# What is the Value of the Court System for Firms?*

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## Abstract

We exploit a U.S. Supreme Court ruling on diversity of citizenship in legal disputes to estimate the contribution of the court system to firm value. In an event study, we find that an increase in state court quality from bottom to top tercile is associated with an average increase in equity value of 0.45%, or about $8.7 million on the event day. This effect appears to be driven by courts' attitude towards businesses more than by their competency and is more pronounced for firms in industries with high litigation risk. We also test whether firms benefit from the ability to steer lawsuits into friendly courts, so called forum shopping. We provide evidence that a reduction in firms' ability to forum shop decreases firm value, whereas a reduction in plaintiffs' ability to forum shop increases firm value. We further document that the ruling had significant real effects. Firms which previously stayed out of regions with potentially problematic courts subsequently increased their operations in those regions. Throughout our analysis we exploit a previously unused source of geographic heterogeneity in treatment for U.S. Supreme Court rulings, namely varying interpretations of the same laws across different federal circuits, so called "circuit splits".

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**Keywords:** Corporate Governance, Court System, Forum Shopping, Circuit Splits

# 1 Introduction

The outcome of a legal dispute depends not solely on the applicable laws but equally on the courts and judges which enforce them. Lawsuits can have a significant impact on firm value. In the legal battle between Argentina and its hold out creditors, the ruling by judge Thomas Griesa impacted $1.5 billion worth of bonds and pushed the country into bankruptcy. Other examples include the fines levered against firms in the asbestos and tobacco industry. Despite its importance, the court system's role has received comparatively little attention in the finance literature. Few countries or states have truly bad laws, but many have flawed court systems which fail to enforce those laws. Hay and Shleifer (1998), for example, analyze why the countries of eastern Europe and those of the former Soviet Union experienced different economic trajectories despite adopting similar liberalization laws. They argue that the former Soviet Republics' underdeveloped legal system was the main culprit for the lack of translation of good laws into strong economic development. Court quality does not just vary between nations but also individual U.S. states. The Chamber of Commerce, a particularly vocal lobbying organization in the United States, found that 70% of surveyed corporate lawyers stated that the quality of a state's court system was likely to impact specific business decisions.[1] The Chamber of Commerce does not just rank courts but actively attempts to change their composition. Lenzner and Miller (2003) found that candidates supported by the Chamber had prevailed in 21 out of 24 judicial election races.[2]

In this paper we shed light on a particular aspect of the legal system: The impact of courts on firm value in the United States. A particular challenge in comparing legal systems across U.S. federal states is that any two will not just feature different court systems but will also enforce different laws. We propose a solution to disentangle the effects of courts and laws. The U.S. court system is comprised of two layers: Federal and state courts. Most cases are handled by state courts, but there are important exemptions. If a civil lawsuit features parties from different U.S. states, this "diversity of citizenship" grants federal courts jurisdiction over the case. Diversity of citizenship has been a long-standing feature of U.S. law, rooted in the constitution and practiced in various forms since the Judiciary Act of 1789.

Importantly, federal courts are bound to apply exactly the same law as the state court in whichever state the original case was based in. This so called "Erie doctrine" has been

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[1]See *2012 Lawsuit Climate Survey*, available at http://www.instituteforlegalreform.com.
[2]For a detailed analysis of the Chamber of Commerce's advertisements, see Champagne (2001).

a well established rule ever since the landmark case of *Erie v. Tompkins* in 1938.[3] The Erie Doctrine has the effect that the difference between trying a case in federal or state courts does not lie in different laws but solely in differences among courts. The dual court system therefore allows us to evaluate the impact of courts on firm value while controlling for the applicable laws.

Whether a case is tried in federal or state court is, of course, endogenous. Lawyers refer to a party's attempt to move cases into a favorable court as "forum shopping". Forum shopping is pervasive and whether a party is successful in setting the forum can greatly impact the outcome at trial (Clermont and Eisenberg, 1994). To solve this endogeneity issue we exploit a U.S. Supreme Court ruling to provide an exogenous variation in the ability of parties to move cases between forums. In the case of *Hertz Corp. v. Melinda Friend*, the U.S. Supreme Court ruled on the conditions under which a corporation is deemed a citizen of a state for the purpose of diversity jurisdiction.[4] On February 23, 2010, the court decided that a corporation should only be deemed a citizen of its incorporation state and the one in which its officers guide the firm's day to day activities. The judges ruled that this corporate "nerve center" was to be found at the firm's headquarter. After the ruling, firms were able to reliably claim diversity of citizenship in state courts which were not their headquarter or incorporation state. At the same time, they lost the ability to claim diversity of citizenship in their headquarter state, something they were able to do before the ruling, under certain circumstances.

We use this exogenous shock to the availability of forums combined with a novel measure of the geographic dispersion of firms' business activities in the spirit of Garcia and Norli (2012) to investigate the consequences of the court system for firm value. We perform an event study around the ruling in *Hertz* using a sample of U.S. nonfinancial firms and focus on firms which lost the ability to move cases into federal courts in their headquarter state. Those firms were therefore "pinned" into their state court through the ruling. Using both an academic ranking of courts by Choi, Gulati, and Posner (2009) and one produced by the Chamber of Commerce, we find that the quality of courts is directly connected to firm value. A firm exposed to a state court at the top tercile of the Chamber of Commerce ranking experiences a positive abnormal return of 0.45% compared to a firm exposed to court from the bottom tercile. This translates into a $8.7 million increase in equity value for the median firm in our sample. In addition, we use differences between thee two rankings to investigate whether this value effect is driven by court efficiency

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[3]304 U.S. 64 (1938).
[4]559 U.S. 77 (2010).

or rather court attitude towards business. We find that while a business-friendly court increases firm value, pure court efficiency does not.

We then investigate the effect of forum shopping, or the flexibility to steer cases into favorable courts, on firm value by means of a matching estimator. To investigate the role of forum shopping, we sharpen our identification strategy by exploiting geographic heterogeneity in treatment. Before *Hertz*, federal circuits across the U.S. employed different interpretations of corporate citizenship, creating a so called "circuit split". This divergent interpretation created geographic variation in the treatment effect from *Hertz*. We use this geographic variation as an additional dimension of treatment. Doing so we identify firms which experienced a reduction in the ability of plaintiffs to pick a favorable forum when suing them. We find that firms which firms treated in this way exhibit positive abnormal returns on the event date.

The *Hertz* ruling also changed defendants' ability to forum shop.[5] Because of the 9th Circuit's particular interpretation of corporate citizenship, firms with sizable operations on the West Coast (the 9th Circuit's jurisdiction) but not headquartered or incorporated in that area were the most affected.[6] Indeed, before the ruling, firms with non-trivial operations in the 9th Circuit could be considered citizens of not just one, but multiple states in the 9th circuit, even though their nerve center was located elsewhere. This allowed firms significant flexibility to move cases between state and federal courts when sued in a state of the 9th Circuit. By contrast, after the ruling those firms would only end up in federal court. Consistently, the reduction in such firms' ability to forum shop is associated with negative abnormal returns.

We then examine the widely held belief among legal practitioners that federal courts are, as a rule, more favorable to corporate defendants than state courts. The ruling in *Hertz* gave firms the ability to always move cases from state to federal court when sued outside their headquarter state. We analyze the impact of the ruling for firms which

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[5]For simplicity, the remainder of this paper uses the terms "firm" and "defendant" interchangeably. We refer to the opposing parties suing the firm as plaintiffs. Of course, a firm can be either plaintiff or defendant. The reason for this choice is that cases in which one corporation is suing another will be impacted roughly symmetrically by the rulings we analyze. In our event study of announcement returns these opposing effects are going to net out as long as corporations suing each other are not systematically located in states with different court ratings. In addition, many contracts between corporations include a clause which explicitly stipulates a certain court system for any disputes arising under the contract. A market wide estimate of cumulative abnormal returns will therefore only capture the effect of the ruling on lawsuits in which one side is a public corporation and the other is not. Those cases include common areas of dispute such as product liability or employment laws.

[6]Throughout the paper, for brevity, we use the expression "headquarter state" to mean both headquarter and incorporation states.

experienced the largest increase in their ability to move cases to the federal court system. If federal courts were on average superior to state courts these firms should experience a positive share price reaction to the ruling. At the same time, those firms were the ones which experienced the largest reduction in their ability to forum-shop, which we previously identified to have a negative impact. We find that those firms with the largest increase in their ability to move cases into federal court indeed experienced negative, rather than positive, abnormal returns on the announcement of the ruling in *Hertz*. We conclude that there is no evidence of an overall beneficial impact from federal courts on firm value or that any beneficial impact federal courts might have on average is outweighed by the loss of flexibility to choose courts on a case by case basis.

We complement these results with three independent analyses: First, we refine our findings about the consequences of court quality for firm value by exploiting cross-industry heterogeneity in operational litigation risk. We find that the effect of court quality on firm value is especially pronounced for firms in high litigation risk industries, such as those with a high job-related injury and illness rate among employees.

In a second additional test, we repeat the analysis regarding the impact of forum shopping on firm value using a second, unrelated experiment. A 2006 U.S. Supreme Court ruling in the case of *Wachovia v. Schmidt* decreased nationally-chartered banks' ability to forum shop in the same fashion as *Hertz* affected firms with operations in the 9th Circuit.[7] Banks which lost flexibility in this manner through *Wachovia* experienced negative abnormal returns around the event date, just as firms with exposure to the 9th Circuit did after *Hertz*, validating our earlier results.

Finally, we provide some suggestive evidence on its real effects by analyzing the relocation of firms' operations in the years following the ruling in *Hertz*. Again, the most affected states are arguably those in the 9th Circuit. Firms with sizable operations in the 9th Circuit but non-headquartered in that circuit experienced a negative announcement return upon the ruling in *Hertz*. This indicates that those firms were well suited to operate in that circuit, either because they were less prone to the state courts there or because they were especially skilled in steering lawsuits into favorable forums. By contrast, firms not operating much in the 9th Circuit pre-*Hertz* might have found it especially costly dealing with state courts within the circuit. The ruling in *Hertz* lifted this constraint for them. If firms did indeed self-select into operating in the 9th Circuit, we would expect firms that previously opted to stay small in it to increase their operations post-*Hertz*. Consistently, we find that these firms significantly expanded their operations in the 9th

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[7]The case is filed as 546 U.S. 303 (2006).

Circuit in the four years following the ruling in *Hertz*, compared to firms which were already present there pre-*Hertz*. The point estimate of treatment lies between 1.6% and 5% of firms' total operations, depending on specification.

Our paper is related to a number of literatures. A large number of papers is concerned with the impact of specific laws and rulings on firm value. Most prominently, the relatively small state of Delaware is the incorporation state of more than 50% of U.S. corporations (Daines, 2001). A large literature researches causes and consequences of this Delaware effect. It is argued that Delaware's sophisticated case law on corporate issues and its specialized business courts are key explanations in its popularity (Romano, 1985; Daines, 2001). Other factors that received significant attention are the effect of different regulations regarding merger and acquisition activity or liability of directors (Hyman, 1979; Dodd and Leftwich, 1980; Netter and Poulsen, 1989; Heron and Lewellen, 1998). Findings have, however, been inconclusive due to the endogenous nature of the decision whether to incorporate in Delaware. Some authors have gone as far as claiming that state law is irrelevant (Black, 1990). We provide an arguably exogenous variation in court quality that allows to analyze the importance of courts for firms.

Our paper also relates to the literature on law and finance, in particular to the research on the consequences of the quality of institutions for businesses. Using different legal origins of countries, institutions that help enforce contracts and property rights have been found to impact economic growth and financial development (Acemoglu and Johnson, 2005). Other papers analyze the extend to which a country's legal origin impacts the formalism of its legal system or governance (López de Silanes, La Porta, Shleifer, and Vishny, 1998; Djankov, R. La Porta, López de Silanes, and Shleifer, 2003; Spamann, 2010). We add to this literature by providing evidence that even in a highly developed country the quality of courts still varies significantly. Indeed, there is strong evidence of forum shopping. Plaintiffs do not just strategically choose between federal and state courts (Hubbard, 2013), but also between various judges (Taha, 2011), and venues inside the federal and state court systems (Sukhatme, 2014). Armour, Black, and Cheffins (2012) document forum shopping in cases involving firms in Delaware. They find that plaintiffs strategically move their cases out of Delaware courts when they see their chances of success diminishing due to earlier rulings, concluding that forum shopping leads to a deterioration of Delaware's edge in corporate litigation. We contribute to this literature by examining the consequences for firm value of heterogeneity in state court systems and of flexibility in the choice of courts, with particular attention to econometric identification.[8]

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[8]Spier (2007) provides an overview of the literature on law and economics including models of the

From a methodological perspective, the effect of court decisions has been the subject of various studies in economics and finance: For instance, such events have been used as exogenous shocks to study the role of takeover provisions (Cohen and Wang, 2013; Cheng, Nagar, and Rajan, 2005), alternative corporate governance mechanisms (Grinstein and Rossi, 2014), and conflicts between shareholders and creditors (Becker and Strömberg, 2012). Moreover, many studies have used variation in laws across states as an identification strategy (e.g., Bailey, 2006; Bertrand and Mullainathan, 2003; Jayaratne and Strahan, 1996). Our approach differs since it does not rely on state-level differences in laws but on the interpretation and application of laws in different circuits.

## 2 Methodology and data

### 2.1 Identification strategy

Our identification strategy consists of three components. First, we exploit a unique feature of the U.S. court system which allows cases to be tried under institutionally distinct court systems but considering the exact same laws. Second, since selection into either of those two court systems is endogenous, we make use of a decision by the U.S. Supreme Court in *Hertz Corp. v. Friend* that changed the rules under which cases are assigned to the different courts. Finally, we exploit an exogenous geographic variation in how the ruling affected firms, caused by a so called circuit split. Such splits arise when different regional circuits of the federal courts interpret laws in contradicting ways.

The questions of which laws are to be applied and which courts are in charge of the case are inherently intertwined: The outcome of a case brought in Austin under Texas laws will be determined by different laws, legal precedents and courts than that of a similar case brought in Seattle under Washington laws. There is, however, a peculiarity of the U.S. judicial framework that allows for the separation of court systems and laws: The U.S. constitution (Article III, Section 2) grants federal courts the right to try civil cases as long as the two parties are from different states: "The judicial Power [of federal courts] shall extend to all Cases [...] between Citizens of different States".[9] This means that civil cases in which the two parties are from different states can be heard by federal courts.

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decision to go to trial, settle or negotiate. Yet he does not mention forum shopping and the consequences of choice of courts, an area of law and economics that has yet to be thoroughly explored.

[9]Implemented as "28 U.S. Code 1441 - Removal of civil actions". The rule was later interpreted as requiring "complete diversity": No member of the defendants can be a citizen of the same state as any of the plaintiffs (546 U.S. 81). See http://www.archives.gov/exhibits/charters/constitution_transcript.html, retrieved on April 19, 2015.

The founding fathers were afraid that a state court trying an out-of-state citizen might lack objectivity. The federal courts were to act as a neutral forum to settle interstate disputes.

The reason why this dual court system allows us to disentangle the role of court quality from that of laws is that the federal courts are forced to apply exactly the same laws as the state court. The Erie Doctrine is a longstanding legal rule, first established in the case of *Erie Railroad Co. v. Tompkins* in 1938.[10] The Erie Doctrine has the effect that the difference between a case tried in state vs. federal court lies solely in the court system itself. There are different judges, juries and procedural rules between the two systems, but exactly the same laws.

