Impact of free legal search on rule of law: Evidence from Indian Kanoon*

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Abstract

How does free access to legal information affect markets and firm behavior? We examine this question using Indian Kanoon, a free digital legal search platform that was launched in 2008. Using a generalized difference-in-differences approach, we find that the staggered rollout of Kanoon has increased access to justice and court efficiency while maintaining decision quality. Kanoon's introduction also led to substantial changes in firm finances, including significant increases in assets, income, expenditures, and legal charges. The effects are most concentrated among large firms operating in highly regulated sectors. Importantly, these changes extend beyond firms involved in litigation and permeate throughout the broader business landscape. Our findings demonstrate the critical importance of free and unrestricted access to legal information in driving economic progress.

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1 Introduction

Fair justice systems require meaningful and reliable access to legal information for all stakeholders (United Nations 2015; OECD 2017).[1] However, the high costs and complexity of legal language and processes make legal information prohibitively expensive and difficult to access for much of the population (United Nations 2016).

A substantial body of literature links legal institutions to economic development. Legal origins shape financial markets and corporate governance (La Porta et al. 1998), while judicial quality affects contract enforcement, investment, and growth (Djankov et al. 2003; Acemoglu, Johnson, and J. A. Robinson 2005). Recent randomized trials in South Africa and Pakistan suggest that providing legal information improves firm performance and citizen trust (Bertrand and Crépon 2021; Acemoglu, Cheema, et al. 2020) and can mitigate hold-up problems between trading partners (Boehm and Oberfield 2020). Our study extends this literature by examining how improving access to legal information within existing institutions affects economic outcomes.

We focus on India, a nation with the world's largest common law system and historically prohibitive barriers to accessing legal precedents and statutes.[2] In 2008, Sushant Sinha established Indian Kanoon, a web platform offering free access to all laws and court orders from the Supreme Court, High Courts, and Tribunals.[3] The platform is now widely regarded as a "first-stop" for legal information searches in India (Iyengar 2010).

We argue that the launch of the Kanoon platform created a sudden and substantial reduction in the cost of searching for legal information in India, which affected litigants, courts, and markets. We also argue that the timing of this reduction was plausibly exogenous to economic and legal outcomes, providing a natural experiment for analysis.

Our analysis draws on comprehensive data scraped from both Kanoon and the eCourts' official records of Indian district and high courts. We extracted all accessible cases from Kanoon, coding them for judgment dates, courts, and citations. We also retrieved case-level metadata from the eCourts database, including filing and decision dates, to construct

[1] The 2030 Agenda for Sustainable Development, adopted by the United Nations General Assembly in September 2015, includes Goal 16 on promoting peaceful and inclusive societies, providing access to justice for all and building effective, accountable, and inclusive institutions at all levels.

[2] World Justice Project survey data (Ponce et al. 2019) shows 32% of Indians experienced a legal problem in the past two years, only 39% knew where to get legal information, and resolution took an average of 35 months.

[3] Sinha reported in February 2022 that Indian Kanoon receives 2.9 million search queries and 1.6 million sessions per month, with 6 minutes spent per page.

measures of court efficiency. We then mapped district court cases to high court cases to identify appeals. We obtain firm financial variables (income, assets, expenditures, and legal expenditures) from the Prowess database, which contains time-series balance sheet data for India's largest formal firms. To link legal proceedings with economic outcomes, we identify firms mentioned in district court cases and match them to Prowess firms. For a more representative picture of India's formal manufacturing sector, we also analyze data from the Annual Survey of Industries (ASI), a repeated cross-section representative of formal Indian firms, and construct financial measures aligned with the Prowess variables.

We exploit the staggered rollout of the Kanoon platform in Indian states and use an event study framework (Borusyak, Jaravel, and Spiess 2021; Sun and Abraham 2021) to estimate the causal effect of Kanoon on judicial cases, court efficiency, and formal firms' balance sheets.

Our first analysis explores Kanoon's influence on district courts, revealing that its introduction corresponded with a substantial rise in filings (an additional 6.9 thousand per state and month) and decisions (8.3 thousand per state and month). Despite this uptick, efficiency metrics, such as the backlog of cases pending over a year and average decision times, remained largely unaffected. In particular, we did not detect any compromise in the quality of district courts' decisions, as evidenced by the unchanged rate of case appeals. Moreover, tracking these cases into the high courts, we observed a 2.6 percentage point increase in case withdrawals and a 13 percentage point decrease in overturn rates. Together, we interpret these results as increased access to the judiciary after the launch of Kanoon.

In addition, the high courts exhibited complementary trends, with a notable reduction in filings and decisions, primarily in original civil litigation cases. Interestingly, this decline did not translate into improved disposition times; in fact, we observed a slight increase in backlog. This outcome suggests that Kanoon might have streamlined case processing in the high courts, possibly by reducing erroneous filings, promoting alternative dispute resolutions, and discouraging forum shopping.

Our panel analysis extends to Kanoon's economic ramifications, particularly its effect on the balance sheets of major firms that account for 70% of India's industrial output. The data reveal a positive influence on large formal firms' financial health. Firms involved in district court litigation during our study period experienced a significant increase in yearly income (48%), assets (62%), expenditures (50%), and legal charges (44%). Although these effects were slightly muted throughout the broader firm spectrum, they remained substantial and were most pronounced in the highly regulated manufacturing and financial sectors,

reflecting the reduced informational frictions within these firms.

The additional analysis on firms representative of all formal manufacturing firms in India, using ASI's repeated cross-sectional data, showed effects smaller in magnitude, but still statistically and economically significant. In particular, we observe an increase in total income (assets) of 7.2% (9.4%) after 3 (4) years. Similarly, we also see a 7.7% increase in expenditures in the second year of the roll-out. In addition, we look at expenses undertaken on new construction projects by the firms and find a similar positive effect after Kanoon rollout. We find that these effects are particularly pronounced for the largest firms in the ASI sample, underscoring Kanoon's significant impact on larger enterprises.This is consistent with the larger effects observed in the Prowess data, which covers predominantly large firms, compared to the more representative ASI sample.

Collectively, these findings underscore Kanoon's role in diminishing legal information costs, alleviating bottlenecks, and enhancing judicial efficiency, all without eroding decision quality. These improvements had, in turn, a significant effect on the economy. Our results align with La Porta et al. (1998)'s perspective that the legal environment fundamentally shapes economic outcomes while demonstrating that improvements within an existing legal framework, specifically through enhanced information access, can yield substantial economic benefits without wholesale institutional reform.

Our work also contributes to a wider economic literature on the links between the efficiency of legal systems and economic advancement (Djankov et al. 2003; Ponticelli and Alencar 2016; Lichand and Soares 2014; Visaria 2009; Kondylis and Stein 2018; Chemin 2020; M. Rao 2021). In particular, our results complement the previous findings from randomized control trials, accentuating the partial equilibrium causal link between legal information and favorable economic outcomes for firms (Bertrand and Crépon 2021). Information friction costs can be quite high for firms (Bloom, Eifert, et al. 2013; Bloom, Manova, et al. 2021; Guillouet et al. 2021). Unlike these, by asking what happens when all citizens get access to a free online legal search platform, we substantiate the widely held belief that the absence of common knowledge about laws and regulations levies both direct and secondary costs on economies. When people know that other people have access to the same legal information, societies can have a predictable socio-economic landscape with greater accountability and higher levels of trust in economic transactions (McAdams and Rasmusen 2007). By examining a large-scale intervention, i.e. the launch of a free, accessible, and searchable platform offering legal information, we are able to undertake a large-scale examination of these dynamics.

We also contribute to the growing literature on the impact of digital technologies on markets. In the past three decades, digital platforms have transformed information access in various economic sectors, including meteorology, medicine, and academia. Economic theory suggests that reducing the cost of information gathering improves the efficiency of decision-making (Stigler 1961; Diamond 1971; Varian 1980). Recent empirical evidence further confirms that decreased search costs lead to increased transaction volumes and overall market efficiency (Goldfarb and Tucker 2019). While past work has often focused on the impact of commercial platforms such as Amazon and eBay, here we focus on the provision of free legal information. This has been identified as an important priority by many governments and the United Nations (United Nations 2015; OECD 2017). Legal information is particularly important in common law judicial systems that rely on legal precedent. Here, improved access to legal information can contribute to market development by reducing uncertainty and transaction costs, allowing for more efficient resource allocation. (Gennaioli and Shleifer 2007).

The remainder of this paper is structured as follows. Section 2 presents background information on the Indian legal system and the general context of this study. Section 3 presents our research hypotheses. Section 4 presents an overview of our data and some descriptive statistics of the samples that are used for analysis. Section 5 presents our empirical strategy. Section 6 presents the results of our analysis. The final section concludes.

2 Background

2.1 The Indian Legal System

India's legal system goes back several centuries (Jois 2004). Its modern system of justice is based on the common law justice system established by the British colonial administration in the nineteenth century (Baxi 1982; Galanter 1963). The current judicial system is significantly shaped by the Constitution of India, which was written after Indian independence in 1947.

The court system of India comprises a hierarchical structure with the Supreme Court of India at the top. The 25 high courts constitute the next tier.[4] The lowest tier are all

[4] The high courts have four areas of jurisdiction: (1) original jurisdiction (that is, the authority to hear certain types of case that cannot be heard at subordinate courts), (2) appellate jurisdiction (i.e., the authority to hear appeal cases by any subordinate court), (3) advisory jurisdiction (i.e., the review of cases sent to it by government departments), (4) judicial review (i.e., the review of any judgment or order developed by any

subordinate courts at district, municipal and village levels. The justice system is an integrated system, which means that decisions made by the higher courts are binding on the lower courts. The appendix table A1 gives an overview of the 25 Indian high courts, their establishment date, and the states and union territories over which they have jurisdiction.

Although the Indian judiciary commands a high level of public trust, it has been increasingly criticized for a growing backlog of cases, long delays in outcomes, and inefficiency (Krishnaswamy and Swaminathan 2019). Currently, there are more than 5.9 million pending cases in the high courts, although their average rate of disposal between 2015 and 2019 was approximately 1.8 million cases per year.[5]

Long and complex proceedings discourage citizens from seeking justice and distort markets (Krishnan et al. 2014; M. Rao 2021; Chemin 2012). Chemin (2009) for example, shows that 430 high-court amendments to the Code of Civil Procedure between 1971 and 1996 lengthened trials and these delays affected credit markets, agricultural development, and manufacturing performance throughout the country.

2.2 Legal information

Efforts to digitize legal information in India began about 20 years ago when the Supreme Court of India began to publish some of its cases online. In 2005, the Chief Justice of India, R.C. Lahoti, established the Information Technology and Judicial Reform Cell to promote the introduction of online legal information and services at all courts in the country. The first phase of the program, which lasted from 2007 to 2015, focused on court computerization with the installation of hardware, network infrastructure, and software that could provide basic case-related services to litigants and lawyers. Case documents were uploaded to court websites throughout this phase.[6] The top panel of the appendix Figure A1 gives an overview of when cases of the different high courts became available for the first time on their websites.

To upload cases on their websites, states relied heavily on the National Informatics

subordinate court). Only the first two areas of jurisdiction feature citizen cases and are therefore likely to be affected by the launch of Kanoon.

[5]National Judicial Data Grid, https://njdg.ecourts.gov.in/hcnjdgnew/, accessed on April 4, 2022.

[6]The second phase of the program, launched in 2015, intends to improve the experience of litigants, lawyers and other stakeholders in the courts through provisions such as information in local languages, applications for mobile phones, kiosks in court complexes, the delivery of certified copies of documents via electronic platforms and the deployment of payment platforms for making deposits, payment of court fees, fines, etc. However, during this period, cases have been uploaded to court websites.

Centre, a public sector corporation that is responsible for hosting, maintaining and updating the websites of constitutional, central, state, and local government agencies across India. Iyengar (2010) notes that considerable legal information was provided at each of these sites through the complete texts of applicable legislation, subordinate legislation, administrative rulings, reports, census data, application forms, etc. This served as the foundation for the emergence of the Kanoon platform.

2.2.1 The Emergence of IndianKanoon.org

The development of IndianKanoon.org began in the summer of 2007 and was publicly announced on 4 January 2008. The entire effort was led, financed, and managed by Sushant Sinha, a graduate student in the Computer Science Department at the University of Michigan.

The project started informally. Sinha's self-stated goal was to "bring the knowledge of law to the common people".[7] He relied minimally on physical infrastructure or hardware and utilized free and open-source software for the purpose of scraping cases from court websites and building a searchable database that could be helpful for legal education and research (Iyengar 2010).[8]

In his reflections from a personal blog, as well as the objectives stated on the website itself, two key priorities emerged in the initial phases of the project. First, information on laws was made accessible to a wide range of stakeholders. In his own words, Sinha argues that "acts are very large and in most scenarios just a few sections of laws are applicable". As a result, "finding the most applicable sections from hundreds of pages of law documents is too daunting for common people". He placed considerable emphasis on the ease of keyword searches, particularly for terms that are of interest to a broad audience.

A second priority was to illuminate how laws are interpreted by the courts. He argues that "laws are often vague and one needs to see how they have been interpreted by the judicial courts". Thus, on the website, laws and judgments were maintained separately. The legal documents were broken down into the smallest possible clauses. A tight integration of court judgments with laws and with prior judgments allows automatic determination of

[7] See indianKanoon.org/about.html, accessed April 1, 2022.

[8] Iyengar (2010) interviewed Sinha in 2010 and documented a heavy reliance on a database in *Postgres*. This was favored for its "inbuilt search functionality, inverted index, and ranking functions" (Iyengar 2010). When existing packages were inadequate for his needs, Sinha developed patches for the broader community of software developers. His efforts contributed to an improvement in the 'headline citation' functionality of Postgres, which facilitates the retrieval of contextual information associated with search queries.

the most relevant clauses and court judgments.

The coverage of the Indian Kanoon was extended in waves. When the website was launched in January 2008, only cases from the Supreme Court and the texts of central (federal) legislation were featured. By 2009, judgments from 10 high courts and 17 tribunals had also been uploaded. The full text of the debates of the Constituent Assembly of India, the reports of the Law Commission, and the full texts of central legislation were also added throughout this time. The bottom panel of Appendix Figure A1 provides a summary of when the uploading of cases per high court on the website began.

The public response to the site appeared to be overwhelmingly positive from a brief study of users (Iyengar 2010) and the comments received by Sinha himself. The users were enthusiastic about having a legal resource that is accessible, user-friendly and free (Iyengar 2010). The site also has some interesting features: the data is searchable, pages have links to posts or other writings on the Internet that refer to the cases, and there are cross-links within judgments to cited cases. These innovations significantly improve the user experience of accessing the law, substantially reducing search costs for relevant information.

However, there are also some limitations. Unlike officially curated cases, Kanoon does not provide a case note, it cannot be officially cited as a source, and it is not accepted by judges during official proceedings. Web scraping errors are not manually corrected, making it somewhat less reliable than paid databases.

To date, there has been no rigorous evaluation of the impact of the Kanoon platform. Sinha continues to maintain the site, without formal funding or any formal organizational structure.

2.2.2 Other Databases

Indian Kanoon was not the only electronic source of data at the time it was released. The increased availability on-line of legal data from the courts facilitated a proliferation of electronic resources for Indian legal research. A detailed list is available in the online appendix Section OA1 of this paper. These resources were different from Kanoon in several ways: they were expensive, difficult to access, and only covered certain parts of Indian law. Ethnographic evidence from the grassroots district courts suggests that in the era of our study, access to these databases was negligible (Krishnan et al. 2014). A survey by a legal think-tank found that even in 2020, only half of Indian advocates at high courts had access

to these databases (VIDHI 2020).[9]

Since 2015, all available Indian laws and their amendments have been curated into a single repository, available at http://www.indiacode.nic.in/. This website, which has been functional since 2017, includes all central Acts and subordinate legislation. The portal presents the complexity of the chain of laws, starting from the "parent" act to the subordinate legislation. However, this website remains still difficult to access for those who do not have a legal background.[10]

In summary, Indian Kanoon has been the *only* free electronic resource that was readily available and accessible to the people of India since 2007. It is widely regarded as a first-stop in the search for legal information, not just for lawyers but also for lay citizens. Lawyers often browse this site to curate data and then turn to paid databases to add details and formal citations before presenting their work in an official capacity.[11]

3 Data and Descriptive Statistics

Our main analysis is based on the samples drawn from the official eCourts data. The timing of the rollout of the Kanoon platform (Appendix Figure A1) together with the filing dates and judgment dates of these records allows us to estimate the impact of the platform on cases and court efficiency.

3.1 Rollout dates

Of the 25 Indian high courts established today, we drop four (Manipur, Meghalaya, Telangana, and Tripura High Courts) from our analysis, as these were created during or after our

[9] Sinha was well aware of these issues and described these paid databases as follows: *"Until very recently, most law resources in India were provided by libraries or Websites that charged a significant amount of money. In effect, they prohibited access to a significant portion of the population that wanted to investigate legal issues. The average time spent per page on the Indian Kanoon website is six minutes; this shows that most users actually read the legal text, and apparently find it easier to understand than they had previously expected."* (https://blog.law.cornell.edu/voxpop/tag/indiankanoon/, accessed on June 23, 2022.)

[10] Sinha emphasizes that "lawyers are often accustomed to using these interfaces and, of course, understand these technical legal terms" but "requiring prior knowledge of this kind of technical legal information as a prerequisite for performing a search raises a big barrier to access by common people" (Private Conversation with Sushant Sinha, February 2022).

[11] Even today, a cursory examination of Indian legal research guides at libraries across the United States, particularly libraries of prominent law schools (Harvard University, Yale University, Georgetown University, and others), finds Kanoon remains prominently listed in the recommended research platforms with a note that the service is free, easy to search, and requires no formal registration.

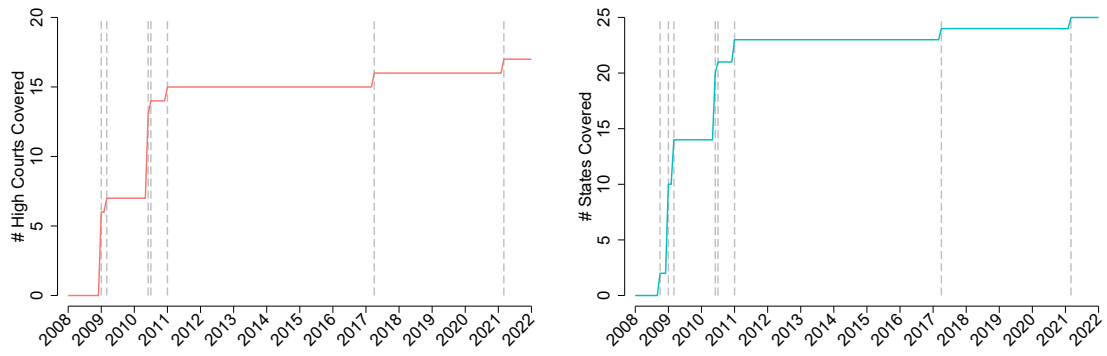

Figure 1: Number of States and high courts on Kanoon

Note: The left panel displays the cumulative number of high courts included on Indian Kanoon. The right panel displays the cumulative number of states and union territories under the jurisdiction of high courts included on Indian Kanoon. Vertical gray lines represent waves of Kanoon rollout. Appendix Table A1 provides complete information about high courts' inauguration dates, the states and union territories they have jurisdiction over, and their Kanoon rollout dates.

study period. For the remaining high courts, we have case-level data for 17 high courts. Of these, six are included on Indian Kanoon in January 2009, one in March 2009, six in June 2010, one in July 2010, one in January 2011, one in April 2017 and one in March 2021.

For district courts, we end up with data from 25 states and union territories. Of these 25, two are under the jurisdiction of a high court included in Indian Kanoon in August 2008, eight in January 2009, four in March 2009, six in June 2010, one in July 2010, two in January 2011, one in April 2011, and one in March 2021.

Appendix Table A1 gives an overview over all high courts, the states they have jurisdiction over, their Kanoon rollout date and whether they are included in our analysis or not.

The left panel of Figure 1 illustrates the rollout timing of the 17 high courts in our sample. High courts can have jurisdiction over more than one state or union territory. This is represented in the right panel of Figure 1, which presents the increasing number of states under the jurisdiction of high courts included on Indian Kanoon platform over time.

3.2 IndianKanoon.org

We scraped publicly available data on Indian Kanoon for the years 2005–2015. This resulted in a corpus of 5,632,421 cases, including both criminal and civil cases. For each

case, we extracted the date of the judgment, the court name, and the citations of other cases within the judgment.[12]

3.3 eCourts Data

For district courts and high courts, we scraped data from the eCourts portal to obtain summary information on case types, filing dates, and decision dates (if a given case has been decided), as well as the names of the presiding judge, plaintiff, and respondent. We exported case lists from each eCourts website of an Indian high court and merged them into Kanoon rollout dates.

For district courts, we focus on all cases that were open at any time between 2005 and 2015. In this period, we observed 43,716,170 cases filed and 30,303,020 cases decided. For the high courts, we follow a similar approach and observe 6,665,230 filings and 5,274,129 decisions in our sample period.

We examine case activity in the courts through a set of metrics that are all connected to the typical workflow in a court.

Filings measure demand for judicial services - increases suggest greater access to justice but may strain court capacity.

Decisions measure judicial output - the court system's ability to resolve cases.

Backlog measures the stock of unresolved cases over one year old - a key indicator of system efficiency and access to timely justice.

Disposition Time measures how long cases take to resolve on average - directly capturing the speed of judicial resolution.

These measures are connected through court workflow: higher filings increase caseload, more decisions reduce pending cases, and the balance between filings and decisions determines backlog accumulation and disposition times.

