INDUSTRY VS SERVICES: DO ENFORCEMENT INSTITUTIONS MATTER FOR SPECIALIZATION PATTERNS? DISAGGREGATED EVIDENCE FROM SPAIN

2018

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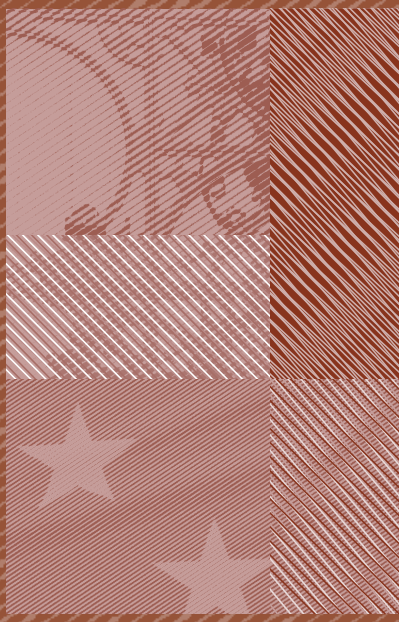

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Abstract

We exploit historical differences in foral law to consistently estimate the contribution of the quality of enforcement institutions to economic specialization across Spanish provinces in the period 1999-2014. The distribution of economic activity in Spain as of today shows a strong pattern of geographical specialization. Regions less specialized in manufacturing (industry) and oriented to services sectors (Andalusia, Extremadura) in the south are compared with industrialized/manufacturing regions in the north such as the Basque Country, Navarre or Aragon. We construct province-level congestion rates across three different jurisdictions (civil, labor and administrative) from real judicial data measuring the performance of the Spanish judicial system over time, and estimate the effect of judicial efficacy on the share of manufacturing and services in the total output. Using a variety of estimation techniques, the evidence unveils strong and persistent effects of judicial efficacy on province-level economic specialization with notable distributional differences. The provinces with a historical experience of foral law are significantly more likely to have more efficient enforcement institutions at the present day. In turn, greater judicial efficacy facilitates specialization in high-productivity manufacturing while greater judicial inefficacy encourages service-intensive specialization. The effect of judicial efficacy on economic specialization does not depend on confounders, holds across a number of specification checks and appears to be causal. Lastly, the three jurisdictions seem relevant to explain specialization, although the administrative jurisdiction appears to have a more pronounced impact than the labor or civil jurisdictions.

Keywords: economic specialization, institutions, justice.

JEL Classification: O1, K4.

Resumen

Este documento estima el efecto de la calidad de las instituciones en el patrón de especialización productiva observado en España en el período 1999-2014 a nivel local. La investigación parte de la observación de que la actividad económica en España muestra un fuerte patrón de especialización geográfica: las regiones menos especializadas en manufacturas o actividades industriales y orientadas al sector servicios en el sur (como Andalucía o Extremadura) contrastan con regiones más industrializadas o con mayor intensidad manufacturera en el norte, como el País Vasco, Navarra o Aragón. Para realizar el análisis, construimos tasas de congestión judicial a nivel provincial para las jurisdicciones civil, administrativa y social y estimamos su efecto sobre el peso del sector manufacturero y el sector servicios en el PIB provincial. Para que la estimación sea consistente, analizamos las diferencias históricas en la vigencia de Derecho foral o especial y las relacionamos con la eficacia del sistema judicial hoy. Tras utilizar diversas técnicas de estimación, los resultados muestran un efecto fuerte y persistente de la eficacia judicial sobre la especialización productiva a nivel provincial. Más en concreto, las provincias en las que históricamente ha habido vigencia de Derecho foral o especial tienen una probabilidad significativamente mayor de que la eficacia judicial sea más alta hoy. A su vez, una mayor eficacia judicial facilita la especialización de la provincia en actividades manufactureras de alta productividad y una menor eficacia fomenta la especialización en el sector servicios. El efecto de la eficacia judicial sobre la especialización productiva parece robusto en distintas verificaciones y parece ser causal. Por último, las tres jurisdicciones serían relevantes para explicar la especialización, si bien parece tener un impacto más pronunciado la jurisdicción administrativa que la laboral o la civil.

Palabras clave: especialización productiva, instituciones, justicia.

Códigos JEL: O1, K4.

1 Introduction

1.1 Enforcement Institutions and Specialization

Enforcement institutions, of which the most representative example is the judicial system, are an integral part of the institutional matrix. Proper enforcement of contracts and property rights may need a well-functioning set of enforcement institutions [North (1990), Coase (1960), Acemoglu and Johnson (2005)]. More specifically, economic efficiency is related, on the one hand, to the quality of enforcement institutions that "control" the contracts between private agents (citizens and companies), and, on the other hand, to the quality of enforcement of property rights, which defend citizens and companies from potential expropriation from the government. There are numerous studies that relate the efficacy of enforcement institutions with greater efficiency either at specific sectors (such as the performance of the credit markets[1]) or at the international level (see Palumbo *et al*. 2013 for a survey). For the specific case of Spain there is evidence confirming the impact of the quality of enforcement on several aspects such as credit market development (Mora-Sanguinetti *et al*. 2017), firm creation (through firm entry and exit rates) (García-Posada and Mora-Sanguinetti, 2014) or firm size (García-Posada and Mora-Sanguinetti, 2015). Related to those questions, see also Fabbri (2010).

Far from general analyzes, a question that has not been widely studied is whether the lack of efficacy of enforcement institutions has an effect on sectoral specialization. The study of sectoral specialization is important because, according to the literature, economic development and "industrial mix" may be related. That is, different economies may experience different long-run economic outcomes partially because of their sectoral specialization patterns. This would be consistent with the neoclassical trade theory (Slaughter, 1997, Rassek and Thompson, 1998, Martínez-Galarraga *et al*. 2015).

The reasoning behind this research question is that sectors should not be reacting the same to the efficacy of the judicial system. A starting observation indicates that sectors within an economy differ markedly in their dependence on complex (and long-term, i.e require long-term relationships between different companies) investment decisions. The problem is that those decisions are normally irreversible and, if they are affected by a certain degree of specificity, they can be subject to holdup problems (Klein *et al*., 1978, Levchenko, 2007) and opportunism. Even if a "complete" contract could be designed[2], there would always be risks of non-compliance. Because of this, investment needs mechanisms to ensure enforcement and in this way, agents can achieve a perception of security in the process. The paradigmatic example of these mechanisms in a developed economy is the judicial system. Indeed, international evidence indicates that before an inefficient institutional framework there could be less investment (Nunn, 2007).

Therefore, ineffective enforcement institutions should affect to a greater extent sectors that are more dependent on investment decisions and the impact should be greater the more complex and dependent on interaction with other agents these investments are. Following this same reasoning, we can go a step further and differentiate between investment decisions in tangible versus intangible (or "knowledge-based" capital)[3]. Following the OECD (2015), there is

1 Djankov et al. (2008), Bae and Goyal (2009), Qian and Strahan (2007), Jappelli et al. (2005) and Shvets (2013).

2 A strategy to "complete" the contract could be giving the "property rights" of each aspect not specifically contracted to only one of the contracting parties (Grossman and Hart, 1986).

3 See OECD (2017) or Corrado et al. (2009) for a list of assets which could be considered "knowledge-based".

international evidence[4] showing that the median knowledge capital intensity in 2013 was above in manufacturing with respect to any other sector (ranging from agriculture to "other services"), with the only exception of trade and finance. Also, according to the OECD (2017), new-to-market product innovators (as a % of all business in each sector) were higher in Spain in the manufacturing industries than in the services industries (this pattern is also commonly observed in other economies). A judicial system that works with average performance may be sufficient to protect physical capital (as its measurement is quite straightforward) while the protection of the company's intangible assets (copyrights, patents, etc.) is more difficult (Kumar *et al*. 2001, García-Posada and Mora-Sanguinetti, 2014) and may need a high-performing judicial system.

In the last paragraphs, it was argued that the judicial system may affect investment through its impacts on private contracts. However, the potential expropriation by politicians and elites may also generate uncertainty. A company could seek protection from the judicial system also against this risk. Acemoglu and Johnson (2005) related an ineffective defense of property rights with lower economic development in the long term and lower investment and financial development.

As an overall prediction, economies with greater judicial efficacy should specialize intensively in sectors more dependent on specific investments such as manufacturing. In contrast, economies with a lower degree of judicial efficacy should specialize in low-skilled services.

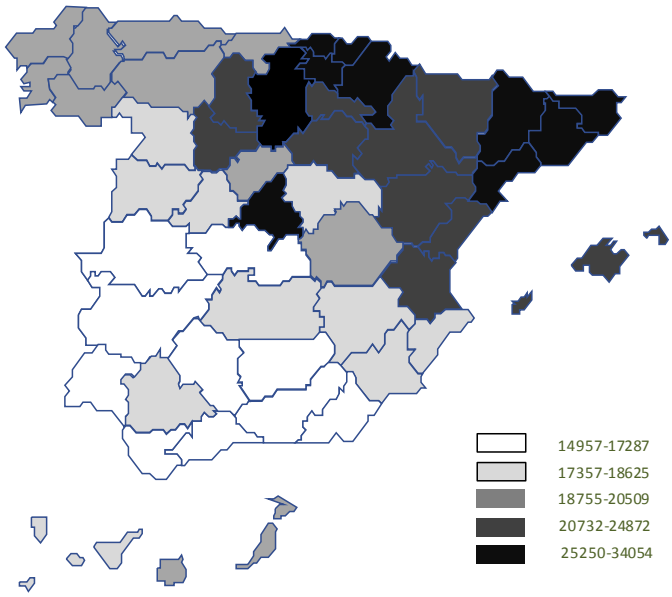
1.2 Geographical Specialization, Economic Development and Institutions in Spain

Economic activity in Spain shows a strong pattern of geographical specialization. Regions least specialized in manufacturing (industry) and oriented to services sectors (Andalusia, Extremadura) in the South are confronted to highly industrialized/manufacturing regions in the North such as the Basque Country, Navarre or Aragon.

At the same time, we observe that there are still today considerable differences in economic development between different regions in Spain. Following the statistics of the National Statistics Institute (INE) (Spanish Regional Accounts), GDP per capita was more than 25% higher in Madrid, the Basque Country or Navarre compared to the national average in 2014. By contrast, GDP per capita in Extremadura or Andalusia was more than 25% lower than the national average. These differences seem to be persistent in the long run, with a trend that may have existed since 1800 (Carreras, 1990), although including a period of convergence in the 1960s and 1970s (Goerlich Gisbert and Mas Ivars, 2002, Tortosa-Ausina *et al*. 2005). To date, and despite the mentioned period of convergence, we could clearly observe a spatial clustering, bringing together the richest provinces in the northeast of the country and the poor in the southwest (Tirado-Fabregat *et al*. 2015) (see Figure 1).

4 The OECD (2015) shows aggregate international data at the sector level for a group of selected economies (including Spain and another EU 13 countries).

Figure 1: GDP per Capita (Euros) at the Spanish Provinces (2014)

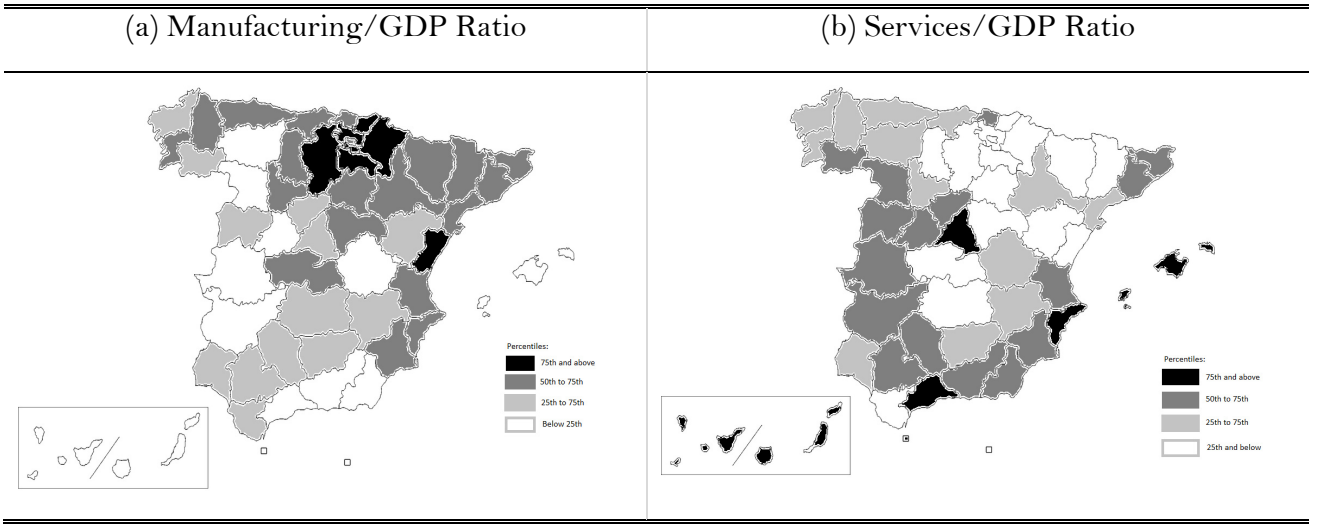


SOURCE: self-elaboration from INE (2016) Regional Accounts. *Pro memoria*: GDP per capita of Spain (2014): 22323 euros.

As it was discussed above, development and sectoral specialization may be linked. Thus, convergence in sectoral patterns between regions may reduce inequality. Indeed, convergence in sectoral organization of regional economies would mainly explain the convergence mentioned in the 60s and the 70s at the regional level in Spain. This does not exclude other explanations, such as the reduction in productivity gaps "within" sectors. The lack of further convergence at the industrial/sectoral mix would partially explain the lack of further reduction in inequalities between Spanish regions in the last part of the last century, although the importance of productivity performance intra-sector is gaining weight. The debate may be also connected with other recent discussions in the literature. In fact, the Spanish case could go hand in hand with the hypothesis of Rodrik (2016), who suggested that a "*premature deindustrialization*" might be taking place in several countries. The rise of construction in Spain before the recession, accompanied by the decline of growth-enhancing manufacturing and by the rise in low-skilled services may follow the pattern suggested by Rodrik.[5] On these issues, the literature repeats that more empirical work is needed (De la Fuente, 2002, Martínez-Galarraga *et al*, 2015). In Figure 2, we present the spatial distribution of manufacturing activity and services across Spanish provinces in the period 1999-2014 where a clear North-South gradient is also apparent.

5 In more general terms, Rodrik (2016) proposed a suggestive example: imagine a country with a high-income industrialized region and two other regions, characterized by low-income (one of them characterized by a comparative advantage in manufacturing). As a result of the implementation of labor-saving technologies and a reduction in transport or transaction costs among regions, the low-income region without comparative advantage in manufacturing would suffer a reduction in output (and employment).

Figure 2: Spatial Distribution of Manufacturing and Services across Spanish Provinces



The article analyzes the institutional structure at the provincial level (NUTS[6] 3 data) and argues that specialization may be partially the outcome of the performance of the efficacy of enforcement institutions in the long run.

1.3 Mechanisms

The main testable prediction of this paper is that Spanish provinces with greater judicial efficacy should specialize intensively in sectors more dependent on specific investments such as manufacturing, and provinces with a lower degree of judicial efficacy should specialize in low-skilled or non-complex activities, such as services and construction (see Section 1.1 and its references).

