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Which legal procedure affects business investment most, and which companies are most sensitive? Evidence from microdata

Daniel Dejuan-Bitria a, Juan S. Mora-Sanguinetti b,∗

a Universitat Pompeu Fabra, Spain
b Banco de España – Eurosystem, Spain

ARTICLE INFO

JEL classification:
D25
E22
K41
K12
Keywords:
Business investment decisions
Judicial system
Legal procedures

ABSTRACT

The negative impact of judicial inefficiency on investment decisions has been examined theoretically, supported by aggregate empirical studies at the country level. Whether this effect is observed at the firm level, however, and under what circumstances and through which channels it occurs, has yet to be determined. This paper fills the gap by analyzing the problem empirically for the period 2002–2016 using information from 650,000 firms (3.5 million observations). Our approach is novel, because it shows that the impact is greater in large companies than in small ones, that it occurs more strongly in industrial companies, and that the civil (private) jurisdiction is the crucial one in achieving efficiency improvements. These findings are important for aggregate productivity growth.

1. Introduction

Institutions matter for economic efficiency (e.g., North, 1990, 1994; Hall and Jones, 1999; Helpman, 2008). One reason for this is that a lower quality of institutional framework, which includes the judicial system, distorts the incentive structure for investment and its dynamics (Knack and Keefer, 1995; Nawaz, 2015; Eslamloueyan and Jafari, 2019). This, in turn, implies lower investment rates. A critical feature of the general channel that connects justice and investment is that an ineffective judicial system generates insecurity and distrust. On the private contracting side, this is because firms expect that the judicial system will resolve more slowly (or less confidently) disputes arising from the specificity of investments. That is, the parties to a contract fear getting involved with opportunistic companies (i.e., a hold-up problem) in an investment relationship (Klein et al., 1978; Levchenko, 2007). In addition, an ineffective judicial system is a weaker barrier to expropriation by the public sector, which in turn discourages investment. Therefore, faced with an ineffective judicial system, companies would avoid making an investment that depends on unknown companies; this effectively serves as a barrier to entry for new providers. Such companies may also look for internal solutions outside the market (such as becoming vertically integrated with providers or customers), and as a result would invest less (Klein et al., 1978; Johnson et al., 2002; Nunn, 2007).

On the private contracting side, several studies have delineated the channel that connects an ineffective justice system with less investment. Klein et al. (1978), for instance, document the problems associated with commissioning a printing press for a factory. Many similar cases could be discussed, such as attempts to purchase laboratory equipment and elevators, because this type of equipment is usually ordered with a series of adaptations—which, in turn, reduces their external market value. Therefore, the contract not only generates a state of dependency for the buyer, but potentially also for the seller.

Investment decisions are sensitive to enforcement institutions because of their irreversibility and specificity (which, as noted above, renders them sensitive to opportunism and hold-up problems). A theoretical solution to the problem could be drafting a ‘complete’ contract

https://doi.org/10.1016/j.econmod.2020.09.023
Received 15 October 2019; Received in revised form 25 September 2020; Accepted 29 September 2020
Available online 7 October 2020
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(Grossman and Hart, 1986). However, contracts are subject to the risk of noncompliance, and therefore a stable framework for the relationship between enterprises requires external mechanisms, such as the judicial system, to oversee their enforcement. That is, the company that considers itself harmed must be able to bring the matter before the relevant court.

The literature has not moved beyond general discussion of this connection, however, to identify which jurisdictions and legal procedures within the judicial system most affect business investment and which firms are the most sensitive; this is due to a lack of disaggregated judicial data. Understanding these differences is important in terms of economic policy, because they assist in improving the judicial system to render it more favorable to economic development. Likewise, knowing which types of companies are more sensitive helps to advance understanding of transmission channels and improve the design of the judicial system. For example, the sensitivity of investment depending on the degree of vertical integration of the firm has been extensively hypothesized in the literature, yet empirical evidence is scarce (Klein et al., 1978; Johnson et al., 2002).

This paper addresses these questions and discusses specific transmission channels based on two rich databases that cover investment decisions for more than 650,000 Spanish firms (3.5 million observations) (CBI - Integrated CBSO- Central de Balances Integrados of the Banco de Espana) and information on the functioning of the judicial system at the local level over the period 2002–2016 (Consejo General del Poder Judicial - CGPJ database). In contrast to other studies (see, among others, Mauro, 1995, and Shah and Shah, 2016), our data reflect objective and real information on the operation of the system.

Examination of the effects of the functioning of the Spanish judicial system is particularly salient because Spain has higher litigation rates than almost all other developed countries (i.e., more disputes end up in the courts). Notably, Spain is one of the top four OECD economies based on litigation rates, regardless of whether the data are corrected by population or GDP (in PPP). Also, the overall performance of the judicial system is lower in many comparable economies (Palumbo et al., 2013; CEPEJ, 2016; Mora-Sanguinetti et al., 2017).

To model the relationship between investment and judicial inefficiency at the firm level, we construct a fixed-effects model of investment in the spirit of Gulen and Ion (2016) and Baker et al. (2016). We find that judicial inefficiency has a negative and significant impact on business investment, which is consistent with the general channels outlined above. More specifically, we find that the civil (private) jurisdiction -that is, with jurisdiction over contracting disputes between private companies- has five times the impact of the administrative jurisdiction. The latter is more focused on the defense of property rights which therefore serve as a barrier to expropriation by the public sector. Within the civil jurisdiction, declaratory proceedings have 10 times the impact of executions.

On the firms’ side, the impact of judicial inefficiency is three times larger for big companies than small ones. Interestingly, large and mature firms are typically considered to be less vulnerable to most investment obstacles, such as financial frictions or uncertainty. Our paper is novel in documenting an obstacle to investment that more severely affects this type of firm. We also examine the differential effect by sector of activity, and find that the negative effect of judicial inefficiency is more pronounced in the industrial sector. Finally, regarding the relationship between vertical integration and the impact of judicial inefficiency, we find that firms that are less dependent on intermediate inputs are less affected by the congestion rate. This finding is in line with previous theoretical work by Klein et al. (1978) and Johnson et al. (2002). The specific channels that explain these differences are, on the one hand, the greater importance of the private contractual channel in a developed economy (which is the one regulated by the civil jurisdiction) and, on the other hand, the greater intensity and frequency of investments in larger companies relative to smaller ones.

These conclusions have important consequences in terms of aggregate economic efficiency. For instance, the literature shows that the small size of Spanish companies has a negative impact on the economy’s productivity, which is also low (Dolado et al., 2016; Mora-Sanguinetti and Pérez-Valls, 2020). Likewise, the bias toward non-industrial productive sectors, which could be implied by judicial inefficacy, also has an effect on long-term economic growth (Mora-Sanguinetti and Spruk, 2018).

The rest of the paper is structured as follows. In Section 2, we present the firm-level data used in the analysis and show how we build our judicial efficacy measures using judicial data. In Section 3 we explain our estimation strategy. Section 4 discusses the results and channels. Section 5 provides a discussion of the heterogeneous effects of judicial congestion based on the different degrees of vertical integration (and, again, the transmission channels). Section 6 concludes.

2. Data

In this section we describe the data used in the empirical exercise. Section 2.1 presents the firm-level data, highlighting the sample coverage and the definition of the main variables. Section 2.2 provides detailed information about our measures of judicial efficacy.

2.1. Firm-level data

We use firm-level information from the Integrated Central Balance Sheet Data Office Survey (CBI) of the Bank of Spain. This database is based on filings coming from the CBA Annual Survey by nonfinancial firms and from the mercantile registries. Firm data is available at annual frequency and represents a significant coverage of the Spanish non-financial sector. More specifically, we select firms which are listed in the database at least two years in the period 1997–2016 and apply standard cleaning procedures to the considered variables. Because our measures of judicial efficacy cover the years 2002–2016, we further restrict our sample to this particular period. The final sample that we use in the estimates has more than 3.5 million observations for a total of 653,289 firms. Since we identify their location, we are able to cross them with local judicial efficacy data.

Table 1 below presents the firm level characteristics that we have used in the analysis together with basic descriptive statistics for the period 2002–2016. Our main variable of interest is the investment rate of firms. As a measure of investment, we compute the gross investment ratio at the firm level. This is the sum between the gross formation of tangible fixed capital and the gross formation of intangible fixed capital.

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1 Alternatively, the parties to a contract could agree to assign the “property rights” over what was not included in the contract to one of them (as a way of “completing” the contract).

2 These studies, among others, make use of proxies for the functioning of justice based on subjective indicators (such as surveys of professionals for the Doing Business indicators of the World Bank), which have a more limited scope.

3 See, among others, García-Posada (2019) and Gulen and Ion (2016) for recent reviews of the heterogeneous effects of financial frictions and uncertainty on investment by firms’ size and maturity.

4 Namely, our sample represents around 50% of Spanish non-financial corporations in the year 2015. See the work of Dejuan and Ghirelli (2018) for a detailed appendix about this sample and its coverage. We closely follow this paper both in the cleaning procedure of the database and in the definition of the variables.

5 Our judicial efficacy measures of civil (private) jurisdiction cover the period 2002–2016. The sample can be extended to the period 2000–2016 for the case of administrative judicial efficacy, at the cost of not being able to control for unemployment at the province level, for which we start to have information in the year 2002. To enhance comparability of results between the different judicial efficacy measures, we fix our sample of firms for the period 2002–2016. Results for the case of administrative judicial efficacy measures are robust to extending the sample back to year 2000.

