

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

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## Abstract

Addressing the global constraint of limited access to legal information, this paper explores the potential of digital platforms in fostering free legal search and subsequently lifting market-level economic impediments. Specifically, we assess the impact of Indian Kanoon, a comprehensive, free legal search engine, using a generalized difference-in-differences empirical methodology. Our study illustrates that the phased introduction of Kanoon contributed to enhanced access to justice and court efficiency, while preserving the quality of decisions. Significantly, Kanoon's emergence prompted substantial changes in firm finances, resulting in sizeable positive impacts on assets, income, and expenditures - a shift observable not only among firms litigating in courts but extending to the broader business landscape. This study hence offers insights into the transformative role of free legal information platforms in bolstering economic development.

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# 1 Introduction

Fair justice systems require meaningful and reliable access to legal information for all stakeholders (United Nations, 2015).<sup>1</sup> However, accessing legal information remains challenging for many individuals, as it can be prohibitively expensive to access and difficult to understand (United Nations 2016). Recent landmark randomized controlled trials, in South Africa and Pakistan most notably, suggest that the provision of legal information can have economic impacts on firm performance and citizen trust in formal institutions (Bertrand and Crépon 2021, Acemoglu et al. 2020).

This paper examines the impact of free legal search engine on a range of society outcomes in India, the world's largest common law nation where the costs of accessing legal information are high.<sup>2</sup> Launched in 2008 by overseas graduate student Sushant Sinha, Indian Kanoon aimed to provide free and easily accessible access to relevant legal information for the common Indian citizen who typically faces labyrinthine legal corridors for clauses and court judgments while navigating their way through a legal issue (Iyengar 2010). With 2.9 million search queries and 1.6 million sessions per month, and 6 minutes of time spent on each page, Kanoon is widely regarded as a "first-stop" in a search for legal information in India.<sup>3</sup>

Our approach involved intensive web scraping of case data from Kanoon and the official records of the Indian district and high courts, referred to as eCourts. We scrape all available cases from the Kanoon website and code the resulting corpus for judgment dates, courts, and citations. We also scrape case-level metadata, such as filing and decision dates, from the official online records of the Indian district courts and high courts to construct the court efficiency measures. To identify appeals from district courts to high courts, we merge the district courts and high courts scrape. We also linked firms featured in district court cases to the Prowess firms database, a reservoir of financial indicators from firm balance sheets. Utilizing an event study framework (Borusyak, Jaravel, and Spiess (2021),

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<sup>1</sup>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.

<sup>2</sup>In a survey data reported by the World Justice Project (2019), 32% of Indians report experiencing a legal problem in the past two years, 39% knew where to get legal information, and the average respondent took 35 months to resolve their legal issue.

<sup>3</sup>We are grateful to Sushant Sinha for providing us these estimates in personal conversations in February, 2022.

Sun and Abraham (2021)), we capitalized on the staggered rollout of the Kanoon platform across states to discern its effects on cases, courts, and firms.

Our findings coalesce into three overarching themes on justice accessibility, judicial efficiency, and firm outcomes, each revealing the impact of Indian Kanoon on India's socio-economic landscape. While the district courts witnessed an upsurge in filings and decisions, the appeal cases originating from the district and moving to the high courts saw an increase in their number, a heightened likelihood of withdrawal, and lower chances of being overturned. While we find an additional 6.3 thousand filings and 8.5 thousand decisions per court and month in the district courts, overall court efficiency measured as the number of cases pending for more than a year (backlog) and the average time to decision (disposition time) do not change significantly. We also see no significant loss of quality in district court decisions. There is no significant change in the proportion of cases that are appealed, and following the district court cases into the high courts, cases are 2.2 percentage points more likely to be withdrawn and 13 percentage points less likely to be overturned.

We observe very different effects at the high courts. Strikingly, the high courts experienced a decrease in filings and decisions, predominantly from a drop in original civil litigation cases. Surprisingly, we see no corresponding change in disposition time and even a small increase in backlog (as defined by cases taking more than 1 year to resolve). We surmise that in the context of the high courts, Kanoon may have reduced erroneous filings, encouraged take-up of alternative dispute resolution systems and reduced the tendency of citizens to forum-shop, i.e. intentionally file cases at the high courts with the expectation of more favorable judgments.

Finally, Kanoon's influence resonated in the balance sheets of large formal firms, notably elevating income, assets, and expenditures, corroborating the idea of free legal information reducing information frictions for firms. We conduct a panel analysis on Kanoon's impact on the balance sheets of firms comprising 70% of India's industrial output. We find that the emergence of Kanoon had large positive impacts on firm balance sheets with sizeable positive impacts on income, assets, and expenditures. This result holds whether we look at the subset of firms involved in litigation at district courts during our study period, or at all firms in our data. For the subset of firms involved in litigation at district courts, we observe that Kanoon increased yearly income by 51%, assets by 64%, and expenditures by

55% on average. Effect sizes are smaller but of similar magnitude when considering the full set of firms. These effects are driven by firms in the manufacturing and financial sectors, which are highly regulated in India and the regulations have been changing frequently.

Collectively, our findings underscore the profound implications of making legal information accessible, the ensuing improvement in court efficiencies, and the subsequent positive ripple effects on the economy and everyday life. This insight extends beyond the borders of India, contributing significantly to the broader economic literature that underscores the intersection of legal system functionality and economic development, the role of information in market efficacy, and the importance of disseminating information on formal institutions to citizens. Taken together, these results suggest that the release of Kanoon reduced the cost of legal information to the Indian population, reduced bottlenecks, increased efficiency, without decreasing the quality of the court decisions. These improvements had in turn a significant effect on the economy and citizens' life outside of court. This case study offers valuable insights on the importance of making legal information more accessible to all stakeholders in justice systems, and on the value of free and accessible information in general.

Our findings bolster the expansive body of work correlating the efficiency of legal systems with economic advancement (Djankov et al. 2003; Ponticelli and Alencar 2016; Lichand and Soares 2014; Visaria 2009; Kondylis and Stein 2018; Chemin 2020; Rao 2021). Notably, our results build on prior findings from randomized control trials accentuating the causal linkage 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). Different from 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). Our intervention, consisting of a free, accessible, and searchable platform offering legal information, offers an unprecedentedly large-scale examination of these dynamics, bypassing the typical constraints associated with most RCTs.

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 across various economic sectors, including meteorology, medicine, and academia. Economic theory suggests that reducing the cost of information gathering enhances decision-making efficiency (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). Our study diverges from past work focusing on commercial platforms like Amazon and eBay, instead concentrating on the accessibility of legal information. In the realm of justice systems, comprehensive and reliable access to legal information is crucial for all stakeholders (United Nations, 2015).<sup>4</sup> This is of paramount importance in common-law judicial systems that rely on legal precedent, as improved access to legal information could promote market development by reducing uncertainty and transaction costs, thus enabling 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. Section 7 explores some mechanisms that may explain our results (or not). 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, however, is grounded in the common law justice system that was established by the British colonial administration in the 19th century (Baxi 1982; Galanter 1963). The current judicial system is significantly shaped by

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<sup>4</sup>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. An OECD roundtable in 2017 that called for a "citizen-centered" and "people-centered" approach to achieving this goal emphasized the importance of expanding access to legal information as a first step towards improving access to justice systems.

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

While the Indian judiciary commands a high level of public trust, it has been increasingly criticized for a growing backlog of cases, lengthy delays in outcomes and inefficiency (Krishnaswamy and Swaminathan 2019). There are currently more than 5.9 million pending cases at the high courts, even though their average rate of disposal between 2015 and 2019 was about 1.8 million cases per year.<sup>5</sup>

Long and complex proceedings discourage citizens from seeking justice and distort markets (Krishnan et al. 2014; Rao 2021; Chemin 2012). Chemin (2009) for example, demonstrates 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 across the country.

## 2.2 Legal information

Efforts to digitize legal information in India began about twenty 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 the computerization of courts with the installation of hardware, network infrastructure, and software that could provide basic case related services to litigants and lawyers. In the years that followed, cases were uploaded on the websites of the Supreme Court, high courts, district courts and tribunals.<sup>6</sup> The top panel of Figure 1 gives an overview of when cases of the different high

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<sup>5</sup>National Judicial Data Grid, <https://njdg.ecourts.gov.in/hcnjdgnew/>, accessed on March 4, 2022.

<sup>6</sup>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. Throughout this period, however, cases have been uploaded

courts became first available on their websites.

To upload cases on their websites, states relied heavily on the National Informatics 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 began informally. Sinha's self-stated goal was to "bring the knowledge of law to the common people".<sup>7</sup> 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).<sup>8</sup>

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 about laws was made accessible to a broad 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

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to the court websites.

<sup>7</sup>See [indianKanoon.org/about.html](http://indianKanoon.org/about.html), accessed April 1, 2022.

<sup>8</sup>Iyengar (2010) interviewed Sushant 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, Sushant 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.

are often vague and one needs to see how they have been interpreted by the judicial courts". On the website, laws, and judgments were thus separately maintained. Legal documents were broken down into smallest possible clauses. A tight integration of court judgments with laws and with prior judgements allows automatic determination of the most relevant clauses and court judgments.

The coverage of 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) legislations were featured. By 2009, judgments of 10 high courts and 17 tribunals had also been uploaded. The full text of India's Constituent Assembly debates, Law Commission reports and the full texts of central legislation were also added throughout this time. The bottom panel of Figure 1 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. Users were enthusiastic to have 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 judgements to cited cases. These innovations significantly enhance a user's experience of accessing the law, reducing search costs for relevant information substantially.

There are, however, 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. He has become an advocate for freedom of information in India and protecting the rights of citizens to get information from their government.



### 2.2.2 Other Databases

Indian Kanoon was not the only electronic source of data at the time it was released. The increased online availability of legal data from the courts facilitated a proliferation of electronic resources for Indian legal research. A detailed list is available in Appendix Section A1 of this paper. These resources were different from Kanoon in several ways: they were expensive, difficult to access, and had only partial coverage 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).<sup>9</sup>

Since 2015, all available Indian laws as well as their amendments have been curated into a single repository. These are 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. This website, however, still remains difficult to access for those who do not have a legal background.<sup>10</sup>

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 lay citizens. Lawyers often browse this site to curate data and then turn to paid databases for adding details and formal citations prior to presenting their work in an official capacity.<sup>11</sup>

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<sup>9</sup>Sushant 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 look into 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/voxpath/tag/indiankanoon/>, accessed on June 23, 2022.)

<sup>10</sup>Sinha 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).

<sup>11</sup>A cursory examination of India legal research guides at libraries across the United States, particularly libraries of prominent law schools (Harvard University, Yale University, Georgetown University and others) found 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.

### 3 Research Hypotheses

We postulate that the release of Kanoon brought a sudden, substantial and entirely exogenous reduction in the cost of searching for legal information in India. This affected litigants, courts, and markets. The immediate effects are likely to be driven by the changes in behavior of stakeholders who have already filed cases. As stakeholders adjust to the new technology and form new expectations, however, long-term impacts are likely to become evident. Given that the mean age of decided cases in the high courts and district courts is around two years, we expect the long-term effects to take at least three years to unfold.

#### 3.1 Courts

Though the rulings on the Kanoon website could be helpful to litigants in all areas of India's justice system, the most immediate beneficiaries are likely private citizens who had filed cases or were appealing cases that are in the jurisdiction of the high courts.<sup>12</sup>

Improved accessibility to legal information has the potential to promptly influence both the perceived likelihood of success and the actual probability of winning a case. Individuals utilizing the platform may be empowered to present more coherent and compelling arguments during legal proceedings. This, in turn, can facilitate judges in reaching decisions more efficiently, thereby reducing the time required for case resolution. However, it is important to acknowledge that increased access to information can also introduce additional complexities to the case, potentially prolonging the review process for judges. As these two mechanisms exert opposing effects on the time taken to resolve cases, the overall impact of Kanoon remains a question that must be examined empirically.

While the records of the 2,800 district courts were not uploaded on Kanoon, we can anticipate the impact of Kanoon on these courts for a variety of reasons. First, the rulings of the high court carry authoritative weight and establish precedents for these district courts. Second, considering that Kanoon

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<sup>12</sup> High courts in India have four areas of jurisdiction: (1) original jurisdiction (i.e., the authority to hear certain types of cases 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 court). Only the first two areas of jurisdiction feature citizen cases and are thus likely to be affected by the launch of Kanoon.

may have been particularly beneficial to stakeholders in economically disadvantaged regions of India, litigants in these courts have a lot more to gain from Kanoon than their counterparts in the high courts. In the short term, enhanced access to legal information can influence decisions regarding initiating a case or filing an appeal. In the long run, if improved information leads to higher-quality decisions, we can expect a reduction in both the number of appeals and the rate of reversals at the high court.

We can also anticipate different effects at the high courts than the district courts. High courts are located in large cities where there are significant populations of lawyers who may have access to the paid databases and are part of networks of lawyers with considerable legal knowledge. Evidence to date suggests that external legal expenses by firms and wealthy individuals have been on the rise in India (Galanter and Robinson 2013; Sankaraguruswamy and Varottil 2023). These populations may thus stand to gain little from a platform like Kanoon.

For both district and high courts we thus examine case-level outcomes as well as court-level measures of efficiency such as the number of filings, the number of decisions, the number of pending cases, the extent of the backlog and the clearance rate.

## 3.2 Firms

In business, legal knowledge helps with negotiating contracts, resolving disputes, understanding tax obligations, complying with regulations, and generally, reducing risk and uncertainty in economic transactions. Common knowledge is created when parties know that others have access to the same legal information as they do. This potent knowledge symmetry nurtures efficiency, creating a predictable socio-economic landscape with low transactions costs and higher levels of trust among contracting parties (McAdams and Rasmusen 2007).

Such legal knowledge is particularly important in developing countries like India, where firms face a complex regulatory landscape (Bloom, Eifert, et al. 2013; Ahluwalia 2019). We hypothesize that the arrival of Kanoon reduces "communication frictions" in business activities in India (Guillouet et al. 2021). Before Kanoon was available, lawyers were the only source for legal information and were called upon by managers and accountants for all aspects of legal counsel. Kanoon removes this information bottlenecks. We thus expect the rollout of Kanoon to have favorable impacts on all measures

of firm financial status. There is also, of course, the possibility that the arrival of Kanoon enabled firms and customers to increase litigation - this effect, however, will be measured in our analysis of the activity of the courts themselves.

## 4 Data and Descriptive Statistics

Our main analysis relies on the samples drawn from the official eCourts data. The timing of the rollout of the Kanoon platform (Figure 1) together with the filing dates and judgement dates from these records allow us to estimate the impact of the platform on cases as well as court efficiency.

### 4.1 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. This corpus includes both criminal and civil cases. We coded the cases for the date of judgment, court name, and cases cited within the judgment.<sup>13</sup>

Figure 2 presents a summary of the data on cases that are found on the Kanoon database by high court, grouped by the dates of the Kanoon rollout, which are depicted in solid vertical lines on each graph. This figure documents the first stage, with a tremendous increase in cases available around the dates of the roll-out.

### 4.2 eCourts Data

For district courts as well as 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 in the 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 observe 35,543,620 filed and 25,127,870 decided cases. Figure 3 depicts the number

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<sup>13</sup>We greatly appreciate the support of Sushant Sinha, the founder of Indian Kanoon, in procuring this data. We further thank him for providing additional insight into search engine mechanics and design.

of filings in these data. We note that there is a gradual increase in the number of cases filed for many states over time, and especially post-2012. Noteworthy, we do not observe any particular pattern in the number of observed filings on eCourts district courts around the respective high court's Kanoon rollout date.<sup>14</sup>

For the high courts, we follow a similar approach and have a sample of 6,414,378 cases. Figure 4 presents the total number of filings in the eCourts system for each of the four sets of high courts and the corresponding rollout dates that pertained to them. The figure demonstrates a striking level of variability in the filings across the four groups of courts, as well as over time. Here, we observe a first peak in the number of filings, across high courts and Kanoon rollout dates, in 2009.<sup>15</sup>

#### 4.2.1 Data Linkages to Appeal Cases

We start by associating the records from the lower courts to those of the upper courts (see Appendix Section A3.1 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 at a high court at any point during our sample period. On average, 0.3% of registered cases are appealed at high courts within a year.<sup>16</sup> Based on this data, we compute the proportion of total registrations in district courts per state, year, and month that result in an appeal.

An appeal submitted by a plaintiff progresses through multiple stages of the justice process (see Appendix Figure A4 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.<sup>17</sup> 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

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<sup>14</sup>Case resolutions are presented in appendix Figure A2, and these also show a similar pattern as the number of filings in the district courts.

<sup>15</sup>In appendix Figure A3, we present additional data on case resolutions. We find that the overall patterns are quite similar to the total number of filings shown here.

<sup>16</sup>0.33% cases are appealed within 2 years and 0.35% cases are appealed within 5 years.

<sup>17</sup>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](https://ecourts.gov.in/ecourts_home/static/manuals/efiling-User-manual.pdf))

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.<sup>18</sup>

### 4.3 Prowess

Prowess is a database that curates financial information of around 54,000 listed private and public companies in India. It covers nearly all companies on the National Stock Exchange and Bombay Stock Exchange.<sup>19</sup> These firms account for more than 70% of industrial output and 75% of corporate taxes collected by the Indian government. The database has been widely used in academic analysis (Goldberg et al. 2010). The data is collected, supplied and continuously updated by the Centre for Monitoring the Indian Economy, an independent, non-governmental research organization. The database 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.

