Toxic Loans and the Entry of Extreme Candidates

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Abstract

While the importance of the 2008 financial crisis in boosting extreme and populist voting in Europe and in the USA is well acknowledged, the role played by public finance mismanagement has been so far neglected. In this paper, we study the electoral consequences of a public finance scandal: the leak on September 2011 of a list of French municipalities which contracted "toxic" loans to the bank Dexia. Using an instrumental variable strategy based on geographical distance to remove endogeneity issues, we find that during the subsequent local elections in 2014, municipalities with toxic loans had a higher number of political parties and a higher probability of having extreme candidacies. These effects were stronger in economically fragile municipalities and in cities with a higher growth of the immigrant population. The findings suggest that the revelation of public finance misconduct fosters the entry of extreme politicians, thus increasing their vote shares and decreasing the support for the incumbents' parties.

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1 Introduction

Does public finance mismanagement foster the rise of extreme candidacies? Despite the importance of the 2008 financial crisis in explaining the growing trend towards extreme and populist votes[1], the role played by public finance mismanagement has been so far neglected. Furthermore, as recently acknowledged by Guiso et al. (2017) and Rodrik (2017), the determinants of electoral results are studied at length but factors affecting the entry of candidates in the political arena and in particular of extreme politicians, are still largely unexplored. In this paper, we show that these two dimensions are deeply intertwined and argue that public finance mismanagement leaves room for the emergence of extreme candidacies, both on the left and on the right of the electoral spectrum.

To study the impact of public finance mismanagement, we use as a natural experiment the scandal of Dexia "toxic" loans that hit French municipalities in 2011. In September 2011, the national newspaper *Liberation* leaked an online dataset of 3,016 structured loans contracted between 1996 and 2011 with Dexia by 1,586 French municipalities. Dexia bank was the main provider of structured loans to French municipalities and was about to be bailed-out at that time. These structured loans had fixed interest rates for the first years (on average between 2 and 7 years), before turning to variable interest rates indexed on external indicators (such as foreign exchange rates or spreads of interest rates). For every city, this dataset listed the number and amount of loans contracted, their maturity and the excess interests triggered by the variable part of the loan. Overall, these loans represent a total initial credit amount of 8.94 billion Euros with sometimes astounding overhead ratios, defined as the excess interests divided by the initial credit amount : half of them were above 9.1%, 25% were over 13.3%, with a maximum of 114%.

These revelations are of particular interest for two reasons. Firstly, the turmoil of the financial crisis induced sharp variations of the external assets on which structured loans were indexed, therefore affecting their variable part. The most striking example is the Swiss Franc, on which nearly 10% of Dexia structured loans were indexed and which played the role of a safe haven before the financial crisis. While its parity with the Euro had been stable for more than a decade, its value went up steadily from around 1EUR=1.5CHF to about 1EUR=1.2CHF between the mid-2008 and the late 2011. Although these variations were arguably unrelated to the specific financial situation of each municipality, it triggered exceptionally high overheads on many structured loans. Secondly, these revelations happened right in the middle of the municipal electoral term, which started in March 2008 and ended in March 2014. We therefore use this event to analyze whether French municipalities (with a proportional list

[1]See for example Algan et al. (2017) on the European case.

ballot), which were affected by Dexia toxic loan(s) had a different pool of candidates in 2014 compared to municipalities which were not.

Our reasoning relies on retrospective voting, whereby voters consider the *Libération* leak as a negative popularity shock, revealing of the incumbent quality. However, in this context, we expect voters' punishment to spread beyond the incumbent. First, this was a salient and widespread scandal, which involved a substantial number of municipalities, and which was extensively covered by French media. Second, the politicians involved in the scandal were mostly running for mainstream parties, the ones traditionally ruling French municipalities. The combination of these two elements might lead voters to interpret the leak as a "cue" for the overall quality of the mainstream political class (see Daniele et al. (2017) for a similar case in Italy). This implies that voters would punish mainstream parties and reward extreme ones, considered unattached to the scandal. In a citizen-candidate context, a stronger support for extreme parties might be interpreted as a higher entry of local activists willing to run for them. In turn, extreme party leaders might have anticipated their higher chances at reelection, focusing their campaign efforts in municipalities hit by the leak. This latter hypothesis is corroborated by anecdotal evidence on the rhetoric used by extreme parties during this scandal.[2] Overall, our prediction is that the entry of extreme party lists increases in areas hit by the leak due to a higher support for extreme parties, leading to a larger pool of potential candidates, and to stronger political selection efforts of extreme parties.

While this shock was arguably not anticipated by local incumbents, simple OLS estimates are likely to be biased as municipalities contracting structured loans *with Dexia* might differ on unobserved characteristics. For instance, these municipalities are more likely to be urban, poorer and holding worse public finances. Our identification strategy should therefore use an instrument which satisfies two conditions. First, it should predict the adoption of structured loans *to Dexia*, as opposed to the non-adoption of structured loans or the adoption of structured loans provided by other banks. Second, conditionally on other observed factors, it should not be directly correlated to the entry of extreme party lists or their vote shares. To do so, we propose a novel instrument, exploiting the history of the relationships between Dexia and French municipalities. Dexia was created in 1996 as the fusion of the French and Belgian banks specialized in credits to local governments (respectively *Crédit Local de France* - hereafter *CLF* and *Crédit Communal de Belgique* - hereafter *CCB*). In 1994, many local governments entered the capital of the *CLF*, among which 362 municipalities. As we show, municipalities located close to municipalities

[2]The main extreme-left and extreme-right parties, which were rarely in office at the municipal level, indeed publicly blamed responsible mayors. For instance before the 2015 county elections, the former *Front National* Vice President wrote: *"This dramatic situation is due to the local barons of the UMPS, who are governing [...] The taxpayers' money vanished because of the headlong rush of this caste of amateurs."* A similar statement is reported by an extreme-left candidate at the 2014 municipal election in the city of Antony: *"The incumbent can always pretend that everything is all for the best in the best of all worlds [...] The executive UMP-UDI at best lacked of critical thinking, and at worse willfully took risks. [...] Is it the role of a local government to gamble with everybody's money ?"*
Sources:
http://www.frontnational.com/2015/01/emprunts-toxiques-indexes-sur-le-franc-suisse-stop-a-la-finance-casino-des-elus-nocifs/
http://antonyagauche.fr/category/nos-campagnes/municipales-2014/

which entered the CLF capital were much more likely to subsequently adopt toxic loans. We therefore instrument the presence of a Dexia toxic loan by the distance to the closest municipality which entered the CLF capital - excluding the latter from the estimation. This instrument builds upon an established literature showing the importance of distance for credit adoption (Degryse and Ongena (2005), Bharath et al. (2009)), and upon the idea, documented by qualitative evidence, that municipalities which historically had stronger ties with the CLF were also more likely to adopt structured loans. Our exclusion restriction is likely to be warranted, since our instrument relies on mayoral decisions made two electoral terms before the largest increase in structured loan contracting (2001-2008), and 17 years before the unexpected leak by *Libération*.

Our results are threefold.[3] First, we show that in concerned municipalities, the number of party lists increased by 0.7 on average, suggesting higher electoral competition. The probability to observe at least one extreme political list is higher by about 23 percentage points. The probability to observe a *Front National* list is indeed 14 points higher, while the probability to observe at least one extreme-left candidacy is 19 points higher. We do not find however any effect on the probability of re-running for the incumbent. Second, we find larger effects for diverse and disadvantaged municipalities: the entry of extreme party lists was particularly salient in municipalities with high taxation, high unemployment, low median income and high growth rates of the immigrant population. We conversely show that the effect is hardly driven by the toxicity of the loan itself. To do so, we instrument the degree of toxicity by the presence/absence of a contract indexed on the Swiss Franc. The exclusion restriction is then that, conditionally on contracting toxic loan(s), the variations in Swiss Franc were not anticipated when the contract was signed (as argued by Bartolone and Gorges (2011), Cour des Comptes (2013), Seban and Vasseur (2014)), and did not directly affect the electoral competition other than through their effect on the toxicity of the loans. Using this methodology, we do not find that toxicity impacts extreme voting.[4] These findings are therefore more likely to reflect a generalized hostile reaction towards incompetent politicians from mainstream parties than a reaction to the short-term actual consequences of such decisions. Third, after documenting the entry of candidates, we analyze the consequences of toxic loans on the electoral outcomes. While there is no average effect of toxic loans on abstention, we find that concerned municipalities with poorer inhabitants (in terms of median income) reacted by abstaining more following the revelation. Moreover, regardless the presence of the incumbent mayor in the election, vote shares of the parties of the same affiliation largely decreased, especially in municipalities with low median income. Conversely, vote shares received by far-right parties in these elections were substantially

[3]Our analysis will focus on municipalities over 1,000 inhabitants as below this threshold political affiliation of candidates is not always mentioned (more details in Section 2.3).

[4]Similarly, the availability of information might play a role: as the map was first displayed on the website of *Libération*, this information might have been more difficult to access in areas with no or slow Internet connection. Therefore, these areas might have been underexposed to the information - especially since France was not completely covered by high-speed Internet in 2011. Also in this case, we do not find conclusive evidence. We also show that the effect does not depend on the gender of the mayor and on whether the mayor facing re-election was accountable for contracting the loan or not. We report these results in the Appendix.

higher in municipalities which adopted structured loans. The latter is partly due to their increased entry following the scandal.

This paper speaks to several strands of literature. First, it relates to the literature exploring the emergence of extreme and populist votes. Political scientists have been investigating for long this matter and stated that events discrediting the elites are particularly important to trigger the emergence of such political movements (see for example Panizza (2005)). The recent waves of populism across Europe and the United States led economists to study more closely such phenomena. On the empirical side, two sets of studies can be mentioned. The first one points to cultural factors, referring to cultural backlash of previously dominant strata of the society (Inglehart and Norris (2016)), or to hostility towards migrants (Becker et al. (2016), Hangartner et al. (2017), Dustmann et al. (2016), Viskanic (2017), Edo et al. (2018)). The second one focuses on the role played by economic conditions, whether it relates to openness to trade (Dippel et al. (2015), Dorn et al. (2016), Malgouyres (2017), Colantone and Stanig (2017)), unemployment shocks (Algan et al. (2017)), or fiscal cuts (Becker et al. (2017)).[5] Relatedly, some studies highlight the specific role of financial crises on the rise of extreme votes. Algan et al. (2017) find a strong relationship between increases in unemployment and voting for populist parties during the Great Recession. Similarly, De Bromhead et al. (2012) and Funke et al. (2016) show that financial crises lead to increase polarization and higher support for extreme-right parties. Differently from these studies, we do not test the overall political effects of the financial crisis. Instead we are interested in a specific mechanism, i.e. public finance mismanagement, which might explain *how* the financial crisis trickled down to politics.[6] Second, while the determinants of votes for specific parties are largely explored, empirical evidence on the mechanisms driving the entry decisions of politicians are still at an early stage (Dal Bó et al. (2017)), despite important theoretical contributions (Besley and Coate (1997), Osborne and Slivinski (1996)). Recent studies have stressed the importance of analyzing the supply-side of politics, with a specific focus on populism (Rodrik (2017), Guiso et al. (2017)). In this paper, we specifically tackle this dimension, studying extreme party candidate entry in French local elections. Finally, this paper more generally contributes to our understanding of the consequences of public finance mismanage-

[5] Upon a theoretical point of view, Acemoglu et al. (2013b) argue that voters demand weaker checks and balances on politicians, as it makes it more difficult to bribe politicians by increasing political rent. Acemoglu et al. (2013a) model populist policies as signals sent by politicians to inform voters they are honest and not tied to special interests. Di Tella and Rotemberg (2016)) consider populist votes as a reaction to disloyal leaders, which makes voters turn to less competent ones.