6 See Appendix A for an exact definition of the considered variables.
2.2 Measuring judicial efficacy

In this paper we approximate the efficacy of the functioning of the judicial system computing “congestion rates” (see García-Posada and Mora-Sanguinetti, 2015, among others). These rates are calculated using information on the volume of conflicts accumulated without resolution and the number of resolved conflicts that reach a specific judicial body in a specific jurisdiction. The results are aggregated at the province level (p); a congestion rate could be considered a proxy of the resolution time. The higher the congestion rate, the worse the efficacy of the system (and potentially the higher the length or the cost expected by firms to see their conflicts resolved by the system).

More specifically, a congestion rate is calculated 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. The data used in this paper is actual data on the functioning of the Spanish judicial system provided by the General Council of the Judiciary (CGPJ) of Spain.

\[
\text{Congestion rate}_p = \frac{\text{pending cases}_{p,t-1} + \text{New cases}_{p,t}}{\text{Cases resolved}_p}
\]

In Appendix B we use an alternative measure of the functioning of the judicial system: a litigation rate. The results are consistent with those presented in the main text.

The judicial system is complex. Therefore, it is necessary to define “where” to measure its efficacy in order to get meaningful information related to firms’ investment decisions. We aim to identify the jurisdiction related to the protection of companies against contractual risks and against the risk of expropriation by the public sector. Both perspectives were discussed by Acemoglu and Johnson (2005). As shown in Fig. 2, conflicts that reach the Spanish judicial system may be resolved by four different jurisdictions (civil, criminal, labor and administrative). Each jurisdiction has a certain degree of specialization. Threats against the public interest (regulated as crimes in the Penal Code and processed through the Law of Criminal Procedure) are dealt by the Criminal jurisdiction. Labor disputes within a company (for example, related to the dismissals of a worker) are analyzed by the labor jurisdiction. Conflicts between companies related to the enforcement of private contracts are resolved by the civil jurisdiction and conflicts with the public administration are resolved by the contentious administrative jurisdiction (or “administrative jurisdiction”). It should be noted that in Spain, civil and labor jurisdictions are separated and served by specialized judges (unlike the connections between both jurisdictions that may exist in other countries, such as Italy). We thus focus both on the Civil jurisdiction and the Administrative jurisdiction.

2.2.1 Civil justice efficacy

More specifically, civil conflicts are those that occur between private companies or citizens, for example, as a result of a misinterpretation of a contract or a breach of an obligation agreed in a contract (for instance, an investment contract). These conflicts are resolved using the specific rules of the Civil Procedural Law.7 Entry into the system is done through the “courts of first instance” (if the city is large enough) or the “courts of first instance and instruction” (in smaller cities) and take a specific form that, partially, depends on the amount in conflict. Thus, generally, if the conflict has an amount exceeding 6000 euros, the “ordinary judgment” will be used.8 This judgment is classified as “declarative” because the judge will “declare” which company is right and will set out the obligations to be fulfilled.

It may happen that, in spite of the sentence (in the “declarative” judgment), the condemned company (the debtor) decides not to comply with the provisions of the judgment. In this case it would be necessary to return to the court to proceed with the “execution”. The judge, in that case, could, for example, forcibly access the accounts of the debtor.

In this paper, we measure the efficacy of the civil jurisdiction in these two “stages” (the declaration and the execution). We compute the measures for the whole of the “first instance” and “first instance and instruction” courts of a province. The congestion rate will be computed annually, for the period 2002–2016. We have begun the measurement of the congestion rate in 2002 because a new Civil Procedural Law (CPL) entered into force in 2001, abrogating the “old” CPL of 1881.9

It must be highlighted that the “declarative” civil congestion measure is computed for the whole set of civil conflicts which reach the civil courts, including the different types of contentious procedures and very diverse matters, such as family and “no family” conflicts. This is important because the conflicts related to investment decisions do not have preference to be judged in the Spanish courts. Therefore, an enterprise is affected by the congestion of the civil jurisdiction in general (as a result

Note: Table 1 presents the basic summary statistics of firm-level variables that we use in the analysis. The sample comes from the Integrated Central Balance Sheet Data Office Survey (CBI) of the Bank of Spain, for the years 2002–2016.
of business conflicts but also family conflicts) and will make its decisions accordingly.\textsuperscript{11}

Fig. 3 shows the time variation of the congestion rate in the civil jurisdiction when solving a “declarative” judgment for the whole economy (as a simple average across provinces over time): on average, the congestion rate was higher during the economic crisis and we only observe a slight reduction in the last observation (2016) already in the expansion period. This suggests that inefficacy in the Spanish judicial system may be countercyclical. Already, Ginsburg and Hoetker (2006) and Palumbo et al. (2013) found international evidence in this regard. Mora-Sanguinetti et al. (2017) discussed the Spanish case. This countercyclicality could result from companies having more problems to fulfill their contracts in a crisis context, so that the courts’ workload could be higher. However, important differences can be observed among regions, as will be discussed below.

Fig. 4\textsuperscript{12} below shows the time variation of province congestion rates

\textsuperscript{11} Although it is not technically correct, we have computed an estimation test including only the “ordinary” conflicts arriving to the Civil courts and excluding family conflicts. Therefore, we have run the estimation selecting only a set of conflicts that will more likely contain “investment” conflicts. The results are similar to those shown in this paper. The correlation between the two civil measures is in fact 0.8.

\textsuperscript{12} Appendix E includes some additional figures.
averaged across specific regions (Comunidades Autónomas). In particular, we consider four regions: Andalusia (in the south), Catalonia (containing Barcelona), Madrid and the Basque Country (in the north). Andalusia, Catalonia and Madrid are the most populated regions. Such disaggregation reveals different patterns across regions. While Andalusia and Madrid display a spike in the average congestion rate in 2009, judicial efficacy in Catalonia and the Basque country seems to be less sensitive to the business cycle. In addition, the congestion rate in the Basque country (which is known to be below the average) steadily increases since 2010 while the congestion rate in Catalonia is rather decreasing since 2008, although with an uneven pattern. In our analysis we exploit both time variation and across-province variation to identify the average effect of the congestion rate on the gross investment to capital ratio.

Figs. 5 and 6 show a lower level of disaggregation (the provincial level), which is the one used in the empirical model. Fig. 5 shows the time-average of the congestion rate for each province. This shows the across-province variation of the index. Spain shows a high variability in the efficacy of justice at the provincial level. Consistent with Fig. 4, the provinces belonging to Andalusia, Catalonia and Madrid show a relatively darker color than many other areas. In general, all the Mediterranean provinces and Madrid (which concentrate the bulk of the Spanish population) show worse behavior. Fig. 6 shows instead the standard deviation of the congestion rate computed over the period for each province. This shows the time-variation of the index: the time variation of the index is greater the darker the color of the province.

2.2.2. Administrative jurisdiction efficacy

In parallel to the risks involved in unsafe private contracting (which should be disciplined by the civil jurisdiction), investment may also be sensitive to a risk which does not depend on contracts between private parties: the risk of expropriation by politicians and elites (Acemoglu and Johnson, 2005).

According to Acemoglu and Johnson (2005), institutions related to the defense of property rights would have a significant effect on investment, while institutions related to better contracting would have a much more limited impact. More specifically, countries with greater
restrictions on their politicians and elites and greater protection against expropriation on their part would enjoy higher investment rates. Moreover, at the country level, the quality of “contract” institutions would have no effect on the investment to GDP ratio if the relationship is controlled by the quality of institutions which defend the property rights.

It is difficult to think of a significant case of “classic” expropriation in Spain today (that is, the unjustified and direct expropriation of private assets by the public administration). However, we could think of alternative forms of “expropriation” that could still take place nowadays: such as the favoritism of the government towards some business groups or, in general, the making of non-neutral public decisions that could affect investment. Firms harmed by these problems could resort to the help of the judicial system (so that it invalidates the decisions of the public administration).

The analysis of the “expropriation” channel must be approached with a different judicial database. Expropriation risks by the public sector are dealt by the administrative jurisdiction. More specifically, that jurisdiction controls the decisions of the public administrations and it would resolve a conflict between a private company and the local, regional or national administrations (unlike the civil jurisdiction, which resolves conflicts between private companies or citizens).

The procedural rules that govern this jurisdiction are different (Law regulating the Contentious-Administrative Jurisdiction) and, therefore, we can extend the years for which we compute the measure of congestion to 2000–2016. The congestion measure in this jurisdiction is based on the workload of the administrative courts (juzgados contencioso-administrativos).

2.2.3. Further clarifications (labor jurisdiction and ADR)

The Civil jurisdiction is focused on the study of the effects of uncertainty in private contracting. The nearest jurisdiction would be the labor jurisdiction, but it deals only with some specific types of conflicts (such as
The dependent variable \( (I/K_{g,t}) \) is the gross investment ratio, which is defined as gross fixed capital formation over total capital stock. \( C_{g,t} \) is the congestion rate of the civil jurisdiction (in one of the two stages: ordinary judgments or executions inside the civil jurisdiction) or the administrative jurisdiction and \( X \) is a vector that contains firm level characteristics. Finally, \( M \) refers to time varying province specific controls while \( \epsilon_{p,t} \) is the error term, which we cluster at the firm and at the year level in order to allow for serial correlation and cross-sectional correlation (Petersen, 2009). To minimize endogeneity concerns regarding plausible reverse causality between the realized investment rate and both firm’s characteristics and external determinants, we lag all explanatory variables by one year. The working hypothesis, as it was explained in section 1, is that the judicial efficacy faced by firms in year \( t \) has a negative impact on investment decisions in \( t-1 \).