We conduct our analysis on two samples of these firms. First, we use the full sample, regardless of whether the firm has pending cases at the courts. Second, we examine the subsample of firms that have any active case (either pending or new) at any time during the period 2005-2015.

To do this we identify all the firm Corporate Identification Numbers (CIN) - unique firm identification numbers - in the Prowess database and then restrict the sample of the eCourts data to the cases where these entities are litigants in the cases.<sup>20</sup> That implied linking the cases in the eCourts district court database to firms in the Prowess database. Of the 83.8 million cases in the eCourts district court database, we found 718,000 unique cases that matched with a firm in the Prowess database. This

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<sup>18</sup>In theory, the appellant can decide to withdraw at any time, even during the administrative stage before admission.

<sup>19</sup>These are registered companies that disclose their financial statements according to the 1956 Companies Act. Initially, the companies had to meet one of the following conditions to be included in the database: either the firm needed to have a turnover of at least 2.5 crore rupees, or the firm's annual reports must be available for at least two years before the date of updating.

<sup>20</sup>The CIN number is a 21 digit alphanumeric number that is given by the Registrar Of Companies of various states under the Ministry of Corporate Affairs. The CIN number is typically used to track all the activities of an enterprise after its registration by the government of India. This number contains the identity of an organization and additional information such as the type of company, the founding date of the company, the state code and the types of exemptions that a company is subjected to.

corresponds to 9,246 unique Prowess firms - around 18% of all the firms in the Prowess data.

Summary statistics of all key variables from these different datasets are presented in Tables 1 and 2. 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.

## 5 Empirical Strategy

To estimate the impact of Kanoon on court efficiency, appeals, and firm financials, we use an event study framework that exploits the exogeneity of the timing of the Kanoon rollout. 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, cases are added to Kanoon on the date that they appear on the court websites. Though Kanoon now covers all Indian high courts, we restrict our attention to the set of 16 courts where the rollout first occurred, and the rollout date is clearly known.

We estimate the following two-way fixed effects (TWFE) model at the 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 court  $c$  in year  $y$  and month  $m$ . We explore the impacts on both district courts and state-level high-courts.  $\text{Kanoon}_{cym}$  is a dummy variable that takes value 1 if the Kanoon rollout of court  $c$  happened before year-month  $ym$  (and 0 otherwise).  $\gamma_c$ ,  $\delta_y$ , and  $\eta_m$  represent year, court, and month fixed effects. Standard errors are clustered at the court-level.

The staggered nature of the treatment produces a complex control group whose population changes over the period of the study. As Kanoon rolls out over the country, courts move from the "untreated" to "treatment" category at different times. Recent literature suggests that in this scenario, 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).<sup>21</sup> 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.<sup>22</sup>

We examine several types of outcome variables. First, we consider four district court efficiency parameters aggregated 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.)<sup>23</sup> 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 for high court efficiency. 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. Lastly, we study a set of outcomes at the high-court case level: the probability of being resolved or resolved in less than one year after the filing date, and the probability that the government is involved as petitioner, respondent, or any of the two.

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

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

where variables are defined as in Equation 1 and  $\text{Kanoon}_{c,y+j,m}$  is a set of dummy variables equal to 1 if the Kanoon rollout of court  $c$  happened  $j$  years before (or after) year-month  $ym$  (and 0 otherwise).

Estimating this equation via OLS would imply relatively strong assumptions about homogeneity

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<sup>21</sup>We use the STATA 17 package *did\_multiplgt*.

<sup>22</sup>See Appendix Table A3 for a robustness check, where we compare our baseline estimates with simple OLS estimations and two alternative estimators proposed by Callaway and Sant'Anna (2021).

<sup>23</sup>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.



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 re-weighting at each time interval of all groups which (at that time) have yet to be treated against groups which 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).<sup>24</sup> 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:

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

where  $Y_{fcy}$  is a financial indicator of firm  $f$  based under the jurisdiction of high court  $c$  for financial year  $y$ .  $\text{Kanoon}_{fcy}$  is a dummy variables equal to one if financial year  $y$  began after court  $c$ ’s Kanoon rollout.  $\delta_y$  and  $\eta_f$  are financial year and firm fixed effects, respectively.

The coefficient(s) of interest in all three settings is either  $\beta$  or the set of  $\beta_j$ . In the dynamic estimations using the method from Sun and Abraham (2021),  $\text{Kanoon}_{c,y-1,m}$  is excluded and results should be interpreted with respect to this baseline. In order to interpret the coefficients  $\beta$  and  $\beta_0, \dots, \beta_5$  as the average treatment effects on the treated (ATT) of the introduction of the Kanoon platform on the

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<sup>24</sup>We use the STATA package entitled "eventstudyweights" to conduct this analysis (Sun and Abraham 2021)

outcome variables, we rely on the parallel trends assumption, i.e., in the absence of treatment, the difference between treated and untreated observations remains constant over time. We discuss possible threats to the identification of causal effects, and our proposed solutions, below.

## 5.1 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 followed closely 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 the content on high court websites (Figures 1 and 2). Second, as discussed in section 2.2, the eCourts web hosting program that permitted users to retrieve information about pending cases was launched after the years that we are focusing on in this analysis. In the period that we are studying, the only information that was available to the public was that content of high court websites, which varied in content and coverage but was always restricted to information about past cases.

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 pre-trends. We remedy this by constructing event-study plots and examining the evidence for pre-trends, 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 with outcome variables that are normalized relative to one year prior to 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 the treatment happening 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.

## 6 Results

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

### 6.1 Impacts on District Courts

We find that Kanoon has substantial positive impacts on access to justice. We consider first the impacts on the district courts (Table 3, Panel A). Note that there is an observed increase of approximately 6.3 thousand filings per state and month during the post-Kanoon period. This is equivalent to a 39% increase relative to the overall sample mean, and the effect remains stable and statistically significant in all the specifications. We also see a significant increase in the number of decisions by 8.5 thousand cases (75% increase).

While the case volume in the district courts is increasing, it is intriguing to note that there is only a marginal rise in court backlog (i.e., the number of cases pending for over 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 empower more parties, especially in small claims, to file original cases without significantly affecting the overall pace of case processing.

The dynamic effects of Kanoon on district courts are presented in Figure 5. We observe that the number of filings and decisions at the district courts increases steadily in the four years after the rollout of Kanoon. The overall positive effects noted in Table 3 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 see no statistically significant impacts in any year on the disposition time. There is a small and statistically significant increase in backlog in the second year of the rollout.

In summary, we see strong impacts of the Kanoon platform on access to district courts without adverse impacts on their efficiency. The analogous results for high courts will be examined later in this section. For now, we turn to the impacts of the platform on a specific category of cases that originate in the district courts: appeals. A closer look at the trajectory of appeals in the Indian justice system before and after the rollout provides insight into the question of what drives the higher case volume, and whether there are changes in the case "quality".

## **6.2 Appeals from District Courts at High Courts**

We follow appeal cases from the district courts through the high courts in a linked dataset described in section 4.2.1. The first step is to examine the number of appeals that emanate from the district courts. Table 5 presents the impact of Kanoon on the number of cases appealed (Column 1) as well as percentage (Column 2). On average, we note a statistically significant uptick of 51 appeals (or 50%) per state, year, and month after the Kanoon rollout (Column 1). We do not observe a significant increase in the proportion of district court cases appealed to high courts (Column 2). The dynamic estimates, as presented in Figure 7, follow a similar pattern as shown in the district court measures discussed in the previous section, i.e., we see a gradual increase in the number of appeals over the initial years, with particular prominence achieved during years 3 to 5 after the Kanoon rollout. There is, however, no sustained statistically significant increase in the percentage of cases that are appealed in this period. Except for a small increase in the first year after the rollout, Kanoon is thus not changing the likelihood of any litigant filing an appeal in this era.

Did the increase in litigation volume following the Kanoon rollout coincide with a decline in the "quality" of cases, meaning a higher likelihood of dismissal or rejection when appealed in the high courts? To examine this, we analyze how these cases fare upon entry into the high court, where they may either be admitted, rejected, or transferred. Our findings indicate that the vast majority of appeal

cases (approximately 80%) are admitted, meaning they successfully pass the initial stage in the high courts and proceed for further consideration. In simpler terms, despite Kanoon's notable impact on increasing case volumes (as shown in column (1) of Table 6), there is no statistically significant impact on the proportion of appeals that are admitted.

This suggests that the increase in litigation quantity following the rollout of Kanoon does not lead to a deterioration in the quality of cases being appealed in the high courts. The majority of cases continue to be deemed worthy of further consideration, despite the higher number of cases being filed overall.

Next, we examine the impact of Kanoon on the outcomes of the appeals at the high court. As explained earlier, admitted cases can be disposed in three ways: "dismissed" (the district-court decision stands), modified or "overruled" (the district court decision is modified) or "withdrawn" (the litigant decides to not pursue the case and the original district court decision stands). To study these outcomes, we construct conditional percentages along the appeal process in each node of this tree.<sup>2526</sup>

Among the admitted appeals that are admitted, we find no changes in the likelihood of disposal (as indicated in column (2) of Table 6) in the post-Kanoon period. However, we do find significant effects on the *type* of disposals. Specifically, the rollout of Kanoon appears to have increased case withdrawals by 2.2 percentage points, while simultaneously decreasing the proportion of cases (at least partly) overruled by 13 percentage points. These findings suggest that litigants still get their opportunity for a fair hearing in court; however, some opt to withdraw their cases during the course of proceedings. Furthermore, the decrease in the share 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. In essence, the implementation of Kanoon seems to have facilitated better-informed decisions among litigants, impacting the types of disposals while maintaining access to justice for all parties involved.

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<sup>25</sup>Conditional in the sense that the denominator for each case status is the last node in Figure A4. For the variable % Admitted, the denominator is the number of decided appeal cases from that state-year-month. For % Disposed, the denominator is the number of admitted appeals. For the two variables % Withdrawn and % Overruled, it is the number of disposed cases.

<sup>26</sup>See A5 for the results on the total quantity of appealed cases by outcome.

The event study plots for these outcomes are presented in Figure 8. Note that there is a decrease in the likelihood of being admitted in the first three years after the rollout, but this decline appears to be transitory. For admitted cases, disposed cases, reversals and withdrawals, the dynamic results in Figure 8 are also consistent with the overall impact in Table 6.

Overall, these results suggest that the availability of free legal information via Kanoon may improve the capacity of appellants to understand and interpret the proceedings of the court, conduct their own legal research, and file appeals. Conditional on being admitted, however, litigants may decide against the continuation of the legal process more than they did before they had access to the Kanoon platform.

### 6.3 Impacts on High Courts

Next, we examine the impact of Kanoon on high courts. Given that we already noted an increase in case-load at the district courts, it is reasonable to speculate that the high court case-load would also be increasing in the aftermath of Kanoon. Appeals, however, account for only 41.6% of the case-load in our data (see footnote 12). In other areas of court jurisdiction (such as “original jurisdiction”), it is unlikely that Kanoon had significant impacts on litigants. Such cases are typically contested by urban lawyers who maintain close affiliations to the courts, have greater access to (paid) digital databases and maintain thick professional networks for the exchange of legal information (Galanter and Robinson 2013). Legal professionals in this domain likely already had robust mechanisms to access legal information at the time of the Kanoon rollout.

Table 3, Panel B presents estimates of the number of cases filed, decisions made, backlog and disposition time at the high courts. In contrast to the increased case load at the district courts, here we observe a decrease in the number of cases filed and decisions made in all specifications. On average, the Kanoon rollout led to 1.4 thousand fewer cases filed per state, year and month. Similarly, it reduced decisions by 1.1 thousand cases. Unlike for district courts, we observe an increase in backlog in the high courts: the Kanoon rollout led to an increase in the stock of pending cases older than one year (backlog) by 49%. These results are statistically significant at the 1% level.

The results of the estimation of the dynamic impacts of Kanoon on the high courts are presented in Figure 6. We note an overall downward trend in the estimate of Kanoon on the number of filings,

with some of the coefficients taking on statistical significance. Backlog increases over the years after the Kanoon rollout, peaking within two to three 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 cases at the high courts? Table 4 presents the impacts of Kanoon on the different case-types at these courts: criminal, civil, writs, appeals, and "other".<sup>27</sup> We note that there is a negative and statistically significant effect on the number of civil cases. This is, for the most part, driving the overall decline.

But then the next question is why Kanoon would induce such a decline in the number of civil cases filed. Here, we speculate that the Kanoon may help citizens take greater advantage of the policy reforms that were being undertaken to reduce the backlog in the justice system throughout this time. The judiciary was actively promoting the establishment of tribunals (for example, the debt recovery tribunal and the green tribunal), alternate dispute resolution systems (for example, *Lok Adalats*) and the launch of digital services that were discussed earlier in this paper. The arrival of free legal information for citizens may have reduced communications and information frictions in the rollout of these platforms. Kanoon may have been able to reduce jurisdictional confusion (Krishnan et al. 2014).<sup>28</sup> It may also deter citizens from "forum shopping", i.e. intentionally filing cases in high courts with the expectation of gaining advantages, such as faster resolution, favorable judgments, or strategic reasons, despite the case being more appropriately handled in a lower court. Our current event study framework does not provide us with the flexibility to test this hypothesis, through, for example, constructing the interaction of Kanoon and these interventions, but we believe this is an important and fascinating area for additional research.

We also conducted robustness tests of all the event study estimations above by estimating them

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<sup>27</sup>Criminal, civil, writ and appeal are not mutually exclusive case types. E.g., a "criminal appeal" is counted as both criminal and appeal. The category "other" includes cases that can not be categorized in any of the other categories (example: judicial section cases that pertain to personell decisions within the judiciary, or judicial review activities).

<sup>28</sup>The issue of the overlapping jurisdictions of the high courts, tribunals and subordinate courts has been a frequent issue of contention in the judiciary due to a lack of clarity in the Indian Constitution. Article 226 for example, gives High Courts the ability to issue instructions, orders, and writs to any person or authority, including the government. Article 227 gives High Courts the power of superintendence over all courts and tribunals in the territory over which they have jurisdiction. The precise meaning of the term "superintendence" was intensely debated for years (Supreme Court Online 2021). Kanoon may have provided some clarity to confused citizens and deterred them from filing cases in the High Courts.

using the method from De Chaisemartin and d'Haultfoeuille (2020). Results are presented in Figures A10, A11 and A12. The results suggest the absence of the pre-trends for all the outcome variables and display similar effects post-Kanoon rollout.

## 6.4 Impacts on Firms

In this last part of our analysis, we study Kanoon's impact on firms. As conjectured earlier, free legal information within a firm can facilitate business activity by enabling smoother contract negotiation, dispute resolution, tax compliance, and regulatory understanding. This clarity breeds trust and predictability in commercial relationships, increasing "common knowledge" among market participants. To capture these broad effects, we consider the simplest possible measures of the financial well-being of firms that may be affected by improved access to legal information across the markets in which they operate: income, assets, and expenditures. To capture more direct effects, we also present results on the presence of external legal charges, i.e. legal expenses that exclude in-house legal counsel services and pertain to services outside the firm.

We restrict our sample to firms for which we have financial information for all years 2005-2015 and, therefore, abstract from entry and exit decisions of firms. We also emphasize here that the firms in the Prowess database are *not* representative of all Indian firms – they mostly represent large firms in the formal sector that have financial information available for all the years we are considering here.<sup>29</sup>

We analyze the impact of Kanoon on firms in two ways. First, we estimate the impact of Kanoon on all firms in our sample, regardless of whether they had any cases within our considered time frame. We refer to this as a "general equilibrium" effect.<sup>30</sup> Then, we restrict our analysis to firms having at least one case at the courts during the 2005-2015 time period. We refer to this as the "partial equilibrium" analysis. For this, we linked firm-level data to the legal data by matching the eCourts district court case data to the firms in the Prowess database.

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<sup>29</sup>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.

<sup>30</sup>Labelling these regressions as general equilibrium is a slight but common misuse of language, as we do not allow for entry or exit of firms. We think the label is still informative, as we want to see the effect on firms that are not directly involved in litigation and therefore impacted by Kanoon.



In each regression, we note that the unit of observation is a financial year of a firm. Panel A of Table 7 presents the estimates for the "partial equilibrium" impacts, this is, the impact on firms that had at least one identified active case in a district court at any time during the period 2005-2015. We observe that income increased by 5,863 (51%), assets by 13,965 (64%), and expenditures by 6,003 (55%) million Indian rupees (INR).<sup>31</sup> Panel B of Table 7 displays the overall effect Kanoon had on the "general equilibrium" outcomes of firms. We observe smaller impacts than the partial equilibrium estimates. On average, income increased by 2,834 million INR (43%), assets by 6,582 mill. INR (52%), and expenditures by 2,940 mill. INR (47%). Figure 9 displays the dynamic effects of Kanoon on these firm financial variables. Note that in both general and partial equilibrium settings, the Kanoon rollout had large and significant effects on firms' financial variables, increasing over the first three years. The effect on assets is steadily increasing over the first years after Kanoon rollout before leveling off at a longer term effect around 10,000 (general equilibrium) and 20,000 million INR (partial equilibrium).

