

Judicial Independence and US State Bond Ratings: An Empirical Investigation

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Significant research has assessed how judicial independence influences a number of economic outcomes, however, less has been done to evaluate how financial institutions perceive an independent judiciary. Therefore, this paper considers how greater judicial independence across US states may affect state bond ratings. Overall, the results suggest that states with relatively more independent judiciaries do in fact have higher bond ratings, which translates into lower borrowing costs. The results are robust to a number of specifications and suggest the role that an independent judiciary plays in contract enforcement along with several other important implications for future research.

INTRODUCTION

A growing literature addresses the impact that judicial independence (JI) has on a number of socioeconomic outcomes both internationally and across the US states. In general, this literature finds considerable support for the claim that higher quality institutional arrangements, including JI leads to increased stability and predictability within an economy, which in turn increases productive entrepreneurial endeavors and with it economic growth (Aidis, Estrin, and Mickiewicz 2012; Ardagna and Lusardi 2010; Bjornskov and Foss 2008; Capelleras et al. 2008; Feld and Voigt 2003; La Porta et al. 1998; Laeven and Woodruff 2007; Levie and Autio 2011; Nystrom 2008; Troilo 2011). Here it is the institutions or the “rules of the game” that incentivize individuals to pursue productive or unproductive economic activities, which in turn enhances or hinders growth.¹

The current paper adds to this literature by evaluating the extent to which state-level differences may influence the perceptions of the financial sector, and thus impact borrowing costs

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1. See Baumol (1990) for the distinction between productive, unproductive, and destructive entrepreneurship.

and bond ratings for a state government. This endeavor is fruitful for several reasons. First, as will be discussed in greater detail below, JI has been shown to differ significantly across states, and therefore should lead to different perceptions about the quality of a state's legal system in general.

Second, given that an important feature of any judiciary is its ability to act as an impartial arbitrator over legal disputes, this will play a significant role in market participant's perceptions and willingness to contract with a state government. Specifically, JI requires a judiciary that is free from outside influence, whether it is from private interest groups, or from other public officials. Here, as this influence is diminished, impartiality is increased and with it so is the credibility of the state in general (Feld and Voigt 2003). Thus, a state can use JI to serve as a credible commitment to market actors about its willingness to adhere to pre-specified, binding rules.

This commitment is important since, along with numerous other functions, a judiciary is charged with mediating disputes between private individuals (contract enforcement), between those involving private individuals and public officials (which requires the ability to review if procedural formalities were consistently applied and to impartially assess fault), and also over disputes between other branches of government (Feld and Voigt 2003). In the context of the financial sector, greater JI will lead to more consistent and predictable contract enforcement both between private citizens and between private citizens and other branches of government. Thus, *ceteris paribus*, greater JI should lower the probability that creditor rights are arbitrarily altered or disregarded and thereby lowering the risk of default (Biglaiser and Staats 2012; North and Weingast 1989).

Further, a relatively more independent judiciary that is able to better avoid political influence should also incentivize state's to act relatively more prudently so as to better avoid default to begin with and should act as a signal to creditors that their rights will not arbitrarily be violated. Importantly, appealing a case to a federal court is problematic when a state court abrogates the contracts clause and does so for purely political reasons.² Federal courts, (especially when it is possible to appeal to them) are costly and by definition are relatively more costly if they are appealed to after going through state courts. Thus, a first best outcome would be to have a state court that is impartial as possible and thereby avoids the need to take extra steps by plaintiffs.

APPLICATIONS FOR PRACTICE

- The research finds a strong association between judicial independence (JI) and state bond ratings based on the method employed to select and retain justices to a state's high court of last resort.
- The results indicate that relatively greater JI results in lower interest payments on state debt between \$8.2 and \$15.5 million depending on the specification employed. This relationship is strongest for states that select judges through merit selection and unopposed retention elections.
- This evidence is robust to a number of specifications and should provide policy-makers and scholars with additional evidence on the importance of an independent judiciary and the effect it can have on state bond ratings and, ultimately, borrowing costs.

2. This is, in fact, an issue that states have faced on multiple occasions through the 19th century and also in 1933 when Arkansas became the last state to default on its obligations (Ratchford 1941).

These final points are especially important given the existence of the 11th amendment to the United State Constitution, which grants sovereign immunity to states. If a state were to default sometime in the future, it is not at all clear that a federal remedy would even be available to bondholders, which should create a level of uncertainty within credit markets. Therefore, a relatively independent state court could minimize that uncertainty and should act as a commitment device by that state government. At the margin, this should send a clearer signal to market actors that the likelihood of a biased ruling in the event of some future potential default would be minimized. Overall, this should lead to a relatively more favorable bond rating, again since creditors, at the margin, should be able to recover a larger portion of their investments and state governments should be better incentivized to avoid default in the first place.³

This paper uses several measures of state-level judicial selection and reappointment to assess the importance of JI to explain state government bond ratings. These measures are then used to analyze how much state government bond ratings, compiled by Moody's Investor Services (Moody's), Standard and Poor's (S&P), and Fitch Ratings (Fitch), are affected by JI over the sample period 1995–2013. Importantly, while bondholders might prefer a court favorable to their interests, credit rating agencies have an incentive to objectively evaluate the institutional environment and base ratings on that metric.

As a result, this study contributes to several additional literatures. The first is the impact that institutions play on economic growth and development broadly (Acemoglu and Johnson 2005; Acemoglu, Johnson, and Robinson 2002; Besley 1995 DeSoto 2001; Djankov et al. 2002; La Porta et al. 1997; Lopez de Silanes et al. 1998; North 1994; Weingast 1995). As noted, it is the legal, political, and economic framework within which individuals operate that has the largest and most direct effect on economic growth and development.