In order to analyze the research question, we have constructed a novel database with real data on the performance of the Spanish judicial system. More specifically, we construct measures of efficacy for three different jurisdictions (administrative, civil and labor) at the province level (see Section 2.2 for more details of the "legal" structure of the Spanish judicial system). We expect to find that the efficacy in any of the three jurisdictions will have positive impacts on specialization in manufacturing (or "complex" economic activities). However, the analysis of the three jurisdictions will allow us to explore if the channel of expropriation risks is more important than the channel of (private) contractual risks as implied by Acemoglu and Johnson (2005).

More specifically, Acemoglu and Johnson (2005) argued that countries with greater restrictions on their politicians and elites and greater protection against expropriation on their part would have higher investment rates. Moreover, at the country level, once controlled by institutions that defend property rights, the quality of "contractual" institutions (contracts between private agents) would have no effect on the investment to GDP ratio. It could be argued, therefore, that the jurisdiction of the judicial system that controls the administration might be more important for investment than the jurisdictions of the judicial system that controls the execution of private contracts.

6 Nomenclature of Territorial Units for Statistics.

Indeed, the three jurisdictions in Spain deal with different types of conflicts. The administrative jurisdiction controls the functioning of the public administration (solving eminent domains related conflicts, zoning, public contracts, etc.) and could be considered as a proxy of the quality of the check and balances existing in the Spanish economy to control the power of the government. The civil jurisdiction deals with the enforcement of contracts between private companies and citizens and the labor jurisdiction deals with conflicts arising between employers and employees. The efficacy of these two jurisdictions (civil and labor) can be deemed as proxies to the quality of contracting institutions. Following the above mentioned reasoning, the administrative jurisdiction should have deeper effects on investment and specialization than the civil or the labor one.

It should be noted that the analysis of the three jurisdictions gives depth to the study as it allows to consider in the same paper different potential links between the judicial system and the daily functioning of enterprises in any sector (see section 2.2): beyond the importance of judicial efficacy for investment (that would be a general concern), a company may be also negatively affected in its hiring decisions if the labor jurisdiction works inefficiently. Furthermore, companies more dependent on public contracting with the local, regional or state administrations may be more affected by the efficacy of the administrative jurisdictions (in contrast to other firms that interact eminently with other private enterprises and would be more dependent on the functioning of the civil jurisdiction).

In order to analyze the impacts of judicial efficacy (through three different jurisdictions) on specialization, we build the shares of manufacturing and services in the total output at the province level. We then estimate the effect of the institutional framework on the share of manufacturing and services in the total output using a variety of estimation techniques: quantile regressions first and then an instrumental variables framework, exploiting as instruments certain historical conditions. A limitation of our analysis (that goes beyond this paper) is that specialization is measured in an aggregate way at the provincial level (as shares in the total output) and not at the enterprise level.

The rest of this paper is organized as follows: Section 2 presents our dataset and discusses how we have constructed our measures of quality of the Spanish institutional setup and our instruments. Section 3 explains our identification strategy. Section 4 presents the results of the estimations and finally, Section 5 provides some conclusions. The paper is completed by three appendices: in the first one (A) we include (and discuss) a group of extra instruments related to the historical conditions of legal education in Spain, in the second one (B), we present a counterfactual scenario by province and jurisdiction, and in the third one (C) we present the impact of judicial efficacy on economic specialization using alternative outcome variables (taking into account agriculture and construction).

2 Data

2.1 Outcomes

We compute the share of manufacturing (*M*) and services (*S*) in the total output at the local level in the *i*-th province or the *j*-th autonomous community at time (*t*) as the two key measures of economic specialization. Following the standard classification of economic activity, the total output is divided into four sectors: (i) agriculture, (ii) manufacturing, (iii) construction, and (iv) services. Local shares of manufacturing and services in the total output exhibit substantial province-level variation. At one extreme, the province of Barcelona has a mean share of manufacturing in total output at 18%, and 74% share of services. At the other end, Málaga has a mean share of manufacturing in total output at 4% and 85% share of services.

2.2 Measuring Judicial Efficacy

We have constructed a database on the performance of "enforcement institutions" using actual operating data of the Spanish judicial system. The data is coming from the General Council of the Judiciary (CGPJ) of Spain. We can compile information on the conflicts resolved at the province level, by jurisdiction on a yearly basis. More specifically, the information on flows of new, pending and solved conflicts inside the system allows us to construct proxies for judicial efficacy at the province[7] level.

We have obtained data for three jurisdictions, more specifically those mainly related to the economic activity of enterprises and citizens: the administrative, labor and civil jurisdictions. Figure 3 provides a scheme of the Spanish judicial system. First, a company may have to negotiate with the public administrations in its daily activities. Several domains are affected by that type of interactions: ranging from the payment of taxes to obtaining zoning permits to construct an industrial warehouse. Conflicts arising from the contact between citizens or companies and the public administration will be usually solved by the jurisdiction for suits under administrative Law (or administrative jurisdiction). In parallel, a company may have conflicts with its employees. For instance, a dismissal conflict which arrives to the judicial system will be resolved by the labor jurisdiction.[8] Finally, on a daily basis a company may have conflicts with other private firms or citizens such as suppliers and customers: for instance misinterpretations of private contracts (loans, intellectual property, etc), management of the dissatisfaction with the quality of a product or the problems in the reception of intermediate goods. All those conflicts will be solved by the civil ("private") jurisdiction.

Each jurisdiction is ruled by its own procedural rules, and its own courts (served by, to a certain extent, "specialized" judges). As it was discussed, our database compiles information on all those jurisdictions at the province level. Several approaches could be taken to proxy the efficacy of the judicial system. We have constructed a standard measure of enforcement efficacy called the "congestion" rate [see, among others, García-Posada and Mora-Sanguinetti (2015) or Ponticelli and Alencar (2016)]. The congestion rate is defined as the ratio of the sum of pending cases (measured at the beginning of the year, "*t*"), plus the new cases measured in a specific year divided by the resolved cases in the same year. A lower

7 In the CGPJ data, the province of Cádiz includes the Autonomous city of Ceuta and Málaga includes the Autonomous city of Melilla in the 3 jurisdictions analyzed (administrative, labor and civil).

8 The data we use correspond to the activity of labor judges.

congestion rate is related to a greater efficacy in the specific jurisdiction analyzed (administrative, labor and civil) in the province "*j*".

$$Congestion\ \ rate_{j,t} = \frac{Pending\ \ cases_{j,t-1} + New\ cases_{j,t}}{Cases\ resolved_{j,t}}$$

The descriptive statistics of the congestion rates obtained are presented in Table 1. In the case of the civil jurisdiction we have computed a congestion rate with data from 2002 (until 2014). The reason to begin the analysis in 2002 is that a new Civil Procedural Law (CPL) entered into force on 7 January 2001, abrogating, after more than a century in force, the "old" CPL of 1881. The new CPL changed several aspects of civil procedure in Spain making the system less "formal" (in the sense of Djankov *et al*. 2003) than before (Mora-Sanguinetti 2010). The types of procedures available for the parties were also new after 2001. More specifically, we have computed the congestion rate for a "representative" procedure (the "ordinary judgment" at the declaratory stage) including the scarce number of family Law cases taking the form of "ordinary" judgments.[9] Then, in the case of the administrative and labor jurisdiction, we have data between 1999 and 2014.

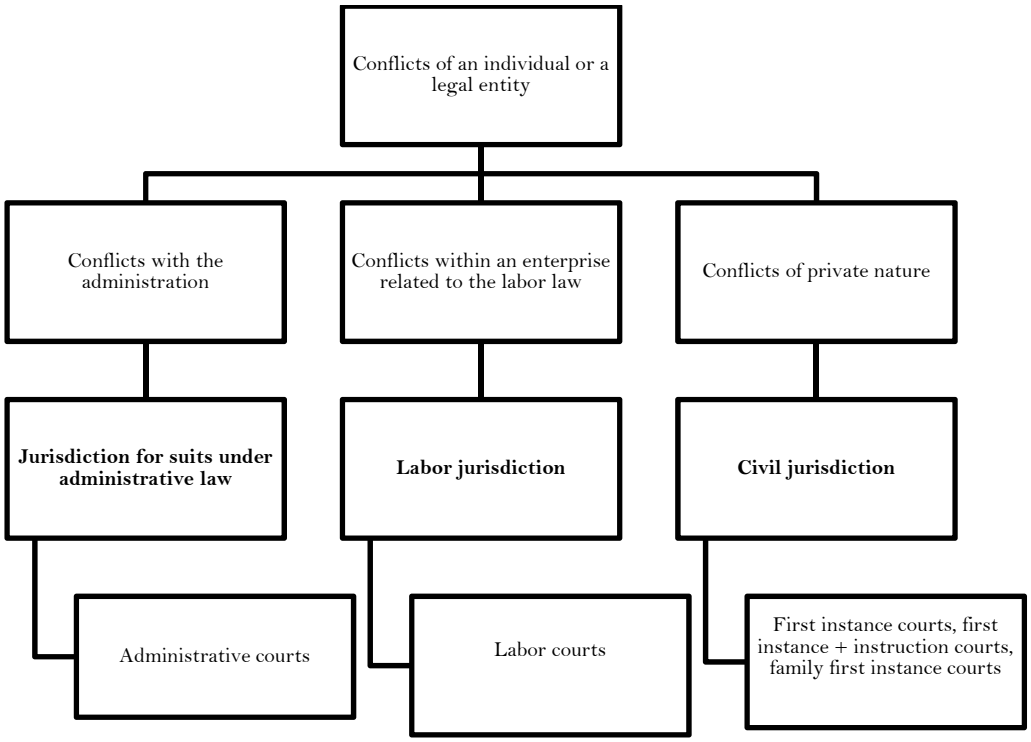
In Figure 4, we present the spatial distribution of the congestion rates using the first principal component of congestion rates across administrative, labor and civil jurisdictions. For the administrative and labor jurisdiction, we use 1999-2014 period while 2002-2014 period is used for the civil jurisdiction to compute the principal component. The evidence at first glance indicates a clear pattern between foral (see section 2.3.) and non-foral law provinces where the latter tend to have higher component scores, indicating greater congestion rates than the foral law provinces with p-value = 0.000 using a two-tailed mean comparison test.

9 The "ordinary" judgments not including family cases encompasses conflicts arriving to the "first instance" and "first instance + instruction" courts. The ordinary judgments related to family Law encompasses conflicts arriving to the "first instance", "first instance + instruction" and "family first instance" courts.

Table 1: Descriptive Statistics

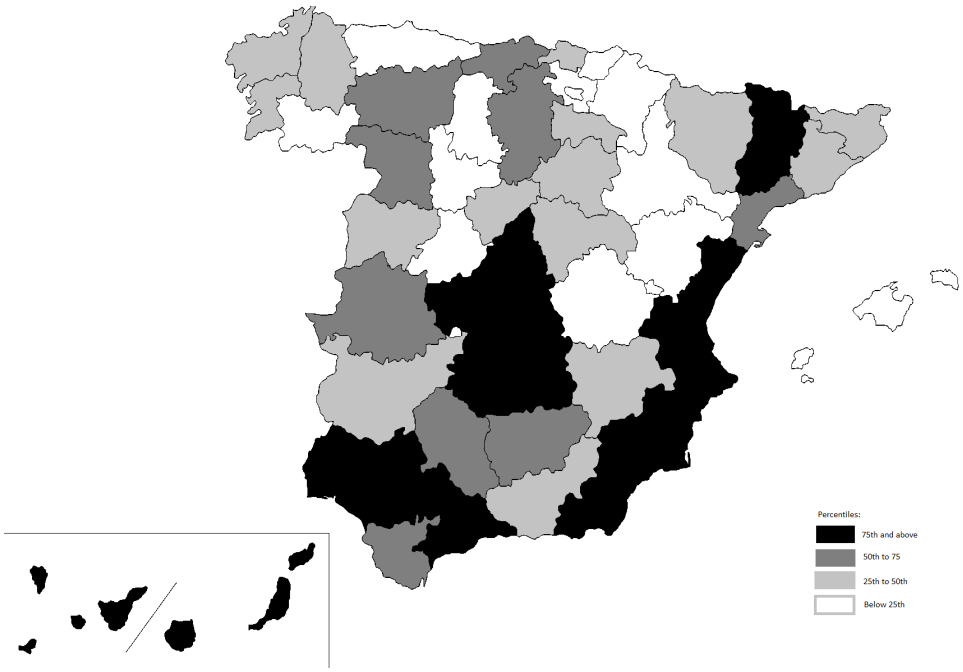
	Obs	Mean	StD			Min	Max	Treatment/Control Two-Sided t-test (p-value)
			Overall	Between	Within			
Panel A: Administrative Jurisdiction								
Total Congestion Rate	800	1.80	.426	.240	.353	1.09	4.12	0.23
Panel B: Labor Jurisdiction								
Dismissal Lawsuits	850	1.35	.239	.110	.213	.816	2.52	0.003
Panel C: Civil Jurisdiction								
Congestion Rate for New Civil Cases	650	1.99	.299	.237	.185	1.41	3.13	0.000
Panel D: Structural Covariates								
Corporations Per Capita	800	.065	.008	.007	.002	.045	.091	0.000
Lawyers Per Capita	800	1.99	.693	.683	.150	.398	5.41	0.315
Population Size	800	856,868	1,081,360	1,087,911	89,491	75,870	6,400,000	0.000
Real GDP Per Capita	800	29,435	6,338	6,176	1,658	18,711	52,146	0.000
Panel E: History and Geography Covariates								
Literacy Rate in 1860	800	26.82	8.92			13	50	0.019
Literacy Rate in 1900	800	44.98	14.50			28	74	0.022
Literacy Rate in 1930	800	72.06	13.69			49	94	0.000
Literacy Rate in 1950	800	88.30	10.92			73	100	0.000
Literacy Rate in 1960	800	91.64	8.14			73	100	0.000
Annual Rainfall Precipitation (mm)	432	540.39	284.43			229.01	1540.77	0.000
Annual Rainfall Precipitation Volatility	432	170.42	79.69			88.53	471.87	0.000
Mean Temperature Level	287	58.15	179.18			9.54	794.25	0.000
Long-Run Temperature Volatility	287	13.44	40.69			1.26	180.57	0.000

Figure 3: Simplified scheme of the Spanish judicial system



SOURCE: Own elaboration.

Figure 4: Judicial Inefficacy across Spanish Provinces



SOURCE: Own elaboration.

2.3 Instrumental Variables: Foral Law

As instruments we analyze if there is "foral Law" enforced in the province (i.e. "historical" civil/private Law regulations which differed from the "common" Spanish regulations since the middle ages, and are still applicable today with preference to the "common" ones in some specific provinces or regions). [10]

More specifically, the basic set of rules of private (civil) law in Spain is compiled in the "Civil Code" where we can find dispositions ranging from family law to general contract and property law. The Spanish "Civil Code" was enacted in 1889 and, even though it was a national Law, it recognized the enforceability of some private rules applicable in certain provinces by that time. That is, the "Civil Code" did not abrogate them. Those private rules are called "foral Law" or "special Law". The Spanish Civil Code became thus supplementary of the "foral Law" in the provinces where it existed. Therefore, some private transactions are affected by private Law dispositions which may slightly differ from one Spanish province to another.

If we take as a reference the compilation of foral Laws published by the BOE (Boletín Oficial del Estado, the State Official Newsletter) of 24th July 2017, there is still foral Law being enforced in the following provinces: Huesca, Zaragoza, Teruel, Balearic Islands, Barcelona, Tarragona, Lleida, Girona, A Coruña, Lugo, Ourense, Pontevedra, Navarra, Álava, Guipuzcoa, Vizcaya, Castellón, Valencia and Alicante. This coincides with the regions of Aragón, Catalonia, Balearic Islands, Valencia, Galicia, Navarra and the Basque Country. We have thus not included Badajoz (in Extremadura) and Ceuta.

