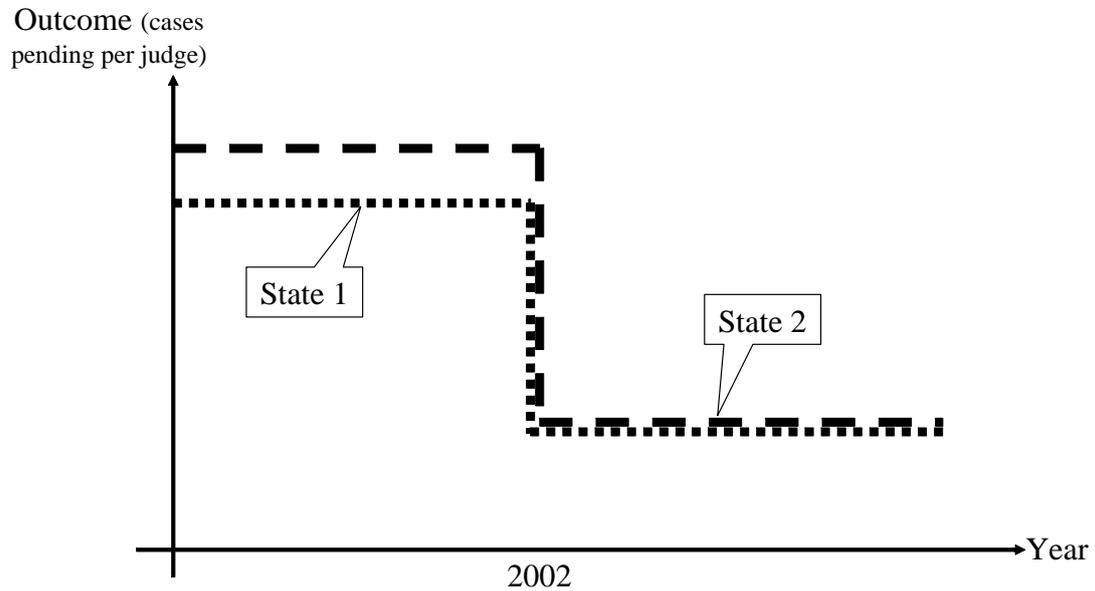


Figure 5: Outcome for state 1 and 2

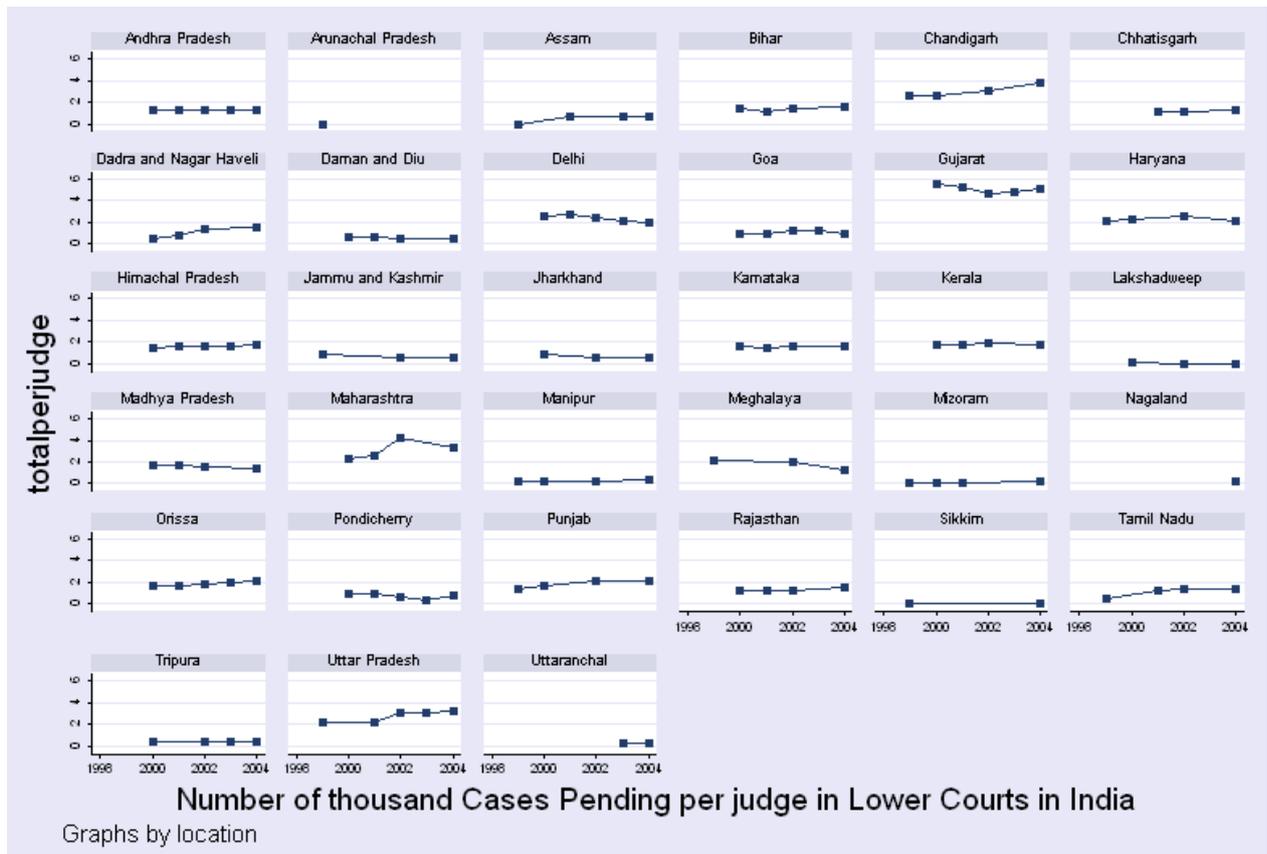


Figure 6: Number of thousand cases pending per judge in Lower Courts in India

Table 1: Impact of the 2002 Amendment Act on Number of Cases Pending Per Judge
(Dependent Variable: Number of thousand cases pending per judge in Lower Courts in India)

Sample	(1) Whole Sample	(2) Without Union Territories	(3) Without North-Eastern States	(4) 16 bigger states	(5) Whole Sample
2002 Amendment Act*(post 2002)	-676.5677 (1.81)*	-792.1859 (1.75)*	-631.9001 (1.81)*	-993.3815 (2.06)**	
2002 Amendment Act*1999					1,308.6633 (1.07)
2002 Amendment Act*2000					57.9347 (0.71)
2002 Amendment Act*2001					66.5579 (0.64)
2002 Amendment Act*2002					-278.4926 (1.80)*
2002 Amendment Act*2003					44.7769 (0.26)
2002 Amendment Act*2004					-411.4252 (1.02)
2002 Amendment Act*2005					508.1648 (1.22)
2002 Amendment Act*2006					382.0395 (1.52)
Year Dummies (8)	Yes	Yes	Yes	Yes	Yes
State dummies (37)	Yes	Yes	Yes	Yes	Yes
State Trend dummies (37)	Yes	Yes	Yes	Yes	No
Observations	165	136	133	87	165
R-squared	0.73	0.72	0.71	0.69	0.74

Robust t statistics in parentheses, * significant at 10%, ** significant at 5%, *** significant at 1%. Number of cases pending in Lower Courts in India obtained from Annual Reports, Ministry of Law & Justice & Past Issue, Govt. of India. Number of Judges obtained from various Rajya Sabha and Lok Sabha questions, centralised by www.indiastat.com. The variable 2002 Amendment Act is the net impact of the 2002 Amendment Act once taken into account the fact that some states already enacted some amendments in the past. Therefore, this variable varies by state. State dummies and Year Dummies are included in all columns. 37 states and 8 years are included. In columns (1), (2), (3), (4), the variable of interest is "2002 Amendment Act*(post 2002)" equal to the net impact of the reform interacted with a post 2002 dummy. In columns (1), (2), (3), (4), 37 state dummies interacted with a time trend are included. In column (2), Union Territories are excluded (Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Delhi, Lakshadweep, Pondicherry). In column (3), the North-Eastern states are excluded (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura). In column (4), only the 16 biggest states of India representing more than 92% of the indian population are included. In column (5), the net impact of the "2002 Amendment Act" per state is interacted with the 8 year dummies.