The second is those factors that affect sovereign borrowing costs and more specifically bond ratings. This literature has considered the historical context within which institutions influence these borrowing costs (Dincecco 2009, 2010; North and Weingast 1989; Saiegh 2013; Sussman and Yafeh 2000, 2006), more recent international comparisons (Archer, Biglaiser, and DeRouen 2007; Biglaiser and Staats 2010, 2012; Schultz and Weingast 2003; Saiegh 2005), and most closely related to this paper, various institutional factors that affect US state bond ratings including fiscal constitutions (Bayoumi, Goldstein, and Woglom 1995; Eichengreen 1992; Goldstein and Woglom 1992; Johnson and Kriz 2005; Kiewiet and Szakaly 1996; Lowry 2001;

3. This is especially important given the historical record of state default. Although no state has defaulted since Arkansas in 1933, there were two major default episodes in the 19th century. The first was in the wake of the panic of 1837 and the second was during Southern Reconstruction (Ratchford 1941). These events led to a number of important precedents, the most significant of which was a refusal by the federal government to assume any outstanding state debts (Ratchford 1941). This hard budget constraint has been adhered to ever since, and is currently on display as Puerto Rico attempts to work through its own default problems. Thus, there should be little expectation on the part of any state that a federal bailout would be available as a remedy in the event of a default. Finally, while states could adjust tax rates and expenditures in order to avoid default, as Greece has recently shown and Puerto Rico is currently discovering, these options are only politically feasible to an extent meaning default, in the extreme, may be a more politically appealing option. Therefore, these considerations also drive home the importance of an independent judiciary.

Poterba and Rueben 1999) and economic freedom (Belasen, Hafer, and Jategaonkar 2015; Calcagno and Benefield 2013). This final strand of the literature looks at a number of institutional factors that appear to influence state bond ratings, including anti-deficit and anti-spending measures, tax and expenditure limits, and debt referenda.

The remainder of the paper is structured as follows: the next section provides a brief overview of JI across US states and some theoretical considerations on how JI may impact state bond ratings. This is followed by a section describing the data and model specification, with that followed by a discussion of the results and interpretation. Finally, the paper concludes.

A BRIEF OVERVIEW AND THEORETICAL CONSIDERATIONS

A significant body of research has addressed differences in and the extent to which JI exists across US states (see generally Berkowitz and Clay 2006; Hanssen 2004a). As a means to proxy for JI these studies largely focus on the method by which individuals are selected to the bench, especially on state courts of last resort. In general, there are five major methods of selection: partisan elections, nonpartisan elections, gubernatorial appointment, legislative appointment, and merit selection.

Merit selection is a mode of selection that developed as a direct response to what had become increasing perceptions that other methods of selection, and especially partisan elections had led to undue influence and systematic biases within state judiciaries (Hanssen 2004a). Many of these concerns regarding partisan judicial elections have been corroborated within both the economics and political science literature. The evidence suggests that partisan elected judges systematically rule in partisan ways (Nagel 1973), are less likely to dissent on politically controversial issues (Hall 1987), are less likely to overturn a death sentence (Hall and Brace 1996), and are less likely to see criminal cases go to trial (Elder 1987). Further, states with judicial elections also experience more employment discrimination suits (Besley and Payne 2003), see higher damage awards against out-of-state firms (Tabarrok and Helland 1999), and have higher levels of corruption (Cordis 2009). Additionally, Besley and Payne (2003) suggest that although individuals sitting on the bench are generally similar across states, their individual behavior changes once selected, suggesting that the differing methods of selection create differing incentives and constraints.

Again, as a result of this perceived bias arising from electoral pressures a number of states adopted some form of merit selection. Although variation does exist, in general merit selection requires a non-partisan nominating commission to provide a list of potential candidates to a state's governor who then selects a candidate from this list. The name is then sent to the state legislature which is charged with confirming the candidate. Once approved, that individual may stand for periodic, unopposed retention elections where citizens have the opportunity in an up-or-down vote to decide whether that individual should remain on the bench. As noted above, the evidence indicates that merit selection does lead to a relatively more independent judiciary, especially as compared to partisan elections and appointment. Given this, it should

be the case that states with merit selection will receive higher bond ratings relative to other states.

Further, Alesina and Tabellini (2007) indicate that when allocating policy tasks an independent bureaucrat or judge is preferable when the task is relatively technical and where ability is more important than effort. Additionally, Maskin and Tirole (2004) model the importance that accountability of public officials can have. Specifically, making public officials accountable through the electoral process allows voters to punish those officials if necessary; however, such accountability may lead to public pandering and less secure minority rights. Here a dispute between both creditor and debtor would require an impartial hearing to ensure that the rights of both parties are equally protected. Also, a judge that is more accountable to the general public or another branch of government may, at the margin, arbitrarily rule against bondholder rights.

This paper uses a series of dichotomous variables to capture the differences in the selection, retention, and potential removal of justices of state courts of last resort. These dichotomous variables are divided into four categories: (i) selection of justices; (ii) retention of justices; (iii) selection of chief justice; and (iv) independent commissions overseeing these processes. Following Hanssen (2004a), dummy variables for merit selection (`select_merit`), for partisan elections (`select_elect`) and for either non-partisan elections and appointment (`select_appoint`) are used to capture differences in the selection of justices of state courts of last resort. Here merit selection is the most independent, partisan elections is the least independent and non-partisan elections in between.

The process in which justices are retained can be just as important for overall JI as the initial selection method (Berkowitz and Clay 2006). This study creates a dummy variable for each of three methods: popular election (`retain_popselect`), reappointment (`retain_reappoint`), and retention elections (`retain_reselect`). Here retention elections are unopposed elections in which voters have the opportunity to decide in an up-or-down vote whether or not a sitting judge should remain on the bench. It should be noted that popular elections will lead to the least independence while retention elections the most, meaning that retention elections will lead to relatively higher bond ratings (Berkowitz and Clay 2006).

The third category of JI is the method by which a chief justice of a state's court of last resort is selected. As has been suggested within the literature a chief justice has a number of important responsibilities and powers within a state court system, which may include the ability to agenda set cases heard, the distribution of resources across the judiciary within a state, and also overseeing the creation and implementation of procedural and other rules across the judiciary (Dove 2015). Given this, a relatively independent chief justice may play an important role in overall JI. This paper creates dummy variables for each of the methods used: popular election (`chief_popselect`), reappointment (`chief_reappoint`), and peer selection (`chief_peer`). Here peer selection would lead to relatively more independence while popular elections would lead to relatively less.