Table 8 presents supplementary estimates derived from subsamples of firms across various sectors. Notably, the manufacturing sector (column 1) experiences the most robust impacts of the rollout of Kanoon. We see that income, assets, and expenditures all witness a substantial increase of 60% in the aftermath of the rollout. The financial sector (column 2) also shows significant effects, albeit with lower level effects compared to manufacturing, yet proportionately significant. Outside these two sectors, we find that the rollout of Kanoon does not exhibit any statistically significant impact. It is worth noting that manufacturing and financial services remain among the most heavily regulated sectors in India, although there has been some relaxation of regulations since the pro-market reforms of 1991 (Ahluwalia 2019). The similarity in the impacts on these two sectors aligns with recent literature that underscores the close linkages between them: evidence indicates that capital market liberalization has facilitated the improvements in manufacturing efficiency during the post-reform years (Arnold et al. 2016; Bau and Matray 2023).

Appendix Figure A7 presents additional results on Kanoon's impact on court-level efficiency measures for cases involving firms from the Prowess data. We note here a discernable decline in the disposition time of cases in the third and fourth year of the rollout. We also present placebo tests for

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<sup>31</sup>5,863 million INR corresponds to approximately 71 million dollars.

the partial and general equilibrium estimations and the court-level efficiency estimates (see Appendix Tables A15, A14, and A13). These results strengthen our confidence in the absence of pre-trends.

To interpret the impacts on firm financial indicators, we draw on the growing literature that demonstrates the substantial impact of providing relevant legal or management information on the productivity of firms in developing countries. In a recent randomized controlled trial that offered firm management consulting services in India, Bloom, Manova, et al. (2021) note a remarkable 200% increase in firm assets (via the establishment of new plants). In South Africa, the provision of legal information to firms increased employment by 12% over just a six-month period (Bertrand and Crépon 2021). We complement these findings by studying 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 (McAdams and Rasmusen 2007). Our intervention, consisting of a free, accessible, and searchable platform offering legal information, offers an unprecedentedly large-scale examination of these dynamics, bypassing the typical constraints associated with most RCTs.

## 7 Conclusion

Our research underscores the profound effects that increased access to legal information, afforded by the introduction of the Indian Kanoon legal search engine, has exerted on both the judiciary and economic sectors in India. We utilize a staggered event study methodology to examine the nationwide implementation of this platform, effectively transforming an abstract concept - the democratization of legal knowledge - into measurable impacts on courts and firms.

Our key findings demonstrate that at the district courts, there has been a marked rise in both case filings and resolutions, without a concurrent increase in backlog or case disposition times. These results point to an enhanced legal understanding among litigants and suggest a steady quality in district court decisions. A consequential effect of the Kanoon platform can be observed in the altered landscape of case outcomes; an increased propensity for appeal withdrawal and a diminished likelihood of cases being overturned.

Contrarily, at the high court level, we note a decline in case filings and decisions, predominantly driven by a reduction in original civil litigation cases. The platform's influence here seems to mitigate erroneous filings, foster the use of alternative dispute resolution systems, and dampen forum shopping tendencies. However, we also report a minor escalation in case backlog, which suggests further exploration into the interplay between legal accessibility and high court dynamics is warranted.

Crucially, our analysis extends to formal firms, indicating considerable gains in their financial health upon Kanoon's inception. The analysis presents a strong positive correlation between the platform's emergence and firm-level income, assets, and expenditures. Importantly, these effects permeate across firms in both manufacturing and financial sectors and are discernable for firms involved in litigation at district courts as well as all firms in our dataset.

Taken together, these findings offer a persuasive narrative of how the widespread dissemination of legal information via Kanoon has catalyzed judicial efficiency, eliminated legal bottlenecks, and empowered economic actors in India. Further, our work has broader implications that transcend national boundaries. It stands as an archetype demonstrating how the democratization of legal knowledge can alleviate market constraints and bolster economic growth. As such, we submit that strategies emulating the Kanoon model should be part of a broader, global discourse on legal reform and economic development.

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## 8 Figures and Tables

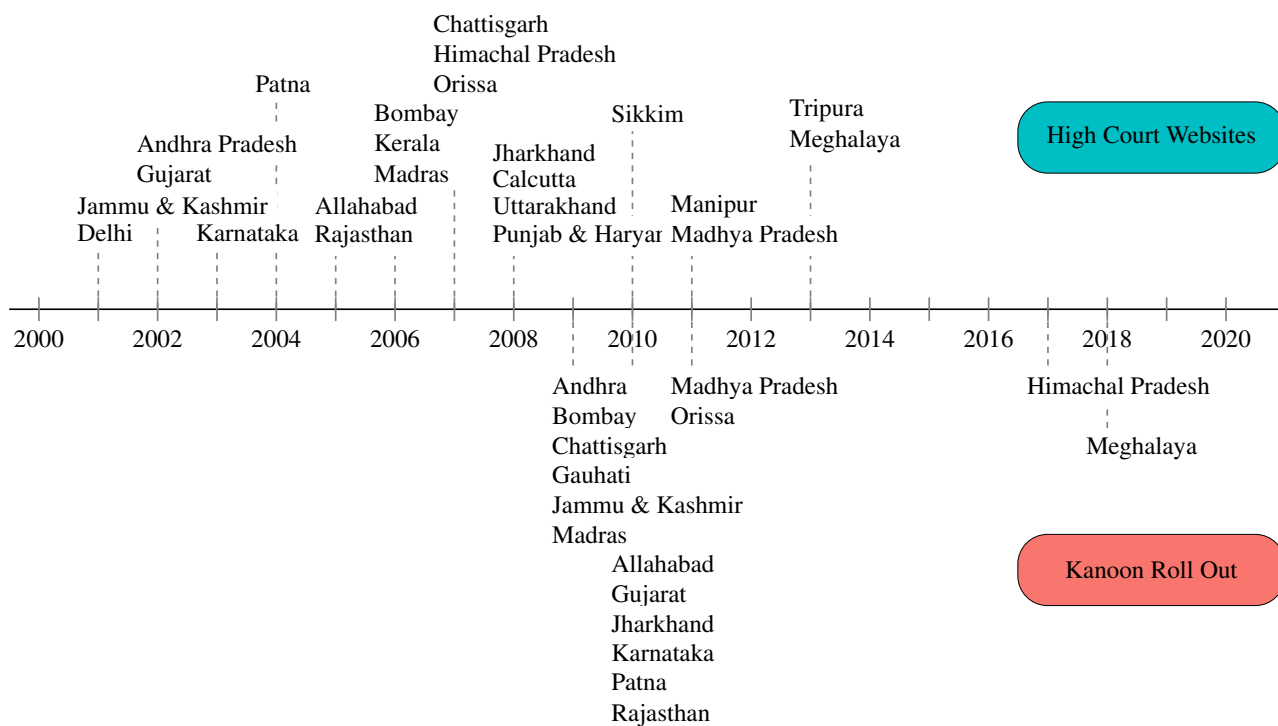


Figure 1: Rollout Years for High Court Websites (top) and Indian Kanon (bottom)

Note: 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 Kanon database included the high courts for the first time. For exact dates of these events and additional information, see Appendix Table A1.

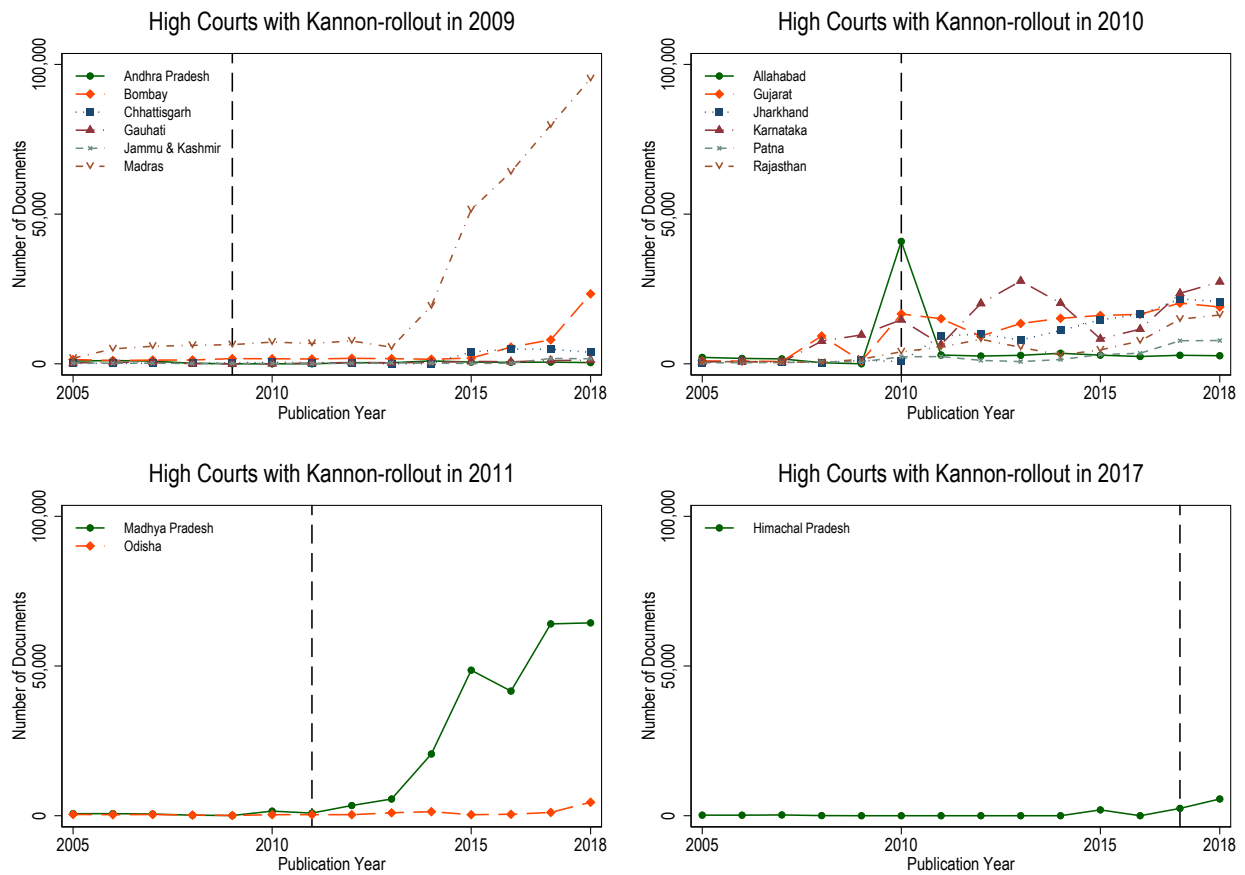


Figure 2: Number of Documents on Indian Kanoon per Publication Year and High Court

Note: This figure displays the number of documents (Judgements, Orders, Laws) available on Indian Kanoon in March 2021 by the year of the documents' publication dates and by high court. Each panel assembles high courts with a common rollout year on Indian Kanoon, which is represented by a dashed vertical line.

Table 1: Summary Statistics for Courts Data

	N	Mean	SD	Min	Max
<i>eCourt District Courts Data (State-Year-Month Level)</i>					
Filings (Thsd.)	2,244	16.29	21.57	0.00	132.60
Decided cases (Thsd.)	2,244	11.37	23.14	0.00	353.02
Backlog (Thsd.)	2,244	518.25	710.49	0.04	3,661.21
Disposition time (Years)	2,002	30.83	120.62	0.01	1,650.17
<i>eCourt High Courts Data (State-Year-Month Level)</i>					
Filings (Thsd.)	1,812	3.39	3.54	0.00	20.83
Decided cases (Thsd.)	1,842	2.62	2.91	0.00	35.32
Backlog (Thsd.)	1,848	82.71	75.22	1.26	329.39
Disposition time (Years)	1,842	0.91	4.30	0.01	99.41
Filings Criminal	1,812	0.71	1.02	0.00	5.81
Filings Civil	1,812	0.87	1.76	0.00	12.73
Filings Writ	1,812	0.39	0.91	0.00	10.89
Filings Appeal	1,812	0.81	1.93	0.00	16.32
Filings Other	1,812	0.62	1.32	0.00	10.30
<i>Appeals of District Court Cases (State-Year-Month Level)</i>					
Appeals (Thsd.)	1,716	0.10	0.18	0	1.1
% Appealed	1,716	0.01	0.01	0	.077
<i>High Court Case Status of District Court Appeals (State-Year-Month Level)</i>					
Admitted	1,393	63.28	114.04	0	667
Disposed	1,716	51.26	105.60	0	667
Withdrawn	1,716	2.27	5.92	0	56
Overruled	1,716	14.00	29.97	0	167
% Admitted	1,291	0.81	0.19	0	1
% Disposed (of Admitted)	1,278	1.00	0.01	.94	1
% Withdrawn (of Disposed)	1,278	0.09	0.13	0	1
% Overruled (of Disposed)	1,278	0.25	0.21	0	1

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



Table 2: Summary Statistics for Firm Data

	N	Mean	SD	Min	Max
<i>Firm Financial Data (Yearly): All Firms</i>					
Income (Thsd.)	58,773	6.54	74.15	-0.000	5,439.60
Assets (Thsd.)	58,773	12.55	126.91	-0.002	6,487.84
Expenditures (Thsd.)	58,773	6.22	72.01	-1.825	5,380.96
External Legal Charges (Thsd.)	55,880	0.01	0.07	0.000	4.03
External Legal Charges (if > 0) (Thsd.)	30,359	0.02	0.10	0.000	4.03
Any External Legal Charges	55,880	0.54	0.50	0.000	1.00
<i>Firm Financial Data (Yearly): Firms with at least one case in 2005-2015</i>					
Income (Thsd.)	15,081	11.48	121.78	0.000	5,439.60
Assets (Thsd.)	15,081	21.85	193.69	-0.002	6,487.84
Expenditures (Thsd.)	15,081	11.01	119.89	-0.107	5,380.96
External Legal Charges (Thsd.)	14,399	0.01	0.07	0.000	3.34
External Legal Charges (if > 0) (Thsd.)	8,583	0.02	0.09	0.000	3.34
Any External Legal Charges	14,399	0.60	0.49	0.000	1.00
<i>eCourt High Courts Cases linked to Firms (State-Month Level)</i>					
Filings (Thsd.)	1,848	0.13	0.29	0.000	2.88
Decisions (Thsd.)	1,848	0.09	0.30	0.000	7.48
Backlog (Thsd.)	1,848	2.82	6.41	0.002	33.85
Disposition Time (Years)	1,095	0.43	0.73	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.

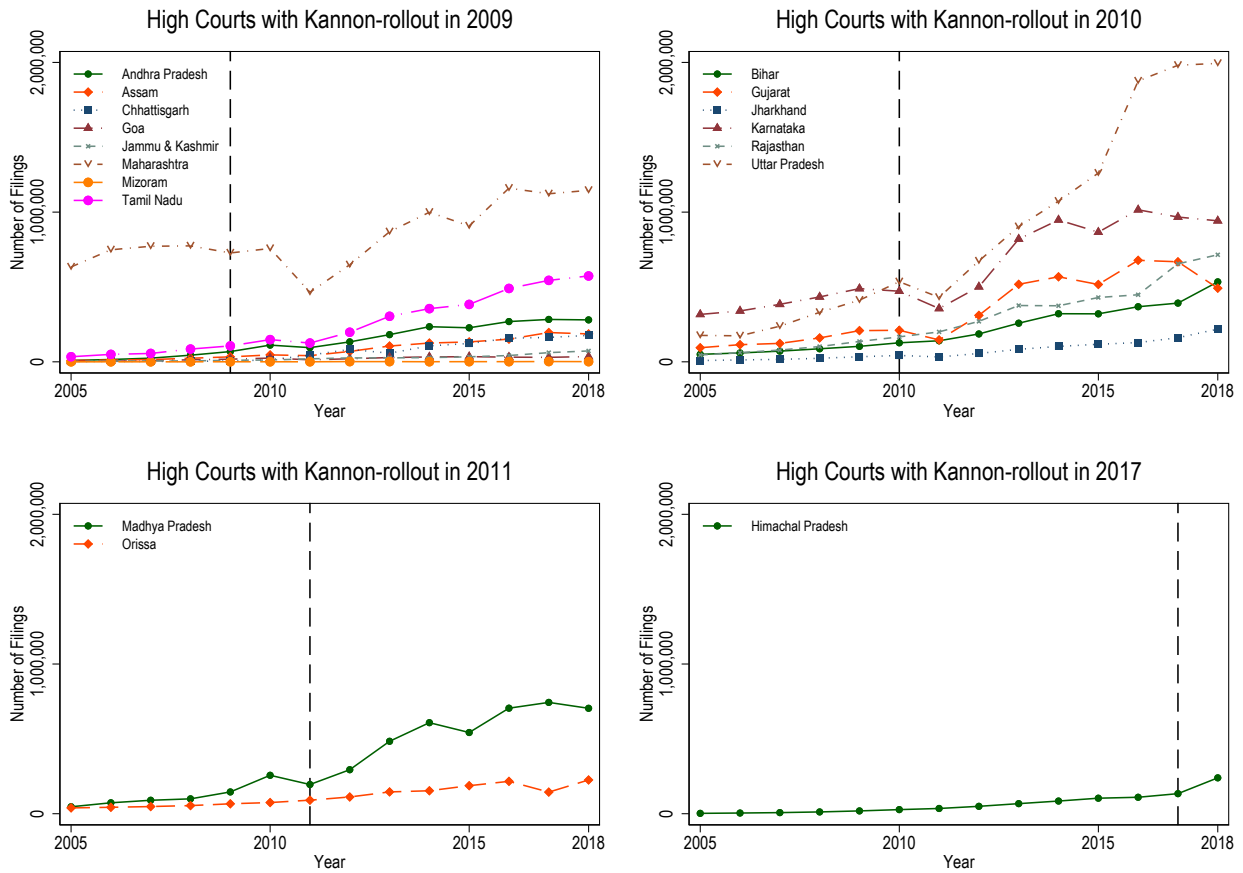


Figure 3: Number of Filings in District Courts by Year and State

Note: This figure displays the number of filings in district courts per state and year of filing for cases available on eCourts District Court in May 2019. Each panel assembles states with a common rollout year on Indian Kannon, which is represented by a dashed vertical line.