Based on that information, we have constructed a variable which captures the provinces in which a "foral" Law partially affects or substitutes part of the common (Spanish) civil Law. Thus, the variable takes value 1 in all the provinces mentioned above (see Figure 7) and it is called "Foral Law" in Table 5. However, we cannot sustain that "foral" Law is equally affecting the civil law of all the provinces captured by that variable. In order to construct a variable measuring the "weight" (or the "importance") of foral Law, we have relied again in the compilation mentioned above. It contains a certain amount of norms by region (see Table 2a, Table 2b). From this information we have constructed two variables: "# Foral Legal norms" (as the number of norms included in the compilation by region/province) and "Foral Law per capita word count" which counts an approximated number of words of those norms. Following this count, the provinces of Catalonia are the most affected by foral Civil Law.

So far, we have discussed the foral/special Law in the context of civil law which implies that the foral Law IVs will be used as IVs in the civil jurisdiction only. Nevertheless, there is foral/special law outside the civil jurisdiction. i.e. there is "foral Law" affecting the tax law in the Basque provinces, Navarra and the Canary Islands.[11] This implies that the variable "Foral Law" takes value 1 only for the provinces in the Basque Country, Navarra and Canary Islands (as there are specific tax regulations in those provinces) when analyzing the administrative jurisdiction. As before, we construct the number of norms of this type taking into account the information included in a BOE compilation (Código de Legislación Tributaria). We also compute the "weight" of the norms, taking as a proxy the word count. Table 2a summarizes the foral/special law in the administrative jurisdiction. Table 2b exhibits the equivalent summary for

10 As it will be discussed, we also mention the Tax Law specialties of the Basque Country and Navarra.

11 We recognize that the term "foral" in this context is usually applied just to the Basque Country and Navarre. We have decided not to extend this terminological discussion as it is not probably a fundamental discussion for our analysis.

the civil jurisdiction. Finally, it should be clarified that there is no "foral labor Law" (therefore, no "foral Law" IV will be included when we analyze that jurisdiction).

As a robustness exercise, Appendix A adds a second group of IVs which compiles information on the historical conditions and structure of the Spanish university system.

Table 2a: "Weight" of Foral /special Tax Administrative Law

Region	Provinces Affected	Norms	Number of Norms	Approximate Word Count
Basque Country	Alava Guipuzcoa Vizcaya	Ley 12/2002, de 23 de mayo, por la que se aprueba el Concierto Económico con la Comunidad Autónoma del País Vasco	1	21,404
Navarra	Navarra	Ley 28/1990, de 26 de diciembre, por la que se aprueba el Convenio Económico entre el Estado y la Comunidad Foral de Navarra	1	23,783
Canary Islands	Las Palmas Santa Cruz de Tenerife	Ley 19/1994, de 6 de julio, de modificación del Régimen Económico y Fiscal de Canarias. Ley 20/1991, de 7 de junio, de modificación de los aspectos fiscales del Régimen Económico Fiscal de Canarias. Real Decreto 2538/1994, de 29 de diciembre, por el que se dicta normas de desarrollo relativas al Impuesto General Indirecto Canario y al Arbitrio sobre la Producción e Importación en las islas Canarias, creados por la Ley 20/1991, de 7 de junio.	3	154,376
Rest of Regions	Rest of Provinces	0	0	0

Table 2b: “Weight” of Foral Civil Law

Region	Provinces Affected	Norms	Number of Norms	Approximate Word Count
Basque Country	Alava Guipuzcoa Vizcaya	Ley 5/2015, de 25 de junio, de Derecho Civil Vasco. Ley 2/2003, de 7 de mayo, reguladora de las parejas de hecho	2	22547
Catalonia	Barcelona Tarragona Lleida Girona	Decreto legislativo 1/1984, de 19 de julio, por el que se aprueba el Texto Refundido de la Compilación del Derecho Civil de Cataluña Ley 29/2002, de 30 de diciembre, primera Ley del Código Civil de Cataluña Ley 25/2010, de 29 de julio, del libro segundo del Código Civil de Cataluña, relativo a la persona y la familia Ley 4/2008, de 24 de abril, del Libro Tercero del Código Civil de Cataluña, relativo a las personas jurídicas Ley 10/2008, de 10 de julio, del libro cuarto del Código Civil de Cataluña, relativo a las sucesiones Ley 5/2006, de 10 de mayo, del libro quinto del Código Civil de Cataluña, relativo a los derechos reales Ley 6/2000, de 19 de junio, de pensiones periódicas Ley 22/2000, de 29 de diciembre, de Acogida de Personas Mayores Ley 2/2005, de 4 de abril, de contratos de integración Ley 1/2008, de 20 de febrero, de contratos de cultivo Ley 5/2009, de 28 de abril, de los recursos contra la calificación negativa de los títulos o las cláusulas concretas en materia de derecho catalán que deban inscribirse en un registro de la propiedad, mercantil o de bienes muebles de Cataluña Ley 15/2009, de 22 de julio, de mediación en el ámbito del derecho privado Ley 4/2012, de 5 de marzo, del recurso de casación en materia de derecho civil de Cataluña	13	237307
Galicia	A Coruña Lugo Ourense Pontevedra	Ley 2/2006, de 14 de junio, de derecho civil de Galicia Ley 5/2005, de 25 de abril, reguladora del recurso de casación en materia de derecho civil de Galicia Ley 3/1993, de 16 de abril, de las Aparcerías y de los Arrendamientos Rústicos Históricos de Galicia	3	24211
Valencia	Valencia Alicante Castellón	Ley 5/2012, de 15 de octubre, de Uniones de Hecho Formalizadas de la Comunitat Valenciana Ley 3/2013, de 26 de julio, de los Contratos y otras Relaciones Jurídicas Agrarias	2	15089
Aragon	Zaragoza Huesca Teruel	Decreto Legislativo 1/2011, de 22 de marzo, del Gobierno de Aragón, por el que se aprueba, con el título de «Código del Derecho Foral de Aragón», el Texto Refundido de las Leyes civiles aragonesas Ley 4/2005, de 14 de junio, sobre la casación foral Aragonesa	2	87387
Navarra	Navarra	Ley 1/1973 de 1 de marzo, por la que se aprueba la Compilación del Derecho Civil Foral de Navarra Ley Foral 6/2000, de 3 de julio, para la igualdad jurídica de las parejas estables Ley Foral 15/2005, de 5 de diciembre, de promoción, atención y protección a la infancia y a la adolescencia Ley Foral 3/2011, de 17 de marzo, sobre custodia de los hijos en los casos de ruptura de la convivencia de los padres	4	80403

SOURCE: Self elaboration using BOE (Boletín Oficial del Estado). Leyes Civiles Forales. Edición actualizada a 24 de julio de 2017, and BOE (Boletín Oficial del Estado). Códigos electrónicos. Código de Legislación Tributaria. Edición actualizada a 13 de noviembre de 2017.

NOTE: The Word count is approximated as it contains a limited number of words of headings, page numbers, etc. Two norms are not updated: Libro Quinto del Código Civil de Cataluña (Derechos reales) and Compilación del Derecho Civil de las Islas Baleares.

2.4 Covariates

2.4.1 TIME-VARYING COVARIATES

Control variables capture systematic covariates related to the specialization profiles. Real GDP per capita controls for the general economic performance of the province in a specific point in time. Economic performance may be related to litigation levels (Ginsburg and Hoetker, 2006, Palumbo et al. 2013). Our period of analysis covers both years of expansion (before 2008) and recession (from 2008). We also control for the number of corporations per capita, constructed using data from the DIRCE (Central Business Register) of the National Statistics Institute (INE). As it is discussed in the literature, more "complex" local economic environments may induce higher litigation rates (Mora-Sanguinetti and Garoupa, 2015). Finally, we have also controlled by the number of lawyers (*ejercientes*) per capita in the province.

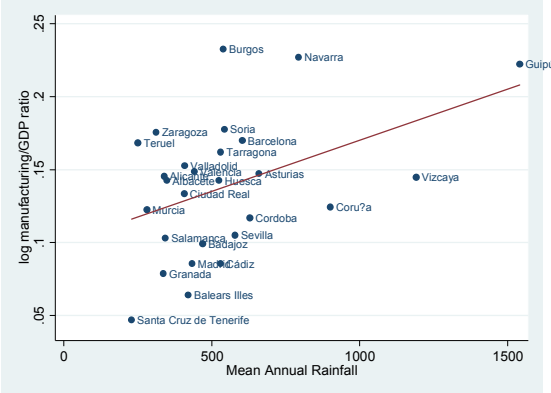
2.4.2 TIME-INVARIANT COVARIATES

2.4.2.1 Weather Conditions

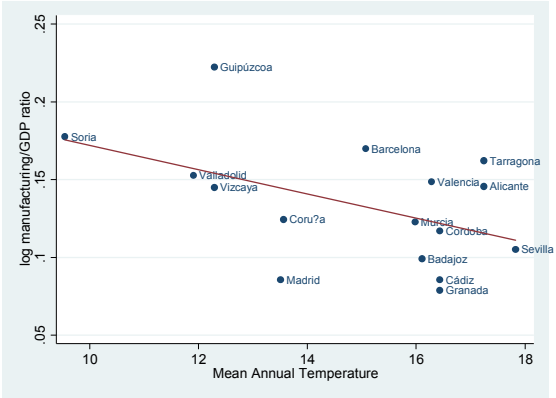
There may be a relationship between weather conditions and both litigation and economic specialization. Climate and temperature are ideal candidates to establish an exogenous source of variation in economic specialization (Gallup *et al*. 1999). Climate, for instance, has a bearing on agricultural productivity. Then, on the side of the enforcement institutions, following the literature (see Palumbo et al. 2013), the higher the weight of the agricultural sector with respect to industry, the higher the litigation. This may reflect, for instance, the higher dependence on climatic conditions. From Carreras de Odriozola and Tafunell Sambola (2006), we have obtained historical data (since late XIX century) for weather conditions, specifically the quantities of rain (annual rainfall precipitation in mm and the volatility in annual rainfall precipitation) and the historical temperatures for the available provinces (mean temperature level and long-run temperature volatility). See Table 1 for the descriptive statistics. Figure 5 plots the mean annual temperature and precipitation against the log manufacturing/GDP ratio, and shows that the provinces with higher annual temperature show lower shares of industry in total output. On the other hand, provinces with greater precipitation tend to experience markedly higher share of industry in total output.

Figure 5: Weather Conditions and Economic Specialization

(a) Mean Annual Rainfall



(b) Mean Annual Temperature



2.4.2.2 Historical Literacy Rates

The role of human capital on specialization has been widely explored in the literature (Rosen, 1983, Costinot, 2009). Historical rates of literacy may explain contemporary outcomes as traditionally less literate provinces should experience a greater absence of legal capital and knowledge. Using the same source as the previous case (Carreras de Odriozola and Tafunell Sambola, 2006), we have obtained historical data on literacy (from the census databases) in the years 1860, 1900, 1930, 1950 and 1960. Figure 6 plots the historical literacy rate from 1860 against the current share of industry in total output, and suggests that the provinces with greater historical literacy tend to have substantially higher share of manufacturing in total output.

Figure 6: Historical Literacy and Economic Specialization

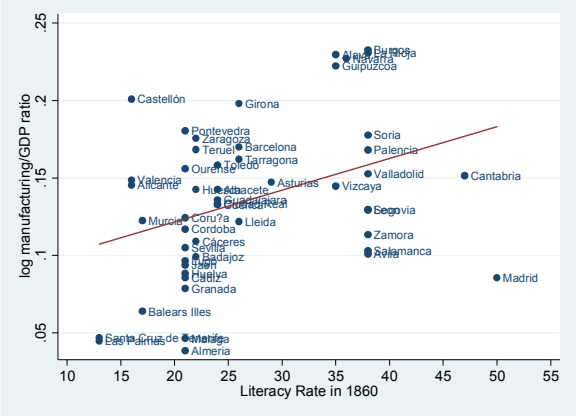


Figure 7: Provinces affected by Foral Civil Law

3 Identification Strategy

3.1 Fixed-Effects Framework

Our goal is to examine the contribution of judicial efficacy to the province-level economic specialization. As the two key measures of economic specialization, our outcome set comprises the share of manufacturing and share of services in total output. Ignoring non-linearities, the basic fixed-effects relationships between judicial efficacy and economic specialization are:

$$M_{i,j,t} = \Theta + \hat{\lambda}_1 \cdot CR_{i,j,t} + \mathbf{X}'_{\mathbf{i},TV}\beta + \mathbf{X}'_{\mathbf{i},TI}\alpha + \\ + \sum_{i=1}^{N} \mu_i \cdot 1\left[i \to \{0,1\}\right] + \sum_{j=1}^{J} \phi_j \cdot 1\left[j \to \{0,1\}\right] + \sum_{t=1}^{T} \varphi_t \cdot 1\left[t \to \{0,1\}\right] + u_{i,j,t} \quad (3.1)$$

$$S_{i,j,t} = \Theta + \hat{\lambda}_2 \cdot CR_{i,j,t} + \mathbf{X}'_{\mathbf{i},TV}\beta + \mathbf{X}'_{\mathbf{i},TI}\alpha + \\ + \sum_{i=1}^{N} \mu_i \cdot 1\left[i \to \{0,1\}\right] + \sum_{j=1}^{J} \phi_j \cdot 1\left[j \to \{0,1\}\right] + \sum_{t=1}^{T} \varphi_t \cdot 1\left[t \to \{0,1\}\right] + \varepsilon_{i,j,t} \quad (3.2)$$

where M denotes the share of manufacturing in *i*-th province within *j*-th autonomous community[12] at time *t*, and S denotes the share of services. The key covariate of interest is CR which denotes the jurisdiction-level congestion rate. $\hat{\lambda}_1$ and $\hat{\lambda}_2$ capture the contribution of jurisdiction-level judicial efficacy to the economic specialization. The set of covariates $\mathbf{X}'_{\mathbf{i},TV}$ is the vector of province-level time-varying control variables while $\mathbf{X}'_{\mathbf{i},TI}$ denotes the vector of time-invariant province-level covariates such as historical literacy rates and geography covariates. The term $\mu_i \cdot 1\left[i \to \{0,1\}\right]$ captures the unobserved province-level heterogeneity bias shifting the intercept Θ, $1\left[j \to \{0,1\}\right]$ denotes the autonomous community unobserved effects, and $1\left[t \to \{0,1\}\right]$ denotes the time-varying technology shocks common across all provinces. The terms $u_{i,j,t}$ and $\varepsilon_{i,j,t}$ capture the stochastic disturbances. The key challenge posited by the linear fixed-effects relationship in (3.1) and (3.2) concern the province-level uncertainty of the standard errors which critically affects the consistency of the estimated judicial efficacy parameters. A major threat to the proposed empirical strategy is the possibility of serially correlated stochastic disturbances both across and within provinces for the given size of $t = 1, 2, ...T$. The failure to control for temporal and spatial clustering of stochastic disturbances can lead to massively underestimated standard errors, which implies that the set of null hypotheses on the effects of congestion rate on the economic specialization is over-rejected using standard hypothesis tests (Moulton 1986, 1990). In repeated cross sections such as our province-year panel, spatial and temporal clustering of the observables and unobservables can persist even when potentially unobserved effects are controlled for. Valid standard errors require overcoming the single-way clustering using the

12 Spain is a very much decentralized country. It is divided in 17 regions (Autonomous Communities) which have legislative powers and 50 provinces (each region is composed by 1 or more provinces). There are also 2 Autonomous cities in the North of Africa (Ceuta and Melilla) which do not belong to any province or region.

multi-way clustering scheme to control for within-province serial correlation of unobservables (Kezdi 2004, Bertrand *et. al*. 2004).