[6] A related contribution on the topic of toxic loans is from Chou (2018), who analyzes their impact on Front National vote shares in the 2014 municipal elections. As in our case, his results suggest higher vote shares for Front National in municipalities where toxic loans were contracted, as well as increased pro-populist feelings among voters. However, he also finds that this effect is stronger where toxic loans were riskier (as measured by the presence of toxic loans indexed on the Swiss Franc). Nonetheless, and contrarily to our contribution, this analysis is unlikely to provide a causal interpretation, as it does not instrument for the presence of Dexia toxic loans (which, as we show, is largely endogenous to a host of factors) and is based on the small and endogenous sample of municipalities which had a Front National candidate in the 2014 elections (thus reducing the set of controls which can be imposed and omitting the strategic entry that we emphasize). Our contribution differs by instrumenting simultaneously the presence of toxic loans and their toxicity: this allows us to provide causal estimates, focusing on a much wider set of municipalities and controlling for a larger set of covariates. This might also explain why, contrarily to Chou (2018), we do not find any effect of the toxicity of the loan. Our scope is finally also broader, as we investigate the entry decisions of extreme candidates on both sides of the electoral spectrum, which is relevant as extreme candidates are still rare in French local elections, as well as their vote shares.

ment. Previous studies have focused on corruption or mismanagement scandals to determine to what extent corrupt politicians are likely to be reelected (Ferraz and Finan (2008), Hirano and Snyder Jr (2012), Nannicini et al. (2013)), whether corruption sways voters away from the booths (Giommoni (2017)) or whether corruption induces a change in candidate quality and party labeling (Cavalcanti et al. (2016), Daniele et al. (2017)). However, to the extent of our knowledge, we are among the first to assess the impact of public finance mismanagement on the entry of extreme politicians.

The remainder of the paper is as follows. Section 2 underlies the institutional setting, describes the data and provides descriptive statistics. Section 3 describes the estimation strategy. Section 4 reports the results, both on the entry of the political lists and on the vote shares they received, as well as robustness and additional tests. Section 5 concludes.

2 Institutional Setting

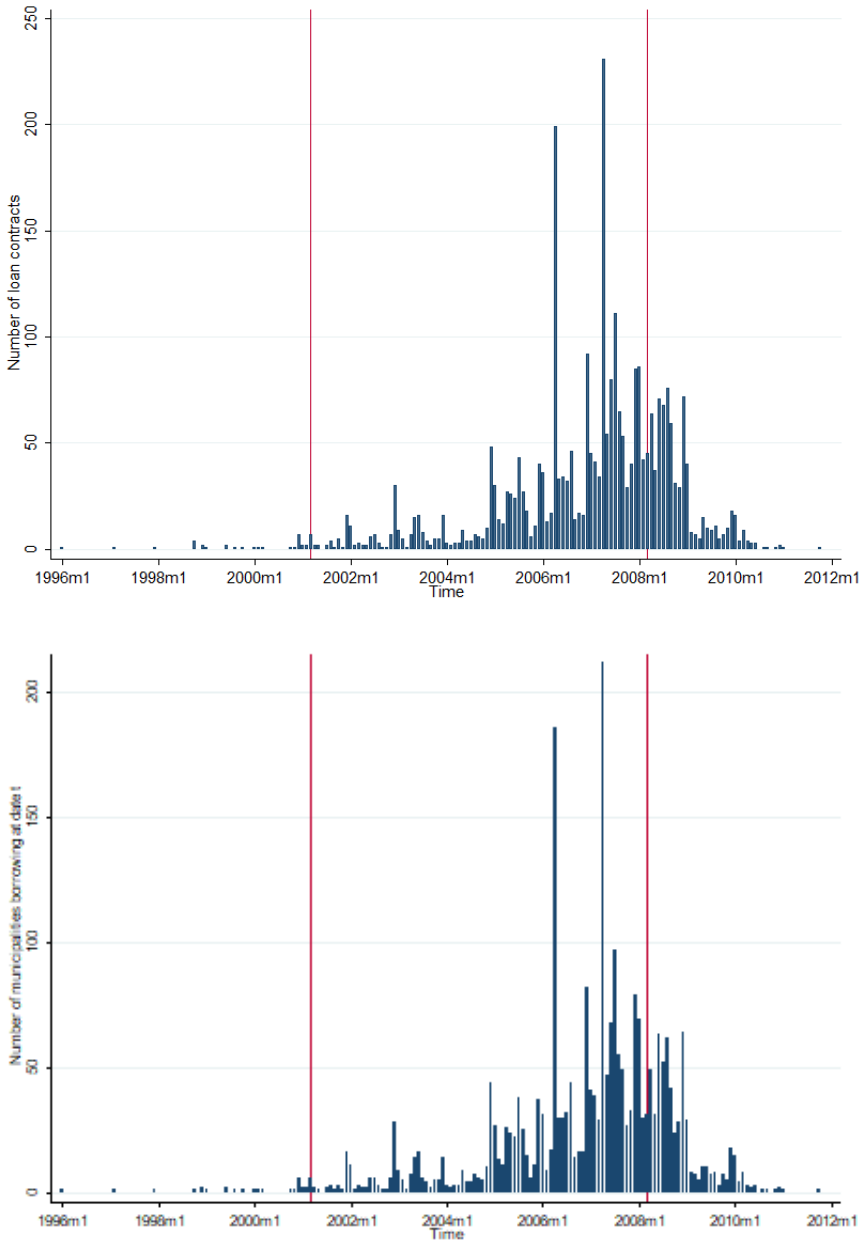
2.1 Dexia and the CLF

Dexia bank was created in 1996 as the result of the merger between the French and Belgian banks specialized in credits to local governments: the *Crédit Local de France* (hereafter *CLF*) and the *Crédit Communal de Belgique* (hereafter *CCB*). Specifically, the *CLF* was created in 1987 after the reform of the *Caisse d'Aide à l'Equipement des Collectivités Locales* established in 1967. First public, the *CLF* then entered the stock market in 1991 and was privatized in 1993. In 1994, local governments were allowed to enter the CLF capital. 437 did so on a voluntary basis, among which 362 municipalities.

Dexia then became a major source of funding for the French public sector. According to a report from the Cour des Comptes (2011), as of 2010, 32% of the debt of the French public sector was held by Dexia. Among the loans granted by Dexia to local governments, there was a high share of structured derivatives: 70% of all structured loans granted in France to municipalities were indeed delivered by Dexia (Bartolone and Gorges (2011)). The amount of structured derivatives in the budget of local governments was as high as 30 billion Euros, with 10 billion of highly risky loans (Cour des Comptes (2011)). Figure 1 plots the number of contracted structured loans and the number of concerned municipalities over time. These amounts steadily increased reaching a peak in 2006-2007, before decreasing after the beginning of the financial crisis and coming back to zero in 2011 when the bank was finally bailed-out. Due to the volatility induced by the 2008-2009 financial crisis, many of these loans have become toxic.[7]

[7]While our dataset only indicates the interest rate at one point in time (i.e. 2011), Pérignon and Vallée (2017) show on a sample of 49 contracts that the spike in interest rates only occurred after the financial crisis.

Figure 1: Number of municipalities and structured loans contracted with Dexia over time



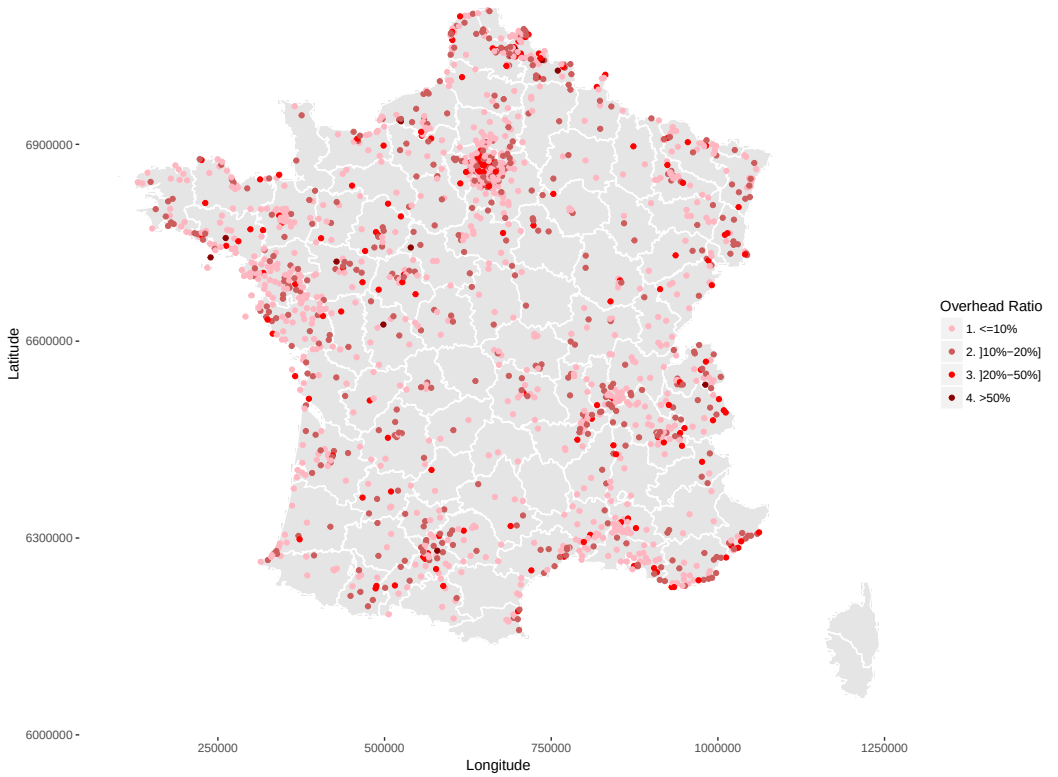
2.2 The revelation of toxic loans by *Liberation*