The fixed effects model allows to control for all time-invariant characteristics that may determine investment: for instance, differences in business practices across companies, location characteristics that are constant over time, or time invariant differences in the economic or demographic structure across provinces. Along with them, time fixed effects control for all aggregate variables that change over time but not across firms: for instance, macroeconomic conditions, national policies or policy uncertainty that may affect corporate investment.

Following the existing literature, we explicitly control for firm time-varying variables that may affect investment, such as the profitability of a firm and its financial position. Notice that, while the profile of a specific firm and its decisions may not cause congestion, as long as a correlation exists, their omission would contaminate the estimation of the effect of judicial efficacy on investment. The main channel through which firm’s characteristics may be correlated with judicial congestion is through economic conditions. Introducing profitability variables attempts to control for firm’s investment opportunities, which is an unobservable determinant. Despite many authors rely on the use of the Tobin’s q measure, the nature of our data (with a high proportion of SMEs) implies considering alternative proxies for investment opportunities. Namely, we control for the return on assets and sales growth. On the other hand, we control for the financial position of the firm which may also influence investment decisions through the credit channel. Namely, we control for the debt to asset ratio, the debt burden and cash-flows. Note that by controlling for this battery of firms’ characteristics, we are (to our best possible) controlling for the cost of capital and the firm-specific interest rate that a company may face to finance investment.

Our regressor of interest is the measure of judicial efficacy which varies across provinces and over time. Since we control for time fixed effects, we are already taking into account any aggregate time varying factor that affects all the cross-section. Hence, to estimate the effect of the congestion rate on corporate investment we exploit the time variation of judicial efficacy within each province and across provinces.

Our identification challenge is threefold. First, notice that judicial congestion is measured at the province level. Since we want to estimate the effect that a higher congestion rate may have on firms’ investment decisions, mobility of firms across provinces to resolve conflicts would virtually kill our identification. Arguably, firms would litigate their conflicts in those provinces where the judicial system works more efficiently. In other words, as it was discussed by Mora-Sanguinetti et al. (2017), a possible source of concern for the validity of the analysis could be that conflicts of companies located in a province “\( p \)” could be solved in any other province “\( p’ \)”. Fortunately, this is limited by Law: the CPL

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(Articles 50 and 51) establishes that the competent court to resolve a conflict will be, by default, that of the domicile of the defendant, both in the case of natural and legal persons.

We must recognize, however, that there are exceptions to these rules: the Law allows the parties to agree to choose another place to resolve a conflict (Article 55) and there is also a certain choice for the plaintiff while can also sue a businessman (defendant) in the place where he does business (in disputes arising from his business or professional activity).

Still, we believe that these exceptions should not be a relevant problem for our estimates. On the one hand, we observe that the provinces are an important “frontier” to economic activity in Spain: workers tend to move only within the province limits (Jimeno et al., 2015). According to the Labor Force Survey, workers commuting to a province other than their province of residence amounted to 4.6% during the period 2005–2013 and firms changing province amount to just around 0.1% each year.17 On the other, in the extreme and unrealistic event that firms actually self-selected provinces for litigation, our estimate of the average effect of judicial congestion on investment would be a lower bound of the true effect. Judicial congestion at province “p” would be irrelevant to investment for all firms located in “p” that litigate in “no p”. This would induce an attenuation bias in our estimate and we would be hence estimating a lower bound for the true effect, which may still be of interest.

Another threat to our identification strategy is the possibility of reverse causality. In this scenario, judicial efficacy would be endogenous to the economic structure, and in particular to firms’ investment plans. While we argued that judicial efficacy may have an impact on investment (see Section 1), we cannot sustain that investment decisions (and the conflicts derived from them) influence in a remarkable way the measures of judicial efficacy we compute. This is due to the Spanish judicial structure. We construct our measures of efficacy based on the performance of first instance (and first instance and instruction) courts (on the side of the civil jurisdiction). None of these judicial bodies are specialized in investment decisions nor deal exclusively with business disputes. The mentioned civil courts resolve, in addition to conflicts arising from an investment decision, other cases such as evictions or inheritance conflicts (see García-Posada and Mora-Sanguinetti, 2015). Therefore, an increase in litigation related to investment decisions could only be transferred to congestion rates indirectly. The creation of non-specialized courts could, in addition, be based on factors much broader than the litigation derived from investment decisions.

Regarding this same issue (reverse causality) but with respect to the administrative courts, we should point out that these courts are not specialized in investment decisions nor deal exclusively with business disputes as they also solve immigration (extranjería) or electoral conflicts, among others. Therefore, an increase in litigation related to investment decisions could only be transferred to congestion rates indirectly.

Last but not least, our estimation could be biased due to the fact that the congestion rate is expected to be counter-cyclical and the economic cycle clearly affects firms’ investment opportunities and expected demand, which are relevant investment determinants. Periods of high economic growth will be associated with positive firm’s performance and a low probability of breach of contract while the opposite may occur in periods of recession. Thus, not controlling for the business cycle would introduce an omitted variable bias in our estimation. We alleviate this concern by explicitly controlling for the business cycle in two main ways. First, we introduce time fixed effects so that we are controlling for everything that may vary along time at the aggregate level, such as the national business cycle and the credit cycle. Second, we additionally introduce different variables at the province level in order to control for time varying factors that may vary differently across provinces.

17 As an additional argument, if all firms could move to the most efficient provinces, this would increase local congestion rates. In equilibrium, congestion rates would be the same across all provinces. This is not what it is observed in the data.

4. Baseline results and discussion

In this section we present the average effect of judicial congestion on investment rate. On the side of the analysis of civil jurisdiction, we consider two potentially relevant proxies for the congestion rate according to “where” we measure the efficacy of the judicial system: the congestion rate at the declarative stage (congestion declarative) and at the execution stage (congestion execution). We expect to observe a negative effect of a higher congestion rate on investment as suggested by the negative relationship between the averages of the variables for each province (see Fig. 1).

Following the specification presented in section 3, our empirical exercise will allow us to establish a causal claim on such relationship by controlling for other firm-specific and aggregate determinants of investment and to investigate potential heterogeneous effects.

Table 2 presents our baseline results for the case of the judicial congestion rate at the declarative stage. In all regressions, we control for firm specific unobservable heterogeneity, time fixed effects and firm specific controls. In column 1 we can see the results when we estimate a classic investment model. Proxies of economic performance such as the return on assets and the growth of sales have a positive effect on the investment rate. Together with this, a higher debt to asset ratio and debt burden, which proxy the financial position of a firm, appear to negatively affect the level of investment while the cash to asset ratio has a positive effect on investment. Both findings are consistent with the role of financial frictions in the access to credit and investment.

Column 2 of Table 2 extends the classical investment model by including a measure of judicial congestion. Classical investment determinants remain significant and affecting the investment rate in the expected direction. The judicial congestion rate measured at the declaration stage has a negative effect on the investment rate, even after controlling for firm specific characteristics and time fixed effects. Controlling for aggregate shocks ensures that our estimators are not contaminated by the impact that the business cycle may have on both the investment rate and judicial congestion. In particular, we find that a 10-percentage point decrease in the congestion rate would increase on average the investment rate by roughly 0.1 percentage points, caeteris paribus. In order to have a better sense of the relevance of this magnitude an example may be helpful. In year 2010, Alicante was one of the provinces with higher levels of judicial congestion (220 unresolved cases per 100 resolved ones), while Alava exhibited one of the lowest level of congestion (140 unresolved cases per 100 resolved ones). If Alicante had the judicial efficacy observed in Alava, investment in Alicante would increase by \( \Delta \text{Congestion Rate} \times 80 \text{pp} \times 0.01 = 0.8 \text{ pp} \), which is a magnitude similar to the effect that a 10-pp increase in cash flows has on average on the level of investment.

Our result is robust to the inclusion of controls at the province level. Arguably, our estimation could be affected by potential confounders. For example, for a given number of courts in a province, population and firm density could be important determinants of judicial congestion rates and could plausibly be related to investment behavior of firms. In column 3 we introduce a block of controls to alleviate concerns of such potential confounders. In particular, we control for the number of lawyers in each province (as suggested by Mora-Sanguinetti and Garoupa (2015), as this variable is related to litigation), the ratio of total number of civil courts in a province over the sum of total population plus number of firms and the population growth. These two last variables allow us to safely disentangle the effect of judicial inefficacy from population density pressure.