We use a non-nested multiway clustering estimator from Cameron *et al*. (2011), and cluster the standard errors at the province-, region (autonomous community)- and year-level based on two-way error components model with i.i.d. error distribution assumption similar to Moulton (1986), Pepper (2002) and Davis (2002), compared to one-way clustering [White (1980), Pfefferman and Nathan (1981), Liang and Zeger (1986), Arellano (1987), Hansen (2007), Wooldridge (2003), Cameron and Trivedi (2005)] which may lead to the over-rejection of the null hypotheses and render the standard errors and parameter inference unreliable. This strategy allows us to estimate the model parameters in (3.1) and (3.2) consistently by allowing for heteroskedastic distribution of the random error variance and serial correlation in observables both across and within provinces.

3.2 Quantile Regression Framework

Although the fixed-effects estimation setup may yield consistent parameter estimates, a potential backdrop against uncovering the full effect of judicial efficacy on economic specialization can arise from neglecting the parameter estimates across various tails of the distribution. Our outcome variables have a continuous distribution, which can change in a way not revealed by the average effect of judicial efficacy. In spatial and temporal terms, the distribution of service and manufacturing shares can either spread out or become more compressed. In order to better grasp the effects of judicial efficacy on economic specialization, understanding the entire distribution is necessary. We replicate the fixed-effects relationship from (3.1) and (3.2) across various tails of the outcomes' distribution using the quantile regression estimator of the following form:

$$Q_M\left(\tau\right)=\Theta^{\tau}+\hat{\lambda}_{1,\tau}\cdot CR_{i,j,t,\tau}+\mathbf{X}'_{\mathbf{i},TV,\tau}\beta+\mathbf{X}'_{\mathbf{i},TI,\tau}\alpha \qquad (3.3)$$

$$Q_S\left(\tau\right)=\Theta^{\tau}+\hat{\lambda}_{2,\tau}\cdot CR_{i,j,t,\tau}+\mathbf{X}'_{\mathbf{i},TV,\tau}\beta+\mathbf{X}'_{\mathbf{i},TI,\tau}\alpha \qquad (3.4)$$

where $Q_M\left(\tau\right)$ and $Q_S\left(\tau\right)$ denote the τ-th quantile regression function for each outcome. Both functions solve the minimization problem weighing the positive and negative terms asymmetrically across τ quantiles:

$$\hat{q}_{\tau}^{M}=\arg\min_{q\in\Re}\sum_{i=1}^{N}\sum_{j=1}^{J}\sum_{t=1}^{T}\rho_{\tau}\left(M_{i,j,t}-q_M\right)=\arg\min_{q\in\Re}\left[\left(1-\tau\right)\sum_{M_i\in\{j,t\}}\left(q-M_i\right)+\tau\sum_{M_i\in\{j,t\}\geq q}\left(M_i-q\right)\right] \qquad (3.5)$$

$$\hat{q}_{\tau}^{S}=\arg\min_{q\in\Re}\sum_{i=1}^{N}\sum_{j=1}^{J}\sum_{t=1}^{T}\rho_{\tau}\left(S_{i,j,t}-q_M\right)=\arg\min_{q\in\Re}\left[\left(1-\tau\right)\sum_{S_i\in\{j,t\}}\left(q-S_i\right)+\tau\sum_{S_i\in\{j,t\}\geq q}\left(S_i-q\right)\right] \qquad (3.6)$$

where ρ is the check function that determines the relative size of the quantile. Substituting the linear fixed-effects model for the conditional quantile function, we allow the underlying effect of judicial congestion rate to vary across quantiles using the asymmetric loss function in the following form:

$$\hat{\lambda}_{1,\tau} = \arg\min_{\lambda \in \Re^k} E\left[\rho_\tau \left(M_{i,j,t} - \Theta - \hat{\lambda}_{1,\tau} \cdot CR_{i,j,t,\tau} - \mathbf{X}'_{\mathbf{i},TV,\tau}\beta - \mathbf{X}'_{\mathbf{i},TI,\tau}\alpha \right) \right] \qquad (3.7)$$

$$\hat{\lambda}_{2,\tau} = \arg\min_{\lambda \in \Re^k} E\left[\rho_\tau \left(M_{i,j,t} - \Theta - \hat{\lambda}_{1,\tau} \cdot CR_{i,j,t,\tau} - \mathbf{X}'_{\mathbf{i},TV,\tau}\beta - \mathbf{X}'_{\mathbf{i},TI,\tau}\alpha \right) \right] \qquad (3.8)$$

which allows to unravel the full distributional effect of judicial efficacy on economic specialization. We set ρ =.001 so that the underlying check function is based on the micro-percentile simulation of the overall effect of the judicial efficacy to avoid the compression of substantial parts of the full distribution that may be not be best characterized by the conditional mean independence assumption used in the fixed-effects estimation framework.

3.3 Instrumental Variables Setup

The main drawback of the fixed-effects and quantile regression estimator concerns the exogeneity assumption on the judicial efficacy measures. Both fixed-effects and quantile estimates can yield reasonably consistent parameter estimates if the judicial efficacy covariate is orthogonal to the error term in (3.1) and (3.2). But since the judicial efficacy is highly likely to be correlated with the unobservables, maintaining the exogeneity assumption is doubtful since the underlying fixed-effects coefficients of interest $\hat{\lambda}_1 = \dfrac{\mathrm{cov}\left(CR, M\right)}{\mathrm{var}\left(CR\right)}$ and $\hat{\lambda}_2 = \dfrac{\mathrm{cov}\left(CR, M\right)}{\mathrm{var}\left(CR\right)}$ are contaminated by omitted variable bias, particularly legal history. The omitted variable bias indicates that the judicial efficacy covariate is correlated with the unobservables, $\mathrm{cov}\left(CR, u\right) \neq 0$ which implies that the fixed-effects coefficient on judicial efficacy does not reflect the causal effect on economic specialization.

Our IV strategy exploits the historical variation in legal capital across Spanish provinces to consistently estimate the effect of judicial efficacy on economic specialization. Ignoring non-linearities and potential interaction terms, we deploy the first-stage relationship for the jurisdiction-level congestion rate:

$$\begin{aligned} CR_{i,j,t} &= \Omega + \theta_1 \cdot \mathbf{Z}_{1i,j,t}^{\text{Foral Law}} + \mathbf{X}'_{\mathbf{i},TV}\beta + \mathbf{X}'_{\mathbf{i},TI}\alpha \\ &+ \sum_{i=1}^{N} \mu_i \cdot 1\left[i \to \{0,1\} \right] + \sum_{j=1}^{J} \phi_j \cdot 1\left[j \to \{0,1\} \right] + \sum_{t=1}^{T} \varphi_t \cdot 1\left[t \to \{0,1\} \right] + e_{i,j,t} \end{aligned} \qquad (3.9)$$

where $\mathbf{Z}_{1i,j,t}^{\text{Foral Law}}$ is the set of foral law IVs indicating whether the province is affected by foral law[13], and e is the first-stage error term. We assume the set of proposed instruments based on legal history satisfies both the exogeneity and relevance restrictions. Each of the designated IVs contains part of the variation in judicial efficacy determined historically. Hence, we assume that the proposed set of IVs is orthogonal to the current economic specialization. It is quite unlikely that the proposed set of instruments would directly feed into the province-level differences in economic specialization. We impose the following covariance constraint: $\mathrm{cov}\left(\mathbf{Z}_{2i,j,t}^{\text{Foral Law}}, u_{i,j,t} \right) = 0$. Under the covariance constraint, the underlying IV estimate yields

13 As it was explained, different foral Law variables are designed depending on the jurisdiction.

a true underlying effect of interest since the probability limit of the IV estimator is the true effect of judicial efficacy on economic specialization:

$$\text{plim}\lambda_1^{IV} = \lambda_1 + \frac{\text{cov}\left(\mathbf{Z}_{1i,j,t}^{\text{Foral Law}}, u_{i,j,t}\right)}{\text{cov}\left(\mathbf{Z}_{1i,j,t}^{\text{Foral Law}}, CR_{i,j,t}\right)} \cdot \frac{\sigma_u}{\sigma_{CR}} = \lambda_1 \qquad (3.10)$$

where our key identifying assumption is $\text{cov}\left(\mathbf{Z}_{1i,j,t}^{\text{Foral Law}}, u_{i,j,t}\right) = 0$ and which suggests that the underlying effect of judicial efficacy on economic specialization, exploited from foral legal background across provinces, appears to be consistent, $\text{plim}\lambda_1^{IV} = \lambda_1$.

4 Results

Table 3 presents, the effects of judicial efficacy, proxied by jurisdiction-level congestion rates, on province-level economic specialization. The results proceed in two steps. In the first step, we simultaneously include time-varying and time-invariant covariates in the basic OLS specification. Please note that this effectively reduces the number of observations to 287 given the data limitations on time-invariant climatic and historical human capital variables. In the second step, we consider time-varying regressions only in fixed-effects and multi-way clustered specifications which keeps the number of observations at 800.

4.1 Administrative Jurisdiction

In Panel A, we first tackle the relationship between the congestion rate and the economic specialization across and within provinces at the level of administrative jurisdiction. The evidence suggests that provinces subject to greater congestion rates, hence having more inefficient judiciary, are substantially more likely to experience smaller manufacturing sectors and more expansive services' sectors. Recalling Acemoglu and Johnson (2005), economic efficiency depends on the quality of property rights. A more efficient administrative jurisdiction would defend citizens and companies from potential "expropriation" (in the sense of potential favoritism of the government towards specific agents). Column (1), basic OLS evidence suggests a 1 percentage point increase in the administrative congestion rate is associated with 0.7 percentage point drop in the size of the manufacturing sector relative to GDP. In column (3), the standard errors are simultaneously adjusted for spatial and temporal serially correlated stochastic disturbances that could potentially invoke omitted variable bias and mask the true effect either with upward and downward bias.

The parameter estimate in column (3) advocates a quantitatively large effect of the judicial congestion rate on manufacturing activity both across and within provinces. In particular, 1 percentage point increase in the congestion rate is associated with 2.2 percentage point decline of the manufacturing sector. In column (9), the parameter estimates suggests that a higher congestion rate tends to encourage the specialization in the service sector. For each 1 percentage point increase in the congestion rate, our model predicts 1.8 percentage point expansion of the services sector. In column (11), we adjust the OLS estimates for temporal and spatial serial correlation in the unobservables biasing the true effect. The parameter estimate from clustered standard errors advocate a quantitatively much larger effect on the size of services sector which is statistically significant at 1%. Neglecting the temporal and spatial clustering bias tends to underestimate the true effect of congestion rate on the services-based specialization by a factor of 1.28 which roughly equals 28 percent.

Table 3: Effects of Judicial Efficacy on Economic Specialization across Spanish Provinces, 1999-2014

	Share of Manufacturing in GDP								Share of Services in GDP							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Basic OLS	Fixed Effects	Basic OLS with Multiway Clustered S.E	Effects by Quantile					Basic OLS	Fixed Effects	Basic OLS with Multiway Clustered S.E	Effects by Quantile				
				0.10	0.25	0.50	0.75	0.90				0.10	0.25	0.50	0.75	0.90
Panel A: Administrative Jurisdiction																
Congestion Rate	-.007*	-.0001	-.022***	-.046***	-.027***	-.018***	-.018**	-.020**	.025***	.004*	.032***	.025**	.029***	.036***	.035***	.049**
	(.003)	(0017)	(.008)	(.013)	(.008)	(.006)	(.007)	(.008)	(.006)	(.002)	(.006)	(.011)	(.005)	(.007)	(.009)	(.023)
Obs	287	800	800	800	800	800	800	800	287	800	800	800	800	800	800	800
Theil R2	0.83	0.00	0.42	0.35	0.41	0.42	0.40	0.39	0.77	0.18	0.44	0.42	0.43	0.44	0.43	0.41
Within R2		0.38								0.71						
Between R2		0.00								0.23						
Panel B: Labor Jurisdiction																
Congestion Rate (Dismissals)	-.015**	-.009**	-.040***	-.036*	-.045***	-.029***	-.023*	-.031***	.041***	.030***	.056***	.059***	.062***	.058***	.056*	.067***
	(.006)	(.003)	(.011)	(.019)	(.014)	(.015)	(.015)	(.008)	(.007)	(.004)	(.012)	(.014)	(.007)	(.010)	(.031)	(.017)
Obs	287	800	800	800	800	800	800	800	287	800	800	800	800	800	800	800
Theil R2	0.83		0.42	0.38	0.42	0.42	0.40	0.40	0.78	0.18	0.44	0.42	0.43	0.44	0.44	0.43
Within R2		0.40								0.74						
Between R2										0.23						

Panel C: Civil Jurisdiction

Congestion Rate for Civil Cases	.006	-.002	-.035**	-.078***	-.060***	-.029	-.007	-.014	.002	.008*	.031***	.010	.020*	.030**	.040	.056***
	(.006)	(.003)	(.017)	(.024)	(.017)	(.021)	(.010)	(.012)	(.008)	(.005)	(.011)	(.010)	(.010)	(.014)	(.033)	(.018)
Obs	233	650	650	650	650	650	650	650	233	650	650	650	650	650	650	650
Theil R2	0.85		0.49	0.40	0.45	0.48	0.44	0.43	0.82	0.20	0.48	0.44	0.47	0.48	0.47	0.45
Within R2		0.34								0.69						
Between R2										0.24						
Time-Varying Controls	ON	OFF	ON	ON	ON	ON	ON	ON	ON	OFF	ON	ON	ON	ON	ON	ON
Time-Invariant Controls	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
# Province Clusters	18	50	50	50	50	50	50	50	18	50	50	50	50	50	50	50
# Time Clusters			13								13					
# Autonomous Community Clusters			17								17					
Parente-Santos Silva Intra-Cluster Correlation Test				0.000	0.000	0.000	0.000	0.000				0.000	0.000	0.000	0.000	0.000
(p-value)																

NOTES: the table presents the effects of judicial efficacy on the province-level economic specialization. The outcome variables are the shares of services and manufacturing relative to the size of the GDP. Columns (1) through (3) and (9) through (11) reports the OLS estimates along with the fixed-effects estimated clustered by a combination of province, autonomous community and year clustering scheme to address the multiple sources of serially correlated stochastic disturbances and heteroskedastic distribution of random error variance across and within provinces. The standard errors are constructed using the finite-sample empirical distribution function with finite moment condition adjustment to remove the inconsistencies arising from OLS variance-covariance matrix estimator and single-way clustered standard errors. Columns (4) through (8) and (12) through (16) report the quantile-specific effect of judicial congestion rate per jurisdiction using Parente-Santos Silva cluster-robust standard errors. Asterisks denote statistically significant regression coefficients at 10% (*), 5% (**), and 1% (***), respectively.