We exploit this dual court structure to isolate the impact of court quality from that of laws. Since the choice of trying a case in federal or state court is endogenous, we use a U.S. Supreme Court decision as a quasi natural experiment. In the case of *Hertz Corp. v. Friend*, the Supreme Court had to decide under which circumstances a corporation was allowed to remove cases from state into federal court. Hertz, headquartered in New Jersey, was being sued by its former employee Melinda Friend in California state court over an alleged breach of employment laws. Hertz petitioned to remove the case into federal court, claiming diversity of citizenship. The petition was rejected on the grounds that between 16% and 20% of Hertz's employees, revenues, and transactions were located in California. Hertz then appealed this rejection, citing other cases in which firms with similarly sized operations in California had been granted diversity of citizenship. On February 23, 2010, the U.S. Supreme Court ruled in favor of Hertz. It argued that a corporation should only be considered a citizen in its state of incorporation and the state in which its day to day business activities were orchestrated, something the judges referred to as the corporation's nerve center. We describe this ruling and its effect on the accessibility of federal and state courts in more detail in Appendix A. We also confirm the applicability of the ruling as a quasi natural experiment by establishing that it was both unanticipated ex ante and widely distributed in the media upon decision.

We further sharpen our identification by exploiting a so called circuit split. The U.S. federal judiciary is geographically organized in 11 courts of appeal or *circuits*. Each circuit is composed of multiple federal states each. Circuit splits arise when different geographical sections of the U.S. federal court system persistently interpret the same law in different ways. The resolution of circuit splits is one of three reasons for the

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[10]Case 304 U.S. 64.

U.S. Supreme Court to hear a case.[11] If the question in case is important enough and the differing interpretations vary significantly, the U.S. Supreme Court can opt to grant "petitions for writs of certiorari" in which it resolves the split and establishes a common interpretation among the circuits. When the Supreme Court does so, the ruling creates a geographic variation in treatment. If the Supreme Court sides with one circuit, cases in that circuit (and the firms involved in those cases) do not experience a change in the interpretation of the law. They therefore form a control group. Cases in circuits whose interpretation of the law is overturned, on the other hand, experience a treatment effect.

In the case of *Hertz*, the 7th Circuit had been applying the nerve center test for the purpose of determining corporate citizenship even before the Supreme Court's ruling. Other circuits had employed different definitions, with the 9th Circuit applying the most divergent rules. The Supreme Court's decision therefore had a geographically heterogeneous impact on court cases: Firms with operations in the 9th circuit experienced the most significant change in the application of diversity jurisdiction. Firms in the 7th circuit experienced no change and form a control group.

One challenge is to determine the exposure of firms to lawsuits in the various circuits. We use machine collected data to proxy for firms' geographical footprints. A firm with significant operations in a givens tate is likely to also experience exposure to this state's courts, either through employees, business partners or customers. See Section 2.3 for details on how we construct our measure of geographic dispersion.

### 2.2  Circuit splits as quasi natural experiments

Our identification strategy relies on the geographical heterogeneity of treatment due to a circuit split. We now discuss the general usefulness of circuit splits as quasi natural experiments. It lies in the nature of those splits that treatment varies depending on geography: Consider, for example, a circuit split between the 2nd Circuit and the 4th Circuit.[12] If the U.S. Supreme Court decides to side with the 4th Circuit's opinion, this has no impact on lawsuits brought in any of the states in that circuit. But any lawsuit in the 2nd Circuit will now have to be judged under the different rules established by the 4th Circuit. This variation provides a geographic dimension in treatment through U.S. Supreme Court's rulings. Firms in the 2nd Circuit form the treatment group, whereas firms in the 4th Circuit form the control group.

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[11]See U.S. Supreme Court's Rule 10(a): https://www.law.cornell.edu/rules/supct/rule.

[12]The 2nd Circuit includes Connecticut, New York and Vermont, whereas the 4th Circuit includes Maryland, North Carolina, South Carolina, Virginia and West Virginia (see Figure 1).

To the best of our knowledge, this is the first paper in finance or economics to exploit this geographic dimension of a Supreme Court ruling. We believe that circuit splits provide valuable quasi natural experiments for multiple reasons. First, federal circuits comprise multiple states. This large size of treatment areas assures that there will be a large number of treated firms in diverse industries. The 9th Circuit, for example, is home to such different companies as the high-tech startups of Silicon Valley, the casinos of Las Vegas and Starbucks in Seattle. In addition, the fact that circuits span multiple states helps to control for any state specific shocks due to state laws or state Supreme Court rulings concerning other issues.

Another particular feature that makes circuits ideal settings for experiments is that they group states in a unique way: Apart from the fact that states in a circuit tend to share a border, there is no obvious commonality across states in the same circuit. The composition of circuits is the result of historic political decisions in the 17th century and is therefore unrelated from modern economic circumstances. This feature, in turn, should lessen concerns about estimates being driven by the local business cycle. For instance, Crone (2005) produces a subdivision of U.S. states in economic regions based on similarities of state business cycles alone (i.e., without accounting for proximity measures), that bear little resemblance to the 11 circuits.[13] The fact that circuits are formed in such a unique way makes it less likely that firms are sorted into treatment and control groups in a non random fashion, increasing the validity of the experiment (Meyer, 1995).

Finally, circuit splits are not necessarily binary: In many cases there exist more than two differing leanings among circuits. Hence, treatment is not simply "Yes" or "No" but comes in various shades, allowing for even more precise estimation of treatment effects. By adding the geographic dimension to experiments involving U.S. Supreme Court's rulings, we can substantially enhance the precision of our estimates.

There are, however, challenges in exploiting the regionally different impact of rulings. A geographically diverse firm with operations all over the country or even abroad will only be partially affected by any rulings. A key challenge is therefore to identify the degree to which firms are geographically diverse. Data on this are not available in high quality from any standard database.[14] We therefore propose a new measure of geographic diversification which is built from text analysis of publicly available 10-K filings. Our proposed measure of geographic dispersion is close to the one originally introduced by Garcia and Norli (2012), which for each firm counts the number of occurrences of each

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[13]See Figure 1 of Crone (2005).

[14]The Compustat Segments data file, for example, are very incomplete at the state-level.

U.S. state in certain sections of the firm's 10-K (see Section 2.3 and Appendix B).

The ruling in *Hertz* is just one example of a circuit split being resolved by the Supreme Court. We believe that the geographic dimension of circuit splits can be fruitfully applied for numerous instances in finance and economics. Table 1 gives an overview of 17 circuit splits resolved by the U.S. Supreme Court and their potential area of interest. The potential of those rulings for academic economists emerges from several studies relying on them, yet without the authors making use of the circuit split. For instance, Massoud, Saunders, and Scholnick (2011) use a ruling about credit card fees (517 U.S. 735), whereas Giambona, Lopez-de Silanes, and Matta (2014) use a ruling about bankruptcy proceedings (526 U.S. 434).

### 2.3   Data

We obtain accounting and daily stock return data for U.S. public firms from the CRSP-Compustat merged database over the period 2006 through 2014. Compustat provides only the current headquarter and incorporation states. We therefore add information on each firm's historic headquarter and incorporation states starting from 2007 data from CRSP's COMPHIST table. We include firm-years with non-missing sales, total assets, common shares outstanding, share price, and calendar date. In addition we require firms to report total assets in excess of \$10 million in 1990 dollars. We use daily return risk factors from Kenneth French's data library.[15] Industry level information regarding labor intensity stems from the NBER-CES Manufacturing Database and we obtain data about nonfatal occupational injury and illness rates are from the Injuries, Illnesses, and Fatalities (IIF) program of the Bureau of Labor Statistics (BLS). We winsorize all variables at the 1st and the 99th percentile. All dollar amounts are expressed in 1990 dollars.

In the analysis of the ruling in *Hertz*, we exclude financial institutions. We focus on firms with available stock price data on the day of the ruling in *Hertz*, February 23, 2010. We regress each firm's daily stock returns over the estimation window on the three Fama and French (1993) risk factors (excess market return, small minus big, high minus low) and a momentum factor. We use a one-year estimation window from July 1, 2008 to June 30, 2009. We winsorize the estimated factor loadings at the 5th and 95th percentile as in Becker, Bergstresser, and Subramanian (2013). We then compute event-day ARs, $CAR[0,0]$, and CARs over different windows around the event-day, $CAR[n1, n2]$,

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[15]These risk factors are available on Kenneth French's website: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

as residuals of the estimated factor model for each firm in our sample.[16]

To compute our measure of corporate geographic dispersion, we collect data from annual reports filed with the SEC's EDGAR database. Similar to Garcia and Norli (2012) and Bernile, Kumar, and Sulaeman (2015), we construct this measure by searching certain segments of 10-K annual report filings for the names of U.S. states and rank them according to their frequency of occurrence. If the number of state mentions is missing for a given firm-year, we interpolate it by taking the average between the counts in the year before and after the year with missing data. If either the lead or lag count is missing as well, we only use the available count. We remove all the observations for which state counts are still missing after interpolation. Given these counts, we compute our baseline measure of corporate geographic dispersion, *Out of HQ state operations (%)*, namely the fraction of non-headquarter state counts to total state counts. Similarly, we obtain the concentration of out-of-headquarter state operations by computing the Herfindahl index of non-headquarter state counts, *Out of HQ state operations (HHI)*. A detailed description of the construction of the measure, including an example excerpt can be found in Appendix B.

A key question of the paper is the impact of state court quality on firm value. To this end, we employ three measures of state court quality. First, we use the 2012 ranking of state courts published by the U.S. Chamber of Commerce. The ranking is constructed by surveying legal counsels of large U.S. corporations about various aspects of states' court systems. Despite the ranking's large public profile, business lawyers are not an unbiased audience to survey. This feature has drawn significant criticism in the past (e.g. Eisenberg, 2009). Hence we also employ an academic ranking that uses measures of efficiency such as the rulings per judge or citation count of rulings in other states (Choi, Gulati, and Posner (2009)). We make the two rankings comparable by removing oversees territories and the District of Columbia from the academic ranking as those are not featured in the Chamber of Commerce ranking.[17] For both the Chamber of Commerce ranking and the academic ranking, we employ the ordinal ranking of states, such that the value of 1 corresponds to the best ranked state, and 50 to the worst ranked state (see Appendix C). Finally, we orthogonalize the two rankings: The Chamber of Commerce ranking is likely

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[16]Event-day ARs should already incorporate the effect of the ruling in *Hertz*, as the U.S. Supreme Court released its decision at around 10 a.m. ET (see http://www.wsj.com/articles/SB10001424052748704188104575083371529042754).

[17]In addition, the academic ranking assesses the civil and criminal courts of Texas separately. We only consider the civil court's ranking, since it is more relevant for the kind of lawsuits usually faced by corporations.

to incorporate both an efficiency as well as a business attitude component, whereas the academic ranking is based solely on efficiency criteria. By separating the two rankings we obtain a measure of court business-friendliness that is orthogonal to court efficiency.

We then combine our measures of geographic dispersion with state court rankings: For each firm and ranking, we build a weighted average of non headquarter state courts by multiplying the relative percentage of occurrences for each state with the ranking of its courts. This yields the average quality of non headquarter state courts for each firm. But this number does not take into account how much non headquarter states contribute a corporation's business. We therefore multiply the average out of home state court quality by the fraction of non home state operations.[18]

Table 2 presents summary statistics for data used in our event study on the ruling in *Hertz*. Panel A reports the mean of several measures of geographic dispersion (also weighted by state court business-friendliness) by quartile. We observe non-trivial variation in these measures between the bottom and top quartiles. For instance, the average firm in the bottom quartile by *Out of HQ state operations (%)* has 18.5% of operations outside its headquarter state. By contrast, the average firm in the top quartile has 85.4% of operations outside its headquarter state. Similarly, the lowest quartile of firms mention 3 different states in their annual report compared to 23 states for the highest quartile of firms. Panel B reports the mean of Febraury 23, 2010 ARs by quartile of the same geographic dispersion measures. Event-day ARs ($CAR[0,0]$) are generally decreasing in these measures of geographic dispersion. Panel C provides unconditional summary statistics for all the main variables used in our analysis. Detailed definitions of the variables are given in Table D.1.

For our additional experiment on banks, the ruling in *Wachovia* (see section 5.2) on January 17, 2006, we focus on banks with available stock returns in CRSP, based on the CRSP-FRB link file made available by the Federal Reserve Bank of New York.[19] By means of this link file, we supplement the bank sample with the 2005 FDIC's Summary of Deposits, which provides high-quality data on locations and deposits at the bank branch-level. To compute ARs, we follow the same procedure described above for the ruling in *Hertz* but with two differences. First, the one-year estimation window goes from July 1, 2004 to June 30, 2005. Second, we use ARs based on the market model, as standard

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[18]Formally, let $I$ be the set of states mentioned in the annual report different from the firm's headquarter state, and $J$ be the set of all states. Let $rank_i$ denote the ranking and $count_i$ the number of mentions of $state_i$, then: $\frac{\Sigma_{i\in I} count_i rank_i}{\Sigma_{i\in I} count_i} \frac{\Sigma_{i\in I} count_i}{\Sigma_{j\in J} count_j} = \frac{\Sigma_{i\in I} count_i rank_i}{\Sigma_{j\in J} count_j}$.

[19]See http://www.newyorkfed.org/research/banking_research/datasets.html.

in the literature for banks (e.g., Delong and Deyoung, 2007; Minnick, Unal, and Yang, 2011). We present summary statistics for the bank sample in Section 5.2.

## 2.4 Econometric issues

In our empirical analysis, we assess stock price reactions to the U.S. Supreme Court's ruling concerning corporate diversity of citizenship following a regulatory event study methodology (Schwert, 1981).

We test our hypotheses by estimating cross-sectional regressions of event-day abnormal returns (AR) and cumulative abnormal returns (CARs) on the event-day and the following day on several measures of state court system quality and corporate geographic dispersion. We restrict the analysis to event-day ARs and two-day CARs to establish a sounder causal interpretation of our findings, as the occurrence of confounding events are likely to take place as we move away from the event-day. We also employ the Abadie and Imbens (2002) matching technique to estimate the average treatment effect of the treated (ATT) on CARs.

Our tests exploit a single event affecting the firms in the sample. As a consequence, we are faced with cross-correlation of stock returns. We account for cross-correlation in the systematic component of stock returns by adjusting returns for the three Fama and French (1993) risk factors and a momentum factor. As a further correction for cross-correlation in the idiosyncratic component of returns, unless otherwise noted, we use clustered standard errors at the industry-level in our cross-sectional regressions of event-day ARs and two-day CARs (Cohen and Wang, 2013).[20]

## 3  Hypothesis development

We begin our investigation with the question of whether the quality of the court system matters for firm value. Hence we test this simple initial hypothesis.

- *Hypothesis 1: A better court system increases firm value.*

"Better" here refers to the firm's point of view. The court system can impact firm value through two main channels: Efficiency and business attitude. The first channel is court efficiency. If courts correctly apply the law and arrive at decisions quickly,

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[20]In untabulated regressions, we also estimate standard errors robust to heteroskedasticity as in Larcker, Ormazabal, and Taylor (2011), and standard errors clustered at the industry-circuit level. Our results are robust to these alterative standard errors.

this reduces legal uncertainty. This reduction of uncertainty and increased efficiency saves transaction costs (e.g., lawyer fees), reduces uncertainty and frees up management resources. Management attention in particular has been shown to have a major impact on productivity and firm value (Giroud, 2013; Giroud and Mueller, 2015).