Finally, we control for the local business cycle in columns 4 to 6. In the case there is variation among regions in terms of their economic performance, the local business cycle could be potentially correlated with
Table 2
Effects of the efficacy of the civil jurisdiction (when solving declarative judgments) on investment.

|                    | (1)          | (2)          | (3)          | (4)          | (5)          | (6)          |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Congestion declarative | -0.0143***   | -0.0145***   | -0.0117***   | -0.0104***   | -0.0073***   |
|                    | (0.0029)     | (0.0030)     | (0.0027)     | (0.0027)     | (0.0029)     |
| Cashflow           | 0.0669***    | 0.0669***    | 0.0669***    | 0.0669***    | 0.0669***    |
|                    | (0.0033)     | (0.0033)     | (0.0033)     | (0.0033)     | (0.0033)     |
| EBIT/Assets        | 0.0234***    | 0.0234***    | 0.0235***    | 0.0234***    | 0.0235***    |
|                    | (0.0047)     | (0.0047)     | (0.0047)     | (0.0047)     | (0.0047)     |
| Debt Burden        | -0.0086***   | -0.0086***   | -0.0086***   | -0.0086***   | -0.0086***   |
|                    | (0.0003)     | (0.0003)     | (0.0003)     | (0.0003)     | (0.0003)     |
| Debt/Assets        | -0.0317***   | -0.0317***   | -0.0317***   | -0.0317***   | -0.0317***   |
|                    | (0.0028)     | (0.0028)     | (0.0028)     | (0.0028)     | (0.0028)     |
| Sales growth       | 0.0094***    | 0.0094***    | 0.0094***    | 0.0094***    | 0.0094***    |
|                    | (0.0008)     | (0.0008)     | (0.0008)     | (0.0008)     | (0.0008)     |
| Number of Lawyers  | -6.4405      | -5.9436      | -5.4008      | 3.2392       |
| Regional: Unemployment | -6.4405      | -5.9436      | -5.4008      | 3.2392       |
| Regional: GDP growth | 0.0130***    | 0.0130***    | 0.0130***    | 0.0127***    |
| Regional: #Courts/(population + firms) | 2.0272*** | 2.0463*** | 1.9790*** | 1.5603*** |
| Regional: Population growth | -0.2155** | -0.1864** | -0.1949** | -0.2504*** |
| Regional: Credit/GDP | 0.0067**    | 0.0067**    | 0.0070**    | 0.0070**    |
| Regional: Unemployment | -0.0090***   | -0.0090***   | -0.0090***   | -0.0090***   |

Robust standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: Table 2 reports the estimated effect of the congestion rate in the civil jurisdiction (declarative stage) on the investment rate of firms, as specified in the equation presented in section 3. The dependent variable is the investment rate. We account for firm fixed effects by means of the within transformation. We also account for year fixed effects. Data are two-way clustered at both the firm and year level. Column 1 presents a classical investment regression model where only firm-level variables are included. Column 2 augments the model by including our main regressor of interest, judicial congestion at the declarative stage, measured at the province level. Columns 3 to 5 introduce further controls at the province level. All variables are lagged by one year. The considered sample covers the period 2002-2016.

Table 3
Effects of the efficacy of civil executions on investment.

|                    | (1)          | (2)          | (3)          | (4)          | (5)          | (6)          |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Congestion execution | -0.0020***   | -0.0018***   | -0.0013**    | -0.0012**    | -0.0010**    |
|                    | (0.0005)     | (0.0005)     | (0.0005)     | (0.0004)     | (0.0005)     |
| Cashflow           | 0.0669***    | 0.0669***    | 0.0669***    | 0.0669***    |
|                    | (0.0033)     | (0.0033)     | (0.0033)     | (0.0033)     |
| EBIT/Assets        | 0.0234***    | 0.0234***    | 0.0235***    | 0.0235***    |
|                    | (0.0047)     | (0.0047)     | (0.0047)     | (0.0047)     |
| Debt Burden        | -0.0086***   | -0.0086***   | -0.0086***   | -0.0086***   |
|                    | (0.0028)     | (0.0028)     | (0.0028)     | (0.0028)     |
| Debt/Assets        | -0.0317***   | -0.0317***   | -0.0317***   | -0.0317***   |
|                    | (0.0008)     | (0.0008)     | (0.0008)     | (0.0008)     |
| Number of Lawyers  | -10.5356     | -9.2084      | -8.2718      | 1.6404       |
| Regional: Unemployment | -10.5356     | -9.2084      | -8.2718      | 1.6404       |
| Regional: GDP growth | 0.0132***    | 0.0132***    | 0.0127**     | 0.0126***    |
| Regional: #Courts/(population + firms) | 1.9123*** | 1.9380*** | 1.8793*** | 1.4597*** |
| Regional: Population growth | -0.2210** | -0.1903** | -0.1989** | -0.2561*** |
| Regional: Credit/GDP | 0.0665**    | 0.0665**    | 0.0665**    | 0.0665**    |
| Regional: Unemployment | -0.0090***   | -0.0090***   | -0.0090***   | -0.0090***   |

Robust standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: Table 3 reports the estimated effect of the congestion rate in the civil jurisdiction (execution stage) on the investment rate of firms, as specified in the equation presented in section 3. The dependent variable is the investment rate. We account for firm fixed effects by means of the within transformation. We also account for year fixed effects. Standard errors are two-way clustered at both the firm and year level. Column 1 presents a classical investment regression model where only firm-level variables are included. Column 2 augments the model by including our main regressor of interest, judicial congestion at the execution stage, measured at the province level. Columns 3 to 6 introduce further controls at the province level. All variables are lagged by one year. The considered sample covers the period 2002-2016.
both the congestion measure and firms’ investment decisions. Both credit to GDP ratio, regional GDP growth and the unemployment rate are significant and affect investment in the expected direction. Notably, once we control for the local business cycle, the effect of congestion rate remains significant although smaller in magnitude. Hence, while the evolution of congestion may be correlated with the economic performance of each province, the estimated effect on investment does not disappear once we control for aggregate and local economic shocks. Our preferred specification is the model presented in column (6). We choose the most conservative specification (notice that in this case judicial congestion is only significant at the 5% level) in order to assess heterogeneous effects across firms (see the next section).

Table 3 considers the effect of judicial congestion when we focus on the execution stage. Recall that this stage is only reached when, after the “declarative” judgment, the condemned company decides not to comply with the provisions of the judgment and it is necessary to return to the court to proceed with the “execution”. Following the same structure of Table 2, we first introduce our measure of judicial congestion while only controlling for firm specific variables and we then control for regional specific trends. In all specifications we find a significant negative effect of judicial congestion on the investment rate. Namely, a 10-percentage point decrease in the congestion rate (which would for example entail a change from 120 unresolved cases per 100 resolved ones to 110 unresolved per 100 resolved ones) increases, on average, the investment rate by roughly 0.01 percentage points, ceteris paribus.

Notice that, despite the direction of the effect is the same in both the declarative and the execution stage, we find significant differences in terms of the magnitude of the estimate. In particular, the impact of congestion on investment at the declarative stage is ten times bigger than the effect observed at the execution stage. Arguably, the lower relevance of congestion at the execution stage could be related with the fact that less firms do actually reach this second stage and thus the overall sensitivity to judicial efficacy is lower. This circumstance also indicates that companies have some confidence in the effectiveness of the judicial system once, unfortunately, a conflict has occurred (usually there would be no need to carry out forced execution).

In Appendix C we carry out a robustness test in where we exclude Madrid and Barcelona. These provinces maintain the headquarters of the largest companies. The results of the experiment are confirmed.

Regarding the analysis of administrative jurisdiction, Table 4 shows the effects of the efficacy of the administrative jurisdiction on investment. The effect is negative and only significant at the 5% level when we introduce our baseline controls at the province level.

Table 5 shows the effects of the efficacy in the administrative jurisdiction when also the efficacy of the civil jurisdiction is considered. This experiment seems nearer to the one proposed by Acemoglu and Johnson (2005). Once we introduce the whole sale of controls as in our baseline specification, we find that congestion at the administrative level has a negative impact on the investment rate. The impact is significant at the 5% confidence level and five times smaller in magnitude compared to the impact of judicial inefficacy at the declarative stage.

As a summary, we found that the civil (private) jurisdiction has five times the impact of the administrative jurisdiction. Interestingly, this result seems not to coincide with Acemoglu and Johnson’s (2005) intuition. According to their work, as indicated above, the essential barrier to legal uncertainty has to do with defending property rights against government action, an element that in Spain would be carried out mainly by the administrative jurisdiction. In our work, even after taking into account various controls of the economic context, the channel of defense of private contracts (carried out by the civil jurisdiction) is shown to be more important. The hypothesis of Acemoglu and Johnson (2005) has also been challenged by another country-level analysis (in that case for India) (Chemin, 2012). For his part, Nunn (2007) has already focused his research on the study of the quality of contract enforcement.

This difference in results for the case of Spain can be rationalized in the sense that Acemoglu and Johnson compare more or less developed economies. In a poorly developed economy, the risks of expropriation could be high. Spain is, instead, a developed economy where the risk of expropriation by the public sector is lower. In addition, Acemoglu and Johnson argue that the contractual channel may not be as important because agents may alter the terms of formal and informal contracts to

### Table 4

**Effects of the efficacy of the administrative jurisdiction on investment.**

|                | (1)       | (2)       | (3)       |
|----------------|-----------|-----------|-----------|
| Congestion administrative | -0.0001*** (0.0009) | -0.0001*** (0.0009) | -0.0018** (0.0006) |
| Number of Lawyers | 10.3201 (7.9101) | 0.9767 (11.3395) |
| Regional: #Courts/(population + firms) | 2.0226*** (0.2454) | 1.4690*** (0.3085) |
| Regional: Population growth | -0.2217*** (0.0872) | -0.2698*** (0.0723) |
| Regional: Credit/GDP | 0.0143*** (0.0030) |
| Regional: Unemployment | -0.0010*** (0.0002) |

|                | Year and firm FE | Observations | R-squared |
|----------------|-----------------|--------------|-----------|
| YES | 3,511,238 | 0.3155 | 0.3156 |

Robust standard errors in parentheses.

