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**Working Paper**

## When credit turns political: Evidence from the Spanish Financial Crisis

DIW Discussion Papers, No. 2042

**Provided in Cooperation with:**

German Institute for Economic Research (DIW Berlin)

*Suggested Citation:* Hüttl, Pia; Baumgartner, Simon (2023) : When credit turns political: Evidence from the Spanish Financial Crisis, DIW Discussion Papers, No. 2042, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin

This Version is available at:

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# 2042

## Discussion Papers

Deutsches Institut für Wirtschaftsforschung

2023

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#### IMPRESSUM

DIW Berlin, 2023

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<https://www.diw.de>

ISSN electronic edition 1619-4535

Papers can be downloaded free of charge from the DIW Berlin website:  
<https://www.diw.de/discussionpapers>

Discussion Papers of DIW Berlin are indexed in RePEc and SSRN:  
<https://ideas.repec.org/s/diw/diwwpp.html>  
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# When Credit Turns Political: Evidence From the Spanish Financial Crisis\*

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June 15, 2023

## Abstract

This paper provides causal evidence on the effect of credit crunches on political polarization. We combine data on bank-firm connections and electoral outcomes at the city-level during the 2008-2014 Spanish Financial Crisis. First, we show that firms in a relationship with weak banks experience a reduction in their loan supply and employment growth. Next, we estimate the effects of unemployment on voting behaviour. We construct an instrument for unemployment based on the city-level exposure to foreign weak banks. We find that a one standard deviation increase in instrumented unemployment translates into a 7 percentage increase in the polarisation of voters.

**JEL classification:** G01, P16, D72, P43

**Keywords:** Polarization, Financial Crisis, Instrumental Variable Strategy, Spanish Elections, Credit Supply Shock, Real Effects, Unemployment Risk

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\*We would like to thank Luise Peltzer and Antonia Vogel for excellent research assistance. We would also like to thank Max Bruche, Michael Koetter (discussant), Alex Stomper, Emilie Sartre, Enrique Jorge Sotelo, the participants of the 2021 WZB Workshop on Instrumentalizing Economics for Political Goals in Berlin, the participants of the 2022 HU-IWK Joint Junior Seminar in Finance in Halle, of the Finance Brown Bag Seminars at Humboldt University, and of the Macro Department Research Seminar at the DIW Berlin for valuable comments. Contact: Pia Hüttl, DIW Berlin, Mohrenstraße 58, 10117 Berlin.

# 1 Introduction

*“Populism is the true legacy of the global financial crisis.”*

Financial Times, August 2018

Since the start of the 2008 financial crisis, anti-establishment sentiment is on the rise again (Rodrik (2018), Algan et al. (2017)). Financial crises, as opposed to other types of crises, are often at the heart of this polarisation (Mian, Sufi, and Trebbi (2014)). However, the specific channels behind these dynamics have remained a black box this far. Dörr et al. (2018) suggest antisemitism in Germany’s banking crisis of the 1930s as a key driver behind the rising Nazi votes, Gyongyosi and Verner (2021) finds a debtor-creditor conflict at the heart of the far-right support in Hungary. In this paper, we provide causal evidence in support of the model of Guiso et al. (2017): Rising economic insecurity leads to higher support for populist and less support for centralist parties. Using data on bank-firm connections and electoral outcomes during the financial crisis in Spain, we argue that credit crunches lead to political polarisation through rising unemployment risk.<sup>1</sup>

To estimate the causal effects of a credit crunch on the polarisation of votes, we first analyse the impact of unemployment on voting behaviour.<sup>2</sup> We find that the effect on polarization is higher in areas with lower labour market tightness. However, this econometric set-up faces an identification challenge related to an omitted variable bias: Unobserved city-specific time-varying factors might affect labour market tightness and voting at the same time. Immigration could be an example of this bias, driving both labour market tightness as well as radical voting, which increases political polarization. More specifi-

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<sup>1</sup>Spain is an ideal setting for our empirical analysis. Its entire banking sector suffered from the bursting of a housing bubble. At the same time, populist parties running on anti-elite, and anti-corruption platforms reached new heights in terms of approval and voting results.

<sup>2</sup>In our analysis, we cannot measure unemployed risk directly. Instead, we use a measure which influences the costs of becoming unemployed: the local labour market tightness. In tight labour markets, it is easier for employees to find new jobs, so the cost a worker incurs when getting unemployed is relatively low because search costs are lower and the expected duration of unemployment is shorter.

cally, there might exist reverse causality between voter polarization and labour market tightness: Radical voting could be used to install local governments that shelter local labour markets from immigration-induced competition. In order to address this concern in the most rigorous way, we set up a two-stage least squares (2SLS) estimation. We construct an instrument for labour market tightness based on firm-level exposures to foreign weak banks. The reasoning behind is the following: As credit supply shocks have an adverse impact on firm-level employment, we use it as an shock for labour market competition on the local level which is unrelated to immigration. Our identification relies on a number of assumptions. First, the loan demand from Spanish firms is negligible from the foreign bank’s perspective.<sup>3</sup> Second, the local exposure to foreign weak banks has no effect on the number of immigrants in the locality.<sup>4</sup> We find that a one standard deviation increase in instrumented unemployment translates into a 7 percentage increase in the polarization of voters.

To highlight the relevance of our instrument, we take advantage of an established fact in the literature: firms in a relationship with weak banks experience a bigger reduction in loan supply compared to firms without such relationships (Chodorow-Reich (2014), Acharya et al. (2015)). We define weak banks as banks that received a bailout from their respective government. Here, one major identification challenge is related to reverse causality between the health of the banking sector and the economy. Given that Spain experienced a housing bubble, it could well be that failing borrowers decreased loan demand, which led to banks cutting credit to these borrowers. To address this concern, we focus on *foreign* weak banks active in Spain. In other words, we focus on banks that are active in Spain, but received a bailout in their respective home countries other than

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<sup>3</sup>This assumption would reasonably be violated when we would look at local Spanish banks instead of foreign banks.

<sup>4</sup>A positive correlation is unlikely. If immigrants would strategically chose their destination to increase expected future income, they would optimally chose not to migrate to cities which experienced a financial shock.

Spain. The troubles of these banks are likely to be exogenous to the performance of the Spanish loan portfolio, but might nevertheless lead to a contraction of credit supply to Spanish borrowers (Giannetti and Laeven (2012)). Consequently, this credit crunch leads to a reduction of firm-level employment, as shown also in Bentolila, Jansen, and Jiménez (2018), increasing the employee’s risk of becoming unemployed.

This paper relates to the following strands of literature. First, we add to the emerging political economy literature which links economic shocks to sharp ideological shifts in voting behaviour. When looking at different types of crises such as financial, currency, inflation and debt crises, Mian, Sufi, and Trebbi (2014) provide evidence that, especially after financial crises, government vote shares decrease and voters become more ideologically extreme. Similarly, using a historical dataset spanning 140 years and 800 elections, Funke, Schularick, and Trebesch (2016) find that far-right parties increase their vote shares significantly after a financial crisis. However, the literature on well-identified microeconomic evidence on the impact of credit contraction is limited. Notable exceptions are Braggion, Manconi, and Zhu (2020) and Dörr et al. (2018), who show that credit rationing has an impact on social unrest in 1930s China, and on the votes for the Nazi Party in 1930s Germany. In this paper, we bring this set-up to modern day data, and provide causal evidence for the impact of financial crises on the polarization of voting in Spain through the channel of unemployment risk.

By identifying unemployment risk as one channel behind polarization, we contribute to the literature on the drivers behind rising populism. Autor et al. (2020) identifies Chinese import shocks as a driver behind rising populism in the US; Becker, Fetzer, and Novy (2017) highlights the role of cuts to government spending in the Brexit vote; Gyongyosi and Verner (2021) the foreign currency composition of household debt on Hungarian Far-Right votes, and Sartre, Daniele, and Vertier (2021) public finance mismanagement on

the entry of populist politicians. Dörr et al. (2018) suggest antisemitism in Germany’s banking crisis of the 1930s as a key driver behind the rising Nazi votes. For Europe, Algan et al. (2017) document a link between increases in unemployment and voting for populist parties during the Great Recession. Using our city-level exposure to foreign weak banks as an instrument, we establish causality between labour market tightness, our measure of unemployment risk, and the polarization of votes.

Third, we also add to the literature on the real effects of banking crises. Chodorow-Reich (2014)’s important work on firm-bank relationships during crises reveals that firms with a relationship to banks affected by the Lehman crisis suffered more in terms of employment than firms without such a connection. Huber (2018) moves beyond firm-level evidence and shows that credit contractions also indirectly depress economic activity in the regions most exposed to such lending cuts. For Spain, Bentolila, Jansen, and Jiménez (2018) finds that the solvency of Spanish banks caused the highest employment losses. We extend this literature by looking at election outcomes as another real effect, suggesting that credit contractions do not only impact firm performance and employment and economic output, but also shape voter behaviour.

The remainder of the paper is as follows. Section 2 describes the data, the variable construction, and the empirical strategy. Section 3 presents the results. Section 4 reports robustness tests and Section 5 concludes.