The second channel is court and jury attitude towards business. We compare two legal systems which apply the same law. Nonetheless any law can be interpreted on a case by case basis and the final verdict can vary depending on judges and juries. If judges have a pro- or anti-business stance, this can significantly alter the course of trial. This logic holds even more strongly for juries. Indeed, juries are drawn from the general population and might be more likely to have their personal feeling towards business influence their judgement since they are not legal experts. The two channels have different implications for the value of courts: A court which is biased in favor of businesses might create firm value but not necessarily social value. We therefore also test whether firms value is driven by court competency or business attitude.

If courts matter for firm value, it is a natural assumption that both sides in a legal dispute are going to try and steer lawsuits into favorable courts. This practice of forum shopping leads us to Hypothesis 2.

- *Hypothesis 2: Firm value increases in a firm's ability to choose favorable courts. It decreases in the ability of opposing parties to choose favorable courts.*

The U.S. court system consists of a state and a federal layer. Therefore courts vary both among states and between the state and federal level. Legal professionals refer to the choice among different state courts as "horizontal" forum shopping, compared to the "vertical" forum shopping between state and federal court levels. Figure 2 illustrates the context of forum shopping.

The initial choice of court is in the power of the plaintiff: She decides whether to bring her suit in federal or state court and in which state or circuit. The initial court chosen is hard to change later. If the defendant wishes to change courts, it is the defendant's obligation to show that the initial court was incorrect.

Firms and plaintiffs therefore have different abilities in setting the court: Plaintiffs can choose the state in which to sue, which is equivalent to choosing the law which will be applied. In addition, plaintiffs can choose whether to file suit in federal or state court. Plaintiffs therefore have flexibility both in the horizontal and the vertical dimension. Firms can then mainly influence whether the case will be tried in federal or state court. As a result, firms mainly chose courts on the vertical dimension. Both vertical and

horizontal forum shopping have been found to occur frequently in the law and law and economics literature (Hubbard, 2013; Sukhatme, 2014; Clermont and Eisenberg, 1997; Taha, 2011; Cox, Thomas, and Bai, 2009; Field, 2013).

One concern might be that plaintiffs profit more from flexibility as they establish the initial forum. But there are a number of reasons why firms enjoy significant flexibility even after the initial court has been chosen. There is significant variation even within a single Circuit, as each Circuit is segmented into different districts. So even after a state and the corresponding Circuit have been fixed, there is room to move the case into a more favorable forum. For example, Taha (2011) finds that plaintiffs selectively choose forums within the federal jurisdiction with judges whose political leanings might favor their cause.[21]

So even after the initial choice of forum by plaintiffs there is significant flexibility for firms to move the case to a more favorable court. In addition, firms might be better equipped to take advantage of forum shopping compared to plaintiffs. First, a corporation's lawyers might be more specialized, or at least more experienced, in arguing for a change of court than their counterparts. Second, the corporation's lawyers have access to and can influence the provision of inside data about the firm's geographical distribution of assets, revenues and employees as well as internal management processes. Since these data are not available to plaintiffs, the firm has an advantage in negotiating a change of forum. Finally, it is possible that deep-pocketed corporations can afford to hire larger, more qualified and more expensive teams of lawyers than their opponents as hypothesized in Clermont and Eisenberg (1997).

Our final hypothesis relates to the overall quality of federal and state courts.

- *Hypothesis 3: Federal courts are, as a rule, favourable for corporations compared to state courts.*

The idea that federal courts are more favorable than state courts for firms is widespread. The Wall Street Journal, for example, writes that "[...] corporations generally prefer to litigate in federal court; state courts are traditionally more plaintiff friendly".[22]

Indeed, Clermont and Eisenberg (1997) find that 71% of diversity cases which remain in state court end with a victory for plaintiffs, compared to 34% of cases which are removed to federal court. Yet in an analysis of jury trial cases, Eisenberg, Goerdt, Ostrom,

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[21]For instance, Taha (2011) finds that plaintiffs steer lawsuits regarding employment discrimination away from courts with a higher fraction of registered Republicans.

[22]See http://blogs.wsj.com/law/2006/01/17/supreme-court-issues-wachovia-decision-banking-industry-breathes-sigh-of-relief/, retrieved on April 19, 2015.

and Rottman (1995) find that win rates between federal and state courts are roughly similar when not limiting the sample to cases in which a party tried to remove the case. In addition, they find that federal courts actually award higher payments. These contradicting results could be the result of the endogenous nature of venue choice: Corporate defendants will only choose to move cases into federal court if they expect a sizable advantage from doing so. Even if federal courts are not uniformly favorable to corporations, the choice of federal courts in itself will imply a higher win rate for corporations upon successful removal. Our paper offers a potential solution to this endogeneity problem.

## 4  Results

### 4.1  Hypothesis 1: The quality of the court system matters

To test whether the quality of the court system impacts firm value, we begin with an event study on the day of the ruling in *Hertz v. Friend*. As described in Appendix A, the ruling determined that a firm's citizenship lies with its headquarter state, which made it impossible for firms to claim diversify of citizenship in their headquarter state. We focus on firms which were able to remove cases to the federal system in the past because they had very small operations in their headquarter state. Those firms were unable to do so after the ruling in *Hertz*. Those firms are therefore "pinned" into their headquarter state's court system. If the quality of state courts matters for firm value, then firms pinned into states with worse courts will lose value compared to firms which get pinned into better courts.

To test this hypothesis, we limit the sample to firms headquartered outside the 7th Circuit and those for which their headquarter state constitutes less than 15% of their overall operations. The reason for eliminating firms headquartered in the 7th Circuit is that courts there had applied the nerve center test even before *Hertz*. Hence, those firms are not suitable to our test.[23]

Therefore, all firms with their headquarter in a state outside the 7th Circuit had the chance to claim diversity of citizenship when sued in their headquarter state pre-*Hertz* if operations in that state were small enough. This is why we limit the sample to firms

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[23]All the other Circuits allowed firms to claim diversity of citizenship in their headquarter state pre-*Hertz*. Note that we use the headquarter state rather than the incorporation state: Firms were unable to remove any cases brought against them in their state of incorporation both pre- and post-*Hertz*. The 9th Circuit was most extreme in applying the "significant operations" test described in Section A. All other states employed varying mixtures of the two systems. Usually courts would first test whether a firm was "centralized" in its home state using the significant operations test. If they found the firm not to be centralized, they assigned citizenship to the state with the most significant operations.

for which operations in their headquarter state, as measured by the count of mentions of this state, constitute less than 15% of their nationwide operations. We chose this cutoff as it is between the threshold of 18% at which Hertz was found a California citizen and the 13% at which Best Buy was found not to be a citizen.[24]

We quantify the quality of the court system in each firm's headquarter state. We do so using both the Chamber of Commerce ranking and academic ranking described in Section 2.3. We employ the ordinal ranking of states, such that the value of 1 corresponds to the best ranked state, and 50 to the worst ranked state. The ruling denied firms the ability to escape state courts in their headquarter state. If state court quality matters, we expect a negative coefficient on all ranking variables, since a higher ranking-number corresponds to a worse system.

Table 3 estimates regressions of CARs around the date of the ruling in *Hertz* on February 23, 2010 on various measures of court quality in firms' headquarter states. Panel A of Table 3 reports our baseline results. Column 1 shows that ARs on February 23, 2010 were negative and significant at -0.65%. Column 2 presents results from regressing ARs on the ranking of each firm's headquarter state in the Chamber of Commerce ranking. We find that the coefficient on ranking is negative at -0.029% and statistically significant at the 1% level. Comparing a firm from the top to one from the bottom tercile in terms of Chamber of Commerce ranking this corresponds to about 0.45% increase in equity value. For the average (median) firm in our sample this corresponds to an increase in market capitalization of $8.7 ($1.2) million, using stock prices at the end of 2009. Column 3 repeats the exercise using the academic ranking. We find a positive and insignificant coefficient of 0.01%. This result suggests that the Chamber of Commerce ranking is better able to capture the relevant factors for equity value.

The value of courts for firms can stem either from competency or from business attitude. From a social planner's point of view, the competency hypothesis is preferable: If the legal system works smoothly, this benefits the economy by reducing wasteful activities and freeing resources for productive use. The attitude hypothesis, on the other hand, suggests that any benefit for firms from a "good" legal system ultimately comes at the expense of their counterparties in court. This does not automatically imply that firm value gained through business attitude is not socially beneficial. If, for example, the threat of ruinous lawsuits hampers innovation and investment, these externalities can make a more pro business attitude socially desirable.

To distinguish between the two channels, we exploit differences between the two rank-

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[24]Our results are robust to variations in this threshold, see Table 3, Panel B

ings. The academic ranking, which is based on citation counts and productivity per judge captures mainly the competency aspects of courts. On the other hand, the Chamber of Commerce ranking which relies on a survey of business lawyers will likely feature both competency and attitude considerations. In order to separate the business attitude from the competency factor we proceed to orthogonalize the two rankings. Column 4 reports results of regressing ARs on business attitude. We find a negative point estimate of -0.41%. Column 5 adds the orthogonalized academic ranking to the regression. The co-efficient on business attitude remains negative and significant. As before, the coefficient on the academic ranking is positive and insignificant.

In unreported results, we repeat these regressions with a sample of firms headquartered in the 7th Circuit only. Due to the small number of firms in the 7th District we cannot enforce the requirement that firms have less than 15% of their operations in their headquarter state which makes the sample not perfectly comparable to the analysis in Panel A. Since those firms were unaffected by *Hertz* they should not experience the same treatment effect. Indeed all coefficients are insignificant.

In Panel B of Table 3 we repeat the exercise with varying cutoffs for out of headquarter state operations. Columns 1 to 3 report results when we loosen the restriction from 15% out of headquarter operations to 20%. All coefficients retain both their economic and statistical significance. Columns 4 to 6 add Fama-French 30-industry fixed effects to control for any potential industry shocks on the days surrounding the event. In addition, Columns 7 to 9 extend our event window with one additional day following the ruling. Again both the economic and statistical significance of all coefficients remains unchanged.

The results presented in Table 3 suggest that firms which lose the ability to escape state court in worse systems are more negatively affected than those who get "pinned" in a good system. We interpret this as evidence that the quality of the legal system does indeed matter for firm value. We find that differences in competency or efficiency between different U.S. circuit courts appear not to drive differences in firm value. Instead it is state courts' attitude towards business that explains the different stock price reactions of firms to the ruling in *Hertz*.

This does, however, not imply that court competency does not matter for firm value. There are two potential alternative explanations: The first explanation could be that objective court quality inside the U.S. does not vary much. After all, state court systems have a very similar legal and administrative tradition, the same legal origins and recruit their judges from a pool of similarly qualified candidates. A second potential explanation why court efficiency does not affect firm value might be that it aids both plaintiffs and

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their counterparts symmetrically. A more efficient court system does not help the firm win more cases, unlike court attitude which is a zero sum game. We therefore next test our second hypothesis which analysis whether a party's ability to chose forums impacts firm value.

### 4.2  Hypothesis 2: The ability to forum shop impacts firm value

Section 3 discusses how forum shopping can create value for firms and plaintiffs. The choice of court is indeed a relevant decision. A powerful example is the fact that up to 39% of all patent lawsuits filed by non-practicing entities, so called "patent trolls", were filed in the court of the Eastern District of Texas.[25] Non-practicing entities choose that court since it is considered to rule more frequently in their favor and grant higher awards. This behavior is an example of forum shopping at the expense of firms (e.g., U.S. Government Accountability Office, 2013; Cohen, Gurun, and Kominers, 2014).

A key challenge in our investigation is that the ruling in *Hertz* affected the ability to forum shop of both firms and plaintiffs. If firms can forum-shop more easily, this will increase their equity value. The opposite holds for plaintiffs: If plaintiffs have more forums to choose from, this will reduce firms' equity value. We now present results from two setups that allow us to isolate each of the two channels separately. We begin by analyzing the impact of plaintiffs' ability to forum shop on firms' stock prices.

Forum shopping by plaintiffs has been documented both in both the vertical and horizontal dimension (Hubbard, 2013; Sukhatme, 2014). A larger set of forums to choose from offers plaintiffs a greater chance to pick a favorable set of venue, judge, jury pool or procedure. A smaller set of forums on the other hand reduces this ability and should benefit firms targeted by plaintiffs. To identify this effect, we focus on situations in which the ruling in *Hertz* made plaintiffs lose the ability to sue a firm in one specific federal circuit. Those firms form the treatment group. We then compare treated firms to a control group of firms, for which plaintiffs did not lose the ability to sue in that court. If the ability to forum shop is indeed valuable to plaintiffs and hence detrimental to firms, we would expect treated firms to experience positive abnormal returns on the event date.

Such a situation arises when a firm's only connection to a circuit is through its head-quarter state: Pre-*Hertz*, there was a possibility for plaintiffs to sue such a firm in both its headquarter state and the corresponding circuit court. It was the firm's obligation to make the case why the initial forum was wrong afterwards. Yet post-*Hertz*, access to

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[25]Non-practicing entities are firms which own patents not for use in production but solely for the purpose of suing producing firms for potential infringements.

the federal court was impossible as the firm's only connection to the circuit was lying in its headquarter and *Hertz* forced all cases brought in that state into state court. Such firms form the treatment group. The control group consists of matched firms, with the difference that control group firms have at least one more state inside the same circuit as the headquarter state. Plaintiffs suing those firms did not lose access to the circuit court post *Hertz* since they could always access the federal court through the second state.

Figure 3 is a simplified schematic of such a case. Two firms $A$ and $B$ are both headquartered in the same state, $State_i$ which is part of circuit $\alpha$. Both firms' operations in $State_i$ are such that they can try to ask for removal of cases to federal court. Both firms operate in a second state. Firm $A$ operates in $State_j$ which is also part of Circuit $\alpha$, whereas firm $B$ operates in $State_k$ which is part of Circuit $\beta$.

Pre-*Hertz*, the two firms have exposure to the court system in their headquarter state $State_i$ as well as the corresponding Circuit $\alpha$. In addition, firm $B$ is exposed to Circuit $\beta$ through its operations in *state k*. After the ruling in *Hertz*, firm $B$ is not exposed to Circuit $\alpha$ anymore since all its exposure was driven by the headquarter state.

A plaintiff suing firm B therefore has three forums available to her pre-*Hertz* and two forums post-*Hertz*.[26] This is a reduction by one forum, limiting the plaintiff in her ability to forum shop for a favorable court. For firm $A$, the corresponding number of forums are two and two - no reduction.

To implement this test, we assign treatment to firms whose headquarter state is the only state in the corresponding circuit such as firm $B$ in Figure 3. The control group is comprised of firms operating in at least a second state in the same circuit as the firm's headquarter state. firms in the control group correspond to firm $A$ in Figure 3. We then match treated firms to control firms using the Abadie and Imbens (2002) procedure.[27] This estimator minimizes the matching error (the Mahalanobis distance) on a vector of continuous covariates and allows for exact matching on selected categorical variables. Moreover, it applies a bias-correction to the estimated treatment effect (as the matching on continuous covariates cannot be exact), and provides heteroskedasticity-consistent standard errors. We impose exact matching on the headquarter state to control for the home state quality effect we found testing Hypothesis 1. In addition, we match on a set

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[26]The underlying assumption is that most lawsuits occur in states in which a firm has a footprint either through establishments or sales. Technically it is still possible, but significantly harder to sue firm B in federal circuit $\alpha$. It would be possible if the plaintiff claimed diversity of citizenship, i.e., the plaintiff would have to stem from a different state. To the extent that this influence our analysis, it should bias us against finding an effect.