In September 2011, while negotiations on a bail-out of Dexia were being held, the national newspaper *Libération*[8] released on its website a confidential file from Dexia, detailing all the loans it granted to local governments. We collected the data released by *Libération* for French municipalities, gathering information on 3,016 loans contracted by 1,586 municipalities, which represent around 16% of municipalities above 1,000 inhabitants. Figure 2 represents the basic information contained on this map, namely the

[8]With a national print of more than 150,000 copies for about one million of readers, making it the 4^{th} most read general newspaper in France in 2011.

total overhead ratio (i.e. the ratio between the excess interests and the initial amounts of all the loans contracted).[9] In its interactive version, this map also reports information on the borrowed amount, the number of loans, the date of contracting, the end date of the contract and the counterpart bank.[10]

Figure 2: Toxic Loans and their Overhead Ratio

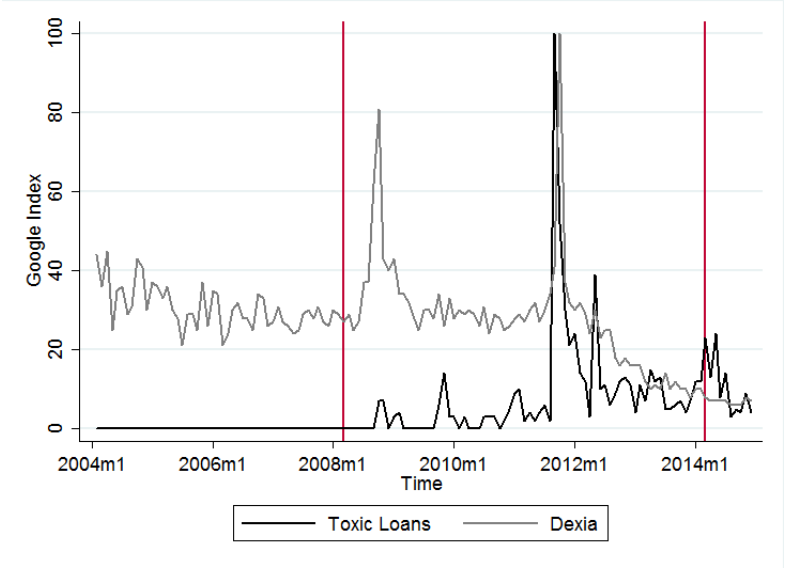


Several pieces of evidence suggest that it is very unlikely that the taxpayers were aware of the issue before *Libération* released the information in 2011. First, Pérignon and Vallée (2017) argue that the French legislation does not impose municipalities to report their use of derivatives. Second, as pointed out by Tirole (2017), the incumbent mayors would have no interest in disclosing the long term risks of such derivatives if the initial aim was to maintain a balanced budget, while financing more investments. Third, before September 2011, there were also virtually no Google requests for the French translation of "Toxic Loans" ("*Prêts Toxiques*"). In September 2011, a massive spike of requests occurred, which rapidly decreased to a level steadily higher than before. Similarly, while Google searches for Dexia increased during the financial crisis, the peak of Google searches for this bank in France took place at the time of the revelation by *Libération*. Therefore, it seems convincing that taxpayers were mostly unaware of these loans before the *Libération* leak.

[9] The original version can be found at the following address:
http://s0.libe.com/fremen/maps/carte-emprunts-toxiques/index.html

[10] Dexia was covered for each of these loans. The main counterpart banks were the Bank of America, Barclays, BNP Paribas, Credit Suisse, Deutsche Bank, Dexia Bank Belgium, Goldman Sachs, HSBC, JP Morgan, the Royal Bank of Canada and UBS.

Figure 3: Google Trends for "*Emprunts Toxiques*" (Toxic Loans) and "*Dexia*"



After these revelations, some municipalities decided to challenge these structured loans in court.[11] The first sentences were generally favorable to municipalities and allowed them to cancel their loans, arguing that the contract did not indicate the overall effective interest rate (Pérignon and Vallée (2017)). However, later ones deemed municipalities informed enough to be aware of the potential risks associated to these loans.[12] On July 29^{th} 2014 a law was voted enacting the retroactive validity of the contracts, even if the effective interest rate was absent or inaccurate.[13] At the same time, a special relief fund was created, endowed with 1.5 billion Euros in 2014 and then 3 billion Euros in 2015, when the Swiss Franc spiked up again.[14] In 2015, 676 municipalities had applied for help from the fund,[15] which imposed to restructure municipal debt through an average refund of 50% (and up to 75%) of the early loan repayment fees, in exchange for municipalities abandoning judicial litigation.[16] After the bail-out of Dexia, the bank did not have the right to lend to local public entities (or only under very restrictive conditions). In 2013, a new entity was created to provide loans to municipalities, the SFILL-CAFFIL, joint between the State (75%), the Deposits and Consignments Fund (20%) and the *Banque Postale* (5%).[17]

[11] While we do not observe the exact number of such litigations, about a hundred litigations were counted a few days before the municipal elections. Source: *http://abonnes.lemonde.fr/les-decodeurs/article/2014/03/13/tout-comprendre-des-emprunts-toxiques-en-10-questions_4381222_4355770.html*

[12] Source: *http://www.lagazettedescommunes.com/461865/emprunts-toxiques-la-justice-deboute-quatre-communes/*

[13] Source: *http://www.vie-publique.fr/actualite/panorama/texte-discussion/projet-loi-relatif-securisation-contrats-prets-structures-souscrits-par-personnes-morales-droit-public.html*

[14] Source: *http://www.lagazettedescommunes.com/330036/emprunts-toxiques-le-gouvernement-annonce-le-doublement-du-fonds-de-soutien/*

[15] Source: *https://www.caissedesdepotsdesterritoires.fr/cs/ContentServer?pagename=Territoires/LOCActu/ArticleActualite&cid=1250269120310*

[16] Source: *https://www.collectivites-locales.gouv.fr/fonds-soutien-aux-emprunts-a-risque*

[17] Source: *http://www.lagazettedescommunes.com/497105/banque-postale-sfil-un-modele-a-clarifier-durgence/*

2.3 French Municipal Elections

France has more than 36,000 municipalities, the majority of them having a population below 500 inhabitants. Every six years, municipal elections are held on the same day for every municipality. The latest election years are 1977, 1983, 1989, 1995, 2001, 2008 and 2014.[18] At the municipality level, the electoral system depends on the size of the municipality.

Since 2014, any city with more than 1,000 inhabitants has been indeed subjected to a runoff proportional list ballot.[19] Citizens have to vote for a list without any way to cross-out candidates on an individual basis. If a list obtains the absolute majority at the first round, no second round is held. Otherwise, all the lists which received more than 10% of the votes in the first round can go to the second round.[20] The ballot is proportional with a bonus for the majority list: a list obtaining the absolute majority gets indeed half of the offered seats, and the remaining seats are proportionally shared among all the lists with more than 5% of the seats. The three biggest cities in France (Paris, Lyon and Marseille) have this runoff system at the *arrondissement* level but not at the *city* level. Therefore, we choose to exclude them from the sample. In cities with less than 1,000 inhabitants, the system has been a two-round majoritarian plurinominal system since 2014. Candidates run within lists but voters can modify them by adding or suppressing their names or even can combine the lists they want. As a consequence, votes are counted by candidates. Any candidate obtaining the absolute majority of valid votes obtains a seat in the municipal council (if the number of votes received is greater than 25% of the number of registered voters). The remaining seats are shared in the second round. Candidates obtaining the greatest share of the votes are then elected.

Note that in both cases, voters elect only municipal councilors who in turn elect the mayor. For cities with more than 1,000 inhabitants, the order on the list is not arbitrary: the top of each list is not only seen as potential municipal councilor but also as candidate for the office of mayor. At the end, the mayor is generally the head of the list who got the most number of seats. For the rest of our analysis, we will then focus on municipalities over 1,000 inhabitants as they share the same voting system, in which votes are counted by lists and not by candidates, and whereby political affiliation is always mentioned.

2.4 Data description

To measure the impact of Dexia toxic loans on the French municipal elections, we first combine the *Libération* dataset with electoral data and information on municipalities entering the *CLF* capital. Electoral data for the 2014 municipal elections in municipalities of more than 1,000 inhabitants are provided

[18] The 2007 municipal elections were postponed to 2008 as the presidential election was also held in 2007.
[19] Before 2014, only cities with more than 3,500 shared this type of ballot.
[20] The lists which gathered more than 5% of the votes can merge with the other lists.

by the Ministry of Interior. They contain variables such as the number of party lists and their political affiliation. To build the instrumental variable, we also use an exhaustive list of the municipalities which entered the *Crédit Local de France* capital in 1994. Data were taken from the publication in the *Journal Officiel de la République Française* of December 16^{th} 1994 and were then matched with GIS data from the *Institut National de l'Information Géographique et Forestière* (IGN).

To control for different city covariates, we use several datasets at the municipality level, such as the Census, municipal budget data and the National Registry of Representatives. Firstly, we control for population characteristics using the 2011 Census Data.[21] Such data include shares of each socio-professional category, age structure of the population, level of education, structure of the local housing market (vacant housing, main residencies, share of landlords and social housing), type of municipality (rural/urban), unemployment rate, share of immigrants and median income. For the last three variables, we consider their winsorized growth rate between 2008 and 2013 (winsorized at the 1% and 99% level). Secondly, we consider 2013 budgetary variables and take their growth rates between 2008 and 2013 using data from the *Direction Générale des Finances Publiques* (DGFiP). Control data include capital expenditure, the total amount of local taxation, debt stock, annual repayments and the overall budget result, all winsorized at the 1% and 99% levels and expressed per inhabitant.[22] Thirdly, we control for the characteristics of incumbent mayors using the National Registry of Representatives (*Répertoire National des Elus*), provided by the Ministy of Interior. It delivers information for each elected mayor about her gender, age, party and socio-professional category.

2.5 Descriptive Statistics

Quantity and amounts of structured loans

Table 1 summarizes the main characteristics of the loans in our dataset. As the total number of loans corresponds to 8.94 billion Euros, it represents a sizable share of the debt amount of French municipalities (59.9 billion Euros in 2011). The average loan size is 2.96 million Euros, with a maximum of 77.9 million Euros. In 2011, the overhead ratio is on average of 11.8%, with a median of 9.1% and a maximum of 114%. Among those municipalities, 47% contracted more than one structured loan to Dexia.