## 2 Data and Empirical Strategy

### 2.1 Data

**Lending Data** We obtain bank-firm relationships from the syndicated loan market. In this market, different banks form a syndicate to then jointly lend to a single borrower. The lending syndicate includes one lead bank and a number of participating banks. Lead arrangers are those members of a syndicate typically responsible for traditional bank duties, including negotiating the conditions of the deals, due diligence, and monitoring (Ivashina and Scharfstein (2010)). Participants are usually not in direct contact with the borrower, but merely supply credit. We therefore consider only banks acting as lead arrangers. Similarly, we restrict the sample to loans by banks to non-financial firms and consider lending only by commercial, savings, cooperative and investment banks. We decompose syndicated loan deals into loan portions provided by each lender to obtain granular loan level data. Whenever Dealscan provides information on lending shares of each bank, we use this information to split loan volume accordingly. In other cases, we follow Schwert (2018) to estimate lending shares via a tobit estimation using information on the facility amount, the number of participants, borrower and lender sales. In doing so, obtain bank  $i$ 's loan issuance to firm  $j$  in year  $t$ , which we define as a bank-firm observation. Total loan volume in a given year is the sum of all new loans issued by bank  $i$  to firm  $j$ . Hence, we only account for transactions happening when a syndicated loan is issued, disregarding its maturity profile. We hence only account for flows on the bank-firm level.

**State Aid** We hand-collect state aid given to individual banks for the 28 countries of the European Union, and break down the information into amount and type of state aid. Our primary source for state aid to financial institutions is the online database on state

aid provided by the European Commission. It contains all state aid cases which occurred in the European Union, and in particular, it contains state aid within the meaning of Article 107(1) TFEU<sup>5</sup> granted to financial institutions. It is important to highlight that we only have information about ‘implemented’ state aid, involving the aid actually used and given to financial institutions. We identify a bank to be subject to government aid, if it has received at least one of four state aid measures, as indicated in the documents (recapitalisation, asset relief, liquidity support, guarantees). In doing so, we can identify 70 banks active in the European Union, which were subject to government aid between 2008 and 2015.

**Electoral Data** We hand-collect data of the Spanish parliamentary elections on the constituency (city) level, which have taken place in 2011, 2015 and 2016.<sup>6</sup> This allows obtaining the electoral results of 8127 constituencies with respect to 56 parties. The electoral data allows extracting also data on population and voter turnout on a constituency-year level. “Voter turnout” is defined as the ratio between total votes and the electoral census. “Population” is the log of the total population in constituency  $c$  in year  $t$ .

**Political Orientation Data** We download the political orientation of European parties from Chapel Hill, which is widely used in the literature.<sup>7</sup> This database allows classifying parties with respect to eight political ideology categories: far right, conservatives, liberal, socialist, far left, greens, regional, no family.

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<sup>5</sup>Treaty on the Functioning of the European Union

<sup>6</sup>available at: Spain Ministerio del Interior [www.infoelectoral.mir.es/infoelectoral/min/](http://www.infoelectoral.mir.es/infoelectoral/min/)

<sup>7</sup>available at: [www.chesdata.eu](http://www.chesdata.eu)

## 2.2 Variable Construction

### 2.2.1 Weak Bank Measure

**Firm-Bank Level** Combining the bank-firm relationship data with the bank-level state aid data allows constructing the weak bank indicator variable on the firm level. We divide the sample into two groups depending on firm  $j$ 's relationship with a weak bank  $i$ . In our case, a "weak" bank is a bank which has received a government aid ( $WB_i$ ).

We then construct our firm-level bank dependence variable  $Dependence_{jt}$ , using the loan issuance to firm  $j$  by bank  $i$ , depending on bank  $i$  being a weak or a healthy bank. Mathematically speaking:

$$Dependence_{jt} = \sum_{\forall j} Volume_{ijt} * WB_i \quad (1)$$

where  $Volume_{ijt}$  is bank  $i$ 's loan issuance to firm  $j$ 's at year  $t$  in the syndicated loan market. Finally, we define the firm-level bank dependence variable to be its three year backward looking moving average.<sup>8</sup>

**Aggregation to the City-Level** Next, our goal is to construct a measure that describes the overall exposure of firms to weak banks on the level where the elections take place, i.e. the electoral constituencies (cities). We therefore combine the voting data with the data on firm-level exposure to weak banks. Our idea is that through the firms' exposure to foreign weak banks, their employees face higher (perceived) risks of

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<sup>8</sup>We are interested in the shadow cost of acquiring a new loan. This rolling average captures the importance of the set of weak banks that lent to firm  $j$  in the past three years. The assumption is, if bank  $i$  is in distress, firm  $j$ 's shadow cost of acquiring a new loan by this bank  $i$  increases.

unemployment, which has an effect on the employees' voting behavior.

When creating this measure, we exploit information on the geographical coordinates of the firms' headquarters and match (exposed) firms to electoral constituencies(cities)<sup>9</sup>.

To identify the headquarter of the respective firms, we use the firm information provided in the syndicated loan dataset. Dealscan provides both the city name and the zip, or missings thereof. Whenever one of the two is missing, we combine the available data with zip or cityname data for Spain.<sup>10</sup> Whenever none of the two is available, we identify the headquarter manually through CapitalIQ searches based on the firm name. Eventually, we identify 796 firms located in 199 cities across Spain. 435 of which have a relationship to a weak bank and 361 do not have such a relationship in end-2010.

We then compute geodetic distances between each electoral constituency,  $c$ , and every Spanish municipality,  $m$ .<sup>11</sup> For every  $c, m$  pair we define a dummy variable,  $D_{cm}$ , which takes the value of one if the physical distance between electoral constituency  $c$  and municipality  $m$  is smaller than 20 kilometers; and zero else. This dummy variable flags municipalities which are in the vicinity of a certain electoral constituency.

In order to create a constituency level measure, we aggregate the firm level exposure to weak banks,  $Dependence_{jt}$ , over all firms which are in the vicinity of the electoral constituency.

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<sup>9</sup>We use the geographical coordinates of the district capital municipality as a proxy for the location of the electoral constituencies. By doing so, we implicitly assume that the location of a firm's headquarter is correlated with the locations of the facilities where the firm's employees are employed. This assumption might seem unrealistic but is standard in the literature.

<sup>10</sup>available at: [www.geonames.org](http://www.geonames.org)

<sup>11</sup>That is the length of the shortest curve between two points along the surface of a mathematical model of the earth. We follow the methodology proposed by Vincenty, T. (1975) Direct and inverse solutions of geodesics on the ellipsoid with application of nested equations, Survey Review 22(176): 88-93. Available from: [http://www.ngs.noaa.gov/PUBS\\_LIB/inverse.pdf](http://www.ngs.noaa.gov/PUBS_LIB/inverse.pdf)

$$Exposure_{mt} = \sum_{\forall j} D_{c(j)} \times Dependence_{jt} \quad (2)$$

where  $D_{m(j)}$  equals one if firm  $j$  is within 20 km of city  $c$ .

### 2.2.2 Political Polarization Measure

We want to identify the polarization of votes in the Spanish parliamentary elections, to do so, we need both the development of radical vs the development of centralist parties. First, we combine two datasets on the city level: one on electoral data and one on the political orientation of parties. This allows classifying 26 parties out of the 56 Spanish parties running in the parliamentary elections. The ones not classified are fringe parties, and those of which achieved a electoral result of only 1% of overall votes or below are dropped. Eventually, we obtain the vote share of the respective parties and their political orientation on the city-year level. Importantly, on the discussion of changes vs. levels when it comes to voting data, we follow the reasoning highlighted by Rodrik (2021) on the matter: 'The relative importance one ascribes to economics versus culture depends crucially on whether we are interested in a question about levels or about changes that is, whether we ask why so many people voted for a populist candidate or why the populist vote share increased so much' (Margalit (2019)). We hence look at changes.

We define radical votes as the votes going to new parties which collocate themselves on the extremes, and have advertised themselves as radical alternatives, on the back of major corruption scandals of the more established parties.<sup>12</sup> Our political orientation variable ( $Radical_{ct}$ ) is the logarithmic growth rate, change in votes, going to the radical

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<sup>12</sup>We add up radical left and radical right, as the newly established radical right party VOX only enters national elections as of 2015.

left and right, where  $c$  is city and  $t$  is year:

$$\Delta \ln(\text{Radical}_{ct}) = \Delta \ln(\text{Radical Left}_{ct} + \text{Radical Right}_{ct}). \quad (3)$$

We then define centralist votes as the votes going to established, traditional parties, both of which have shaped Spanish politics over the last decades. We define our political orientation variable ( $\text{Central}_{ct}$ ), as the logarithmic growth rate, the change in votes going to the conservatives and the social democrats, where  $c$  is city and  $t$  is year:

$$\Delta \ln(\text{Central}_{ct}) = \Delta \ln(\text{Conservatives}_{ct} + \text{Social Democrats}_{ct}). \quad (4)$$

Lastly, we define our preferred measure of polarization as the logarithmic growth rate, the change in  $\text{Radical}_{ct}$  minus the change in  $\text{Central}_{ct}$ , where  $c$  is city and  $t$  is year:

$$\text{Polarization}_{ct} = \Delta \ln(\text{Radical}_{ct}) - \Delta \ln(\text{Central}_{ct}). \quad (5)$$

## 2.3 Identification and Empirical Strategy

Our aim is to estimate the causal effects of credit crunch on polarized voting. The idea underlying the channel we have in mind is the following: during the Great Recession, many banks were subject to financial pressure which limited their ability to grant new loans to their existing corporate customers.(Chodorow-Reich (2014)). This constraint led

to increased lay-offs at the banks' corporate customers (Bentolila, Jansen, and Jiménez (2018)) and, thus, their employees' risk of becoming unemployed rises. One potential consequence of unemployment risk is the employees polarize politically (Urdal (2012)). We are specifically interested in the effect a credit crunch has on political polarization through the channel of unemployment risk. However, since we are unable to observe unemployment risk directly, we need to proxy an employees' costs of becoming unemployed. Assuming that employees' geographical mobility is limited, it is relatively easy for employees to find a new job when local labour markets are tight. Therefore, the costs associated with becoming unemployed are relatively lower in tighter labour markets. We proxy unemployment risk by labour market tightness.