[27]We use the Stata routine `nnmatch` developed by Abadie, Drukker, Herr, and Imbens (2004).

of continuous covariates including size, number of states in which the firm operates and fraction of out of state operations. In this way, we compare firms with the same change in their ability to remove cases from the state to the federal court system and the only difference between treatment and control groups is in plaintiffs' ability to forum shop.

Firms in the treatment group therefore experience a reduction in forums in which they can be sued compared to firms in the control group. This lower ability to forum shop for plaintiffs should result in positive event returns for treated firms. Panel A of Table 4 presents results from estimating ATTs using the above matching and variations of it. Column 1 presents the result of the baseline matching for the event-day ARs. As predicted, the coefficient is positive at 0.72%. It is also statistically significant at the 10% level. Column 2 repeats the analysis using two-day CARs [0,1]. The coefficient is slightly higher at 0.81% and also statistically significant at the 10% level. Columns 3 and 4 add exact matching on firms' states of incorporation.[28] Controlling for incorporation state, the point estimates for one- and two-day CARs are 1.018% and 1.108%. Both estimates are statistically significant at the 5% level. Columns 5 and 6 repeat the exercise excluding firms headquartered in the 9th Circuit in addition to the 7th Circuit. As discussed in Appendix A, the 9th Circuit was different from the other circuits in that it applied the test of citizenship more loosely. We find that excluding firms headquartered in the 9th Circuit leads to estimated treatment effects of 1.188% and 0.810% for the one- and two-day CARs, respectively. The estimate for event-day ARs is statistically significant at the 5% level, that for two-day CARs at 10%. Finally, Columns 7 and 8 report the results for the whole sample. When not excluding firms from the 7th Circuit the results become weaker both economically and statistically, but stay overall robust.

In Panel A, we analyze the reaction of equity value to a reduction in the plaintiffs' ability to forum shop. In Panel B, we examine stock price reaction when *firms* rather than *plaintiffs* lose flexibility to shop for forums. Our identification stems from the looser application of the citizenship test in the 9th Circuit. Firms with significant operations in the 9th Circuit were particularly affected by questions of diversity jurisdiction. They could be found a citizen of many states and the rules to determine citizenship varied widely between courts.[29] This provides us with a setup to test for the impact of forum shopping by firms on firm value. Firms with high exposure to states located in the 9th Circuit had the chance to move cases between state and federal court for a lot of states.

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[28]This is done to avoid accidentally comparing firms with incorporation in special states with those incorporated elsewhere. For example, firms incorporated in Delaware have been shown to differ significantly from non Delaware ones in previous work (Daines, 2001; Barzuza and Smith, 2015).

[29]For details, see Appendix A.

They enjoyed a lot of vertical forum shopping ability (see Hubbard (2013)). We therefore contrast the impact of the ruling in *Hertz* on those firms with that for comparable firms which differ only in that they have low exposure to the 9th Circuit.

In Columns 1 and 2 of Panel B we identify treated firms following Manconi, Massa, and Zhang (2015) by assigning treatment to firms with an above median Herfindahl index of non-headquarter state operations in the 9th Circuit as those firms are significantly exposed to the court system there. Firms with below median HHI for the 9th Circuit form the control group. This way we make sure that treated firms do not just have small operations in several states within the 9th Circuit, but are actually at risk of being found a citizen in at least one state. Using the Abadie and Imbens (2002) procedure, we match treatment and control firms based on the fraction and concentration of out-of-headquarter state operations as well as size. In addition, we impose exact matching at the 2-digit SIC industry-level. Treated firms should experience negative returns on the announcement day since the 9th Circuit's diversity jurisdiction granted them more flexibility for vertical forum shopping before. The loss of this flexibility post-*Hertz* should translate into negative returns. The estimated ATT for event-day ARs reported in column 1 is -0.32% and statistically significant at the 10% level. The two-day estimate is -0.5% and significant at the 5% level. This confirms our conjecture about the loss of flexibility. Columns 3 through 6 report the results from assigning treatment based on the Herfindahl index of all non-headquarter states, not just those in the 9th Circuit.[30] Columns 3 and 4 (5 and 6) match firms based on the 2-digit SIC (Fama-French 30-) industry-level. The coefficients for both the one- and two-day CARs are similar to the ones found before, but slightly smaller in magnitude and statistical significance. We interpret this as confirming the fact that the 9th Circuit was special in its application of the citizenship test.

### 4.3  Hypothesis 3: Are federal courts more friendly to corporations?

We proceed to the question of whether federal courts are more favorable forums for firms than state courts. Panel A of Table 5 reports results from regressions of CARs on various measures of corporate geographic footprint. Before *Hertz*, firms with a large geographic spread were more likely to be "pinned" into state court without the ability to claim diversity of citizenship. Post-*Hertz* those firms were always able to claim diversity. If federal courts are generally advantageous for shareholders, these firms should experience positive ARs on the day of the ruling.

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[30]In this analysis, we do not match firms based on their Herfindahl index of non-headquarter state operations.

Column 1 reports the result of a regression of event-day ARs on the fraction of non-headquarter state operations. The coefficient is -0.545% but statistically insignificant at any conventional level. The coefficient becomes even more negative but remains insignificant once we control for the concentration of non-headquarter operations in column 2. These results do not support the hypothesis that firms with a larger geographic footprint should experience positive ARs. Columns 3 to 5 confirm this finding using various weights of out of headquarter state operations. If *Hertz* reduced the danger of being pinned into a state court, one would expect the positive effect to be larger for firms with operations in worse courts. Weighting operations by the Chamber of Commerce ranking (column 3), the academic ranking (column 4) and the business attitude measure (column 5) all result in negative and statistically insignificant coefficients of the geographic footprint on CARs. This result is robust to the exclusion of states located in the 7th Circuit (columns 6 and 7), with the difference that the measure weighted by the Chamber of Commerce Ranking is negative and significant. Since Hypothesis 3 actually predicts a positive coefficient, this is evidence against a general superiority of federal courts. In columns 8 and 9, we only consider operations in the 9th and 7th Circuit, respectively. Firms with large operations in the 9th Circuit should be particularly positively affected since they were at risk of being found a citizen of multiple states (see Appendix A). On the other hand, operations in the 7th Circuit should not have an impact since firms could not be found a citizen in those states pre-*Hertz*. Both coefficients are negative and insignificant.

Columns 1 to 5 in Panel B repeat the analyses from Panel A on two-day CARs. All coefficients remain negative and are generally statistically significant. Columns 6 to 9 add Fama-French 30-industry fixed effects. The estimated coefficients are negative and, with the exception of the business attitude measure, significant.

From these results we conclude that there is no evidence that improved access to federal courts post-*Hertz* benefits shareholders. One potential explanation is that the loss in flexibility to forum shop outweighs any existing benefit. This seems particularly likely given that operations in the 9th Circuit are associated with negative returns. This is the opposite of what legal common wisdom suggests but is in line with the findings in Hypothesis 2 that firms in these states were especially affected by the loss of flexibility to forum shop.

## 5 Additional tests

### 5.1 Litigation risk and the impact of courts

We refine our tests regarding the impact of court quality on firm value (Hypothesis 1) by exploiting cross-industry heterogeneity in exposure to litigation risk. We expect the effect of court quality on firm value found in Section 4.1 to be stronger for firms with higher exposure to litigation risk. There is no well established method to measure a firm's legal risk. Past work has focused on securities lawsuits, either in the context of IPO underpricing (Hughes and Thakor, 1992; Lowry and Shu, 2002; Clarkson and Simunic, 1994) or auditor liability (Clarkson and Simunic, 1994; Seetharaman, Gul, and Lynn, 2002; Kim and Skinner, 2012).

We are, however, interested in litigation which is connected to a company's operations. Areas of interest include employment, accident and injury lawsuits as well as product liability cases. To capture operational litigation risk, we use three different industry-level measures. First, we rely on the industry occupational nonfatal injuries and illnesses rate. We argue that such instances of job-related injuries and illnesses are likely to lead to lawsuits by affected employees. Second, in the same spirit, we look at labor intensity in manufacturing industries, as measured by the total payroll to total value added ratio. This measure captures the exposure to employment related lawsuits. Finally, we capture the exposure to product liability suits using industry customer orientation, i.e., we distinguish between industries catering to retail customers (business-to-customer) and those catering to other businesses (business-to-business). We conjecture that firms in business-to-customer industries are more likely to face product liability suits.

All firms headquartered outside the 7th Circuit could claim diversity of citizenship when sued in their headquarter state pre-*Hertz* if operations in that state were small enough. Hence, as in the baseline tests of Hypothesis 1 above, we limit the sample to firms for which operations in their headquarter state, as measured by the count of mentions of this state, constitute less than 15% of their nationwide operations.

Table 6 presents the results for industry tests, in which we interact the Chamber of Commerce ranking and the court business attitude of a firm's headquarter state with our proxies for litigation risk. In columns 1 and 2, we find that the coefficient on the Chamber of Commerce ranking is significantly more negative for firms operating in industries with above-median occupational risk and labor intensity, respectively.[31] Interestingly, the

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[31]We have a reduced number of observations in labor intensity specifications, as we look only at manufacturing industries from the NBER-CES Manufacturing Database. When using the industry oc-

effect of the Chamber of Commerce ranking on ARs seems to be mainly driven by firms from industries with high litigation risk. By contrast, in column 3, we find no significant difference between business-to-customer and business-to-business industries. However, this industry classification may only marginally reflect exposure to lawsuits. In columns 4 through 6, we find similar results for our measure of court business-friendliness for the three proxies of litigation risk.[32] The results presented above provide support to the channel we propose in Hypothesis 1. Firms in high litigation risk industries are particularly sensitive to the quality and business attitude of the court system.

### 5.2 A second quasi-natural experiment (Wachovia v. Schmidt)

We proceed to test our Hypothesis 2 (Forum Shopping) using a second quasi-natural experiment, similar to the ruling in *Hertz*. In the case of *Wachovia v. Schmidt*, the U.S. Supreme Court had to decide on the citizenship of nationally-chartered banks. In the U.S., banks have the choice between being nationally- or state-chartered. Nationally-chartered banks are exempt from state-level interest rate ceilings. Until today, nationally-chartered banks are being supervised by the Office of the Comptroller of the Currency rather than the state regulatory authorities. Most notably, there is no one-to-one relationship between a bank's charter and its geographic footprint. For example, as of 2005, Regions Financial Corporation was state-chartered but operated in 15 states, whereas Texas Capital Bancshares Inc. was nationally-chartered but operated just in Texas.

In *Wachovia*, the question was whether nationally-chartered Wachovia Bank was considered a citizen of every U.S. state in which it operated a branch. For the purpose of claiming diversity of citizenship, that reading of the law meant that Wachovia would not be able to diversify any cases in states in which it operated at least a single branch. On January 17, 2006, the U.S. Supreme Court ruled that a nationally-chartered bank would be treated like any other corporation, with citizenship either in the state that comprised its principal place of business or in which it was incorporated.[33] For additional details on the case as well as analysis of why it constitutes a valid experiment, see Appendix A.

This ruling allows us to independently recreate our test of Hypothesis 2 (i.e., firms'

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cupational nonfatal injuries and illnesses rate, we have less observations than in Table 3, because some SIC groups (SIC codes ending in zero) cannot be easily assigned to NAICS industries from BLS data, so we prefer to remove such observations to avoid confounding effects.

[32]In untabulated regressions, we obtain a positive and significant (though economically small) interaction between the academic court ranking and our measures of litigation risk. In other words, low court efficiency benefits firms exposed to high litigation risk.

[33]Note that the U.S. Supreme Court did not clarify how to determine the principal place of business, something it did later in *Hertz*.

ability to forum shop increases firm value). The ruling reduced firms' ability to chose between different forums on a case by case basis. This reduction mirrors that experienced by firms with strong exposure to the 9th Circuit in the *Hertz* case. Firms with exposure to the 9th Circuit and nationally-chartered banks lost part of their ability to forum-shop on the day of the rulings in *Hertz* and *Wachovia*, respectively. Therefore, we expect nationally-chartered banks with exposure to many states pre-*Wachovia* to experience negative ARs, analogous to the firms with large exposure to the 9th Circuit.

Before the ruling in *Wachovia*, the criterion for determining citizenship for nationally-chartered banks was the existence of a single bank branch.[34] We therefore consider as treated those nationally-chartered banks that operated in more than one state as of the ruling in *Wachovia*, based on the 2005 bank offices data by the FDIC. Such banks were affected by the ruling in *Wachovia* since for them there was a reduction in the flexibility to switch between state and federal courts. State-chartered banks and one-state nationally-chartered banks form the control group, given that they were considered a citizen in just their principal place of business and incorporation states both pre- and post-*Wachovia*.

We present our findings in Table 7. Panel A provides summary statistics. Our sample consists of 434 banks registered with the FDIC. The 145 nationally-chartered banks operate branches in on average 3.6 states and an average fraction of 23.4% of branches is located outside of the bank's headquarter state. On average, the 289 state-chartered banks have offices in 1.6 states, with 14.9% of them outside of the bank's headquarter state.

In Panel B of Table 7, we present regressions of CARs for treated and control banks. Columns 1 through 5 focus on event-day ARs. In column 1, we regress event-day ARs on the treatment indicator, finding an insignificant coefficient. In columns 2 through 4, we regress event-day ARs on banks' number of non-headquarter-state branches over the whole sample, the treated sample, and the control sample, respectively. We obtain a negative and statistically significant effect over the whole sample and the treatment group, while the coefficient is insignificant over the control group as we would expect, as such banks were not affected by the ruling. Given the coefficient of 0.039 in column 3, a treated bank in the top quartile in terms of states of operations experienced a drop in equity value of 0.16% compared to a bank in the bottom quartile. Though small in relative terms, this effect is sizable in monetary terms as we are dealing with large banks.

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[34]This is related but different from the question of significant operations used for normal companies pre-*Hertz*. A bank can have significant exposure to a state through real estate or commercial loans without operating a retail branch network there.

Indeed, for the average treated bank in our sample this corresponds to a decrease in market capitalization of $15.31 million, using stock prices at the end of 2005. However, when we interact the treatment indicator and the number of states of operations over the whole sample in column 5, we fail to find a statistically significant coefficient.

Columns 6 through 10 focus on two-day CARs. The results are in line with those for event-day ARs, except for the interaction of the treatment indicator and the number of states of operations, which is negative and significant in this case, as we would expect.

The results from the ruling in *Wachovia* confirm two of our findings from the ruling in *Hertz*. First, we find that banks that lose the ability to forum shop experience negative abnormal returns. This is analogues to corporations in the 9th Circuit which lost a lot of ability to forum-shop post-*Hertz*. Second, we fail to find evidence that federal courts are generally more favorable to businesses compared to state courts. It might initially seem puzzling that a ruling in favor of a corporation in this case leads to negative returns for other firms. The explanation to keep in mind is that firms profit from the flexibility to steer lawsuits into generally favorable courts on a case by case basis. In this particular case, it was favorable for Wachovia to claim diversity of citizenship in the particular case at hand, but on average for all banks the loss of flexibility induces negative returns.