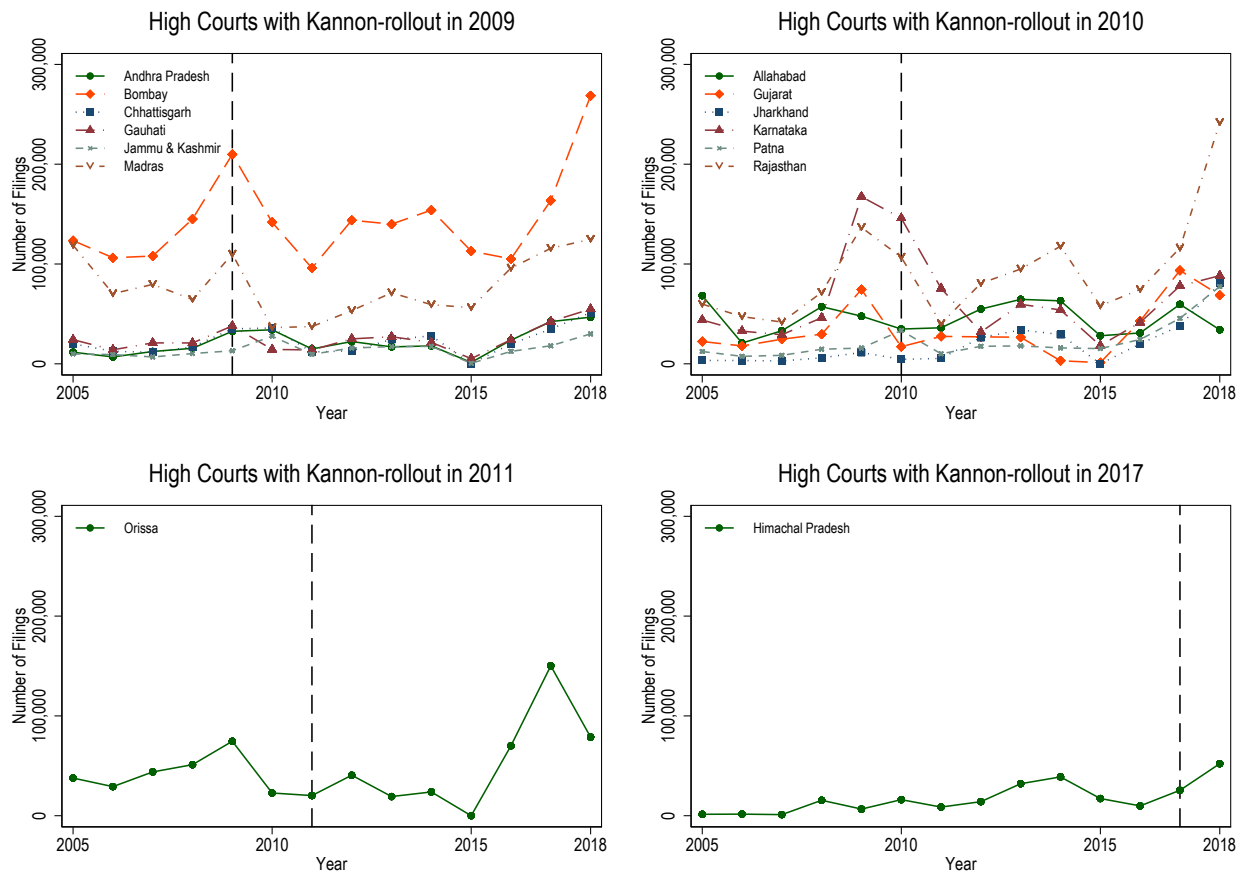


Figure 4: Number of Filings in High Courts per Year and High Court

Note: This figure displays the number of filings per high court and year of filing for cases available on eCourts High Court in November 2020. Each panel assembles high courts with a common rollout year on Indian Kanoon, which is represented by a dashed vertical line.

Table 3: Baseline Results: Kanoon’s Impact on Court Efficiency

	Filings			Decisions	Backlog	Disposition Time
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: District Courts</b>						
Post-Kanoon introduction	6.211*** (1.966)	6.292*** (1.973)	6.292*** (1.973)	8.506*** (2.592)	115.912 (78.257)	-7.996 (19.326)
Mean Dep. Var.	16.291	16.291	16.291	11.366	518.251	30.828
Observations	2,244	2,244	2,244	2,244	2,244	1,946
<b>Panel B: High Courts</b>						
Post-Kanoon introduction	-1.359*** (0.477)	-1.362*** (0.479)	-1.444*** (0.470)	-1.063*** (0.300)	25.919*** (9.289)	-0.117 (1.015)
Mean Dep. Var.	3.394	3.394	3.394	2.621	82.706	0.915
Observations	1,812	1,812	1,812	1,842	1,848	1,842
Year FE	✓	✓	✓	✓	✓	✓
Month FE		✓	✓	✓	✓	✓
Rollout FE	✓	✓				
State FE			✓	✓	✓	✓

Note: This table displays estimation results 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. 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.

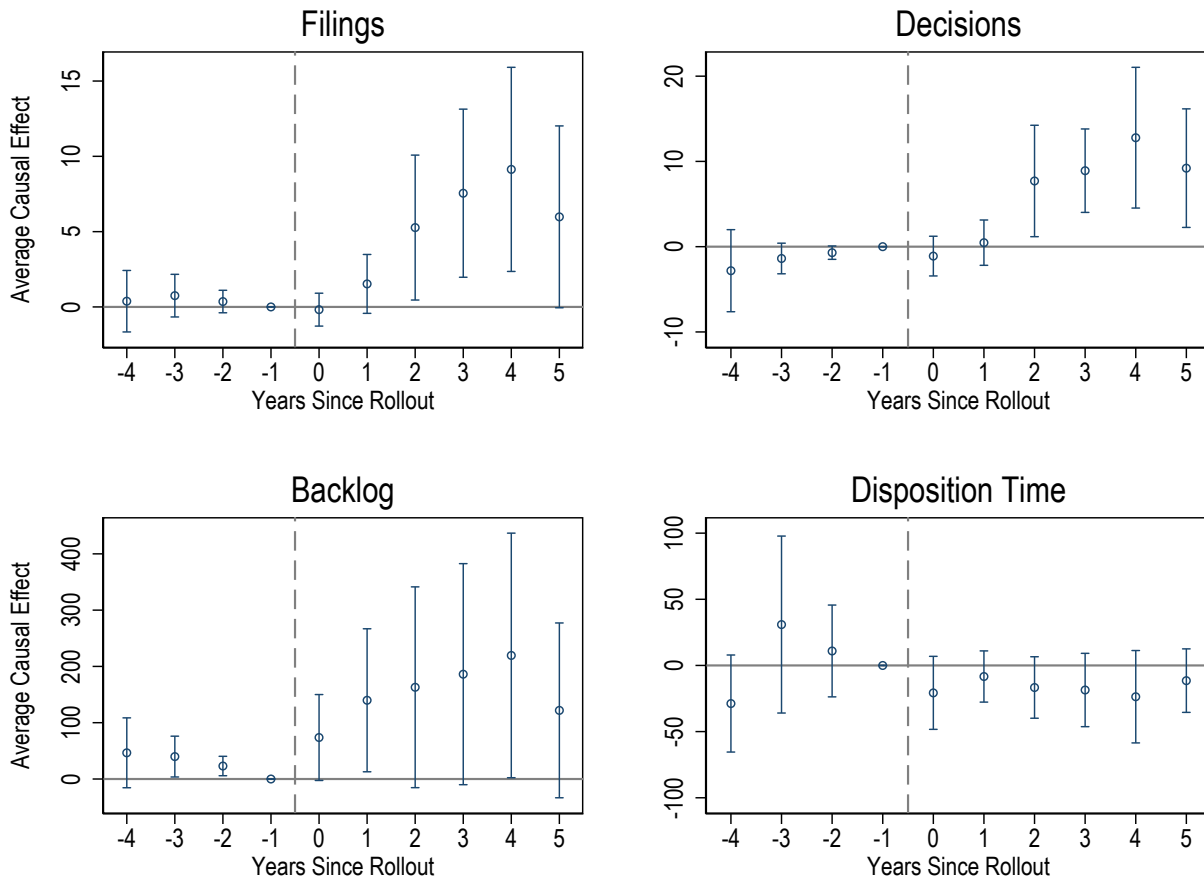


Figure 5: Impact of Kanoon Rollout on Aggregate Efficiency Measures of District Courts

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on overall 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. 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. Himachal Pradesh (rollout 04/2017) is defined 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.

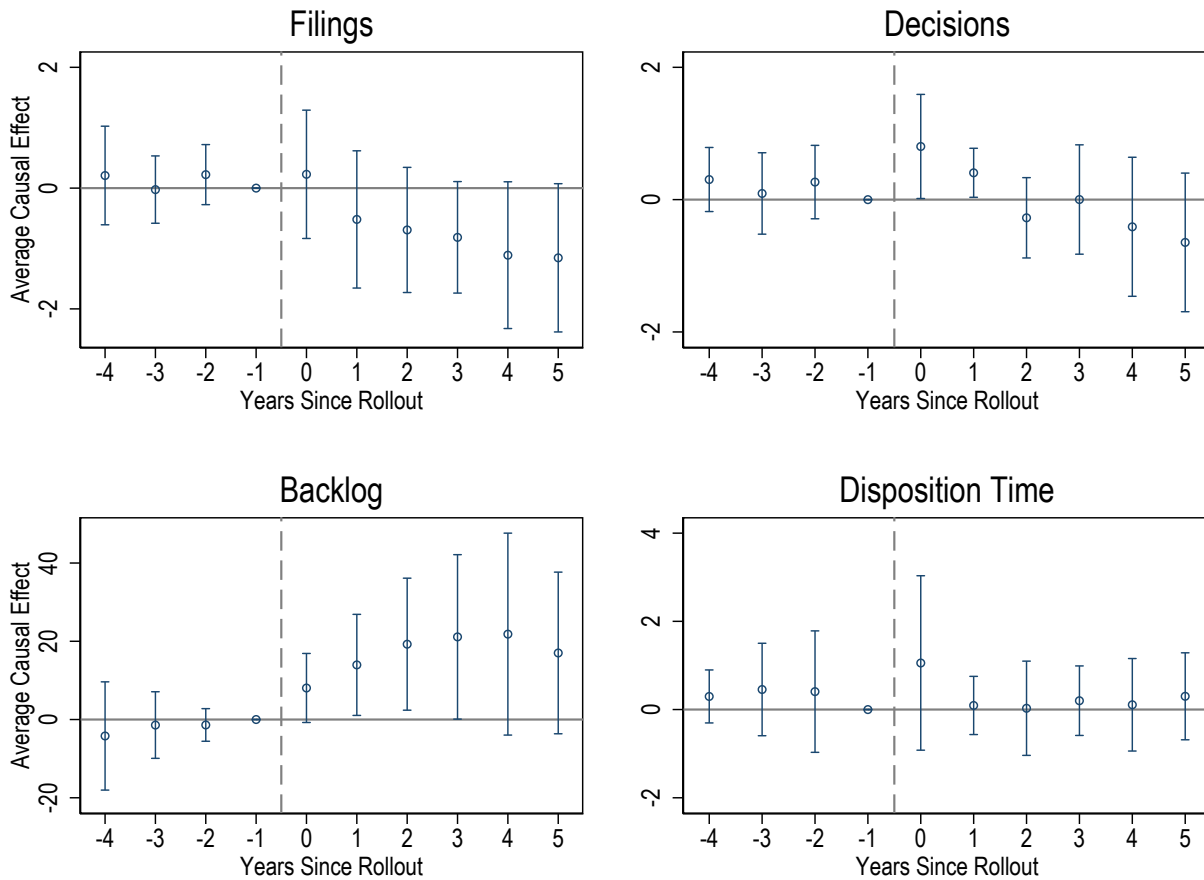


Figure 6: Impact of Kanoon Rollout on Aggregate Efficiency Measures of High Courts

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 High Court 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. Himachal Pradesh (rollout 04/2017) is defined 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.

Table 4: 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	0.067 (0.183)	-0.873*** (0.153)	-0.135 (0.109)	0.004 (0.004)	-0.481* (0.263)
Court FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Month FE	✓	✓	✓	✓	✓
Mean Dep. Var.	0.81	1.04	0.53	0.08	1.07
Observations	1,812	1,812	1,812	1,812	1,812

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.

Table 5: Baseline Results: Kanoon’s Impact on Appeals

	(1) Appeals	(2) % Appealed
Post-Kanoon introduction	.051** (.021)	.0021 (.0023)
Year FE	✓	✓
Month FE	✓	✓
State FE	✓	✓
Mean Dep. Var.	.1	.00659
Observations	1,716	1,716

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 used in this analysis 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 roll-out of the high court with jurisdiction over the state, along with several fixed effects. The variables in the table are defined as follows: *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. The presence of stars (\*, \*\*, \*\*\*) indicates that the p-value is below 0.1, 0.05, and 0.01, respectively.



Table 6: Kanoon’s Impact on Appeal Outcomes of District Court Cases in High Courts (in %)

	% of Appeals		% of Disposed	
	(1) Admitted	(2) Disposed	(3) Withdrawn	(4) Overruled
Post-Kanoon introduction	-.0044 (.032)	-.00044 (.00038)	.022** (.0093)	-.13*** (.031)
Year FE	✓	✓	✓	✓
Month FE	✓	✓	✓	✓
State FE	✓	✓	✓	✓
Mean Dep. Var.	.81	.999	.0852	.247
Observations	1,288	1,276	1,276	1,276

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.

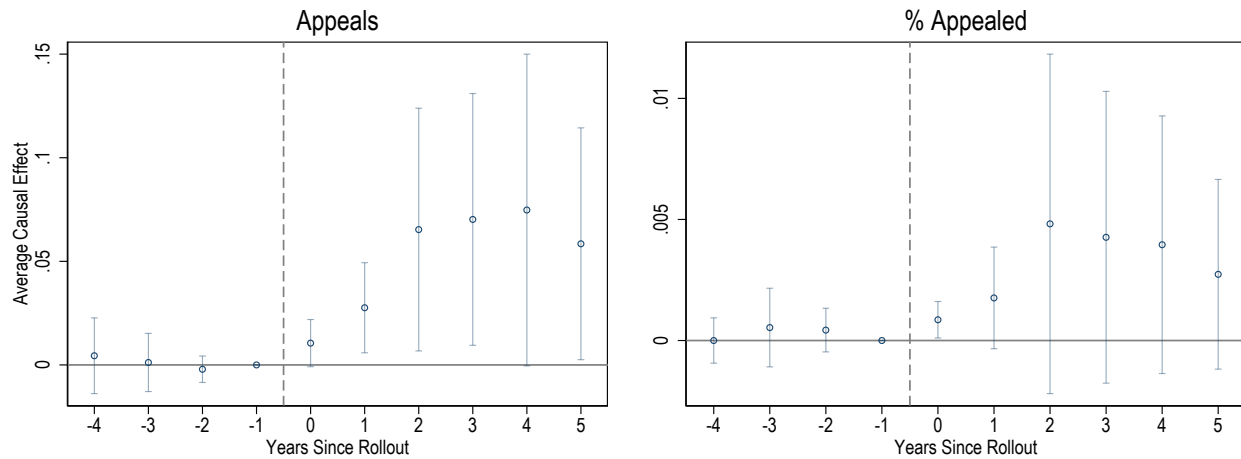


Figure 7: Impact of Kanoon on Appeals of District Court Cases in High Courts

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. Himachal Pradesh (rollout 04/2017) is defined 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.