4.2 Labor Jurisdiction

In Panel B, we closely examine the effects of judicial efficacy in the labor jurisdiction on province-level specialization patterns using the dismissal-related congestion rate as a proxy for judicial efficacy. The evidence advocates a strong and persistent relationship between the labor jurisdiction-level judicial efficacy and the patterns of economic specialization. In column (1), the OLS parameter estimate advocates an arguably large effect of congestion rate on province-level specialization. For each 1 percentage point increase in province-level congestion rate, our model predicts 1.5 percentage points decrease in manufacturing/GDP ratio. Since the underlying relationship can be conditioned by the unobserved province-level heterogeneity hiding the true effect, we add the set of province-level fixed effects to the core empirical setup. The evidence suggests a much smaller but statistically significant effect of congestion rate on the patterns of specialization, which does not disappear with the parameter correction for spatial and temporal clustering bias. The province-level variation in the congestion rate across the labor jurisdiction explain a similar bulk of specialization differences to the congestion rate across the administrative jurisdiction from Panel A. Following the introduction, economic efficiency is related to the quality of the enforcement institutions that "control" the relationships between private agents and reduce the opportunism of contractors. This function is mostly carried out by the labor and the civil (which is discussed below) jurisdictions. Lower efficacy may affect sectoral composition. In column (3), a 1 percentage point increase in the labor congestion rate is associated with 4 percentage points decrease in the manufacturing activity relative to province-level GDP. In column (10), adding the province-fixed effects to the model setup suggests that greater congestion rate across the labor jurisdiction tends to favor the services sector. In particular, the point estimate predicts a 3 percentage point increase in the size of the services sector subsequent to a 1 percentage point increase in the congestion rate. Adjusting the standard errors for temporal and spatial clustering bias in the variance-covariance matrix in column (11) suggests the effect of labor-related congestion is noticeably larger (.056) than the unconstrained fixed-effect estimate (.030). From the normative perspective, the estimates plausibly indicate the adverse effects of judicial inefficacy on economic specialization. In particular, the provinces with inefficient judiciary will more likely abandon the productivity-enhancing manufacturing activity, and will more likely concentrate in low-productivity service-related activities. Moreover, our evidence suggests the judicial inefficacy might be able to partially account for the contrasting experience between highly industrialized north of Spain and heavily deindustrialized south. Although the established effect merely indicates the strength of the correlation between judicial (in)efficacy and patterns of economic specialization, it indicates that the magnitude of the effect does not disappear once the province-fixed effects are allowed, or once the parameter estimates are adjusted for spatial and temporal clustering bias hidden in the underestimated standard errors in the core setup.

4.3 Civil Jurisdiction

In Panel C, the effects of the congestion rate on province-level economic specialization are presented in depth for the civil jurisdiction. The evidence from columns (1) through (3) suggests that increasing congestion rate for civil cases is associated with a marked expansion of the manufacturing sector. In column (11), adjusting for temporal and spatial clustering bias suggests greater congestion rate in civil cases tends to produce a slight deindustrialization effect with a marked expansion in the size of the service sector following each percentage point increase in the congestion rate.

4.4 Quantile Regression Estimates

Does the effect of judicial efficacy on the level of industrialization differ across different levels of manufacturing/GDP and service/GDP ratios? The evidence so far suggests an unequivocal

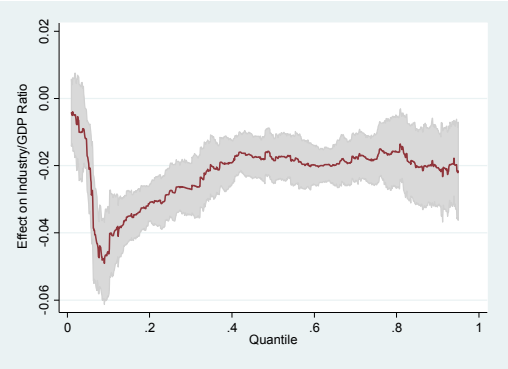
effect of judicial efficacy on economic specialization at mean values of the outcome variables (at least for the administrative and the labor jurisdictions) which does not necessarily imply that established effects should hold across the entire distribution of outcome variables. Columns (4) through (8) and columns (12) through (16) disentangle the distributional effect of judicial efficacy on the size of the manufacturing sector and the services sector relative to GDP in more detail using the quantile regression approach. The evidence suggests that the effect of congestion rate per jurisdiction tends to differ persistently across different tails of the outcome distribution. In Panel A, increasing the congestion rate across the administrative jurisdiction tends to depress the size of the manufacturing sector strongly in the least industrialized provinces. The effect at the 10^{th} percentile is much stronger than the baseline OLS effect with multiway-clustered standard errors, and statistically significant at 1%. The effect of administrative congestion rate tends to fade away at the 25^{th} percentile. It becomes slightly stronger at the median but fades away at 75^{th} and 90^{th} percentiles, respectively. An opposite pattern is found in the quantile-specific relationship between the size of the service sector and the administrative congestion rate across columns (12) through (16). Increasing administrative-level congestion rates tends to expand the size if the service sector consistently. The quantile effects are broadly comparable to the OLS effects with multiway-clustered standard errors. Therefore, the set of quantile-specific effects suggests that higher congestion rates tends to further amplify the deindustrialization process across provinces. In particular, higher congestion rates are substantially more likely to downscale the size of the manufacturing sector in the low-manufacturing provinces, and further expand the size of the service sector in service-intensive provinces.

In Panel B, we replicate the set of quantile regressions for the labor jurisdiction using the dismissal congestion rate as the key covariate of interest. The evidence unveils substantially stronger quantile-specific effects compared to the administrative-level congestion rate. Increasing congestion rate tends to strongly depress the size of the manufacturing sector at low manufacturing/GDP ratio, and the effect gradually becomes weaker in the upper percentiles. Nonetheless, magnitude of the OLS effect is matched with the quantile-specific effect at 75^{th} and 90^{th} percentile, respectively. From the distributional point of view, the disproportionate strength of the effect at 10^{th} and 25^{th} percentile readily suggests that greater judicial inefficacy is overwhelmingly more harmful to the least-industrialized provinces as it tends to further depress the manufacturing activity compared to the highly-industrialized provinces. An exactly opposite pattern is detected in columns (12) through (16) where a rising effect of congestion rates on the service/GDP ratio is found at higher quantiles of the outcome distribution. In particular, greater congestion rates tends to foster the service-intensive economic specialization to a much larger degree in high-service provinces compared to almost nonexistent effect in low-service provinces. Excluding the covariates, province-level differences in dismissals-related congestion rate account for between 1.7 percent and 1.9 percent of the overall differences in cross-province economic specialization at the median of the distribution.

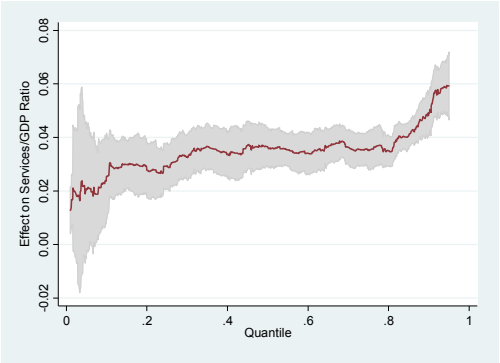
In Panel C, we replicate the core relationship across the five quantiles for the civil jurisdiction and find much smaller differences in the strength of the effect across various tails of the distribution. A quite even distribution of the effect is found across quantiles. In particular, our evidences advocates a rising congestion rate for civil cases tends to foster the service-intensive specialization consistently across various tails of the distribution. On the other hand, rising congestion rate tends to dampen the size of the manufacturing sector, particularly at 10^{th} and 25^{th} percentile of the distribution.

Figure 6: Effect of Congestion Rate on Province-Level Manufacturing and Service GDP. Shares Across Micro-Percentiles

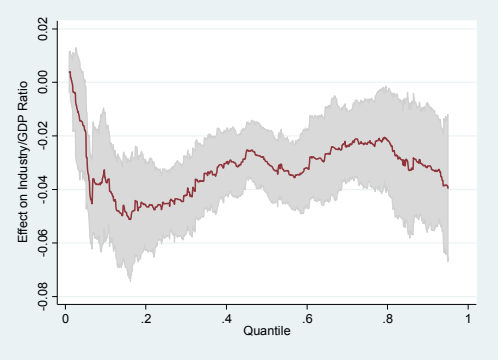
(a) Effect of Congestion Rate in Administrative Jurisdiction on the Share of Manufacturing in GDP



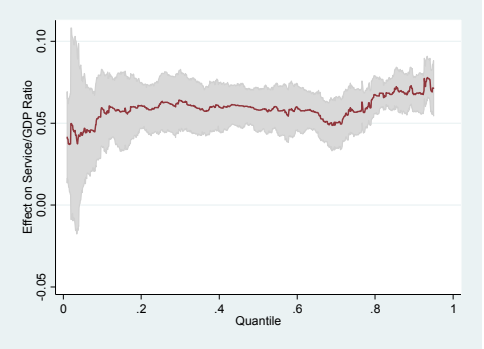
(b) Effect of Congestion Rate in Administrative Jurisdiction on the Share of Services in GDP



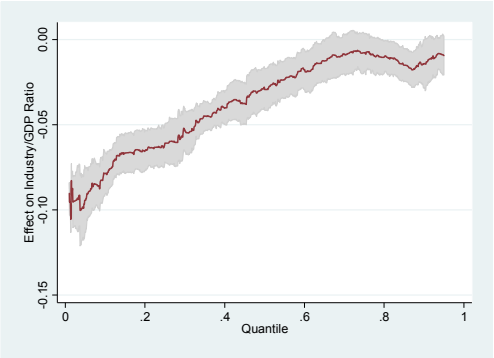
(c) Effect of Judicial Congestion Rate in Labor Jurisdiction on the Share of Manufacturing in GDP



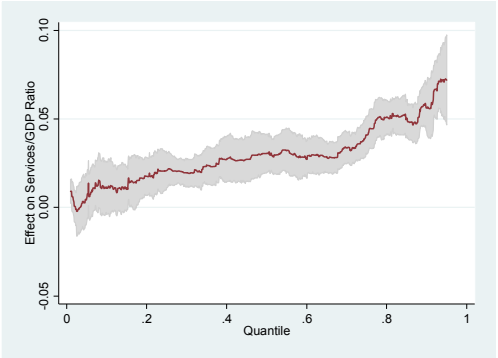
(d) Effect of Judicial Congestion Rate in Labor Jurisdiction on the Share of Services in GDP



(e) Effect of Congestion Rate in Civil Jurisdiction (Cases) on the Share of Manufacturing in GDP



(f) Effect of Congestion Rate in Civil Jurisdiction (Cases) on the Share of Services in GDP



In Figure 6, we break down the quantile estimates into micro-percentile estimates by narrowing the quantile estimator window down to 1/1000 of the original quantile estimation window to further unravel the heterogeneity in the distribution of the effect of congestion rate per jurisdiction on service/GDP and manufacturing/GDP ratio. The figure plots the estimated micro-percentile coefficients along with the 95% confidence intervals. The horizontal line denotes the OLS effect as a reference comparison. The evidence shows the effect of administrative-level congestion rate on manufacturing/GDP ratio does not elapse or move outside the negative space across a wide tail of the entire distribution. The effect of administrative-level congestion rate on the service/GDP ratio is stable and within the 95% confidence bounds across the whole spectrum of the outcome distribution which confirms its relevance in explaining the contrasting levels of industrialization across the provinces. In Panel (c) and (d), the percentile-based microsimulation suggests the effect of the dismissal-based congestion rate on the manufacturing activity is particularly strong in the lower part of the distribution and is gradually weakened at the higher end of the distribution while the effect of dismissal congestion rate on service/GDP ratio is stable across the whole spectrum of the outcome distribution. For the civil jurisdiction, micro-percentile effect simulation suggests an arguably strong and persistent effect of rising congestion rate on the size of the service/GDP ratio.

4.5 Hausman-Taylor Estimates with Time-Invariant Controls

In Table 4, we add the time-invariant covariates, i.e. historical literacy rates, temperature levels, precipitation, to the list of control variables and specifically distinguish between time-varying and time-invariant regressors. Using Hausman and Taylor (1981) estimator based on the overall and within residual decomposition method, we estimate the core fixed-effects relationship with Hausman-Taylor random-effects estimator to prevent the potential time-invariant confounders from being eliminated by the within transformation in fixed-effects framework. The evidence confirms the negative effects of rising congestion rates on manufacturing activity across all three jurisdictions. At the same time, the evidence tends to substantiate the positive effect of rising congestion rates on service/GDP ratio. Columns (1) through (3) exhibit the effect of the congestion rate on manufacturing activity per jurisdiction. The parameter estimates suggest that the effect of the congestion rate on the manufacturing sector is most pervasive in the new civil and the labor jurisdictions and slightly weaker in terms of the magnitude in the administrative jurisdiction. Augmenting the baseline specification with time-invariant covariates arguably tends to bias the underlying judicial efficacy effect on the patterns of specialization. For time-invariant and time-varying regressors, we compute the test of joint significance and the evidence readily indicates the fundamental importance of time-varying regressors and time-invariant controls in explaining the contrasting paths of economic specialization across provinces with p-value = 0.000 in each contested specification.

Table 4: Effects of Judicial Efficacy on Economic Specialization with Time-Varying and Time-Invariant Regressors using Hausman-Taylor Estimator

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome	Log Share of Manufacturing in GDP			Log Share of Services in GDP		
	Administrative Jurisdiction	Labor Jurisdiction	Civil Jurisdiction	Administrative Jurisdiction	Labor Jurisdiction	Civil Jurisdiction
Congestion Rate	-.001	-.011***	-.003*	.005***	.032***	.009***
	(.001)	(.002)	(.002)	(.001)	(.003)	(.003)
Constant Term	.957	.927	.386	-2.935*	-2.917*	-2.023
	(.795)	(.720)	(.483)	(1.903)	(1.690)	(1.562)
Time-Varying Controls	YES	YES	YES	YES	YES	YES
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Time-Invariant Controls	YES	YES	YES	YES	YES	YES
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
σ_u	.097	.088	.059	.234	.208	.192
σ_e	.012	.012	.009	.016	.015	.013
Observations	800	800	650	800	800	650
Wald Test	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
(p-value)						

NOTES: table presents the random-effects estimates of judicial congestion rate per jurisdiction on province-level economic specialization from Hausman and Taylor (1981) and Amemiya and McCurdy (1986) with time-varying and time-invariant endogenous and exogenous regressors using the within and overall residual decomposition method. The set of endogenous regressors comprises the set of congestion rates across different jurisdictions and is constructed by the predicted first-stage relationship. The set of exogenous regressors consists of climate and rainfall covariates. Standard errors are denoted in the parentheses. Asterisks denote statistically significant regression coefficients at 10% (*), 5% (**), and 1% (***), respectively.

4.6 IV-Two Stage Estimates

Our structural parameters are estimated using the Cameron et al. (2011) multiway clustering scheme at the province-, autonomous communities- and year level to address the multiple sources of temporal and spatial bias arising the serially correlated stochastic disturbances that might underestimate the standard errors and, consequently, over-reject the null hypothesis. In each specification, the F-test on excluded instrumental variables by Angrist and Pischke (2009), constructed by partialling out the linear projections of the endogenous variables predicted by instruments in the first stage, is consistently within 10% significance level suggesting that the null hypothesis of unidentified endogenous variables is rejected across the broad set of our model specifications. In addition, we subject the validity of our instruments to the test by Hansen (1982) with a null hypothesis that the exclusion restrictions are stable and, hence, the instrumental variables may be valid. Across the whole set of specifications, we fail to reject the null hypothesis of overidentifying restrictions and conclude that the proposed instruments provide a plausibly exogenous source of variation in the differential paths of economic specialization across Spanish provinces.

In Table 5, we present the structural effects of judicial efficacy on economic specialization using the province-level presence of foral law as a plausibly exogenous source of variation in contemporary economic specialization.