Table 2: Impact of the 2002 Amendment Act on the probability to experience a breach of contract

	(1)	(2)	(3)	(4)
	non-recovery of service charges, fees, credit			
2002 Amendment Act	-0.0073	-0.0067	-0.0069	-0.0072
	(-2.67)***	(-2.69)***	(-2.65)***	(-2.91)***
State Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
NIC2 dummies	No	Yes	No	No
NIC3 dummies	No	No	Yes	Yes
State-Level Controls	No	No	No	Yes
Observations	537454	537396	537141	527547

Robust z statistics in parentheses, clustered at the level of the state. * significant at 10%; ** significant at 5%; *** significant at 1%. The dependent variable is the probability to experience a problem of non- recovery of service charges / fees/ credit. This variable is equal to 1 if the enterprise experienced such a problem, 0 otherwise. The variable 2002 Amendment Act is the net impact of the 2002 Amendment Act once taken into account the fact that some states already enacted some amendments in the past. Therefore, this variable varies by state. State dummies and Year Dummies are included. In column (2), NIC2 dummies are included. This corresponds to the National Industrial Classification, disaggregated to the second level. 42 NIC2 dummies were included. In column (3), NIC3 dummies are included. This corresponds to the National Industrial Classification, disaggregated to the third level. 119 NIC3 dummies were included. In column (4), state-level controls are included: number of fast-track courts functioning per capita, state-wise financial assistance released for fast-track courts per capita, state-wise number of cases disposed off in Lok Adalats per capita, state-wise amount released for development of infrastructural facilities for judiciary in India per capita, number of policemen per one thousand of population, total police expenditure per policemen.

Table 3: Impact of the 2002 Amendment Act on investment

	(1)	(2)	(3)	(4)
	net addition to plant and machinery assets	net addition to tools and other fixed assets	net addition to transport and equipment assets	net addition to land assets
2002 Amendment Act	0.0044 (3.65)***	0.0408 (2.73)***	0.0039 (2.77)***	-0.0026 -1.11
State Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
NIC3 dummies	Yes	Yes	Yes	Yes
State-Level Controls	Yes	Yes	Yes	Yes
Observations	502633	504901	502762	498969

Robust z statistics in parentheses, clustered at the level of the state. * significant at 10%; ** significant at 5%; *** significant at 1%. The dependent variable in column (1) is the net addition to plant and machinery assets owned during last 365 days. This variable is equal to 1 if the enterprise experienced a net addition to plant and machinery assets, 0 otherwise. The dependent variable in column (2) is the net addition to tools and other fixed assets owned during last 365 days (1 if the enterprise did such an investment, 0 otherwise). The dependent variable in column (3) is the net addition to transport and equipment assets owned during last 365 days (1 if the enterprise did such an investment, 0 otherwise). The dependent variable in column (4) is the net addition to land assets owned during last 365 days (1 if the enterprise did such an investment, 0 otherwise). The variable 2002 Amendment Act is the net impact of the 2002 Amendment Act once taken into account the fact that some states already enacted some amendments in the past. Therefore, this variable varies by state. State dummies and Year Dummies are included. NIC3 dummies are always included. This corresponds to the National Industrial Classification, disaggregated to the third level. 119 NIC3 dummies were included. State-level controls are always included. They are: number of fast-track courts functioning per capita, state-wise financial assistance released for fast-track courts per capita, state-wise number of cases disposed off in Lok Adalats per capita, state-wise amount released for development of infrastructural facilities for judiciary in India per capita, number of policemen per one thousand of population, total police expenditure per policeman. I also added some controls specific to states' financial development: state-wise ratio of aggregate deposits to total credit of public sector banks and state-wise number of bank offices of public sector banks per capita.