Structured products and underlying assets

[21] Since 2004, municipalities with less than 10,000 inhabitants are covered by an exhaustive census survey done every five years. For bigger municipalities, census remains on an annual basis but is not exhaustive anymore (i.e. surveys are restricted to 8 % of the population). Therefore, the 2011 Census Data cover all French municipalities surveyed between 2009 and 2013.

[22] Annual repayments are equal to debt repayments plus the interests. The overall budget result gives an overview of the budget of French municipalities. More specifically, it is equal to the operating accounting result minus financing requirement. The budget of French municipalities is indeed divided into two sections: an operating one (for all the operational aspects of the municipality) and an investment one (for all the change in the asset value of the municipality). The operating accounting result is therefore the result of the operating section while financing requirement is defined as the difference between the investment expenditures and the investment revenues.

Table 1: Characteristics of contracted loans

	Mean	SD	Min	Max	Q1	Median	Q3	Total
Amount	2,964,836	3,928,713	13,000	7.79e+07	543,000	2,059,000	3,737,000	8.94e+09
Overhead Ratio	0.118	0.104	-0.180	1.142	0.061	0.091	0.133	
N	3016							

While media coverage frequently mentioned the Euro-Swiss Franc exchange rate, portfolios were more diversified at that time and many structured products were indexed on different underlying assets. In fact, only about 10% of the contracted loans were based on the Swiss Franc exchange rate while more than 50 % were linked to the Euro Interbank Offered Rate. As shown by Appendix Table 21, four types of underlying assets can be pointed out: inflation rates, interbank offered rates, exchange rates and Constant Maturity Swap spreads.[23] These four types of underlying assets did not appear at the same time. According to an investigation from Cori and Le Gall (2013), it was only in 2004 that structured loans based on CMS spreads were introduced. Before that, interbank offered rates and/or inflation were mainly used as underlying assets. These financial products built on the yield curve appeared ex-post as riskier assets.[24] As a consequence, other riskier assets were gradually introduced. In 2006, Dexia launched a new range of products based on exchange rates. Around 20% of French municipalities under contracts with Dexia chose to take this step and potentially without knowing it, started to protect the bank against the currency risk. While it was not feasible to trace back the evolution of each interest rate before 2011, the type of the underlying asset and particularly the adoption of contract(s) based on the Swiss Franc exchange rate certainly help reveal the ex-post toxicity of the loan.

Characteristics of municipalities with structured loans

To highlight differences between municipalities which adopted structured loans and those which did not, we conduct several t-tests. The two samples are on average particularly distinct. First, treated municipalities appear more as urban ones. Their population is clearly larger (Appendix Table 17) while the housing market seems more constrained, with a lower proportion of homeowners and a higher proportion of tenants (Appendix Table 14). Second, mayors differ between the two samples (Appendix Table 13). Mayors in charge of municipalities with Dexia toxic loans are more likely to be managers or hold a liberal occupation. They also tend to come more from the moderate left or from the extreme left than their counterparts[25]. Third, municipalities which took toxic loans face more economic and financial

[23]These underlying assets are not directly mentioned in the database. However, thanks to administrative records, we deduce them from the names of the 135 standard contracts.

[24]Before the financial crisis, the long-term interest rates were indeed higher than the short-term ones. However, as early as 2005, the spread between CMS 10 years and CMS 2 years for instance started to narrow. The yield curve actually inverted during the subprime crisis, leading more than 30% of French municipalities affected by structured loans to incur high overhead ratios.

[25]Note that this last point does not contradict our hypothesis that voters would reward extreme political lists to punish mainstream parties involved in the scandal. In municipalities with Dexia toxic loans, a large part of the mayors in charge in 2013 come from moderate right and moderate left (45.3% and 41.5% respectively) while only 6.3% were from the extreme left. Still we control for the political orientation of the incumbent in our regressions.

issues than the others: unemployment rate is larger and median income is lower (Appendix Table 14). Their financial position is worse (Appendix Table 17): even if intoxicated municipalities have larger budgets (Appendix Table 17), their debt is higher, both in terms of stock and annual repayments.[26]

Among municipalities which contracted toxic loans, there is mixed evidence of selection into the degree of toxicity. On the one hand, mayors and population characteristics do not substantially differ when we focus on the degree of toxicity (Appendix Table 15 and Appendix Table 16). On the other hand, operating revenues, operating expenses per capita, debt stock and annual repayments are larger for highly intoxicated municipalities (Appendix Table 18).[27] Selection into the degree of toxicity would not be totally surprising. While ex-post toxicity was driven by the financial crisis, and even though the ex-post risk was unlikely to be fully taken into account by municipalities, riskier loans might have had ex-ante lower interest rates during the first years due to the risk premium, thus leading to a selection effect. We control for those variables in our regressions and propose an instrument for the degree of toxicity.

Without controlling for all the observable differences, the OLS coefficients may be biased in several directions. As intoxicated municipalities tend to face more financial issues than the others and are also more likely to be governed by radical-left mayors, the OLS coefficients may be biased positively. However, those cities are also bigger and have more qualified mayors. Qualification may be positively correlated with competence and leadership, which are likely to prevent the emergence of extreme candidacies. Big cities also tend to be more moderate in terms of political orientation. This would lead our OLS coefficients to be biased negatively. In order to get rid of any potential bias, we therefore use an IV identification strategy.

3 Instrumental variable approach

We estimate the impact of Dexia toxic loan(s) on electoral entry, abstention and vote shares for the municipal elections of 2014 in municipalities over 1,000 inhabitants.
Our main specification is the following:

$$Y_i = \alpha + \beta T_i + \gamma X_i + \epsilon_i \tag{1}$$

where Y_i is an outcome variable in municipality i, T_i is a dummy equal to one if municipality i is listed as having a toxic loan in the *Libération* database and zero otherwise and X_i is a set of covariates.

[26] Those figures are from 2013 so worse financial position may be partly due to toxic loans. However, in terms of variation, both operating expenses and investment expenditures grow to a lesser extent between 2008 and 2013 in those municipalities (Appendix Table 19).

[27] Note that similarly, investment revenues and expenditures grow to a lesser extent between 2008 and 2013 for municipalities which were ex-post highly intoxicated (Appendix Table 20).

Endogeneity issues

Even though the sharp increase in interest rates was unlikely to be anticipated neither by taxpayers, nor by local administrations, nor by Dexia itself (Bartolone and Gorges (2011), Cour des Comptes (2013), Seban and Vasseur (2014)), municipalities adopting structured loans remain different from municipalities which did not, both in terms of observable (see Section 2.5) or unobservable characteristics. At least two main reasons are at stake.

Firstly, part of structured loan contracting might be due to strategic motives. As we observe in the data, French municipalities which chose such products often faced financial issues and/or heavy investment projects. In that respect, lower fixed interest rates at an early stage might have appeared interesting to help them being temporarily released from financial stranglehold. It does not mean however that contracting structured products was entirely driven by real financial needs. Pérignon and Vallée (2017) and Tirole (2017) argue that since such derivatives momentarily help to decrease tax rates and debt burden, they were particularly interesting for reelection purposes. It may have been indeed the case for the 2008 municipal elections (Pérignon and Vallée (2017)).[28] Such motives might bias naive estimations in several ways, depending on whether strategic behaviors are positively or negatively linked with the emergence of extreme candidacies.

Secondly, we only observe structured loans contracted to Dexia. Naive estimators may be biased if the loans proposed by Dexia are more appealing to some municipalities than others or if Dexia specifically targeted certain municipalities. Considering the history of Dexia and the adopted strategy of the bank to expand, this last point appears to be confirmed. As Cori and Le Gall (2013) described it, staff bonuses were indexed on the sales of structured products to French municipalities and in the mid-2000, target figures were also put in place to incentive their employees. Therefore, brokers were keen to get in touch with French municipalities and seem to have selected them according to their size, their historical ties and their financial position.

Instrumental variable

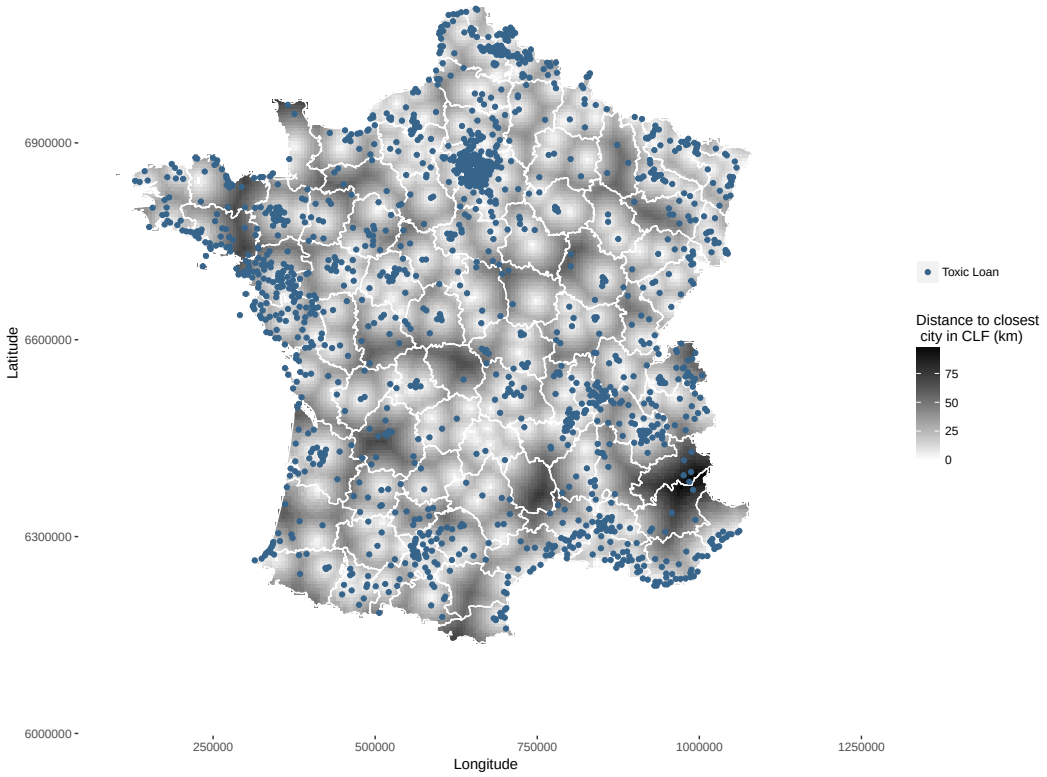
In order to circumvent potential biases, we instrument toxic loan contracting by distance to the closest municipality entering the CLF. This builds upon the well-documented fact that distance is an important determinant of credit (Degryse and Ongena (2005) and Bharath et al. (2009)). Municipalities with historically tighter links with Dexia were indeed more likely to contract structured bonds with Dexia.[29]

[28] Note that while the number of adopted structured loans steadily increased between 1996 and 2006-2007, there are however no clear political cycles on the average amount per contract. Strategic behaviors might exist but they remain a limited part of the story.