Note: Table 4 reports the estimated effect of the congestion rate in the administrative jurisdiction on the investment rate of firms, as specified in the equation presented in section 3. The dependent variable is the investment rate. We account for firm fixed effects by means of the within transformation. We also account for year fixed effects. Standard errors are two-way clustered at both the firm and year level. In all regressions, the firm-level controls are cash flows, EBIT/ assets, debt burden, Debt/assets, and sales growth. Columns 1 includes our main regressor of interest, the congestion rate in the administrative jurisdiction. Columns 2 and 3 introduce further controls at the province level. All variables are lagged by one year. The considered sample covers the period 2002–2016.

### Table 5

**Effects of the efficacy of the administrative jurisdiction on investment when civil justice efficacy is also considered.**

|                | (1) | (2) | (3) |
|----------------|-----|-----|-----|
| Congestion administrative | -0.0001 | 0.0000 | -0.0017** |
| (0.0008) | (0.0008) | (0.0006) |
| Congestion declarative | -0.0143*** | -0.0145*** | -0.0066** |
| (0.0029) | (0.0030) | (0.0029) |
| Number of Lawyers | -6.4252 | 1.9210 |
| (8.9479) | (11.8845) |
| Regional: #Courts/(population + firms) | 2.0529*** | 1.5266*** |
| (0.2274) | (0.2892) |
| Regional: Population growth | -0.2154*** | -0.2625*** |
| (0.0769) | (0.0710) |
| Regional: Credit/GDP | 0.0134*** |
| (0.0031) |
| Regional: Unemployment | -0.0009*** |
| (0.0003) |

|                | Year and firm FE | Observations | R-squared |
|----------------|-----------------|--------------|-----------|
| YES | 3,511,238 | 0.3155 | 0.3156 |

Robust standard errors in parentheses.

Note: This table reports the estimated effect of the congestion rate in the administrative jurisdiction on the investment rate of firms, after further controlling for the congestion rate in the civil jurisdiction (declarative stage). The dependent variable is the investment rate. We account for firm fixed effects by means of the within transformation. We also account for year fixed effects. Standard errors are two-way clustered at both the firm and year level. In all regressions the firm-level controls are cash flows, EBIT/assets, debt burden, Debt/assets, and sales growth. Columns 1 includes our two measures of congestion. Columns 2 and 3 introduce additional controls at the province level. All variables are lagged by one year. The considered sample covers the period 2002–2016.
avoid the poor quality of that part of the institutional framework. Although this “avoidance” process could occur in Spain, it seems not to be the most frequent case: the high level of litigation in civil jurisdiction (in the OECD top 4 as already indicated) suggests a high dependence of economic agents on judicial decisions. In other words, companies and citizens very often choose to litigate within the formality of the judicial system to resolve their disputes in Spain.

The importance of the civil jurisdiction over the administrative jurisdiction in a context of a developed economy seems evident when comparing the frequency of conflicts of one type or another. Courts of “first instance” and “first instance and instruction” had 1,176,384 new conflicts (this does not include conflicts related to family law) in 2017 in Spain. The administrative courts had 123,112 conflicts admitted (120,771 initiated). Therefore a much lower number of conflicts. The imbalance is also evident in the number of courts (1724 civil courts versus 229 administrative courts).

The specifications in the following sections focus on understanding the heterogeneous effects (at the enterprise level) of civil jurisdiction.

5. Heterogeneous effects

We augment our baseline specification (as for the analysis of the civil jurisdiction) by introducing interaction terms of judicial congestion and firm characteristics. Our aim in this section is to study whether judicial inefficacy has differential effects for certain types of firms. We first explore the role of size, firm maturity and the sector to which a firm belongs. The two first characteristics have been largely considered in the literature to classify the profile of firms and their investment behavior. For the case of Spain and using a very similar sample to ours, Herranz and Martinez-Carrascal (2017) and Dejuan et al. (2018) document that small firms invest less on average than larger firms and with a lower frequency. Together with this, smaller and younger firms are typically considered to be more vulnerable to information frictions and thus, to suffer more from credit constraints and uncertainty (García-Posada, 2019; Gulen and Ion, 2016). In a second exercise, we consider possible heterogeneous effects of congestion on investment by intermediate input’s use. This analysis relates to the prediction by Klein et al. (1978) which suggests a positive relationship between judicial inefficiency and vertical integration.

Our specification can be now rewritten as:

\[ I / K_{it,p} = \alpha_i + \beta_1 C_{p,t-1} + \beta_2 M_{p,t-1} + \beta_3 C_{p,t-1} \times Z_{p,t-1} + \alpha_4 + \epsilon_{it,p} \]

where the \( Z \) accounts for firm level variables for which we compute the heterogeneous effects by interacting them with our judicial congestion measure. To facilitate the interpretation of the interaction terms, all \( Z \) variables are categorical so that we can interpret the differential effect of judicial congestion with respect the omitted baseline category of \( Z \).\(^{19}\)

5.1. Sector, size and maturity

We first consider the differential effect of judicial congestion by sector. Investment behavior in terms of intensity, the proportion devoted to tangible vs intangible investment, lumpiness etc. may vary across economic activities. Table 6 presents our main results. Relative to the effect of judicial congestion for firms in our baseline category, namely the “energy” sector, we observe a significant and larger effect in firms belonging to the industrial sector and, to a less extent, for firms belonging to the “trade & hotels” sector. Both in terms of magnitude and significance, the effects are more robust when measuring congestion at the declarative stage.

One of the implications of the literature discussed in the introduction (see Klein et al., 1978; Levchenko, 2007; Mora-Sanguinetti and Spruk, 2018, among others) is that sectors within an economy should not be reacting the same to the efficacy of enforcement. This is because sectors differ noticeably in their dependence on complex investment decisions requiring long-term interactions. The median knowledge (or intangible) capital intensity (OECD, 2017; Corrado et al., 2009) was above in manufacturing with respect to any other sector (ranging from agriculture to “other services”), with the only exception of trade and finance.\(^{20}\)

Although our results should be read with caution (as the breakdown by sector analyzed is limited), this paper provides evidence that, indeed, sectors such as industry or trade suffer more in a context of legal uncertainty, which implies less investment.

On the other hand, Table 7 presents the results from interacting judicial congestion both at the declarative and execution stage with size and maturity of a firm.\(^{21}\) Panel A focuses on the role of firm size. We find robust heterogeneous effects in this dimension when considering congestion at the declarative stage. Namely, the effect is close to the average effect for the case of small firms, our baseline category and significant at the 5% confidence level (as expected, as small firm represent 96% of our sample) but doubles in magnitude and triples in magnitude when considering medium and large firms, respectively. Furthermore, for medium and large firms, the effect is always found to be

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\(^{19}\) Adding the courts of first instance and the courts of first instance and instruction.

\(^{20}\) The study was conducted by aggregating information from Spain and 13 other European countries (OECD, 2015).

\(^{21}\) See Appendix A for the definition of these variables.
significant at the 1% significance level. This finding is robust when considering alternative modelling specifications (see Appendix C). On the other hand, panel B presents the differential effects of judicial inefficiency for firms with different ages. Once again, significant effects are only found for the case of congestion at the declarative stage. We observe that mature firms are more affected by judicial congestion in a relevant order of magnitude.

Our finding suggests that bigger and more mature firms are more affected by judicial congestion. Notably, it is this less vulnerable group of firms to other potential frictions (such as credit frictions and uncertainty) that the group that is most sensitive to inefficiency in the judicial sector. Why may larger and more mature firms be more affected by judicial congestion? Different channels could be present. Despite proper identification of each possible channel is beyond our present goal, we provide anecdotal evidence of the different forces that may be in place.

The first channel we propose is the investment intensity channel. Arguably, the larger the size of investment in place (in absolute and relative terms), the more sensible investment decisions may be to judicial congestion. The intuition is that larger planned investment may make companies more reluctant to invest if litigation is inefficient. Consequently, firms that engage in larger investment decisions may be more sensitive to judicial congestion. Notably, firms of bigger size present a higher investment rate, unconditionally and conditional on other determinants (see Dejuan et al., 2018). In Appendix D we provide an exploration of this channel. Namely, we consider a quantile regression model where we study the impact on judicial inefficacy at different conditional quantiles of the investment rate distribution. We find that upper conditional quantiles of the investment distribution are more severely affected by judicial inefficiency. However, this result must be cautiously interpreted. Note that we are not controlling for firm fixed effects. Also, our standard errors are clustered at the firm level rather than at the firm and year level. Hence, we consider this evidence as a suggestive correlation hinting a possible channel between investment, judicial inefficacy and larger and more mature firms.