Table 4: Impact of the 2002 Amendment Act on access to finance

	(1)	(2)	(3)	(4)
	shortage of capital	loan from a formal institution	loan from a business friend	loan from a relative
2002 Amendment Act	-0.064 (-4.28)***	0.0487 (2.73)***	0.0285 0.43	0.0297 0.99
State Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
NIC3 dummies	Yes	Yes	Yes	Yes
State-Level Controls	Yes	Yes	Yes	Yes
Observations	504966	49588	50233	50179

Robust z statistics in parentheses, clustered at the level of the state. * significant at 10%; ** significant at 5%; *** significant at 1%. The dependent variable in column (1) is the probability to experience a problem of shortage of capital (1 if the entrepreneur experienced such a problem, 0 otherwise). The dependent variable in column (2) is the probability to obtain a loan from a formal financial institution (financial institutions, government, bank) among the entrepreneurs which obtained a loan (1 if the entrepreneur obtained a loan from a formal financial institution if it obtained a loan, 0 otherwise). The dependent variable in column (3) is the probability to obtain a loan from a business friend (contractor, moneylender) if the entrepreneur obtained a loan. The dependent variable in column (4) is the probability to obtain a loan from a relative (relative, business partner) if the entrepreneur obtained a loan. There are only 50,000 observations for columns (2), (3) and (4) as only 50,000 of the entrepreneurs reported having obtained a loan. The variable 2002 Amendment Act is the net impact of the 2002 Amendment Act once taken into account the fact that some states already enacted some amendments in the past. Therefore, this variable varies by state. State dummies and Year Dummies are included. NIC3 dummies are always included. This corresponds to the National Industrial Classification, disaggregated to the third level. 119 NIC3 dummies were included. State-level controls are always included. They are: number of fast-track courts functioning per capita, state-wise financial assistance released for fast-track courts per capita, state-wise number of cases disposed off in Lok Adalats per capita, state-wise amount released for development of infrastructural facilities for judiciary in India per capita, number of policemen per one thousand of population, total police expenditure per policeman. I also added some controls specific to states' financial development: state-wise ratio of aggregate deposits to total credit of public sector banks and state-wise number of bank offices of public sector banks per capita.

Table 5: Impact of the 2002 Amendment Act on rental markets

	(1)	(2)	(3)	(4)
	rent plant and machinery assets	rent tools and other fixed assets	rent transport and equipment assets	rent land assets
2002 Amendment Act	0.0004	0.0033	0.0012	-0.0205
	0.97	(2.95)***	(1.95)*	(-2.39)**
State Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
NIC3 dummies	Yes	Yes	Yes	Yes
State-Level Controls	Yes	Yes	Yes	Yes
Observations	495464	503007	496390	504857

Robust z statistics in parentheses, clustered at the level of the state. * significant at 10%; ** significant at 5%; *** significant at 1%. The dependent variable in column (1) is equal to 1 if the entrepreneur is renting plant and machinery assets, 0 otherwise. The dependent variable in column (2) is equal to 1 if the entrepreneur is renting tool assets, 0 otherwise. The dependent variable in column (3) is equal to 1 if the entrepreneur is renting transport and equipment assets, 0 otherwise. The dependent variable in column (4) is equal to 1 if the entrepreneur is renting land assets, 0 otherwise. The variable 2002 Amendment Act is the net impact of the 2002 Amendment Act once taken into account the fact that some states already enacted some amendments in the past. Therefore, this variable varies by state. State dummies and Year Dummies are included. NIC3 dummies are always included. This corresponds to the National Industrial Classification, disaggregated to the third level. 119 NIC3 dummies were included. State-level controls are always included. They are: number of fast-track courts functioning per capita, state-wise financial assistance released for fast-track courts per capita, state-wise number of cases disposed off in Lok Adalats per capita, state-wise amount released for development of infrastructural facilities for judiciary in India per capita, number of policemen per one thousand of population, total police expenditure per policeman. I also added some controls specific to states' financial development: state-wise ratio of aggregate deposits to total credit of public sector banks and state-wise number of bank offices of public sector banks per capita.