As a first step, we need to establish that foreign weak banks curtailed credit to firms more than other banks (Section 2.3.1). Here, we face a major identification challenge related to reverse causality between the health of the banking sector and the economy (Reinhart and Rogoff (2009)). Weak banks might be weak ( = subject to a bailout in our case ) because their loan portfolio performs poorly. Given that Spain experienced a housing bubble, it can well be that failing borrowers decreased loan demand, which led to banks cutting their credit to these borrowers. To address this concern, we focus on *foreign* weak banks active in Spain. In other words, we focus on banks active in Spain, but subject to a bailout in their respective home countries. The troubles of these banks are likely to be exogenous to the performance of the Spanish loan portfolio, but might nevertheless lead those banks to reduce their exposure to Spanish borrowers (Giannetti and Laeven (2012)). Hence, firm-level exposure to foreign weak banks is our proxy for exposure to a credit crunch. We analyse its impact before and after the start of the European Sovereign Debt crisis in May 2010.<sup>13</sup>

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<sup>13</sup>Similar to Drechsler et al. (2016), we define the start of the European Debt Crisis as May 2, 2010, the day the European Union and the IMF agreed on the first bailout-package to Greece. The crisis subsequently put into question the credit-worthiness of other euro area member states, most notably

Second, we turn to the main research question and estimate the effects of a credit supply shock on the polarization of votes. We first empirically verify the impact of labour market tightness on voting behaviour (Section 2.3.2). We expect the effect of polarization to be higher in areas with lower labour market tightness. However, in this set-up, we face a major identification challenge related to an omitted variable bias; unobserved city-specific time-varying factors might affect labour market tightness at the same time as the voting. For example, the number of immigrants is a plausible candidate for an omitted variable, driving both labour market tightness (through their addition to the local labour force) as well as political polarization (through xenophobia) on the city level.

As we want to establish a *causal* relationship between labour market tightness and voter behaviour, we propose an instrumental variable approach based on our firm-level exposure measure to foreign weak banks (Section 2.3.4).<sup>14</sup> To do so, we aggregate our exposure measure to the city level. Our identification strategy relies on two assumptions. First, the city-level exposure to foreign weak banks affects local unemployment and, therefor, the tightness of the local labour market. Second, bank bailouts affect voting only via the risk that employees, i.e. voters, become unemployed. One might argue that the second identifying assumption is not sensible, as bailouts were indeed drivers of voting.<sup>15</sup> For this reason, the use of city-level exposure to *foreign* weak banks as a valid instrument seems reasonable.<sup>16</sup> Our exclusion restriction is that foreign banks in Spain do not grant mortgage loans. Given that the syndicated loan market is restricted

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Spain and Italy, and prompted the ECB to intervene in the sovereign bond markets through the Securities Markets Programme (SMP) in May of the same year.

<sup>14</sup>Algan et al. (2017) study the impact of unemployment on the radicalisation of votes in Europe during the Great Recession. They suggest the use of pre-crisis share of construction as a Bartik-style instrument for unemployment. However, the pre-crisis share of construction is very much related with housing prices, an potential omitted variable driving the results.

<sup>15</sup>Bailouts have always been very much politicized for the sheer amount of tax payer's money flowing into financial sector bailout programmes.

<sup>16</sup>Unobserved geographical heterogeneity, for example in voting behavior or home-ownership, or general macro-economic time trends are controlled for by the use of city-level fixed effects and year fixed effects.



to corporate lending, this seems reasonable to assume.

### 2.3.1 Credit Supply Shock

First, we want to test the hypothesis that foreign weak banks curtail credit to firms more than other banks after the start of the European debt crisis in 2010. We estimate the following equation on the bank-firm-quarter level:

$$y_{ijt} = \delta_1 \text{ Foreign WB}_i \times \text{Post10}_t + \delta \mathbf{X}_{i,t-1} + \mu_{jt} + \epsilon_{ijt}, \quad (6)$$

where  $y_{ijt}$  is the logarithm of (one plus) the loan issuances in million USD to firm  $j$  provided by bank  $i$  (as lead or participating bank) at quarter  $t$ .  $\text{Foreign WB}(0/1)_i$  is an indicator variable equal to 1 if a foreign bank received a bailout, and equal to zero otherwise.  $\text{Post10}_t$  is equal to zero up to Q1 2010, the start of the European debt crisis, and 1 afterwards.  $\mathbf{X}_{i,t-1}$  is a vector of bank-level controls for size, equity ratio, cash ratio, liquidity ratio and deposits ratio, all lagged by two quarters.  $\mu_{jt}$  denote country or firm  $\times$  year fixed effects, where country fixed effects represent the the country of origin of the respective bank.

The coefficient of interest  $\delta_1$  measures how firm relationships with foreign weak banks impacts loan supply before and after the start of the European debt crisis in Q2 2010. We expect  $\delta_1 < 0$ , as foreign weak banks are the banks most in trouble, and curtail credit more than other banks. This is along the lines of Chodorow-Reich (2014), who finds that firms with a relationship to banks hit by the Lehman shock suffer most in terms of credit contraction and employment.

To strengthen our results further, we rerun the specification on the firm level. We are

interested in the effect on loan and employment growth if a firm is in a relationship with a weak bank, as opposed to firms without such a relationship. We estimate the following equation:

$$y_{jt} = \gamma_1 \text{ Foreign WB}(0/1)_j + \gamma \mathbf{X}_{j,t-1} + \mu_r + \mu_t + \epsilon_{jt}, \quad (7)$$

where  $y_{jt}$  is the logarithmic growth rate of the loan supply of firm  $j$  in year  $t$ , and zero otherwise.  $\text{Foreign WB}(0/1)_j$  in this case is an indicator variable equal to one if a firm is in a relationship with a foreign weak bank, and equal to 0 if it is not.  $\mathbf{X}_{j,t-1}$  is a vector of firm-level controls (Total Assets, ROA, Sales, CAPEX), all lagged by 1 year.  $\mu_r$  denote industry, and  $\mu_t$  year fixed effects.

The coefficient of interest  $\gamma_1$  measures the effect on the loan growth if firm  $j$  has a lending relationship with a foreign weak bank. We expect  $\gamma_1 < 0$ , reflecting the negative coefficient estimate on the bank-firm level.

Next, following Bentolila, Jansen, and Jiménez (2018) we explore the impact of the credit supply shock on on firm-level outcomes, and in particular on employment. We substitute the dependent variable in Equation 7 with the logarithmic growth rate of the number of full time employees at firm  $j$  at year  $t$ . In this case, we expect  $\gamma_1 < 0$ , as firms with a relationship to foreign weak banks decrease their employment more compared to firms without such a relationship.

### 2.3.2 Unemployment Risk and the Polarization of Voters (OLS)

We empirically verify the impact of labour market tightness on voting behaviour. Labour market tightness ( $LMT_{ct}$ ) tell us how easy it is for a worker to find a new job.<sup>17</sup> In areas with low labour market tightness, the voter (worker) has higher costs finding a new job. Bentolila, Jansen, and Jiménez (2018) shows that the credit crunch causes a reduction in firm-level employment in Spain. At the same time, Algan et al. (2017) highlights that unemployment is the main factor contributing to the ideological polarization of voters during the European debt crisis. Therefore, we suspect the effect of polarization to be higher in areas with low labour market tightness.

To test this, we set up the following equation on the city-year level:

$$Vote_{ct} = \beta_1 LMT_{ct} + \beta_2 \mathbf{X}_{ct} + \phi_c + \phi_t + \epsilon_{ct} \quad (8)$$

where  $Vote_{ct}$  is the logarithmic growth of the votes going to a certain party in city  $c$  at election in year  $t$ ;  $LMT_{ct}$  is one minus city  $c$ 's unemployment rate at year  $t$ .  $X_{ct}$  is a vector of city level controls (log population and voter turnout).  $\phi_c$  are city fixed effects and  $\phi_t$  year fixed effects. The sample period comprises the parliamentary elections of 2011, 2015 and 2016.