3.3.1 Data Linkages to Appeal Cases

Decisions of the district court can be appealed in the high court that has jurisdiction over the original court. In order to follow the cases from district courts to high courts, we start

[12]We greatly appreciate the support of Sushant Sinha, the founder of Indian Kanoon, in procuring these data. We also thank him for providing additional insight into the mechanics and design of search engines.

by associating the records from the lower courts to those of the upper courts (see Online Appendix Section OA4 for a comprehensive explanation of this method). We generate estimates of the total count of cases registered and resolved over each year-month from January 2001 to December 2018 for every state in the district courts data. From the registered cases, we count the number that are appealed in a high court at any point during our sample period. On average, we note that 0.3% of registered cases are appealed in the high courts in any given year.[13][14]

An appeal submitted by a plaintiff progresses through multiple stages of the justice process (see Appendix Figure A2 for an overview of the various stages and potential outcomes of an appeal case.) We employ the courts' own official language to label these stages.[15] Upon its initial filing at the high court, a case is marked as either "Admitted" (all paperwork is in order and the case is deemed fit for processing at the high court and listed for a hearing/decision) or "Rejected" (the case falls outside the court's jurisdiction, territory or in terms of content, or the paperwork has irreparable defects). If a case is admitted, it can be heard by the high court, and then, upon a decision by the bench, it is labeled as "Disposed". The nature of disposal varies: an appeal can be "Overruled" (approved), "Dismissed" by the bench, or "Withdrawn" by the petitioner.[16]

3.4 Firm-Level Data

3.4.1 Prowess

Prowess is a database that curates financial information of around 54,000 listed private and public companies in India. It covers almost all companies on the National Stock Exchange and the Bombay Stock Exchange.[17] These firms account for more than 70% of

[13] 0.33% cases are appealed within 2 years and 0.35% cases are appealed within 5 years.

[14] Several factors explain this low rate of appeals in our data. Many district court matters involve modest stakes where appeal costs outweigh expected benefits, and many disputes settle before judgment. Procedural thresholds (such as minimum monetary values for civil appeals) also limit which cases can be appealed. We also acknowledge that matching between district and high court case numbers may be imperfect due to differences in case numbering systems across judicial levels, though this remains the most comprehensive district-to-high-court linkage available for India.

[15] These are official terms used in the eCourts system, applied by the e-filing administrator when reviewing the case documents (see https://ecourts.gov.in/ecourts_home/static/manuals/efiling-User-manual.pdf)

[16] In theory, the appellant can decide to withdraw at any time, even during the administrative stage before admission.

[17] These are registered companies that disclose their financial statements according to the 1956 Companies Act. Initially, companies had to meet one of the following conditions to be included in the database: the firm

industrial production and 75% of corporate taxes collected by the Indian government. The data is collected, supplied, and continuously updated by the Center for Monitoring the Indian Economy (CMIE), an independent non-governmental research organization. Data is compiled from firms' audited annual reports and information supplied to the Ministry of Corporate Affairs, as well as company filings with stock exchanges and the prices of securities listed on the main stock markets in the case of publicly traded corporations. The database has been widely used in academic analysis (Goldberg et al. 2010).

Firms are assigned to states based on their registered office location as recorded in Prowess, which we link to the high court having jurisdiction over that state. Under India's Companies Act and Code of Civil Procedure, the registered office serves as a firm's primary legal domicile and determines venue for most corporate litigation, including contract enforcement, shareholder disputes, tax matters, and regulatory challenges. This provides a legally meaningful, non-arbitrary assignment rule for our analysis. We acknowledge that this may not capture firms' complete geographic footprint if they operate establishments in multiple states. However, results remain robust when excluding firms with multiple registered addresses or complex multi-state corporate structures.

To abstract from firm entry and exit, we focus on the panel of 7,522 firms which have nonzero income data for all years 2005 to 2015. We perform our analysis on two samples of these firms. First, we use the full panel of firms, regardless of whether the firm has pending cases in the courts. Second, we examine the subsample of these firms that have at least one active case (pending or new) at any time during the period 2005-2015 in the district courts.

That implied linking the litigants in the eCourts district court database to firms in the Prowess database. Of the 83.8 million cases in the district court database eCourts, we found 718,000 unique cases that matched at least one firm in the Prowess database. This corresponds to 9,246 unique Prowess firms, about 18% of all firms in the Prowess data. For the period 2005-2015, we end up with a panel of 1,771 firms that are litigants in at least one active district court case and which have nonzero income data for all financial years of the time period.

Section OA2 of the online appendix gives an overview of the sample creation for the Prowess data, and compares our balanced sample of firms to the universe of prowess firms.

needed to have a turnover of at least 2.5 crore rupees, or annual company reports must be available for at least two years before the date of update.

3.4.2 ASI

The Annual Survey of Industries (ASI), administered by the Ministry of Statistics and Program Implementation (MoSPI), constitutes India's main data set on the formal manufacturing sector. This comprehensive survey captures detailed information on employment, wages, output, input costs, capital assets, and operational characteristics of industrial establishments classified under the National Industrial Classification (NIC) system. Conducted annually through a structured sampling methodology, ASI is widely used to study structural patterns and performance dynamics within India's industrial economy.

Unlike the Prowess database, ASI is not a panel data set, as firm identifiers are anonymized to protect confidentiality. This structural limitation prevents researchers from tracking specific establishments over time or linking court cases directly to individual firms.

For our empirical analysis, we rely on ASI data that span from 2005 to 2015. This restricts our sample to industrial units that reported full operational status and 12 months of continuous operation during the survey year. This sample selection criterion ensures the inclusion of stable, consistently functioning establishments, providing a reliable foundation for examining temporal variations in industrial performance relative to the staggered implementation of Kanoon rollout.

Section OA3 of the online Appendix gives an overview of the sample and variable creation for the ASI data.

The summary statistics of all key variables from these different datasets are presented in Tables A2, A3 and A4. Appendix Table A1 gives an overview of the exact Kanoon rollout dates and the data coverage for high courts and each state's district courts.

4 Empirical Strategy

To estimate the impact of Kanoon on court efficiency, appeals, and firm finances, we use an event study framework that takes advantage of the exogeneity of Kanoon rollout timing. A high court, state, case, or firm is considered treated from the date on when the high court's (or the high court having jurisdiction over the state) cases are uploaded on Kanoon. We refer to this event as the "Kanoon rollout date" for that high court. On this date, all cases that were filed *prior* to the rollout date *and* available for review on the high court websites are available in an accessible format. For all the dates that follow, the cases are added to Kanoon on the date that they appear on the court websites.

We estimate the following two-way fixed effects (TWFE) model at the state or high court level:

$$Y_{cym} = \alpha + \beta \text{Kanoon}_{cym} + \gamma_c + \delta_y + \eta_m + \varepsilon_{cym} \quad (1)$$

where Y_{cym} is an observed outcome of state or high court c in year y and month m. $Kanoon_{cym}$ is a dummy variable that takes the value 1 if Kanoon was implemented in the high court c (or the high court having jurisdiction over the state c) before the year-month ym (and 0 otherwise). γ_c, δ_y, and η_m represent fixed effects at the level of year, high court (or state), and month. Standard errors are clustered at the high court level.

The staggered nature of the treatment produces a complex control group whose population changes over the study period. As Kanoon rolls out across the country, courts move from the "untreated" to "treatment" category at different times. Recent literature suggests that in this scenario, the coefficients in the standard TWFE model may not represent a simple weighted average of unit-level treatment effects. The problem of "forbidden comparisons", i.e. treated units are inappropriately compared with those untreated, and some groups may even receive negative weights, leading to a reversal of the sign of the coefficient relative to estimates seen in an event-study plot (Roth et al. 2023). Our remedy for this issue is to rely on the estimator from Borusyak, Jaravel, and Spiess (2021).[18] The estimator exploits the known and specified structure of the treatment to draw comparisons between treated and never treated groups (where never treated in our setting is equivalent to a Kanoon rollout post 2015), and then aggregates them using user-specified weights to estimate the impact of the legal platform.[19]

We examine several types of outcome variables. First, we consider the four aggregated district court efficiency parameters at the state-year-month level: Number of filings, number of decisions, backlog (number of unresolved cases older than one year) and disposition time (ratio between the number of unresolved cases and the number of decisions, a measure of how many years it takes on average to resolve a case.)[20] For these analyses, Kanoon rollout is defined with respect to the high court which has jurisdiction over the state.

Second, we study the same outcomes at the high court-year-month level, to estimate the impact of Kanoon's rollout on this court's efficiency.

[18] We use the STATA 17 package *did_multiplegt*.

[19] See Online Appendix Tables OA5 and OA6 for robustness checks, where we compare our baseline estimates with simple OLS estimations and two alternative estimators proposed by Callaway and Sant'Anna (2021).

[20] In results available upon request, we also explore the impact of Kanoon on the mean age of decided cases, the mean age of pending cases, and the clearance rate.

Third, we study the impact on the number and share of district court cases appealed in high courts and the impact on their case status and outcome in the high courts.

In order to study the dynamic effects of Kanoon on the different outcomes and test for parallel trends, we also estimate the following event-study:

$$Y_{cym} = \alpha + \sum_{j=-4}^{5} \beta_j \text{Kanoon}_{c,y+j,m} + \gamma_c + \delta_y + \eta_m + \varepsilon_{c,y,m} \tag{2}$$

where variables are defined as in Equation 1 and $Kanoon_{c,y+j,m}$ is a set of dummy variables equal to 1 if Kanoon was rolled out at court c before (or after) by j years and m months (and 0 otherwise).

Estimating this equation via OLS would imply relatively strong assumptions about homogeneity in treatment effects to deliver consistent results. If Kanoon has larger effects for states that are treated early, then as the early-treated become controls for the later-treated, the treatment effects can be biased downwards. To address this identification problem, we draw on new econometric advances. We implement a reweighting at each time interval of all groups which (at that time) have yet to be treated against groups that have been treated. We follow the methodology proposed in Sun and Abraham (2021). This method involves estimating the underlying weights on cohort-specific average treatment effects with auxiliary regressions to remove contamination from spillover effects from earlier time periods (Sun and Abraham 2021).[21] This method is similar to other proposed corrections in recent literature (see, for example, Callaway and Sant'Anna 2020, De Chaisemartin and d'Haultfoeuille 2020 and Goodman-Bacon 2021). Our element-wise difference-in-differences (DID) estimator is consequently an unbiased and consistent estimator for the causal average treatment on the treated (ATT) of each group of courts treated with Kanoon at the same points in time ('cohort'). By weighting these estimators based on their cohort's share of the untreated at each point in time, we report the causal effect of Kanoon in the context of interest, without needing to assume away heterogeneous treatment effects.

Lastly, we inspect Kanoon's downstream impacts on firms and estimate a yearly model (and, similarly, an event study) on a panel of Indian firms:

$$Y_{fcy} = \alpha + \beta \text{Kanoon}_{fcy} + \delta_y + \eta_f + \varepsilon_{fcy} \tag{3}$$

[21] We use the STATA package entitled "eventstudyweights" to conduct this analysis (Sun and Abraham 2021)

where Y_{fcy} is a financial indicator of firm f based under the jurisdiction of high court c for financial year y. Kanoon$_{fcy}$ is a dummy variable equal to one if financial year y began after the court rollout of Kanoons c'. δ_y and η_f are financial year and firm fixed effects, respectively.

The coefficient(s) of interest in all three settings is β or the set of β_j. In dynamic estimations using the method from Sun and Abraham (2021), Kanoon$_{c,y-1,m}$ is excluded and the results should be interpreted with respect to this baseline. In order to interpret the coefficients β and $\beta_0, \ldots, \beta_5$ as the average effects of treatment on the treated (ATT) of the introduction of the Kanoon platform on the outcome variables, we rely on the assumption of parallel trends, that is, in the absence of treatment, the difference between the treated and untreated observations remains constant over time. We discuss possible threats to the identification of causal effects and our proposed solutions in the following.

4.1 Econometric Challenges

The specifications above eliminate some specific sets of confounding factors in the impact of Kanoon. The inclusion of court, year, and month fixed effects rules out the possibility that Kanoon's observed impact is induced by high court (or state) characteristics, temporal trends such as macroeconomic fluctuations, changes in internet regulations, digital privacy laws, or seasonal factors.

Causal identification of the impact of Kanoon on outcomes, however, hinges on the independence of the platform's rollout timeline. This assumption would be violated if the Kanoon rollout for a state's high court coincided with a substantive change in law in this state, a change in the judicial functioning of the state, or if it closely followed the digitization of the state's courts itself. If every time a high court digitized and started to publish case-level data online, Kanoon followed closely and included the court in its database, we could not extract the relative weights of the causal effect of Kanoon and the causal effect of digitization.

This concern does not apply to our study for several reasons. First, the Kanoon rollout was independent of the timing of the rollout of content on high court websites (Appendix Figure A1). Second, as discussed in Section 2.2, the eCourts web hosting program that allowed users to retrieve information about pending cases was launched after the years on which we focus in this analysis. In the period that we are studying, the only information available to the public was the content of high court websites, which varied in content and

coverage but was always restricted to information about past cases.

Additionally, in the online Appendix Figure OA1 we plot the evolution of the number of filings in district courts over time separately for each of the 25 states and union territories included in our analysis. We note a general pattern of an increase in filings over time, independently of the Kanoon rollout of the high court having jurisdiction over the state or union territory. This strengthens our trust, that although some artifacts of the data are sensitive to an increased digitalization of courts over time, these are similar across states and independent of Kanoon's availability.

Finally, we also face the possibility that the order of expansion across states may be correlated with other confounding factors, creating the challenge of omitted variables and the possibility of pretrends. We remedy this by constructing event study plots and examining the evidence of pretrends, as recommended by Roth et al. (2023). More specifically, we assess the validity of the parallel trends assumption in a dynamic model that includes four years prior to the launch of Indian Kanoon in a given jurisdiction. We analyze the association between the launch of Indian Kanoon and the outcome variables that are normalized relative to one year before the arrival of Indian Kanoon in that jurisdiction. Second, we conduct additional exercises suggested by De Chaisemartin and d'Haultfoeuille (2020). These estimates are obtained by assuming that instead of treatment occurring at t, it occurred at time $t-k$ where $k \in \{1,2,3,4\}$. We present these estimates in the Appendix. Both sets of analyses lend confidence to our causal inference.

5 Results

We present and interpret our baseline estimates of the causal effect of Kanoon in three broad areas: access to justice, court efficiency, and firm outcomes.

5.1 Impacts on District Courts

Although rulings on the Kanoon website benefit litigants across India's justice system, the most immediate beneficiaries are those with cases filed or under appeal in the high courts.

Improved access to legal information affects both the perceived and actual probability of winning cases. Platform users can present more coherent arguments during legal proceedings, helping judges decide cases more efficiently and reducing resolution times. However, increased access to information can also introduce complexities that prolong the

review. Since these mechanisms operate in opposite directions, the net impact on case duration is an empirical question.

Kanoon's impact extends beyond the high courts to the district courts, despite district court records not being directly uploaded. This influence operates through two channels. First, high court rulings establish binding precedents for district courts within their jurisdiction. Second, Kanoon benefits stakeholders in economically disadvantaged regions where district court litigants have more to gain from access to legal information. Better information influences short-term decisions on filing cases or appeals. If improved information leads to higher-quality initial decisions, we expect long-term reductions in both appeals and high court reversals.

For both district and high courts, we examine case-level outcomes and court-level efficiency measures: filings, decisions rendered, pending cases, backlog accumulation, and clearance rates. This approach identifies the multifaceted impacts of democratized access to legal information across India's judicial system.

The immediate effects are likely driven by stakeholders who have already filed cases. However, as stakeholders adjust to the new technology and form new expectations, long-term impacts may emerge. Given that the mean age of decided cases in high courts and district courts is around two years, we expect the long-term effects to take at least three years to unfold.

We begin by examining the impact of Kanoon on district court operations, where we observe substantial increases in both case filings and judicial decisions (Table 1). We note an increase of approximately 6.9 thousand filings per state and month during the post-Kanoon period. This is equivalent to a 52% increase relative to the overall mean of the sample. The effect remains stable and statistically significant in all specifications. We also see a significant increase in the number of decisions by 8.3 thousand cases (90% increase). Panel A of the online Appendix Table OA5 displays the estimation results of other estimators and shows that the results are robust to the choice of estimator.

Although the volume of cases in the district courts is increasing, it is interesting to note that there is only a marginal increase in court backlog (that is, the number of cases pending for more than a year) and a slight statistically insignificant reduction in case disposition times. As district courts are typically the initial judicial recourse for most original litigation, these findings imply that improved access to court data may enable more parties, especially in small claims, to file original cases without significantly affecting the overall pace of case processing.

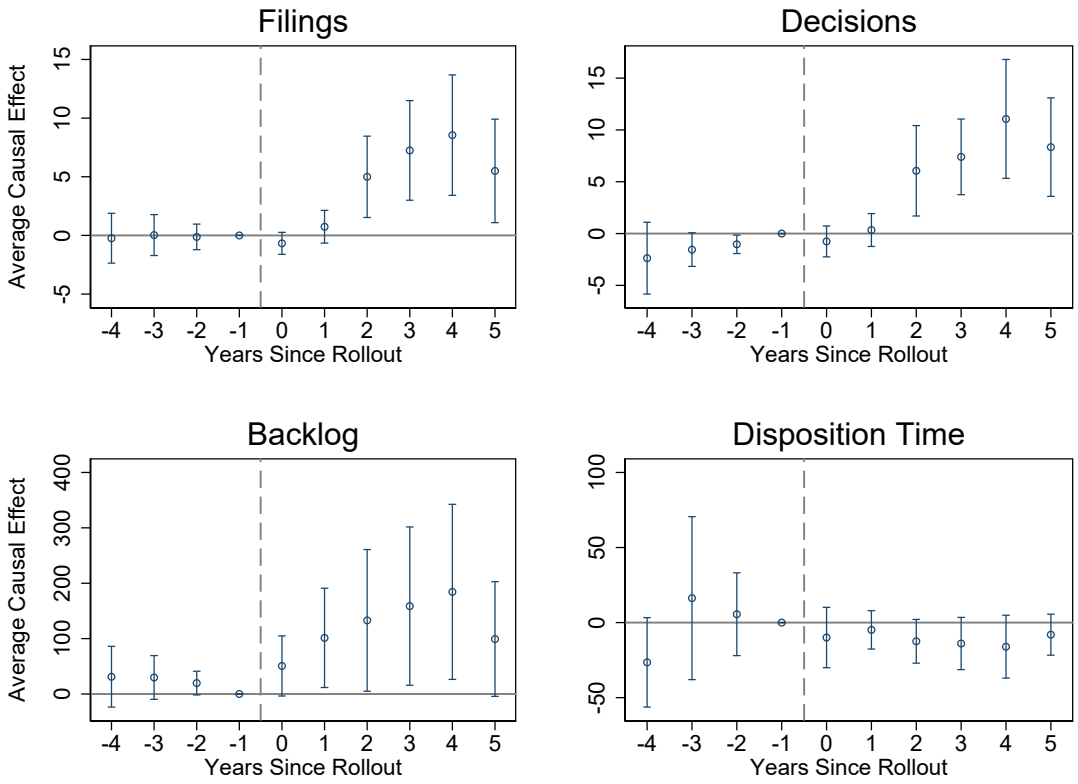

Figure 2: Dynamic Impact of Kanoon Rollout on District Court Efficiency

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on court efficiency in district courts. Observations are at the state-year-month level. The data is based on all cases active in the period 2005-2015 and available on eCourts District Court in May 2019. Leads and lags are defined as the yearly difference between the year and month of an observation and the year and month of the rollout of the state's high court on Indian Kanoon. *Lead 1* is the omitted category. *Filings* counts the number of filings per state-year-month (in thousand). *Decisions* counts the number of decided cases per state-year-month (in thousand). *Backlog* counts the number of undecided cases in a state at the end of a year-month, and which were filed at least one year prior to this year-month (in thousand). *Disposition Time* is the ratio between the number of unresolved cases at the end of a year-month and the number of decisions in that year-month in a state, and is a measure of how many years it takes on average to resolve a case. Any court that has not been rolled out by 2017 is used as control cohort. The estimation controls for state, year, and month fixed effects and is robust to heterogeneous treatment effects. Standard errors are clustered at the state level. Confidence intervals are at the 95% level.

Table 1: Kanoon's Impact on District Court Efficiency

	Filings			Decisions	Backlog	Disposition Time
	(1)	(2)	(3)	(4)	(5)	(6)
Post-Kanoon introduction	6.856***	6.929***	6.929***	8.256***	105.593*	-2.221
	(1.940)	(1.942)	(1.942)	(2.151)	(56.566)	(12.558)
Year FE	✓	✓	✓	✓	✓	✓
Month FE		✓	✓	✓	✓	✓
Rollout FE	✓	✓				
State FE			✓	✓	✓	✓
Mean Dep. Var.	13.247	13.247	13.247	9.183	386.713	24.414
Observations	3,300	3,300	3,300	3,300	3,300	2,868

Note: This table displays estimation results of Indian Kanoon's impact on court efficiency in district courts. Observations are at the state-year-month level. The data is based on all cases active in the period 2005-2015 and available on eCourts District Court in May 2019. Every estimation is regressing a measure of court efficiency on a dichotomous variable, equal to one if the year-month is post the Indian Kanoon rollout for the respective high court, and several fixed effects. *Filings* counts the number of filings per state-year-month (in thousand). *Decisions* counts the number of decided cases per state-year-month (in thousand). *Backlog* counts the number of undecided cases in a state at the end of a year-month, and which were filed at least one year prior to this year-month (in thousand). *Disposition Time* is the ratio between the number of unresolved cases at the end of a year-month and the number of decisions in that year-month in a state, and is a measure of how many years it takes on average to resolve a case. Standard errors are clustered at the high court level. Stars *, ** and *** indicate that the p-value is below 0.1, 0.05 and 0.01 respectively.

The dynamic effects of Kanoon on district courts are presented in Figure 2. We observe that the number of filings and decisions in district courts increases steadily in the four years after the implementation of Kanoon. The general positive effects noted in Table 1 are largely driven by the positive and significant effects in the second, third, and fourth year of the launch of the platform. At its peak, four years after the launch, we observe an additional 10 thousand filings and 12 thousand decisions per state, year, and month. We do not see statistically significant impacts in any year on the disposition time. There is a small and statistically significant increase in the backlog in the second year of implementation.