The final category of JI is whether or not states have judicial nominating commissions, judicial retention commissions, and also the number of formal procedures available to remove a sitting judge from the bench before the end of his or her term. Judicial retention commissions are

nonpartisan, independent bodies charged with providing information to voters on the overall performance of a given judge through his or her tenure. Such a commission, if it is able to increase voter awareness of a given judicial candidate, should lead to increased independence. This is so as it provides a relatively low-cost means for voters to examine the record of each candidate and may check the influence of third parties attempting to sway the outcome.

Judicial nominating commissions are also nonpartisan, independent bodies that are tasked with presenting potential candidates to a state's governor or legislature (generally) for nomination. To the extent that these commissions increase the number of checks and balances that exist within the judicial selection process, they should also increase judicial independence. Finally, the number of formal procedures available to remove a sitting judge should have a relatively ambiguous effect on JI. As the number of procedures available to other branches of government and citizens increases, it may make it more difficult for a given judge to rule on issues, especially controversial ones, in an unbiased manner as the threat of removal increases. This would, therefore, decrease JI. However, without any ability to remove a judge the incentive exists for that individual to rule opportunistically and according to his or her own preferences, which would decrease JI overall (Hanssen 2004b). Table 1 provides a summary of each of these variables broken down by state.

One important issue to address is the possibility that the above variables may be proxying for something more than just JI per se and may actually be picking up broader institutional characteristics like the rule of law. Obviously, this may be the case, and to some extent this is unavoidable given that an independent judiciary tends to be considered part of the "bundle" that is the rule of law more broadly defined.

This is so as an independent judiciary helps minimize arbitrariness in the law, meaning individuals will be better able to pursue relatively longer-term and forward looking plans. Thus, no matter the variables chosen to measure JI specifically, they will to some degree inevitably pick up broader institutional characteristics. That being said, it should still be the case that the analysis and variables employed are in fact largely measuring JI for a couple of reasons. First, the variables included here have become generally used across studies as noted above. Additionally, in what follows I attempt to include a full range of institutional variables that should help to minimize the possibility that I am measuring the rule of law broadly and instead focusing more on JI specifically. All that being said the effect that the rule of law broadly understood may play on the perceptions of financial markets is one that would be worthy of significant future research.

DATA AND EMPIRICAL SPECIFICATION

The current study uses a number of variables along with those listed in the previous section in order to evaluate how JI may influence state bond ratings. The dependent variable is bond ratings from the three sovereign bond rating agencies of Fitch, S&P, and Moody's from 1995 to 2013. Each rating agency uses a slightly different rating structure, with S&P and Fitch applying ratings of a high of "AAA" down to a low of "C" with "+" and "-" incorporated as well through the range. Moody's on the other hand uses a scale which includes a high of "Aaa" and a low of "C"

TABLE 1
Judicial Independence Variables by State

State	Court of last resort-selection			Court of last resort-retention				Chief justice			Additional checks		
	Part elect	Nonpart elect	Appoint	Merit	Retain_popselect	Retain_appoint	Retain_retenlect	Elect	Appoint	Peer	NonCom	Reten Com	Removal
Alabama	Yes				Yes			Yes					2
Alaska				Yes			Yes			Yes	Yes	Yes	2
Aricaona				Yes			Yes			Yes	Yes	Yes	3
Arkansas	Yes				Yes		Yes	Yes					3
Calictnia			Yes				Yes		Yes				3
Colorado				Yes			Yes			Yes	Yes	Yes	2
Connecticut				Yes		Yes			Yes	Yes	Yes	Yes	3
Delaware				Yes		Yes			Yes	Yes	Yes	Yes	2
Florida				Yes			Yes			Yes	Yes	Yes	2
Geerica	Yes			Yes					Yes	Yes	Yes	Yes	2
Hawaii				Yes		Yes					Yes	Yes	1
Idaho	Yes			Yes						Yes	Yes	Yes	2
minors							Yes			Yes	Yes	Yes	2
Indiana	Yes			Yes			Yes		Yes		Yes	Yes	3
Iowa				Yes			Yes			Yes	Yes	Yes	2
Kansas				Yes			Yes			Yes	Yes	Yes	3
Kentuckv	Yes			Yes						Yes	Yes	Yes	2
Louisiana	Yes			Yes				c		c			2
Maine				Yes			Yes			Yes	Yes	Yes	2
Maryland			Yes	Yes			Yes		Yes		Yes	Yes	4
Massachusetts			Yes	Yes		a	Yes		Yes		Yes	Yes	3
Michigan	Yes			Yes						Yes			3
Minnesota	Yes			Yes				Yes			Yes	Yes	3
Mississippi	Yes			Yes				c		c			3
Missouri				Yes			Yes			Yes	Yes	Yes	2
Montana	Yes			Yes			Yes	Yes					2
Nebraska				Yes			Yes				Yes	Yes	2
Nesada	Yes			Yes					c	c			4
New Hampshire			Yes		a		a		Yes		Yes	Yes	3
New Jersey	Yes		Yes		Yes				Yes	Yes	Yes	Yes	3

(continued)

TABLE 1 (Continued)

State	Coni of last resort-selection				Court of last resort-retention				Chief justice			Additional checks		
	Part elect	Nonpart elect	Appoint	Merit	Retain_popelect	Retain_appoint	Retain_retenlect	Elect	Appoint	Peer	NonCom	Reten Com	Removal	
New Mexico	Yes						Yes			Yes	Yes	Yes	2	
New York			Yes			Yes		Yes			Yes	Yes	3	
North Carolina		Yes		Yes				Yes					3	
North Dakota		Yes		Yes						Yes			2	
Ohio								Yes					3	
Oklahoma			Yes				Yes			Yes	Yes		2	
Oregon				Yes					Yes	Yes			2	
Pennsylvania	Yes						Yes	b	c	c			2	
Rhode Island				Yes	b				Yes		Yes		2	
South Carolina			Yes			Yes			Yes		Yes		3	
South Dakota			Yes				Yes						2	
Tennessee				Yes			Yes			Yes	Yes		2	
Texas	Yes				Yes			Yes					4	
Utah				Yes									2	
Vermont				Yes					Yes		Yes		2	
Virginia			Yes					Yes			Yes		2	
Washington													2	
West Virginia	Yes	Yes		Yes					Yes				2	
Wisconsin		Yes		Yes				c	c	c			1	
Wyoming				Yes			Yes			Yes	Yes		4	
Wyoming								Yes		Yes	Yes		3	

^aJustices in Massachusetts and New Hampshire are tenured until age 70 and therefore do not face retention procedures.