We expect our coefficient of interest  $\beta_1 < 0$ , as unemployment is associated with

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<sup>17</sup>Because we lack information on the local number of job vacancies, instead of vacancies/unemployment we define the measure by 1/unemployment. We, therefore, implicitly assume that there are no different trends in the number of vacancies across different cities. It is plausible, that the number of vacancies and unemployment are negatively correlated following a credit shock, i.e. an affected firm fires employees and cuts back on hiring temporarily. Therefore, if anything, we underestimate the effect of the credit shock on local labour market tightness.

lower costs in cities with high labour market tightness. This causes cities with low labour market tightness to experience an stronger increase in polarized votes, compared to cities with high labour market tightness.

### 2.3.3 Credit Supply Shock and the Polarization of Voters (Reduced Form)

Our main hypothesis is that credit constraints impact voting behaviour. To test this, we estimate the following equation on the city-year level:

$$Vote_{ct} = \beta_1 Exposure_{ct}^{for} + \beta_2 \mathbf{X}_{ct} + \phi_c + \phi_t + \epsilon_{ct} \quad (9)$$

where  $Vote_{ct}$  is the logarithmic growth of the votes going to a certain party in city  $c$  at election in year  $t$ ;  $Exposure_{ct}^{for}$  is city  $c$ 's exposure to foreign weak banks previously defined on the firm-level. This is our main explanatory variable of interest. We include  $\mathbf{X}_{ct}$ , a vector of city level controls (log population and voter turnout). To further control for unobservable factors at the city level, we include city fixed effects  $\phi_c$ . We also take care of time-trends common to all cities by including year fixed effects  $\phi_t$ . The sample period comprises the parliamentary elections of 2011, 2015 and 2016.

We expect  $\beta_1 > 0$ , as cities with a higher exposure to firms borrowing from weak banks see a stronger contraction in bank lending, and an increase in the polarization of votes. Our identifying assumptions is that cities with firms borrowing more from weak banks are hit harder by the troubles of those banks.

However,  $\beta_1$  in Equation 9 only measures the correlation between the two variables and does not allow us to make a causal statement about the effect of a credit crunch on the polarization of votes. We turn to an instrumental variable approach in the next section.

### 2.3.4 Instrumental Variable Approach

To establish a causal relationship between labour market tightness and voter behaviour, we propose an instrumental variable based on our city-level exposure measure to weak banks. In a standard two stage least square (2SLS), we first regress LMT on Foreign Exposure

$$LMT_{ct} = b \text{ Exposure}_{ct}^{for} + \gamma \mathbf{X}_{ct} + \epsilon_{pt} \quad (10)$$

and use the prediction of  $LMT_{ct}$ ,  $\widehat{LMT}_{ct}$  as regressor in the second stage regression:

$$Vote_{ct} = \beta' \widehat{LMT}_{ct} + \gamma \mathbf{X}_{ct} + \epsilon_{ct} \quad (11)$$

The  $b$  coefficient estimated from Equation 10, the first stage, measures the relationship between labour market tightness ( $LMT_{ct}$ ) and the city-level exposure to foreign weak banks ( $Exposure_{ct}^{for}$ ). The reasoning behind this is the following: foreign bank bailouts affect employment on the firm level, and hence labour market tightness. If this was not the case,  $b$  would be equal to zero, and our instrument would be weak. If foreign bank bailouts instead do play a role for domestic labour markets,  $b$  is larger than zero. We

cluster our standard errors at the city level.

Consequently, the  $\beta'$  coefficient estimated from Equation 11, the second stage, allows for causal interpretation of the effect of labour market tightness on the change in polarized voting.

### 3 Main Results

This section presents the empirical results. The analyses in Section 3.1 are on the city-year level. This allows including city and year fixed effects in all specifications, which is a rigorous way of absorbing time-invariant factors at the city level as well as common time trends. We first show that cities with lower labour market tightness experience a stronger increase in the polarization of voters. We then set up a IV estimation, and provide causal evidence on the effect of labour market tightness on the polarization of votes. In Section 3.2 we first demonstrate on the firm-bank-quarter level that foreign weak banks curtail credit to firms more than other banks. We then reconfirm these findings on the firm-year level. Firms with a relationship to foreign weak banks experience a drop in loan and employment growth.

#### 3.1 Results on the City-Level

##### 3.1.1 OLS Results

Table 3 presents the results of labour market tightness on electoral outcomes. All estimations include year and city fixed effects. Robust standard errors are clustered at the city level. We start by looking at changes in votes for radical parties (Column 1-2). In Column (1), the coefficient of interest is negative and significant. Once we include year fixed effects to take care of common macro trends, the coefficient turns insignificant. A different picture emerges when looking at changes in votes for central parties (Column 3-4): the coefficient of interest is positive and highly statistically significant across specifications, less so economically. Column 5 and 6 report the results for our preferred measure "Polarization", the logarithmic growth of radical minus the logarithmic growth

of central. In other words, it allows grasping which of the two components grew more/-less. The coefficient is highly significant and negative in Column 5 and stays that way once we include year fixed effects in Column 6. Cities with lower (higher) labour market tightness experience an increase (decrease) in polarization. This result is marginally economically significant. A one s.d. decrease in labour market tightness translates into a 0.9 percentage point increase in polarized voting.

Table 4 presents the results of credit constraints on electoral outcomes. All estimations include as control variables on the city level log population and voter turnout. Robust standard errors are clustered at the city level. We start by looking at the change in votes for radical parties (Column 1-2). Column (1) includes city fixed effects. The coefficient of interest is positive and significant at the 1% level. Once we add year fixed effects to absorb any common trends across cities (Column 2), the coefficient stays positive and highly significant but halves in magnitude. Cities with a higher exposure to weak banks experience an growth in votes for radical parties. This result is slightly economically significant. A one s.d. increase in exposure translates into a 0.5 percentage increase in radical voting. We turn to the change in votes for centrist parties in Column (3) and (4). Without year fixed effects (Column 3), our exposure measure has a negative and highly significant impact on centralist voting. Once we include year fixed effects, the coefficient of interest decreases in magnitude but stays significant (Column 4).

Lastly, we look at our preferred measure "polarization", the logarithmic growth of radical minus the logarithmic growth of central. Column (5) includes only city fixed effects, while Column (6) includes both year and city fixed effects. In both specifications, our coefficient of interest is highly significant. When we take care of common trends across cities in Column (6) through inclusion of year fixed effects, the coefficient decreases in magnitude, but stays significant at the 1% level. Cities with a higher exposure to foreign



weak banks experience an increase in polarization. In economical terms, a one s.d. increase in exposure translates into a increase our measure of polarization of 0.6% points.

### 3.1.2 IV Results

Given the endogeneity of labour market tightness in the previous regressions, we introduce an instrumental variable approach. This allows us to establish a causal relationship between labour market tightness, our proxy for unemployment risk, and changes in voting behaviour.

Table 5 reports the results of the two stage least squares estimation (2SLS). We use our preferred measure "polarization" as dependent variable across all specifications. Column (1) presents again the OLS estimates, while Column (2) presents again the estimates from the Reduced Form. Column (3) gives the results of the first stage, and Column (4) the results of the second stage. In Column (3), we test empirically if our instrument  $Exposure_{ct}^{for}$  has an impact on labour market tightness. We find a highly significant and strong negative relationship. This evidence suggest that our instrument is indeed a relevant instrument. Column (4) reports estimates for the second stage regression as defined in Equation 11. Compared to the OLS estimate in Column (1), the IV coefficient in Column (4) gained both in magnitude and significance. We find a strong negative relationship. Economically speaking, a one s.d. increase in instrumented labour market tightness leads to a 7 percentage point increase in polarization. This effect is significant at the 1% level.

### 3.2 Results on the Firm(-Bank) Level

**Firm-Bank-Level** Table 6 presents the results of the estimation on the firm-bank-quarter level. The dependent variable is the logarithm of (one plus) the loan issuances to firm  $j$  provided by bank  $i$  at quarter  $t$ , conditional on the firm  $j$  receiving a loan. Foreign  $WB_i$  is an indicator variable equal to one if bank  $i$  is a foreign weak bank, that is, was subject to government aid in its home country, and equal to zero otherwise.  $Post10_t$  is equal to zero up to Q1 2010, the start of the European debt crisis, and 1 afterwards. Each column includes bank level controls, such as the log of total assets, the equity ratio, the cash ratio, the liquidity ratio and the deposits ratio. Robust standard errors are clustered at the bank level, which is the level of the treatment.

Column (1) does not include any fixed effects, the coefficient on the interaction term is negative, but insignificant. Once we include bank fixed effects, as well as industry  $\times$  quarter and firm  $\times$  quarter fixed effects in Column (2), the coefficient of interest is negative and significant at the 1% level. To refine our comparison between treatment and control group, we add time-varying bank-level controls in Column (3). The coefficient of interest remains virtually unchanged: foreign weak banks decrease their lending by  $\exp(0.302) - 1 = 35.3\%$  to the same firm compared to other banks after the start of the European debt crisis.

Our identification strategy relies on the absence of differential pre-2010 trends in terms of loan issuance for firms in the treatment and control groups. We test this parallel trends assumption graphically in Figure 4, showing the quarterly coefficients of loan volume between Q1 2008 and Q4 2012. The coefficient is not significantly different from zero before Q1 2010, and turns negative after Q1 2010. This provides evidence that loan issuance between the foreign weak banks and the healthy banks did not differ systematically in the period prior to Q1 2010.