In summary, Kanoon substantially increased access to district courts without adverse efficiency effects. We examine analogous high court results later in this section. We now turn to appeals—cases originating in district courts that reach high courts—to understand what drives higher case volumes and whether case quality changes.

5.2 Appeals from District Courts in High Courts

We follow appeal cases from district courts through high courts using the linked dataset described in Section 3.3.1. Table 2 presents Kanoon's impact on the number of appeals

Table 2: Kanoon's Impact on Appeals of District Court Cases in High Courts

	(1) Appeals	(2) % Appealed
Post-Kanoon introduction	.044**	.0011
	(.019)	(.0023)
Year FE	✓	✓
Month FE	✓	✓
State FE	✓	✓
Mean Dep. Var.	.0972	.00706
Observations	1,980	1,980

Note: This table presents estimation results examining the impact of Indian Kanoon on appeals of district courts cases in high courts. The observations are at the court-year-month level. The data includes all cases active during the period 2005-2015, as obtained from eCourts District Court in May 2019. Each estimation regresses a measure of court efficiency on a dichotomous variable, which equals one if the year-month is after the Indian Kanoon rollout of the high court with jurisdiction over the state, along with several fixed effects. *Appeals* represents the number of district court cases filed in a state-year-month and later appealed in the high court (in thousand). *% Appealed* represents the share of district court cases filed in a state-year-month that are appealed later on in the high court. Standard errors are clustered at the high court level. Stars (**, **, ***) indicate that the p-value is below 0.1, 0.05, and 0.01, respectively.

(Column 1) and the appeal rate (Column 2). We observe a statistically significant increase of 44 appeals (45%) per state-year-month after Kanoon rollout (Column 1), but no significant change in the proportion of district court cases appealed to high courts (Column 2).

Dynamic estimates (Online Appendix Figure OA2) follow a similar pattern to district court measures: a gradual increase in appeal numbers over the initial years, with effects most prominent during years 3 to 5 after rollout. However, the appeal rate does not show a sustained statistically significant increase during this period. Except for a small increase in the first year, Kanoon does not change the likelihood of filing an appeal.

Did the increase in litigation volume after Kanoon coincide with a lower quality of the case, measured by higher dismissal or rejection rates in high courts? We analyze how appeals are treated upon entry into high courts, where they are either admitted, rejected, or transferred. Approximately 83% of appeals are admitted, which means they pass the initial stage and proceed for consideration. Despite Kanoon's substantial impact on case volumes (Column 1, Table 3), we do not find a statistically significant impact on the proportion of

Table 3: Impact on Outcomes of District Court Case Appeals in High Courts (in %)

	% of Appeals	% of Admitted	% of Disposed	
	(1) Admitted	(2) Disposed	(3) Withdrawn	(4) Overruled
Post-Kanoon introduction	.0013	-.00037	.026***	-.13***
	(.028)	(.00033)	(.0096)	(.028)
Year FE	✓	✓	✓	✓
Month FE	✓	✓	✓	✓
State FE	✓	✓	✓	✓
Mean Dep. Var.	.83	.999	.0795	.25
Observations	1,519	1,507	1,507	1,507

Note: This table displays estimation results of the impact of Indian Kanoon on outcomes of district courts cases appealed in the high courts. Observations are at the court-year-month level. The data is based on all cases active in the period 2005-2015 available on eCourts District Court in May 2019 and appealed later on in the high court. Every estimation is regressing a conditional share of cases with a given appeal status on a dichotomous variable, equal to one if the district court filing date is post the Indian Kanoon rollout of the high court having jurisdiction over the state, and several fixed effects. *Admitted* measures the share of all district court appeal cases for which all paperwork is in order, and the case is deemed fit for processing at the high court and listed for a hearing/decision. *Disposed* measures the share of *admitted* appeal cases which is heard by the high court and decided by the bench. *Withdrawn* measures the share of *disposed* appeal cases withdrawn by the petitioner. *Overruled* measures the share of *disposed* appeal cases (at least partly) approved by the high court. Standard errors are clustered at the high court level. Stars *, ** and *** indicate that the p-value is below 0.1, 0.05 and 0.01 respectively.

appeals admitted.

This suggests that the higher volume of cases after the launch of Kanoon did not reduce the quality of the cases referred to the high courts. The majority of cases continue to merit consideration despite more filings.

We next examine Kanoon's impact on appeal outcomes at high courts. As explained earlier, admitted cases are disposed in three ways: "dismissed" (the district court decision stands), "overruled" (the district court decision is modified), or "withdrawn" (the litigant abandons the case and the original decision stands). We construct conditional percentages at each node of the appeal process.[22][23]

[22] Conditional percentages use the preceding node as the denominator (see Figure A2). For % Admitted, the denominator is decided appeal cases from that state-year-month, For % Disposed, it is admitted appeals, For % Withdrawn and % Overruled, it is disposed cases.

[23] See Online Appendix Figure OA4 for total quantities of appealed cases by outcome.

Among admitted appeals, we find no change in the likelihood of disposal (Column 2, Table 3) after Kanoon's launch. However, we observe significant effects on disposal types. Kanoon increased the withdrawal of cases by 2.6 percentage points, while decreasing the proportion of cases overruled (at least partly) by 13 percentage points. These findings suggest that litigants still get the opportunity for a fair hearing in court; however, some opt to withdraw their cases during the course of the proceedings. Furthermore, the decrease in the percentage of cases overruled implies that the district court decisions were not of lower quality. Instead, this outcome suggests that Kanoon may have made appellants more aware of their chances of success, leading some to withdraw their cases in anticipation of an unfavorable ruling. Kanoon thus facilitated better-informed litigant decisions, affecting disposal types while maintaining access to justice.

The event study plots for these results are presented in the online appendix Figure OA3. We note that admission likelihood decreases in the first three years after Kanoon, but this decline is transitory. For admitted, disposed, overruled and withdrawn cases, the dynamic results in the online appendix figure OA3 align with the overall impacts in Table 3.

In summary, these results indicate that free legal information through Kanoon may have improved appellants' ability to understand court proceedings, conduct legal research, and file appeals. However, conditional on admission, litigants withdraw more frequently than before accessing Kanoon.

5.3 Impacts on High Courts

We next examine Kanoon's impact on high courts. We anticipate different effects than in district courts due to preexisting disparities in legal information access. High courts are located in large cities with substantial lawyer populations who already access paid legal databases and belong to professional networks with considerable legal knowledge. Evidence shows that external legal expenses from companies and wealthy individuals have increased in India (Galanter and N. Robinson 2013; Sankaraguruswamy and Varottil 2023), suggesting that these populations may benefit less from Kanoon than those with previously limited information access.

Given the district court caseload increases documented above, it may seem plausible that Kanoon would also increase the high court caseload. However, we note that appeals account for only 41.6% of the caseload of high courts (see footnote 4). In other jurisdictional areas of high courts (such as "original jurisdiction"), Kanoon likely had minimal

Table 4: Kanoon's Impact on High Court Efficiency

	(1) Filings	(2) Decisions	(3) Backlog	(4) Disposition Time
Post-Kanoon introduction	-1.165**	-1.028***	20.864**	-0.013
	(0.549)	(0.294)	(8.149)	(0.905)
Year FE	✓	✓	✓	✓
Month FE	✓	✓	✓	✓
State FE	✓	✓	✓	✓
Mean Dep. Var.	3.144	2.461	74.225	0.799
Observations	2,120	2,143	2,187	2,142

Note: This table displays estimation results of Indian Kanoon's impact on court efficiency in high courts. Observations are at the high court-year-month level. The data is based on all cases active in the period 2005-2015 and available on eCourts in November 2020. Every estimation is regressing a measure of court efficiency on a dichotomous variable, equal to one if the year-month is post the Indian Kanoon rollout for the respective high court, and several fixed effects. *Filings* counts the number of filings per state-year-month (in thousand). *Decisions* counts the number of decided cases per state-year-month (in thousand). *Backlog* counts the number of undecided cases in a state at the end of a year-month, and which were filed at least one year prior to this year-month (in thousand). *Disposition Time* is the ratio between the number of unresolved cases at the end of a year-month and the number of decisions in that year-month in a state, and is a measure of how many years it takes on average to resolve a case. Standard errors are clustered at the high court level. Stars *, ** and *** indicate that the p-value is below 0.1, 0.05 and 0.01 respectively.

impact. Original jurisdiction cases are typically contested by urban lawyers who maintain close affiliations with the courts, have greater access to (paid) digital databases, and strong professional networks to share legal information Galanter and N. Robinson 2013). These legal professionals likely already had robust mechanisms to access legal information all through the study period.

Table 4 presents estimates of cases filed, decisions made, backlog and disposition time. In contrast to the district court caseload result, here we observe a decrease in the number of cases filed and decisions made in all specifications. On average, the Kanoon rollout led to 1.2 thousand fewer cases filed per state, year and month. Similarly, it reduced the number of decisions by about a thousand cases. We also observe an increase in the backlog: Kanoon rollout increased the stock of pending cases older than one year (backlog) by 28%. Panel B of Online Appendix Table OA5 shows that these results are robust to alternative estimation techniques.

Estimates of dynamic impact are presented in Figure 3. We note an overall downward trend in the estimate of Kanoon on the number of filings. Backlog increases over the years after the Kanoon rollout, peaking within three to four years after the rollout, where there are additions of approximately 20,000 cases per court per month. Here too, we see no significant change in the disposition time.

What drives the decline in high court cases? Several factors could potentially explain the decline in high court filings. Nationwide judicial reforms were underway during our study period—including Alternative Dispute Resolution (ADR) expansion, Lok Adalat programs, and the National Mission for Delivery of Justice and Legal Reforms (2011). However, because these reforms were implemented nationwide rather than on a state-by-state basis, they are absorbed by our year fixed effects and cannot explain the differential timing of effects across states following IK's staggered rollout. Instead, we focus on mechanisms where Kanoon rollout itself causes changes in high court filing behavior.

Appendix Table A5 disaggregates Kanoon's impact by case type: criminal, civil, writs, appeals, and "other."[24] The decline is driven primarily by civil cases, which show large negative and statistically significant effects.

Several mechanisms may explain the decline in civil cases. First, reduced forum shopping: High courts in India have clear rules for "original jurisdiction" compared to district courts, primarily hearing high-value civil matters, writ petitions, and constitutional cases that cannot be presented to district courts. Before Kanoon, litigants may have had limited visibility into jurisdictional boundaries that govern forum selection. Improved access to legal precedents could clarify which cases belonged in district versus high courts, reducing inappropriate high court filings. Second, litigants may have been able to better navigate various judicial forums. During this period, the judiciary actively promoted tribunals (debt recovery, green tribunals) and alternative dispute resolution systems (Lok Adalats). Free legal information may have clarified which disputes should be directed to these specialized forums rather than high courts, reducing jurisdictional confusion (Krishnan et al. 2014).[25] Third, litigants may simply be better informed. Access to high court precedents could have

[24] Criminal, civil, writ, and appeal categories are not mutually exclusive. For example, a criminal appeal is counted as both criminal and appeal. "Other" includes cases that cannot be categorized elsewhere (e.g., judicial section cases pertaining to personnel decisions within the judiciary or judicial review activities).

[25] Overlapping jurisdictions of high courts, tribunals, and subordinate courts have been contentious due to constitutional ambiguity. Article 226 gives high courts authority to issue writs to any person or authority, while Article 227 grants superintendence power over all courts and tribunals within their jurisdiction. The precise meaning of "superintendence" was intensely debated for years (Supreme Court Online 2021). Kanoon may have clarified these boundaries for potential litigants.

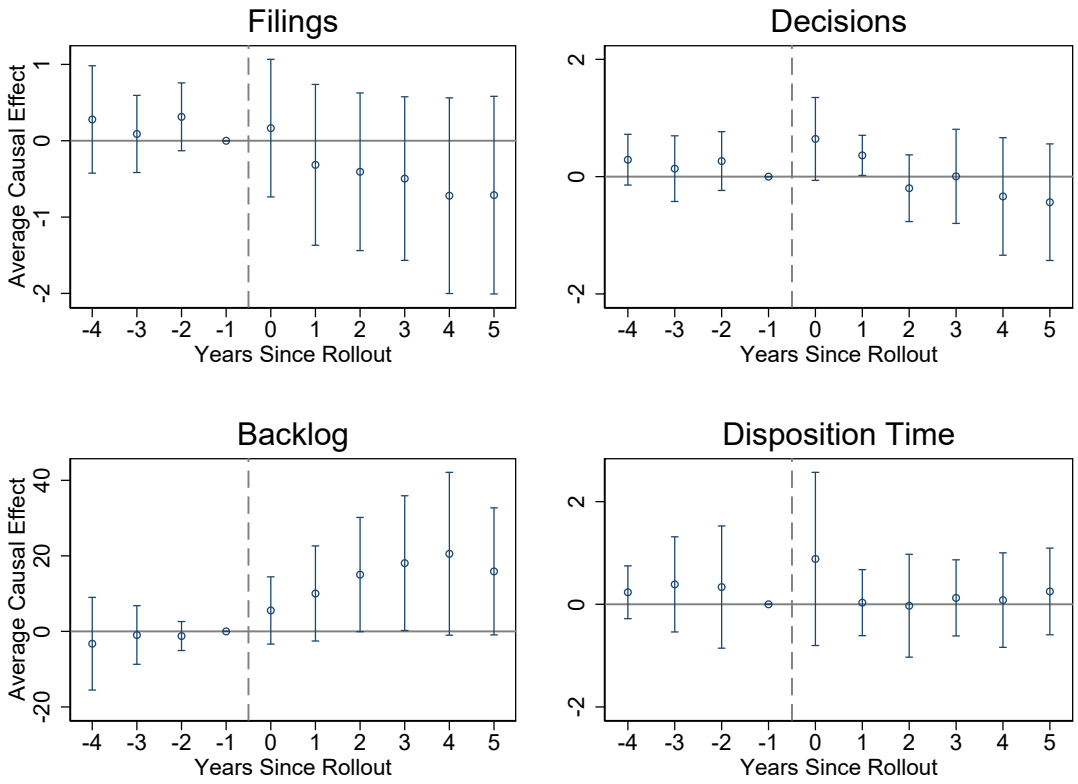

Figure 3: Impact of Kanoon Rollout on Aggregate Efficiency Measures of High Courts

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on overall court efficiency in high courts. Observations are at the court-year-month level. The data is based on all cases active in the period 2005-2015 and available on eCourts in November 2020.The leads and lags are defined as the yearly difference between the year and month of an observation and the year and month of the rollout of the state's high court on Indian Kanoon. *Lead 1*, the dummy variable which is equal to one for the 12 months before Kanoon rollout, is omitted and estimates should be interpreted relative to this baseline. *Filings* counts the number of filings per state-year-month (in thousand). *Decisions* counts the number of decided cases per state-year-month (in thousand). *Backlog* counts the number of undecided cases in a state at the end of a year-month, and which were filed at least one year prior to this year-month (in thousand). *Disposition Time* is the ratio between the number of unresolved cases at the end of a year-month and the number of decisions in that year-month in a state, and is a measure of how many years it takes on average to resolve a case. The estimation uses the *eventstudyinteract* command in STATA to estimate consistent and heterogeneous treatment robust average dynamic treatment effects. Any court that has not been rolled out by 2017 is used as control cohort. The estimation controls for state, year, and month fixed effects. Standard errors are clustered at the state level. Confidence intervals are at the 95% level.

allowed potential litigants to assess the strength of the case prior to filing. If precedents clearly disfavored their position, they could choose not to file or pursue alternative dispute resolution instead.

We also performed robustness tests for all the event study estimates above by estimating them using the method from De Chaisemartin and d'Haultfoeuille (2020). The results are presented in figures OA8, OA9 and OA10. The results suggest the absence of pretrends for all outcome variables and display similar effects after the launch of the Kanoon.

Additionally, in the online Appendix OA5 we use data from All India Reporter (AIR), a renowned legal publication in India, to study the impact of the Kanoon rollout on the citation praxis in Indian high courts.

5.4 Impacts on Firms

We now examine Kanoon's impact on firms. Legal knowledge affects firms through multiple channels: negotiating contracts, resolving disputes, understanding tax obligations, complying with regulations, and reducing risk and uncertainty in economic transactions. Beyond helping individual firms, free access to legal information creates common knowledge—parties know that others have access to the same information. This knowledge symmetry fosters efficiency, creating a predictable environment with lower transaction costs and greater trust between the contracting parties McAdams and Rasmusen (2007).

Legal knowledge is particularly important in developing countries such as India, where firms face a complex regulatory landscape (Bloom, Eifert, et al. 2013; Ahluwalia 2019). We hypothesize that Kanoon reduces "communication frictions" in business activities (Guillouet et al. 2021). Before Kanoon, lawyers were the primary source of legal information, consulted by managers and accountants for all legal counsel. Kanoon could have removed this information bottleneck.

To capture these broad effects, we examine simple measures of firm financial well-being: income, assets, and expenditures. We expect Kanoon to favorably impact all measures of firm financial status. To capture more direct effects, we also examine external legal charges—legal expenses excluding internal counsel and pertaining to outside services.

We restrict our sample to firms with financial data reported from 2005-2015.[26] We emphasize that firms in this sample are *not* representative of all Indian firms – they mostly represent large firms in the formal sector that have financial information available for all the

[26] Online Appendix OA2 contains a more detailed discussion of the sample construction and entry and exit dynamics.

Table 5: Effects on Firm Financials

	(1) Income	(2) Assets	(3) Expenditures	(4) Legal Charges
Panel A: Litigation Sample				
Post-Kanoon introduction	5.173***	13.018***	5.174***	0.006***
	(1.232)	(2.212)	(1.182)	(0.001)
Mean Dep. Var.	10.89	20.86	10.33	0.01
Observations	19,481	19,481	19,481	18,689
Panel B: Full Sample				
Post-Kanoon introduction	2.376***	6.250***	2.460***	0.004**
	(0.758)	(1.891)	(0.730)	(0.002)
Mean Dep. Var.	6.05	11.87	5.72	0.01
Observations	82,731	82,731	82,731	78,815
Year FE	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓

Note: This table display estimation results of the impact of Indian Kanoon on several firm financials. Observations are at the firm-financial year level, and outcomes are measured in a billion INR. The data includes firms with non-zero income data available for all years 2005-2015 in the Prowess database. Every estimation is regressing a financial variable on a dichotomous variable, equal to one if the financial year started post the Indian Kanoon rollout of the high court having jurisdiction over the state the firm is registered in, and year and firm fixed effects. A financial year is defined as April 1st to March 31st of the following year. Panel A restricts the sample to firms which had at least one active case in the period 2005-2015. Panel B includes all firms. Estimates are robust to heterogeneous treatment effects. Standard errors are clustered at the high court level. Stars *, ** and *** indicate that the p-value is below 0.1, 0.05 and 0.01 respectively.

years we are considering here.[27] However, Section 5.5 examines a representative sample of formal Indian manufacturing firms.

We analyze the impact of Kanoon on firms in our Prowess sample in two ways. First, we estimate impacts on all firms in our sample, regardless of court involvement in the time frame considered. Second, we restrict our sample to firms with at least one case in the courts during the 2005-2015 period, hypothesizing that these firms should experience larger impacts. For this analysis, we link firm-level data with legal data with legal data by matching the eCourts district court cases to Prowess firms.

In each regression, the unit of observation is a financial year. Panel A of Table 5 presents estimates of Kanoon on firms that had at least one active district court case during 2005-2015. We note that income increased by 5,173 (48%), assets by 13,018 (62%), and expenditures by 5,174 (50%) million Indian rupees (INR).[28] We also observe a 44% increase in legal charges for these firms.

We note that such effects can emerge from two sources. First, the launch of Kanoon may have changed the composition of firms involved in district court litigation. Second, the firms involved in litigation regardless of Kanoon may have experienced larger effects than than those without any litigation. Unfortunately, we cannot separate these two effects, and leave this for further research.[29]

Panel B of Table 5 displays the overall effect Kanoon had on the full set of firms in the Prowess sample. We observe smaller impacts than Panel A. On average, income increased by 2,376 million INR (39%), assets by 6,250 million INR (53%), expenditures by 2,460 million INR (43%), and legal charges by 4 million INR (41%).

Figure 4 displays the dynamic effects of Kanoon on these financial variables of the companies in our sample. In both settings – the full sample as well as the firms involved in litigation – Kanoon had large and significant effects on firms' financial variables, increasing over the first three years. The effect on assets increases steadily during the first years after rollout before leveling off at a longer-term effect around 10,000 million INR (full sample) and 20,000 million INR (firms involved in litigation).

[27] In our sample of 5,240 firms, analysis of national industry classification codes suggests that 2,190 (41.79%) are in the manufacturing sector, 1,126 (21.49%) are in the financial sector and the remaining 24% of firms are spread across a variety of sectors that include information technology (5.59%), construction (4.4%), administrative services (3.36%), transportation (2.08%), etc.

[28] 5,393 million INR corresponds to approximately 57 million dollars.

[29] In results not shown here, we attempted to predict firms that may be involved in litigation solely based on baseline characteristics of these firms. We did not find these characteristics to be predictive though admittedly, we have only a limited sample of the characteristics of these firms to use in our analysis.