### 5.3 Real effects

If the quality of court systems matters for firm value, it is likely to play a role in firms' choice of where to operate. In the Chamber of Commerce's 2012 Lawsuit Climate Survey, 70% of surveyed corporate lawyers claimed a state's court system had an impact on the firm's location decisions. In this section, we test whether firms relocated their operations as a response to the ruling in *Hertz*. The most affected states by the ruling should lie in the 9th Circuit in the West Coast. The reason is that 9th Circuit's courts could consider a firm a citizen of multiple states (see Appendix C). The negative CARs exhibited upon the ruling in *Hertz* by firms with significant operations in the 9th Circuit (see Section 4.2) could be a sign that they were well suited to operate in that region. One potential explanation is that those firms had an edge in determining corporate citizenship, for example because they employed particularly skilled lawyers. At the same time, firms that chose not operate in 9th Circuit in the pre-*Hertz* period could have been facing especially high costs to deal with diversity of citizenship issues.

After the ruling in *Hertz*, the firms that originally kept out of 9th Circuit have been more inclined to increase operations there. In other words, these firms could have been

interested in operating in the 9th Circuit previously, but held back out of fear to be stuck in state court. Therefore, in our baseline analysis, the treatment group consists of all firms that had no operations in 9th Circuit's states before 2010, based on state mentions' counts in annual reports (*Treated 1*). We also follow two alternative treatment definitions: *Treated 2* (*Treated 3*) assigns treatment to all firms that exhibit less than 15% (less than 15% but strictly positive) state counts in the 9th Circuit in their pre-2010 annual reports. In each case we restrict the sample to firms not headquartered in the 9th Circuit, with available data both in the pre- and in the post-*Hertz* period.

Figure 4 plots the mean fraction of 9th Circuit's operations for firms in the treatment and control group. Under each treatment definition, treated firms significantly increase their operations in 9th Circuit's states following the ruling in *Hertz*. Firms in our baseline treatment group increase their exposure from 0% in 2009 to an average of 4% in 2012. By contrast, firms with strictly positive exposure before 2009 slightly reduce their operations in the 9th Circuit.

We also test whether these findings are statistical significant and survive after the inclusion of control variables. Table 8 estimates panel regressions of our text-based measure of out-of-headquarter state operations in the 9th Circuit on the treatment indicators defined above, control variables, and firm- and year-fixed effects. In columns 1 through 3, we cluster standard errors at the firm-level, whereas in columns 4 through 6 we cluster standard errors at the firm-year level. In each specification, the treatment indicator is positive and statistically significant at the 1% level, in line with the graphical analysis above. We conclude that there is significant evidence that firms actively moved their operations into the 9th District after the ruling in *Hertz* gave them a greater chance to diversify cases there. This is in line with the fact cited earlier that 70% of firms surveyed by the Chamber of Commerce in 2012 claimed that state litigation environment was an important factor in their choice of where to operate.

## 6    Conclusion

The legal environment is an important factor for firms' operations. In this paper, we argue that this impact stems not just from laws themselves, but also from the courts and judges enforcing them. Our first set of results confirms that better courts are associated with higher firm value. When we separate the channel of court efficiency from that of business attitude we find that it is the latter that has the biggest impact on firm value: A hostile yet efficient court will simply deliver its biased sentence more quickly.

In our second set of results, we demonstrate that corporations' flexibility in choosing a favorable court on a case by case basis (forum shopping) has a major impact on firm value. We find evidence that the ruling in *Hertz*, by simplifying the rules for establishing corporate citizenship, significantly reduced the scope of forum shopping.

In our final set of results, we test the common perception that federal courts are, as a rule, more favorable to corporations than state courts. We find no evidence of such an effect. If a preference for federal courts exists it is trumped by the ability to choose forums on a case-by-case basis: The variation between individual courts is larger than any potential systematic difference between court systems.

Many questions regarding firms and legal systems remain. For once, our results suggest a rather large impact of court quality on firm value. Since court quality impacts firm value only indirectly through reducing existing legal uncertainty and expenses, this suggests that the original legal component of firm value is significant. Quantifying the actual contribution of legal risk, and in particular legal operational risk, to firm value is an open question.

Another question for further research arises from our finding that it is business attitude more than court competency that drives firm value. This result suggests that more business friendly courts redistribute money from plaintiffs to firms. Whether this redistribution is socially beneficial, harmful or neutral depends largely on whether courts are on average biased for or against businesses. If courts are, on average, anti-business, then redistributing from plaintiffs to firms can increase social welfare through higher incentives for innovation and investment. Whether this is the case is beyond the scope of this paper.

Similarly, our finding that court competency does not significantly impact firm value is potentially a result of our study's focus on the U.S. where the overall level of court quality is high. The impact of court competency on firm value in less developed legal system is another question for future research.

Finally, our paper makes use of a circuit split to provide a geographic variation in the effect of a U.S. Supreme Court's ruling. We believe that circuit splits form an interesting new class of experiments that can be fruitfully applied to analyze a wide array of questions.

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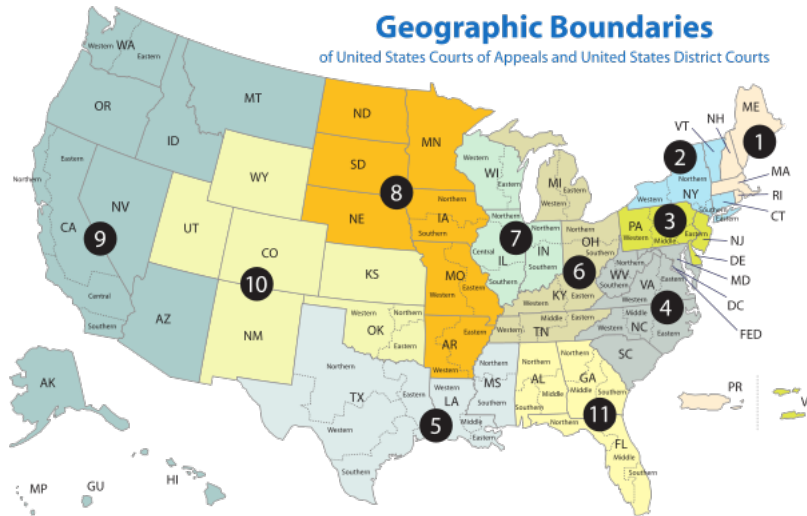
**Figure 1:** Map of U.S. federal circuits. Source: http://www.uscourts.gov/uscourts/images/CircuitMap.pdf
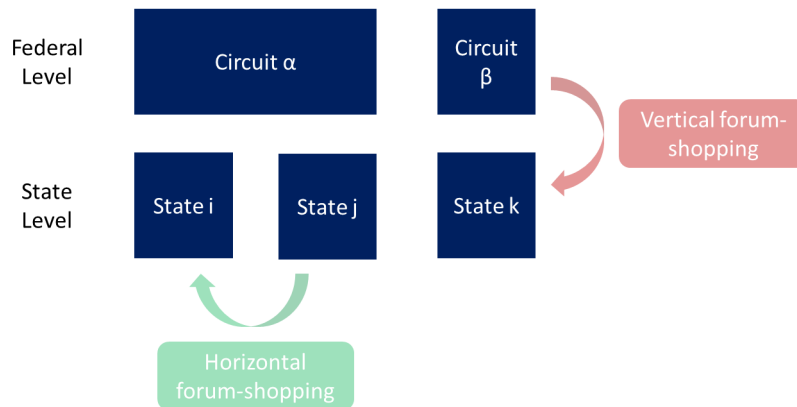


**Figure 2:** Two-layer structure of the U.S. court system. The U.S. court system features a federal and a state level. Switching between state courts is referred to as horizontal forum shopping, as opposed to vertical forum shopping among federal and state courts.
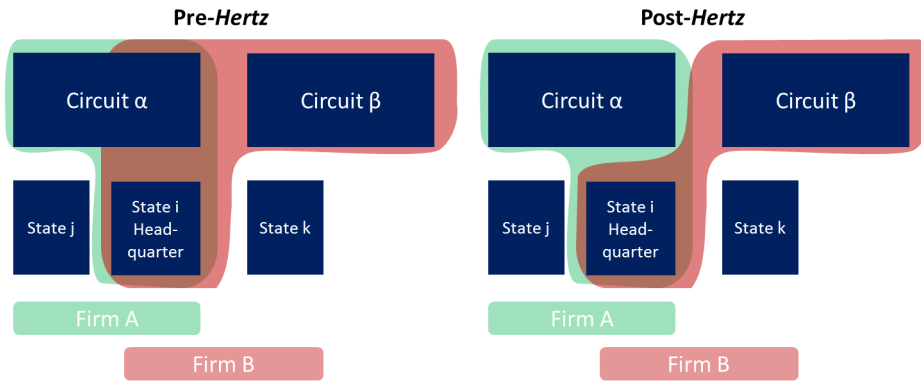
**Figure 3:** Illustrative example of reduction of forums in which a firm can be sued post-*Hertz*. After the ruling in *Hertz*, plaintiffs trying to sue firm *B* have a much harder time accessing the federal circuit $\alpha$ as the only connection to this circuit is headquarter state $i$, which is considered firm *B*'s place of citizenship. As firm *A* has exposure to circuit $\alpha$ also through its operations in $State_j$ and hence is not treated.
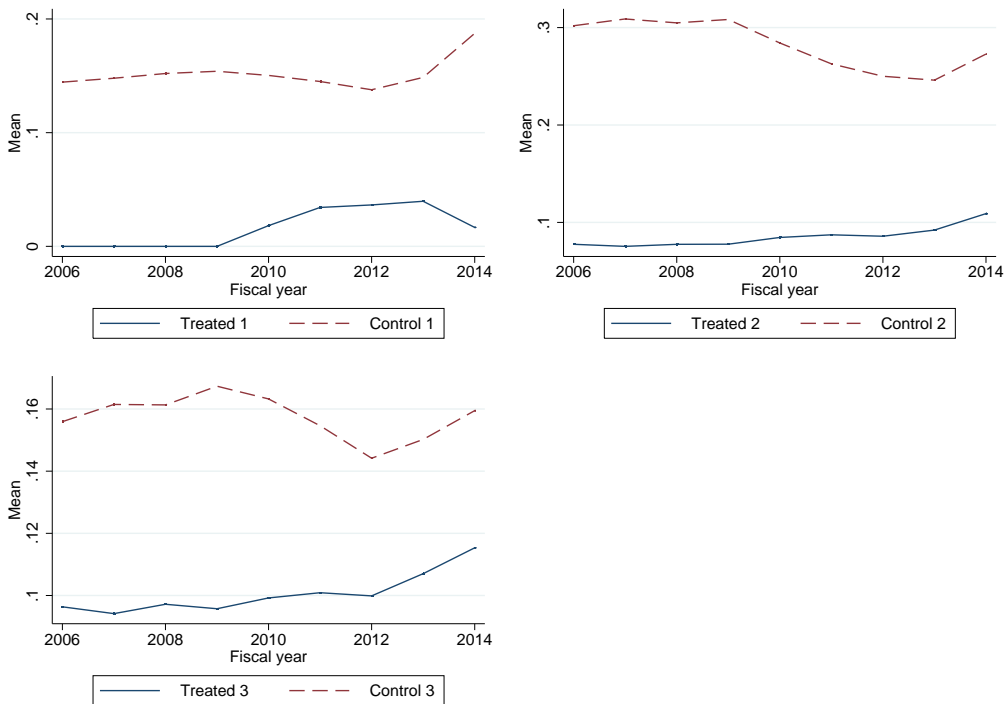


**Figure 4:** Out-of-headquarter state operations in 9th Circuit (%). *Treated 1* assigns treatment to firms that have no operations in 9th Circuit's states before 2010, based on *Out of HQ state operations in 9th Circuit (%)*. *Treated 2* assigns treatment to firms for which *Out of HQ state operations in 9th Circuit (%)* is below 15% before 2010. *Treated 3* assigns treatment to firms for which *Out of HQ state operations in 9th Circuit (%)* is below 15% but strictly positive before 2010.

36

**Table 1:** Some U.S. Supreme Court's rulings on circuit splits
This table reports several circuit splits resolved by the U.S. Supreme Court and their potential area of interest.

| Ruling | Year | Area |
|---|---|---|
| 388 U.S. 395 | 1967 | Arbitration |
| 421 U.S. 723 | 1975 | Securities fraud |
| 441 U.S. 677 | 1979 | Title IX rights of action |
| 480 U.S. 421 | 1987 | Asylum |
| 485 U.S. 224 | 1988 | Fraud on the M&A market |
| 499 U.S. 554 | 1991 | Tax effect asset swap |
| 501 U.S. 157 | 1991 | Personal bankruptcy Chapter 11 |
| 503 U.S. 79 | 1992 | M&A accounting |
| 505 U.S. 88 | 1992 | Health and safety regulation |
| 506 U.S. 447 | 1993 | Monopoly antitrust |
| 509 U.S. 155 | 1993 | Asylum |
| 511 U.S. 93 | 1994 | Out of state discrimination |
| 517 U.S. 735 | 1996 | Banking |
| 526 U.S. 434 | 1999 | Bankruptcy |
| 543 U.S. 50 | 2004 | Truth in lending maximum penalty |
| 552 U.S. 148 | 2008 | Securities fraud |
| 568 U.S. ___ | 2013 | Securities fraud |

**Table 2:** Summary statistics
This table reports summary statistics of the variables employed in the analysis of the U.S. Supreme Court's ruling in *Hertz Corp. v. Melinda Friend* of February 23, 2010. The sample includes U.S. public firms with available stock price data on the event-day, excluding financial institutions and utilities. Accounting and daily stock return data are from the CRSP-Compustat merged database. Data on firms' headquarter and incorporation states are from CRSP's table COMPHIST. Panel A presents the mean of several corporate geographic dispersion measures by quartile. Panel A presents the mean of event-day ARs by quartile of the same corporate geographic dispersion measures. Panel C presents the summary statistics of the main variables used in our analysis as of the event-day. Refer to Table D.1 for variable definitions.