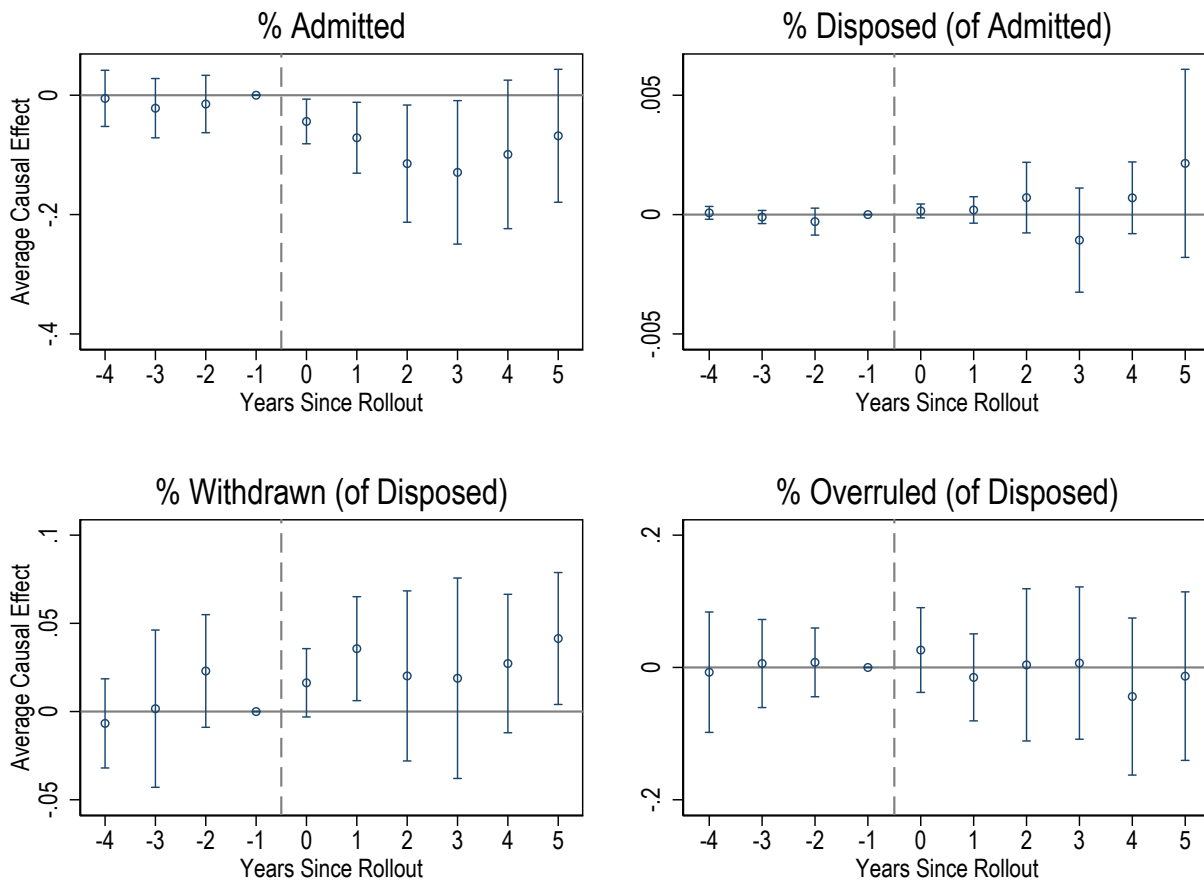


Figure 8: Impact of Kanoon on Appeal Outcomes of District Court Cases in High Courts (in %)

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. Himachal Pradesh (rollout 04/2017) is defined 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.

Table 7: Effects on Firm Financials

	(1)	(2)	(3)	(4)
	Income	Assets	Expenditures	Legal Charges
<b>Panel A: Partial Equilibrium</b>				
Post-Kanoon introduction	5.863*** (1.394)	13.965*** (2.652)	6.003*** (1.340)	0.005*** (0.001)
Mean Dep. Var.	11.48	21.85	11.01	0.01
Observations	15,081	15,081	15,081	14,399
<b>Panel B: General Equilibrium</b>				
Post-Kanoon introduction	2.834*** (0.710)	6.582*** (1.589)	2.940*** (0.689)	0.006*** (0.001)
Mean Dep. Var.	6.54	12.55	6.22	0.01
Observations	58,586	58,586	58,586	55,693
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 thousands. 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 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.

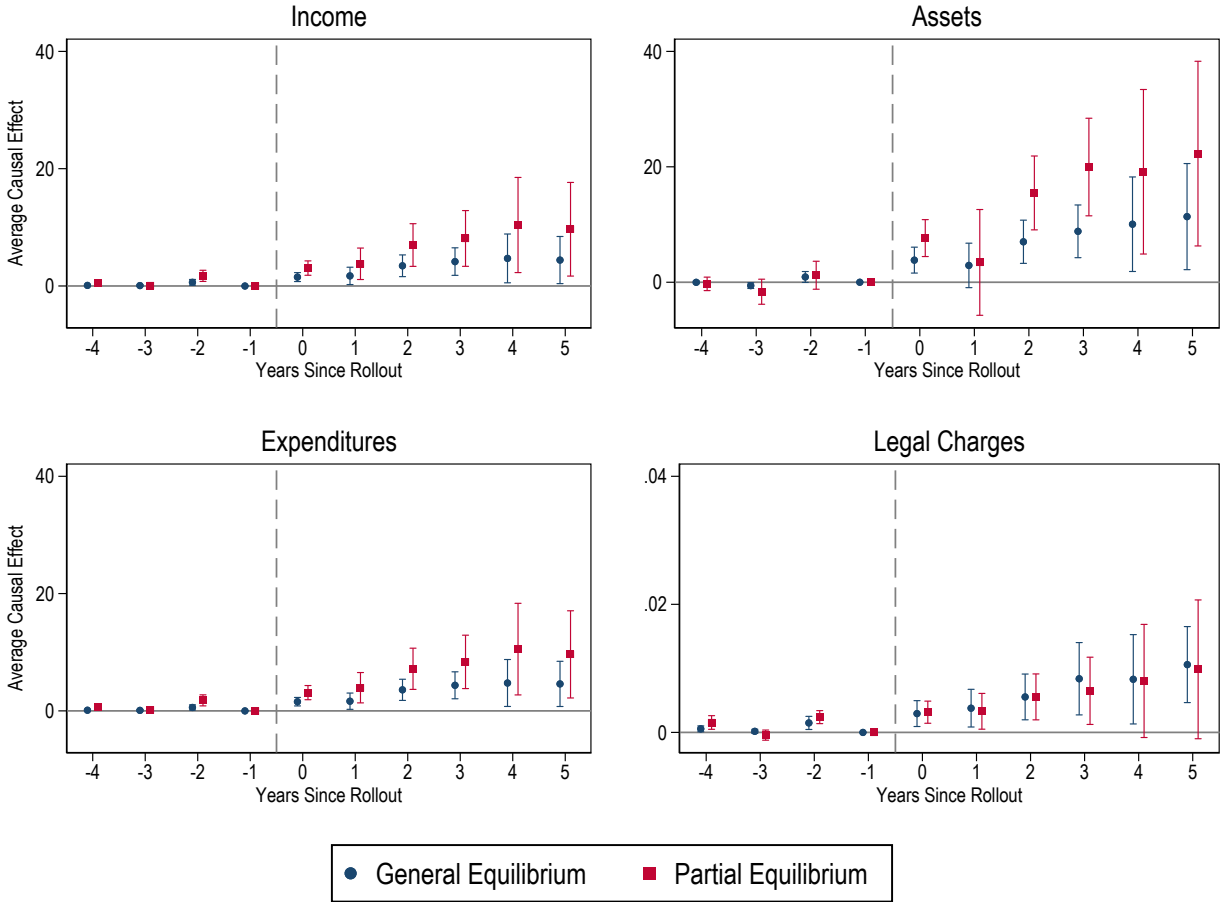


Figure 9: Effects of Kanoon rollout on Firm Financials

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on various firm outcomes for all firms (General Equilibrium) and firms having at least one district court case during the considered time frame (Partial Equilibrium). Observations are at the firm-financial year level and outcomes are measured in thousands. 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. Himachal Pradesh (rollout 04/2017) is defined 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 8: Heterogeneous General Equilibrium Effects on Firm Financials by Sector

	(1)	(2)	(3)
	Income	Assets	Expenditures
<b>Panel A: Manufacturing Sector</b>			
Post-Kanoon introduction	6.067*** (1.820)	5.547*** (1.552)	6.005*** (1.788)
Mean Dep. Var.	10.28	8.77	9.92
Observations	24,090	24,090	24,090
<b>Panel B: Financial Sector</b>			
Post-Kanoon introduction	2.119*** (0.192)	19.608*** (2.387)	1.854*** (0.163)
Mean Dep. Var.	2.88	25.98	2.52
Observations	12,199	12,199	12,199
<b>Panel C: Other Sectors</b>			
Post-Kanoon introduction	0.121 (0.230)	0.377 (0.564)	0.586** (0.236)
Mean Dep. Var.	4.39	7.48	4.17
Observations	22,297	22,297	22,297
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 thousands. 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. 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". 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.

# Appendix

## A1 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.

## A2 Additional Descriptive Statistics

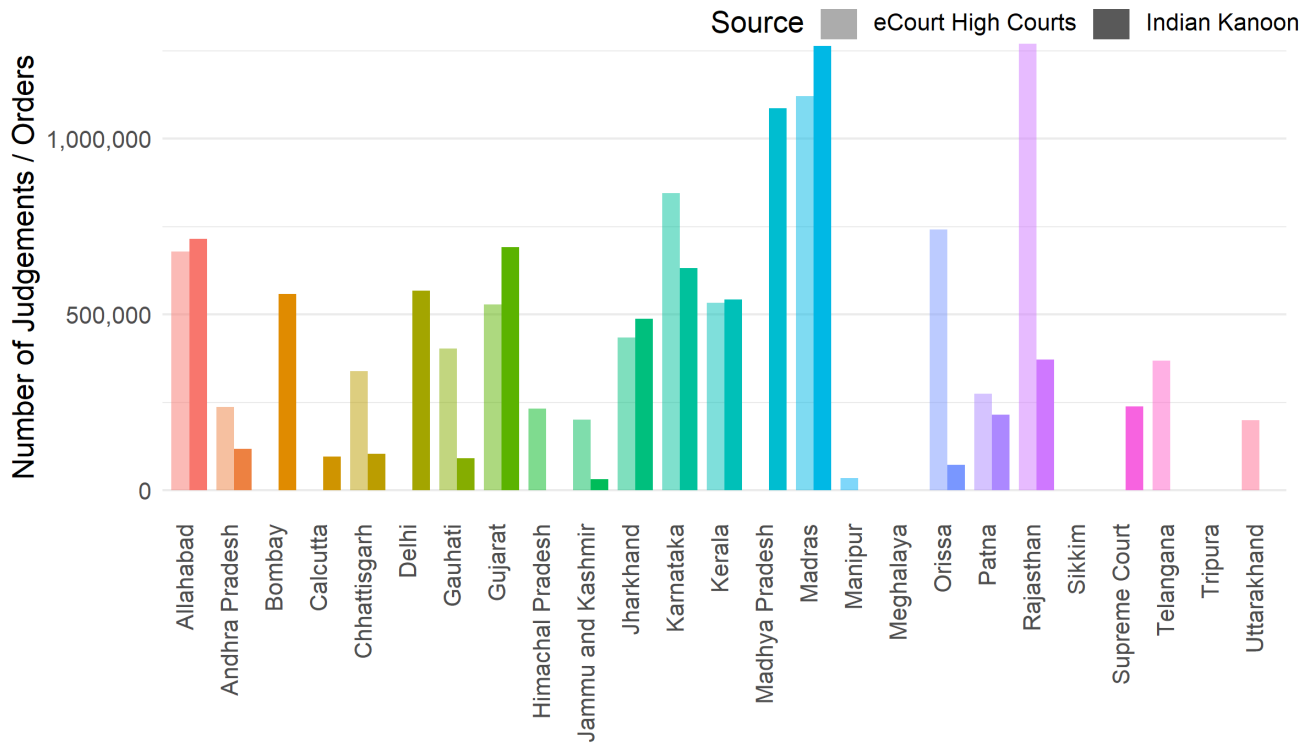


Figure A1: Number of Dispositions (eCourt High Court) and Judgements and Orders (Indian Kanoon) per high court for the years 2001-2019.



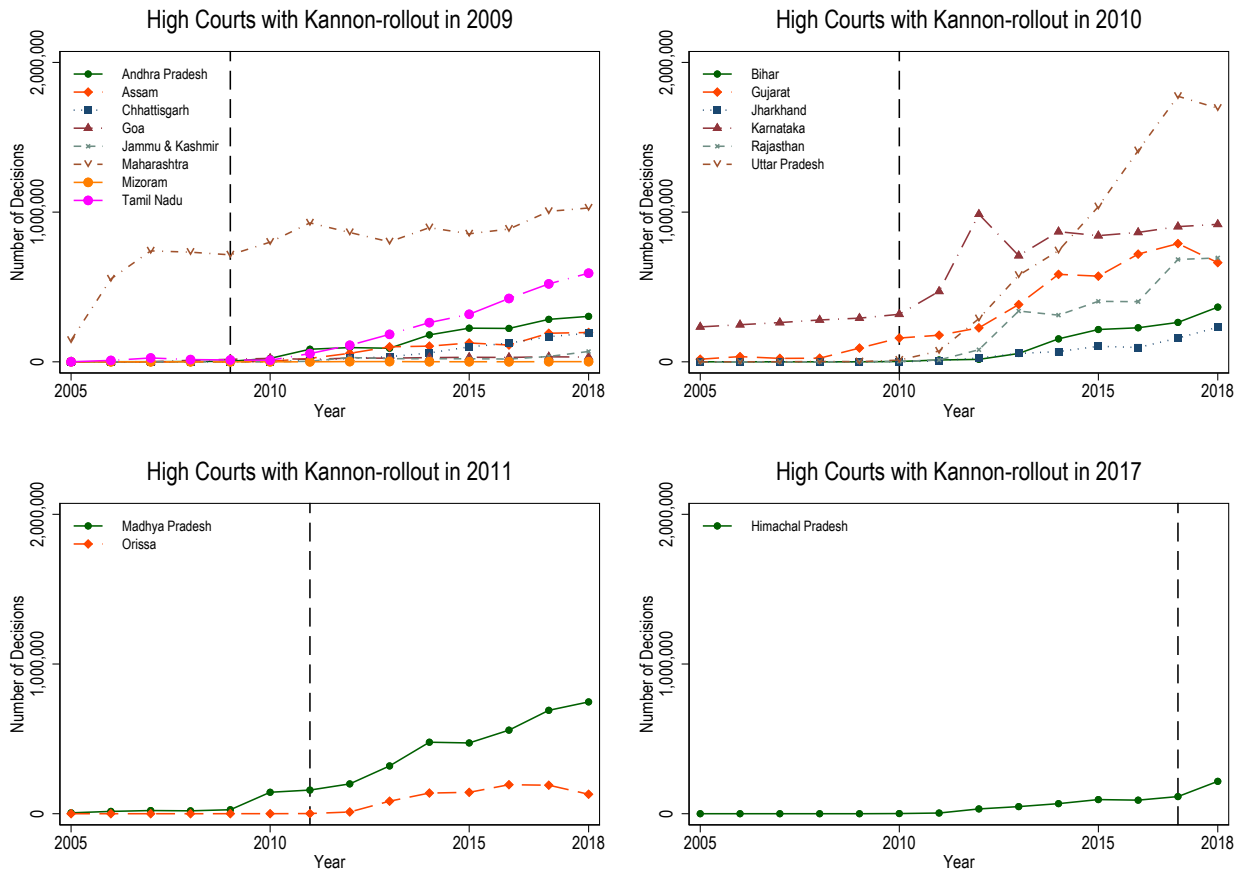


Figure A2: Total number of resolutions per year by rollout years (eCourts District Court)

Note: This figure presents the number of decisions in district courts per state and year for cases available on eCourts District Court in May 2019. Each panel assembles states with a common rollout year on Indian Kanoon, which is represented by a dashed vertical line.

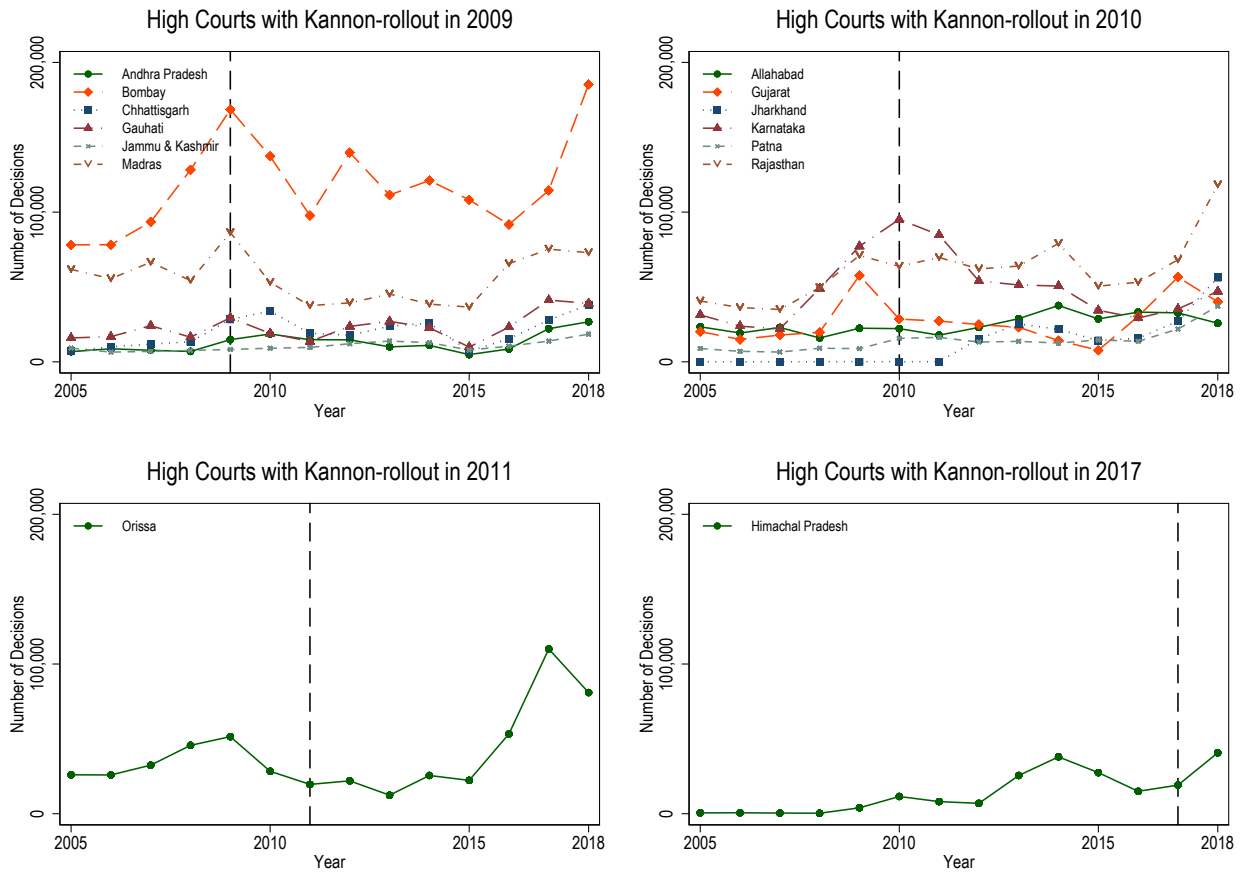


Figure A3: Total number of resolutions per year by rollout years (eCourts High Court)

Note: This figure presents the number of decisions per high court and year for cases available on eCourts High Court in November 2020. Each panel assembles high courts with a common rollout year on Indian Kanoon, which is represented by a dashed vertical line.