^bJustices in Rhode Island are appointed for life and therefore do not face retention procedures.

^cLouisiana, Mississippi, Nevada, Pennsylvania, and Wisconsin base selection of the chief justice on seniority.

with “1,” “2,” and “3” attached to each generic category through the range. Thus, there are a total of 25, 21, and 19 possible unique scores for S&P, Moody’s, and Fitch, respectively.

In order to operationalize these three measures in a manner suitable for empirical investigation the paper follows a procedure developed by Depken and Lafountain (2006) and implemented by Belasen et al. (2015); Calcagno and Benefield (2013); and Schelker (2012). Under this procedure each state’s bond rating is converted into a numerical value, where the value for state i in year t provided by rating service k is $R_{itk} \in \{1, \dots, N_k\}$, with one representing the lowest possible bond rating and N_k the highest possible for rating agency k . From this, each score is normalized for each rating agency such that $\tilde{R}_{itk} = R_{itk}/N_k$ and finally the normalized scores for each rating agency are averaged in order to obtain one score for each state i in year t ranging from a low of zero to a high of one.⁴ The baseline specification is the following:

$$\text{Bondrating}_{it} = \alpha + JI'_{it}\beta + X'_{it}\delta + \mu_t + \varepsilon_{it} \quad (1)$$

where $i = 1, 2, \dots, 50$ and $t = 1995, 1996, \dots, 2013$.

Here, Bondrating_{it} represents the normalized bond rating score for state i in year t . JI'_{it} is a vector of judicial independence variables as discussed before. X'_{it} is a vector of socioeconomic control variables to be described in greater detail below, while μ_t is a set of fixed time effects to control for any unobservable variations that may occur from year to year in the sample.⁵

Due to collinearity between the JI variables the baseline specification is broken down into separate regressions, including variables from one of the four main categories. Thus the first regression becomes:

$$\text{Bondrating}_{it} = \alpha + \beta_1 \text{select_reappoint}_{it} + \beta_2 \text{select_merit}_{it} + X'_{it}\delta + \mu_t + \varepsilon_{it} \quad (2)$$

Now $\text{select_reappoint}_{it}$ represents whether or not a state i selected justices of its respective court of last resort through either non-partisan elections or appointment in year t while select_merit_{it} is whether or not a state employed merit selection for members of its court of last resort. Each result is relative to whether or not a state applied partisan elections.

The next regression considers the method of retaining justices.

$$\text{Bondrating}_{it} = \alpha + \beta_1 \text{retain_appoint}_{it} + \beta_2 \text{retain_retenelect}_{it} + X'_{it}\delta + \mu_t + \varepsilon_{it} \quad (3)$$

4. Not all states were rated by every agency in every year. When this occurred the ratings that did exist are used. As an example to better understand this process, if state i in year t receives a AAA rating from S&P and Fitch and Aaa from Moody’s, then each rating is converted into a score of 25, 19, and 21, respectively. Each of these are then divided by the total number of ratings possible (again 25, 19, and 21). This would provide a normalized score of “1” for each agency, which is then averaged across all three agencies.

5. A Hausman Test was conducted to determine whether a random-effect or fixed-effect model would be preferred. The results overwhelmingly suggested use of fixed effects. Though not reported for the sake of space, these test statistics are available upon request.

Now *retain_appoint* is if a state retains justices of its court of last resort through reappointment or non-partisan elections, while *retain_retenelect* is whether or not a state has retention elections to do so. Again, this regression is evaluated relative to partisan elections.

An additional specification becomes:

$$\text{Bond Rating}_{it} = \alpha + \beta_1 \text{chief_reappoint}_{it} + \beta_2 \text{chief_peer}_{it} + X'_{it} \delta + \mu_t + \varepsilon_{it} \quad (4)$$

This model represents the method of selecting a chief justice of a state's court of last resort. *Chief_reappoint* is if a chief justice is selected through non-partisan elections or appointed, while *chief_peer* is if a member is chosen by his or her peers on the bench. Again the results are relative to partisan elections.

A final model is as follows:

$$\text{Bondrating}_{it} = \alpha + \beta_1 \text{RetenCom}_{it} + \beta_2 \text{NomCom}_{it} + \beta_3 \text{Removal}_{it} + \delta X'_{it} + \mu_t + \varepsilon_{it} \quad (5)$$

RetenCom is whether or not a state utilizes a judicial retention commission in the selection of its judges, *NomCom* is whether there is an official nominating commission that exists within a state, while *Removal* is the number of formal procedures in place to remove a sitting judge before the end of his or her official term. Table 2 lists the summary statistics for all of the variables.

The analysis also employs a number of socioeconomic and institutional control variables shown to affect a state's bond rating (Belasen et al. 2015; Calcagno and Benefield 2013; Liu and Thakor 1984; Schelker 2012). The first set of controls account for the overall income within a state and includes per capita gross state product (measured in real, 2012 dollars), the median age of a state's population, and the population density. These controls are meant to proxy for the ability of a state's citizens to generate income and, importantly for the state, tax revenue. Thus, potential tax revenues will generally be higher in states with higher incomes. Further, a more densely populated state tends to be relatively wealthier than more rural areas, while older populations may have lower income earning potential, and with it reduced potential tax revenues. Therefore, it should be that as per capita income and population density increase so too do bond ratings, while as a state's median age increases there should be a decrease in bond ratings.