Panel A: Geographic dispersion measures

|  | No. states | | Out of HQ state op. (%) | | Bus. att. (out of HQ state) | |
|---|---|---|---|---|---|---|
|  | Mean | Obs. | Mean | Obs. | Mean | Obs. |
| Low | 3.080 | 615 | 0.185 | 576 | -0.262 | 577 |
| 2 | 5.911 | 628 | 0.471 | 580 | -0.022 | 575 |
| 3 | 9.673 | 539 | 0.674 | 572 | 0.106 | 576 |
| High | 23.128 | 522 | 0.854 | 576 | 0.424 | 576 |

Panel B: Abnormal returns (event day)

|  | No. states | | Out of HQ state op. (%) | | Bus. att. (out of HQ state) | |
|---|---|---|---|---|---|---|
|  | Mean | Obs. | Mean | Obs. | Mean | Obs. |
| Low | -0.124 | 615 | -0.308 | 576 | -0.112 | 577 |
| 2 | -0.266 | 628 | -0.119 | 580 | -0.335 | 575 |
| 3 | -0.515 | 539 | -0.388 | 572 | -0.416 | 576 |
| High | -0.627 | 522 | -0.660 | 576 | -0.610 | 576 |

*(Continued)*

**Table 2:**  *– Continued*

Panel C: Summary statistics for main variables

| | Mean | Std.Dev. | Q1 | Med. | Q3 | Obs. |
|---|---|---|---|---|---|---|
| CAR$[-10, -5]$ | 1.038 | 8.027 | -3.426 | 0.461 | 5.219 | 2304 |
| CAR$[-2, -1]$ | 0.303 | 6.243 | -1.485 | 0.024 | 1.577 | 2304 |
| CAR$[0, 0]$ | -0.368 | 3.091 | -1.689 | -0.216 | 0.932 | 2304 |
| CAR$[0, 1]$ | -0.387 | 4.463 | -2.011 | -0.232 | 1.054 | 2304 |
| CAR$[-1, 1]$ | -0.136 | 6.900 | -1.938 | -0.229 | 1.286 | 2304 |
| CAR$[-2, 2]$ | -0.084 | 8.044 | -2.504 | -0.203 | 1.774 | 2304 |
| CAR$[-3, 0]$ | -0.268 | 8.895 | -3.379 | -0.283 | 2.452 | 2304 |
| Headquarter 7th Circuit | 0.070 | 0.256 | 0.000 | 0.000 | 0.000 | 2304 |
| Headquarter 9th Circuit | 0.248 | 0.432 | 0.000 | 0.000 | 0.000 | 2304 |
| Chamber of Commerce ranking (HQ state) | 29.229 | 13.605 | 20.000 | 30.500 | 42.000 | 2304 |
| Academic ranking (HQ state) | 20.142 | 15.887 | 6.000 | 14.000 | 35.000 | 2304 |
| Business attitude (HQ state) | 0.258 | 0.939 | -0.381 | 0.346 | 1.143 | 2304 |
| No. states | 9.936 | 9.111 | 4.000 | 7.000 | 12.000 | 2304 |
| Out of HQ state operations (%) | 0.546 | 0.260 | 0.337 | 0.579 | 0.761 | 2304 |
| Out of HQ state operations (HHI) | 0.194 | 0.295 | 0.025 | 0.070 | 0.183 | 2269 |
| Chamber of Commerce ranking (out of HQ state) | 14.804 | 8.411 | 7.932 | 14.714 | 21.314 | 2304 |
| Academic ranking (out of HQ state) | 12.735 | 7.460 | 6.924 | 12.649 | 18.456 | 2304 |
| Business attitude (out of HQ state) | 0.061 | 0.279 | -0.087 | 0.022 | 0.207 | 2304 |
| Size | 5.674 | 1.875 | 4.220 | 5.545 | 6.942 | 2304 |

**Table 3:** Tests of Hypothesis 1

This table analyzes the relation between firm value and court system quality by estimating cross-sectional regressions of CARs on several measures of court system quality in firms' headquarter state. CARs are from an event study of the U.S. Supreme Court's ruling in *Hertz Corp. v. Melinda Friend* of February 23, 2010. Panel A presents the baseline results using event-day ARs, $CAR[0,0]$, as dependent variable. The sample is restricted to firms headquartered outside the 7th Circuit and with a fraction of out-of-headquarter state operations above 85%, according to our measure *Out of HQ state operations (%)*. Panel B presents additional results. Columns 1 through 3 restrict the sample to firms headquartered outside the 7th Circuit and with a fraction of out-of-headquarter state operations above 80%, according to our measure *Out of HQ state operations (%)*. Columns 4 through 6 include Fama-French 30-industry fixed effects. Columns 7 through 9 use two-day CARs, $CAR[0,1]$, as dependent variable. $t$-statistics calculated with robust standard errors clustered by Fama-French 30-industry are reported in ( ). Significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively. Refer to Table D.1 for variable definitions.

| Panel A: Baseline regressions | | | | | |
| --- | --- | --- | --- | --- | --- |
| | (1) | (2) | (3) | (4) | (5) |
| Chamber of Commerce ranking (HQ state) | | -0.029*** | | | |
| | | (-2.91) | | | |
| Academic ranking (HQ state) | | | 0.011 | | |
| | | | (1.01) | | |
| Business attitude (HQ state) | | | | -0.409*** | -0.416*** |
| | | | | (-3.05) | (-3.08) |
| Ort. academic ranking (HQ state) | | | | | 0.199 |
| | | | | | (1.15) |
| Constant | -0.646*** | 0.125 | -0.943** | -0.623*** | -0.647*** |
| | (-2.92) | (0.43) | (-2.60) | (-2.86) | (-2.97) |
| Observations | 267 | 267 | 267 | 267 | 267 |
| $R^2$ | 0.00 | 0.02 | 0.00 | 0.02 | 0.03 |

*(Continued)*

**Table 3:** *– Continued*

Panel B: Additional tests

| | Out. 7th Circ. & Out of st. op.> 80% | | | Outside 7th Circuit & Out of state op.> 85% | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | | | | | | | | CAR[0, +1] | |
| Chamber of Commerce ranking (HQ state) | -0.023** | | | -0.030** | | | -0.056** | | |
| | (-2.60) | | | (-2.42) | | | (-2.72) | | |
| Academic ranking (HQ state) | | 0.002 | | | 0.009 | | | -0.003 | |
| | | (0.19) | | | (0.80) | | | (-0.18) | |
| Business attitude (HQ state) | | | -0.320** | | | -0.418** | | | -0.779** |
| | | | (-2.67) | | | (-2.49) | | | (-2.67) |
| Constant | -0.035 | -0.687*** | -0.617*** | 0.077 | -1.095*** | -0.705*** | 0.442 | -0.937** | -0.978*** |
| | (-0.14) | (-2.86) | (-3.51) | (0.20) | (-3.31) | (-14.25) | (0.80) | (-2.10) | (-3.14) |
| Industry F.E. | No | No | No | Yes | Yes | Yes | No | No | No |
| Observations | 430 | 430 | 430 | 267 | 267 | 267 | 267 | 267 | 267 |
| $R^2$ | 0.01 | 0.00 | 0.01 | 0.18 | 0.16 | 0.17 | 0.04 | 0.00 | 0.03 |

**Table 4:** Tests of Hypothesis 2

This table analyzes the relation between firm value and forum shopping by using the Abadie and Imbens (2002) matching technique. The outcomes variables are CARs from an event study of the U.S. Supreme Court's ruling in *Hertz Corp. v. Melinda Friend* of February 23, 2010. Panel A estimates the bias-adjusted ATT on CARs of the negative shock to plaintiffs' ability to forum shop provided by *Hertz* by matching treated firms to control firms. Treatment is assigned to firms whose headquarter state is the only state in the corresponding circuit. The control group is comprised of firms operating in at least a second state in the same circuit as the firm's headquarter state. Matching is performed on a set of continuous covariates including *No. states*, *Out of HQ state operations (%)*, *Size*. In addition, exact matching is imposed on the headquarter state. *Matching 1* excludes firms with headquarter state in the 7th Circuit. *Matching 2* excludes firms with headquarter state in the 7th Circuit and imposes exact matching also on the incorporation state. *Matching 3* excludes firms with headquarter state in the 7th Circuit or the 9th Circuit. *Matching 4* does not impose restrictions on the sample. Panel B estimates the bias-adjusted ATT on CARs of the negative shock to firms' ability to forum shop provided by *Hertz* by matching treated firms to control firms. *Matching 1* assigns treatment to firms with an above median *Out of HQ state operations in 9th Circuit (HHI)*, while considering the other firms as part of the control group. Matching is performed on a set of continuous covariates including *Out of HQ state operations (%)*, *Out of HQ state operations (HHI)*, and *Size*. In addition, exact matching is imposed at the 2-digit SIC industry-level. *Matching 2* and *Matching 3* assign treatment to firms with an above median *Out of HQ state operations (HHI)*, while considering the other firms as part of the control group. *Matching 2* (*Matching 3*) imposes exact matching at the 2-digit SIC (Fama-French 30-) industry-level. In both panels, odd columns use event-day ARs, $CAR[0,0]$, as outcome variable, whereas even columns use two-day CARs, $CAR[0,1]$, as outcome variable. The significance of ATTs is computed using heteroskedasticity-consistent standard errors. Significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively. Refer to Table D.1 for variable definitions.

Panel A: Plaintiffs' flexibility

| | Matching 1 | | Matching 2 | | Matching 3 | | Matching 4 | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| ATT | 0.724* | 0.810* | 1.018** | 1.108** | 1.188** | 0.810* | 0.681* | 0.727* |
| | (1.67) | (1.86) | (2.27) | (2.55) | (2.23) | (1.86) | (1.69) | (1.79) |
| No. treated firms | 1804 | 1804 | 1804 | 1804 | 1337 | 1337 | 1951 | 1951 |

Panel B: Firms' flexibility

| | Matching 1 | | | Matching 2 | | | Matching 3 | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | | (3) | (4) | | (5) | (6) |
| ATT | -0.319* | -0.500** | | -0.241 | -0.459* | | -0.307* | -0.444* |
| | (-1.72) | (-2.18) | | (-1.39) | (-1.95) | | (-1.89) | (-1.87) |
| No. treated firms | 1134 | 1134 | | 1134 | 1134 | | 1134 | 1134 |

**Table 5:** Tests of Hypothesis 3

This table analyzes the relation between firm value and exposure to state vs. federal courts by estimating cross-sectional regressions of CARs on several measures of corporate geographic dispersion (also weighted by state court system quality). CARs are from an event study of the U.S. Supreme Court's ruling in *Hertz Corp. v. Melinda Friend* of February 23, 2010. Panel A presents the baseline results using event-day ARs, $CAR[0,0]$, as dependent variable. Panel B presents additional results. Columns 1 through 5 use two-day CARs, $CAR[0,1]$, as dependent variable. Columns 6 through 9 include Fama-French 30-industry fixed effects. Columns 7 through 9 use two-day CARs, $CAR[0,1]$, as dependent variable. $t$-statistics calculated with robust standard errors clustered by Fama-French 30-industry are reported in ( ). Significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively. Refer to Table D.1 for variable definitions.

| Panel A: Baseline regressions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Out of state operations (%) | -0.545 | -0.812 | | | | | | | |
| | (-1.39) | (-1.58) | | | | | | | |
| Out of state operations (HHI) | | -0.507 | | | | | | | |
| | | (-1.54) | | | | | | | |
| Chamber of Commerce ranking (out of state) | | | -0.021 | | | | | | |
| | | | (-1.61) | | | | | | |
| Academic ranking (out of state) | | | | -0.016 | | | | | |
| | | | | (-1.62) | | | | | |
| Business attitude (out of state) | | | | | -0.512 | | | | |
| | | | | | (-1.62) | | | | |
| Ch. of Comm. rank. (out of state, 7th Circ. excluded) | | | | | | -0.024* | | | |
| | | | | | | (-1.71) | | | |
| Academic rank. (out of state, 7th Circ. excluded) | | | | | | | -0.015 | | |
| | | | | | | | (-1.48) | | |
| Out of state operations in 9th Circuit (%) | | | | | | | | -0.382 | |
| | | | | | | | | (-0.68) | |
| Out of state operations in 7th Circuit (%) | | | | | | | | | -0.474 |
| | | | | | | | | | (-0.45) |
| Constant | -0.073 | 0.175 | -0.054 | -0.171 | -0.339* | -0.041 | -0.190 | -0.324 | -0.355* |
| | (-0.24) | (0.42) | (-0.19) | (-0.89) | (-2.00) | (-0.15) | (-1.02) | (-1.43) | (-1.95) |
| Observations | 2273 | 2238 | 2273 | 2273 | 2273 | 2273 | 2273 | 2273 | 2273 |
| $R^2$ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

*(Continued)*

43

**Table 5:** *– Continued*

Panel B: Additional tests

| | CAR[0, 1] | | | | | CAR[0, 0] | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Out of state operations (%) | -1.167* | | | | | -0.473* | -0.698** | | |
| | (-2.04) | | | | | (-1.72) | (-2.05) | | |
| Chamber of Commerce ranking (out of state) | | -0.040** | | | | | | -0.018* | |
| | | (-2.22) | | | | | | (-1.92) | |
| Business attitude (out of state) | | | -0.716* | | | | | | -0.375 |
| | | | (-1.86) | | | | | | (-1.46) |
| Out of state operations in 9th Circuit (%) | | | | -1.130 | | | | | |
| | | | | (-1.56) | | | | | |
| Out of state operations in 7th Circuit (%) | | | | | -0.624 | | | | |
| | | | | | (-0.48) | | | | |
| Out of state operations (HHI) | | | | | | | -0.414 | | |
| | | | | | | | (-1.31) | | |
| Constant | 0.247 | 0.199 | -0.346** | -0.253 | -0.369** | 0.394** | 0.586** | 0.415** | 0.155*** |
| | (0.64) | (0.57) | (-2.43) | (-1.21) | (-2.45) | (2.39) | (2.51) | (2.63) | (5.20) |
| Industry F.E. | No | No | No | No | No | Yes | Yes | Yes | Yes |
| Observations | 2273 | 2273 | 2273 | 2273 | 2273 | 2273 | 2238 | 2273 | 2273 |
| $R^2$ | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.05 | 0.05 | 0.05 | 0.05 |

**Table 6:** Industry tests of Hypothesis 1

This table analyzes the relation between firm value, court system quality and litigation risk by estimating cross-sectional regressions of CARs on several measures of court system quality in firms' headquarter state and their interaction with litigation risk measures. CARs are from an event study of the U.S. Supreme Court's ruling in *Hertz Corp. v. Melinda Friend* of February 23, 2010. The sample is restricted to firms headquartered outside the 7th Circuit and with a fraction of out-of-headquarter state operations above 85%, according to our measure *Out of HQ state operations (%)*. Columns 1 through 3 (4 through 6) interact the Chamber of Commerce ranking (court business attitude) with an indicator variable equal to one for industries with above-median occupational risk, an indicator variable equal to one for industries with above-median labor intensity (only manufacturing firms), and an indicator variable equal to one for business-to-customer industries. *t*-statistics calculated with robust standard errors clustered by Fama-French 30-industry are reported in ( ). Significance at the 10%, 5%, and 1% level is indicated by \*, \*\*, \*\*\*, respectively. Refer to Table D.1 for variable definitions.

|  | Outside 7th Circuit & Out of state op.> 85% | | | | | |
|---|---|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| Ch. of Comm. rank (HQ state) × High occup. risk | -0.064** | | | | | |
|  | (-2.47) | | | | | |
| Ch. of Comm. rank (HQ state) × High lab. int. | | -0.224*** | | | | |
|  | | (-3.43) | | | | |
| Ch. of Comm. rank (HQ state) × Custom. or. | | | -0.002 | | | |
|  | | | (-0.10) | | | |
| Bus. att. (HQ state) × High occup. risk | | | | -0.979** | | |
|  | | | | (-2.45) | | |
| Bus. att. (HQ state) × High lab. int. | | | | | -3.278*** | |
|  | | | | | (-3.39) | |
| Bus. att. (HQ state) × Custom. or. | | | | | | 0.064 |
|  | | | | | | (0.20) |
| High occupational risk | 2.096*** | | | 0.455 | | |
|  | (3.65) | | | (1.02) | | |
| High labor intensity | | 3.687 | | | -2.136 | |
|  | | (1.58) | | | (-1.72) | |
| Customer orientation | | | 0.655 | | | 0.605 |
|  | | | (1.13) | | | (1.56) |
| Chamber of Commerce ranking (HQ state) | -0.010 | 0.005 | -0.029** | | | |
|  | (-0.80) | (0.23) | (-2.28) | | | |
| Business attitude (HQ state) | | | | -0.087 | 0.076 | -0.469** |
|  | | | | (-0.50) | (0.23) | (-2.71) |
| Constant | -0.492 | -0.762* | -0.188 | -0.735** | -0.629* | -0.941** |
|  | (-1.55) | (-1.96) | (-0.45) | (-2.13) | (-1.81) | (-2.70) |
| Observations | 192 | 44 | 267 | 192 | 44 | 267 |
| $R^2$ | 0.03 | 0.25 | 0.04 | 0.03 | 0.24 | 0.04 |

45

**Table 7:** Alternative tests of Hypotheses 2

This table analyzes the relation between firm value and forum shopping in the banking sector. CARs are from an event study of the U.S. Supreme Court's ruling in *Wachovia v. Schmidt* of January 17, 2006. Panel A reports summary statistics of the variables employed in this analysis distinguishing between nationally- and state-chartered banks. The sample includes U.S. banks with available stock price data on the event-day, based on the CRSP-FRB link file made available by the Federal Reserve Bank of New York. Accounting and daily stock return data are from the CRSP-Compustat merged database. Branch-level data on banks' locations and deposits are from the 2005 FDIC's Summary of Deposits. Panel B estimates cross-sectional regressions of CARs on a treatment indicator variable and measure of corporate geographic dispersion, *No. states (FDIC)*. Treatment is assigned to nationally-chartered banks operating also outside of their headquarter state. Columns 1 through 5 use event-day CARs, $CAR[0,0]$, as dependent variable. Columns 6 through 10 use two-day CARs, $CAR[0,1]$, as dependent variable. Columns 3 and 8 (4 and 9) restrict the sample to treated (control) banks. Firm- and year-fixed effects are includes in all specifications. $t$-statistics calculated with robust standard errors are reported in ( ). Significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively. Refer to Table D.1 for variable definitions.