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

High Court	Established	State	State Created	Population	Kanoon	eCourt HC	eCourt DC
Allahabad HC	1866-03-17	Uttar Pradesh	1950-01-26	19,9812,341	2010-07-08	2001-2019	2000-2018
Andhra Pradesh HC <sup>a,b</sup>	2019-01-01	Andhra Pradesh Telangana (until Jan 2019)	1956-11-01	4,9506,799	2009-01-18	2001-2019	2000-2018 2000-2018
Bombay HC	1862-08-14	Goa Maharashtra Dadra & N. H. & D. & D. (UT)	1987-05-30 1960-05-01 2020-01-26	145,8545 112,374,333 586,956	2009-01-18	x	2000-2018 2000-2018 x
Calcutta HC	1862-07-02	West Bengal Andaman & Nicobar Islands (UT)	1950-01-26 1956-11-01	91,276,115 380,581	x	x	2000-2018 x
Chhattisgarh HC	2000-11-01	Chhattisgarh	2000-11-01	25,545,198	2009-01-18	2001-2019	2000-2018
Delhi HC	1966-10-31	Delhi (UT)	1956-11-01	16,787,941	x	x	2000-2018
Gauhati HC <sup>c</sup>	1948-03-01	Arunachal Pradesh Assam Mizoram Nagaland Meghalaya (until Mar 2013) Manipur (until Mar 2013) Tripura (until Mar 2013)	1987-02-20 1950-01-26 1987-02-20 1963-12-01	1,383,727 31,205,576 1,097,206 1,978,502	2009-01-18	2001-2019	x 2000-2018 2000-2018 x 2000-2018 2000-2018 2000-2018
Gujarat HC	1960-05-01	Gujarat	1960-05-01	60,439,692	2010-06-13	2001-2019	2000-2018
Himachal Pradesh HC	1971-01-25	Himachal Pradesh	1971-01-25	6,864,602	2017-04-15	2001-2019	2000-2018
Jammu & K. and L. HC	1928-03-26	Jammu and Kashmir (UT) Ladakh (UT)	2019-10-31 2019-10-31	12,258,433 290,492	2009-01-18	2001-2019	2000-2018 x
Jharkhand HC	2000-11-15	Jharkhand	2000-11-15	32,988,134	2010-06-13	2001-2019	2000-2018
Karnataka HC	1905-02-26	Karnataka	1956-11-01	61,095,297	2010-06-13	2001-2019	2000-2018
Kerala HC	1956-11-01	Kerala Lakshadweep (UT)	1956-11-01 1956-11-01	33,406,061 64,473	x	2001-2019	2000-2018 x
Madhya Pradesh HC	1936-01-02	Madhya Pradesh	1950-01-26	72,626,809	2011-01-29	x	2000-2018

Continuation of Table A1

High Court	Established	State	State Created	Population	Kanoon Rollout	eCourt HC	eCourt DC
Madras HC	1862-08-15	Tamil Nadu Puducherry (UT)	1956-11-01 1962-08-16	72,147,030 1,247,953	2009-01-18	2001-2019	2000-2018 x
Manipur HC <sup>c</sup>	2013-03-25	Manipur	1972-01-21	2,855,794	x	2001-2019	2000-2018
Meghalaya HC <sup>c</sup>	2013-03-23	Meghalaya	1972-01-21	2,966,889	2018-10-21	2005-2014	2000-2018
Orissa HC	1948-04-03	Odisha	1950-01-26	41,974,218	2011-01-26	2001-2019	2000-2018
Patna HC	1916-09-02	Bihar	1950-01-26	10,409,9452	2010-06-13	2001-2019	2000-2018
Punjab and Haryana HC	1947-08-15	Chandigarh (UT) Haryana Punjab	1966-11-01 1966-11-01 1966-11-01	1,055,450 25,351,462 27,743,338	x	x	2000-2018 2000-2018 2000-2018
Rajasthan HC	1949-06-21	Rajasthan	1950-01-26	68,548,437	2010-06-13	2001-2019	2000-2018
Sikkim HC	1975-05-16	Sikkim	1975-05-16	61,0577	x	2001-2009	2000-2018
Telangana HC <sup>a,b</sup>	2019-01-01	Telangana	2014-06-02	35,193,978	x	2001-2019	2000-2018
Tripura HC <sup>c</sup>	2013-03-23	Tripura	1972-01-21	367,3917	x	2010-2018	2000-2018
Uttarakhand HC	2000-11-09	Uttarakhand	2000-11-09	10,086,292	x	2001-2019	2000-2018

<sup>a</sup> 2 June 2014: bifurcation of Andhra Pradesh into Telangana and Andhra Pradesh: common HC renamed to "HC of Judicature at Hyderabad"

<sup>b</sup> 1 January 2019: Separation of HCs: "Andhra Pradesh HC" for Andhra Pradesh and "Telangana HC" for Telangana

<sup>c</sup> 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

## A3 Additional Results on Appeals

### A3.1 Appeals Data Creation

For the appeal regressions in Tables 7 and 8 and Appendix Tables A5, A10, A11, and A12 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.

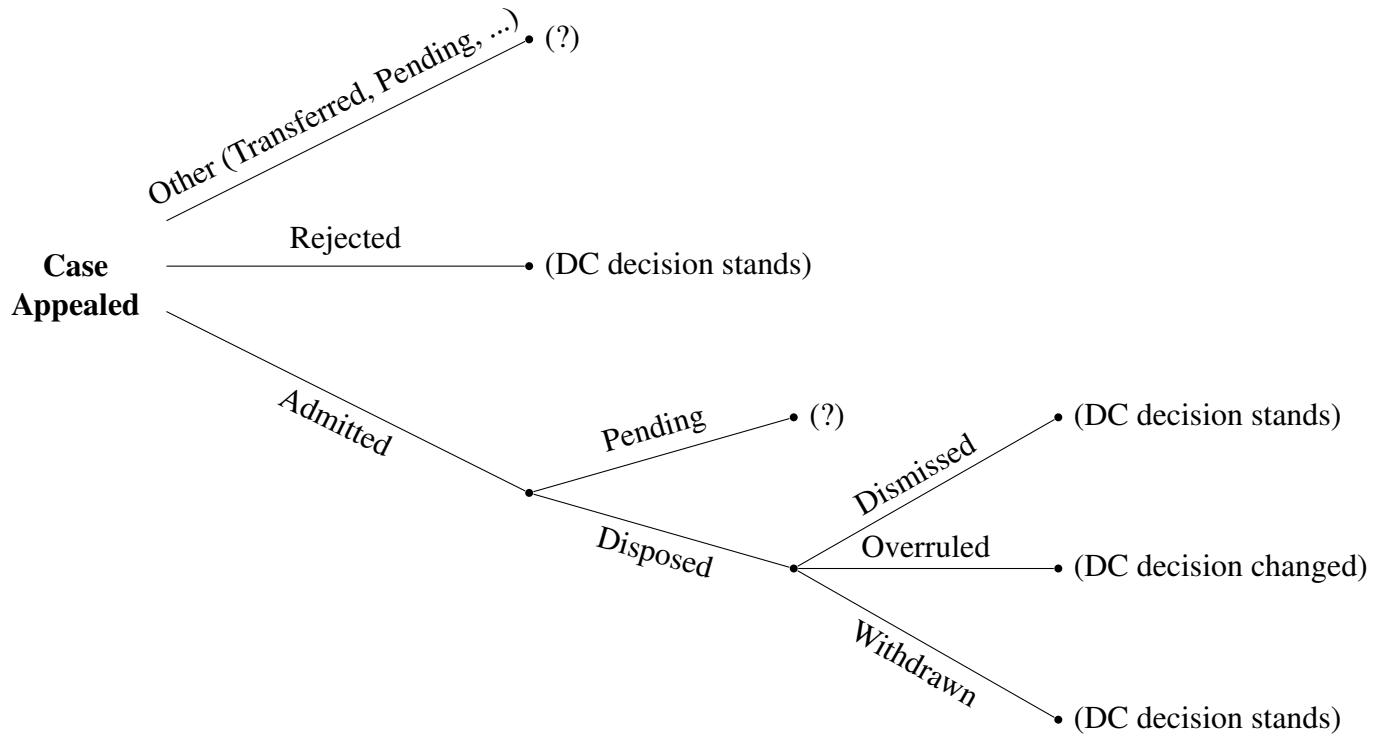


Figure A4: Decision Tree of District Court Appeals in High Courts

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.

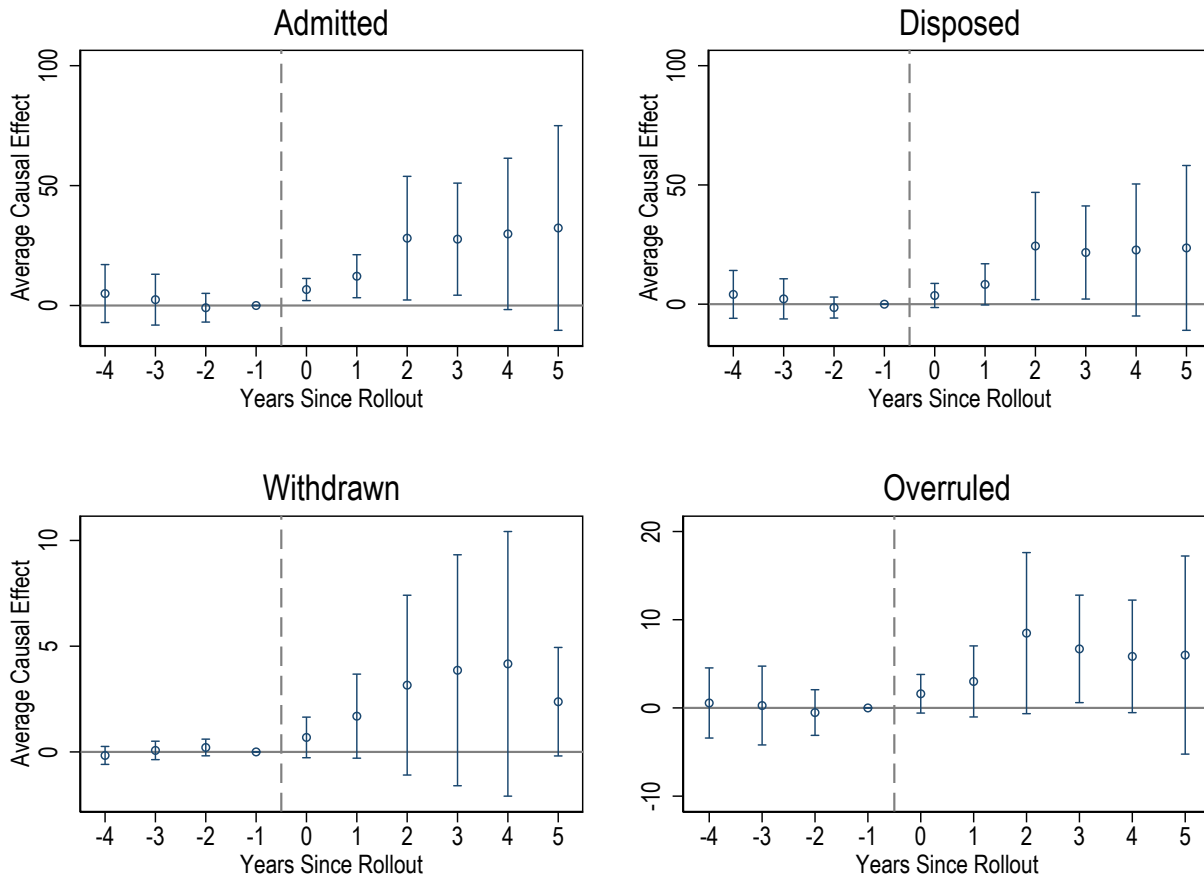


Figure A5: Impact of Kanon on Appeal Outcomes of District Court Cases in High Courts (in Levels)

Note: This figure presents dynamic estimation results of the impact of Indian Kanon 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 Kanon. *Lead 1*, the dummy variable which is equal to one for the 12 months before Kanon 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. Himachal Pradesh (rollout 04/2017) is defined 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.

## A4 Additional Results on Firms

Table A2: Effects on External Legal Charges

	(1)	(2)
	External Legal Charges (if > 0)	Any External Legal Charges
<b>Panel A: Partial Equilibrium</b>		
Post-Kanoon introduction	0.006*** (0.001)	0.100*** (0.015)
Mean Dep. Var.	0.02	0.60
Observations	7,879	14,399
<b>Panel B: General Equilibrium</b>		
Post-Kanoon introduction	0.007*** (0.001)	0.023** (0.009)
Mean Dep. Var.	0.02	0.54
Observations	27,308	55,693
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 thousands. *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.



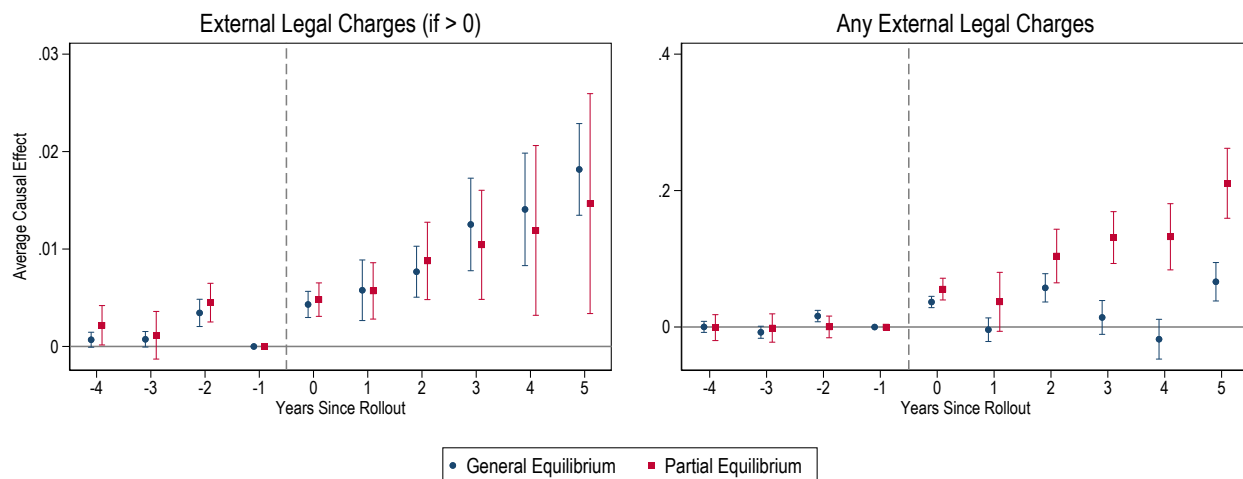


Figure A6: Dynamic Effects of Kanoon rollout on External Legal Charges

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on various firm outcomes for all firms (General Equilibrium) and firms having at least one district court case during the considered time frame (Partial Equilibrium). Observations are at the firm-financial year level and outcomes are measured in thousands. 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. Himachal Pradesh (rollout 04/2017) is defined 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.