**Firm-Level** Next, we reconfirm our findings on the firm-level. Due to data limitation, we now run our analyses on the year instead of the quarter level. We define a new treatment indicator variable on the firm level,  $\text{Foreign WB}_j$ , equal to 1 if firm  $j$  has a relationship with a foreign weak bank, and zero otherwise. Table 7 presents the results. The dependent variable is  $\Delta \ln(\text{Loans})$ , the logarithmic growth rate of loans for firm  $j$  in year  $t$ . Robust standard errors are clustered at the firm level.

The coefficient of interest remains highly significant and negative as we add more stringent fixed effects across specifications. In Column (2), we add year fixed effects, to take care of common time trends across firms. The coefficient is significant at the 1% and negative. If a firm has a relationship with a foreign weak bank, it experiences a decrease in its loan growth. In Column (3) we add industry fixed effects, to take care of differences across firms due to different industries. The coefficient increases slightly in magnitude and stays negative and significant. Once we add time-varying firm-level control variables such as log of total assets, ROA, Sales and CAPEX, all lagged by one year, the coefficient of interest decreases in magnitude, but remains negative and significant at the 5% level. Firms with a relationship to foreign weak banks experience a decrease in their loan growth of 28.6 % points compared to firms without such a relationship.

Next, Table 8 provides evidence that the observed credit supply shock on the firm-level has an impact on employment growth. The dependent variable is the logarithmic growth of full-time employees at firm  $j$  in year  $t$ . Robust standard errors are clustered at the firm level. In Column (2) we include both year and industry fixed effects, and find that firms with a relationship to foreign weak banks experience a decrease in their employment growth of 10.6% compared to firms without such a relationship. Once we add firm-level controls such as the log of total assets, Capex, ROA and Sales, all lagged

by one year, the coefficient of interest remains negative, but is only significant at the 13% level.

To sum up, this evidence re-confirms what we have found so far on the firm-bank level: firms with a relationship to foreign weak banks experience a credit supply shock. Also, they experience a drop in employment growth, which confirms negative real effects of banking crises highlighted so far in the literature (Chodorow-Reich (2014), Acharya et al. (2015), Bentolila, Jansen, and Jiménez (2018)).

## 4 Robustness

To substantiate our findings, we run a set of robustness checks.

**Distance Measures** First, we vary the distance measures in our geo-matching exercise (see Equation 2). In Table 9,  $D$  is equal to 50 km. We find that such an alternative definition does not alter the significance of our main results.

**Different Moving Averages** Second, our preferred definition of our Exposure measure is the three-year moving average of it. Table 10 provides evidence that our results do not depend on how our explanatory variable is smoothed.

**Single Parties** Third, instead of grouping the vote shares to our political orientation variables, we run our baseline specification on the vote shares going to the single parties present in Spain. Table 11 presents the results: the effect of an increase in exposure to weak banks on the city level is strongest for votes going to the radical parties.

## 5 Conclusions

We provide causal evidence on the effect of credit crunches on political polarization. We combine data on bank-firm connections and on electoral outcomes at the city level during the Spanish Financial Crisis. First, we show that firms in a relationship with weak banks experience a reduction in loan supply. Next, we estimate the effects of unemployment on voting behaviour. We construct an instrument for unemployment based on the city-level exposure to foreign weak banks. We find that a one s.d. increase in instrumented unemployment translates into a 7 percentage point increase in the polarization of votes.

This paper first and foremost expands our understanding of the channels through which financial crises polarize voters. Our results confirm the model of Guiso et al. (2017): rising economic insecurity leads to higher support for populist parties. We find that credit supply shocks lead to political polarization through rising unemployment risk.

Some caveats are in order. We only focus on unemployment risk as a channel, which however does not exclude other channels discussed in the literature so far (i.e. cultural traits, import competition, austerity, debtor-creditor conflicts, public mismanagement). Studying in more detail the relative strength of the different channels would be a profitable avenue for future research.

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## 6 Table and Figures

### 6.1 Figures

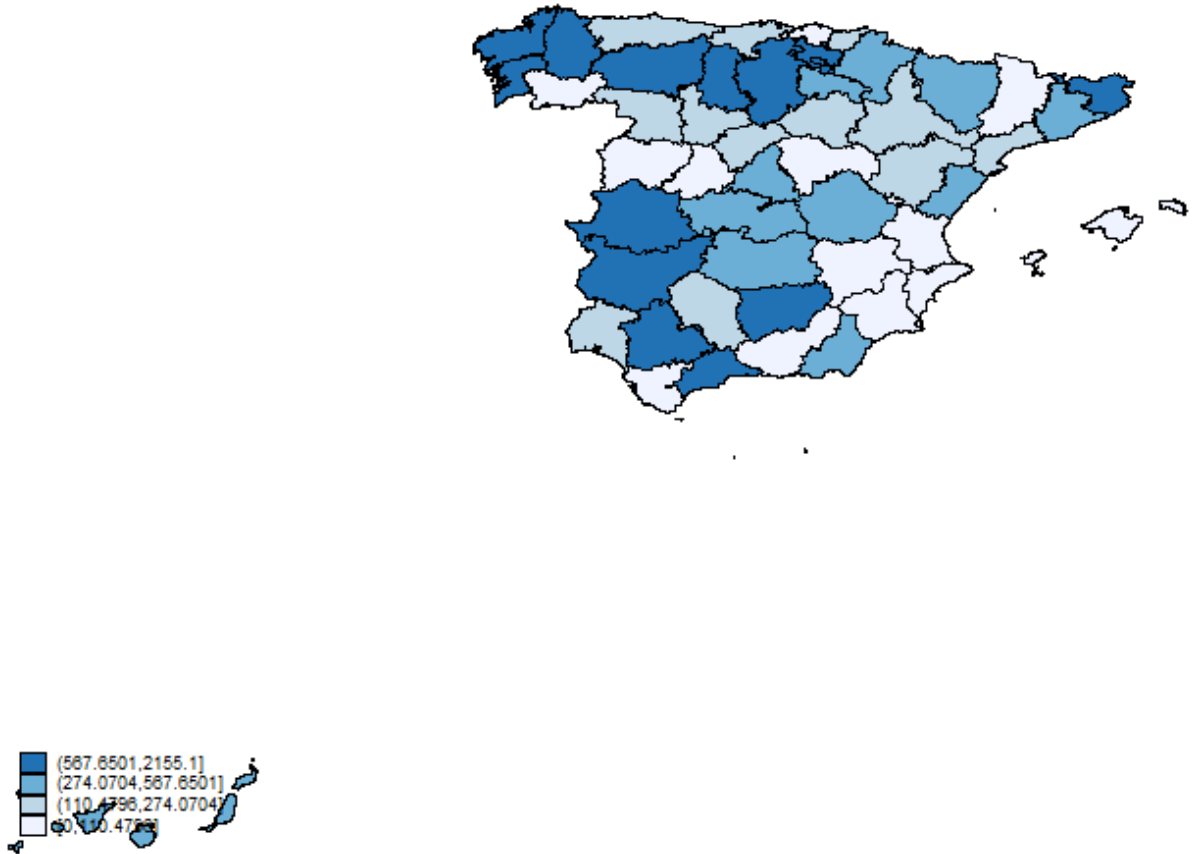


Figure 1: **Exposure to weak banks by Spanish provinces.** This figure plots the city-level exposure measure to weak banks for 51 Spanish provinces end 2015. Source: Own calculations and GADM.