In each specification, we address the spatial and temporal bias in the dependence of serial correlation in unobservables across provinces, autonomous communities and over time simultaneously using the Cameron, Gelbach and Miller (2011) multiway clustering scheme to adjust the standard errors thereof. Wherever feasible, we use the Nagar 2SLS maximum likelihood estimator (Davidson and Mackinnon, 1993) to adjust the parameter estimates for the small-sample bias that might arise in our setup. We estimate the set of flexible panel-level specifications with a different fixed-effects setup by taking into account potential partial-out of structural covariates and first-stage IVs that could invoke the collinearity bias. In columns (1) through (6), we examine the effects of congestion rate on the shares of manufacturing and services in GDP at the level of administrative jurisdiction.

In Panel B, first-stage evidence suggests an arguably powerful and persistent effect of foral law on contemporary province-level judicial efficacy. As indicated in columns (1) through (4) provinces affected by the foral law in the administrative jurisdiction, i.e. Basque Country and Navarra, tend to have between 13 percent, and 18 percent lower administrative congestion rate than the non-foral provinces. Across columns (1) through (4), the first-stage parameters suggest greater length of foral law compilation is associated with markedly lower congestion rates. The structural effects in Panel A confirm our theoretical notions. The point estimates imply that 1 percentage point increase in congestion rate decrease the share of manufacturing in province-level GDP between 3 percent and 4.8 percent, respectively. On the other hand, 1 percentage point increase in administrative congestion rates tend to expand the service/GDP ratio between 2.8 percent and 5.6 percent, respectively. The full set of parameter estimates is statistically significant at 10% and 5%, respectively.

The first-stage parameter estimates are statistically significant at 10% and 5% and unlikely to be confounded by the time-varying effects of per capita GDP, population size, density of lawyers and corporations per capita. In the second stage, rising congestion rate predicted by the IVs in the first stage, translate into an arguably large negative effect on the manufacturing activity. Accounting for the potential instrument bias, our evidence suggests that the overidentifying restrictions appear to be valid and unlikely to be confounded with the alternative sources of variation that could contaminate the structural relationship between judicial efficacy and economic specialization. We also consistently reject the null hypothesis on excluded instruments in the first-stage which confirms the relevance of foral law in explaining the between-province differences in judicial efficacy.

In particular, our two-stage model setup predicts a discernable drop in the province-level manufacturing/GDP ratio with rising congestion rate. Concurrent to columns (1) and (2), in columns (3) and (4) a positive effect of rising congestion rate on the service/GDP ratio is found. Apart from demonstrating a strong downward bias in baseline OLS estimates, the evidence from the IV-2 stage setup readily suggests that rising congestion rates translate into sectoral shifts from manufacturing towards service-based economic activity.

Please note that we omit the labor jurisdiction from the IV-2 stage estimation setup since the labor jurisdiction is not subject to foral law. In columns (5) through (8), we replicate our structural and first-stage estimates using the province-level variation in congestion rates across the civil jurisdiction. The first-stage evidence testifies to the ubiquitous importance of

foral law in explaining the differential congestion rates across the civil jurisdiction down to the present day. In column (9), the point estimates suggest the provinces with historical experience in the foral law have, on average, 14.5 percent lower congestion rate for civil cases. In the second stage (Panel A), rising the congestion rate in the civil jurisdiction predicts a sharp drop in the manufacturing/GDP ratio, and a marked rise in the share of services in province-level GDP.

When we restrict the composition of foral law quasi-treatment group to Catalonia only in columns (6) and (8), the evidence suggests a remarkably strong effect of congestion rate on the pattern of economic specialization. In particular, 10 percent increase in the civil congestion rate is associated with 0.6 percentage point drop in the manufacturing/GDP ratio, and 0.5 percentage point expansion in the service/GDP ratio, respectively. Both parameter estimates are statistically significant at 1%, and are unlikely to suffer from weak identification properties with asymptotically stable exclusion restrictions, and relatively strong first-stage evidence on the relevance of foral law IVs in explain the judicial efficacy down to the present day. When the foral law quasi-treatment group comprises Catalan and non-Catalan provinces, the structural effects still hold although the underlying effects appear to be slightly weaker with respect to the service/GDP ratio, and slightly stronger with respect to manufacturing/GDP ratio compared the parametric estimates in columns (6) and (8). Both structural IV effects are quantitatively larger than the OLS counterparts, which suggests a persistent downward omitted variable bias in the causal inference on OLS coefficients. Hence, the evidence suggests that the effect of congestion rates on cross-province economic specialization is likely to be causal which confirms our theoretical expectations.

Table 5: Foral Law, Judicial Efficacy and Economic Specialization, IV Estimates

	Administrative Jurisdiction				Civil Jurisdiction			
	Log Manufacturing Share of GDP		Log Services Share of GDP		Log Manufacturing Share of GDP		Log Services Share of GDP	
	Basque Country + Navarra + Canary Islands				Full Foral Jurisdiction	Cataluña Only	Full Foral Jurisdiction	Cataluña Only
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Structured Setup								
Congestion Rate	-.482*	-.307*	.563***	.284**	-.112*	-.062***	-.068	.056***
	(.276)	(.170)	(.223)	(.122)	(.067)	(.006)	(.063)	(.004)
Panel B: First-Stage OLS Estimates of Congestion Rates								
Foral Law	-1.337*	-1.854**	-1.337*	-1.854**	-.145**	-4.336***	-.163***	-4.336***
	(.686)	(.868)	(.686)	(.868)	(.065)	(.792)	(.050)	(.792)
Foral Law Compilation Length	-.0004*	-.0005*	-.0004*	-.0005*	-.0032*	.518***	-.0035***	.518***
	(.0002)	(.0003)	(.0002)	(.0003)	(.0014)	(.059)	(.0010)	(.059)
# Foral Legal Norms	2.328*	2.984*	2.328*	2.984*	.077**	-.367***	.085***	-.367***
	(1.361)	(1.633)	(1.361)	(1.633)	(.028)	(.079)	(.018)	(.079)
Observations	800	800	798	798	800	709	800	709
# Province Clusters	50	50	50	50	50	45	50	45
# Time Clusters	16	16	16	16	16	16	16	16
# Autonomous Community Clusters	17	17	17	17	17	17	17	17
Structural Confounders	NO	YES	NO	YES	NO	YES	YES	YES
Cragg-Donald Weak ID Test	4.33	3.44	1.29	4.58	8.91	8.09	9.85	8.09
Angrist-Pischke F-Test on Excluded Instruments (p-value)	0.14	0.005	0.000	0.000	0.037	0.000	0.000	0.000
Hansen J-Test (p-value)	0.19	0.31	0.34	0.73	0.04	0.42	0.34	0.43

NOTES: the table presents the IV effects of judicial efficacy in the administrative and civil jurisdiction on the province-level economic specialization using the set of foral law variables as an IV for province-level congestion rates. The outcome variables are the shares of services and manufacturing relative to the size of the GDP. Labor jurisdiction is omitted from the IV-2 stage estimation since there is no foral Law in that jurisdiction. The standard errors are adjusted for within-province serially correlated stochastic disturbances and heteroskedastic distribution of random error variance into province-specific, autonomous community-specific and time-specific clusters using Cameron, Gelbach and Miller (2011) non-nested multi-way clustering scheme for finite-sample adjusted of the empirical distribution function and cluster-robust parameter inference to remove the structural inconsistencies arising from OLS variance-covariance matrix estimator and within-province serially correlated residuals. Multi-way cluster-robust standard errors are denoted in the parentheses for each empirical specification. Asterisks denote statistically significant coefficients at 10% (*), 5% (**), and 1% (***), respectively.

4.7 Counterfactual Scenario

The ultimate question regarding the contribution of judicial efficacy to the economic specialization pattern concerns the counterfactual scenario. Would the province-level share of services and manufacturing be different from current ones if high-congestion provinces had low congestion rates across different layers of jurisdiction? The results presented so far highlight the fundamental importance of judicial efficacy for the patterns of economic specialization. Specifically, our evidence suggests that high-congestion provinces across administrative, labor and civil jurisdiction are significantly more likely to undergo service-intensive specialization while low-congestion provinces are substantially more likely to experience higher share of manufacturing in the province-level GDP.

Our counterfactual scenario consists of several steps. In the first step, we compute the baseline province-level longitudinal point estimates from (3.1) and (3.2) in the absence of time-invariant covariates to overcome the time variance singularity conditions for each jurisdictional layer. In the second step, we specify the counterfactual threshold for high-congestion provinces. Considering the key parameters from the descriptive statistics, our counterfactual scenario is based on the shift of congestion rates from the 75th percentile to the 25th percentile. Such a scenario effectively restricts the composition of the treatment group to those provinces which tend to experience above-75th percentile congestion rate per jurisdiction. And lastly, in the third step, we use the point estimates on congestion rates and the full set of control variables to predict the conditional manufacturing and service shares in high-congestion provinces if they had congestion rate at 25th percentile from the onset of the estimation period. Across the full set of province-level model specifications, we use Cameron *et al*. (2011) multiway clustering estimator with province-, region (autonomous community), and year-fixed effects to allow for serially correlated stochastic disturbances and arbitrary heteroskedastic distribution of error variance which might jeopardize the consistency of our key parameters.

Figure 7 presents the counterfactual scenario for the treated provinces per each jurisdiction.[14] The evidence readily suggests that pushing the congestion rate from the 75th percentile to the 25th percentile of the cross-province distribution is associated with marked changes in economic specialization. In particular, we observe a notable gain in the share of manufacturing and an important drop in the share of services or, at the least, a substantially slower rise in the size of the service sector. For the administrative jurisdiction, a drop in congestion rate to the 25th percentile threshold is associated with markedly lower share of services, particularly for the provinces hypothetically most affected by the drop in the congestion rate, namely Málaga, Almería, Lleida and Huelva. At the same time, we observe a notable rise in the manufacturing/GDP ratio following a drop in the congestion rate to the 25th percentile, particularly for the provinces of Almería, León, Malaga and Toledo which appear to be characterized by a low degree of judicial efficacy in the administrative jurisdiction.

Similar gains in the manufacturing/GDP ratio and drops in service/GDP ratio are observed in the labor jurisdiction. In particular, the counterfactual scenario suggests a marked decline in service/GDP ratio in the provinces Málaga, Murcia and Valencia and a moderate drop in the provinces of Zamora and Lleida. In addition, the counterfactual scenario highlights gains in the share of manufacturing in GDP for the quasi-treated provinces. Across the balance, the counterfactual estimates imply that reducing the congestion rate in the labor jurisdiction from

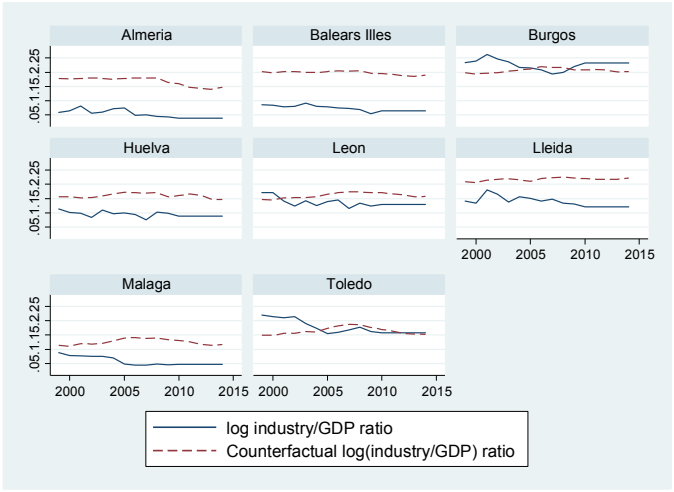
14 Treatment group comprises the provinces whose mean congestion rate throughout the estimation period exceeds the 75th percentile of the cross-province distribution.

75^{th} to 25^{th} percentile threshold is associated with marked and discernable gains in the size of the manufacturing sector. Panel (c) exhibit the counterfactual scenario for the new civil jurisdiction. Since the treatment pool in the new civil jurisdiction is noticeably larger compared to the other two jurisdictions, the counterfactual scenario is characterized by greater heterogeneity of the estimates. In line with our expectations, the estimates readily advocate a notable gain in the manufacturing/GDP ratio and a markedly slower rise in service/GDP ratio following the drop in the congestion rate to the 25^{th} percentile of the full-sample distribution. In Appendix B, we present the counterfactual estimates for both outcome variables broken down by the respective jurisdiction.

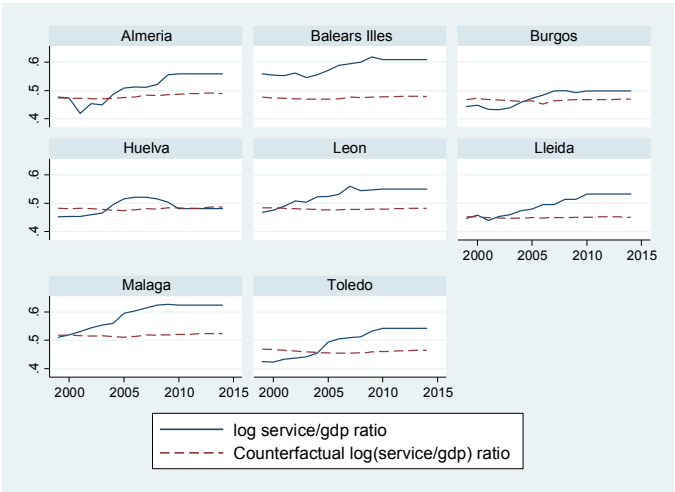
Figure 7: Summary of Counterfactual Scenario