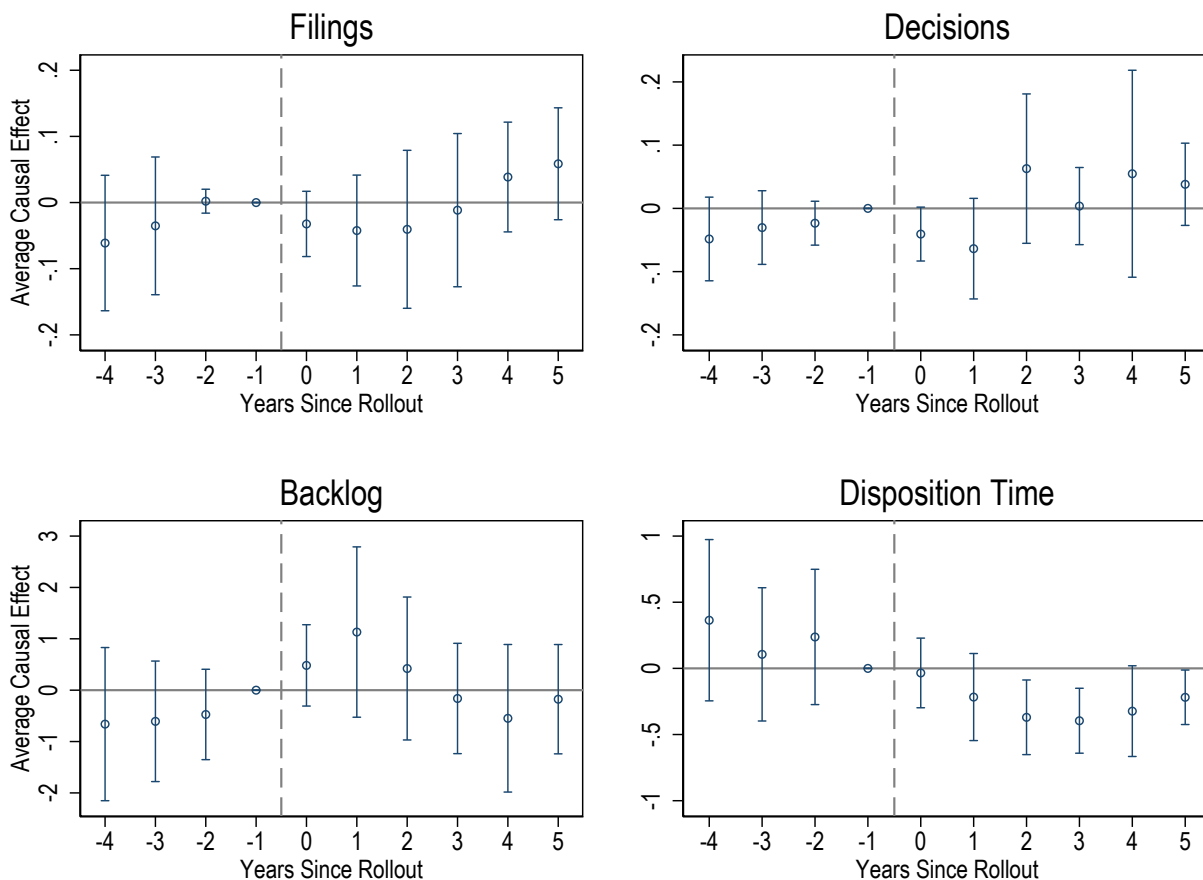


Figure A7: Impact of Kanoon on District Court Efficiency Measures for Cases linked to Firms

Note: This figure presents dynamic estimation results of the impact of Indian Kanoon on district court efficiency measures of the subset of cases linked to firms in the Prowess database. 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. Himachal Pradesh (rollout 04/2017) is defined 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.

Table A3: Effects on Firm Financials: Robustness

	(1)	(2)	(3)	(4)
	Income	Assets	Expenditures	Legal Charges
<b>Panel A: Partial Equilibrium</b>				
TWFE	-0.131 (0.604)	1.705 (1.145)	0.000 (0.583)	-0.000 (0.001)
Borusyak, Jaravel, & Spiess	5.863*** (1.394)	13.965*** (2.652)	6.003*** (1.340)	0.005*** (0.001)
Callaway & Sant'Anna - Never Treated	3.508** (1.391)	11.954*** (2.671)	3.635*** (1.279)	0.000 (0.007)
Callaway & Sant'Anna - Not Yet Treated	3.652*** (1.359)	11.173*** (2.585)	3.887*** (1.242)	0.001 (0.006)
Mean Dep. Var.	11.48	21.85	11.01	0.01
Observations	15,081	15,081	15,081	14,399
<b>Panel B: General Equilibrium</b>				
TWFE	0.014 (0.198)	0.712 (0.489)	-0.014 (0.209)	-0.000 (0.001)
Borusyak, Jaravel, & Spiess	2.834*** (0.710)	6.582*** (1.589)	2.940*** (0.689)	0.006*** (0.001)
Callaway & Sant'Anna - Never Treated	1.995*** (0.629)	5.446*** (1.228)	2.022*** (0.585)	0.004 (0.003)
Callaway & Sant'Anna - Not Yet Treated	1.950*** (0.607)	5.073*** (1.189)	2.007*** (0.561)	0.004 (0.002)
Mean Dep. Var.	6.54	12.55	6.22	0.01
Observations	58,773	58,773	58,773	55,880
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 a least one active case anytime in the period 2005-2015. Panel B includes all firms in the sample. The estimations use, respectively, the *reghdfe*, the *did\_imputation*, the *csdid*, and the *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.

## A5 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 delve into a suite of variables encapsulating 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 A4). 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 A5). 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 A5). 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 A5 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 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 A4). 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 A5). 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

Table A4: Summary Statistics for Citations

	N	Mean	SD	Min	Max
Any Backward Citation	2,162,698	0.06	0.25	0	1
Any Forward Citation	2,162,698	0.03	0.16	0	1
Any Backward Self-Citation	2,162,698	0.03	0.16	0	1
Any Forward Self-Citation	2,162,698	0.02	0.14	0	1
Backward Citations of all cases by all cases	139,678	3.31	4.80	1	179
Forward Citations of all cases by all cases	57,843	2.74	15.94	1	1,951
Backward Self-Citations of all cases by all cases	60,046	1.61	1.68	1	124
Forward Self-Citations of all cases by all cases	42,739	2.59	17.56	1	1,951
Backward Citations of AIR cases by all cases	139,678	0.08	0.32	0	9
Forward Citations of AIR cases by all cases	6,869	3.23	13.07	1	820
Backward Self-Citations of AIR cases by all cases	60,046	0.11	0.36	0	9
Forward Self-Citations of AIR cases by all cases	5,221	3.11	14.48	1	811

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

be required.

Table A5: Impact of Kanoon on Citations of Published Rulings

	Citations		Self-Citations	
	(1) Backward	(2) Forward	(3) Backward	(4) Forward
<b>Panel A: Citations to All Cases - Extensive Margin</b>				
Publication Post-Kanoon introduction	0.022 (0.0182)	0.011 (0.00965)	0.0066 (0.00518)	0.0043 (0.00470)
Mean Dep. Var.	0.06	0.03	0.03	0.02
N	2,162,698	2,162,698	2,162,698	2,162,698
<b>Panel B: Citations to All Cases - Intensive Margin</b>				
Publication Post-Kanoon introduction	0.526 (0.301)	-0.276 (0.159)	0.214** (0.078)	-0.260 (0.190)
Mean Dep. Var.	3.31	2.74	1.61	2.59
N	139,678	57,843	60,046	42,739
<b>Panel C: Citations to AIR Cases - Intensive Margin</b>				
Publication Post-Kanoon introduction	0.028* (0.014)	0.910 (0.574)	0.043** (0.015)	1.075 (0.883)
Mean Dep. Var.	0.08	3.23	0.11	3.11
N	139,678	6,869	60,046	5,221
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 judgements 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 judgements 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 judgement is citing. *Forward citations* measure the number of times an (AIR) judgement is cited in the future. *Self backward citations* is the number of times a judgement is citing (AIR) cases from the same court in which it was heard. *Self forward citations* is the number of times an (AIR) judgement 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.

## A6 Robustness Check: Estimators from de Chaisemartin and D’Haultfoeuille (2020)

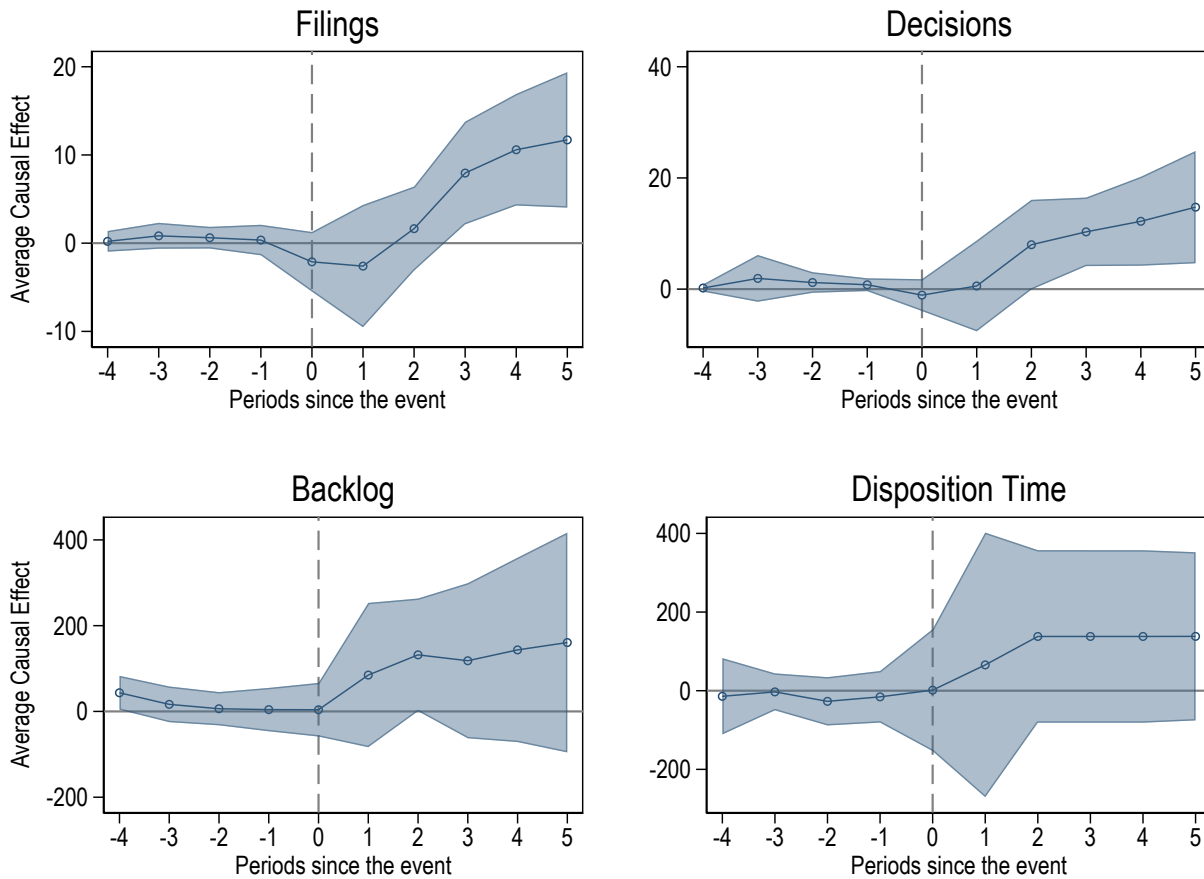


Figure A8: Robustness Check for Aggregate Efficiency Measures of District Courts

*Notes:* This figure shows the results of the Placebo test for checking pre-trends as suggested by de Chaisemartin and D’Haultfoeuille, 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.

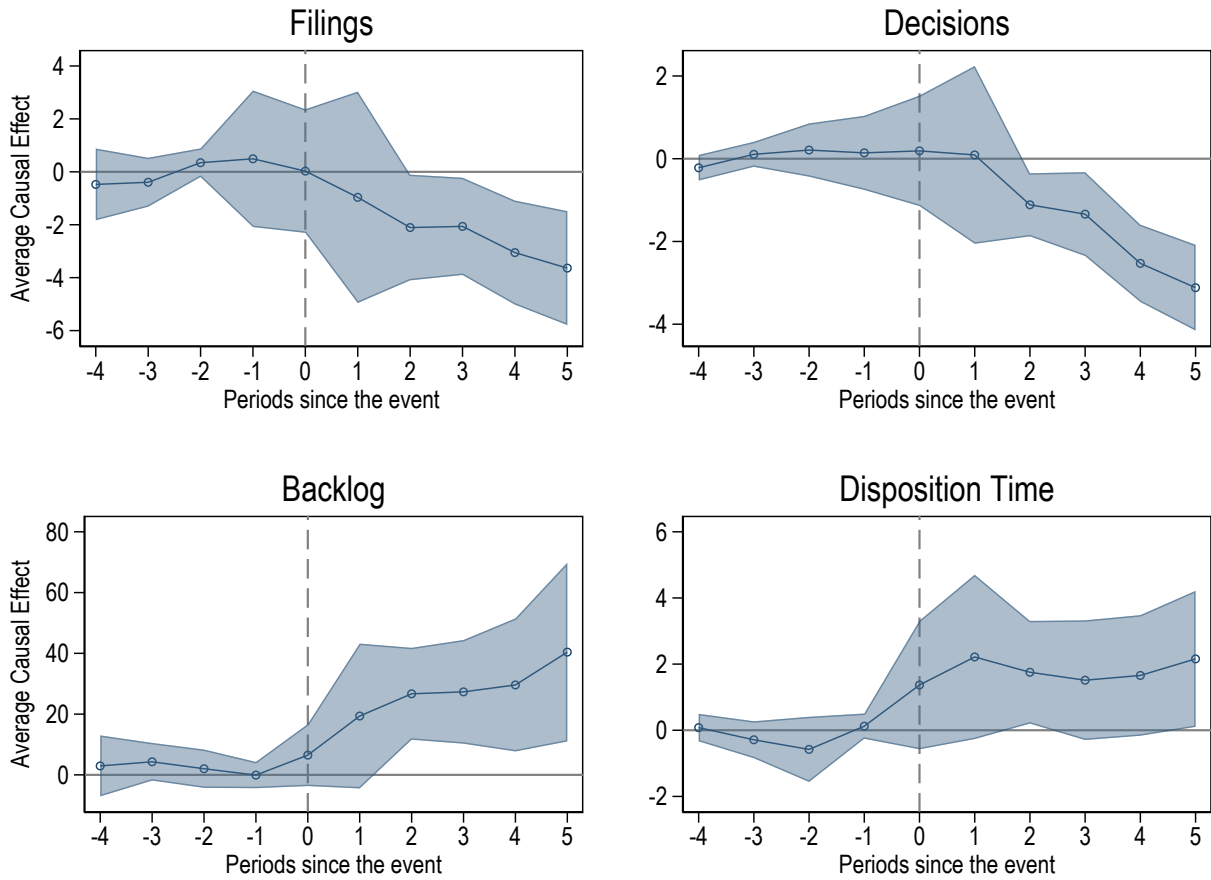


Figure A9: Robustness Check for Aggregate Efficiency Measures of High Courts

*Notes:* This figure shows the results of the Placebo test for checking pre-trends as suggested by Chaisemartin and D’Haultfoeuille, 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.



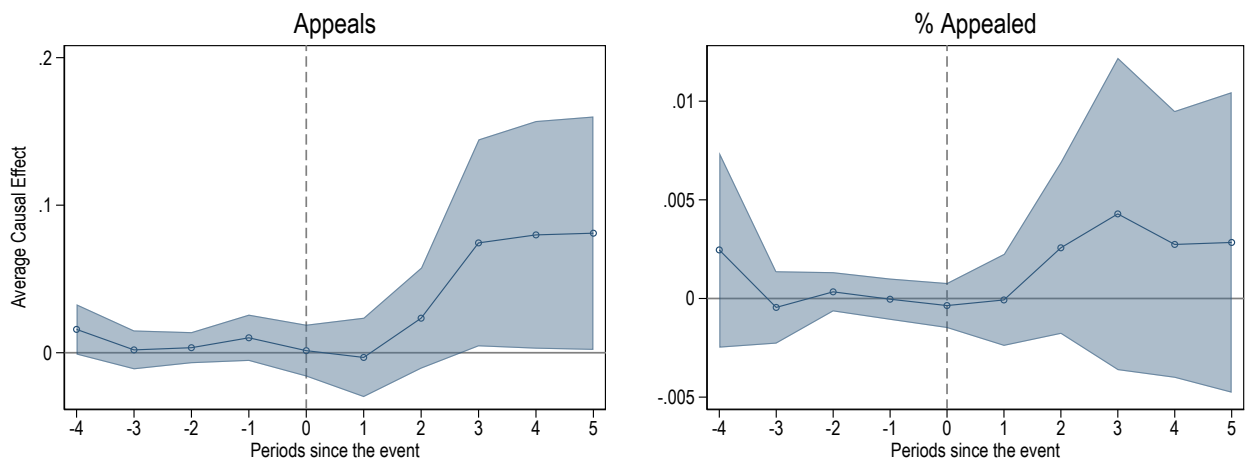


Figure A10: Robustness Check for Appeals of district court cases.

*Notes:* This figure shows the results of the Placebo test for checking pre-trends as suggested by Chaisemartin and D’Haultfoeuille, 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.