A second possible channel relates to information frictions. Despite general statistics about judicial congestion are publicly available, the particular costs and knowledge about the functioning of the judicial system and of the market as a whole may largely depend on firm experience. Hence, we expect that larger and more mature firms have a better knowledge of the judicial system and react more to congestion. Notice that no direct measure exists about the degree of information a firm has about the current state and costs related to judicial congestion. Still, we construct a proxy for this variable by looking at the number of advisors that a given company reports to have, as documented in the Amadeus-Orbis database. Advisors include banks, consulting companies and auditors. Our hypothesis is that, conditional on other characteristics, the more advisors a company has (signaling a better understanding of the general ecosystem of the company, including the judicial environment), the more we expect investment to react to lagged congestion rate. We merge the information of Amadeus-Orbis with our database, ending up with a sub-sample of 45,000 firms, out of which more than two thirds of the firms are medium and large firms. Hence, we conduct our exercise on a very particular composition of our sample which makes comparison to previous results difficult. Appendix D presents our main findings, which we interpret as a suggestive correlation with no causal implications. We observe that the congestion rate affects more severely firms that rely more on external advisors, in line with the channel we were exploring. The effect is significant for specifications in where we do not include firm-fixed effects but vanishes-out once we control for firm unobserved heterogeneity. Arguably, the impact we see in our estimates after controlling for firm fixed effects may suggest that information frictions are well controlled by fixed-effects that largely absorb the possible channel in place.

5.2. Vertical integration

As a result of higher judicial inefficacy, it may be argued that we could observe more cases of vertical integration between firms (Klein et al., 1978). This means that firms would prefer obtaining the inputs (or the services) from an internal provider than getting them through a contract with an external supplier. In the case of an “internal” problem, the firm could just ignore the judicial system and enforce the internal agreement by its own means. In other words, highly vertically integrated firms may be less harmed by judicial inefficacy (Johnson et al., 2002).

This section aims to test if investment decisions of vertically integrated are less affected by judicial congestion. In order to do so, we first construct a variable (“Dependency”) to capture how much does a firm use intermediate inputs with respect to its creation of value-added. The variable “intermediate inputs” proxy external purchases. The information is obtained, as before, from the CBI database (Banco de España). The variable is defined as the (lagged) ratio between intermediate inputs and total value added. To test the hypothesis, we create a set of dummies referring to different levels of dependence of intermediate inputs (as a proxy for vertical integration). In particular, we look at those firms with a dependency rate below the 25 and 50 percentiles of the distribution. We interact those dummies with the congestion rate to look for heterogeneous effects.

Results are presented in Table 8. They suggest that no differential effects can be found when analyzing congestion rates at the declarative
Table 8
Heterogeneous effects and intermediate inputs dependency (declarative and execution stage).

|                               | (1)          | (2)          |
|-------------------------------|--------------|--------------|
| **Panel A**                   |              |              |
| Congestion declarative        | –0.0104**    | –0.0077**    |
|                               | (0.0026)     | (0.0029)     |
| Congestion declarative x      | 0.0017       |              |
| Dependency p[0–25]            |              | (0.0047)     |
| Congestion declarative x      | –0.0043      |              |
| Dependency p[0–50]            |              | (0.0032)     |
| **Panel B**                   |              |              |
| Congestion execution x        | –0.0021***   | –0.0018***   |
| Dependency p[0–25]            |              | (0.0005)     |
| Congestion execution x        | 0.0026***    |              |
| Dependency p[0,50]            |              | (0.0006)     |
| Congestion execution x        | 0.0007       |              |
| Dependency p[0,50]            |              | (0.0004)     |

| Year and firm FE | YES | YES |
| Observations     | 3,305,041 | 3,305,041 |
| R-squared        | 0.3143 | 0.3145 |

Robust standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: Table 8 reports the estimated effect of the congestion rate in the civil jurisdiction on the investment rate of firms, considering potential heterogeneous effects depending on intermediate input use by firms (see the equation presented in section 5). The dependent variable is the investment rate. We account for firm fixed effects by means of the within transformation. We also account for year fixed effects. Standard errors are two-way clustered at both the firm and year level. In all regressions the firm-level controls are cash flows, EBIT/assets, debt burden, Debt/assets, and sales growth. We also control for province level determinants of investment. Panel A refers to the effect of congestion at the civil jurisdiction in the declarative stage. Panel B replicates the analysis for the case of congestion at the civil jurisdiction in the execution stage. In Column 1 we interact the measure of congestion with a dummy variable taking a value equal to 1 if the intermediate input dependency of a firm is below the percentile 25 of the distribution. In Column 2 we interact the measure of congestion with a dummy variable taking a value equal to 1 if the intermediate input dependency of a firm is below the median of the distribution. All variables are lagged by one year. The considered sample covers the period 2002–2016.

We find that the civil (private) jurisdiction, has five times the impact of the administrative jurisdiction. This result indicates that efficacy in the jurisdiction that disciplines contracting between private companies (civil jurisdiction) is more critical to investment decisions than efficacy in the administrative jurisdiction, which is more focused on the defense of property rights and acts as a barrier to expropriation by the public sector. Within the civil jurisdiction, declaratory proceedings have ten times the impact of the executions. On the firms’ side, the impact of judicial inefficacy is three times larger on big companies than on small ones. This research also observes that the negative effect of judicial inefficacy is more pronounced in the industrial sector. Finally, regarding the relationship between vertical integration and the impact of judicial inefficacy, we find that those firms that are less dependent on intermediate inputs are less affected by the congestion rate. The specific channels that explain these differences are, on the one hand, the greater importance of the private contractual channel (there are in fact more than 7 times more civil courts in Spain than administrative courts) and, on the other hand, the greater intensity and frequency of investments in larger companies with respect to smaller ones.

The results of this research indicate that efforts to improve the business investment environment should focus on securing contracting between private companies. This is preferable to addressing the potential risks or expropriation by the public sector. Thus, resources should focus on improving civil jurisdiction and not so much administrative jurisdiction. The improvement of civil jurisdiction seems critical, moreover, for conjunctural reasons: judicial congestion as a whole (and in some highly populated regions specifically) seems sensitive to the economic cycle and spikes during recessions, such as that which could be imposed by the COVID-19 pandemic (Mora-Sanguinetti, 2020).

Improvements in legal certainty are also critical for making progress on an important problem of the Spanish economy: the small size of its companies compared to those of the other large European economies (Mora-Sanguinetti and Pérez-Valls, 2020). This research finds that the impact of judicial inefficacy is 3 times larger on big companies than on small ones. Firm size matters for the productivity growth trend. For instance, López-García and Montero (2012) found that small companies were related to smaller probabilities to innovate.

Finally, our results point to sectors such as industry or trade suffering more in a context of legal uncertainty, which implies less investment. Again, the result has broader economic efficiency implications: development and sectoral specialization may be linked (Mora-Sanguinetti and Spruk, 2018). In Spain, the regions less specialized in industrial activities show below-average economic development.

**Declaration of competing interest**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Appendix A. Variables definition

We define the following variables.

- **Debt burden**: interest payments plus financial costs divided by gross operating revenue plus gross financial revenue.
- **EBIT/Assets (ROA)**: sum of gross operating revenue plus gross financial revenue minus financial costs and interest payments, divided by total assets.
- **Debt ratio**: Total outstanding debt less cash and its equivalents divided by total assets.
- **Cash flows**: change in the cash holdings relative to the previous year divided by total assets.
• **Total capital stock**: sum of fixed tangible capital stock (including real estate investment) and fixed intangible capital stock.

• **Gross investment rate**: the sum of gross fixed tangible and intangible capital formation, divided by the total capital stock.

• **Sales growth rate**: It is computed with respect to previous year. The variable takes value zero if firm sales are zero in two subsequent years.

• **Size dummy**: equal to one if the firm is small, equal to two if the firm is medium size and equal to 3 if the firm is large. Our definition is based on the definition of the European Commission (2003/361/CE). Namely, large firms are required to have more than 250 employees. A medium size firms must have (1) between 50 and 250 employees, (2) total assets between 10 and 43 million or turnover between 10 and 50 million. A small firm must have (1) less than 50 employees, (2) total assets bellow 10 million or turnover bellow 10 million.

• **Age**: number of years since the foundation of the company.