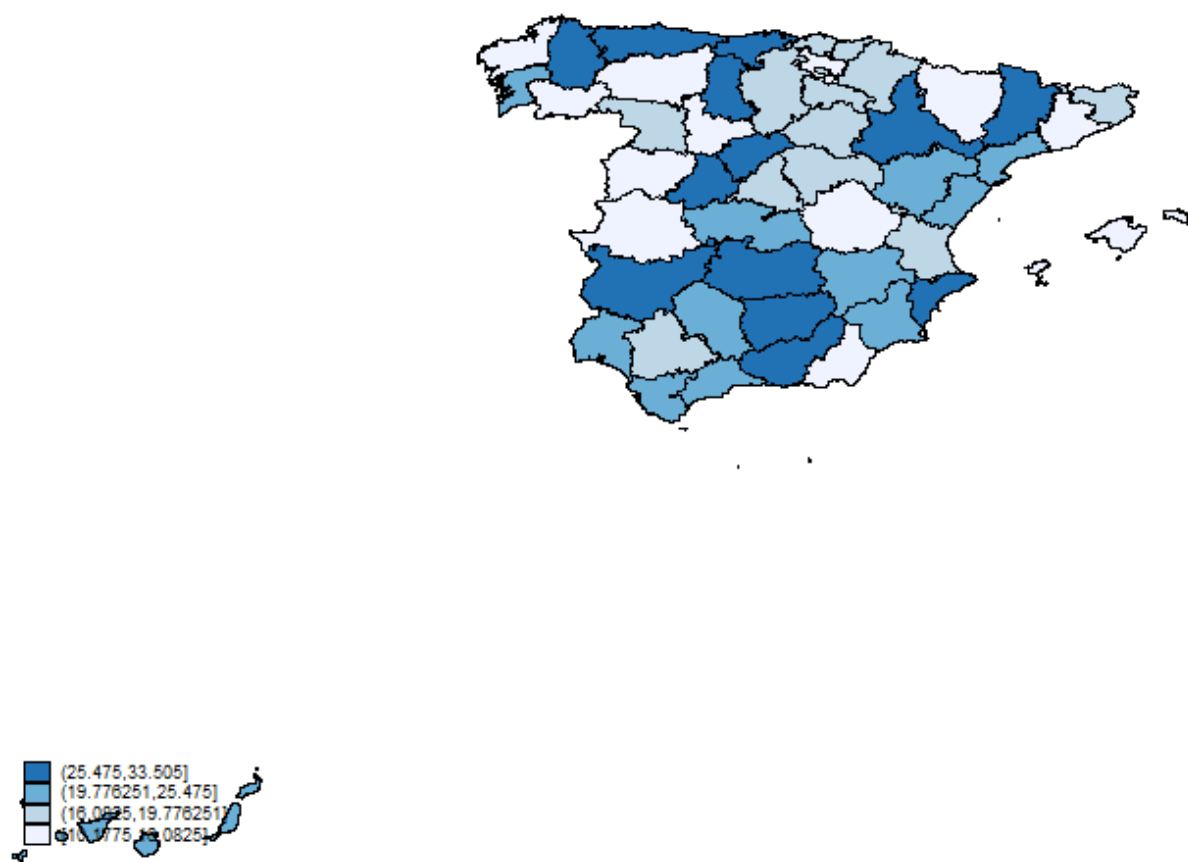


Figure 2: **Unemployment rate by Spanish provinces.** This figure plots the unemployment rate for 51 Spanish provinces in 2015. Source: Instituto Nacional de Estadística (INE) and GADM.

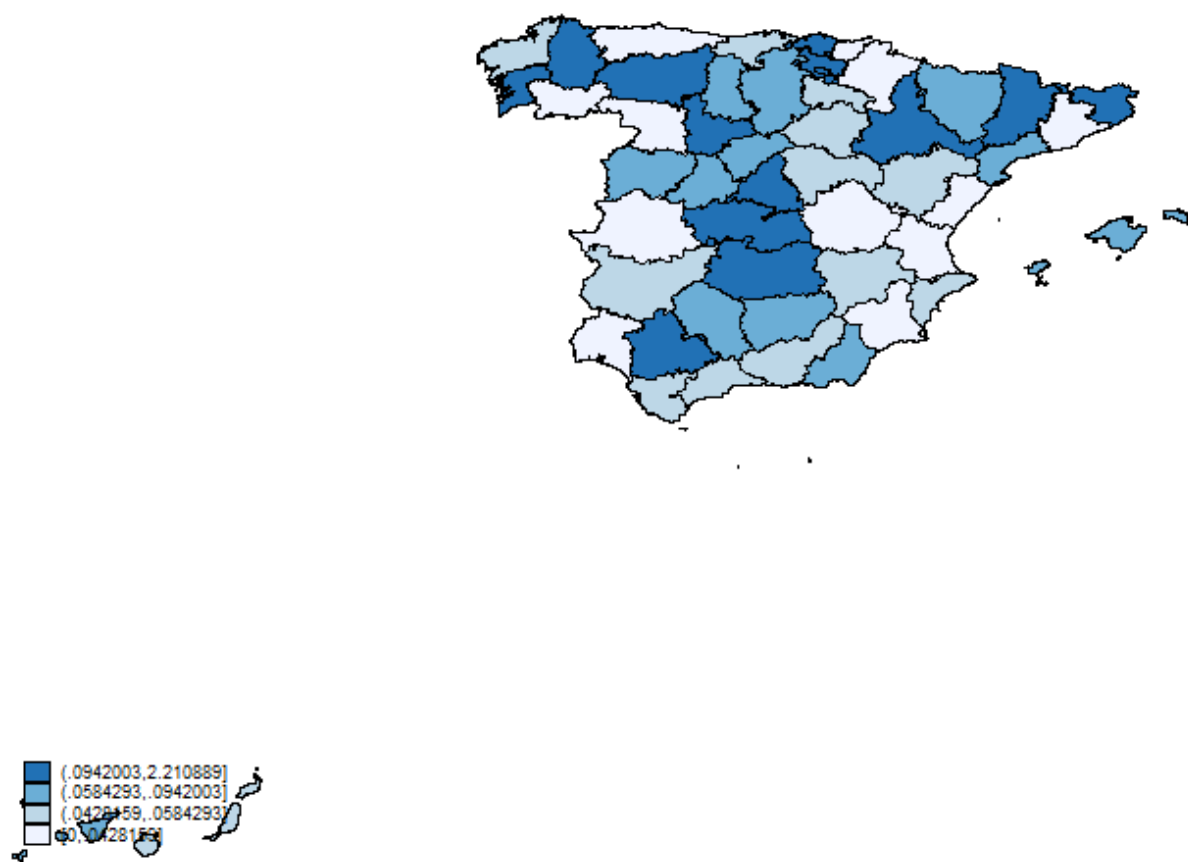


Figure 3: **Radical votes by Spanish provinces.** This figure plots the votes going to radical right and left-wing parties in the 2015 parliamentary elections for 51 Spanish provinces. Source: Ministerio del Interior and GADM.

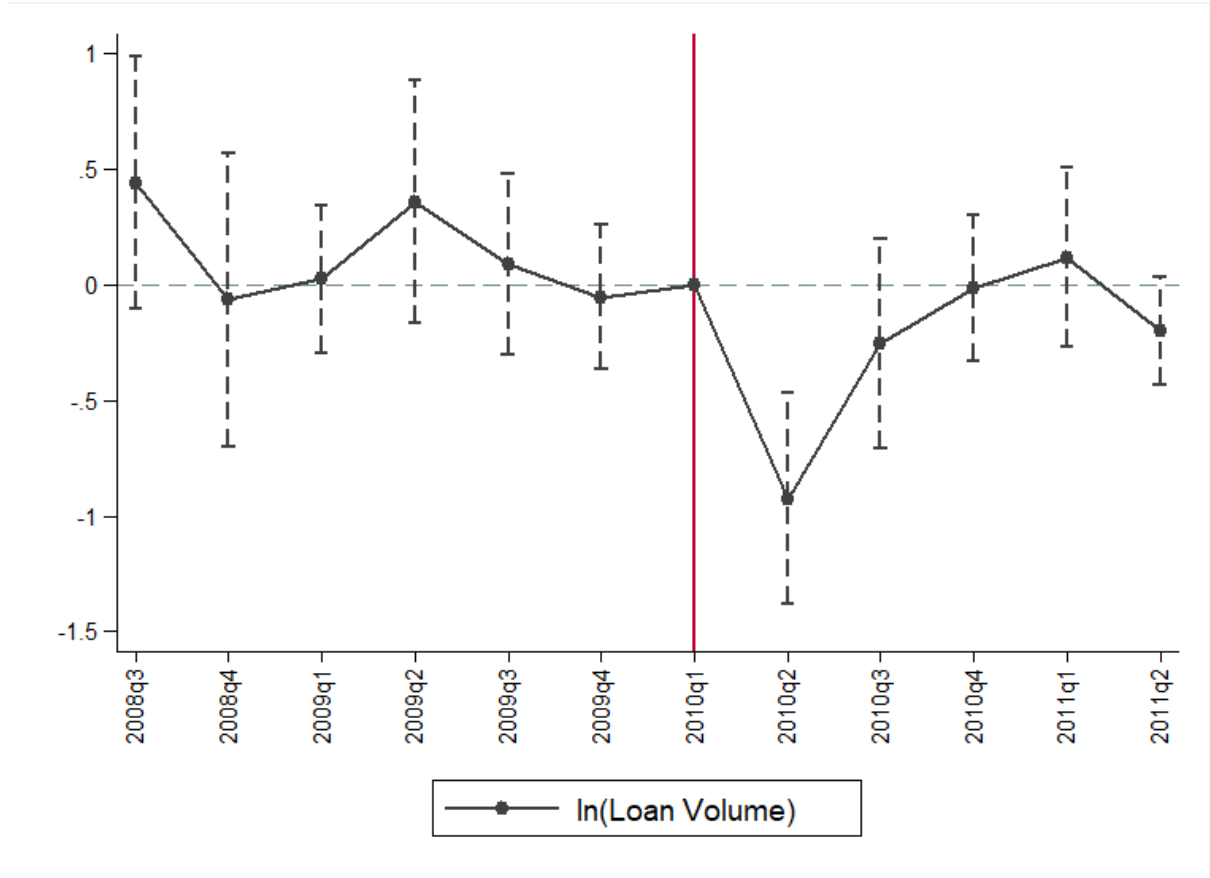


Figure 4: **Parallel trends.** The figure is based on the following equation:

$$y_{ijt} = \sum_{k \neq 2010q1} \beta_k \text{Foreign WB}_i(0/1) \times \mathbf{1}[k = t] + \varepsilon_{ijt},$$

where  $y_{ijt}$  is log loan issuance provided by bank  $i$  to firm  $j$  at quarter  $t$ ;  $\mathbf{1}[k = t]$  is a dummy variable that equals one in quarter  $t$  and 0 otherwise. 2010q1 is excluded to estimate the dynamic effect. The regression includes bank fixed effects, country  $\times$  and firm  $\times$  quarter fixed effects. In this case, Foreign  $\text{WB}_i(0/1)$  is an indicator variable that equals one for banks headquartered outside Spain that received government aid. Country fixed effects refer to the respective banks' headquarters. The dashed lines represent 90% confidence intervals, adjusted for bank-level clustering.