This paper also includes the percent of the population with a bachelor's degree or higher and also a state's unemployment rate. Here again, as educational attainment increases so too does income, while increased unemployment may make it more difficult for a state to service its debt in the future. Therefore, the former variable should increase bond ratings, while the latter should decrease it.⁶ Further, the study also considers a measure of a state's overall fiscal health by including a state's debt-to-revenue ratio. As this variable increases, then it should be the case that it will be relatively more difficult for states to service their debts in the future. Over time then this should decrease overall bond ratings.

6. No educational attainment data were available for 2011 and 2012. Therefore, data were interpolated for those two years.

TABLE 2
Summary Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Bond rating	886	0.925	0.056	0.642	1
Select_elect	886	0.427	0.495	0	1
Select_appoint	886	0.489	0.500	0	1
Select_merit	886	0.351	0.478	0	1
Retain_popelect	886	0.091	0.288	0	1
Retain_reappoint	886	0.517	0.500	0	1
Retain_retenelect	886	0.350	0.477	0	1
Chief_popelect	886	0.427	0.495	0	1
Chief_appoint	886	0.489	0.500	0	1
Chief_peer	886	0.546	0.498	0	1
NomCom	886	0.562	0.496	0	1
RetenCom	886	0.280	0.449	0	1
Removal	886	2.473	0.709	1	4
Per capita income (In 10,000s)	886	4.628	0.890	2.971	7.726
Unemployment	886	5.719	1.990	2.267	13.800
Median age	886	36.932	2.484	26.700	43.900
% of Population with bachdor's degree	886	26.089	4.955	12.700	40.300
Population density (In 10,000s)	886	0.020	0.026	0.0001	0.121
State debt to revenue	886	54.524	29.877	13.474	190.737
Ideology	886	49.804	24.564	0	92.451
ACIR BBR score	886	7.981	2.637	0	10
Corruption	886	0.335	0.294	0	2.548
Income and payroll tax revenue (EFNA2A)	886	5.757	1.836	0.600	9.90
Top marginal income tax rates (EFNA 2Bi)	886	7.226	1.650	3	10
Northeast	886	0.201	0.401	0	1
Midwest	886	0.202	0.402	0	1
West	886	0.314	0.464	0	1
Common Law North	849	0.611	0.488	0	1
Common Law South	849	0.112	0.315	0	1
Civil Law North	849	0.142	0.350	0	1
Civil Law South	849	0.134	0.341	0	1
Citizen ideology	886	49.804	24.564	0	92.451

I also include measures of corruption, economic freedom, tax burden within a state, and balanced budget rules, all of which have been shown to effect bond ratings. The first is the number of federal corruption convictions of state and local public officials (per 100,000 residents) taken from the Public Integrity Section of the US Department of Justice.⁷ In order to

⁷ Information is freely available at www.justice.gov/criminal/pin

measure both tax burdens and economic freedom I include two subcomponents of the Economic Freedom of North America rankings compiled by the Fraser Institute. This index is based on a rating between “0” (least economically free) and “10” (most economically free).⁸ Here I include subcomponents 2A (income and payroll tax revenue as a percentage of income) and 2Bi (top marginal income tax rate). Finally, I include a measure of the restrictiveness of a state’s balanced budget rule (where one exists) as measured by the Advisory Commission on Intergovernmental Relations (Anderson 1987). This index provides a score between “0” (low) and “10” (high) based on the restrictiveness of each state’s balanced budget rules and requirements.

The paper also incorporates a set of regional dummy variables taken from the Census regions for the Northeast, Midwest, West, and South regions. These are included as there is little variation in the measures of judicial independence within states over the sample. This means it is not possible to include a set of state fixed-effects into the analysis, however, regional dummy variables can help control for at least some unobserved differences that may emerge across states.⁹ All of these variables were obtained from the US Census Bureau, except for per capita income which was taken from the Bureau of Labor Statistics.

One issue which may arise in the analysis is the potential endogeneity with a state’s debt-to-revenue ratio, and possibly the JI variables as well. Importantly, the JI variables have, in general, been long-standing institutions and have therefore seen virtually no variation over the sample. This should limit the potential for reverse causality to be driving the results. However, debt-to-revenue still varies and there still may be issues of omitted variable bias and simultaneity, especially if it is voter preferences that are driving the outcomes.

As a first step to overcome this problem, and following Poterba and Rueben (1999) I include a control variable for voter ideology taken from Berry et al. (2010).¹⁰ With the addition of this variable it is possible to avoid the potential that fiscal constraints and also JI merely reflect voter tastes, meaning that it is possible to avoid any correlation between institutions and policy outcomes to being a correlation between policy and what would otherwise be an omitted variable, voter preference (see Poterba and Rueben 1999).

As a final specification I include instrumental variables in several specifications. In order to instrument for JI I include a set of indicator variables developed by Berkowitz and Clay (2006) which codes each state based on their legal origin, with states considered to have been Common Law North, Common Law South, Civil Law North, and Civil Law South.¹¹ In order to instrument for a state’s debt-to-revenue I follow Capeci (1991) and include the percentage of a state’s population age 65 and over along with homeownership rates by state.

8. These data are freely available at www.freetheworld.com/efna/html

9. Besley and Payne (2003) overcome this by analyzing sub-regions in the US where variation does occur. Unfortunately, the current sample available for this paper includes virtually no variation across any states, thus a similar procedure is not possible.

10. These data are from the “Nominat 1960–2004 government ideology series” which have been updated through 2014 and are freely available for download at <https://rcfording.wordpress.com/state-ideology-data/>.

11. Hawaii and Alaska were not coded and are, therefore, excluded from the specification which includes those legal origins variables.

Finally, an additional control is included to account for any potential influence the federal judiciary may have. This is important especially in regard to sovereign debt disputes as federal courts may have a leveling effect on state JI in general. Therefore, in order to control for this influence the paper also adds a set of dummy variables for each of the eleven circuit courts of appeals that each state falls within. The following section presents and discusses the results.