### Appendix B. Effects of the litigation rate on investment

In this Appendix we measure the impact of a litigation rate (as an alternative to the congestion rate explained in section 2.2) on investment decisions. The litigation rate is defined as the number of new conflicts that have reached the judicial system in a year \(t\) (and province, \(p\)) divided by the population of the province in that year. We calculate the rate for the new cases which enter the declarative stage in the Civil jurisdiction.

\[
\text{Litigation rate}_{p,t} = \frac{\text{New cases}_{p,t}}{\text{Population}_{p,t}}
\]

This measure is of interest, while the literature reminds us that litigation is very significantly related to judicial slowness (Palumbo et al., 2013). Therefore, this rate could be considered a predictor of judicial efficacy. Also, as it was mentioned in the introduction, Spain is a country characterized by a very high civil litigation rate, above most of the OECD economies.

| Table B.1 | Effects of the litigation rate on investment. |
|-----------|---------------------------------------------|
|           | (1)          | (2)          | (3)          |
| Litigation rate | -0.8454*** | -0.8854*** | -0.7164*** |
|             | (0.1542)    | (0.1336)    | (0.1366)    |
| Cash flow  | 0.0669***   | 0.0669***   | 0.0669***   |
|             | (0.0033)    | (0.0033)    | (0.0033)    |
| EBIT/Assets| 0.0233***   | 0.0234***   | 0.0234***   |
|             | (0.0047)    | (0.0047)    | (0.0047)    |
| Debt Burden| -0.0086***  | -0.0086***  | -0.0085***  |
|             | (0.0003)    | (0.0003)    | (0.0003)    |
| Debt/Assets| -0.0317***  | -0.0317***  | -0.0316***  |
|             | (0.0028)    | (0.0028)    | (0.0028)    |
| Sales growth| 0.0094***   | 0.0094***   | 0.0094***   |
|             | (0.0008)    | (0.0008)    | (0.0008)    |
| Number of Lawyers | -12.5358   | -2.0766     |
|             | (8.8745)    | (11.3228)   |
| Regional: #Courts/(population + firms) | 2.0004***  | 1.0929***   |
|             | (0.2513)    | (0.2883)    |
| Regional: Population growth | -0.2946*** | -0.3099***  |
|             | (0.0796)    | (0.0705)    |
| Regional: Credit/GDP | 0.0136***  |
|             | (0.0032)    | (0.0002)    |
| Regional: Unemployment | -0.0007***  |
|             | (0.0002)    |             |
| Year and firm FE | YES         | YES         | YES         |
| Observations | 3,511,238   | 3,511,238   | 3,511,238   |
| R-squared    | 0.3155      | 0.3156      | 0.3156      |

Robust standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: This table reports the estimated effect of the litigation rate on the investment rate of firms. The dependent variable is the investment rate. We account for firm fixed effects and year fixed effects. Standard errors are two-way clustered at both the firm and year level. Column 1 presents a classical investment regression model where only firm-level variables and the litigation rate are included. Column 2 and 3 augments the model by including province-level controls. All variables are lagged by one year. The considered sample covers the period 2002–2016.

Table B.1 presents the effect of the litigation rate on investment when controlling for firm specific characteristics, regional controls, firm fixed effects and time fixed effects. We observe that an increase in the litigation rate has a negative impact on investment. In particular, a 1 pp increase in the litigation rate entails a decrease of investment by 0.8 pp.
Appendix C. Robustness checks

C.1. Excluding Madrid and Barcelona

In Table C.1, we present our baseline specification when we exclude Madrid and Barcelona. Arguably, it would be reasonable to think that these two provinces may have an important role in explaining the how judicial inefficacy affects investment in our particular sample. (1) Madrid and Barcelona are the two most populated provinces in Spain, with special concentration of large and mature firms (which we have shown that are the most affected by judicial congestion). (2) These are the provinces with higher level of economic activity in Spain. (3) The biggest law firms and the main banks have been traditionally located in Spain and Barcelona (the financial sector has been very much litigious during the crisis in Spain). We observe that, despite excluding these two provinces notably affects the precision of our estimates at the execution stage, we still find unchanged significant coefficients at the declarative stage signaling that our findings are not uniquely driven by the important role of these two provinces.

Table C.1

|  | (1) | (2) | (3) | (4) | (5) | (6) |
|---|-----|-----|-----|-----|-----|-----|
| | Congestion declarative stage | Congestion execution stage | | | | |
| Congestion | -0.0110*** | -0.0114*** | -0.0065** | -0.0008* | -0.0007 | -0.0003 |
| Cash flow | 0.0682*** | 0.0681*** | 0.0682*** | 0.0682*** | 0.0681*** | 0.0682*** |
| EB IT/As sets | 0.0272*** | 0.0272*** | 0.0272*** | 0.0272*** | 0.0272*** | 0.0272*** |
| Debt Burden | -0.0080*** | -0.0090*** | -0.0080*** | -0.0008*** | -0.0080*** | -0.0080*** |
| Debt/Assets | -0.0322*** | -0.0329*** | -0.0329*** | -0.0329*** | -0.0329*** | -0.0329*** |
| Sales growth | 0.0093*** | 0.0093*** | 0.0093*** | 0.0093*** | 0.0093*** | 0.0093*** |
| Number of Lawyers | -20.2013* | -132184 | -21.9054** | -137041 |
| Regional: #Courts/(population + firms) | 1.6739*** | 1.6433** | 1.6433** | 1.6433** |
| Regional: Population growth | -0.1820** | -0.2767*** | -0.1880** | -0.2855*** |
| Regional: Credit/GDP | -0.0067 | (0.0053) | -0.0067 | (0.0053) |
| Regional: GDP growth | -0.0009*** | (0.0002) | -0.0009*** | (0.0002) |
| Regional: Unemployment | 0.2513*** | 0.1803*** | 0.2096*** | 0.2358*** | 0.1685*** | 0.2034*** |
| Year and firmFE | YES | YES | YES | YES | YES | YES |
| Observations | 2/162,988 | 2462,988 | 2/462,988 | 2/462,988 | 2462,988 | 2/462,988 |
| R-squared | 0.3105 | 0.3106 | 0.3106 | 0.3105 | 0.3105 | 0.3106 |

Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p<0.1.

Note: This table reports the estimated effect of the congestion rate in the civil jurisdiction (declarative stage and execution stage) on the investment rate of firms, when the provinces Madrid and Barcelona are excluded. The dependent variable is the investment rate. We account for firm fixed and year fixed effects. Standard errors are two-way clustered at both the firm and year level. Column 1 to 3 for the case of congestion at the declarative stage and 4 to 6 for congestion at the execution stage, introducing different province level controls. All variables are lagged by one year. The considered sample covers the period 2002–2016.

C.2. Introducing province-time fixed effects and clustering at province level

As argued in section 3, one of the possible endogeneity concerns in our analysis relates to possible omitted variables (at the province level and that vary over time) that correlate with both congestion and investment decisions. In the baseline specification, we tackle this concern by introducing different controls such as measures of population and firm density per region, GDP growth and unemployment rate. In column (1) of Table C.2 we further saturate our model with province-year fixed effects which allows us to control for all observed and unobserved province trends. Note that introducing province-year fixed effects entails that we can no longer identify the effect of congestion rate (neither the effect of any other control at the province level), because they will be colinear with the fixed effects. Still, we can identify the interaction between the congestion rate and firm-specific level variables.22 Notably, the coefficients of the interaction terms remain of similar magnitude and significance to the ones shown in Table 5. On the other hand, in column (2) of Table C.2 we allow for clustering at the province and year level. Allowing for intra-province correlation among observations and over time implies a much more conservative inference standard of our estimated coefficients. At the same time, the specification may suffer from insufficient number of clusters to rely on asymptotic theory. We see that the main effects of our interaction terms remain unchanged after allowing for this alternative clustering strategy.

22 However, we cannot longer estimate the total effect of congestion. The total effect of judicial inefficacy for the group that is interacted with our measure would be the sum of the differential effects (the coefficients of the interactions) and the effect of the congestion rate for the baseline group (the coefficient of judicial congestion itself). The latter is absorbed by the province-year fixed effects.
Table C.2
Heterogeneous effects when introducing province-time fixed effects and province clusters.

|                  | (1)                      | (2)                      |
|------------------|--------------------------|--------------------------|
|                  | Province-year fixed effects | Cluster at province level |
| Panel A          |                          |                          |
| Congestion declarative | -0.0064** (0.0029)    |                          |
| Congestion declarative x Medium size | -0.0290*** (0.0072)   | -0.0287*** (0.0105)     |
| Congestion declarative x Large Size    | -0.0317*** (0.0090)   | -0.0316*** (0.0099)     |
| Year and firm FE | YES                      | YES                      |
| Observations     | 3,511,238                | 3,511,238                |
| R-squared        | 0.3160                   | 0.3156                   |
| Panel B          |                          |                          |
| Congestion declarative | 0.0117 (0.0116)        |                          |
| Congestion declarative x Age[5–15]     | -0.0155* (0.0076)      | -0.0178* (0.0093)       |
| Congestion declarative x Age[16–30]     | -0.0219 (0.0125)       | -0.0268 (0.0160)        |
| Congestion declarative x Age>30        | -0.0414** (0.0164)    | -0.0479* (0.0224)       |
| Year and firm FE | YES                      | YES                      |
| Observations     | 3,510,824                | 3,510,824                |
| R-squared        | 0.3168                   | 0.3164                   |

Robust standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: This table reports the estimated effect of the congestion rate in the civil jurisdiction at the declarative stage on the investment rate of firms, considering heterogeneous effects by firm size and maturity. The dependent variable is the investment rate. We account for firm fixed and year fixed effects. Firm-level controls include cash flows, EBIT/assets, debt burden, Debt/assets, and sales growth. Province-level controls include number of lawyers, the number courts over the total population, population growth, credit over GDP and unemployment rate. In column 1 we include province-time level fixed effects, absorbing controls with variation at the province level. In column 2 we allow for two-way double clustering at the province-year level. All variables are lagged by one year. The considered sample covers the period 2002–2016.