Panel A: Summary statistics

| | Nationally-chartered banks | | | | | State-chartered banks | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Std.Dev. | Q1 | Q3 | Obs. | Mean | Std.Dev. | Q1 | Q3 | |
| CAR[0,0] | -0.103 | 1.406 | -0.830 | 0.370 | 145 | -0.138 | 1.357 | -0.843 | 0.542 | 289 |
| CAR[0,1] | 0.214 | 1.827 | -0.655 | 0.785 | 145 | 0.018 | 1.682 | -0.804 | 0.967 | 289 |
| No. states (FDIC) | 3.559 | 4.863 | 1.000 | 4.000 | 145 | 1.571 | 1.512 | 1.000 | 2.000 | 289 |
| Out of HQ state offices (%, FDIC) | 0.234 | 0.304 | 0.000 | 0.399 | 145 | 0.149 | 0.290 | 0.000 | 0.176 | 289 |
| Out of HQ deposits (%, FDIC) | 0.198 | 0.277 | 0.000 | 0.328 | 145 | 0.135 | 0.284 | 0.000 | 0.092 | 289 |
| Out of HQ state offices (HHI, FDIC) | 0.591 | 0.331 | 0.338 | 1.000 | 78 | 0.808 | 0.302 | 0.641 | 1.000 | 96 |
| Out of HQ deposits (HHI, FDIC) | 0.620 | 0.311 | 0.365 | 1.000 | 78 | 0.848 | 0.265 | 0.761 | 1.000 | 96 |
| Size | 7.816 | 1.923 | 6.389 | 8.962 | 145 | 6.707 | 1.252 | 5.857 | 7.358 | 289 |

Panel B: Regression analysis

| | CAR[0,0] | | | | | CAR[0,1] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| | | | Treated | Control | | | | Treated | Control | |
| Treated | 0.054 | | | | 0.246 | -0.028 | | | | 0.338 |
| | (0.34) | | | | (1.08) | (-0.12) | | | | (1.04) |
| No. states (FDIC) | | -0.023** | -0.039** | -0.026 | -0.026 | | -0.029* | -0.055** | 0.029 | 0.029 |
| | | (-2.05) | (-2.39) | (-1.03) | (-1.03) | | (-1.68) | (-2.13) | (0.73) | (0.73) |
| Treated × No. states (FDIC) | | | | | -0.013 | | | | | -0.084* |
| | | | | | (-0.43) | | | | | (-1.77) |
| Constant | -0.136* | -0.075 | 0.148 | -0.098 | -0.098 | 0.088 | 0.148 | 0.383 | 0.046 | 0.046 |
| | (-1.83) | (-0.94) | (0.71) | (-1.01) | (-1.01) | (0.97) | (1.49) | (1.27) | (0.38) | (0.38) |
| Observations | 434 | 434 | 76 | 358 | 434 | 434 | 434 | 76 | 358 | 434 |
| $R^2$ | 0.00 | 0.00 | 0.03 | 0.00 | 0.01 | 0.00 | 0.00 | 0.03 | 0.00 | 0.01 |

**Table 8:** Real effects

This table estimates panel regression of the fraction of out-of-headquarter state operations in the 9th Circuit, *Out of HQ state operations in 9th Circuit (%)*, on several treatment indicators identifying firms with low exposure to the 9th Circuit before the U.S. Supreme Court's ruling in *Hertz Corp. v. Melinda Friend* of February 23, 2010. The sample is restricted to firms non-headquartered in the 9th Circuit with data available both before and after the ruling. The sample covers the period from 2006 to 2014. In columns 1 and 4, the treatment group (*Treated 1*) consists of all firms that have no operations in 9th Circuit's states before 2010, based on *Out of HQ state operations in 9th Circuit (%)*. In columns 2 and 5, the treatment group (*Treated 2*) consists of all firms for which *Out of HQ state operations in 9th Circuit (%)* is below 15% before 2010. In columns 3 and 6, the treatment group (*Treated 2*) consists of all firms for which *Out of HQ state operations in 9th Circuit (%)* is below 15% but strictly positive before 2010. *t*-statistics calculated with robust standard errors clustered by firm are reported in ( ) in columns 1 through 3. *t*-statistics calculated with robust standard errors clustered by firm-year are reported in ( ) in columns 4 through 6. Significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively. Refer to Table D.1 for variable definitions.

| | St. err. clustered by firm | | | St. err. clustered by firm-year | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treated 1×Post-2010 | 0.038*** | | | 0.038*** | | |
| | (9.12) | | | (5.42) | | |
| Treated 2×Post-2010 | | 0.054*** | | | 0.054*** | |
| | | (8.70) | | | (4.50) | |
| Treated 3×Post-2010 | | | 0.016*** | | | 0.016*** |
| | | | (3.75) | | | (3.36) |
| Size | 0.012*** | 0.010** | 0.011** | 0.012** | 0.010** | 0.011** |
| | (2.66) | (2.34) | (2.56) | (2.49) | (2.23) | (2.40) |
| Market-to-book | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 |
| | (0.15) | (0.34) | (0.31) | (0.13) | (0.29) | (0.26) |
| Cash flow | -0.024** | -0.025** | -0.026** | -0.024* | -0.025* | -0.026** |
| | (-2.08) | (-2.20) | (-2.24) | (-1.84) | (-1.89) | (-1.96) |
| Firm F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 8992 | 8992 | 8992 | 8992 | 8992 | 8992 |

# Appendix for
## "What is the Value of the Court System for Firms?"

## A  Background and description of the Supreme Court rulings

### A.1  *Hertz Corp. v. Friend*

In the ruling of the case *Hertz Corp. v. Friend* on February 23, 2010, the U.S. Supreme Court clarified the citizenship of a corporation. Whereas citizenship is well defined for a "natural person" (i.e., a human being), it is less clear for a legal person such as a corporation.[35] The law states that a firm is a citizen in both the state it is incorporated in and the state where its "principal place of business" lies.[36]

Before the ruling in *Hertz* there was no unanimous interpretation as to what "principal place of business" meant. Some courts interpreted the principal place of business to mean a corporation's nerve center, the (physical) place in which the firm's executives steer its day to day activities. This was generally ruled to be the firm's head quarters, and hence corporations were found to be citizens of the state in which their headquarter was located. Throughout the paper, we refer to this as the "nerve center test". It was adopted by the courts of the 7th Circuit.

Other courts interpreted principal place of business to mean the state in which a firm conducts a significant fraction of its operations. Throughout the paper, we refer to this as the "operations test". Among those courts there was again no consensus as to how to measure "business". Different courts used different indicators such as assets, sales or employees. Both the choice of indicators and their relative weighting varied between courts. Finally there was no consensus as to what fraction of either indicator would cross the threshold of making a place a corporation's "principal" place of business.

In this case, the car rental operator Hertz Corporation was sued by Californian employees over an alleged breach of labor law. Hertz tried to claim diversity of jurisdiction and move the case to the federal level. But the 9th circuit court found Hertz to be a citizen of California. The decision was based on the fact that between 16% and 20% of Hertz's locations, employees, revenue and transactions were located in California.[37] The court therefore denied federal jurisdiction to Hertz.

Shortly thereafter, in a similar case, the same courts ruled that the retailer "Best Buy" was not a citizen of California, despite the state contributing 11% of its locations and 13% of both its revenues and employees.[38] This arbitrary interpretation of the law caused significant uncertainty as to the applicability of federal jurisdiction, and caused the U.S. Supreme Court to resolve the ambiguity.

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[35] The details for the case are filed as Case 559 U.S. 77.

[36] "A corporation shall be deemed to be a citizen of every State and foreign state by which it has been incorporated and of the State or foreign state where it has its principal place of business" (see 28 U.S. Code 1332).

[37] https://www.law.cornell.edu/supct/pdf/04-1186P.ZS, retrieved on April 19, 2015.

[38] See http://www.jonesday.com/hertz_v_friend/, retrieved on April 19, 2015

Hertz appealed the decision to deny its removal to the federal court. The U.S. Supreme Court decided to accept the case and, on February 23, 2010, decided in favor of Hertz: Since the corporation's headquarter was located in New Jersey rather than California, Hertz was found not to be a citizen of California and therefore had the right to remove the case to federal court.

With this ruling the U.S. Supreme Court came down on the side of the nerve center interpretation and ruled that, as a rule, a corporation's principal place of business was to be found in its headquarters.[39] This opinion established binding precedent for all lower courts.

The effect of this ruling was to open the doors to federal courts for corporations under some circumstances and close it under others. After the ruling, firms would (almost) always be able to claim diversity of citizenship and move cases to federal court when sued in a state which was neither its headquarters nor is its incorporation state. At the same time, firms with few assets or revenues in their headquarter state were less able to move cases into federal court. In the past, those firms were able to claim diversity when sued in their headquarter state under the majority of operations rule which was not possible anymore after the ruling.

What makes this decision a perfect natural experiment to assess the relevancy of court quality is that it affected firms differently based on their geographic footprint. The reason is that the nerve center test and the operations test were consistently favored by different U.S. circuits. Circuits are the geographic regions of organization for the federal judiciary (see Figure 1 for a map of circuits and corresponding states). Currently, there are 11 circuits in the U.S., each containing multiple federal states.[40] A corporation sued in a state can only remove the case to the circuit of that state. The issue of corporate citizenship constituted a so called "circuit split" in which different circuits interpret the law consistently in different ways. The 9th Circuit, covering the West Coast of the U.S., was most extreme in applying the operations test. Its interpretation allowed a firm to be found a citizen of not just one but multiple states each contained significant operations. On the opposite side of the split stood the 7th Circuit containing Illinois, Indiana and Wisconsin. The 7th Circuit's courts were proponents of the nerve center rule. The remaining circuits fell somewhere between those two extremes. Most applied either the nerve centre or the operations test on a case by case basis, although none would consider a firm a citizen of more than two states like the 9th Circuit did. Because of this split, the U.S. Supreme Court's ruling had no effect for lawsuits brought in the 7th Circuit, a large effect for lawsuits in the 9th Circuit, and an intermediate effect for all others.

We now turn to the question whether this ruling constitutes a valid experiment for an event study. For this to hold, we need to establish that the ruling was both not anticipated and later recognized upon decision. The ruling in *Hertz* was unanimous, which might prompt fears that the ruling was anticipated. Supreme court cases proceed

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[39] "The phrase 'principal place of business' in 1332(c)(1) refers to the place where a corporation's high level officers direct, control, and coordinate the corporation's activities, i.e., its 'nerve center', which will typically be found at its corporate headquarters."

[40] Washington, D.C. is a stand-alone circuit.

in multiple steps, with an oral argument as the last stage before the actual ruling is made and announced. The oral argument is the last time the supreme court judges publicly discuss a case. Hence if the public anticipates the ruling, this is the time it would be reported. If the oral argument revealed that the court was leaning towards the nerve center test, the actual announcement of the ruling would have been anticipated. We therefore conduct a news search in the week following the oral argument:[41] We find only one mention of the case on the day of the oral argument, which was a law blog article describing the case. This blog entry features no indication whether the court is leaning one way or another.[42] This does of course not rule out that the ruling was at least somewhat anticipated, but, to the degree that this attenuates the market reaction on the announcement day, it will bias us against finding an effect. When then repeat the news search for the day of the announcement to test whether it was received by the market. We limit the search to the day of the announcement and the following day since those are the days we focus on in our event study. We find 209 articles on Google News, including mentions on Reuters and in the Wall Street Journal. Hence, we conclude that the U.S. Supreme Court's ruling in *Hertz* was not anticipated by market participants ex ante and had significant recognition on announcement. It therefore constitutes a valid setting for an event study.

Finally, on the day of the ruling, a drop in consumer confidence was reported in news stories.[43] As a result, market prices declined roughly by 1% on average. To reduce concerns about this confounding event, we estimate regressions controlling for industry-fixed effects, as different industries arguably have heterogeneous exposure to consumer confidence shocks. Moreover, in unreported tests, we rule out that the consumer confidence shock was worse in the 9th Circuit by estimating regression of ARs on an indicator for firms headquartered or incorporated in the 9th Circuit. We find insignificant results, which suggests that the shock was not worse in the 9th Circuit than elsewhere and is not responsible for our finding of negative abnormal returns for firms present in the 9th Circuit. .

### A.2  *Wachovia v. Schmidt*

*Hertz* was not the only U.S. Supreme Court decision concerning diversity of citizenship. In *Wachovia v. Schmidt*, the U.S. Supreme Court had to decide about a similar case concerning the banking industry. The U.S. banking system comprises two types of banking corporations: Nationally- and state-chartered banks. Nationally-chartered banks are under the supervision of the federal Office of the Comptroller of the Currency. State-chartered banks are registered with the local state authorities. This dual system was established through the National Bank Act in 1863. The main advantage of nationally-chartered banks was that they were exempt from state level caps on interest rates in the

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[41]We carry out the news search on Google News, Financial Times, and Wall Street Journal on the day of the argument, November 10, 2009, and the following week. In particular, we search for the following expressions: "Supreme Court", "Hertz", and "Hertz v. Friend".

[42]See https://www.law.cornell.edu/supct/cert/08-1107, retrieved on April 19, 2015.

[43]See, e.g., http://money.cnn.com/2010/02/23/markets/markets_newyork/.

past.

For the purpose of this experiment it is crucial that national-chartering is not identical to national presence. Not all nationally-chartered banks have operations in all states, and there exist state-chartered banks with a presence in multiple states. The level of charter is a formal and regulatory issue. The reason is that before the liberalization of the U.S. banking markets banks were forbidden from operating branches in more than one state, independent from their charter.

Whereas state banks were considered citizens of their state of incorporation and the state in which their main office was located. In *Wachovia*, the question was whether national banks were to be treated the same as state-chartered banks. Courts in the 2nd Circuit had considered national banks to be citizens of any state in which they had a presence. This interpretation of the law effectively banned nationally-chartered banks from federal courts.