RESULTS AND INTERPRETATION

Initial Results

Overall the results provide a number of interesting findings. Table 3 presents the results from equations 2 for the methods of selecting members of state courts of last resort. Additionally, standard errors are clustered by state in order to correct for any autocorrelation and heteroskedasticity within the data.

Column 1 does not include any controls while column 2 includes all control variables. Columns 3 and 4 also include OLS estimates for robustness, while columns 5 and 6 include the instrumental variables.¹² Finally, the reported coefficients are the marginal effects for the tobit model. All results are relative to partisan elections, with *select_merit* positive in five and significant in four of those specifications while all six specifications for *select_appoint* are positive with four of six statistically significant.¹³ Further, all control variables appear to have their expected sign coefficients as discussed above. An interpretation of the results would suggest that *select_merit* increases the normalized bond score by anywhere between 0.0254 and 0.0479 points.

In order to calculate the magnitude of these coefficients, I follow Calcagno and Benefied (2013) and Depken and Lafountain (2006) who apply estimates from Rubinfeld (1973) of the impact on a state's borrowing costs from a one notch change in Moody's ratings. These estimates suggest that a change in Moody's ratings from AAA to AA (where Moody's did not differentiate within investment grades at the time) increased borrowing costs by roughly 20.6 basis points. Thus, Moody's current rating system based on this would indicate an increase of roughly 6.87 basis points for each notch downgraded.¹⁴ Given that *select_merit* is correlated with a higher normalized bond score between 0.0254 and 0.0479, this would translate into a 0.53–1.006 notch

12. Unfortunately, the tobit specifications failed to converge when incorporating the instruments. Therefore, I consider OLS estimates for these specifications.

13. Column 5 indicates a negative relationship between *select_merit* and bond ratings, however, this is a specification with no control variables and one which indicates relatively weak instruments being employed. Thus this is in all likelihood an outlier.

14. Where Moody's had seven categories in 1973 and 21 today. Thus, $20.6(7/21) = 6.87$. Cornaggia, Conaggia, and Israelsen (2015) point out that Moody's recently recalibrated a number of its municipal ratings for many municipal governments (scaling up or down depending). However, this is a shift in the ratings for certain municipal governments and not a change in the number of notches. Thus, this recalibration should have no effect on the interpretation of the results.

TABLE 3
Pooled Results

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Tobit	Tobit	OLS	OLS	2 SLS	2 SLS
Select_appoint	0.0306 (0.0221)	0.0342** (0.0152)	0.0262 (0.0205)	0.0283** (0.0138)	0.124*** (0.0304)	0.0694*** (0.0169)
Select_merit	0.0479** (0.0227)	0.0336* (0.0200)	0.0413** (0.0204)	0.0254 (0.0189)	-0.111** (0.0494)	0.0426* (0.0249)
Per Capita Income (In \$ 10,000s)		0.00116 (0.00737)		0.00158 (0.00631)		0.0116** (0.00516)
Unemployment		-0.00874*** (0.00326)		-0.00666** (0.00297)		-0.00782*** (0.00198)
Median age		-0.0102*** (0.00261)		-0.00645*** (0.00189)		-0.00686*** (0.00116)
% of Population with Bachelor's Degree		0.00384** (0.00179)		0.00292** (0.00141)		-0.000317 (0.000972)
Population Density (In 10,000s)		-0.488* (0.273)		-0.419* (0.236)		-1513*** (0.267)
State Debt to Revenue		-0.000505** (0.000202)		-0.000430** (0.000171)		0.00210*** (0.000533)
Voter Ideology		4.86e-05 (0.000120)		4.01e-05 (0.000105)		0.000173 (0.000105)
A CIR BBR Score		0.00666** (0.00284)		0.00644** (0.00276)		0.0106*** (0.00224)
Public Corruption Convictions (per 100,000 citizens)		-0.0284*** (0.00874)		-0.0274*** (0.00816)		-0.0584*** (0.00977)
Income and Payroll Tax Revenue as a Percentage of Income (EFNA 2A)		0.00431 (0.00352)		0.00530 (0.00319)		0.00803*** (0.00247)
Top Marginal Income Tax Rate (EFNA 2Bi)		0.00664 (0.00454)		0.00585 (0.00415)		0.000852 (0.00282)
Constant	0.880*** (0.0186)	1.124*** (0.119)	0.883*** (0.0178)	0.996*** (0.0958)		
Observations	886	886	886	886	849	849
Log-likelihood	799.402	1184.993				
R-squared			0.096	0.591		
Cragg-Donald F-Statistic					6.330	5.902

Standard errors clustered by state in parentheses: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All regressions include year dummies, regional dummies, and federal circuit dummies (with results excluded for the sake of space but available upon request). Robust standard errors reported for all 2 SLS results. Dependent variable is normalized state bond ratings.

increase in Moody's bond rating.¹⁵ This would imply a decrease in interest costs of roughly \$364 to \$691 per million dollars of debt (assuming a 5 percent interest rate). Given that the average long-term outstanding debt per state in 2012 was roughly \$22.5 billion, this would mean reduced interest payments of between roughly \$8.2 and \$15.5 million. Overall then, not only are the coefficients statistically significant, they are economically significant as well. These findings suggest that relatively more independent methods of selecting judges are associated with increased state bond ratings.

Next Table 4 presents the results for the main variables of interest from every specification discussed in section "Data And Empirical Specification" and, for the sake of space, only indicates whether or not the control variables are included.¹⁶

The layout of the table follows the format described above for Table 3, with columns 1 through 6 again summarizing the results from Table 3, columns 7 through 12 indicating the method of retaining a judge, columns 13 through 18 considering the method of selective a chief justice, and columns 19 through 24 including nominating commissions, retention commissions, and removal procedures. Here the method of retaining a judge (whether it be through retention elections or reappointment) indicates positive and significant coefficients in all six specifications for both variables. Further the method of selecting a chief justice of a state court of last resort nets inconsistent coefficients and is only significant in one specification for *chief_appoint* and two specifications for *chief_peer*, respectively. All of the results for *NomCom*, *RetenCom*, and *Removal* indicate a positive correlation with state bond ratings except for column 23 (2SLS results with no controls) and column 20 for *RetenCom*. Further, it appears that the most robust result is for *NomCom* which is significant in four of six specifications. Thus, building in additional checks and balances into the selection process through non-partisan judicial nominating commissions seems to have the most significant impact on state bond ratings.