(a) Administrative Jurisdiction

Log Share of Manufacturing

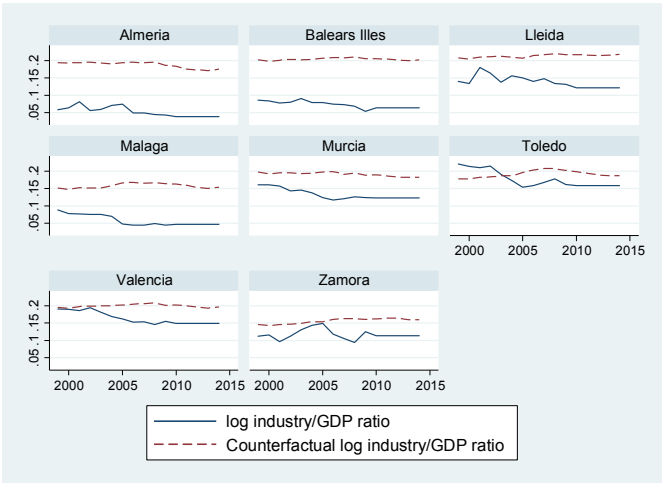


Log Share of Services

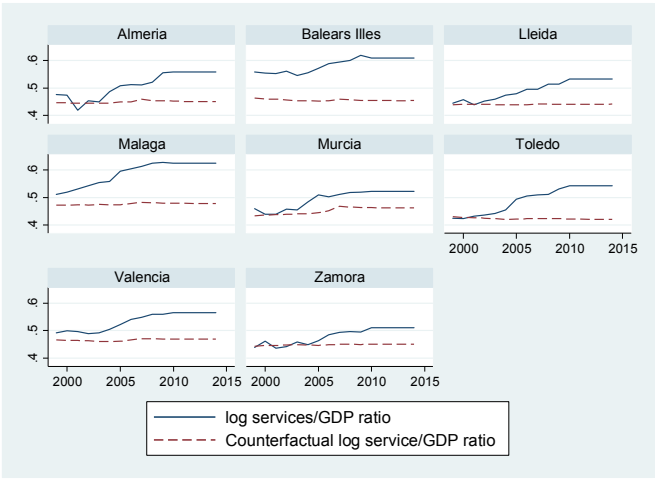


(b) Labor Jurisdiction

Log Share of Manufacturing

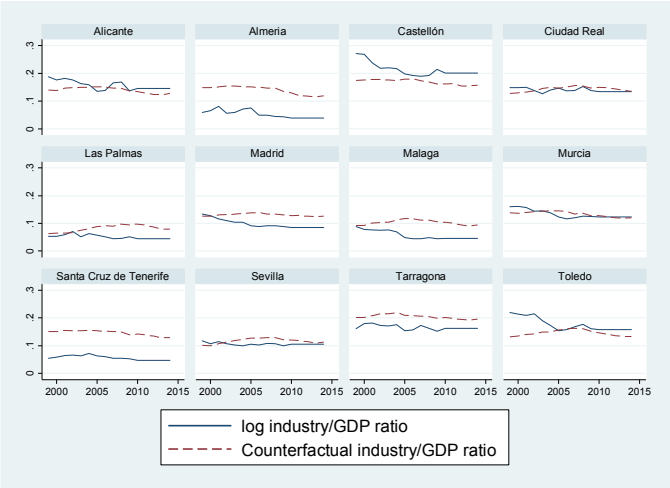


Log Share of Services

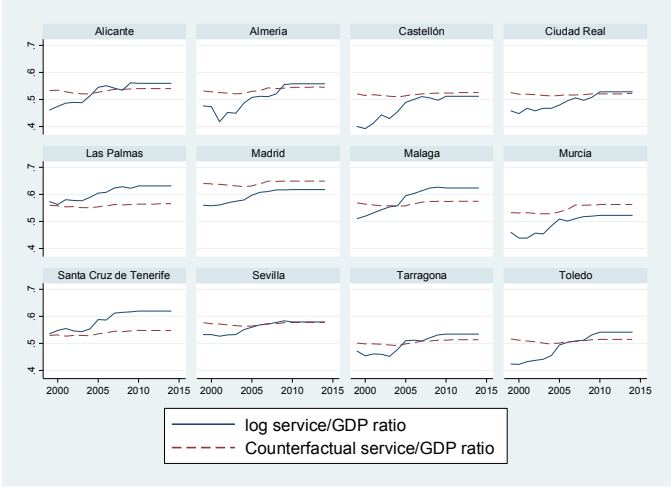


(c) Civil Jurisdiction

Log Share of Manufacturing



Log Share of Services



4.8 Robustness Checks

The main caveat arising from our results concerns the choice of the dependent variables as the appropriate measures of economic specialization. Although the effects of judicial efficacy on the type of economic specialization confirm its negative impact on manufacturing activity and the positive impact on service-related economic activities, it is quite likely that other sectors of economic activity may be adversely affected by the local-level judicial efficacy. To this end, we use two alternative measures of economic specialization and replicate our core structural and non-structural model setup to tackle the robustness of our estimates against alternative proxies for economic specialization. Our alternative measure of economic specialization is denoted on the nexus between complex and non-complex economic activities (Hidalgo and Hausmann 2009, Hausmann and Hidalgo 2011). By the standard account, complex economic activities involve long-term relationships, require long-term investments, and are heavily reliant on judicial efficacy to solve the disputes efficiently. In contrast, non-complex economic activities involve relatively simple contractual relationships where short-term commitment prevails over the long-term one. Hence, local judicial efficacy should play an important role in influencing the specialization in complex vs. non-complex economic activities.

We compute two province-level building blocks of economic specialization. The first building block captures complex economic activities. This building block comprises the share of manufacturing in GDP as the most obvious type of economic activity involving complex long-term relationships.[15] By the same reasoning, the second building block captures non-complex economic activities based on short-term relationships and substantially less long-term

15 Despite some conceptual similarity with the manufacturing sector, we exclude the energy sector from the building block of complex activities. The underlying rationale is that energy investment are contingent on many factors unrelated to the local judicial efficacy such as the structure of feed-in tariffs, geographic endowments, and proximity to external suppliers outside the home country among many other factors. Such factors do not comprise our core hypothesis on the adverse effects of judicial efficacy on economic specialization. The energy sector is oversight by the National Commission on Markets and Competition (CNMC).

commitment. This building block comprises the combined share of construction, agriculture and service activities from the INE Database.[16]

In the Appendix C, we present the OLS and IV evidence on the effects of judicial efficacy on complex vs. non-complex economic specialization. The evidence confirms our key theoretical notion. The provinces with more efficient judiciary are significantly more likely to specialize in complex economic activities while the provinces with more inefficient judiciary are substantially more likely to specialize in non-complex activities around the nexus of services, agriculture and construction. The effects hold across the administrative, labor, and civil jurisdictions. Table C1 replicates the core OLS and quantile setup on the relationship between economic specialization and judicial efficacy. In our preferred specifications with multi-way clustered standard errors, 1 percentage point increase in the administrative congestion rate tends to decrease the share of complex economic activities in the province-level GDP by 0.2 percentage points. The underlying effects appear to be noticeably stronger for the civil jurisdiction where a 1 percentage point increase in the congestion rate tends to backlash the share of complex activities by 0.4 percentage points within 5% significance bound. Provinces with more inefficient judiciary are significantly more likely to specialize in non-complex economic activities. In particular, 1 percentage point rise in the administrative congestion rate tends to expand the share of non-complex activities in the GDP by 0.2 percentage points. In the civil and labor jurisdictions, 1 percentage point increase in the congestion rates tends to enlarge the share of non-complex economic activities in the province-level GDP by 0.5 percentage points and 0.6 percentage points, respectively. Breaking down the effects by quantiles unveils a pattern similar to the core setup in Table 3. The evidence also suggests that our results are robust against the choice of dependent variables as alternative measures of economic specialization involving sectors other than manufacturing and services.

In Table C2, we replicate the core IV-2SLS structural setup with the complex and non-complex specialization outcome variables. The results confirm our expectations. Rising congestion rates are associated with a persistent drop in the share of complex economic activities relative to the size of GDP while provinces with lower judicial efficacy tend to have a larger share of non-complex economic activities. In the first stage, we use the foral law IVs to isolate the impact of judicial efficacy on province-level economic specialization. In the second stage, we use the predicted congestion rates to explain the specialization outcomes across provinces. In the first stage, the provinces affected by the foral law tend to have markedly different judicial efficacy compared to non-foral law provinces. In the second stage, rising congestion rates tend to dampen the share of complex economic activities persistently.[17] The effects are especially profound in the administrative jurisdiction. Based on the evidence in columns (1) and (2), 1 percentage point increase in the administrative-level congestion rate is associated with a decrease in the share of complex economic activities in the GDP between 0.1 and 0.2 percentage points. The equivalent 1 percentage point increase in the administrative congestion rate tends to expand the share of non-complex activities in the GDP between 0.02 and 0.7 percentage points. The estimated parameters are statistically significant within conventional 1% or 5% bounds.

16 Instituto Nacional de Estadística, Contabilidad Regional de España, Base 2010: http://www.ine.es/daco/daco42/cre00/b2010/homog/dacocre_base2010h.htm

17 Since there is no foral Law in the labor jurisdiction, we report the basic OLS estimates with province/autonomous community/year-clustered standard errors in the presence of structural confounding variables simultaneously influencing province-level economic specialization.

In the civil jurisdiction, the IV-estimated effects of judicial efficacy on broad-based economic specialization are particularly strong and pervasive across the full set of specifications. In the presence of unobserved technology shocks common to all provinces, 1 percentage point increase in the congestion rate in the civil jurisdiction tends to decrease the share of complex activities in the province-level GDP by 0.6 percentage points. In column (8), we replace time-fixed effects with the structural confounders and find that the judicial efficacy coefficient remains stable. On the other hand, a higher congestion rate in the civil jurisdiction tends to expand the share of non-complex economic activities in the GDP between 0.09 and 0.1 percentage points and remains stable across the full set of estimated specifications. Hence, the evidence suggests that our estimates are robust against alternative measures of province-level economic specialization.

5 Conclusions

Sectoral specialization may be reactive to the quality of enforcement institutions. Sectors more dependent on specific investments (such as manufacturing) may be more reliant on high quality judicial systems to operate. In this paper, we examine the effects of judicial (in)efficacy on economic specialization across Spanish provinces for the period 1999-2014. To this end, we exploit the variation in foral Law to identify the effect of judicial efficacy on the paths of economic specialization across and within Spanish provinces. We construct provincial congestion rates as broad measures of judicial inefficacy for the administrative, labor and civil jurisdictions. The province-level congestion rates are matched with the weights of the sectors constructed from output data for every year in our sample. Controlling for the confounding effects of enterprise density, income level and lawyers per capita, our estimation strategy consists of two stages. In the first stage, we exploit the variation in the foral law to predict the contemporary congestion rates. In the second stage, we use the predicted congestion rates to explain the differential levels of industrialization and services across and within Spanish provinces.

Our results suggest that greater judicial inefficacy, captured by the rising congestion rates, under the common legal system tends to encourage the deindustrialization process. Provinces with above-median or rising congestion rates are significantly more likely to embark on the path of deindustrialization than the provinces with low, stable and below-median congestion rates. Higher congestion rates typically lead to the decreasing manufacturing/GDP ratio and rising service/GDP ratio simultaneously and therefore encourage a pattern of economic specialization related to slow productivity growth. The effect of judicial inefficacy on economic specialization is not created equal across all three jurisdictions. The effect does not appear to be confounded by income level, number of lawyers per capita or by enterprise density. The three jurisdictions seem relevant to explain specialization, although the administrative jurisdiction appears to have a more pronounced impact than the labor or civil jurisdictions.

From the normative point of view, our results suggest that the effect of foral Law on judicial efficacy is strongly persistent down to the present day, and does not seem to be substituted by alternative explanations or unobservables. Most likely, greater judicial inefficacy at the administrative level tends to bias the strength of the property rights against the long-term investments, adding further uncertainty to the investment decisions. Such uncertainty clearly hinders long-term investments in the manufacturing sector where long-term relationships are one of the key investment prerequisites. We find a similar but less pronounced effect for the rising congestion rate in the civil jurisdiction. In addition, greater judicial inefficacy in the labor jurisdiction (which is not affected by foral Law) is most likely to push up both firm-level and province-level transaction costs. Our results predict quantitatively large and statistically significant decrease in the manufacturing/GDP ratio and a notable expansion of the share of services in total output as an outcome of rising congestion rates across the labor jurisdiction.

In the counterfactual scenario, having shifting the jurisdiction-level congestion rate from the 75^{th} percentile to 25^{th} percentile of the distribution is associated with marked gains in the share of industry in the GDP while the share of services tends to decline persistently in the treated provinces. The counterfactual estimates are particularly powerful in the civil and administrative jurisdictions. Hence, judicial inefficacy might play an important role in shaping the patterns of economic specialization and might help us partially explain why some provinces,

predominantly in the south of Spain, are trapped by low levels of industrialization, widespread service-intensive economic activities and slow productivity, and why some provinces, mostly in the north of Spain (Basque Country, Navarre, Aragon) have higher levels of industrialization and better productivity performance. The effects of judicial efficacy, as one of the key layers of the institutional matrix, on economic specialization seems definitely worth to be taken into account.

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Appendix A: The Effect of the History of Legal Education on Judicial Efficacy

This appendix adds to the "foral Law" IVs proposed in section 2.3 a second group of IVs which compiles information on the historical conditions and structure of the Spanish university system.

Lawyers are educated in Law schools, which have a specific size, location and history. Lawyers (and, potentially, Law faculties) may be related to litigation. The relationship, however, is not always significant nor endogenous (see Mora-Sanguinetti and Garoupa, 2015). The relationship is positive in the case of the U.S. (Hanssen, 1999), Japan (Ginsburg and Hoetker, 2006), Italy [Carmignani and Giacomelli (2010), Buonanno and Galizzi (2012)] and Spain (Mora-Sanguinetti and Garoupa, 2015). No relationship was found for Austria or in the US (in an alternative study). This debate may matter because it is well established that excessive litigation leads to longer resolution periods in a judicial system (Palumbo et al., 2013) and lawyers are the professionals who channel conflicts inside the judicial system. In parallel, it may be argued that, despite a potential positive relationship between lawyers and litigation (which collapses the judicial system and should lead to higher congestion[18]), better legal education should lead to the emergence of better enforcement institutions. For all this, the historical characteristics of Law education in Spain seems relevant as an instrument.

In 1845, Spain had 10 universities (Santiago, Oviedo, Zaragoza, Barcelona, Valladolid, Salamanca, Madrid, Valencia, Granada and Seville). Those cities were also capitals of their respective "university districts". In each of these universities there was a Law School. The students of the respective districts had to study in the corresponding university. In this way, a student from Malaga, had to go to the University of Granada (but he could not go to Seville or Madrid) and a student from the Balearic Islands had to go to the University of Barcelona.

First of all, we have computed the "size" of the Law departments by 1845 as a potential measure of intellectual leadership. Therefore, we have created variables reporting the number of Law professors in each of the old 10 universities and the number of the total number of professors in each of them. From Mora-Sanguinetti and Garoupa (2015) we have obtained the distance (in kilometers from the capital of the 1845 university district to other provinces of the district) and the number of active law schools by 1968. We have taken 1968 as a cutoff date since it is the date of creation of the last "classic" Law school in Spain (the University of the Basque Country in Guipúzcoa). Afterwards, the UNED (National Distance Education University), was created in 1972 and served all provinces at the same time potentially distorting the results.

This appendix proposes an alternative IV strategy (to that presented in Section 3.3) which exploits both the presence of foral Law and the history of legal education across Spanish provinces. Following the structure already presented in Section 3.3., the first-stage relationship for the jurisdiction-level congestion rate can be expressed as:

[18] Which could be considered a proxy of the trial length.

$$CR_{i,j,t} = \Omega + \theta_1 \cdot Z_{1i,j,t}^{\text{Law Faculty in 1968}} + \theta_2 \cdot Z_{2i,j,t}^{\text{Foral Law}} + \theta_3 \cdot Z_{3i,j,t}^{\text{Distance to Law School}}$$
$$+\theta_4 \cdot Z_{4i,j,t}^{\text{Law Professors in 1845}} + \theta_5 \cdot Z_5^{\text{Total Professors in 1845}} + \mathbf{X}'_{\mathbf{i},TV}\beta + \mathbf{X}'_{\mathbf{i},TI}\alpha \qquad (3.9)$$
$$+\sum_{i=1}^{N} \mu_i \cdot 1\left[i \to \{0,1\}\right] + \sum_{j=1}^{J} \phi_j \cdot 1\left[j \to \{0,1\}\right] + \sum_{t=1}^{T} \varphi_t \cdot 1\left[t \to \{0,1\}\right] + e_{i,j,t}$$

where $Z_1^{\text{Law Faculty in 1968}}$ is a dummy variable indicating an active law faculty in 1968, $Z_2^{\text{Foral Law}}$ indicates whether the province is affected by foral law (as in Section 3.3.), $Z_3^{\text{Distance to Law School}}$ denotes the distance from the nearest law school, and $Z_4^{\text{Law Professors in 1845}}$ denotes the number of law professors in 1845, $Z_5^{\text{Total Professors in 1845}}$ denotes the number of total professors in 1845, and e is the first-stage error term.