[29] This point is in line with anecdotal evidence testifying the strong links between French municipalities and the CLF. For example, Lenglet and Touly (2016) argued that *"the case of many officials in small municipalities illustrates, in our opinion, the danger of trust linkages that mayors and aldermen secured for years with Dexia. Indeed, this bank [...] partly stems from the* Caisse des dépôts

Figure 4 shows the location of intoxicated municipalities and compares it to the distance to the closest municipality which entered (computed on a 5km×5km grid). It appears graphically that many treated municipalities were located within short-range of municipalities which entered the CLF in 1994.

Figure 4: Distance to closest city in CLF and adoption of Toxic Loan



Importantly, the exclusion restriction is that distance does not affect the electoral outcomes of 2014 other than through its effect on toxic loan contracting. This hypothesis is likely to be warranted for three reasons. First, the 362 cities which entered the CLF capital are not only urban, economic or cultural centers. They are located all over the territory and many among them are small to medium sized. Therefore, it is unlikely that our instrumental variable captures an effect of distance to important centers, which may be itself correlated to the rise of extreme movements.[30] Second, since we focus on municipalities which did not enter the CLF, we only take into consideration the role of distance. We thus leave aside potential endogeneity arising from the fact that municipalities which entered the CLF might have unobserved characteristics explaining both this decision and the 2014 electoral outcomes. For instance,

et consignations, *[...] which was a public establishment of the Deposits and Consignments Funds. Obviously, this moral capital served to mislead officials"*.
Source: $https://www.capital.fr/economie-politique/emprunts-toxiques-comment-les-villes-se-sont-laisse-pieger-par-les-banques-1193566$
In line with this argument, Figure 7 in Appendix shows that among municipalities which adopted toxic loans, those that entered in the CLF capital were likely to adopt them earlier.

[30] Note that in Pérignon and Vallée (2017) however, the instrument may be linked with distance to urban centers. They indeed use distance to the closest Dexia branch, but the 24 Dexia branches were essentially located in regional capital cities.

this may be the case if the 1994 mayor, whose identity is unobserved by us, had been reelected until 2014. Third, municipalities entered the CLF capital in 1994, thus well before the main wave of toxic loan contracting. The latter indeed occurred between 2001 and 2011. It is therefore unlikely that the distance affects anything except the probability of having toxic loan.

We then exploit the binary nature of our instrumental variable by using a methodology proposed by Wooldridge (2010). It consists in running a 2-SLS estimation where the instrument is the predicted value of the treatment variable. The latter is taken from a Probit model where the treatment variable is regressed on our measure of distance to the closest municipality entering the CLF capital.[31] Formally our first stage can be written as:

$$T_i = \alpha^{'} + \beta^{'}\hat{T}_i + \gamma^{'}X_i + \epsilon_i^{'} \tag{2}$$

where T_i is the treatment variable (i.e. municipality i having at least one toxic loan) and $\hat{T}_i$ is the predicted value of T_i taken from the following Probit model:

$$Pr(T_i) = \Phi(log(Dist_{CLF_i}), X_i) \tag{3}$$

where $log(Dist_{CLF_i})$ is the log distance of municipality i to the closest municipality which entered the CLF capital.

4 Results

4.1 Candidate Entry

We first present our main results on candidate entry. Table 2 shows the results of the OLS estimations, where we respectively explain the number of candidacies, the probability that the incumbent mayor runs again and the presence of at least one extreme list, one extreme-left or one *Front National* list. In order to define extreme lists, we follow the Interior Ministry classification. Far-left candidacies are listed as either "Extreme Left", "Communist" or *"Front de Gauche/Parti de Gauche*". Far-right lists are labeled as "Extreme Right" or "*Front National*" (FN). We only focus on the latter when we study FN entry as it remains the most representative far-right political party in France.[32] In municipalities with toxic loans, we find that the number of candidacies is higher by 0.25 (Column 1) and that the probability to observe at least one extreme candidacy is larger by 5.8 percentage points (Column 3): for a *Front National* list, it is greater by

[31] This estimation is based on the *ivtreatreg* package from STATA.

[32] Note that our results remain valid when we include both *Front National* and *Extreme Right* as outcome variables for far-right candidacies.

3.7 percentage points (Column 4) and for a far-left list, it is higher by 3.3 percentage points (Column 5). Conversely, we do not find that incumbents are more or less likely to run again for office (Column 2).

Table 2: Candidate Entry - OLS

	Nb. cand	$\mathbb{1}_{Incumbent}$	X list	FN list	X-Left list
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	.247***	.0001	.058***	.037***	.033***
	(.038)	(.015)	(.013)	(.010)	(.011)
Controls	Y	Y	Y	Y	Y
e(N)	8933	8933	8933	8933	8933
e(r2)	.442	.162	.349	.254	.336

Control variables: For the population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are at least included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

As mentioned above, such results cannot be interpreted as causal effects as they are likely to be positively or negatively biased. We therefore use our instrumental variable strategy to circumvent this issue. The strength of our first stage is assessed in Table 3. Whether we include control variables or not, we find that municipalities which are close to those entering the CLF capital are much more likely to contract toxic loan(s). The coefficient on the distance is then highly significant. Note that while our estimation strategy does not allow us to obtain standard F-statistics, our instrument remains strong. When we estimate the first stage in a 2-SLS framework, the results are unchanged and the F-Stat is of 13.21.[33]

In Table 4 using our IV identification strategy, we still find a strongly positive and significant effect of toxic loan(s) on the number of candidacies and on the presence of extreme political lists. Specifically, we find the number of candidacies to be higher by 0.74 in intoxicated municipalities (Column 1), suggesting a larger electoral competition. The probability of observing an extreme candidacy is then 24 percentage points higher (Column 3). Note that the presence of a *Front National* list is 14 percentage points higher (Column 4) while for far-left list, it is 19 percentage points higher (Column 5). We still do not find any effect on the probability the incumbent runs again (Column 2).

The instrumental variable estimates are moreover larger than the OLS estimates: the latter are therefore biased downwards. While several factors explaining this downward bias were presented before, other differences unobserved to us might be at stake like the abilities of the mayor, her electoral support

[33]In the Appendix, we further document this first stage by showing the reduced form estimates (Table 22). It consistently shows correlation between our instrumental variable and our outcomes of interest (albeit weaker for the probability of observing a far-left candidacy). Furthermore, in Table 23, we show that the estimated coefficients of the Probit Stage are hardly sensitive to the set of included control variables.

Table 3: IV Regression (Probit Stage)

$\mathbb{1}_{Toxic}$	(1)	(2)
Log of distance to closest CLF city	-.181***	-.151***
	(.026)	(.035)
Controls	N	Y
County (*Département*) FE	Y	Y
N	8917	8917
Chi2	515.21	2692.08
P>Chi2	0.000	0.000

Control variables: For the population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are at least included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

or even her seniority. However, such concerns are dampened by the fact that our results are robust to varying the sets of included controls.[34] Additionally, as indicated in Table 33 in the Appendix, we do not find any effect on the probability of observing a candidacy from moderate right in the 2014 municipal elections. For moderate left, however, the IV coefficient is slightly positive but remains weakly significant, suggesting that our results on extreme candidacies are indeed stronger.

Table 4: IV Regressions (Second stage) - Candidate Entry

	Nb. cand	$\mathbb{1}_{Incumbent}$	X list	FN list	X-Left list
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	.738***	-.037	.238***	.138***	.186***
	(.146)	(.054)	(.049)	(.037)	(.040)
Controls	Y	Y	Y	Y	Y
Obs	8917	8917	8917	8917	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses. P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

4.2 Heterogeneity Analysis

Are the impacts of toxic loan(s) homogeneous across municipalities? We study this question along several dimensions.

Local economic and social conditions

[34] In Appendix, in Tables 24 to 28, we run several sensitivity analyses. We document that overall, while expanding the set of controls slightly diminishes our estimates, the results remain similar across all specifications.

We explore whether differences in electoral competition due to toxic loans depend on local social and economic conditions and local budgets. While our main estimates control for these factors, heterogeneous effects may be plausible as economic and social conditions are common explanations for the rise of extreme parties (Algan et al. 2017; Becker et al. 2017).

First, table 5 shows heterogeneous instrumental variable estimates with simultaneous interactions between the treatment and the median household income, the amount of local taxes per capita and capital expenditure per capita. Our results foremost indicate that the increase due to toxic loan(s) in the number of candidacies and in the probability of observing extreme lists (far-right or far-left) is higher in municipalities with lower median income.[35] We find moreover that the treatment effect on the number of candidacies and on the entry of extreme lists is higher where local taxes per capita are high. This last result seems driven by the extreme right as the interaction effect on entry of far-left lists is positive but insignificant. Finally, we do not find conclusive evidence on the interaction between the treatment and the amount of capital expenditure per capita. These last two findings suggest that the reaction to the leak depended not so much on the actual state of local public good provisions than on the amount of taxes paid by taxpayers. Taxes are indeed much more likely to be salient to them. In line with this argument, we document in Table 35 in the Appendix, that treatment effect does not depend either on the level of debt per capita of the municipality (as measured by annual repayments).

A second heterogeneity test relies on whether the effects of toxic loan(s) differ upon immigrant shares, as shown by (Dustmann et al. 2016; Hangartner et al. 2017). Immigration is usually addressed by extreme political parties and can be therefore considered as a factor for the rise of extremism. In France, immigration is mainly feared by the extreme right, while for some radical-left political parties such as the *Front de Gauche*, the rhetoric is different as asylum rights are supported and migrants advocated. In Table 6, we interact the treatment with the immigrant share of the municipality in 2013, as well as the growth rate of this share between 2006 and 2013. In this test, we find that intoxicated municipalities face a larger entry of extreme candidacies (whether on the right or on the left) when the immigration growth rate is high. Interestingly, in the absence of toxic loans, we find a weakly negative correlation between the growth rate of the immigrant share and the entry of such candidacies. These results call for two comments. On the one hand, they suggest that while immigration is a topic of particular interest for both extreme-right and extreme-left parties (albeit for opposite reasons), it is not enough to trigger the presence of extreme candidacies locally - potentially because it is a dividing topic and the electoral uncertainty of exploiting migratory pressure is too high. On the other hand, being in an intoxicated municipality might lower this uncertainty for extreme parties and make it easier for them to exploit

[35] Replacing median income by unemployment rate, as we do in Table 34 in the Appendix, yields similarly consistent results. The effect of toxic loans is greater in municipalities with higher unemployment rates and especially so for the presence of *Front National* candidates. This is in line with the findings from Algan et al. (2017).