## 6.2 Descriptives

Table 1: **Firm level: Summary Statistics** This table presents summary statistics on the firm level. The sample period is end 2010.  $Exposure_j$  (0/1) is an indicator variable equal to one if firm  $j$  has a relationship with a weak bank, and zero otherwise.  $\ln(Total\ assets)$  is the natural logarithm of firm  $j$ 's total assets.  $Profits-to-Assets-Ratio$  is firm  $j$ ' EDIBTA over total assets.  $LTDebt-to-Assets-Ratio$  is firm  $j$ 's long term debt to total assets.  $STDebt-to-Assets-Ratio$  is firm  $j$ 's short term debt to total assets.  $Equity-to-Assets-Ratio$  is firm  $j$ 's equity ratio to total assets.  $Leverage-Ratio$  is firm  $j$ 's total liabilities to total assets.

	No Exposure			Exposure		
	mean	sd	count	mean	sd	count
Exposure (0/1)	0.00	0.00	361	1.00	0.00	435
$\ln(Total\ Assets)$	4.92	1.65	154	5.71	1.93	209
Profits-to-Assets-Ratio	8.67	10.51	145	5.46	8.69	198
LTDebt-to-Assets-Ratio	30.75	24.30	132	32.14	23.88	176
STDebt-to-Assets-Ratio	9.68	12.90	130	10.75	16.42	174
Equity-to-Assets-Ratio	29.10	22.09	154	24.95	21.60	209
Leverage-Ratio	71.25	21.75	153	75.05	21.60	209

Table 2: **City level: Summary Statistics** This table presents summary statistics on the constituency(city)-year level. The sample period is 2015. The sample is split between constituencies with *No Exposure* and constituencies with *Exposure*. *No Exposure<sub>c</sub>* are constituencies without exposure to weak-bank connected firms. *Population* is the total population of constituency *c* in thousands. *Voter turnout* is the ratio of total votes and the electoral census. *Unemployment rate* is ratio of the number of unemployed people over total labour force on the province level. *Vote Share "k"* is the ratio of votes going to party "k" over total votes in constituency *c* .

	No Exposure			Exposure		
	mean	sd	count	mean	sd	count
Population (in thousands)	4.24	20.97	1,966	9.21	46.00	2,691
Unemployment Rate	20.95	5.43	1,966	21.05	5.90	2,691
Voter Turnout	0.75	0.06	1,966	0.75	0.06	2,691
Vote Share Far-Right	0.14	0.37	1,966	0.12	0.37	2,691
Vote Share Conservatives	36.39	16.78	1,966	32.76	17.48	2,691
Vote Share Liberals	10.34	5.60	1,966	9.85	5.53	2,691
Vote Share Socialist	26.14	12.82	1,966	24.21	13.92	2,691
Vote Share Greens	0.00	0.00	1,966	0.00	0.00	2,691
Vote Share Far-Left	10.22	7.75	1,966	12.79	8.46	2,691

## 6.3 Main Results

### 6.3.1 City-Level

**Table 3: OLS: Effect of Labour Market Tightness on Electoral Results.** This table provides results of a OLS regression analyzing the effect of labour market tightness on electoral results. The analysis is based on data on the city-year level. The sample period are the election years 2011, 2015 and 2016. The dependent variable is  $\Delta \ln(Radical)$ , the logarithmic growth of the votes going to the radical left and radical right in city  $c$  at year  $t$  in Column (1) and (2);  $\Delta \ln(Central)$  in Column (3) and (4), the logarithmic growth of the votes going to the conservatives and the social democrats in city  $c$  at year  $t$ ; *Polarization* in Column (5) and (6), equal to  $\Delta \ln(Radical) - \Delta \ln(Central)$ . Labour market tightness  $LMT_{ct}$  is 1 over city  $c$ 's unemployment rate in year  $t$ ; The control variables on the city-level are *Population*, the log of the total population of city  $c$  in thousands and *Turnout*, the ratio of city  $c$ 's total votes over the electoral census. The regressions further include city and year fixed effects, as indicated. Reported standard errors are in parentheses, clustered at the city level. \*\*\*, \*\*, \* denote significance at the 1, 5, and 10% level, respectively.

VARIABLES	(1) $\Delta \log(Radical)$	(2) $\Delta \log(Radical)$	(3) $\Delta \log(Central)$	(4) $\Delta \log(Central)$	(5) Polarization	(6) Polarization
$LMT_{ct}$	-0.024*** (0.003)	-0.002 (0.004)	0.089*** (0.002)	0.006*** (0.002)	-0.113*** (0.003)	-0.009** (0.004)
Observations	8,179	8,179	8,179	8,179	8,179	8,179
R-squared	0.267	0.281	0.386	0.762	0.261	0.413
City-Level Controls	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes	No	Yes
Cluster	City	City	City	City	City	City

Table 4: **Reduced Form: Effect of Credit Supply Shock on Electoral Results.**

This table provides results of a OLS regression analyzing the effect of credit constraints on electoral results. The analysis is based on data on the city-year level. The sample period are the election years 2011, 2015 and 2016. The dependent variable is  $\Delta \ln(Radical)$ , the logarithmic growth of the votes going to the radical left and radical right in city  $c$  at year  $t$  in Column (1) and (2);  $\Delta \ln(Central)$  in Column (3) and (4), the logarithmic growth of the votes going to the conservatives and the social democrats in city  $c$  at year  $t$ ;  $Polarization$  in Column (5) and (6), equal to  $\Delta \ln(Radical) - \Delta \ln(Central)$ .  $Exposure_{ct}$  is city  $c$ 's exposure to weak banks previously defined on the firm-level at year  $t$ ; The control variables on the city-level are  $Population$ , the log of the total population of city  $c$  in thousands and  $Voter\ turnout$ , the ratio of total votes and the electoral census of city  $c$ . The regressions further include city and year fixed effects, as indicated. Reported standard errors are in parentheses, clustered at the city level. \*\*\*, \*\*, \* denote significance at the 1, 5, and 10% level, respectively.

VARIABLES	(1) $\Delta \log(Radical)$	(2) $\Delta \log(Radical)$	(3) $\Delta \log(Central)$	(4) $\Delta \log(Central)$	(5) $Polarization$	(6) $Polarization$
$Exposure_{ct}^{for}$	0.011*** (0.001)	0.005*** (0.001)	-0.003*** (0.001)	-0.001* (0.001)	0.015*** (0.002)	0.006*** (0.002)
Observations	11,677	11,677	11,677	11,677	11,677	11,677
R-squared	0.347	0.356	0.191	0.736	0.230	0.423
City-Level Controls	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes	No	Yes
Cluster	City	City	City	City	City	City



Table 5: **IV Results: Votes and Labour Market Tightness.** This table reports the regressions of the effect of labour market tightness ( $LMT_{ct}$ ) on votes. Column 1 presents the OLS regression of Polarization on LMT. Column 2 presents the Reduced From regression of Polarization on Foreign Exposure. Column 4 presents the estimates of a two stage least squared (2SLS) fixed effects panel regression. The first stage (Column 3) uses  $Exposure_{ct}^{for}$ , the log of city  $c$ 's exposure to foreign weak banks in year  $t$  as an instrument for labour market tightness ( $LMT_{ct}$ ). We report the Angrist-Pischke F test statistic of the excluded instruments in the first stage regression. *Polarization* is equal to  $\Delta \ln(Radical) - \Delta \ln(Central)$ . The control variables on the city-level are *Population*, the log of the total population of city  $c$  in thousands and *Voter turnout*, the ratio of total votes and the electoral census of city  $c$ . Reported standard errors are in parentheses, clustered at the city level. All specifications include city fixed effects. \*\*\*, \*\*, \* denote significance at the 1, 5, and 10% level, respectively.

	(1)	(2)	(3)	(4)
	Polarization	Polarization	LMT	Polarization
	b/se	b/se	b/se	b/se
LMT	-0.01*			-0.07***
	(0.005)			(0.012)
Turnout	-0.64***	0.25***	0.47***	-0.58***
	(0.081)	(0.073)	(0.182)	(0.079)
Population	-0.17***	-0.08***	-0.06	-0.16***
	(0.029)	(0.024)	(0.104)	(0.028)
Exposure <sup>for</sup>		0.02***	-0.19***	
		(0.002)	(0.010)	
N	6063	6063	5768	5768
APFtest			352.044	

### 6.3.2 Firm(-Bank) Level

Table 6: **Firm-Bank Level: Credit Supply Shock** This table provides results of a OLS regression analyzing the volume of loan issuances when banks are weak banks before and after the start of the European debt crisis in May 2010. The analysis is based on data on the firm-bank-quarter level. The sample period is Q2 2008 to Q1 2012.  $Ln(\text{loan volume})$  is the logarithm of (one plus) the loan issuance from bank  $i$  (as lead arranger) to firm  $j$  at quarter  $t$ .  $Foreign\ WB_i$  is an indicator variable equal to one if bank  $i$  is a foreign weak bank, and zero otherwise.  $Post10_t$  is an indicator variable equal to one after Q1 2010, the start of the European debt crisis, and equal to zero otherwise. Bank controls are bank  $i$ 's log of total assets, the leverage ratio, the cash ratio, the liquidity ratio and the deposits ratio, lagged by two periods. The regressions further include country  $\times$  time and firm  $\times$  time fixed effects, as indicated. Country fixed effects refer to the respective banks' headquarters. Reported standard errors are in parentheses, clustered at the bank level. \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% level, respectively.