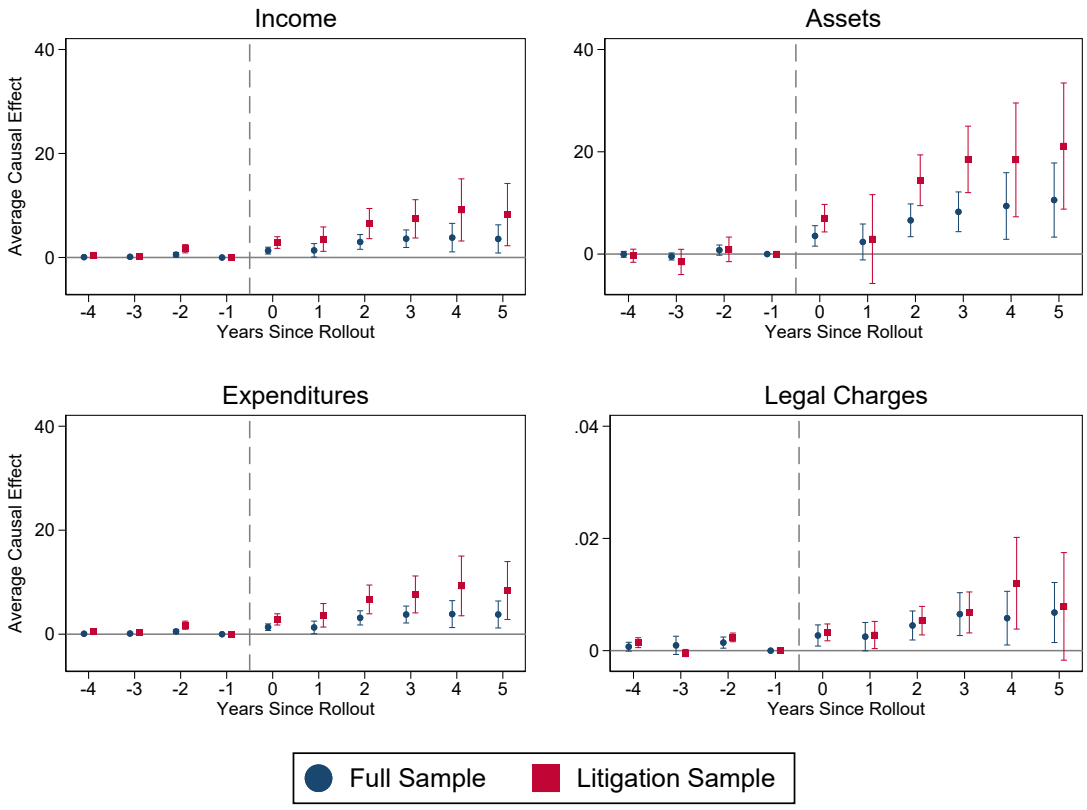

Figure 4: Effects of Kanoon rollout on Firm Financials

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on firm outcomes for all firms and firms having at least one district court case during the considered time frame. Observations are at the firm-fiancial year level and outcomes are measured in billion Indian rupees. The data includes firms with non-zero income data available for all years 2005-2015 in the Prowess database. Leads and lags are defined as the yearly difference between the start of the financial year and the date of rollout on Indian Kanoon of the firm's registration state's high court. *Lead 1*, the dummy variable which is equal to one if the Kanoon rollout falls into the financial year, is the omitted category. Any court that has not been rolled out by 2017 is used as control cohort. The estimation controls for firm and year fixed effects. Standard errors are clustered at the state level. Confidence intervals are at the 95% level.

Table 6 presents estimates of subsamples of firms from different sectors. The manufacturing sector (column 1) experiences the most robust impacts of Kanoon with income, assets, and expenditures all showing a substantial increase of around 60% after rollout. The financial sector (column 2) also shows significant effects, albeit with lower-level effects compared to manufacturing, but proportionately significant.

Outside these two sectors, we find no statistically significant impacts of Kanoon. Manufacturing and financial services are among India's most heavily regulated sectors, despite regulatory relaxation since the 1991 pro-market reforms (Ahluwalia 2019). The similarity in the impacts across these sectors aligns with recent literature that underscores their close links: capital market liberalization has facilitated improvements in manufacturing efficiency in the years after reform (Arnold et al. 2016; Bau and Matray 2023).

Appendix Table A6 investigates in greater detail how Kanoon affected legal expenses of firms. Specifically, we examine whether the observed impact on legal charges is driven by changes in the intensive margin (the amount of legal charges if you have any) or in the extensive margin (the probability of having any legal charges). For firms with at least one active case in our database during the study period, we find a 38% increase in the intensive margin of legal charges and 15 percentage point increase in the probability of having any legal charges. For all firms, we find a 33% increase in the intensive margin and a 5.8 percentage point increase on the extensive margin. Appendix Figure A3 shows that these effects increase over time.

The online appendix Figure OA5 presents additional results on Kanoon's impact on court-level efficiency measures for cases involving firms from Prowess data. We note here a discernable decline in the disposition time of cases in the third and fourth years of the rollout.

We also present placebo tests for these estimates and the court-level efficiency estimates (see the online appendix Table OA6 and Figures OA11, OA12 and OA13). These results strengthen our confidence in the absence of pretrends. In the Online Appendix Figure A4 that the rollout of Indian Kanonn did not have any observable effect on the number of firms being newly included or excluded from the Prowess database, nor did it affect the share of firms included or excluded from the database.

To contextualize these impacts, we consider evidence from previous research on legal and management information interventions in developing countries. In a recent randomized controlled trial that offered firm management consulting services in India, Bloom, Manova, et al. (2021) noted a remarkable 200% increase in firm assets (through the establishment

Table 6: Heterogeneous Effects on Firm Financials by Sector (Full Sample)

	(1) Income	(2) Assets	(3) Expenditures
Panel A: Manufacturing Sector			
Post-Kanoon introduction	5.025***	5.035***	4.973***
	(1.723)	(1.381)	(1.688)
Mean Dep. Var.	9.12	8.16	8.78
Observations	32,615	32,615	32,615
Panel B: Financial Sector			
Post-Kanoon introduction	1.547***	14.131**	1.295***
	(0.523)	(6.067)	(0.476)
Mean Dep. Var.	2.38	21.64	2.03
Observations	20,020	20,020	20,020
Panel C: Other Sectors			
Post-Kanoon introduction	0.577	1.552	1.023*
	(0.554)	(1.239)	(0.552)
Mean Dep. Var.	5.18	9.39	4.86
Observations	30,096	30,096	30,096
Year FE	✓	✓	✓
Firm FE	✓	✓	✓

Note: This table display estimation results of the impact of Indian Kanoon on several firm financials by firms' sector. Observations are at the firm-financial year level, and outcomes are measured in billion Indian rupees. The data includes firms with non-zero income data available for all years 2005-2015 in the Prowess database. Every estimation is regressing a financial variable on a dichotomous variable, equal to one if the financial year started post the Indian Kanoon roll-out of the high court having jurisdiction over the state the firm is registered in, and year and firm fixed effects. A financial year is defined as April 1st to March 31st of the following year. Sectors are defined by divisions of the firms' National Industrial Classification code. "Financial" is short for "financial and insurance activities". "Other" encompasses every division except "manufacturing" and "financial". Estimates are robust to heterogeneous treatment effects. Standard errors are clustered at the high court level. Stars *, ** and *** indicate that the p-value is below 0.1, 0.05 and 0.01 respectively.

of new plants). In South Africa, the provision of legal information to companies increased employment by 12% over a period of only six months (Bertrand and Crépon 2021). Our study complements these experimental findings by analyzing universal access to legal information through the implementation of Indian Kanoon across India. The results support the view that the absence of common knowledge of laws and regulations places direct and indirect costs on economies and institutions (McAdams and Rasmusen 2007). This large-scale natural experiment offers insight into these dynamics that complement evidence from smaller-scale interventions.

5.5 Impact on ASI Firms

The previous section used the Prowess dataset, which covers mainly large, formal, incorporated firms. To examine Kanoon's impact on a more representative sample, we turn to repeated cross-sectional data from the Annual Survey of Industries (ASI). ASI covers the formal manufacturing sector and is representative at the state level. This comprehensive survey captures detailed information on employment, wages, output, input costs, capital assets, and operational characteristics of registered industrial establishments.

We implement a similar event-study framework as earlier, following Sun and Abraham (2021), adapting our empirical strategy to accommodate the absence of firm identifiers across survey waves. Specifically, we compute the event time $K_{st} = year_t - rolloutyear_s$, adjusted by one year for states with a post-March rollout month to account for partial-year exposure. We then construct a series of lead and lag indicators, where leads (up to four years) capture pre-trends and lags (up to five years or more) capture post-treatment effects.

The specification is:

$$Y_{ist} = \sum_{k \neq -1} \beta_k D_{kst} + \alpha_s + \gamma_t + \varepsilon_{ist} \tag{4}$$

where Y_{ist} is the outcome of interest for unit i in state s and year t; D_{kst} are indicators for event time k relative to rollout (with $k = -1$ as the omitted category); α_s and γ_t are state and year fixed effects, respectively; and standard errors are clustered at the state level. The control group comprises states with rollout years beyond 2015, which remain untreated throughout our sample period. To maintain comparability with the earlier Prowess-based results, we construct ASI variables analogous to "Total Income," "Total Expenditure," and "Total Assets."

Figure 5 presents results. We find a statistically significant positive effects on Total Income (4.1% increase at Lag 2) and Total Expenditure (4.4% increase at Lag 2) following

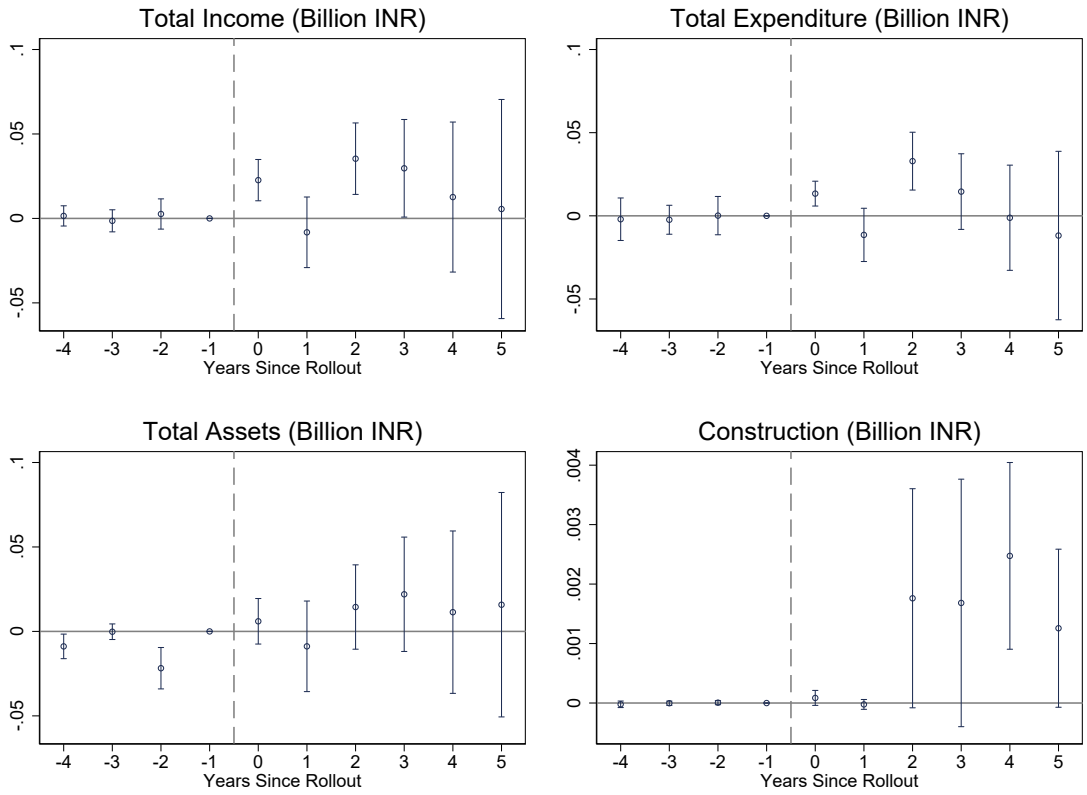

Figure 5: Effects of Kanoon rollout on ASI Firm Financials

Notes: This figure presents event-study estimates of the impact of Indian Kanoon on registered manufacturing firms in India. The analysis uses repeated cross-sectional data from 11 waves of the Annual Survey of Industries (ASI) spanning 2005–2015. Outcomes are measured at the factory-year level in billion Indian rupees. The sample includes factories operating for the full 12-month period. (For details on sample construction and variable definitions, see Online Appendix OA3.) Event time is defined as the difference in years between the survey year and the rollout year of Indian Kanoon for the factory's registration state high court. The omitted category is *Lead 1*, corresponding to factories surveyed in the year of their state's Kanoon rollout. The control group comprises states with rollout years beyond 2015. The specification includes state and year fixed effects. Standard errors are clustered at the state level, and 95% confidence intervals are displayed.

the launch of Kanoon. These effects are smaller in magnitude than those observed for Prowess firms, but they remain both economically and statistically significant.

The bottom-right panel of Figure 5 examines the impact on construction. We observe an increase of up to 4.7% four years after Kanoon rollout. The introduction of a free legal search engine could stimulate construction activity through several mechanisms. Democratizing access to legal information may have reduced uncertainty about property rights and land titles, reduced transaction costs for regulatory compliance, and strengthened contract enforcement mechanisms. The platform may also have helped resolve long-standing land disputes that previously blocked development. In addition, financial institutions might become more willing to fund construction projects when legal risks appear more manageable. Together, these factors could render previously marginal construction projects economically viable.

Figure 6 displays the effect on construction by firm size. We split each year's income distribution into top-10% and bottom-90%. The left panel of Figure 6 displays the effect on the top 10% of the largest firms by income, the right panel on the bottom 90%. We observe large effects for the largest firms (up to 153% in lag 4) but no such effect for smaller firms. If anything, Kanoon rollout actually reduced the value of construction for these firms by 49% in lag 3. This aligns with our general finding: large effects for large Prowess firms but smaller, though still significant, effects for the more comprehensive ASI firm distribution.

6 Discussion

Our findings demonstrate that the launch of the Indian Kanoon platform had substantial impacts on both the judicial system and firm performance in India. We note that the introduction of the platform corresponded to significant increases in district court filings and decisions. In two separate samples of firms, we also note a significant impact on the financial status of firms. Although some of these effects may appear surprisingly large, we believe that they are plausible in light of the prevailing conditions related to both the landscape of legal information and India's market conditions.

These substantial effects are best understood in the context of India's pre-Kanoon legal information landscape. As noted in Section 2, before Kanoon's introduction, India had no free source of comprehensive legal information. Existing commercial databases charged prohibitive fees – approximately $1,500 for Supreme Court case law or $100 plus per-document surcharges for broader coverage (Singh, P. Rao, Deva, et al. 2012). These plat-

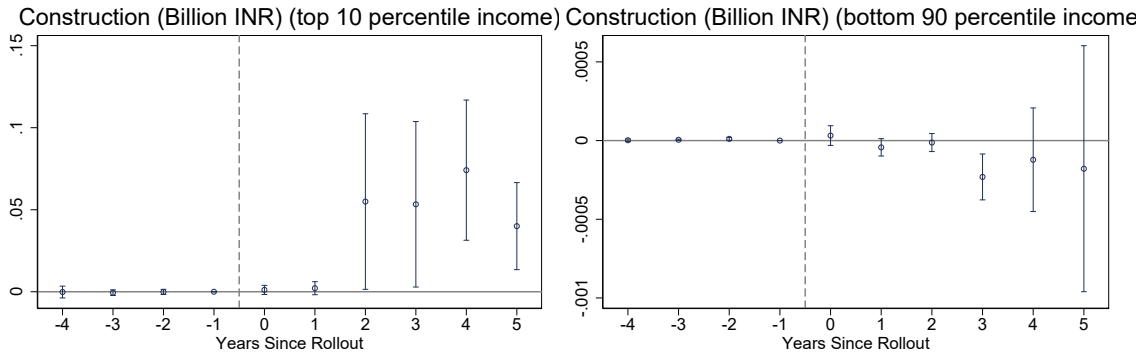

Figure 6: Effects of Kanoon rollout on ASI Firm's Construction by Firm Size

Note: This Figure displays estimation results of the impact of Indian Kanoon on registered manufacturing firms' construction value. The analysis is based on repeated cross sectional surveys, using 11 waves from 2005 to 2015. Outcomes are at the factory-year level and measured in billion Indian rupees. The sample includes factories open for the last 12 months. (For more details on the sample and variable construction, see Online Appendix OA3.) Leads and lags are defined as the yearly difference between the survey year and the date of rollout on Indian Kanoon of the firm's registration state's high court. *Lead 1*, the dummy variable which is equal to one if the Kanoon rollout falls into the survey year, is the omitted category. Any state that has not been rolled out by 2017 is used as control cohort. The estimation controls for firm and year fixed effects. Standard errors are clustered at the state level. Confidence intervals are at the 95% level.

forms provided incomplete coverage across jurisdictions, with significant gaps in district court judgments and historical rulings from high courts and tribunals. Qualitative research studies note that even large corporations struggled with fragmented legal databases and limited precedent access, especially in smaller cities (Kalra 2001; Singh, P. Rao, Deva, et al. 2012). Information asymmetries between parties frequently delay negotiations (Galanter and Krishnan 2003). Practitioners reported significant barriers to tracking divergent interpretations of the high court between states (Krishnan 2010). As a result, businesses routinely struggled to navigate India's complex regulatory systems comprising more than 1,500 acts and more than 69,000 compliances, with rules changing daily (Arvind 2017). The enforcement of contracts through Indian courts took an average of 1,420 days, making India the 177th out of 178 countries worldwide (World Bank 2008).

Within this environment of profound informational inefficiency, Kanoon found ideal conditions to exert its transformative impact. Its interface was free, it did not require registration, and it featured a user-friendly design that was accessible even to those without legal training. As noted earlier, this platform ultimately consolidated and cross-linked virtually every significant ruling from the Supreme Court, High Courts, Tribunals, and legislative acts into a single comprehensive resource enabling simple keyword searches. These search features facilitated the creation of "common knowledge" among counterparties and judges - even when only one side consulted the database, both could credibly assume the information was equally verifiable in court, reducing hold-up concerns in bargaining. Moreover, this powerful search capability was later leveraged by other open-access initiatives, including the Legal Information Institute of India (LII of India), a 2012 collaboration between eight Indian law schools and an international partner: Indian Kanoon shared its extensive case law with LII of India while developing cross-platform technical coordination that expanded its reach throughout India's legal ecosystem (Greenleaf et al. 2013).

The growth in the availability of free legal information has over time crowded out the market for subscriptions to paid legal services since the launch of Kanoon. In 2010, outside of the six main metro cities, paid portals represented less than 10% of the electronic case law searches in 2010 (Krishnan et al. 2014). Survey evidence suggests that fewer than 15% of the advocates in district courts maintain subscriptions to premium services like Manupatra or SCC Online; small and medium enterprises largely rely on free online services (VIDHI 2020).

The large impacts of Kanoon, particularly on financial and manufacturing firms, align with broader research on information frictions in India's markets. Our findings echo the

work of Bau and Matray (2023), who demonstrated that the liberalization of foreign capital equity produced substantial impacts–53% increases in capital and 23% in revenues–while reducing capital misallocation across entire markets. Similar nonlinear scaling effects appear in contexts where information barriers are suddenly removed (Bloom, Eifert, et al. 2013; Bertrand and Crépon 2021). This pattern of enormous returns on information access is consistent in developing economies with complex regulatory environments.

Democratizing access to legal information has been known to catalyze powerful economic externalities in large economies. Unlike targeted reforms such as Ponticelli and Alencar (2016)'s study of Brazilian bankruptcy (showing 2–3% productivity gains), Kanoon addressed legal uncertainties across all domains simultaneously. By reducing informational frictions in contract design and enforcement, Indian Kanoon may have enabled firms to confidently enter into longer-term supply agreements and justify substantial capital investments, driving the increase in capital expenditure we observe following the platform's introduction. The effects are particularly pronounced in the construction sector, where Kanoon likely made previously marginal projects more viable and removed critical bottlenecks by efficiently disseminating accurate and timely information to all involved parties.

By resolving multiple information problems simultaneously, Kanoon paved the way for improvements predicted by the many mechanisms already documented in the literature on law and finance: increased investment, enhanced financing, and accelerated productivity growth (La Porta et al. 1998).

7 Conclusion

Legal information can be difficult to access, expensive, and technically challenging (United Nations 2016). Achieving equal justice for all requires policies to overcome these barriers. We examine the impact of Indian Kanoon, a free legal search engine that was implemented in India in 2008 by an overseas graduate student. The engine had the explicit goal of bringing "the knowledge of law to the common people". An emphasis was placed on keyword searches and tight integration of court judgments with laws and with prior judgments to allow automatic determination of the most relevant clauses and court judgments.

We use an event study framework that takes advantage of the staggered rollout of the platform in different states to assess its effects on individual cases, courts, and companies. Our working sample includes all district court and high court cases active during the period 2005-2015.

Our findings are threefold, covering access to justice, judicial efficiency, and the financial status of firms. Firstly, Indian Kanoon's rollout corresponded with an uptick in case filings and resolutions, without exacerbating backlogs or prolonging case disposition times. Importantly, we did not observe a decrease in the quality of the decision, as indicated by appeals to high courts and their subsequent outcomes.

At the high court level, complementary trends emerged, with noticeable reductions in case filings and decisions, primarily in original civil litigation. Here, Kanoon appears to have curbed erroneous filings, encouraged alternative dispute resolutions, and reduced forum-shopping, thereby enhancing judicial efficiency.

Finally, our analysis indicates beneficial effects on the financial health of large formal firms. We noted a robust positive correlation between the introduction of the platform and improvements in firms' income, assets, and expenditures, consistent across the full spectrum of firms and those involved in district court litigation during our study period. These improvements were associated with similar relative increases in legal charges. In particular, these improvements were most pronounced in the manufacturing and financial sectors.

These results collectively suggest that Kanoon's provision of accessible legal information has had broad-ranging effects in India, including reducing bottlenecks, increasing efficiency, and enhancing legal research quality in courts. This case study has relevance far beyond India - it suggests that free legal search can reduce market-level constraints to economic development.