On January 17, 2006 the U.S. Supreme Court decided in an unanimous vote to treat nationally-chartered bank the same as state-chartered banks for the purpose of establishing citizenship.[44] This ruling had an effect on nationally-chartered banks similar to that of *Hertz* on non-bank corporations. It made removal to federal courts easier in all states but the headquarter state. It had no effect on state-chartered banks or other corporations.

As in the *Hertz* case, it is necessary to establish that the ruling was both unanticipated and received the market's attention upon announcement. The oral argument of the case took place on November 28, 2005. As in *Hertz*, we fail to find any mainstream or financial news media picking up the argument.[45] Contrary to the oral argument, the actual ruling caught attention in financial markets and was mentioned, among others, in the Wall Street Journal.[46]

Importantly, there is a confounding event that overlaps with our estimation window: One day after the ruling in *Wachovia*, the U.S. Supreme Court heard oral arguments in the case of *Merrill Lynch v. Dabit*. Since *Merrill* also concerned banks, this event might confound any estimates for the *Wachovia* case. As a consequence, the decision in *Wachovia* provides us with a second valid experiment as long as we focus on the announcement day, whereas returns in the following days may potentially reflect the market's assesment of the argument in *Merril* as well.

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[44]This is different from the *Hertz* ruling regarding the nerve centre test. The U.S. Supreme Court explicitly mentions in its decision that nationally-chartered banks will be treated like ordinary corporations with respect to their principal place of business, but abstains from a decision how to determine that ruling: "While corporations ordinarily rank as citizens of at most 2 States, Wachovia, under the Court of Appeals' novel citizenship rule, would be a citizen of 16 States" (see https://www.law.cornell.edu/supct/pdf/04-1186P.ZO, retrieved on April 19, 2015).

[45]Again, the only mention is in a law blog without an indication of the court's expected decision. See https://www.law.cornell.edu/supct/cert/04-1186, retrieved on April 19, 2015.

[46]See http://blogs.wsj.com/law/2006/01/17/supreme-court-issues-wachovia-decision-banking-industry-breathes-sigh-of-relief/, retrieved on April 19, 2015.

# B  Measures of corporate geographic dispersion

Our measure of geographic dispersion is built corporate filings with the Securities and Exchange Commission (SEC). The Securities Exchange Act of 1934[47] mandates U.S. corporations with publicly traded securities to file an annual form containing information on both the business itself and its financial situation. We use this information to determine the geographical scope of the firm. As Garcia and Norli (2012) and Bernile, Kumar, and Sulaeman (2015) we use text search to count the number of occurrences of each U.S. State's name in critical Items of discussion in the report. In our analysis we focus on the information provided in Items 1,2,3,6 and 7, which detail general information on the firm's business, property and financial situation.

Item 1 reports on the corporation's business activities as well as those of any subsidiaries. Item 2 contains information on the location and of the corporations most important physical properties, such as plants. In an important deviation from Garcia and Norli (2012) and Bernile, Kumar, and Sulaeman (2015), we also use information from item 3 which details legal proceedings. Since our paper deals specifically with legal risk and exposure to different court systems, this section is relevant for our measure. Item 3 reports on any legal proceedings which exceed the firm's normal scope, including the name of the court in which the action is pending. Item 6 covers financial information of the firm. Item 7 contains the management's discussion and analysis of the company's of the firms performance.[48]

A firm can file more than one type of annual report. Small businesses submit Form 10-KSB which is a reduced version of Form 10-K. Otherwise firms can submit amended versions of their annual reports. We use only a single filing for each firm and year. As ? we use the standard form 10-k whenever it is available. When no such filing is available, we search for an amended filing 10-K/A. Only if neither a normal nor an amended form is present we search for small business reports 10-KSB and 10-KSB/A.

As an example for the mention of states in section three, take the following excerpt from Ford Motor Co.'s 10-K filing for the year 2014. The state is <u>underlined</u>.

**Excerpt from item 3 of Ford Motor Co's 10-K 2014** "[...] Medium/Heavy Truck Sales Procedure Class Action. This action pending in the <u>Ohio</u> state court system alleges that Ford breached its Sales and Service Agreement with Ford truck dealers by failing to publish to all Ford dealers all price concessions that were approved for any dealer. The trial court certified a nationwide class consisting of all Ford dealers who purchased from Ford any 600-series or higher truck from 1987 to 1997, and granted plaintiffs motion for summary judgment on liability. During 2011, a jury awarded $4.5 million in damages to the named plaintiff dealer and the trial court applied the jurys findings with regard to the named plaintiff to all dealers in the class, entering a judgment of approximately $2 billion in damages. We appealed, and on May 3, 2012, the <u>Ohio</u> Court of Appeals reversed the trial courts grant of summary judgment to plaintiffs, vacated the damages award, and

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[47]available at https://www.sec.gov

[48]For detailed description of each item see Regulation S-K http://www.ecfr.gov.

remanded the matter for a new trial. The retrial in September 2013 resulted in a verdict in Fords favor. On February 7, 2014, the trial court granted plaintiffs motion for a new trial, but on December 11, 2014, the <u>Ohio</u> Court of Appeals reversed the order granting a new trial and reinstated the verdict in Fords favor. Plaintiffs have sought further review in the <u>Ohio</u> Supreme Court. [...]"

We verify our measure of state exposure in several ways. First, we find that on average, the corporation's headquarter state accounts for 45% of all states mentioned in the report. This makes it the most mentioned state for almost all corporations. The second most mentioned state on average accounts for 41% of all state mentions. Finally, we find a strong positive and statistically correlation between a state's population and the firm-level mentions of that state in form 10-Ks.

Second, high-quality data on geographic dispersion of commercial banks' operations are made available by the Federal Deposit Insurance Corporation (FDIC). The FDIC provides data on the states in which each bank operates branches. Hence, in Table B.1, we validate our text-based measures against the 2005 FDIC data on bank branches we use for the *Wachovia* experiment. In Panel A, we find that both the fraction of non-headquarter state offices and deposits of banks exhibits a roughly 50% correlation with our *Out of HQ state operations (%)* based on banks' annual reports. Panel B repeats the same analysis for the Herfindahl index of non-hoemstate operations as a measure of concentration (rather than spread) .The results are similar with a roughly 40% correlation between the bank branch data and our measure constructed from annual reports.

We conclude that our measures of geographic dispersion obtained from annual reports work reasonably well. The reason why the correlation with the FDIC branch data is not higher could be that FDIC data only covers retail branches. Since most loans in the U.S. are in fact syndicated rather than bilateral loans (e.g., Armstrong, 2003; Gadanecz, 2004), a bank can gain significant exposure to states of the U.S. where it does not have retail business.

## C    Court rankings

Table C.1 reports ordinal rankings of state court systems according to the 2010 edition of the Chamber of Commerce ranking and the academic ranking proposed by Choi, Gulati, and Posner (2009) in their Table 8.

## D    Variable definitions

See Table D.1.

**Table B.1: Validation of measures of corporate geographic dispersion**

This table validates the text-based measures of corporate geographic dispersion from form 10-Ks filed with the SEC's EDGAR database against similar measures based on data from the 2005 FDIC's Summary of Deposits. The sample includes U.S. banks with available stock price data on the event-day, based on the CRSP-FRB link file made available by the Federal Reserve Bank of New York. Pairwise correlation among the different measures are estimated. Panel A focuses on measures describing a bank's fraction of operations outside its main office state. Panel B focuses on measures of concentration (Herfindahl index) of operations outside a bank's main office state. Refer to Table D.1 for variable definitions.

| Panel A: Fraction of operations | (1) | (2) | (3) |
|---|---|---|---|
| (1) Out of HQ state operations (%) | 1 | | |
| (2) Out of HQ state offices (%, FDIC) | 0.5129 | 1 | |
| (3) Out of HQ state deposits (%, FDIC) | 0.4754 | 0.9745 | 1 |

| Panel B: Herfindahl index | (1) | (2) | (3) |
|---|---|---|---|
| (1) Out of HQ state operations (HHI) | 1 | | |
| (2) Out of HQ state offices (HHI, FDIC) | 0.4261 | 1 | |
| (3) Out of HQ state deposits (HHI, FDIC) | 0.4006 | 0.9033 | 1 |

**Table C.1:** State court system rankings

This table ordinal rankings of state court systems based on the 2010 Chamber of Commerce ranking (see http://www.instituteforlegalreform.com/states) and the academic ranking in Table 8 of Choi, Gulati, and Posner (2009).

| U.S. state | Abbreviation | Chamber of Commerce ranking (2010) | Academic ranking |
|---|---|---|---|
| Alabama | AL | 47 | 17 |
| Alaska | AK | 33 | 29 |
| Arizona | AZ | 13 | 36 |
| Arkansas | AR | 44 | 2 |
| California | CA | 46 | 1 |
| Colorado | CO | 8 | 34 |
| Connecticut | CT | 24 | 31 |
| Delaware | DE | 1 | 32 |
| Florida | FL | 42 | 20 |
| Georgia | GA | 27 | 6 |
| Hawaii | HI | 35 | 46 |
| Idaho | ID | 18 | 42 |
| Illinois | IL | 45 | 11 |
| Indiana | IN | 4 | 30 |
| Iowa | IA | 5 | 23 |
| Kansas | KS | 14 | 16 |
| Kentucky | KY | 40 | 44 |
| Louisiana | LA | 49 | 40 |
| Maine | ME | 12 | 37 |
| Maryland | MD | 20 | 14 |
| Massachusetts | MA | 9 | 9 |
| Michigan | MI | 30 | 50 |
| Minnesota | MN | 11 | 35 |
| Mississippi | MS | 48 | 7 |
| Missouri | MO | 37 | 49 |
| Montana | MT | 43 | 4 |
| Nebraska | NE | 3 | 10 |
| Nevada | NV | 28 | 45 |
| New Hampshire | NH | 16 | 18 |
| New Jersey | NJ | 32 | 28 |
| New Mexico | NM | 41 | 43 |
| New York | NY | 23 | 12 |
| North Carolina | NC | 17 | 48 |
| North Dakota | ND | 2 | 3 |
| Ohio | OH | 29 | 5 |
| Oklahoma | OK | 31 | 38 |
| Oregon | OR | 21 | 33 |
| Pennsylvania | PA | 34 | 8 |
| Rhode Island | RI | 38 | 15 |
| South Carolina | SC | 39 | 24 |
| South Dakota | SD | 10 | 26 |
| Tennessee | TN | 19 | 19 |
| Texas | TX | 36 | 39 |
| Utah | UT | 7 | 22 |
| Vermont | VT | 25 | 27 |
| Virginia | VA | 6 | 41 |
| Washington | WA | 26 | 13 |
| West Virginia | WV | 50 | 21 |
| Wisconsin | WI | 22 | 47 |
| Wyoming | WY | 15 | 25 |

**Table D.1: Definition of variables**

| Variable | Definition |
|---|---|
| CAR$[n1, n2]$ | Cumulative abnormal returns $n1$ days to $n2$ days around the event-day. Abnormal returns are obtained by computing the residuals of separate regressions of individual CRSP daily stock returns on the three Fama and French (1993) risk factors and a momentum factor, with the factor loadings estimated in the pre-event period. For the bank sample, the market model is used to obtain such residuals. |
| Headquarter 7th Circuit | Indicator equal to one if a firm is headquartered in the 7th Circuit. |
| Headquarter 9th Circuit | Indicator equal to one if a firm is headquartered in the 9th Circuit. |
| Chamber of Commerce ranking (HQ state) | Chamber of Commerce ranking of a firm's headquarter state. |
| Academic ranking (HQ state) | Academic ranking of a firm's headquarter state. |
| Business attitude (HQ state) | Pure state court system's business friendliness of a firm's headquarter state obtained orthogonalizing the Chamber of Commerce and the academic ranking. |
| No. states | The number of unique U.S. states for which state count is at least one for a firm. |
| Out of HQ state operations (%) | A firm's sum of non-headquarter state counts as a fraction of the total sum of state counts. |
| Out of HQ state operations (HHI) | A firm's Herfindahl index of non-headquarter state counts. |
| Chamber of Commerce ranking (out of HQ state) | Average Chamber of Commerce ranking of states a firm operates in, weighted by state counts. |
| Academic ranking (out of HQ state) | Average academic ranking of states a firm operates in, weighted by state counts. |
| Business attitude (out of HQ state) | Average state court systems' business friendliness of states a firm operates in, weighted by state counts. |
| Chamber of Commerce ranking (out of HQ state, 7th Circuit excluded) | Defined as *Chamber of Commerce ranking (out of HQ state)* but excluding firms headquartered or incorporated in the 7th Circuit's states. |
| Academic ranking (out of HQ state, 7th Circuit excluded) | Defined as *Academic ranking (out of HQ state)* but excluding firms headquartered or incorporated in the 7th Circuit's states. |
| Out of HQ state operations in 9th Circuit (%) | Defined as *Out of HQ state operations (%)* but based just on 9th Circuit's states. |
| Out of HQ state operations in 7th Circuit (%) | Defined as *Out of HQ state operations (%)* but based just on 7th Circuit's states. |
| High labor intensity | Indicator variable equal to one if a firm belongs to an industry with above-median labor intensity. We define industry labor intensity as the 2009 total payroll to total value added ratio from the NBER-CES Manufacturing Industry Database. |
| High occupational risk | Indicator variable equal to one if a firm belongs to an industry with an above-median nonfatal occupational injuries and illnesses rate. Nonfatal occupational injuries and illnesses rate data are from the 2008 issue of the Injuries, Illnesses, and Fatalities (IIF) program of the Bureau of Labor Statistics (BLS). 2008 BLS data follow the 2002 North American Industry Classification System NAICS, so we use the 2002 NAICS to 1987 SIC concordance table from the U.S. Census Bureau, and the concordance table for SIC groups from the BLS. |
| Customer orientation | Indicator equal to one if a firm belongs to an industry oriented to customers (business-to-customer) rather than other businesses (business-to-business), following the classification of Table 1 of Lev, Petrovits, and Radhakrishnan (2010). |
| No. states (FDIC) | Number of states a bank operates offices in according to the 2005 FDIC's Summary of Deposits. |
| Out of HQ state offices (%, FDIC) | A bank's fraction of offices outside the main office state according to the 2005 FDIC's Summary of Deposits. |
| Out of HQ state deposits (%, FDIC) | A bank's fraction of deposits outside the main office state according to the 2005 FDIC's Summary of Deposits. |

*(Continued)*

**Table D.1:** *– Continued*

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|---|---|
| Out of HQ state offices (HHI, FDIC) | A bank's state-level Herfindahl index of offices outside the main office state according to the 2005 FDIC's Summary of Deposits. |
| Out of HQ state deposits (HHI, FDIC) | A bank's state-level Herfindahl index of deposits outside the main office state according to the 2005 FDIC's Summary of Deposits. |
| Treated 1 | Indicator equal to one for firms for which *Out of HQ state operations in 9th Circuit (%)* is equal to 0% before 2010. |
| Treated 2 | Indicator equal to one for firms for which *Out of HQ state operations in 9th Circuit (%)* is below 15% before 2010. |
| Treated 3 | Indicator equal to one for firms for which *Out of HQ state operations in 9th Circuit (%)* is below 15% but strictly positive before 2010. |
| Size | Firm size defined as the natural logarithm of `at` in Compustat. |
| Market-to-book | Market-to-book ratio defined as `(at-ceq+prccf×csho)/at` in Compustat. |
| Cash flow | Internal cash flow defined as `(oibdp)/at` in Compustat. |