Appendix D. Potential channels between firm size and investment sensitivity to congestion

D.1. Quantile regression

Using our whole sample, we estimate a quantile regression to study the correlation between judicial inefficacy and different percentiles of the investment rate distribution. We consider the impact on the median, the 75th percentile and the 90th percentiles. Notably, the distribution of investment rate in our sample, as documented in Dejuan et al. (2018), is significantly right skewed, with the 25th percentile very close to zero investment. We follow a simplified specification of Koc and Sahin (2016), namely:

\[ Q_q(I/K_{p,t}) = \alpha_q + \beta_q C_{p,t-1} + \beta_q X_{p,t-1} + \beta_q M_{p,t-1} + d_t + \epsilon_{p,t} \]

with \( q = 0.50, 0.75, 0.90 \)

Table D.1
Quantile regression: Effect of congestion on different quantiles of investment rate.

|                    | (1)          | (2)          | (3)          |
|--------------------|--------------|--------------|--------------|
|                    | Percentile SD| Percentile 75| Percentile 90|
| Congestion declarative | -0.0018*** (0.0002) | -0.0104*** (0.0015) | -0.0397*** (0.0044) |
| Cash flow | 0.0038*** (0.0001) | 0.0512*** (0.0013) | 0.1423*** (0.0035) |
| EBIT/Assets | 0.0121*** (0.0002) | 0.0916*** (0.0011) | 0.1650*** (0.0028) |
| Debt Burden | -0.0005*** (0.0000) | -0.0142*** (0.0002) | -0.0349*** (0.0007) |
| Debt/Assets | (continued on next column) |

\(^{23}\) While Koc and Sahin (2016) fully exploit the panel data structure by including firms’ and time fixed effects, we only include province and time fixed effects. We cluster our standard errors that the firm level.
Table D.1 (continued)

| Percentile 5D       | Percentile 75       | Percentile 90       |
|---------------------|---------------------|---------------------|
|                     | (SD)                | (SD)                | (SD)                |
| Percentile 5D       | 0.0090              | 0.0042***           | 0.0064***           |
| Percentile 75       | (0.0000)            | (0.0004)            | (0.0014)            |
| Percentile 90       | 0.0034***           | 0.0484***           | 0.0923***           |
| (0.0001)            | (0.0007)            | (0.0014)            |
| Year FE             | YES                 | YES                 | YES                 |
| Firm FE             | NO                  | NO                  | NO                  |
| Observations        | 3,523,890           | 3,523,890           | 3,523,890           |
| Pseudo R-squared    | 0.0232              | 0.0338              | 0.0344              |

Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: This table reports the correlation between judicial inefficacy and different percentiles of the investment rate distribution, based on a quantile regression. The dependent variable is the investment rate. We account for year and province fixed effects. Firm-level controls include cash flows, EBIT/assets, debt burden, Debt/assets, and sales growth. Province-level controls include number of lawyers, the number courts over the total population, population growth, credit over GDP and unemployment rate. In column 1 we study the correlation between judicial inefficacy and the median investment rate. In column 2 we focus on the effect of congestion on the 75 percentile of the investment rate while column 3 considers the 90 percentile. All variables are lagged by one year. The considered sample covers the period 2002–2016.

D.2. Congestion rate and number of advisors

We investigate the effect of the number of advisors that a firm reports to have on the differential impact of judicial inefficacy on firm’s investment rate. In this exercise we merge our database with information coming from Amadeus-Orbis database. Advisors include banks, consultancy firms and auditors. Notably, this exercise relies on a subsample of mostly medium and large firms (see Table D.2a below). Table D.2b presents the correlation of judicial inefficacy on investment when looking at the group of firms with no advisors, firms with between 1 and 5 advisors, and firms that have more than 5 different advisors. We document a negative (weak) correlation that disappears once we include firm fixed effects. In the specification we control for our usual province level controls and we cluster standard errors at the firm and year level.

Table D.2a
Summary statistics of subsample.

| Variable          | Obs  | Mean   | Std Dev | Min   | Max   |
|-------------------|------|--------|---------|-------|-------|
| Investment rate   | 48112| 0.16143| 0.21296 | −1.2317| 1.57499|
| Cash flow         | 48112| 0.00461| 0.07533 | −0.9502| 0.84784|
| EBIT/Assets       | 48112| 0.0896  | 0.09843 | −1.5665| 0.72005|
| Debt Burden       | 48112| 0.29473| 0.62017 | 0      | 2.77083|
| Debt/Assets       | 48112| 0.5416  | 0.26745 | 0      | 4.57777|
| Sales growth      | 48112| 0.06046| 0.30622 | −1     | 9.22419|
| Large             | 48112| 0.38887| 0.47967 | 0      | 1      |
| Medium            | 48112| 0.29386| 0.45553 | 0      | 1      |
| Small             | 48112| 0.34727| 0.47611 | 0      | 1      |
| Advisors: 0       | 48112| 0.02929| 0.16861 | 0      | 1      |
| Advisors: >0 and ≤5| 48112 | 0.53563| 0.49873| 0  | 1  |
| Advisors: >5      | 48112| 0.43569| 0.49577| 0 | 1 |

Note: Table D.2a presents the basic summary statistics of the firm-level variables. The sample comes from the Integrated Central Balance Sheet Data Office Survey (CBI) of the Bank of Spain merged with the Amadeus-Orbis database. The sample covers the period 2002–2016.

Table D.2b
Number of advisors: differential effect of congestion at the declarative stage.

|                  | (1)       | (2)       |
|------------------|-----------|-----------|
| Congestion declarative | 0.0346    | −0.0277   |
|                  | (0.0299)  | (0.0353)  |
| Congestion declarative x # Advisors: >0 and ≤5 | −0.0581*  | 0.0107    |
|                  | (0.0313)  | (0.0349)  |
| Congestion declarative x # Advisors: >5 | −0.0603*  | 0.0173    |
|                  | (0.0311)  | (0.0375)  |
| # Advisors: >0 and ≤5 | 0.1271*** | (0.0525)  |
|                  | (0.0525)  |           |
| # Advisors: >5   | 0.1370*** | (0.0521)  |
| Cash flow        | 0.0473*** | 0.0408**  |
|                  | (0.0158)  | (0.0140)  |
| EBIT/Assets      | 0.3441*** | 0.1205*** |
|                  | (0.0193)  | (0.0314)  |
| Debt Burden      | −0.0044*  | −0.0042   |
|                  | (0.0024)  | (0.0032)  |

(continued on next column)
Table D.2b (continued)

|                | (1)       | (2)       |
|----------------|-----------|-----------|
| Debt/Assets    | 0.0784*** | -0.0487***|
|                | (0.0055)  | (0.0136)  |
| Sales growth   | 0.0321*** | 0.0168*** |
|                | (0.0047)  | (0.0039)  |
| Year FE        | Yes       | Yes       |
| Province FE    | Yes       | No        |
| Firm FE        | No        | Yes       |
| Observations   | 46,486    | 46,247    |
| R-squared      | 0.0401    | 0.4047    |

Robust standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: Table D.2b reports the estimated effect of the congestion rate in the civil jurisdiction at the declarative stage on the investment rate of firms, considering potential heterogeneous effects across firms depending on the number of advisors that a company reports to have. The dependent variable is the investment rate. We account for year fixed effects. Standard errors are two-way clustered at both the firm and year level. In all regressions the firm-level controls are cash flows, EBIT/assets, debt burden, Debt/assets, and sales growth. Furthermore, we include province level controls: the number of lawyers, the number of courts over the total population, population growth, credit over GDP and the unemployment rate. Columns 1 incorporates province fixed effects. Columns 2 incorporates firm fixed effects. All variables are lagged by one year. The considered sample covers the period 2002–2016.

Appendix E. Additional figures

Note: Figure 3 depicts the annual evolution of the average congestion rate in the civil jurisdiction at the execution stage during the period 2002-2016 for the case of four Comunidades Autónomas in Spain. Namely, Andalucía, Cataluña, Madrid and País Vasco. The measure is constructed using CGPJ data.

**Fig. E.1.** Evolution of the congestion rate (civil executions) for some regions.
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Note: Figure 3 depicts the annual evolution of the average congestion rate in the administrative jurisdiction during the period 2002-2016 for the case of four Comunidades Autónomas in Spain. Namely, Andalucía, Cataluña, Madrid and País Vasco. The measure is constructed using CGPJ data.

Fig. E.2. Evolution of the congestion rate (administrative jurisdiction) for some regions.

Table E.1
Aggregate variables at the provincial level.

| Variables                                    | Obs. | mean    | sd     | min   | max   |
|----------------------------------------------|------|---------|--------|-------|-------|
| Congestion declarative                       | 700  | 1.641   | 0.190  | 1.269 | 2.402 |
| Congestion execution                         | 700  | 4.175   | 1.210  | 1.826 | 10.089|
| Congestion administrative                     | 700  | 1.826   | 0.417  | 0.916 | 3.613 |
| Number of Lawyers                            | 700  | 0.000   | 0.000  | 0.000 | 0.001 |
| Regional: #Courts/(population + firms)        | 700  | 0.043   | 0.009  | 0.012 | 0.063 |
| Regional: Population growth                   | 700  | 0.007   | 0.013  | 0.014 | 0.058 |
| Regional: Credit/GDP                         | 700  | 0.552   | 0.217  | 0.205 | 1.681 |
| Regional: Unemployment                       | 700  | 15.962  | 8.237  | 3.033 | 42.307|
| Regional: GDP growth                         | 700  | 0.031   | 0.046  | 0.102 | 0.150 |

Note: Table 1 presents the basic summary statistics of province level variables that we use in the analysis. Congestion measures and judicial related controls are based on CGPJ data. Population growth, credit to GDP, GDP growth and the unemployment rate come from INE (Spanish Statistical Office). The sample covers the years 2002–2016.

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