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Appendix

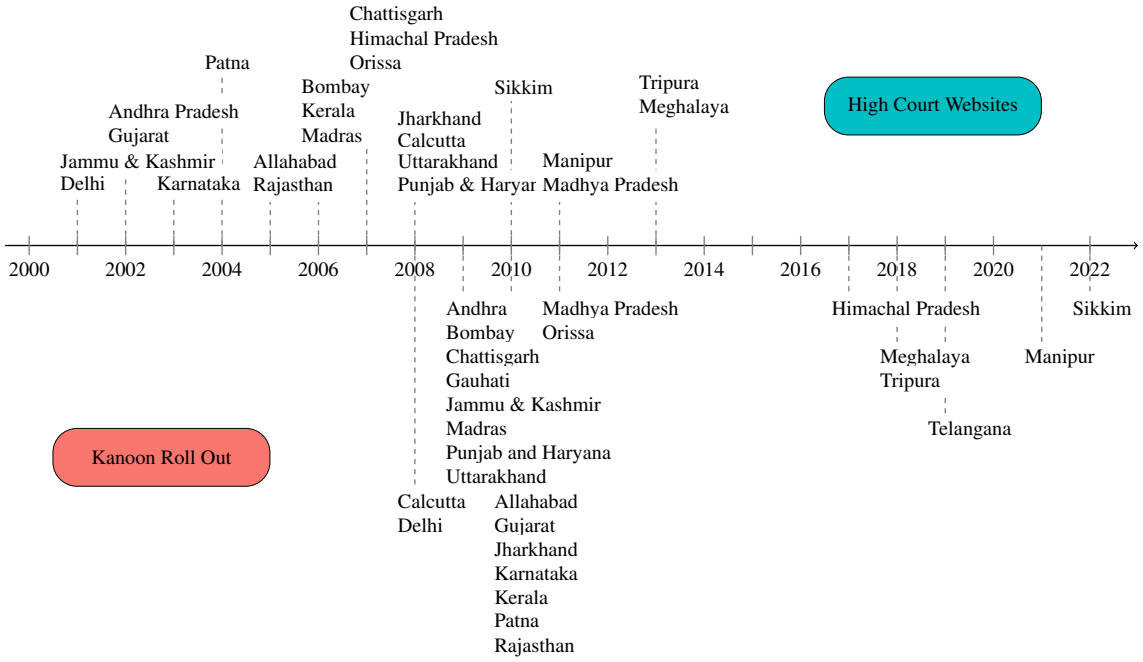

Figure A1: Rollout of High Court Websites versus Indian Kanoon

Note: This figure illustrates that the rollout of Indian Kanoon across high courts (bottom panel) did not follow closely or in a clear pattern the availability of data via high courts' websites (top panel). Names above the vertical timeline represent the year in which high court websites were first publicly accessible. The names below represent the year the Indian Kanoon database included the high courts for the first time. For exact dates of these events and additional information, see Appendix Table A1.

Table A1: State and HCs in India and Data Availability.

High Court	Established	State	State Created	Population	Kanoon	In Analysis? HC	In Analysis? DC
Allahabad HC	1866-03-17	Uttar Pradesh	1950-01-26	19,9812,341	2010-07-08	y	y
Andhra Pradesh HC[a,b]	2019-01-01	Andhra Pradesh	1956-11-01	4,9506,799	2009-01-18	y	y
		Telangana (until Jan 2019)					n
Bombay HC	1862-08-14	Goa	1987-05-30	145,8545	2009-01-18	y	y
		Maharashtra	1960-05-01	112,374,333			y
		Dadra & N. H. & D. & D. (UT)	2020-01-26	586,956			n
Calcutta HC	1862-07-02	West Bengal	1950-01-26	91,276,115	2008-10-26	n	y
		Andaman & Nicobar Islands (UT)	1956-11-01	380,581			n
Chhattisgarh HC	2000-11-01	Chhattisgarh	2000-11-01	25,545,198	2009-01-18	y	y
Delhi HC	1966-10-31	Delhi (UT)	1956-11-01	16,787,941	2008-10-26	n	y
Gauhati HC[c]	1948-03-01	Arunachal Pradesh	1987-02-20	1,383,727	2009-01-18	y	n
		Assam	1950-01-26	31,205,576			y
		Mizoram	1987-02-20	1,097,206			y
		Nagaland	1963-12-01	1,978,502			n
		Meghalaya (until Mar 2013)					n
		Manipur (until Mar 2013)					n
		Tripura (until Mar 2013)					n
Gujarat HC	1960-05-01	Gujarat	1960-05-01	60,439,692	2010-06-13	y	y
Himachal Pradesh HC	1971-01-25	Himachal Pradesh	1971-01-25	6,864,602	2017-04-15	y	y
Jammu & K. and L. HC	1928-03-26	Jammu and Kashmir (UT)	2019-10-31	12,258,433	2009-01-18	y	y
		Ladakh (UT)	2019-10-31	290,492			n
Jharkhand HC	2000-11-15	Jharkhand	2000-11-15	32,988,134	2010-06-13	y	y

Continuation of Table A1

High Court	Established	State	State Created	Population	Kanoon Rollout	HC	DC
Karnataka HC	1905-02-26	Karnataka	1956-11-01	61,095,297	2010-06-13	y	y
Kerala HC	1956-11-01	Kerala	1956-11-01	33,406,061	2010-06-26	y	y
		Lakshadweep (UT)	1956-11-01	64,473			n
Madhya Pradesh HC	1936-01-02	Madhya Pradesh	1950-01-26	72,626,809	2011-01-29	n	y
Madras HC	1862-08-15	Tamil Nadu	1956-11-01	72,147,030	2009-01-18	y	y
		Puducherry (UT)	1962-08-16	1,247,953			n
Manipur HC[c]	2013-03-25	Manipur	1972-01-21	2,855,794	2020-02-27	n	n
Meghalaya HC[c]	2013-03-23	Meghalaya	1972-01-21	2,966,889	2018-10-21	n	n
Orissa HC	1948-04-03	Odisha	1950-01-26	41,974,218	2011-01-26	y	y
Patna HC	1916-09-02	Bihar	1950-01-26	10,409,9452	2010-06-13	y	y
Punjab and Haryana HC	1947-08-15	Chandigarh (UT)	1966-11-01	1,055,450	2009-03-20	n	y
		Haryana	1966-11-01	25,351,462			y
		Punjab	1966-11-01	27,743,338			y
Rajasthan HC	1949-06-21	Rajasthan	1950-01-26	68,548,437	2010-06-13	y	y
Sikkim HC	1975-05-16	Sikkim	1975-05-16	61,0577	2021-03-01	y	y
Telangana HC[a,b]	2019-01-01	Telangana	2014-06-02	35,193,978	2019-08-30	n	n
Tripura HC[c]	2013-03-23	Tripura	1972-01-21	367,3917	2018-10-30	n	n
Uttarakhand HC	2000-11-09	Uttarakhand	2000-11-09	10,086,292	2009-03-20	y	y

[a] 2 June 2014: bifurcation of Andhra Pradesh into Telangana and Andhra Pradesh: common HC renamed to "HC of Judicature at Hyderabad"

[b] 1 January 2019: Separation of HCs: "Andhra Pradesh HC" for Andhra Pradesh and "Telangana HC" for Telangana

[c] Until March 2013, Gauhati HC had jurisdiction over Meghalaya, Manipur, Tripura. "Manipur HC" established 25 March 2013, "Meghalaya HC" established 23 March 2013, "Tripura HC" established 23 March 2013

A1 Summary Statistics

Table A2: Summary Statistics - Courts Data

	N	Mean	SD	Min	Max
eCourt District Courts Data (State-Year-Month Level)					
Filings (Thsd.)	3,300	13.25	19.02	0.00	132.60
Decided cases (Thsd.)	3,300	9.18	19.90	0.00	353.02
Backlog (Thsd.)	3,300	386.71	619.53	0.01	3,661.21
Disposition time (Years)	2,924	24.41	102.45	0.00	1,650.17
eCourt High Courts Data (State-Year-Month Level)					
Filings (Thsd.)	2,120	3.14	3.37	0.00	20.83
Decided cases (Thsd.)	2,143	2.46	2.76	0.00	35.32
Backlog (Thsd.)	2,187	74.22	72.60	0.00	329.39
Disposition time (Years)	2,142	0.80	4.00	0.01	99.41
Filings Criminal	2,120	0.60	0.97	0.00	5.81
Filings Civil	2,120	0.74	1.65	0.00	12.73
Filings Writ	2,120	0.33	0.86	0.00	10.89
Filings Appeal	2,120	0.88	1.89	0.00	16.32
Filings Other	2,120	0.59	1.24	0.00	10.30
Appeals of District Court Cases (State-Year-Month Level)					
Appeals (Thsd.)	1,980	0.10	0.17	0	1.1
% Appealed	1,980	0.01	0.01	0	.077
High Court Case Status of District Court Appeals (State-Year-Month Level)					
Admitted	1,645	59.03	106.66	0	667
Disposed	1,980	48.95	99.63	0	667
Withdrawn	1,980	2.11	5.56	0	56
Overruled	1,980	13.63	28.38	0	167
% Admitted	1,522	0.83	0.18	0	1
% Disposed (of Admitted)	1,509	1.00	0.01	.94	1
% Withdrawn (of Disposed)	1,509	0.08	0.13	0	1
% Overruled (of Disposed)	1,509	0.25	0.21	0	1

Note: All data sources cover the years 2005 - 2015.

Table A3: Summary Statistics - Prowess Firm Data

	N	Mean	SD	Min	Max
Firm Financial Data (Yearly): All Firms					
Income (billion INR)	82,731	6.05	64.94	0.000	5,439.60
Assets (billion INR)	82,731	11.87	116.39	-0.002	6,487.84
Expenditures (billion INR)	82,731	5.72	62.64	-1.825	5,380.96
External Legal Charges (billion INR)	78,815	0.01	0.07	0.000	6.56
External Legal Charges (if > 0) (billion INR)	43,538	0.02	0.10	0.000	6.56
Any External Legal Charges	78,815	0.55	0.50	0.000	1.00
Firm Financial Data (Yearly): Firms with at least one case in 2005-2015					
Income (billion INR)	19,481	10.89	110.06	0.000	5,439.60
Assets (billion INR)	19,481	20.86	179.20	-0.002	6,487.84
Expenditures (billion INR)	19,481	10.33	107.60	-0.107	5,380.96
External Legal Charges (billion INR)	18,689	0.01	0.09	0.000	6.56
External Legal Charges (if > 0) (billion INR)	11,659	0.02	0.11	0.000	6.56
Any External Legal Charges	18,689	0.62	0.48	0.000	1.00
eCourt High Courts Cases linked to Firms (State-Month Level)					
Filings (thousand)	2,772	0.14	0.31	0.000	4.22
Decisions (thousand)	2,772	0.10	0.31	0.000	7.48
Backlog (thousand)	2,772	2.40	5.51	0.002	33.85
Disposition Time (years)	1,697	0.42	0.72	0.002	7.96

Note: For financial data, every observation represents one financial year of a firm (April 1st to March 31st of the following year). Financial data is obtained from Prowess and subset to the years 2005–2015 and to firms which have non-zero income data for all 11 years.

Table A4: Summary Statistics - ASI Firm Data

	N	Mean	SD	Min	Max
All Firms					
Total Income (Billion INR)	390,437	0.86	14.04	0.00	3,420.59
Total Assets (Billion INR)	421,272	0.63	7.84	-6.03	1,364.43
Total Expenditure (Billion INR)	421,754	0.75	12.52	0.00	3,290.57
Construction (Billion INR)	390,437	0.01	0.67	0.00	311.03
Firms in Top 10 Percentile Income Distribution					
Construction (Billion INR)	39,050	0.05	2.12	0.00	311.03
Firms in Bottom 90 Percentile Distribution					
Construction (Billion INR)	351,387	0.00	0.02	0.00	4.34

Note: This table presents summary stats for firm financial variables from the Annual Survey of Industries (ASI), covering registered manufacturing firms in India. The data is available as repeated cross sections from the Indian Ministry of Statistics & Programme Implementation. We use survey rounds 2005 to 2015. The data is subset to include factories operating during all 12 months prior to the date of data collection. For Panel B and C, we divide firms by their position in the yearly income distribution in those in the top-10 percentile and those in the bottom-90 percentile. For more details on data sub setting and variable definitions, see Online Appendix OA3.

A2 Additional Appeal Information

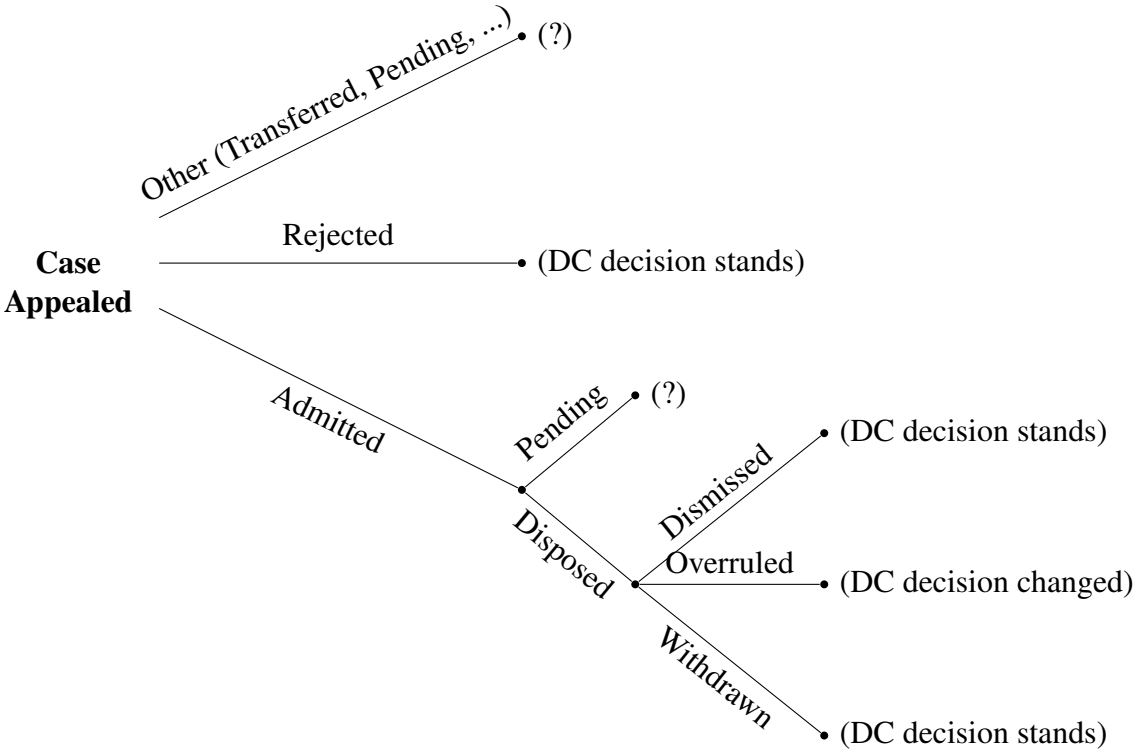

Figure A2: Decision Tree of District Court Appeals in High Courts

Note: *Admitted:* the appeal case's paperwork is in order, and the case is deemed fit for processing at the high court and listed for a hearing/decision. *Rejected:* the appeal cases falls outside the court's jurisdiction or its paperwork has irreparable defects. *Disposed:* the appeal cases was heard by the high court and decided by the bench. *Withdrawn:* the appeal cases was withdrawn by the petitioner. *Overruled:* the appeal cases was (at least partly) approved by the high court. *Dismissed* the appeal cases was dismissed by the high court.

A3 Additional Results on High Courts

Table A5: Kanoon's Effect on Filings in High Courts per Case Type

	Number of Filings of Case Type (in thsd)				
	(1) Criminal	(2) Civil	(3) Writ	(4) Appeal	(5) Other
Post-Kanoon introduction	0.065	-0.748**	-0.154*	-0.359	0.030
	(0.193)	(0.306)	(0.087)	(0.242)	(0.051)
Court FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Month FE	✓	✓	✓	✓	✓
Mean Dep. Var.	0.60	0.74	0.33	0.88	0.59
Observations	2,120	2,120	2,120	2,120	2,120

Note: This table displays estimation results of the impact of Indian Kanoon on the number of filings per case type in high courts (in thousand). Observations are at the court-year-month level. The data is based on all cases active in the period 2005-2015 and available eCourts High Court in November 2020 (Panel B). Every estimation is regressing the number of filings on a dichotomous variable, equal to one if the year-month is post the Indian Kanoon rollout for the respective high court, and several fixed effects. Each column is counting the number of filings of the following case types: Criminal, Civil, Writ, Appeal, and Other if the case can not be categorized in any of the other categories. Note that criminal, civil, writ and appeal are not mutually exclusive case types. E.g., a "criminal appeal" is counted as both criminal and appeal. Standard errors are clustered at the high court level. Stars *, ** and *** indicate that the p-value is below 0.1, 0.05 and 0.01 respectively.

A4 Additional Results on Firms

Table A6: Effects on External Legal Charges

	(1) External Legal Charges (if > 0)	(2) Any External Legal Charges
Panel A: Litigation Sample		
Post-Kanoon introduction	0.008***	0.099***
	(0.002)	(0.014)
Mean Dep. Var.	0.02	0.62
Observations	10,462	18,689
Panel B: Full Sample		
Post-Kanoon introduction	0.006***	0.032***
	(0.002)	(0.008)
Mean Dep. Var.	0.02	0.55
Observations	38,283	78,815
Year FE	✓	✓
Firm FE	✓	✓

Note: This table display estimation results of the impact of Indian Kanoon on several firm financials. Observations are at the firm-financial year level. The data includes firms with non-zero income data available for all years 2005-2015 in the Prowess database. Every estimation is regressing a financial variable on a dichotomous variable, equal to one if the financial year started post the Indian Kanoon rollout of the high court having jurisdiction over the state the firm is registered in, and year and firm fixed effects. A financial year is defined as April 1st to March 31st of the following year. *External Legal Charges (if > 0)* keeps all observations with external legal charges greater than zero and is measured in billion Indian rupees. *Any External Legal Charges* is a dichotomous variable equal to one if external legal charges of a firm in a financial year are greater than zero (and zero otherwise). Panel A restricts the sample to firms which had at least one active case anytime in the period 2005-2015. Panel B includes all firms in the sample. The regressions use the *did_imputation* command in STATA to estimate treatment effects robust to staggered rollout. Standard errors are clustered at the high court level. Stars *, ** and *** indicate that the p-value is below 0.1, 0.05 and 0.01 respectively.

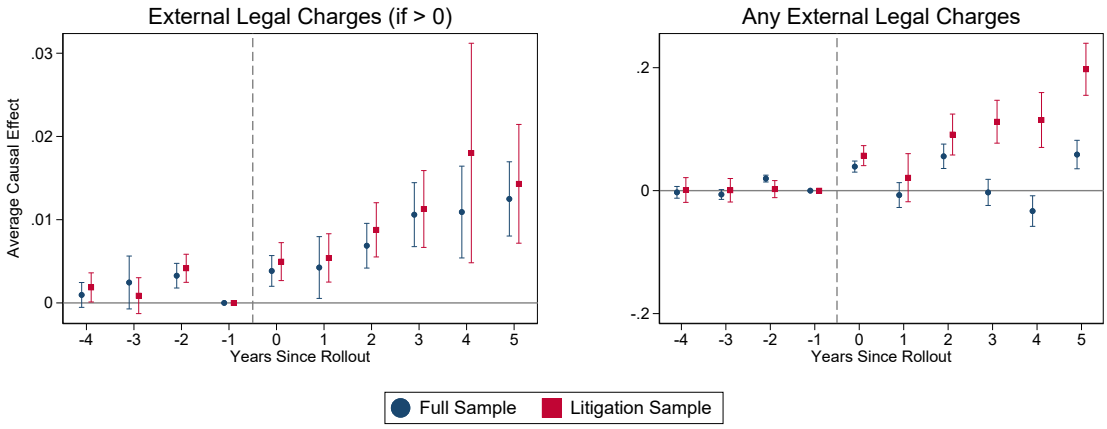

Figure A3: Dynamic Effects of Kanoon rollout on External Legal Charges

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on various firm outcomes for all firms from our Prowess sample (Full Sample) and firms having at least one district court case during the considered time frame (Litigation Sample). Observations are at the firm-financial year level and outcomes are measured in billion Indian rupees. The data includes firms with non-zero income data available for all years 2005-2015 in the Prowess database. The leads and lags are defined as the yearly difference between the start of the financial year and the date of rollout on Indian Kanoon of the firm's registration state's high court. *Lead 1*, the dummy variable which is equal to one if the Kanoon rollout falls into the financial year, is omitted and estimates should be interpreted relative to this baseline. The estimation uses the *eventstudyinteract* command in STATA to estimate consistent and heterogeneous treatment robust average dynamic treatment effects. Any court that has not been rolled out by 2017 is used as control cohort. The estimation controls for firm and year fixed effects. Standard errors are clustered at the state level. Confidence intervals are at the 95% level.