In parallel with the discussion in Section 3.3., we impose the following set of covariance constraints, $\text{cov}\left(Z_{1i,j,t}^{\text{Law Faculty in 1968}}, u_{i,j,t}\right) = 0$, $\text{cov}\left(Z_{3i,j,t}^{\text{Distance to Law School}}, u_{i,j,t}\right) = 0$, $\text{cov}\left(Z_{4i,j,t}^{\text{Law Professors in 1845}}, u_{i,j,t}\right) = 0$, and $\text{cov}\left(Z_{5i,j,t}^{\text{Total Professors in 1845}}, u_{i,j,t}\right) = 0$

In Table B1, we present the structural effects of judicial efficacy on economic specialization using the province-level history of legal education and the presence of foral law as a plausibly exogenous source of variation in contemporary economic specialization. Provinces with a greater density of law faculties in 1968 tend to have significantly and discernably lower rates of congestion in the civil jurisdiction. The provinces with a greater historical density of law professors in 1845 tend to have substantially lower rates of congestion. Although the effect is very small, the distance to the Law school district seems to increase congestion. In summary, even though there is evidence for a positive relationship (although the relationship does not seem to be endogenous) between lawyers and litigion for the case of Spain (Mora-Sanguinetti and Garoupa, 2015), under this setup and period of analysis, the impact of stronger or nearer historical Law education institutions seem to have a positive impact on the quality of enforcement institutions (measured through the congestion rate). Finally, a higher density of professors (in general, thus proxying the size of the university) seems to be related in one of our specifications for the labor jurisdiction to higher congestion rates. Table B1 presents the underlying effects in greater detail.

Table A1: Foral Law, Judicial Efficacy and Economic Specialization-IV Estimates

	Administrative Jurisdiction						Labor Jurisdiction				Civil Jurisdiction					
	Log Share of Manufacturing in GDP			Log Share of Services in GDP			Log Share of Manufacturing in GDP		Log Share of Services in GDP		Log Share of Manufacturing in GDP			Log Share of Services in GDP		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Basque Country + Navarra + Canary Islands						Full IV Set without Foral Law				Foral Law IVs Only	Full IV Set	Cataluña Only	Foral Law IVs Only	Full IV Set	Cataluña Only
	Cameron-Gelbach-Miller		Nagar Bias-Adjusted 2SLS	Cameron-Gelbach-Miller		Nagar Bias-Adjusted 2SLS	Cameron-Gelbach-Miller	Nagar Bias-Adjusted 2SLS	Cameron-Gelbach-Miller	Nagar Bias-Adjusted 2SLS	Cameron-Gelbach-Miller		Nagar Bias-Adjusted 2SLS	Cameron-Gelbach-Miller	Nagar Bias-Adjusted 2SLS	
Panel A: Structural IV Estimates																
Congestion Rate	-.307***	-.111**	-.015***	.563***	.129***	.032***	-.331***	-.040***	.307**	.015***	-.062	-.092**	-.034***	.096***	.147***	.034***
	(.101)	(.051)	(.003)	(.159)	(.046)	(.003)	(.130)	(.003)	(.157)	(.004)	(.084)	(.041)	(011)	(.020)	(.050)	(.011)
Panel B: First-Stage OLS Estimates of Congestion Rate																
Panel B1: Foral Law IVs																
Foral Law	-1.854***	-.005	-1.491	-1.337***	-.005	-1.555***					-.056	-.053	-2.457***	-3.158***	-2.121***	-2.457***
	(.502)	(1.105)	(1.266)	(.028)	(1.105)	(.562)					(.118)	(.108)	(.461)	(.439)	(.517)	(.461)
# Foral Legal Norms	.2.984***	-.219	2.376	2.328***	-.219	2.325**					.061**	.040**	.152***	.226***	.108*	.152***
	(.855)	(1.743)	(2.212)	(.014)	(1.743)	(.995)					(.020)	(.017)	(.062)	(.056)	(.062)	(.062)
Foral Law Compilation Length (log)	-.0005***	0.0004	-.0004	-.00004**	0.0004	-.0004**					-.0024*	-.0012	.218***	.268***	.194***	.218***
	(.0001)	(.0003)	(.0003)	(.00001)	(.0003)	(.0001)					(.0013)	(.0017)	(.033)	(.033)	(.038)	(.033)
Panel B2: Additional IVs																
# Law Faculties in 1968		-.200**			-.200**		-.043	-.043	-.043	-.016					-.140***	
		(.093)			(.093)		(.037)	(.037)	(.037)	(.037)					(.044)	
Distance to the Law School District in 1845		.0002	-.0001		.0002		.00006*	.00006	.00006*	.00006		.0001***	.0002***		.0002***	.0002***
		(.0004)	(.0006)		(.0004)		(.00003)	(.00003)	(.00003)	(.00004)		(.00005)	(.00004)		(.00004)	(.00004)
District-Level Number of Law Professors in 1845			-.033			-.038*	-.011	-.011	-.011	-.018*		-.037***	-.024*			-.024*
			(.021)			(.013)	(.008)	(.008)	(.008)	(.009)		(.011)	(.012)			(.012)
District-Level Number of Professors in 1845							.003	.003	.003	.005**						
							(.002)	(.002)	(.002)	(.002)						

Time-Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	NO	YES	NO	YES	YES	NO	NO	YES
(p-value)			(0.000			(0.000)				(0.000)		(0.000)	(0.00)	(0.000)	(0.000)	(0.000)
Observations	800	800	800	800	800	800	800	800	800	800	650	650	650	577	577	577
# Province Clusters	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
# Time Clusters	16	16	16	16	16	16	16	16	16	16	17	17	17	17	17	17
# Autonomous Community Clusters	17	17	17	17	17	17	17	17	17	17	13	13	13	13	13	13
Structural Confounders	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cragg-Donald Weak ID Test	4.58	12.20	8.84	711.03	12.20	8.16	3.20	4.01	3.20	16.61	5.57	24.33	16.61	5.37	19.91	16.61
Angrist-Pischke F-Test on Excluded Instruments (p-value)	[0.006]	[0.000]	[0.000]	[0.000]	[0.000]	[0.035]	[0.013]	[0.01]	[0.013]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Hansen J-Test (p-value)	0.43	0.31	0.29	0.45	0.54	0.37	0.58	0.58	0.17	0.20	0.46	0.51	0.66	0.32	0.81	0.45

Notes: the table presents the IV effects of judicial efficacy on the province-level economic specialization. The outcome variables are the shares of services and manufacturing relative to the size of the GDP. The standard errors are adjusted for within-province serially correlated stochastic disturbances and heteroskedastic distribution of random error variance into province-specific, autonomous community-specific and time-specific clusters using Cameron, Gelbach and Miller (2011) non-nested multi-way clustering scheme for finite-sample adjusted of the empirical distribution function and cluster-robust parameter inference to remove the structural inconsistencies arising from OLS variance-covariance matrix estimator and within-province serially correlated residuals. Multi-way cluster-specification.

Appendix B: Counterfactual Scenario

Table B1: Summary of the Counterfactual Scenario by Province and Jurisdiction

Province	Mean log Share of:		Counterfactual log Share of:		Counterfactual log Share Change:	
	Manufacturing	Services	Manufacturing	Services	Manufacturing	Services
Panel A: Administrative Jurisdiction						
Almeria	.052	.509	.167	.480	.115	-.029
Balears Illes	.073	.584	.197	.474	.124	-.110
Burgos	.227	.474	.206	.466	-.021	-.008
Huelva	.094	.485	.160	.480	.066	-.005
Leon	.136	.526	.160	.480	.024	-.046
Lleida	.139	.493	.217	.449	.078	-.044
Malaga	.057	.587	.125	.518	.068	-.069
Toledo	.177	.492	.164	.480	-.013	-.012
Panel B: Labor Jurisdiction						
Almeria	.052	.509	.187	.449	.135	-.06
Balears Illes	.073	.584	.204	.456	.131	-.128
Lleida	.139	.493	.213	.440	.074	-.053
Malaga	.057	.587	.157	.476	.100	-.111
Murcia	.132	.494	.191	.452	.059	-.042
Toledo	.177	.492	.191	.423	.014	-.069
Valencia	.163	.533	.199	.466	.036	-.067
Zamora	.116	.479	.155	.448	.039	-.031
Panel C: Civil Jurisdiction						
Alicante	.157	.528	.140	.534	-.017	.006
Almeria	.052	.509	.140	.536	.088	.027
Castellón	.213	.475	.169	.520	-.044	.045
Ciudad Real	.139	.494	.143	.519	.004	.025
Las Palmas	.051	.606	.082	.559	.031	-.047
Madrid	.098	.596	.130	.642	.032	.046
Malaga	.057	.587	.103	.567	.046	-.020
Murcia	.132	.494	.133	.547	.001	.053
Santa Cruz de Tenerife	.056	.587	.146	.539	.090	-.048
Sevilla	.106	.559	.116	.572	.010	.013
Tarragona	.165	.502	.204	.504	.039	.002
Toledo	.177	.492	.145	.509	-.032	.017

Appendix C: The Impact of Judicial Efficacy on Economic Specialization Using Alternative Outcome Variables.

Table C1: Effects of Judicial Efficacy on Types of Economic Specialization across Spanish Provinces, 1999-2014

	Share of Complex Economic Activities in GDP								Share of Non-Complex Economic Activities in GDP							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Basic OLS	Fixed Effects	Basic OLS with Multiway Clustered S.E	Effects by Quantile					Basic OLS	Fixed Effects	Basic OLS with Multiway Clustered S.E	Effects by Quantile				
				0.10	0.25	0.50	0.75	0.90				0.10	0.25	0.50	0.75	0.90
Panel A: Administrative Jurisdiction																
Congestion Rate	-.100*	.009	-.208**	-.473**	-.200	-.277**	-.156***	-.104**	.011	.0004	.025*	.029*	.031**	.024	.023*	.038**
	(.055)	(.014)	(..098)	(.216)	(.163)	(.124)	(.061)	(.053)	(.008)	(.003)	(.016)	(.015)	(.014)	(.017)	(.014)	(.015)
Obs	287	800	800	800	800	800	800	800	287	800	800	800	800	800	800	800
Theil R2	0.78		0.37	0.30	0.38	0.37	0.35	0.32	0.82		0.48	0.44	0.45	0.47	0.47	0.43
Within R2		0.40								0.08						
Between R2		0.01								0.03						
Panel B: Labor Jurisdiction																
Congestion Rate (Dismissals)	-.188**	-.039	-.483***	-.803***	-.519***	-.446***	-.369***	-.244***	-.004	-.012	0.055***	.029***	.031**	.024	.023*	.038**
	(.077)	(.035)	(.134)	(.178)	(.201)	(.146)	(.138)	(.112)	(.012)	(.006)	(.020)	(.015)	(.014)	(.017)	(.014)	(.015)
Obs	287	800	800	800	800	800	800	800	287	800	800	800	800	800	800	800
Theil R2	0.79		0.39	0.35	0.39	0.39	0.38	0.38	0.82		0.48	0.44	0.45	0.47	0.47	0.43
Within R2		0.40								0.09						
Between R2		0.01								0.03						

Panel C: Civil Jurisdiction

Congestion Rate for Civil Cases	-.099	.023	-.401**	-.962***	-.654***	-.391	-.190	-.157**	.004	-.0009	.066***	.037	.040	.063*	.080***	.115***
	(.149)	(.030)	(.189)	(.285)	(.195)	(.245)	(.120)	(.077)	(.022)	(.006)	(.026)	(.027)	(.025)	(.036)	(.018)	(.032)
Obs	287	800	800	800	800	800	800	800	800	800	800	650	650	650	650	650
Theil R2	0.78		0.42	0.34	0.41	0.42	0.38	0.34	0.84		0.54	0.47	0.50	0.54	0.53	0.50
Within R2		0.39								0.08						
Between R2		0.01								0.04						
Time-Varying Controls	ON	ON	ON	ON	ON	ON	ON	ON	ON	OFF	ON	ON	ON	ON	ON	ON
Time-Invariant Controls	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
# Province Clusters	18	50	50	50	50	50	50	50	18	50	50	50	50	50	50	50
# Time Clusters			13								13					
# Autonomous Community Clusters			17								17					
Parente-Santos Silva Intra-Cluster Correlation Test				0.000	0.000	0.000	0.000	0.000				0.000	0.000	0.000	0.000	0.000
(p-value)																

Notes: the table presents the effects of judicial efficacy on the province-level economic specialization. The outcome variables are the shares of complex and non-complex economic activities related to the size of the GDP. Columns (1) through (3) and (9) through (11) reports the OLS estimates along with the fixed-effects estimated clustered by a combination of province, autonomous community and year clustering scheme to address the multiple sources of serially correlated stochastic disturbances and heteroskedastic distribution of random error variance across and within provinces. The standard errors are constructed using the finite-sample empirical distribution function with finite moment condition adjustment to remove the inconsistencies arising from OLS variance-covariance matrix estimator and single-way clustered standard errors. Columns (4) through (8) and (12) through (16) report the quantile-specific effect of judicial congestion rate per jurisdiction using Parente-Santos Silva cluster-robust standard errors. Asterisks denote statistically significant regression coefficients at 10% (*), 5% (**), and 1% (***), respectively.

Table C2: Foral Law, Judicial Efficacy and Economic Specialization, IV Estimates

	Administrative Jurisdiction				Civil Jurisdiction			
	Log GDP Share of Complex Activities		Log GDP Share of Non-Complex Activities		Log GDP Share of Complex Activities		Log GDP Share of Non-Complex Activities	
	Basque Country + Navarra + Canary Islands				Full Foral Jurisdiction			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Congestion Rate	-.137***	-.208***	.768**	.026***	-.640***	-.505***	.137***	.092***
	(.041)	(.042)	(.344)	(.005)	(.066)	(.057)	(.010)	(.008)
Foral Law	.129***	.560***	.129***	.560***	2.297**	1.807*	2.297**	1.807*
	(.037)	(.108)	(.037)	(.108)	(1.030)	(.918)	(1.030)	(.918)
Foral Law Compilation Length	-.019***	-.095***	-.019***	-.095***	-.244**	-.187**	-.244**	-.187**
	(.006)	(.023)	(.006)	(.023)	(.097)	(.087)	(.097)	(.087)
# Foral Legal Norms	.082***	.282***	.082***	.282***	.060***	.052***	.060***	.052***
	(.020)	(.082)	(.020)	(.082)	(.015)	(.016)	(.015)	(.016)
Observations	800	800	800	800	650	650	650	650
# Province Clusters	50	50	50	50	50	45	50	45
# Time Clusters	16	16	16	16	16	16	16	16
# Autonomous Community Clusters	17	17	17	17	17	17	17	17
Structural Confounders	NO	YES	NO	YES	NO	YES	YES	YES
Time-Fixed Effects	YES	NO	YES	NO	YES	NO	YES	NO
Cragg-Donald Weak ID Test	1.29	4.78	1.29	5.41	28.79	16.51	11.17	5.84
Angrist-Pischke F-Test on Excluded Instruments (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000
Hansen J-Test (p-value)	0.31	0.23	0.30	0.20	0.26	0.81	0.19	0.49

Notes the table presents the IV effects of judicial efficacy in the administrative and civil jurisdiction on the province-level economic specialization using the set of foral law variables as an IV for province-level congestion rates. The outcome variables are the shares of complex and non-complex economic activities related to the size of the GDP. Labor jurisdiction is omitted from the IV-2 stage estimation since there is no foral Law in that jurisdiction. The standard errors are adjusted for within-province serially correlated stochastic disturbances and heteroskedastic distribution of random error variance into province-specific, autonomous community-specific and time-specific clusters using Cameron, Gelbach and Miller (2011) non-nested multi-way clustering scheme for finite-sample adjusted of the empirical distribution function and cluster-robust parameter inference to remove the structural inconsistencies arising from OLS variance-covariance matrix estimator and within-province serially correlated residuals. Multi-way cluster-robust standard errors are denoted in the parentheses for each empirical specification. Asterisks denote statistically significant coefficients at 10% (*), 5% (**), and 1% (***), respectively.

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