Robustness

In this section, I consider a significant number of additional specifications to the baseline models. The first (Table 5) now applies cross-sectional tobit and OLS estimates.

Given the time-invariant nature of many of the independent variables, as well as the potential for auto-correlation to be an issue, I employ cross-sectional analysis by averaging all variables over the sample to generate one sample of 50 observations. Columns 1 through 4 list the tobit estimates while columns 5 through 8 show the OLS estimates.

Again, all results still maintain the same sign coefficients as were found in the baseline specifications, although statistical significance is not quite as robust in Tables 5 and 6 for *select_appoint* and *select_merit*. Specifically, *select_appoint* is significant in one of two specifications, while *select_merit* is not significant now. Nevertheless, the findings do still by and large conform to what was originally found, and given that the insignificant results occur with the

15. Calculated as the coefficient multiplied by the number of notches ($0.0479 \times 21 = 1.0059$).

16. The results for those control variables are available from the author upon request.

TABLE 4
Pooled Results

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Tobit	Tobit	OLS	OLS	2SLS	2SLS
Select_appoint	0.0306 (0.0221)	0.0342** (0.0152)	0.0262 (0.0205)	0.0283** (0.0138)	0.134*** (0.0304)	0.0694*** (0.0169)
Select_merit	0.0479** (0.0227)	0.0336* (0.0200)	0.0413** (0.0204)	0.0254 (0.0189)	-0.111** (0.0494)	0.0426* (0.0249)
Observations	886	886	886	886	849	849
Control variables	No	Yes	No	Yes	No	Yes
	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Tobit	Tobit	OLS	OLS	2SLS	2SLS
Retain_renelect	0.0579** (0.0238)	0.0413** (0.0194)	0.0501** (0.0217)	0.0321* (0.0169)	0.0359** (0.0163)	0.0515* (0.0302)
Retain_reappoint	0.0518** (0.0211)	0.0557*** (0.0170)	0.0464** (0.0195)	0.0451*** (0.0148)	0.108*** (0.0151)	0.0961*** (0.0309)
Observations	886	886	886	886	849	849
Control variables	No	Yes	No	Yes	No	Yes
	(13)	(14)	(15)	(16)	(17)	(18)
Variables	Tobit	Tobit	OLS	OLS	2SLS	2SLS
Chief_appoint	0.0103 (0.0229)	-0.00697 (0.0131)	0.00781 (0.0201)	-0.00195 (0.0111)	0.137*** (0.0341)	-0.0311 (0.0345)
Chief_peer	0.0239 (0.0183)	-0.0156 (0.0168)	0.0190 (0.0151)	-0.0137 (0.0141)	0.0518*** (0.0201)	-0.0463** (0.0234)
Observations	886	886	886	886	849	849
Control variables	No	Yes	No	Yes	No	Yes
	(19)	(20)	(21)	(22)	(23)	(24)
Variables	Tobit	Tobit	OLS	OLS	2SLS	2SLS
Nomcom	0.0390** (0.0191)	0.0274** (0.0113)	0.0328** (0.0152)	0.0228** (0.00868)	-0.192 (0.188)	0.0690 (0.0613)
Retencom	0.00286 (0.0219)	-0.000979 (0.0150)	0.00316 (0.0171)	0.00112 (0.0115)	-0.00783 (0.121)	0.0305*** (0.00937)
Removal	0.0119 (0.0103)	0.0142** (0.00710)	0.0106 (0.00828)	0.0141** (0.00620)	-0.634 (0.453)	0.0585 (0.0379)
Observations	886	886	886	886	849	849
Control variables	No	Yes	No	Yes	No	Yes

Standard errors clustered by state in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All regressions include year dummies. Robust standard errors reported for all 2SLS results. Dependent variable is normalized state bond ratings. Control variables include per capita income, unemployment rate, median age, % bachelor's degree, population density, state debt to revenue, voter ideology, A CIRBBR score, public corruption convictions, income and payroll tax revenue as a percentage of income (EFNA 2A), top marginal income tax rates (EFNA 2Bi). Regional dummy variables and federal circuit court of appeals dummy variables also included.

TABLE 5
Cross-Sectional Tobit and OLS Results

Variables	CD	Tobit estimates			OLS estimates			
		(2)	(3)	(4)	(5)	(6)	(7)	(8)
Select_appoint	0.0373** (0.0174)				0.0354 (0.0258)			
Select_merit	0.0303 (0.0220)				0.0276 (0.0332)			
Retain_renelect		0.0444** (0.0185)				0.0460* (0.0266)		
Retain_reappoint		0.0578*** (0.0164)				0.0568** (0.0239)		
Chief_appoint			0.00856 (0.0122)				0.0111 (0.0167)	
Chief_peer			-0.0103 (0.0159)				-0.00947 (0.0226)	
Nomcom				0.0247* (0.0123)				0.0269 (0.0168)
Retencom				0.000512 (0.0137)				-0.00119 (0.0195)
Removal				0.0187** (0.00765)				0.0197* (0.0108)
Observations	50	50	50	50	50	50	50	50
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors clustered by state in parentheses; *** $p < 0.01$. ** $p < 0.05$. * $p < 0.1$. Dependent variable is normalized state bond ratings. Control variables include per capita income, unemployment rate, median age, %bachelors degree, population density, state debt to revenue, voter ideology, ACIRBBRscore, public corruption convictions, income and payroll tax revenue as a percentage of income (EFNA 2A), top marginal income tax rates (EFNA 2B), Regional dummy variables and federal circuit court of appeals dummy variables also included.

controls included, this could be indicative of a lack of degrees of freedom (a tradeoff resulting from the use of cross-sectional data).