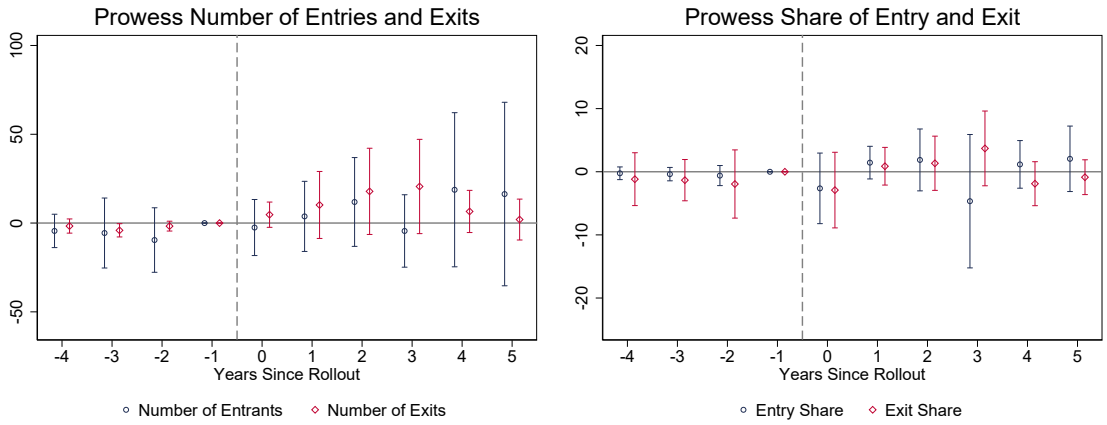

Figure A4: Effect of Kanoon Rollout on Firm Entry and Exit to the Prowess Database

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on the number (left panel) and shares (right panel) of entries and exits in the Prowess database. Entries (and exits) are defined as firms showing up for the first (last) time in the database. Observations are at the state-financial year level. The leads and lags are defined as the yearly difference between the start of the financial year and the date of rollout on Indian Kanoon of the firm's registration state's high court. *Lead 1*, the dummy variable which is equal to one if the Kanoon rollout falls into the financial year, is omitted and estimates should be interpreted relative to this baseline. The estimation uses the *eventstudyinteract* command in STATA to estimate consistent and heterogeneous treatment robust average dynamic treatment effects. Any court that has not been rolled out by 2017 is used as control cohort. The estimation controls for state and financial-year fixed effects. Standard errors are clustered at the state level. Confidence intervals are at the 95% level.

Online Appendix

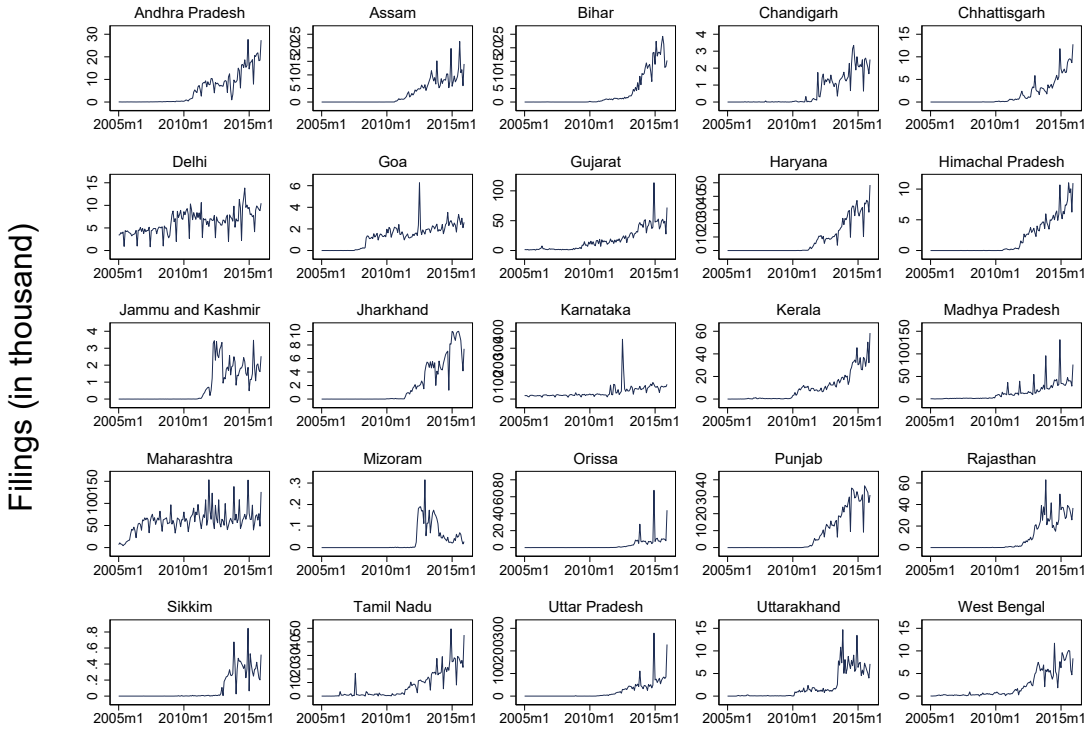

Figure OA1: Number of Filings in Indian District Courts per State

This figure presents the time evolution of the number of cases filed in Indian district courts per month and state. Filings are counted in thousand cases.

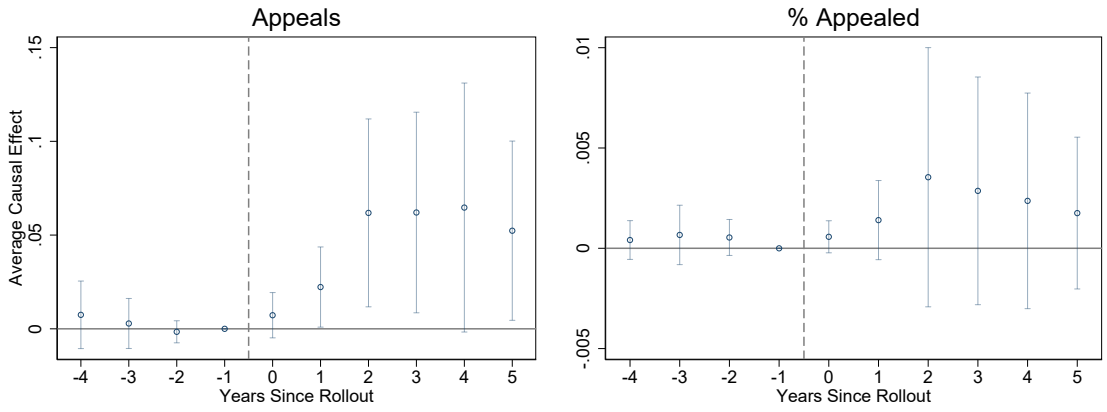

Figure OA2: Impact of Kanoon on Appeals of District Court Cases in High Courts

Note: This table presents dynamic estimation results examining the impact of Indian Kanoon on appeals of district courts cases in high courts. Observations are at the court-year-month level. The data is based on all cases active in the period 2005-2015 available on eCourts District Court in May 2019 and appealed later on in the high court. The leads and lags are defined as the yearly difference between the filing year and month of a case in the district court and the year and month of the rollout of the state's high court on Indian Kanoon. *Lead 1*, the dummy variable which is equal to one for the 12 months before Kanoon rollout, is omitted and estimates should be interpreted relative to this baseline. *Appeals* counts the number of district court cases filed in a state-year-month and appealed later on in the high court (in thousand). *% Appealed* is the share of district court cases filed in a state-year-month and which are appealed later on in the high court. The estimation uses the *eventstudyinteract* command in STATA to estimate consistent and heterogeneous treatment robust average dynamic treatment effects. Any court that has not been rolled out by 2017 is used as control cohort. The estimation controls for state, year, and month fixed effects. Standard errors are clustered at the state level. Confidence intervals are at the 95% level.

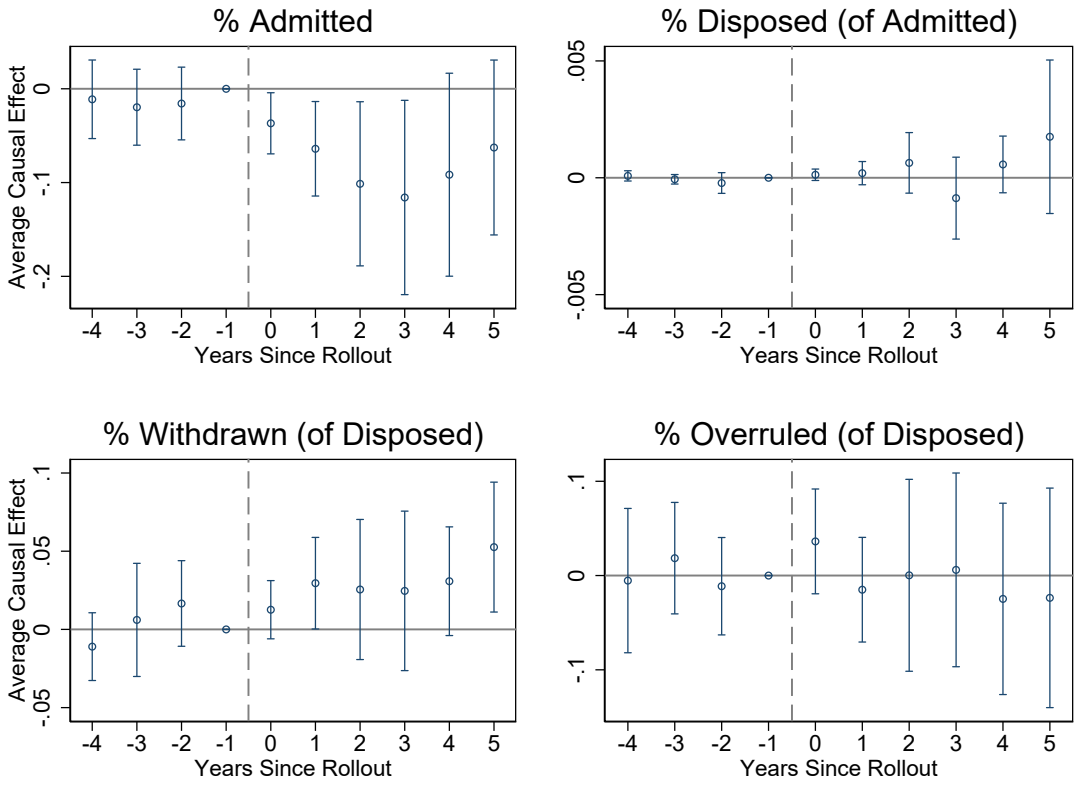

Figure OA3: Impact of Kanoon on Appeal Outcomes of District Court Cases in High Courts (in %)

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on outcomes of district courts cases appealed in the high courts. Observations are at the court-year-month level. The data is based on all cases active in the period 2005-2015 available on eCourts District Court in May 2019 and appealed later on in the high court. The leads and lags are defined as the yearly difference between the year and month of an observation and the year and month of the rollout of the state's high court on Indian Kanoon. *Lead 1*, the dummy variable which is equal to one for the 12 months before Kanoon rollout, is omitted and estimates should be interpreted relative to this baseline. *% Admitted* measures the share of all district court appeal cases for which all paperwork is in order, and the case is deemed fit for processing at the high court and listed for a hearing/decision. *% Disposed* measures the share of *admitted* appeal cases which is heard by the high court and decided by the bench. *% Withdrawn* measures the share of *disposed* appeal cases withdrawn by the petitioner. *% Overruled* measures the share of *disposed* appeal cases (at least partly) approved by the high court. The estimation uses the *eventstudyinteract* command in STATA to estimate consistent and heterogeneous treatment robust average dynamic treatment effects. Any court that has not been rolled out by 2017 is used as control cohort. The estimation controls for state, year, and month fixed effects. Standard errors are clustered at the state level. Confidence intervals are at the 95% level.

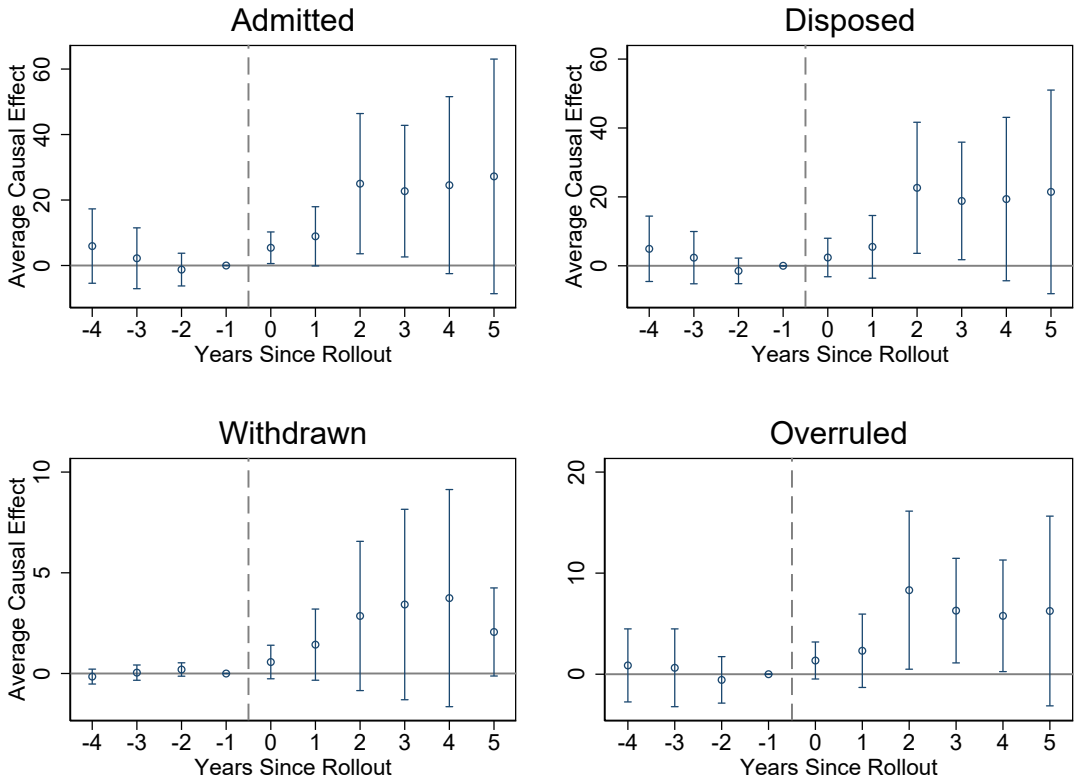

Figure OA4: Impact of Kanoon on Appeal Outcomes of District Court Cases in High Courts (in Levels)

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on outcomes of district courts cases appealed in the high courts. Observations are at the court-year-month level. The data is based on all cases active in the period 2005-2015 available on eCourts District Court in May 2019 and appealed later on in the high court. The leads and lags are defined as the yearly difference between the year and month of an observation and the year and month of the rollout of the state's high court on Indian Kanoon. *Lead 1*, the dummy variable which is equal to one for the 12 months before Kanoon rollout, is omitted and estimates should be interpreted relative to this baseline. *Admitted* counts the number of district court appeal cases for which all paperwork is in order, and which are deemed fit for processing at the high court and listed for a hearing/decision. *Disposed* counts the number of appeal cases which are heard by the high court and decided by the bench. *Withdrawn* counts the number of appeal cases withdrawn by the petitioner. *Overruled* counts the number of appeal cases which are (at least partly) approved by the high court. The estimation uses the *eventstudyinteract* command in STATA to estimate consistent and heterogeneous treatment robust average dynamic treatment effects. Any court that has not been rolled out by 2017 is used as control cohort. The estimation controls for state, year, and month fixed effects. Standard errors are clustered at the state level. Confidence intervals are at the 95% level.

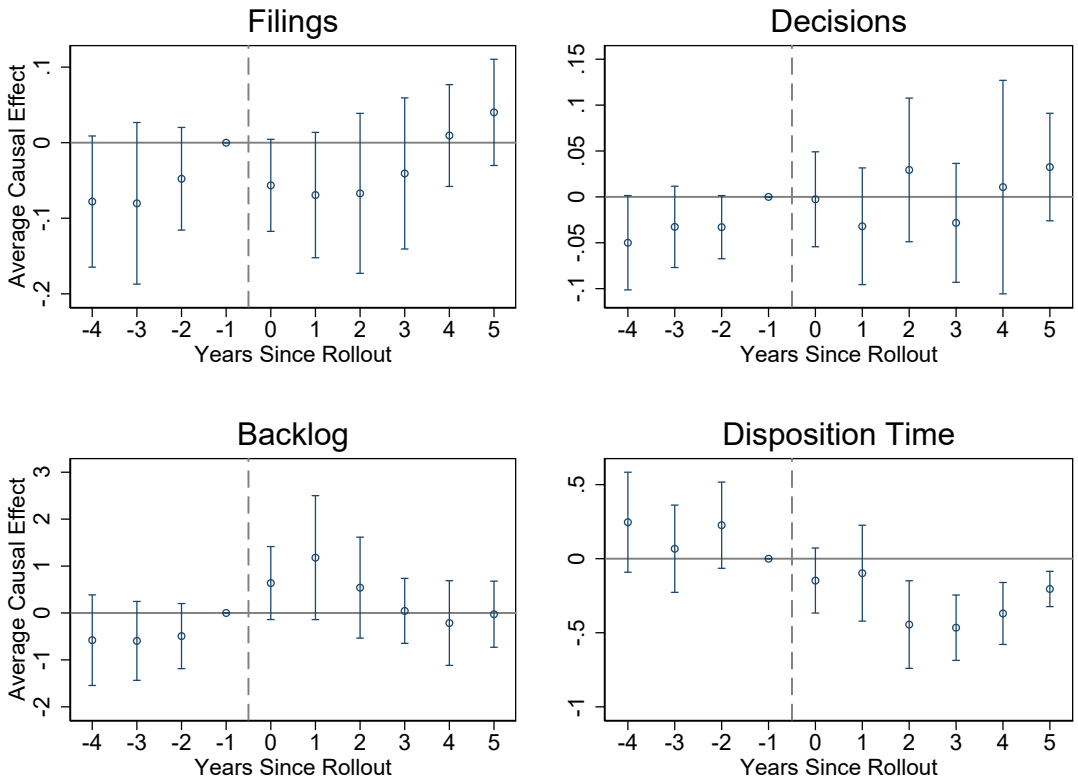

Figure OA5: Impact of Kanoon on District Court Efficiency Measures for Cases linked to Firms

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on district court efficicency measures of the subset of cases linked to firms in the Prowess datatabase. Observations are at the state-year-month level. The data is based on all cases active in the period 2005-2015 and available on eCourts District Court in May 2019 and which are linked to (at least) one firm in the Prowess database. Leads and lags are defined as the yearly difference between the year and month of an observation and the year and month of the rollout of the state's high court on Indian Kanoon. *Lead 1*, the dummy variable which is equal to one for the 12 months before Kanoon rollout, is omitted and estimates should be interpreted relative to this baseline. *Filings* counts the number of filings per state-year-month (in thousand). *Decisions* counts the number of decided cases per state-year-month (in thousand). *Backlog* counts the number of undecided cases in a state at the end of a year-month, and which were filed at least one year prior to this year-month (in thousand). *Disposition Time* is the ratio between the number of unresolved cases at the end of a year-month and the number of decisions in that year-month in a state, and is a measure of how many years it takes on average to resolve a case. The estimation uses the *eventstudyinteract* command in STATA to estimate consistent and heterogeneous treatment robust average dynamic treatment effects. Any court that has not been rolled out by 2017 is used as control cohort. The estimation controls for state, year, and month fixed effects. Standard errors are clustered at the state level. Confidence intervals are at the 95% level.

OA1 Kanoon's Competition: An Overview of Other Electronic Legal Databases

As noted in the paper, Kanoon was not the only electronic source of legal information in India. Several other databases were developed during the same time-period as Indian Kanoon. Some of these are described below:

All India Reporter The All India Reporter (AIR) is one of the oldest and most respected publishers of decisions from the Indian Supreme Court as well as various State high courts. With more than 17 journals and more than 1 million subscribers, it curates, edits, prints and disseminates digests, commentaries and analyses of key cases that are heard at the courts of India.

Manupatra This paid subscription database includes both primary sources (judicial opinions, statutes and other legislative materials, administrative agency materials, etc.) and secondary sources (including treatises and law journals). This company first launched its products in August 2001. The launch, however, was via CD-ROM. Additional media formats such as the online database, e-mail services, books and journals were added over time.

SCC Online This paid subscription database includes cases from a wide variety of Indian courts, including the Supreme Court, the Privy Council, high courts, district courts, and tribunals and commissions. It also includes selected case law from other jurisdictions in the region, including Bangladesh, Malaysia, Pakistan, and Sri Lanka, and from several African jurisdictions. SCC online also includes other Indian legal materials: acts and rules, articles, secondary sources, treaties, and more. It was introduced in 2010 with limited coverage that expanded over the next three years.

LII of India , part of the Free Access to Law Movement, also provides an integrated search platform for primary and secondary sources from over a hundred Legal Information Institute (LII) databases of other countries and territories. This project was established in 2010 with the coordinated efforts of the Asian Legal Information Institute (AsianLII) project, funded by AusAID, and its Commonwealth Legal Information Institute project, funded by the Australian Research Council (ARC). Disruptions in funding, however, prevented the database from reaching scale till late in 2012, when it was formally launched at the LII of India.

OA2 Prowess Data Creation

In our draft, we sampled firms based on the condition that they have a strictly positive income in all years 2005 to 2015. This gave us a balanced panel of 7,504 firms. For comparison, the total number of unique firms in our prowess data (conditional on some smaller cleaning exercises) amounts to 47,933. The number of unique firms active at any time in our time period (2005-2015) is 35,605.

Column (1) of Table OA1 displays the number of active firms per year. This number varies between 16,608 in 2005 to 27,527 in 2014. This increase could come from firm entry as well as from a wider coverage of the Prowess database.

In Columns (2) and (3), we are calculating the number of firms entering and the number of firms exiting our data in a given year. To calculate these numbers, we are using Prowess data from 2000 to 2020 (i.e. 5 years prior and post our study period.) We define firm entry as the year we observe for the first time positive, non-zero income. Similarly, exit of a firm is defined as the last year we observe a positive (non-zero) income. We observe some zero income in between entry and exit, in this case we code them as an open firm with zero income (and not as missing). It is importnat to note, that we do not observe actual market entry and exit, i.e. the timing of firm creation and destruction, but rather when a firms started and stopped to be covered by prowess.

Columns (5) and (6) display the yearly average income of all active firms (5) and firms in the balanced panel (6) respectively. Not surprisingly, firms in the balanced panel, i.e. firms with positive income in all even years, show a significantly higher mean income.