VARIABLES	(1) ln(1 + Loan Volume)	(2) ln(1 + Loan Volume)	(3) ln(1 + Loan Volume)
Foreign $WB_i \times Post10_t$	-0.171 (0.205)	-0.312*** (0.069)	-0.302*** (0.067)
Total Assets			0.068 (0.104)
Equity Ratio			-0.004 (0.036)
Cash Ratio			-0.006 (0.018)
Liquidity Ratio			-0.003 (0.006)
Deposits Ratio			0.000 (0.003)
Foreign $WB_i$	0.509** (0.231)		
$Post10_t$	-0.095 (0.094)		
Observations	1,313	1,313	1,313
R-squared	0.017	0.929	0.929
Bank FE	No	Yes	Yes
Country $\times$ Time FE	No	Yes	Yes
Firm $\times$ Time FE	No	Yes	Yes
Cluster	Bank	Bank	Bank

Table 7: **Firm Level: Loan Growth** This table provides results of a OLS regression analyzing the loan growth when a firm has a relationship with a weak foreign bank. The analysis is based on data on the firm-year level. The sample period is 2008 to 2012. The dependent variable is  $\Delta \ln(Loans)$ , the logarithmic growth rate of loan issuance to firm  $j$  in year  $t$ . *Foreign WB<sub>j</sub>* is an indicator variable equal to one if firm  $j$  has a relationship with a foreign weak bank, and zero otherwise. Firm controls are firm  $j$ 's log of total assets, ROA, Sales and CAPEX, all lagged by one year. The regressions further include year fixed effects and industry  $\times$  year fixed effects, as indicated. Reported standard errors are in parentheses, clustered at the firm level. \*\*\*, \*\*, \* denote significance at the 1, 5, and 10% level, respectively.

VARIABLES	(1) $\Delta \ln(Loans)$	(2) $\Delta \ln(Loans)$	(3) $\Delta \ln(Loans)$	(4) $\Delta \ln(Loans)$
Foreign WB <sub>j</sub>	-0.340*** (0.073)	-0.353*** (0.071)	-0.373*** (0.111)	-0.286** (0.114)
Total Assets				-0.033 (0.038)
Capex				0.002* (0.001)
ROA				0.071 (0.043)
Sales				0.028 (0.027)
Observations	1,438	1,438	1,438	1,438
R-squared	0.003	0.005	0.027	0.030
Year FE	No	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes
Cluster	Firm	Firm	Firm	Firm

Table 8: **Firm Level: Employment Growth** This table provides results of a OLS regression analyzing the employment growth when a firm has a relationship with a weak foreign bank. The analysis is based on data on the firm-year level. The sample period is 2008 to 2012. The dependent variable is  $\Delta \ln(Employees)$ , the logarithmic growth rate of full-time employees at firm  $j$  in year  $t$ . *Foreign WB<sub>j</sub>* is an indicator variable equal to one if firm  $j$  has a relationship with a foreign weak bank, and zero otherwise. Firm controls are firm  $j$ 's log of total assets, lagged by one year. The regressions further include year fixed effects and industry  $\times$  year fixed effects, as indicated. Reported standard errors are in parentheses, clustered at the firm level. \*\*\*, \*\*, \*, + denote significance at the 1, 5, 10% level, respectively.

VARIABLES	(1) $\Delta \ln(Employees)$	(2) $\Delta \ln(Employees)$	(3) $\Delta \ln(Employees)$
Foreign WB <sub>j</sub>	-0.039 (0.046)	-0.106** (0.050)	-0.075 (0.049)
Total Assets			-0.015 (0.011)
Capex			-0.000 (0.001)
ROA			0.000 (0.013)
Sales			-0.011 (0.023)
Observations	1,438	1,438	1,438
R-squared	0.000	0.044	0.045
Year FE	No	Yes	Yes
Industry FE	No	Yes	Yes
Cluster	Firm	Firm	Firm

## 6.4 Robustness Checks

Table 9: **Robustness Check: Distance Measure (50 km)**. This table reports the regressions of the effect of labour market tightness ( $LMT_{ct}$ ) on votes. Column 1 presents the OLS regression of Polarization on LMT. Column 2 presents the Reduced From regression of Polarization on Foreign Exposure. Column 4 presents the estimates of a two stage least squared (2SLS) fixed effects panel regression. The first stage (Column 3) uses  $Exposure_{ct}^{for}$ , the log of city  $c$ 's exposure to foreign weak banks in year  $t$  as an instrument for labour market tightness ( $LMT_{ct}$ ). We report the Angrist-Pischke F test statistic of the excluded instruments in the first stage regression. *Polarization* is equal to  $\Delta \ln(Radical) - \Delta \ln(Central)$ . The control variables on the city-level are *Population*, the log of the total population of city  $c$  in thousands and *Voter turnout*, the ratio of total votes and the electoral census of city  $c$ . Reported standard errors are in parentheses, clustered at the city level. All specifications include city fixed effects. \*\*\*, \*\*, \* denote significance at the 1, 5, and 10% level, respectively.

	(1)	(2)	(3)	(4)
	Polarization	Polarization	LMT	Polarization
	b/se	b/se	b/se	b/se
LMT	-0.01*** (0.004)			-0.07*** (0.015)
Turnout	-0.85*** (0.065)	0.04 (0.060)	0.61*** (0.137)	-0.82*** (0.065)
Population	-0.23*** (0.029)	-0.09*** (0.024)	-0.03 (0.075)	-0.22*** (0.028)
Exposure <sup>for</sup>		0.04*** (0.002)	-0.17*** (0.008)	
N	10012	10012	9692	9692
APFtest			461.847	

Table 10: **Robustness Check: Different Moving Averages** This table provides results of a OLS regression analyzing the effect of credit constraints on electoral results. The analysis is based on data on the city-year level. The sample period are the election years 2011, 2015 and 2016. The dependent variable is *Polarization*, equal to  $\Delta \ln(Radical) - \Delta \ln(Central)$ , where  $c$  is city and  $t$  is year. *ExposureNO<sub>ct</sub>* is city  $c$ 's exposure to weak banks previously defined on the firm-level; *Exposure2<sub>ct</sub>* is the two-year moving average of city  $c$ 's exposure to foreign weak banks previously defined on the firm-level; *Exposure4<sub>ct</sub>* is the four-year moving average of city  $c$ 's exposure to weak banks previously defined on the firm-level. The control variables on the city-level are *Population*, the log of the total population of city  $c$  in thousands and *Voter turnout*, the ratio of total votes and the electoral census of city  $c$ . The regressions further include city and year fixed effects, as indicated. Reported standard errors are in parentheses, clustered at the city level. \*\*\*, \*\*, \* denote significance at the 1, 5, and 10% level, respectively.

	(1)	(2)	(3)	(4)
VARIABLES	Polarization	Polarization	Polarization	Polarization
ExposureNO <sub>ct</sub>	0.014*** (0.001)	0.012*** (0.001)		
Exposure2 <sub>ct</sub>			0.015*** (0.001)	0.005*** (0.001)
Observations	13,734	13,734	13,734	13,734
R-squared	0.201	0.382	0.210	0.378
City Controls	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
Cluster	City	City	City	City

Table 11: **Robustness Check: Single Parties** This table provides results of a OLS regression analyzing the effect of credit constraints on electoral results. The analysis is based on data on the city-year level. The sample period are the election years 2011, 2015 and 2016. The dependent variable are the logarithmic growth rate of different parties: Radical ( radical right and left), Conservatives, Liberals, Socialists, Greens, Regionalists, where  $c$  is city and  $t$  is year;  $Exposure_{ct}$  is city  $c$ 's exposure to weak banks previously defined on the firm-level; The control variables on the city-level are *Population*, the log of the total population of city  $c$  in thousands and *Voter turnout*, the ratio of total votes and the electoral census of city  $c$ . The regressions further include city and year fixed effects, as indicated. Reported standard errors are in parentheses, clustered at the city level. \*\*\*, \*\*, \* denote significance at the 1, 5, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Dvote_radical	Dvote_cons	Dvote_liberal	Dvote_socialist	Dvote_green	Dvote_regionalist
$Exposure_{ct}^{for}$	0.010*** (0.002)	-0.004*** (0.001)	0.001** (0.001)	-0.002*** (0.001)	0.001*** (0.000)	-0.002 (0.002)
Observations	13,734	13,734	13,734	13,734	13,734	13,734
R-squared	0.295	0.743	0.728	0.638	0.125	0.509
City-Controls	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	City	City	City	City	City	City