Table 6: Impact of the 2002 Amendment Act on the status of the enterprise and on firms creation

	(1)	(2)	(3)	(4)
	status of the enterprise			probability to be a new enterprise
2002 Amendment Act	0.0122 (1.66)*	0.0159 (2.73)***	0.0313 (3.20)***	0.0089 (1.71)*
State Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
NIC3 dummies	Yes	Yes	Yes	Yes
State-Level Controls	No	Yes	Yes	Yes
Growth controls	No	No	Yes	Yes
Observations	537424	527830	489510	489432

Robust z statistics in parentheses, clustered at the level of the state. * significant at 10%; ** significant at 5%; *** significant at 1%. The dependent variable in columns (1), (2) and (3) is the status of the enterprise over the last three years. It is equal to 1 if the enterprise is expanding or constant, to 0 if the enterprise is contracting. The dependent variable in column (4) is equal to 1 if the firm operated for less than 3 years, in other words a new firm, 0 otherwise. The variable 2002 Amendment Act is the net impact of the 2002 Amendment Act once taken into account the fact that some states already enacted some amendments in the past. Therefore, this variable varies by state. State dummies and Year Dummies are included. NIC3 dummies are always included. This corresponds to the National Industrial Classification, disaggregated to the third level. 119 NIC3 dummies were included. In column (1), no controls are included. In column (2), the following state-level controls are included: number of fast-track courts functioning per capita, state-wise financial assistance released for fast-track courts per capita, state-wise number of cases disposed off in Lok Adalats per capita, state-wise amount released for development of infrastructural facilities for judiciary in India per capita, number of policemen per one thousand of population, total police expenditure per policemen. In column (3), additional state-level controls are included: state-wise ratio of aggregate deposits to total credit of public sector banks and state-wise number of bank offices of public sector banks per capita. I also included in column (3) the growth rate of the state net domestic product per capita to control for states' economic development.

Data Appendix 1: coding for Utttar Pradesh

Amendment	year	page	section	speed	synopsis
2002 Amendment Act	2002	52	102	1	no second appeal for cases less than 25,000RS (before:1,000, 1976: 3,000)
Utttar Pradesh	1954	52	102	0	no second appeal for cases less than 200RS (but superseded by 1976, so no differential impact in 2002)
2002 Amendment Act	2002	56	115 (1)	1	a revision can be made if the order would cause irreparable injury to the party against whom it was made. This disappears in 2002: less quality but more speed
Utttar Pradesh	1991	57	115 (1)	0	the 1991 amendment is the 1976 amendment. No differential impact in 2002
2002 Amendment Act	2002	56	115 (3)	1	a revision is not a stay of suit (more speed because the court cannot use revisions to slow down the process)
Utttar Pradesh	1991	57	115 (3)	0	the 1991 amendment is the 1976 amendment. No differential impact in 2003
Utttar Pradesh	1991	57	115	-1	revision only for cases more than 1 lakh rupees (=less revisions!). So negative impact in 2002 with respect to the rest of the country because the 2002 Amendment Act will supersede this amendment and repel this provision.
Utttar Pradesh	1991	57	115	-1	no revision by district court. So negative impact in 2002 with respect to the country because the 2002 Amendment Act will supersede this amendment and repel this provision.
2002 Amendment Act	2002	86	4 (1)	-1	a plaint shall be presented in duplicate to the court.
Utttar Pradesh	1926	86	4 (1)	1	for the rest of the country, it is harder to file a case (it has to be a duplicate). Not so for Allahabad because since 1926 they had to file a case and the copy for service with summons upon each defendant. By comparison, it becomes easier in allahabad.
2002 Amendment Act	2002	88	5 (2)	-1	the plaint has to accompany the summons (concise statement not allowed=less speed).
Utttar Pradesh	1926	88	5 (2)	1	the concise statement omission was already present in 1926. no change felt in 2002.
2002 Amendment Act	2002	92	5 (9)	1	to summon a defendant, the court can now use post, fax, email.
Utttar Pradesh	1958	92	5 (9)	-1	the post rule is already present here
2002 Amendment Act	2002	92	5 (9)	1	if the defendant refuses to receive the mail, the summons is considered served
Utttar Pradesh	1958	92	5 (9)	-1	if the defendant refuses to receive the mail, the summons is considered served
2002 Amendment Act	2002	97	5 (1)	1	to summon a defendant outside the jurisdiction of a court, the court can send a courier service, fax, email.
Utttar Pradesh	1958	98	5 (21)	-1	this post rule already present for Allahabad
2002 Amendment Act	2002	179	17 (2)	1	the court can impose higher costs for adjournment
Utttar Pradesh	1926	180	17 (2)	0	no adjournment to call a witness. But that stays.
2002 Amendment Act	2002	373	41 (1)	1	only a copy of the judgement required to file an appeals (not the decree as before)=more speed because it can take time to get a decree
Utttar Pradesh	1969	374	41 (1)	-1	but if the appellate court realises that the original court did not have time to issue the decree, then it will be ok. No impact of 2002 amendment.