Table 5: IV Regressions: Candidate Entry and heterogeneous effects (Median income, local taxation and expenditure spending)

	Nb. cand.	X list	FN list	X-Left list	$\mathbb{1}_{Incumbent}$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	.602***	.156***	.079**	.139***	.024
	(.146)	(.047)	(.037)	(.040)	(.055)
Median Income	-.010	-.004*	.006***	-.008***	-.001
	(.008)	(.002)	(.002)	(.002)	(.004)
$\mathbb{1}_{Toxic}$ x Median Income	-.026	-.017***	-.013***	-.012**	.010
	(.016)	(.005)	(.005)	(.005)	(.006)
Local Taxes	.0004***	.00004	.00002	3.92e-06	.00008*
	(.00009)	(.00003)	(.00002)	(.00002)	(.00005)
$\mathbb{1}_{Toxic}$ x Local Taxes	.0005	.0003**	.0002**	.0002	-.0002*
	(.0004)	(.0001)	(.0001)	(.0001)	(.0001)
Capital Expenditure	-.0001***	2.34e-06	-5.30e-06	1.00e-05	.00003
	(.00004)	(1.00e-05)	(7.84e-06)	(8.91e-06)	(.00002)
$\mathbb{1}_{Toxic}$ x Capital Expenditure	-.0001	-.00005	-.00004	-1.00e-05	2.47e-06
	(.0002)	(.00007)	(.00006)	(.00006)	(.00009)
Controls	Y	Y	Y	Y	Y
e(N)	8917	8917	8917	8917	8917

Note that employment rates, local taxation and capital expenditure are winsorized variables at the level 1% and 99% .
Control variables: For the population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included and robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

migratory pressure. Overall, the combination of toxic loans and increasing immigration therefore seems to be a particularly polarizing one. Yet, immigrant shares play a different role. We indeed find that the impact on the probability of having a *Front National* candidacy is dampened when immigration share is high. For far-left candidacy, the interaction effect remains non-significant. For a *Front National* list, the expected gains of running in an intoxicated municipality might be decreasing when the migrant population is already high, as an electorate located in a multicultural context might be less likely to vote for them.[36] To the contrary, for a far-left list, the expected gain is unlikely to be negatively affected by immigrant shares, probably because the extreme-left rhetoric is more immigrant-friendly.

Overall, these interaction effects suggest a positive feedback loop between toxic loans and economic or social factors affecting the rise of extreme politics. While economic and social conditions are likely to play a role independently, the presence of toxic loans might have amplified their effects.

Toxicity of the loan

[36]In some cities, immigration can be particularly large and has indeed an impact on the electorate. More specifically, 25% of French municipalities have more than 6.2% of immigrants, with a maximum reached of 21%.

Table 6: IV Regressions: Candidate Entry and heterogeneous effects (Immigration rate and Immigration growth rate)

	Nb. cand.	X list	FN list	X-Left list	$\mathbb{1}_{Incumbent}$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	.659***	.210***	.148***	.154***	-.033
	(.137)	(.044)	(.035)	(.036)	(.055)
Immigration Rate	-.373	.189	-.003	.272*	-.048
	(.577)	(.169)	(.117)	(.151)	(.293)
$\mathbb{1}_{Toxic}$ x Immigration Rate	1.661	-1.460**	-2.405***	-.524	1.026
	(2.040)	(.634)	(.509)	(.626)	(.720)
Immigration Growth Rate	.106	-.038**	-.031**	-.035**	.039
	(.073)	(.018)	(.013)	(.015)	(.042)
$\mathbb{1}_{Toxic}$ x Immigration Growth Rate	.366	.742***	.621***	.514***	-.363*
	(.527)	(.175)	(.140)	(.161)	(.204)
Controls	Y	Y	Y	Y	Y
e(N)	8917	8917	8917	8917	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, median income, winsorized employment rate and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: capital expenditure, local taxation, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also controlled for such as gender, socio-professional category and political party. Fixed effects at the county level are included, and robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

The ex-post toxicity of the loans represents an additional dimension, which may be considered as a signal for voters. In order to study the potential impacts of toxicity, we interact our treatment variable with the overhead ratio of the loan (i.e. the excess interests paid by municipalities divided by the initial amount of the loan) and with the overhead debt ratio (i.e. the excess interests paid by municipalities divided by annual repayment). As such variables are endogenous to the fact of contracting toxic loan(s), we instrument them by the presence of at least one structured loan indexed on the Swiss Franc exchange rate. The rationale behind this instrument is that, upon contraction of toxic loans, the Swiss Franc was considered as particularly stable and safe because its exchange rate had varied in a narrow bandwidth over the 2000 decade. Between the mid-2008 and the mid-2011, its value had yet increased sharply, triggering a high overhead ratio. Conditionally on having toxic loan(s), this sharp variation induced by the crisis was therefore unlikely to be anticipated, making the exclusion restriction warranted.

We thus run a specific 2-SLS regression to instrument both the presence of toxic loan(s) (through the log distance to the closest municipality in the CLF capital) and conditionally on it, the overhead ratio (through having a loan based on CHF). More specifically, we instrument our two variables of interest by their predicted values obtained from a Heckman two-step bivariate sample-selection model. In this framework, the predicted value of the treatment variable (i.e. having a toxic loan) is delivered by the same Probit stage as our main identification strategy. The treatment intensity (i.e. the ex-post toxicity) is

Table 7: IV Regressions: Intensity of treatment - Heckman two-step bivariate sample-selection model

	$\mathbb{1}_{Toxic}$	Overhead ratio	$\mathbb{1}_{Toxic}$	Overhead debt ratio
	(1)	(2)	(3)	(4)
Log of distance to closest CLF city	-.152***		-.152***	
	(.036)		(.036)	
$\mathbb{1}_{CHF\quad Toxic\quad loan}$		.146***		.671***
		(.005)		(.027)
Controls		Y		Y
e(N)		8921		8921
Wald Chi 2		1109.44		1238.29
P > Chi 2		.000		.000

The overhead ratio is the total overhead (due to the increased in the interest rate) divided by the initial amount of the loan. The overhead debt ratio is the total overhead divided by annual replacements. These variables (i.e. the intensity of treatment) are instrumented by the presence of structured loan(s) based on the Swiss Franc exchange rate.
Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Last but not least, fixed effects at the county level are also included and robust standard errors are delivered.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

obtained from an OLS regression of the overhead ratio on a dummy variable (having or not at least one toxic loan indexed on CHF), on additional covariates and on a Mills' ratio of the probit stage.[37]

Table 7 shows the coefficients of the Probit and OLS stages of this estimation for two different measures of toxicity: the overhead ratio and the overhead debt ratio. In both cases, we find that the presence of at least one toxic loan indexed on the Swiss Franc sizably increases the toxicity of the loan, which makes it a relevant instrument. Using this double instrumental variable strategy, we do not find any effect of the ex-post toxicity of the loans on our main outcome variables. As shown in Table 8, while the measured effects of toxic loans on number of candidacies, entry of extreme lists and probability that the incumbent runs again are similar to our main effects for an average value of the overhead ratio, they do not differ when the overhead ratio deviates from its average value.[38] Such results therefore suggest that the toxicity of the loan was not so important as the mere presence of the municipality on the map released by *Libération*.[39]

4.3 Electoral Results

In this section, we test whether the 2011 revelation has finally impacted the electoral results. We test this in two different ways. Firstly, we evaluate whether turnout to the 2014 municipal elections

[37] We implement this methodology using the *ctreatreg* package of STATA.
[38] In Appendix, we show in Table 36 that taking the overhead debt ratio as a measure of toxicity yields a similar absence of heterogeneity.
[39] As explained in the Introduction, we report in the Appendix further tests studying if the effects depend upon the level of Internet access, the gender of the mayor and on whether the mayor facing re-election was accountable for contracting the loan or not.

Table 8: IV Regressions: Electoral supply and continuous treatment (Overhead ratio)

	Nb. cand.	X list	FN list	X-Left list	$\mathbb{1}_{Incumbent}$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	.924***	.259***	.150***	.209***	-3.77e-06
	(.155)	(.045)	(.034)	(.039)	(.081)
$\mathbb{1}_{Toxic}$ x Overhead Ratio (Centered)	-1.338**	-.133	-.034	-.174	-.265
	(.601)	(.176)	(.133)	(.150)	(.315)
Controls	Y	Y	Y	Y	Y
e(N)	8921	8921	8921	8921	8921

The overhead ratio is the total overhead (due to the increased in the interest rate) divided by the initial amount of loans. The overhead debt ratio is the total overhead divided by annual repayments. This variable (i.e. the intensity of treatment) is instrumented by the presence of structured loan(s) based on the Swiss Franc exchange rate. Note that the the overhead debt ratio is winsorized at the 1% and 99% level.
Control variables: For population characteristics, we use the 2011 French Census data. We control for socio-professional categories, age distribution, level of education, housing, status of municipality, median income, winsorized employment rate and change in median income and in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: capital expenditure, local taxation, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Last but not least, fixed effects at the county level are included and robust standard errors are delivered.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

was different across intoxicated municipalities or not. In line with previous studies showing a negative effect of political scandals on turnout (Chong et al. (2011); Kostadinova (2009); Costas-Pérez (2013)), our hypotheses are that the leak of Dexia toxic loans decreased turnout and that the rise in extreme candidacies went hand in hand with a rise in abstention (as in Guiso et al. (2017)). Secondly, we explore some electoral consequences, both on the side of the incumbent party and on the side of extreme parties. This part of the analysis is more exploratory, as the electoral outcomes of French municipal elections yield several challenges. Even if toxic loans pushed more extreme lists to run for office, they represent a small share of candidacies. Focusing only on cities with extreme parties would thus excessively reduce the sample. Some mayors moreover do not run for an additional term in office: here again, restricting the sample to cities where an incumbent mayor re-runs for office would be at the cost of reducing our sample. Finally, since the sample includes a vast number of small municipalities, many of them have only one list running for office, therefore generating a mass of vote shares at 100%. To address these issues, we adopt two strategies which however imperfect, can help providing valuable information on electoral results. We first test whether the revelation induced lower vote shares in favor of party lists being from the same political affiliation as the incumbent mayor.[40] We then look at vote shares received by each political block. In both cases, we assign a value of zero to vote shares if no list runs under a specific political affiliation.