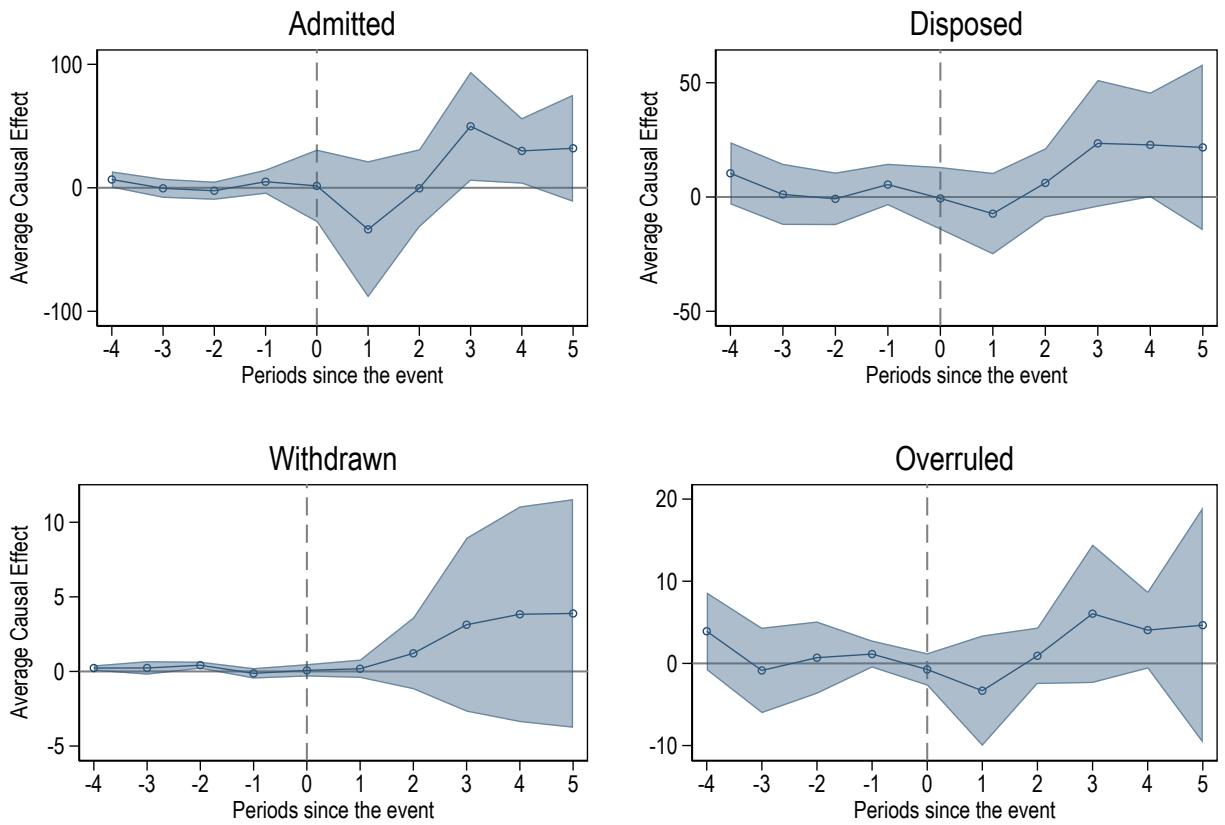


Figure A11: Robustness Check for Kanoon’s Impact on Appeal Outcomes

*Notes:* This figure shows the results of the Placebo test for checking pre-trends as suggested by Chaisemartin and D’Haultfoeuille, 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.

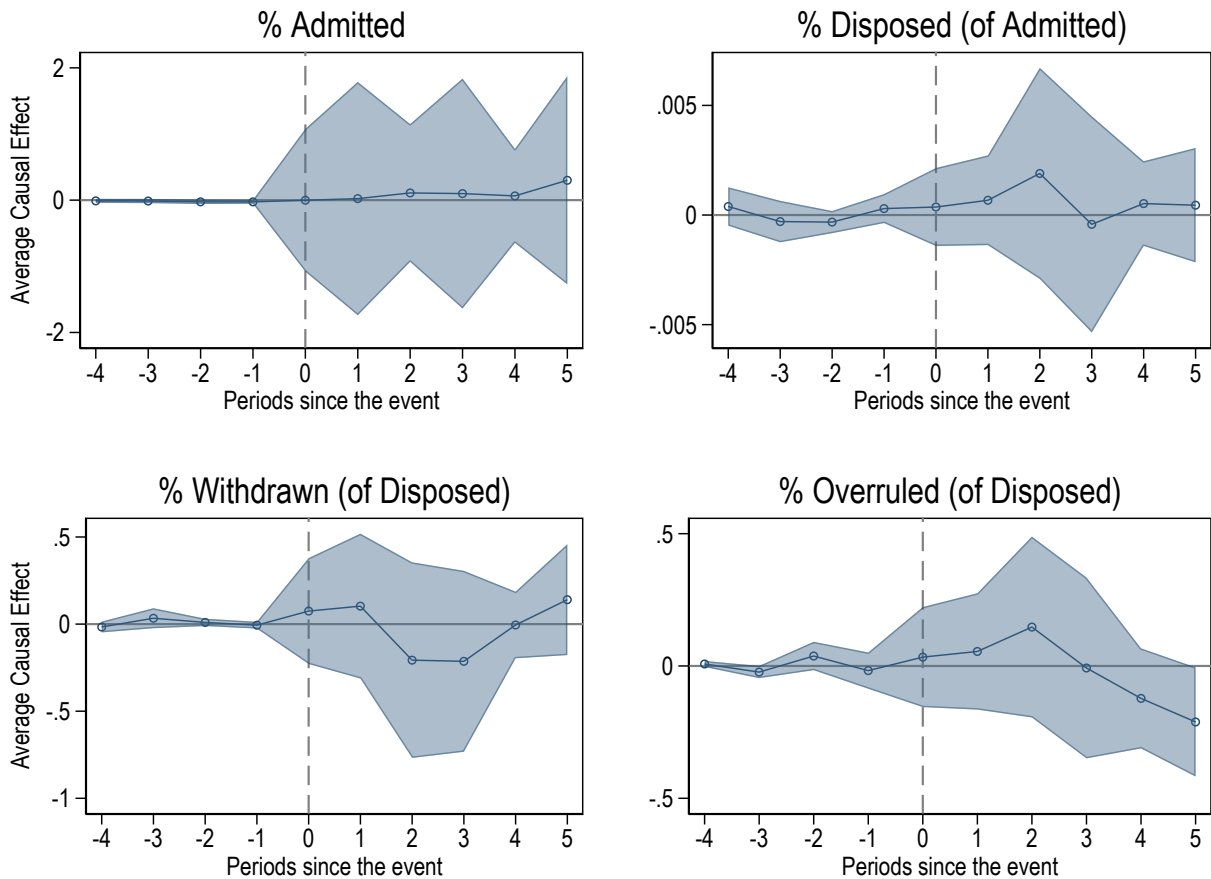


Figure A12: Robustness Check for Kanoon’s Impact on Appeal Outcomes, with variables defined in conditional percentages based on the sample in the previous stage of the pipeline of justice.

*Notes:* This figure shows the results of the Placebo test for checking pre-trends as suggested by Chaisemartin and D’Haultfoeuille, 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  $(1,2,3,4)$ .

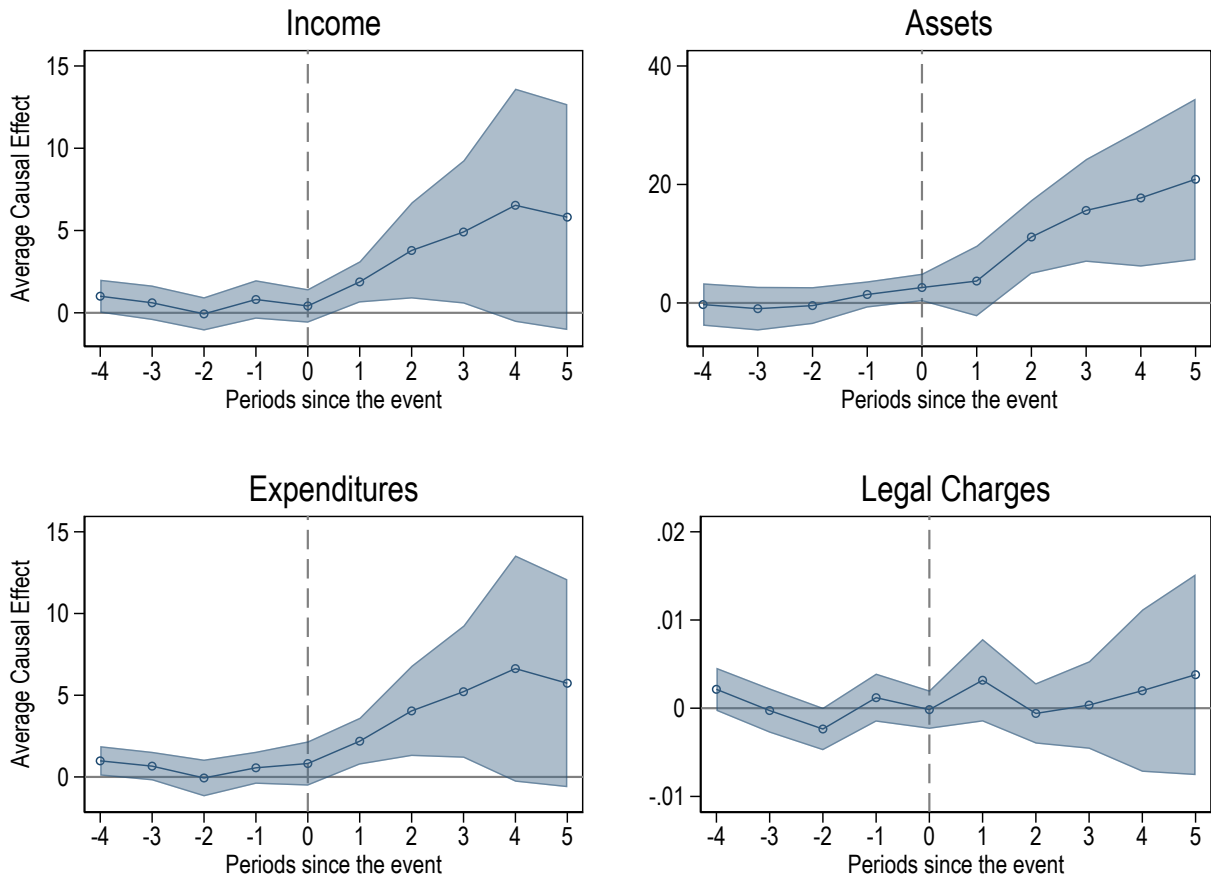


Figure A13: Robustness Check for Kanoon’s Impact on Partial Equilibrium effects on Firm Financials

*Notes:* This figure shows the results of the Placebo test for testing pretrends 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.

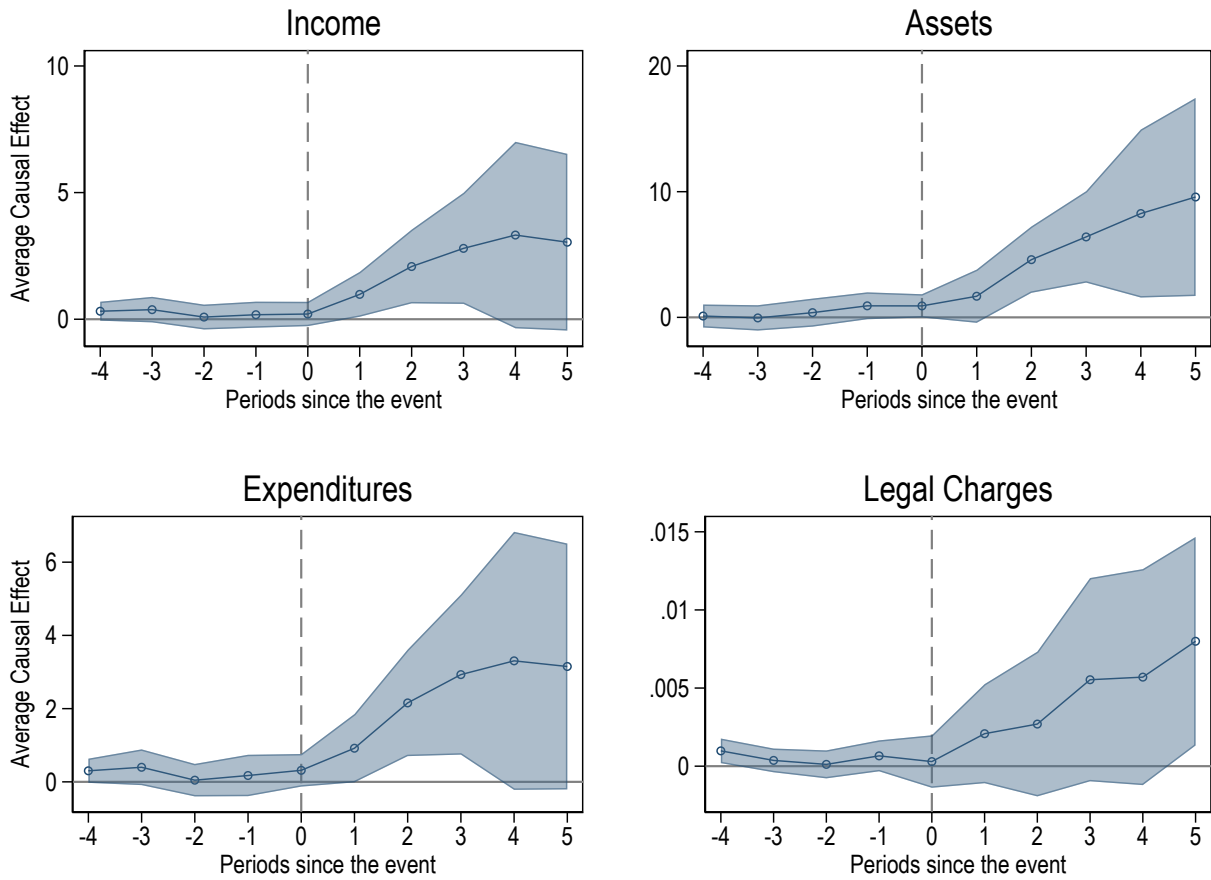


Figure A14: Robustness Check for Kanoon’s Impact on General Equilibrium effects on Firm Financials

*Notes:* This figure shows the results of the Placebo test for testing pretrends 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.

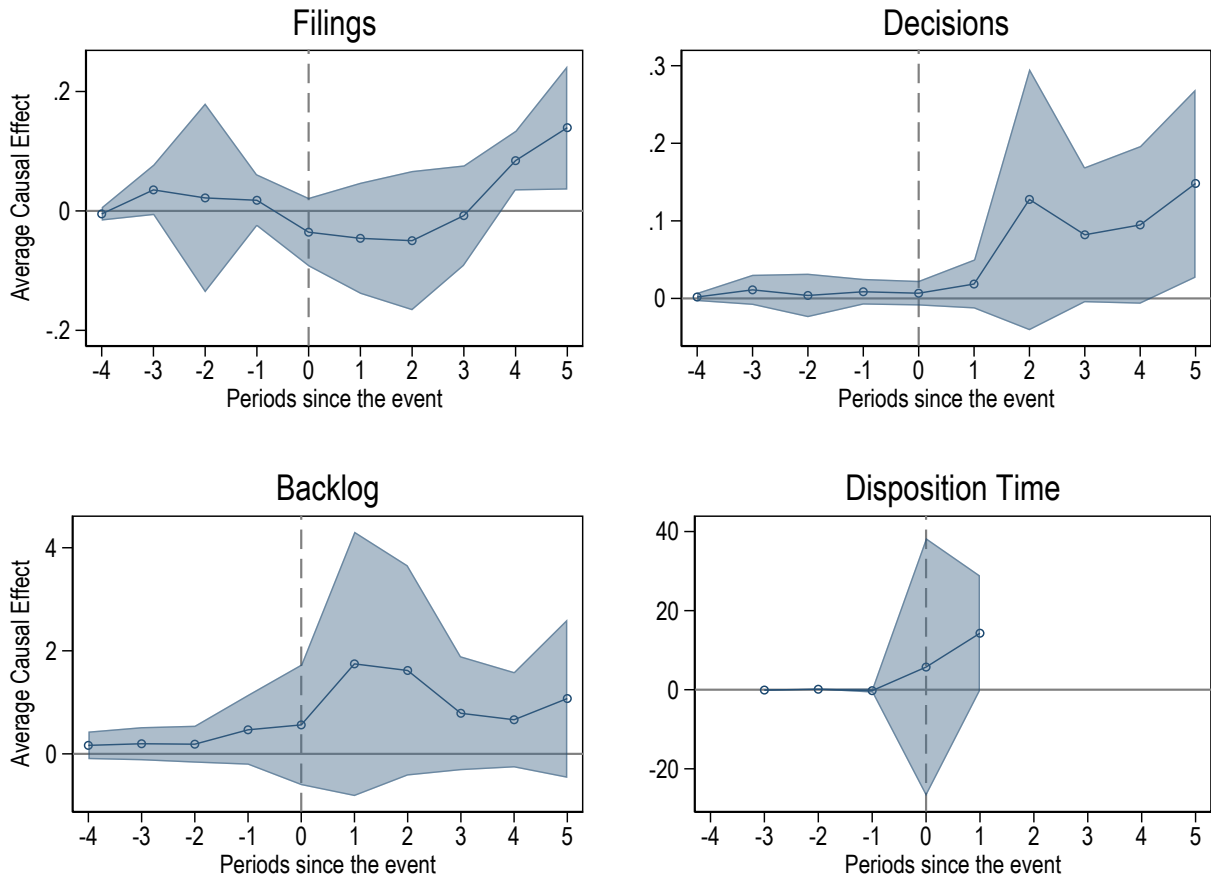


Figure A15: Robustness Check for Kanoon’s Impact on District Court Efficiency Measures for Cases linked to Prowess

*Notes:* This figure shows the results of the Placebo test for checking pre-trends as suggested by Chaisemartin and D’Haultfoeuille, 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.