This table lists all the Utttar Pradesh amendments enacted since 1908 which are superseded by the 2002 Amendments Act. First, the amendments contained in the 2002 Amendment Act is summarized. Immediately below that, the past Utttar Pradesh amendment is described. In the column speed is written the likely impact on speed of this amendment. If the row concerns Utttar Pradesh, the number in "speed" quantifies the differential impact felt in Utttar Pradesh as opposed to the rest of the country in 2002 due to the interaction of the 2002 Amendment and the already enacted past amendment. The sum of these numbers for Utttar Pradesh in this table is -4. This means that the effect in Utttar Pradesh of the 2002 Amendment Act would be smaller than if no past amendment had been enacted. The overall impact of the 2002 Amendment Act is +38. The effect in 2002 will be 38-4=34 for Utttar Pradesh with respect to the rest of the country. (number of pages given according to "Code of Civil Procedure", 19th edition, 2004, Eastern Book Company)

Data Appendix 2: Table of means

Variable	source	Number of observations	Mean	Std. Dev.
2002 Amendment Act	Code of Civil Procedure	70	37.457	1.146
Number of judges	Annual Reports, Ministry of Law Justice, India	201	326.105	352.178
Number of thousand cases pending per judge in Lower Courts in India		128	1.752	2.365
Non recovery of service charges, fees, credit shortage of capital having obtained a loan		537622	0.061	0.239
loan from a formal institution (fin. institutions, government, bank)		537622	0.244	0.430
loan from a business friend (contractor, moneylender)		537622	0.099	0.299
loan from a relative(relative, partner)		53183	0.579	0.494
net addition to plant and machinery assets owned during last 365 days	National Sample Survey	53183	0.300	0.458
net addition to tools and other fixed assets owned during last 365 days	55th (2000) and 57th	53183	0.147	0.354
net addition to transport, equip. assets owned during last 365 days	(2002) rounds	537622	0.030	0.172
net addition to land assets owned during last 365 days		537622	0.169	0.375
rent plant and machinery assets		537622	0.029	0.168
rent tools and other fixed assets		537622	0.010	0.098
rent transport and equipment assets		537622	0.007	0.082
rent land assets		537622	0.017	0.128
status of the enterprise		537622	0.043	0.202
probability to be have been created within the last 3 years		537622	0.356	0.479
number of fast-track courts functioning per capita		537622	0.739	0.439
state-wise financial assistance released for fast-track courts per capita	Rajya Sabha and Lok Sabha questions, collected by www.indiastat.com	49	0.149	0.356
state-wise number of cases disposed off in Lok Adalats per capita		60	8.910E-07	6.860E-07
state-wise amount released for development of infrastructural facilities for judiciary in India per capita		70	1.460E-05	3.150E-05
number of policemen per one thousand of population		57	0.001	0.003
total police expenditure per policemen		70	8.780E-06	1.260E-05
growth rate of the state net domestic product per capita	Crime in India, National Crime Records Bureau	70	1.464	1.041
state-wise ratio of aggregate deposits to total credit of public sector banks	Economic Surveys, http://indiabudget.nic.in/	70	130535.900	38121.100
state-wise number of bank offices of public sector banks per capita		69	1.860	5.093
		70	0.470	0.212
		70	4.900E-05	1.930E-05