Table 9 presents the findings about abstention and vote shares for the political affiliation of the incumbent, both in the OLS and in the instrumental variable setting. We find an increase in abstention following the revealed presence of toxic loans in the OLS regression (around 0.5 percentage points), but

[40]We define political affiliation as being either Extreme-Left, Moderate-Left, Moderate-Right or Extreme-Right.

not in the IV specification. On the vote shares obtained by the lists from the same political orientation as the incumbent mayor, the effect is negative and weakly significant in the OLS but negative and highly significant in the IV specification. Overall, in intoxicated municipalities, vote shares for lists from the same political affiliation as the incumbent are reduced by 13 percentage points.[41] These results hide important heterogeneity effects depending on the economic conditions of the municipality. In Table 37 in Appendix, we show that as median income decreases, the impacts on turnout and vote shares for lists from the same political affiliation as the incumbent are amplified.[42]

Finally, in Table 10 , we show that conversely, in intoxicated municipalities, vote shares for extreme lists are higher but only for far-right lists, i.e. for the *Front National*. Note that this increase is partly mechanical as it embeds the rise in the probability of extreme candidacy.

Table 9: OLS and IV Regressions: Electoral Results

	Abst. (OLS)	Abst. (IV)	Share Inc. Orient. (OLS)	Share Inc. Orient. (IV)
	(1)	(2)	(3)	(4)
$\mathbb{1}_{Toxic}$	.005**	.013	-1.818*	-13.045***
	(.002)	(.009)	(1.059)	(4.247)
Controls	Y	Y	Y	Y
e(N)	8933	8917	7863	7828
e(r2)	.379	.377	.225	.216

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, median income, winsorized employment rate and change in median income and in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: capital expenditure, local taxation, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also into account such as gender, socio-professional category and political party. Fixed effects at the county level are included, and robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

4.4 Falsification test: 2008 municipal elections

In this section, we perform a robustness check by investigating whether there are any potential effects of toxic loans on the municipal elections of 2008 (i.e. before the revelation of the scandal). Note however that the results presented in this section are not directly comparable to the ones obtained from the main estimation since the sample we use is smaller. In 2008, only municipalities with more than 3,500 inhabitants were indeed subjected to a runoff proportional list ballot. This divides our sample size by four and provides us with larger standard errors.

[41] This positive bias of the OLS is in line with the positive bias found in Table 33 on the candidacies from the moderate left and moderate right, which are parties representing the bulk of incumbents.

[42] However, as illustrated in Tables 38, 39 and 40, also in Appendix, we do not find the same heterogeneity on dimensions such as the toxicity of the loan, the quality of Internet access and the gender of the incumbent.

Table 10: IV Regressions: Electoral Results (Vote shares)

	Sh. X T1	Sh. X-Left T1	Sh. FN T1	Sh. Left T1	Sh. Right T1
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	4.010***	.835	3.096***	-5.213	-2.603
	(1.187)	(.913)	(.690)	(3.217)	(3.626)
Controls	Y	Y	Y	Y	Y
e(N)	8917	8917	8917	8917	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, median income, winsorized employment rate and change in median income and in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: capital expenditure, local taxation, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are also included, and robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

In Table 11, we show that presence of toxic loan(s) did not significantly impact political entry in 2008. We then look in Table 12 at abstention and vote shares for the incumbent political block. While the coefficient for abstention is weakly significant, we do not find any effect on vote shares in favor of the incumbent political affiliation.[43] Even if the 2008 results are not entirely comparable with the 2014 ones, these two points suggest that toxic loans were unlikely to impact the 2008 electoral race as in 2014. Furthermore, the absence of consistent effects in 2008 may imply that what we observe in 2014 is unlikely to represent a form of reversal to the mean.

Table 11: IV Regressions: 2008 Municipal elections - Candidate Entry

	Nb. cand.	X list	FN list	X-Left list	$\mathbb{1}_{Incumbent}$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	.319	-.100	.297	-.067	.349
	(.646)	(.253)	(.216)	(.091)	(.213)
Controls	Y	Y	Y	Y	Y
e(N)	2119	2119	2119	2119	2119

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, median income, winsorized employment rate and change in median income and in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: capital expenditure, local taxation, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included, and robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

[43] This result differs from Pérignon and Vallée (2017). They indeed find that toxic loans increased the probability of election of the lists from the incumbent party in 2008. However, our results are not directly comparable as we are considering a more restrictive sample and our instrumental variable strategy differs.

Table 12: IV Regressions: 2008 Municipal elections - Electoral Results

	Abst. 2008	Sh. I's po orient. 2008
	(1)	(2)
$\mathbb{1}_{Toxic}$	.040*	-6.692
	(.023)	(10.077)
Controls	Y	Y
e(N)	2095	1901

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, median income, winsorized employment rate and change in median income and in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: capital expenditure, local taxation, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included, and robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

5 Conclusion

In this paper, we explore a channel for the entry of extreme candidates in the political arena: public finance mismanagement. Using the leak of Dexia toxic loans by the national newspaper *Libération* in September 2011, we find that affected municipalities had a tougher electoral competition in the subsequent 2014 municipal elections and were more likely to see extreme candidacies running for office. Importantly, we show that this effect was amplified in municipalities with more fragile economic conditions (lower income or higher unemployment) and where public finance issues were more salient to the taxpayers (i.e. in cities with higher taxation per inhabitant). However, we document that the actual toxicity of the loan did not play a role, at least in the short run.

Such results therefore suggest that the revelation of this scandal lowered the entry cost of extreme parties - especially in places which cumulated other factors favoring the rise of extreme politicians - and fueled their rhetoric, regardless of the severity of the shock. In turn, this scandal had an impact on vote shares, decreasing vote shares of candidacies from the same political affiliation as the incumbent and increasing vote shares of extreme-right parties. It appears therefore extremely relevant to take into account the factors affecting the entry of politicians, and more particularly the entry of extreme candidacies in order to understand the rise of extremism.

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6 Appendix

6.1 Appendix 1 - T-tests and Underlying assets

Table 13: T-tests (RNE): No toxic loans/ Toxic loans

	No tox. loans	N1	Tox. loans	N2	Diff.	SE.
Gender & Age						
Male	0.887	7892	0.892	1468	-0.005	0.009
Age	62.249	7892	61.318	1468	0.931***	0.237
Socio-professional category						
Agriculture	0.053	7879	0.018	1468	0.035***	0.006
Industry/Trade	0.055	7879	0.050	1468	0.005	0.006
Private-sector	0.125	7879	0.124	1468	0.001	0.009
Liberal	0.066	7879	0.110	1468	-0.043***	0.007
Teaching	0.055	7879	0.078	1468	-0.023***	0.007
Official	0.060	7879	0.073	1468	-0.013*	0.007
Public-sector	0.024	7879	0.029	1468	-0.005	0.004
Various	0.050	7879	0.093	1468	-0.043***	0.007
Retired	0.511	7879	0.426	1468	0.086***	0.014
Political party						
Extreme-right	0.001	7892	0.000	1468	0.001	0.001
Moderate-Right	0.506	7892	0.453	1468	0.053***	0.014
Center	0.055	7892	0.049	1468	0.006	0.006
Moderate-Left	0.348	7884	0.415	1468	-0.067***	0.014
Extreme-Left	0.029	7892	0.063	1468	-0.034***	0.005
Diverse	0.056	7892	0.012	1468	0.044***	0.006
Separatist	0.001	7892	0.001	1468	0.000	0.001

Data: Registre National des Elus (Year 2013)

Table 14: T-tests (Census): No toxic loans/ Toxic loans

	No tox. loans	N1	Tox. loans	N2	Diff.	Std. Error	Obs.
Housing							
Main residence	0.863	7899	0.857	1468	0.005	0.003	9367
Sec. residence	0.068	7899	0.072	1468	-0.004	0.003	9367
Vacant residence	0.069	7899	0.071	1468	-0.002*	0.001	9367
Homeowners	0.684	7899	0.535	1468	0.149***	0.004	9367
Tenants	0.232	7899	0.321	1468	-0.088***	0.003	9367
HLM	0.063	7899	0.124	1468	-0.061***	0.002	9367
SPC							
Farmers	0.013	7899	0.005	1468	0.008***	0.000	9367
Craftsmen/Shopkeepers	0.039	7899	0.034	1468	0.005***	0.000	9367
Liberal prof./managers	0.068	7899	0.075	1468	-0.007***	0.001	9367
Intermediary professions	0.141	7899	0.138	1468	0.003**	0.001	9367
Employees	0.164	7899	0.168	1468	-0.005***	0.001	9367
Blue-collar workers	0.151	7899	0.140	1468	0.010***	0.001	9367
Retired	0.289	7899	0.283	1468	0.006***	0.002	9367
Other	0.135	7899	0.155	1468	-0.020***	0.001	9367
Population: Age							
0-14	0.192	7899	0.185	1468	0.007***	0.001	9367
15-29	0.151	7899	0.172	1468	-0.021***	0.001	9367
30-44	0.199	7899	0.193	1468	0.006***	0.001	9367
45-59	0.212	7899	0.203	1468	0.009***	0.001	9367
60-74	0.153	7899	0.150	1468	0.003***	0.001	9367
75+	0.093	7899	0.097	1468	-0.005***	0.001	9367
Economics							
Unemployment	0.113	7899	0.150	1468	-0.037***	0.002	9367
Median income	20916.08	8047	20247.53	1518	668.553***	106.826	9565
Education							
No degree	0.163	7899	0.182	1468	-0.019***	0.002	9367
CEP	0.117	7899	0.108	1468	0.009***	0.001	9367
BEPC	0.060	7899	0.064	1468	-0.004***	0.000	9367
CAP-BEP	0.276	7899	0.251	1468	0.025***	0.001	9367
BAC	0.164	7899	0.163	1468	0.001	0.001	9367
BAC+2	0.125	7899	0.120	1468	0.004***	0.001	9367
$>$ BAC+2	0.095	7899	0.111	1468	-0.016***	0.002	9367

Data: French census (Year 2011)

Table 15: T-tests (RNE): Degree of toxicity

	Low risk	N1	High risk	N2	Diff.	Std. Error	Obs.
Gender & Age							
Male	0.891	736	0.892	732	-0.001	0.016	1468
Age	59.045	692	59.376	689	-0.331	0.438	1381
Socio-professional category							
Agriculture	0.020	736	0.015	732	0.005	0.007	1468
Industry/Trade	0.049	736	0.051	732	-0.002	0.011	1468
Private-sector	0.132	736	0.116	732	0.016	0.017	1468
Liberal	0.114	736	0.105	732	0.009	0.016	1468
Teaching	0.069	736	0.087	732	-0.018	0.014	1468
Official	0.079	736	0.067	732	0.012	0.014	1468
Public-sector	0.026	736	0.031	732	-0.006	0.009	1468
Various	0.087	736	0.100	732	-0.013	0.015	1468
Retired	0.424	736	0.428	732	-0.004	0.026	1468
Political party							
Extreme-right	0.000	736	0.000	732	0.000	0.000	1468
Moderate-Right	0.470	736	0.436	732	0.034	0.026	1468
Center	0.034	736	0.064	732	-0.030***	0.011	1468
Moderate-Left	0.424	736	0.406	732	0.018	0.026	1468
Extreme-left	0.046	736	0.079	732	-0.033***	0.013	1468
Diverse	0.014	736	0.011	732	0.003	0.006	1468
Separatist	0.001	736	0.000	732	0.001	0.001	1468