Table OA1: Prowess Full Sample vs. Balanced Sample

	N				Mean Income	
	Active Firms	Entry	Exit	Balanced	Active Firms	Balanced
Year						
2005	16,635	2,442	0	7,521	1.39	2.55
2006	18,564	1,929	515	7,521	1.51	3.04
2007	19,556	1,507	472	7,521	1.78	3.78
2008	20,726	1,641	605	7,521	2.03	4.50
2009	22,242	2,119	635	7,521	2.21	5.27
2010	23,411	1,804	857	7,521	2.25	5.49
2011	25,150	2,597	1,468	7,521	2.59	6.58
2012	26,780	3,096	1,802	7,521	3.04	7.85
2013	26,735	1,757	1,737	7,521	3.48	8.64
2014	27,569	2,570	938	7,521	3.85	9.33
2015	26,631	0	907	7,521	4.18	9.54
Total	253,999	21,462	9,936	82,731	2.70	6.05

Note: This table presents a comparison between the full prowess dataset and our balanced panel. Column (1) displays the total number of firms per year, column (2) the number of firms covered for the first time in that year, column (3) the number of firms which were covered last year but not that year anymore, and column (4) the number of firms for which data is available for all years. Columns (5) and (6) display the mean income per year for the full and balanced panel, respectively.

OA3 ASI Data Creation

The Annual Survey of Industries (ASI) is a comprehensive dataset collected by the Ministry of Statistics and Programme Implementation (MoSPI) in India. It provides detailed information on the formal manufacturing sector, including variables on employment, wages, output, input costs, assets, and operational characteristics of registered industrial units. Covering a broad range of industries classified under the NIC system, the ASI is conducted annually and is the principal source for studying the structure and performance of India's industrial economy.

For this study, the ASI data from 2005 to 2015 is subset to include only those industrial units that were fully operational ($statusofunit == 1$) and had twelve months of operation ($no\_mth\_oper == 12$) during the survey year. This filtered sample ensures the inclusion of stable and consistently functioning units, providing a reliable basis for longitudinal analysis.

Table OA2 presents the distribution of industrial units in the analytical sample across the years 2005 to 2015. The number of observations increases steadily over time, which probably reflects growth in the industrial activity captured by the ASI. The dataset consists of a total of 426,234 unit-year observations, restricted to fully operational units with twelve months of activity each year.

Table OA2: ASI - Observations per Year

	Frequency	Percent	Cumulative Percent
2005	33,872	7.95	7.95
2006	36,873	8.65	16.60
2007	36,528	8.57	25.17
2008	32,916	7.72	32.89
2009	33,084	7.76	40.65
2010	35,947	8.43	49.09
2011	38,915	9.13	58.22
2012	39,709	9.32	67.53
2013	44,155	10.36	77.89
2014	45,906	10.77	88.66
2015	48,329	11.34	100.00
Total	426,234	100.00	

Note: This table presents the number of firms per year in the ASI dataset. The sample includes all units that were fully operational and had twelve months of operation during the survey year and non-missing data for at least one of the variables "Total Income", "Total Assets" and "Total Expenditures".

OA3.1 Mapping of our Prowess variables to ASI data

Total Income
Prowess: Total Income usually includes net sales, other income, and operational revenue.
ASI: A mix of multiple variables

- Ex-factory value of output (ex_fact_val_output_j)
- Rent received (rent_rec_pm_g, rent_rec_bldg_g, rent_rec_land_g)
- Interests received (int_rec_g)
- Electricity produced and sold (val_elec_gen_sold_g)
- Income from services (inc_serv_g)
- Value of goods sold as purchased (sale_val_gd_sold_g)

Total Assets
Prowess: Total Assets refers to the full balance sheet total: current + fixed + intangible + investments.
ASI: focuses mainly on fixed assets, not financial assets, inventories, or receivables. So it's not a full match to Prowess's Total Assets. However, some variables can be used to approximate it:

- Net closing value of fixed assets at the end of the year (closing_net_val)
- Closing Value of Working Capital (work_cap_cl_d)

Total Expenditure
Prowess: Total Expenditure includes all operating and non-operating expenses.
ASI: No single "total expenditure" variable, but granular cost components. Construction of a proxy using the sum of the following variables:

- Wages, bonuses & welfare expenses (wages_e, bonus_e, welfare_e)
- Raw material and input costs (purchase_val_h, purchase_val_i)
- Operating expenses (op_expenses_f)
- Non-operating expenses (non_operating_exp_f)
- Work done by others (work_done_other_f)
- Repair & maintenance (rep_maint_bldg_f, rep_maint_pl_mach_f)
- Insurance (ins_charges_f)
- Rent paid (rent_paid_pm_fixedassets_f, rent_paid_bldg, rent_paid_land_f)

- Interest paid (interest_paid_f)
- Depreciation provided during the year (prov_during_yr)
- Purchase value of goods sold in same condition (pur_val_goods_f)

Legal & Professional Fees
Prowess: Appears as a line item under Legal & Professional Fees in the notes or schedules to accounts.
ASI: There is no direct counterpart. ASI is focused on physical production and manufacturing inputs, so detailed administrative or legal expenses are typically not captured.

OA4 Appeals Data Creation

For the appeal regressions in Tables 2 and 3 and Online Appendix Figures OA2, OA3, OA4, OA8, OA9, and OA10 we created a district-year-month level sample with variables drawn from the database of cases at the district courts. These include: *Appeals*, *% Appealed*, and high court variables *Admitted*,*Disposed*, *Withdrawn*, and *Overruled*. In the following, we describe the creation of this sample.

1. **Identify DC cases appealed in HCs**
   High court cases have some information about the subordinate court case giving rise to the appeal. This information is in the form of the decision date of the lower court case, the registration number, and the registration year (or a subset of these variables). However, this information is not sufficient to uniquely identify the lower court case. In order to find the appropriate lower court case, we restrict the potential set of matches in the district data to those cases in the appropriate state (determined by which states are administratively under the given High court) matching the registration number, registration year, and the decision date. Finally, from this restricted set of cases, we choose the case where the litigant's names in the district case closely match (i.e., above a threshold) the litigant's names in the High court case.

2. **Count number of cases decided / registered in DCs per state-month**
   From the original eCourt DC data, we count how many cases were registered and decided per state-year-month (*Registrations* and *Decisions*).

3. **Calculate appeal counts per state-month (DC / HC and Registrations / Decisions)**
   To the matched appeal case dataset, we merge in district court registration and decision dates using the unique district court case identifier (CINO) as merge key. From there, we can then calculate the number of appeals per state-year-month based on the DC registration date and based on the DC decision date (*Appeals by Reg. Date* and *Appeals by Dec. Date*).

4. **Percent of cases appealed**
   We merge together the state-year-month counts of registrations and decisions in DCs with the state-year-month counts of appeal cases by registration and decision date. This allows us to calculate the two variables *% Appealed by Reg. Date* and *% Appealed by Dec. Date*.

5. **Calculate number and percentage of HC appeals**
   To the matched appeal case dataset, we merge in HC registration and decision dates and additional information of these HC cases, especially "disposal name". We use the string variable disposal name to create the variables *Admitted*, *Disposed*, *Withdrawn*, and *Overruled* and create aggregate counts and percentages of them at the state-year-month level based on the DC registration date and decision date.

6. **Merge all state-year-month variables together**
   Finally, we merge all these state-year-month counts and percentages of DC registrations and decisions, the counts and percentages of DC cases appealed in HC, and the counts and percentages of the outcomes in the HCs together in one final dataset.

OA5 Additional Analysis: Did Kanoon Change Citation Practices?

The introduction of Kanoon, a user-friendly, comprehensive legal database in India, has revolutionized the study of past legal decisions, a cornerstone of the common law system. Here, we look into variables capturing the relationship between high court rulings and previous and subsequent cases. To accomplish this, we scrutinize the following four principal citation metrics. *Backward citations*, representing the quantity of previously ruled cases referenced in a judgment. *Forward citations*, representing the frequency a judgment is cited in subsequent cases. *Backward self-citations*, representing the quantity of previously ruled cases from the same high court referenced in a judgment. *Forward self-citations*, representing the frequency a judgment is cited in subsequent cases within the same court.

Analyzing the impact of Kanoon on the extensive margin of citations, we employ dichotomous variables, assigning a value of one if the respective citation measure exceeds zero. Our dataset covers the period from 2005 to 2015, with 2,162,698 documents accessible through the Kanoon website. Interestingly, we find that only 6% of these documents cite at least one other case, and the percentage is even lower for the other citation measures (Table OA3). When examining the impact of Kanoon's implementation on the share of cases with at least one citation, we perceive a roughly 30% augmentation compared to the overall mean, although this result is not statistically significant. (Panel A of Table OA4). This result is anticipated, given that many documents on Kanoon are intermediate orders rather than final verdicts, often lacking references to other cases.

Moving to the intensive margin, where we focus solely on cases with at least one citation, we find that these cases, on average, cite 3.3 past cases (1.6 when limited to cases from the same court) and are cited by other cases an average of 2.7 times (2.59 when restricted to cases from the same court). Notably, Kanoon's launch has a significant effect, culminating in a 13% increase in citations between cases from the same court (Panel B of Table OA4). This corroborates intuition, as rulings from the same court substantially influence future cases. The availability of a free, readily accessible database, especially in the context of a common law system, is greatly beneficial in fortifying courtroom arguments.

Panels A and B of Table OA4 sought to understand Kanoon's impact on citation practices within High Courts, relying on cases uploaded to Kanoon and assuming pre and post Kanoon case similarities. To assuage potential concerns regarding differential case upload influencing citation patterns, we narrow our focus to a critical subset of cases.

Hence, we zero in on cases featured in the All India Reporter (AIR), a venerated legal publication in India. Court verdicts in AIR are regularly cited in official proceedings. By using a 'comprehensive search' query to access appeal cases from district courts on the publisher's site, we compile an exhaustive dataset spanning from 1980 to 2021. These cases are then matched with entries in the Indian Kanoon database using decision dates and litigant names. Our analysis is limited to cases that a committee of juridical experts deems as significant precedents. The AIR database comprises cases approved by this committee for citation by judges in official court proceedings across India, making it a pivotal sample influencing future judicial decisions. By examining the impact of Kanoon's free

Table OA3: Summary Statistics for Citations

	N	Mean	SD	Min	Max
Any Backward Citation	3,234,083	0.08	0.27	0	1
Any Forward Citation	3,234,083	0.03	0.17	0	1
Any Backward Self-Citation	3,234,083	0.04	0.20	0	1
Any Forward Self-Citation	3,234,083	0.02	0.15	0	1
Backward Citations of all cases by all cases	265,223	3.00	4.45	1	368
Forward Citations of all cases by all cases	101,515	3.10	33.58	1	9,131
Backward Self-Citations of all cases by all cases	130,214	1.53	1.45	1	124
Forward Self-Citations of all cases by all cases	77,272	2.99	37.19	1	9,121
Backward Citations of AIR cases by all cases	265,223	0.08	0.30	0	9
Forward Citations of AIR cases by all cases	9,369	3.43	12.21	1	820
Backward Self-Citations of AIR cases by all cases	130,214	0.09	0.32	0	9
Forward Self-Citations of AIR cases by all cases	7,278	3.33	13.33	1	811

Note: Observations are at the case level. The data is based on all judgments and orders from the period 2005-2015 available in March 2021 on Indian Kanoon. *Backward citations* measures the number of (past) (AIR) cases a judgment is citing. *Forward citations* measures the number of times an (AIR) judgment is cited in the future. *Self backward citations* is the number of times a judgment is citing (AIR) cases from the same court in which it was heard. *Self forward citations* is the number of times an (AIR) judgment is cited in the future by cases in the same court.

legal search on this specific subset, we maintain the composition of cases before and after Kanoon's rollout, enabling us to investigate the causal effect of reducing information frictions on the rule of law.

Notably, this selected subset of cases demonstrates a heightened citation frequency, both across all cases and within the same court (Table OA3). The analysis of these cases indicates a notable 35% surge in citations and a 30% rise in self-citations of AIR cases facilitated by Kanoon (Panel C of Table OA4). This suggests that Kanoon has efficaciously enabled stakeholders to identify pertinent citations for their cases, though the additional step of securing the official citation from another source may still be required.

Table OA4: Impact of Kanoon on Citations of Published Rulings

	Citations		Self-Citations	
	(1) Backward	(2) Forward	(3) Backward	(4) Forward
Panel A: Citations to All Cases - Extensive Margin				
Publication Post-Kanoon introduction	0.0094	0.0012	0.0049	0.0035
	(0.00980)	(0.00575)	(0.00430)	(0.00350)
Mean Dep. Var.	0.08	0.04	0.03	0.02
N	3,234,083	3,234,083	3,234,083	3,234,083
Panel B: Citations to All Cases - Intensive Margin				
Publication Post-Kanoon introduction	0.226	-0.445*	0.128**	-0.670*
	(0.223)	(0.252)	(0.048)	(0.381)
Mean Dep. Var.	3.00	3.10	1.53	2.99
N	265,223	101,515	130,214	77,272
Panel C: Citations to AIR Cases - Intensive Margin				
Publication Post-Kanoon introduction	0.005	0.548	0.009	0.495
	(0.014)	(0.494)	(0.017)	(0.715)
Mean Dep. Var.	0.08	3.43	0.09	3.33
N	265,223	9,368	130,214	7,278
Court FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Month FE	✓	✓	✓	✓

Note: This table displays estimation results of the impact of Indian Kanoon on citation practice in high courts. Observations are at the case level. The data is based on all judgments and orders from the period 2005-2015 available in March 2021 on Indian Kanoon. Every estimation is regressing a citation count on a dichotomous variable, equal to one if the document's decision date is post the Indian Kanoon rollout of the high court, and several fixed effects. Panel A includes all available judgments and orders, the dependent variables are dummies equal to 1 if the respective citation count is greater than 0. Panel B restricts the observations to cases where the respective citation count is greater than 0. Panel C restricts the citations to cases published in the All India Reporter (AIR) and other allied journals from the high courts and the supreme court of India, spanning the years from 1980 to 2021, and keeps only cases where the respective citation count is greater than 0. *Backward citations* measure the number of (past) (AIR) cases a judgment is citing. *Forward citations* measure the number of times an (AIR) judgment is cited in the future. *Self backward citations* is the number of times a judgment is citing (AIR) cases from the same court in which it was heard. *Self forward citations* is the number of times an (AIR) judgment is cited in the future by cases in the same court. Standard errors are clustered at the high court level. Stars *, ** and *** indicate that the p-value is below 0.1, 0.05 and 0.01 respectively.

OA6 Robustness to Different Estimation Techniques

Table OA5: Kanoon's Impact on Court Efficiency - Robustness

	(1) Filings	(2) Decided	(3) Backlog	(4) disposition
Panel A: District Courts				
Borusyak, Jaravel, & Spiess (2023)	6.929***	8.256***	105.593*	-2.221
	(1.942)	(2.151)	(56.566)	(12.558)
TWFE	4.741**	6.711***	114.289*	-15.603
	(1.732)	(2.080)	(55.552)	(20.889)
Callaway & Sant'Anna (2021) - Never Treated	5.036**	7.434***	81.487*	-13.021
	(2.034)	(2.519)	(46.989)	(12.641)
Callaway & Sant'Anna (2021) - Not Yet Treated	4.577**	7.194***	69.515	-6.944
	(2.034)	(2.621)	(45.723)	(9.367)
Sun & Abrahams (2020)	2.547	4.759	49.192	3.459
	(2.114)	(1.703)	(54.319)	(15.265)
Mean Dep. Var.	13.25	9.18	386.71	24.41
Observations	3,300	3,300	3,300	2,924
Panel B: High Courts				
Borusyak, Jaravel, & Spiess (2023)	-1.165**	-1.028***	20.864**	-0.013
	(0.549)	(0.294)	(8.149)	(0.905)
TWFE	-0.610	-0.037	16.410**	0.154
	(0.647)	(0.520)	(7.480)	(0.259)
Callaway & Sant'Anna (2021) - Never Treated	-0.927*	-0.638***	16.093**	0.835
	(0.488)	(0.240)	(6.412)	(0.607)
Callaway & Sant'Anna (2021) - Not Yet Treated	-0.914	-0.580**	15.888**	0.680
	(0.570)	(0.291)	(6.284)	(0.554)
Sun & Abrahams (2020)	-0.656	-0.062	13.048	0.208
	(0.685)	(0.539)	(7.859)	(0.258)
Mean Dep. Var.	3.14	2.46	74.22	0.80
Observations	2,120	2,143	2,187	2,142
Year FE	✓	✓	✓	✓
Month FE	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓

Note: This table displays estimation results from different estimators of the impact of Indian Kanoon on overall court efficiency in district courts (Panel A) and high courts (Panel B). Observations are at the court-year-month level. The data is based on all cases active in the period 2005-2015 and available on eCourts District Court in May 2019 (Panel A) and eCourts High Court in November 2020 (Panel B). Every estimation is regressing a measure of court efficiency on a dichotomous variable, equal to one if the year-month is post the Indian Kanoon rollout for the respective high court, and several fixed effects. *Filings* counts the number of filings per state-year-month (in thousand). *Decisions* counts the number of decided cases per state-year-month (in thousand). *Backlog* counts the number of undecided cases in a state at the end of a year-month, and which were filed at least one year prior to this year-month (in thousand). *Disposition Time* is the ratio between the number of unresolved cases at the end of a year-month and the number of decisions in that year-month in a state, and is a measure of how many years it takes on average to resolve a case. The estimations use, respectively, *did_imputation*, *reghdfe*, *csdid*, and *csdid* with option *notyet* commands in STATA to estimate treatment effects. Standard errors are clustered at the high court level. Stars *, ** and *** indicate that the

Table OA6: Effects on Firm Financials: Robustness

	(1) Income	(2) Assets	(3) Expenditures	(4) Legal Charges
Panel A: Litigation Sample				
TWFE	-0.193	1.089	-0.126	-0.001
	(0.559)	(0.863)	(0.514)	(0.001)
Borusyak, Jaravel, & Spiess	5.173***	13.018***	5.174***	0.006***
	(1.232)	(2.212)	(1.182)	(0.001)
Callaway & Sant'Anna - Never Treated	3.100***	11.217***	3.201***	0.001
	(1.187)	(2.140)	(1.058)	(0.007)
Callaway & Sant'Anna - Not Yet Treated	3.235***	10.441***	3.439***	0.001
	(1.147)	(2.072)	(1.009)	(0.006)
Mean Dep. Var.	10.89	20.86	10.33	0.01
Observations	19,481	19,481	19,481	18,689
Panel B: Full Sample				
TWFE	0.023	0.523	0.020	0.000
	(0.183)	(0.350)	(0.192)	(0.001)
Borusyak, Jaravel, & Spiess	2.376***	6.250***	2.460***	0.004**
	(0.758)	(1.891)	(0.730)	(0.002)
Callaway & Sant'Anna - Never Treated	1.670***	4.930***	1.695***	0.003
	(0.526)	(1.068)	(0.477)	(0.002)
Callaway & Sant'Anna - Not Yet Treated	1.627***	4.526***	1.684***	0.003
	(0.497)	(1.027)	(0.445)	(0.002)
Mean Dep. Var.	6.05	11.87	5.72	0.01
Observations	82,731	82,731	82,731	78,815
Year FE	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓

Note: This table displays estimation results of the impact of Indian Kanoon on several firm financials. Observations are at the firm-financial year level. The data includes firms with non-zero income data available for all years 2005-2015 in the Prowess database. Every estimation is regressing a financial variable on a dichotomous variable, equal to one if the financial year started post the Indian Kanoon rollout of the high court having jurisdiction over the state the firm is registered in, and year and firm fixed effects. A financial year is defined as April 1st to March 31st of the following year. Panel A restricts the sample to firms which had at least one active case anytime in the period 2005-2015. Panel B includes all firms in the sample. The estimations use, respectively, *reghdfe*, *did_imputation*, *csdid*, and *csdid* with option *notyet* commands in STATA to estimate treatment effects. Standard errors are clustered at the high court level. Stars *, ** and *** indicate that the p-value is below 0.1, 0.05 and 0.01 respectively.

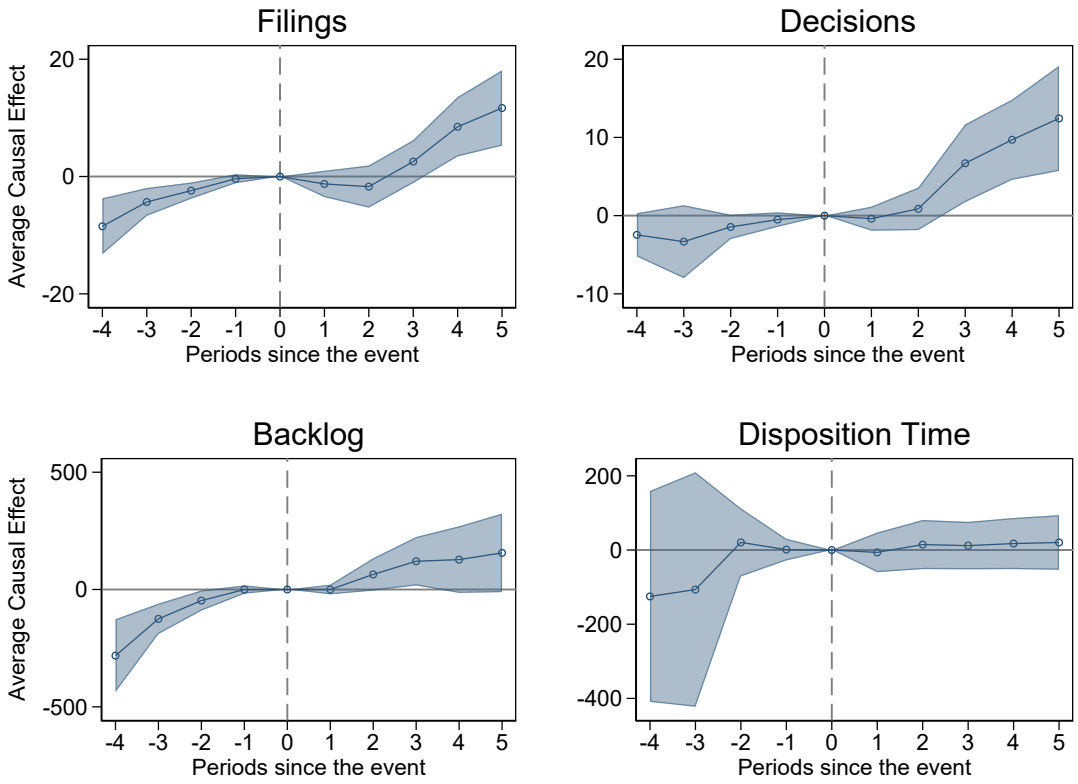

Figure OA6: Robustness Check for Aggregate Efficiency Measures of District Courts

Notes: This figure shows the results of the Placebo test for checking pre-trends as suggested by de Chaisemartin and D'Houltfoeuille, 2020. The Placebo tests are constructed assuming that, for tests whose treatment actually happens at t, treatment occurred at the time t-k, for k in (1,2,3,4). Outcomes are normalized in the following way: Filings, Decided Cases, Pending Cases and Backlog are measured in 100,000 cases. Disposition time divided by 100,000. Mean Age Decided Cases and Mean Age Pending Cases in 100 days. All variables are calculated at the state-year–month level. The estimation controls for state, year, and month fixed effects. Standard errors are clustered at the state level.