As a final specification I use the numerical value for each bond rating agency and apply a pooled ordered probit model to evaluate each rating agency's score (columns 1–12 in Table 6) with each rating agency modeled separately and also a cross-sectional ordered probit model using S&P's score (columns 13–16).¹⁷ Additionally, this table includes all of the control variables mentioned.

These results are also extremely robust, with *select_appoint* and *select_merit* positive and significant in every specification, *retain_renelect* and *retain_reappoint* positive in every specification and significant in two of four and three of four, respectively, *chief_appoint* and *chief_peer* insignificant and generally negative across most results, and *NomCom* positive in all specifications and significant in 3 of 4. Finally, *RetenCom* is generally negative and insignificant, while *Removal* is positive in all specifications and significant in two of four.¹⁸

To summarize then, all this taken together indicates that *select_merit* is significant in 8 out of 12 total specifications (and actually positive in 11 of those). *Select_appoint* is positive and significant in 9 of 12 results, *chief_appoint* and *chief_peer* are both ambiguous and not robust, *retain_renelect* and *retain_reappoint* are both positive and significant in 10 of 12 and 11 of 12 specifications respectively, while *NomCom* appears to be the most robust procedural variable of the three remaining, being positive and significant in 8 of 12 specifications.

Taken together, the findings provide a number of important and interesting implications regarding the overall impact that JI has on borrowing costs. First it would appear that merit selection has the largest impact on bond ratings, as do non-partisan retention elections and the existence of nominating commissions. Not only do these results show statistical significance, they are also economically significant, and are thus associated with lower interest costs.

The fact that the method of selecting a chief justice had no effect may suggest that whatever influence this individual has across the judiciary, it is not something considered to be particularly important to market actors. This may be due to the fact that a chief justices' influence is tempered by the overall makeup of the court, and that any influence that does exist on lower courts might actually play a lesser role in the event that litigation over state debt were to arise.

Further, the fact that judicial retention commissions appeared to be somewhat less important may suggest that they have less influence in the selection process than is generally believed. Again, their stated goal is to provide impartial, low-cost information for voters about a judicial candidate. Although in theory this should increase voter awareness, in practice the outcome may be far from this ideal, and thus there may be little effect on overall JI. An in depth analysis of these

17. The S&P ratings are used for the cross-sectional specification as S&P was the only rating agency with available bond ratings for 2013, and since by definition ratings must be discrete numbers (which excludes averaging them) in order to use an ordered probit, Moody's and Fitch are excluded from this portion of the analysis.

18. One final specification, which is excluded from this version of the paper but is available upon request, considered two alternate measures of JI. These come from the Institute for Legal Reform which has ranked state legal environments since 2002 (where data are freely available at www.instituteforlegalreform.com). Two measures in particular are "Judicial Competence" and "Judicial Impartiality." Even using these two measures nets similar results to those found above providing even more robustness as well.

TABLE 6
Cross-Sectional OLS Results

Variables	CD	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Select_appoint	0.0320 (0.0216)	0.0354 (0.0258)						
Select_merit	0.0470** (0.0209)	0.0276 (0.0332)						
Retain_renelect			0.0521** (0.0218)	0.0460* (0.0266)				
Retain_reappoint			0.0466** (0.0201)	0.0568** (0.0239)				
Chief_appoint					0.00824 (0.0208)	0.0111 (0.0167)		
Chief_peer					0.0168 (0.0153)	-0.00947 (0.0226)		
Nomcom							0.0315** (0.0151)	0.0269 (0.0168)
Retencom							0.00443 (0.0169)	-0.00119 (0.0195)
Removal							0.00922 (0.00845)	0.0197* (0.0108)
Control variables	No	Yes	No	Yes	No	Yes	No	Yes

Notes: Standard errors clustered by state in parentheses; ** $p < 0.01$, * $p < 0.05$, $p < 0.1$. Dependent variable is normalized state bond ratings. Control variables include per capita income, unemployment rate, median age, %bachelors degree, population density, state debt to revenue, voter ideology, ACIRBBBscore, public corruption convictions, income and payroll tax revenue as a percentage of income (EFNA 2A), top marginal income tax rates (EFNA 2Bi), Regional dummy variables and federal circuit court of appeals dummy variables also included.

conjectures along with other possibilities, although beyond the scope of this current paper, would be worthy of future research.

Overall then, if policy implications were to be drawn from the above findings it would be that states should focus on creating a relatively more independent judiciary within their respective courts of last resort, especially with the adoption of merit selection, or appointment or non-partisan elections. This independence (and thus higher bond ratings) can be augmented through the incorporation of retention elections and also by increasing the checks and balances that exist in the selection process by adopting judicial nominating commissions. All of these findings and recommendations should provide ample opportunities for future research.

Finally, there may also be more generalizable implications for JI in sovereign countries. Specifically, JI as an important institutional feature does appear to convey credibility to market actors and both potential and actual creditors. Thus, an important implication for any sovereign state would be to create and maintain an independent judiciary, if for no other reason than to lower borrowing costs, and thereby decrease debt and fiscal burdens on that respective sovereign.

CONCLUSION

This paper has evaluated how differences in judicial independence within US states affect state bond ratings. As has been suggested within the literature, there is a clear connection between judicial independence and economic outcomes, with a more independent judiciary having been shown to lead to increased growth and development. Along these lines, this article has evaluated how an independent judiciary may affect state bond ratings, given the need for the existence of an impartial third party arbitrator able to properly assess fault and protect individual rights from public or private predation and expropriation. To the extent that increased judicial independence is better able to achieve this outcome, it should be the case that such independence will be reflected in higher bond ratings for states with relatively more independent judiciaries.

Overall, the empirical results do in fact suggest that greater judicial independence is associated with higher state bond ratings. This is especially true for independent state courts of last resort, based both on the method of selection and retention that individuals chosen to the bench may face. This is also found to be true with the existence of greater checks and balances built into the selection process, especially through the use of independent judicial nominating commissions, which leads to higher bond ratings relative to states without such an institution. Given this, it would seem important from a policy perspective to take care in determining the method employed to selected justices to the bench.

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