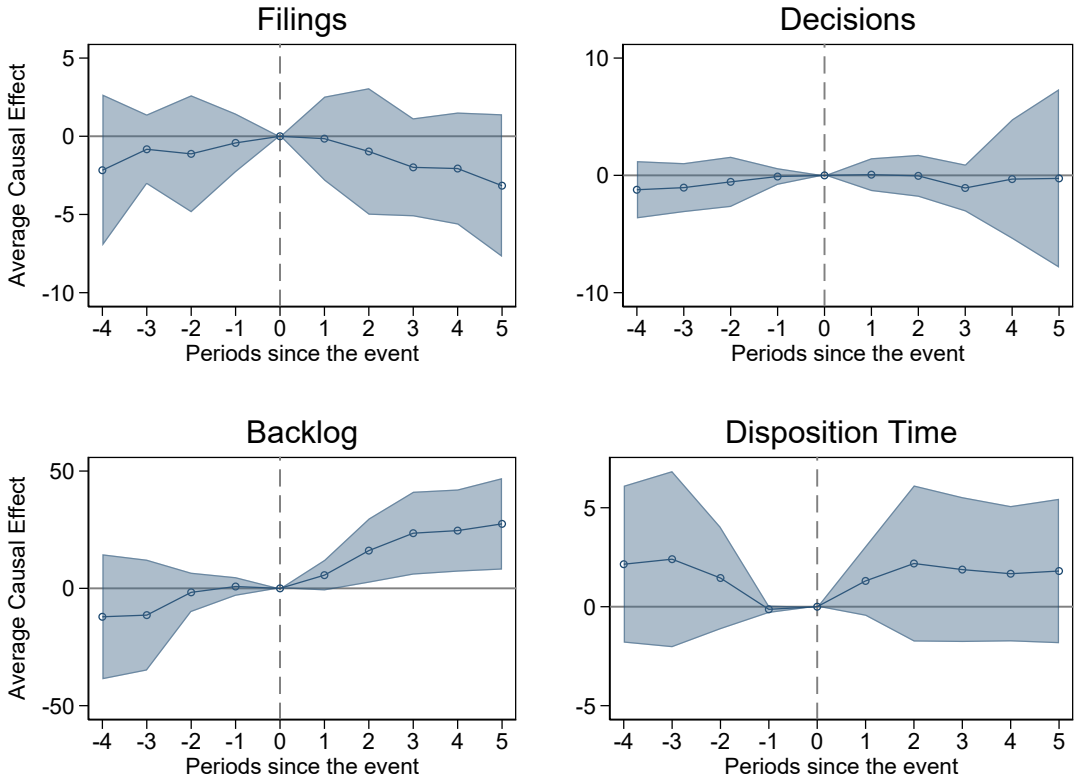

Figure OA7: Robustness Check for Aggregate Efficiency Measures of High Courts

Notes: This figure shows the results of the Placebo test for checking pre-trends as suggested by Chaisemartin and D'Houltfoeuille, 2020. The Placebo tests are constructed assuming that, for tests whose treatment actually happens at t, treatment occurred at the time t-k, for k in (1,2,3,4). All variables are calculated at the state-year–month level. The estimation controls for state, year, and month fixed effects. Standard errors are clustered at the state level.

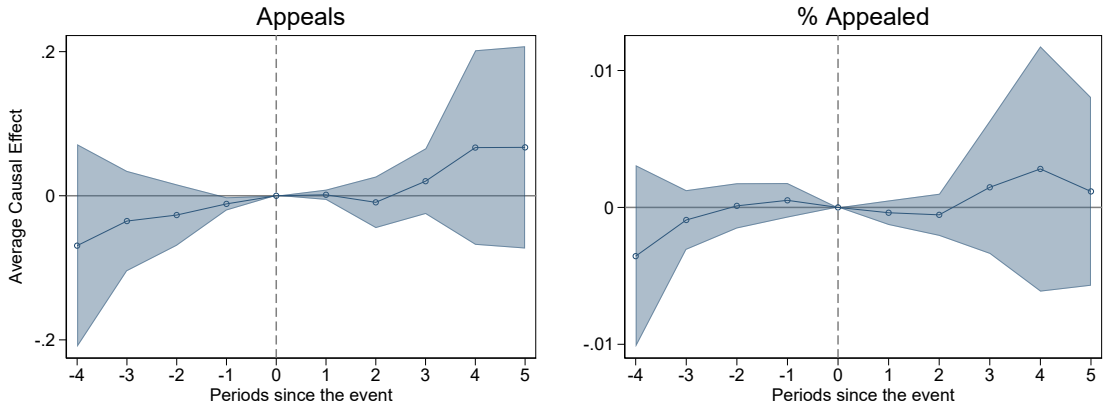

Figure OA8: Robustness Check for Appeals of district court cases.

Notes: This figure shows the results of the Placebo test for checking pre-trends as suggested by Chaisemartin and D'Houltfoeuille, 2020. The Placebo tests are constructed assuming that, for tests whose treatment actually happens at t, treatment occurred at the time t-k, for k in (1,2,3,4). All variables are calculated at the state-year–month level. The estimation controls for state, year, state $\times$ year and month fixed effects. Standard errors are clustered at the state level.

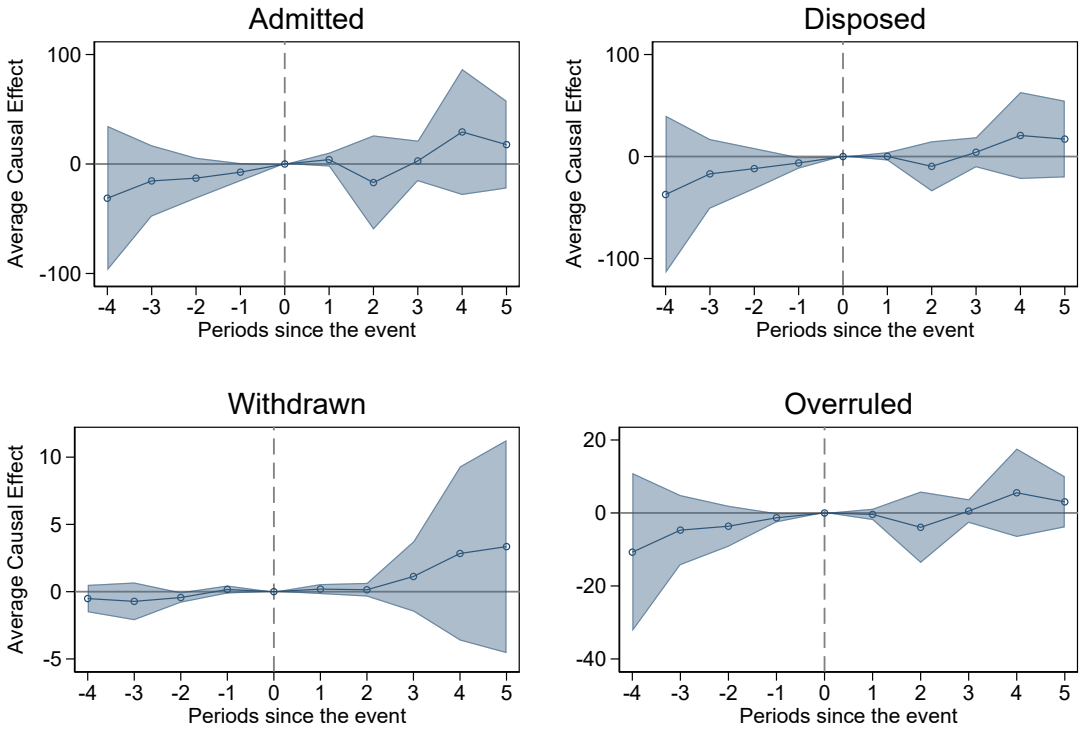

Figure OA9: Robustness Check for Kanoon's Impact on Appeal Outcomes

Notes: This figure shows the results of the Placebo test for checking pre-trends as suggested by Chaisemartin and D'Houltfoeuille, 2020. The Placebo tests are constructed assuming that, for tests whose treatment actually happens at t, treatment occurred at the time t-k, for k in (1,2,3,4). All variables are calculated at the state-year–month level. The estimation controls for state, year, state $\times$ year and month fixed effects. Standard errors are clustered at the state level.

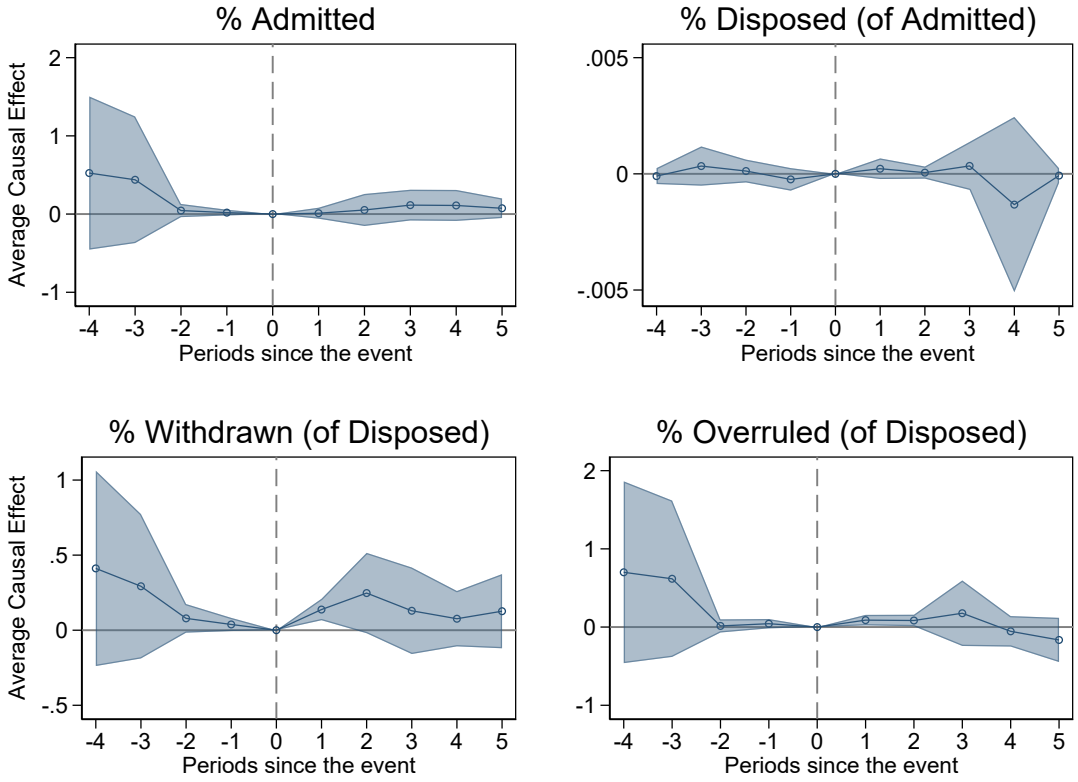

Figure OA10: Robustness Check for Kanoon's Impact on Appeal Outcomes, with variables defined in conditional percentages based on the sample in the previous stage of the pipeline of justice.

Notes: This figure shows the results of the Placebo test for checking pre-trends as suggested by Chaisemartin and D'Houltfoeuille, 2020. The Placebo tests are constructed assuming that, for tests whose treatment actually happens at t, treatment occurred at the time t-k, for k in (1,2,3,4).

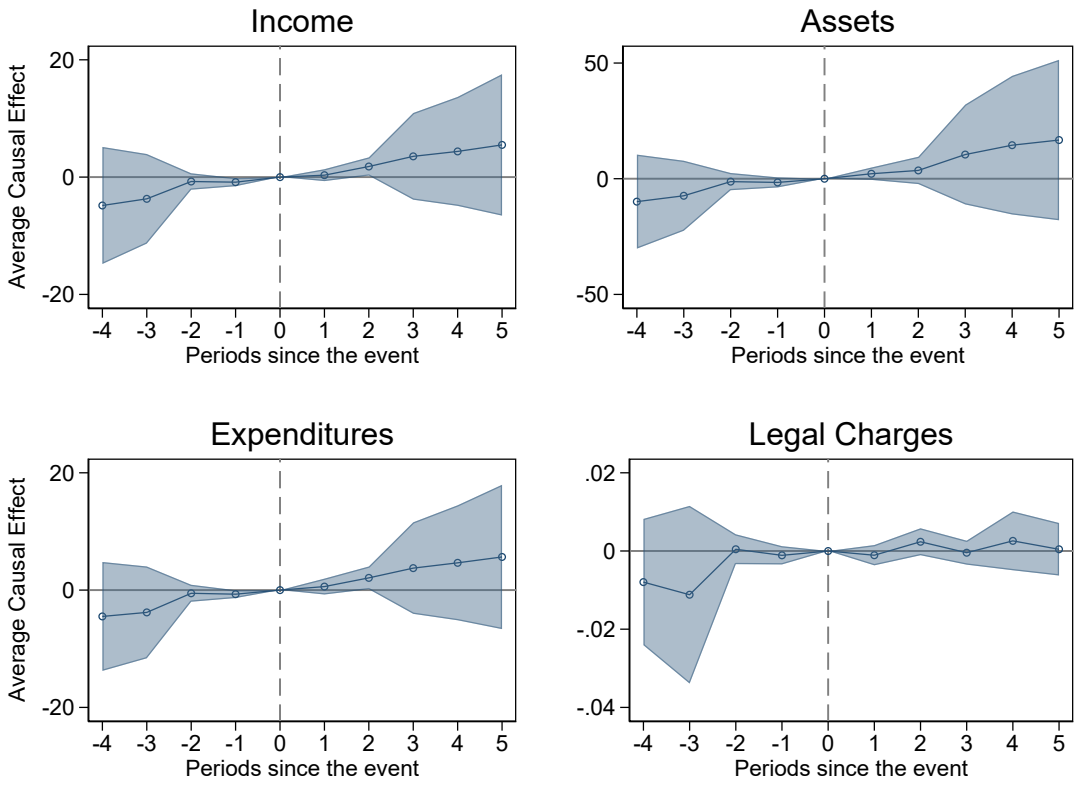

Figure OA11: Robustness Check for Kanoon's Impact on Firm Financials (Litigation Sample)

Notes: This figure shows the results of the Placebo test for testing pre-trends as suggested by Chaisemartin and D'Haultfoeuille, 2020. The placebo estimates are constructed assuming that, for units whose treatment actually happens at t, treatment occurred at time $t-k$ for $k \in (1,2,3,4)$. All variables are calculated at the state-year–month level. The estimation controls for state, year, state $\times$ year and month fixed effects. Standard errors are clustered at the state level.

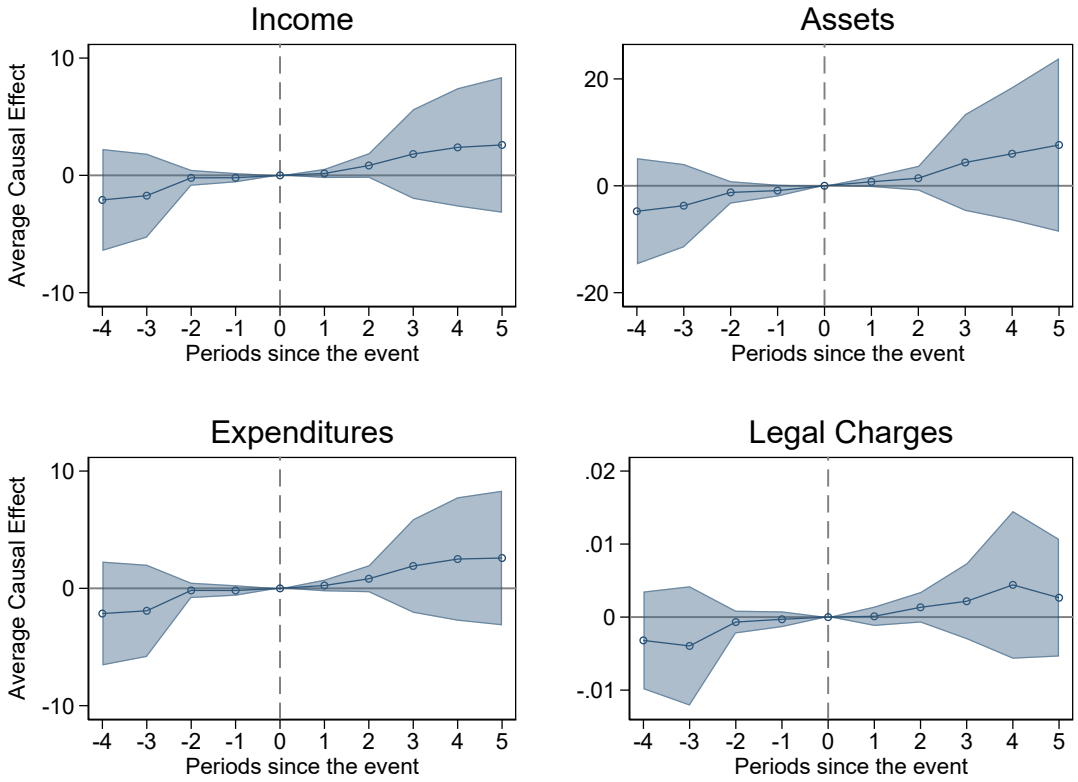

Figure OA12: Robustness Check for Kanoon's Impact on Firm Financials (Full Sample)

Notes: This figure shows the results of the Placebo test for testing pre-trends as suggested by Chaisemartin and D'Haultfoeuille, 2020. The placebo estimates are constructed assuming that, for units whose treatment actually happens at t, treatment occurred at time $t-k$ for $k \in (1,2,3,4)$. All variables are calculated at the state-year–month level. The estimation controls for state, year, state $\times$ year and month fixed effects. Standard errors are clustered at the state level.

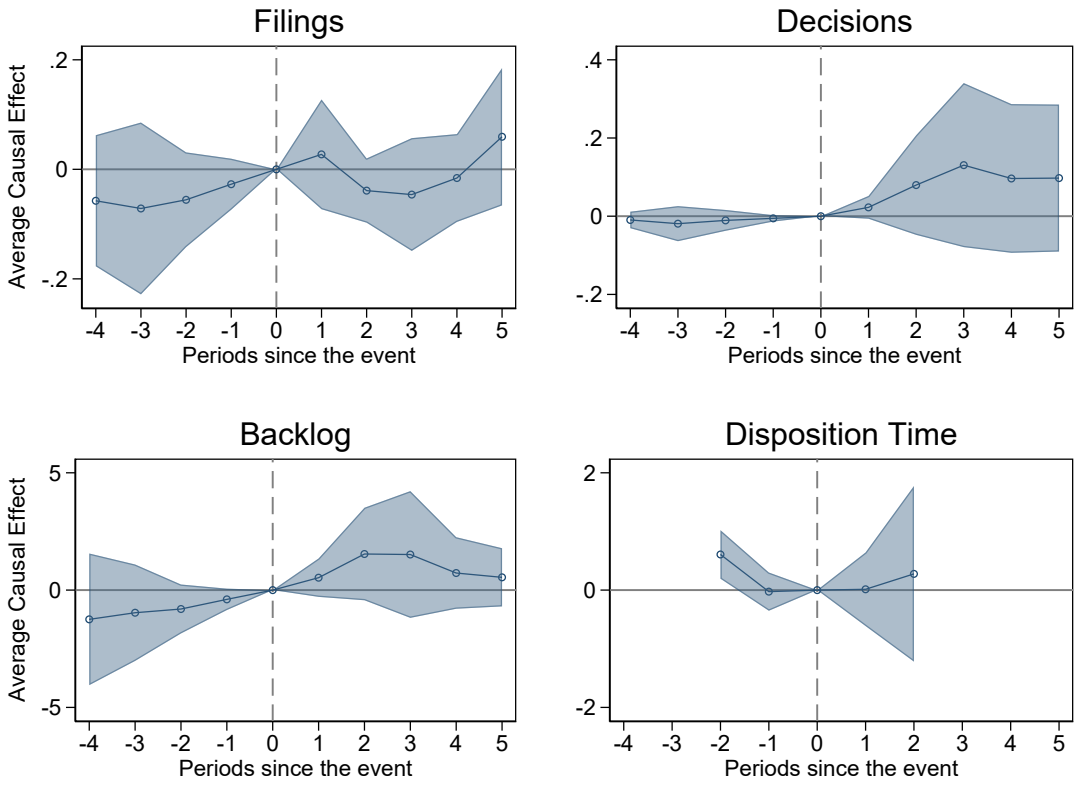

Figure OA13: Robustness Check for Kanoon's Impact on District Court Efficiency Measures for Cases linked to Prowess

Notes: This figure shows the results of the Placebo test for checking pre-trends as suggested by Chaisemartin and D'Houltfoeuille, 2020. The Placebo tests are constructed assuming that, for tests whose treatment actually happens at t, treatment occurred at the time t-k, for k in (1,2,3,4). All variables are calculated at the state-year–month level. The estimation controls for state, year, and month fixed effects. Standard errors are clustered at the state level.