Data: Registre National des Elus (Year 2013)

Table 16: T-tests (Census): Degree of toxicity

	Low risk	N1	High risk	N2	Diff.	Std. Error	Obs.
Housing							
Main residence	0.859	736	0.855	732	0.004	0.008	1468
Sec. residence	0.069	736	0.075	732	-0.006	0.008	1468
Vacant residence	0.072	736	0.069	732	0.003	0.002	1468
Homeowners	0.544	736	0.526	732	0.018**	0.009	1468
Tenants	0.318	736	0.323	732	-0.005	0.005	1468
HLM	0.118	736	0.130	732	-0.011***	0.004	1468
Socio-professional category							
Farmers	0.006	736	0.005	732	0.001***	0.000	1468
Craftsmen Shopkeepers Heads	0.034	736	0.035	732	-0.001	0.001	1468
Liberal prof./managers	0.074	736	0.076	732	-0.002	0.003	1468
Intermediary professions	0.137	736	0.139	732	-0.001	0.002	1468
Employees	0.166	736	0.170	732	-0.004**	0.002	1468
Blue-collar workers	0.142	736	0.139	732	0.003	0.003	1468
Retired	0.288	736	0.279	732	0.008**	0.004	1468
Other	0.153	736	0.158	732	-0.005**	0.002	1468
Population: Age							
0-14	0.184	736	0.186	732	-0.002	0.002	1468
15-29	0.172	736	0.172	732	-0.001	0.002	1468
30-44	0.192	736	0.194	732	-0.002	0.001	1468
45-59	0.203	736	0.204	732	-0.001	0.001	1468
60-74	0.151	736	0.149	732	0.002	0.002	1468
75+	0.099	736	0.096	732	0.003	0.002	1468
Unemployment & Income							
Unemployment rate	0.148	736	0.152	732	-0.004	0.004	1468
Median income	20249.75	759	20245.31	759	4.437	211.996	1518
Education							
No degree	0.180	736	0.184	732	-0.004	0.004	1468
CEP	0.110	736	0.107	732	0.003	0.002	1468
BEPC	0.064	736	0.064	732	0.000	0.001	1468
CAP-BEP	0.253	736	0.250	732	0.003	0.003	1468
BAC	0.163	736	0.163	732	-0.001	0.001	1468
BAC+2	0.121	736	0.120	732	0.002	0.002	1468
$>$ BAC+2	0.109	736	0.112	732	-0.003	0.004	1468

Data: French census (Year 2011)

Table 17: T-tests (Budgetary outcomes per capita): No toxic loans / Toxic loans

	No tox. loans	N1	Tox. loans	N2	Diff.	Std. Error	Obs.
Operating account							
Operating revenues	895.911	7894	1343.438	1465	-447.527***	16.498	9359
Local taxation	365.330	7894	562.058	1465	-196.728***	8.729	9359
Operating expenses	737.419	7894	1183.056	1465	-445.637***	14.159	9359
Investment account							
Investment revenues	440.119	7894	531.325	1465	-91.206***	10.862	9359
Investment expend.	458.739	7894	552.444	1465	-93.705***	11.884	9359
Capital expend.	364.011	7894	401.816	1465	-37.805***	10.299	9359
Overall budget result	139.818	7894	139.683	1465	0.135	7.468	9359
Debt							
Debt stock	682.840	7894	1263.979	1465	-581.139***	21.254	9359
Debt repayment + interests	92.900	7894	152.410	1465	-59.509***	3.066	9359
Population							
Population	3391.394	8042	15405.88	1514	-12014.48***	366.7578	9556

Data: Municipalities' account - DGFIP (Year 2013)

Table 18: T-tests (Budgetary outcomes per capita): Degree of toxicity

	Low risk	N1	High risk	N2	Diff.	Std. Error	Obs.
Operating account							
Operating revenues	1265.693	734	1421.501	731	-155.808***	50.346	1465
Local taxation	533.482	734	590.752	731	-57.271**	24.626	1465
Operating expenses	1105.345	734	1261.086	731	-155.742***	42.779	1465
Investment account							
Investment revenues	515.560	734	547.154	731	-31.594	26.115	1465
Investment expend.	534.820	734	570.139	731	-35.319	27.601	1465
Capital expend.	387.998	734	415.690	731	-27.691	22.551	1465
Overall budget result	141.410	734	137.950	731	3.460	12.897	1465
Debt							
Debt stock	1073.945	734	1454.793	731	-380.848***	66.632	1465
Debt repayment + interests	140.885	734	163.981	731	-23.096***	8.445	1465
Population							
Population	14810.73	757	16001.03	1514	-1190.303	1323.963	1514

Data: Municipalities' account - DGFIP (Year 2013)

Table 19: T-tests (Budgetary outcomes - Change between 2008 and 2013): No toxic loans/ Toxic loans

	No tox. loans	N1	Tox loans	N2	Diff.	Std. Error	Obs.
Δ in operating account							
Operating revenues	0.084	8040	0.090	1509	-0.007	0.005	9549
Local taxation	0.194	8038	0.197	1509	-0.003	0.009	9547
Operating expenses	0.097	8040	0.078	1509	0.018***	0.006	9549
Δ in investment account							
Investment revenues	0.489	8037	0.154	1509	0.335***	0.075	9546
Investment expend.	0.489	8040	0.198	1509	0.291***	0.047	9549
Capital expend.	0.884	8036	0.376	1509	0.508***	0.099	9545
Overall budget result	-0.212	8020	-0.524	1508	0.311	0.737	9528
Δ in debt							
Debt stock	2.022	7938	0.033	1509	1.988**	0.980	9447
Debt repayment + interests	0.284	7821	0.039	1507	0.246**	0.123	9328
Population							
Population	0.079	8040	0.042	1509	0.037	0.003	9549

Data: Municipalities' account - DGFIP (Variation between 2008 and 2013)

Table 20: T-tests (Budgetary outcomes - Change between 2008 and 2013): Degree of toxicity

	Low risk	N1	High risk	N2	Diff.	Std. Error	Obs.
Δ in operating account							
Operating revenues	0.091	732	0.089	729	0.001	0.008	1461
Local taxation	0.186	732	0.208	729	-0.022	0.016	1461
Operating expenses	0.078	732	0.078	729	0.000	0.008	1461
Δ in investment account							
Investment revenues	0.195	732	0.114	729	0.081*	0.048	1461
Investment expend.	0.246	732	0.150	729	0.096**	0.044	1461
Capital expend.	0.416	732	0.330	729	0.085	0.072	1461
Overall budget result	1.184	732	-2.222	728	3.407	2.660	1460
Δ in debt							
Debt stock	0.034	732	0.030	729	0.004	0.025	1461
Debt repayment + interests	0.033	731	0.047	728	-0.014	0.027	1459
Population							
Population	0.043	755	0.041	754	0.002	0.005	1509

Data: Municipalities' account - DGFIP (Variation between 2008 and 2013)

Table 21: Number of loans and municipalities concerned for each financial asset

	UNDERLYING ASSETS	PREVALENCE		SHARES
INFLATION	INFLATION France	Nb of loans	15	0,51
		Nb of municipalities	15	0,94
	INFLATION EURO	Nb of loans	7	0,24
		Nb of municipalities	5	0,32
	INFLATION France-INFLATION EURO	Nb of loans	11	0,37
		Nb of municipalities	11	0,69
	INFLATION US	Nb of loans	3	0,1
		Nb of municipalities	3	0,19
INTERBANK OFF. RATE	EURIBOR	Nb of loans	1676	57,10
		Nb of municipalities	1182	74,5
	EURIBOR-TEC 10	Nb of loans	24	0,82
		Nb of municipalities	23	1,45
	LIBOR CHF	Nb of loans	10	0,34
		Nb of municipalities	10	0,63
	LIBOR USD	Nb of loans	231	7,87
		Nb of municipalities	199	12,54
	STIBOR SEK	Nb of loans	12	0,40
		Nb of municipalities	12	0,76
	WIBOR PLN	Nb of loans	1	0,03
		Nb of municipalities	1	0,06
EXCHANGE RATE	EUR CHF	Nb of loans	222	7,56
		Nb of municipalities	203	12,80
	EUR GBP	Nb of loans	9	0,31
		Nb of municipalities	9	0,57
	EUR USD	Nb of loans	1	0,03
		Nb of municipalities	1	0,06
	EUR USD-EUR CHF	Nb of loans	32	1,11
		Nb of municipalities	32	2,02
	GBP CHF	Nb of loans	1	0,03
		Nb of municipalities	1	0,06
	USD CHF	Nb of loans	30	1,02
		Nb of municipalities	30	1,89
	USD JPY	Nb of loans	38	1,29
		Nb of municipalities	32	2,01
CMS spread	CMS EUR 30-CMS EUR 2	Nb of loans	426	14,51
		Nb of municipalities	389	24,53
	CMS GBP 10-CMS GBP 2	Nb of loans	67	2,28
		Nb of municipalities	66	4,16
	CMS GBP 10-CMS EUR 10	Nb of loans	70	2,38
		Nb of municipalities	69	4,35
	CMS EUR 10-CMS EUR 2	Nb of loans	5	0,17
		Nb of municipalities	5	0,32
	CMS GBP 10-CMS CHF 10	Nb of loans	4	0,14
		Nb of municipalities	4	0,25
	-CMS EUR 30	Nb of loans	3	0,1
		Nb of municipalities	3	0,19

Appendix 2 - Instrumental Variable: Robustness Checks

Table 22: Candidate Entry : Reduced Form

	Nb. cand	$\mathbb{1}_{Incumbent}$	X list	FN list	X-Left list
	(1)	(2)	(3)	(4)	(5)
Log(DistCLF)	-.049***	.002	-.014***	-.009**	-.003
	(.016)	(.008)	(.005)	(.004)	(.004)
Controls	Y	Y	Y	Y	Y
e(N)	8933	8933	8933	8933	8933
e(r2)	.438	.162	.346	.251	.334

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 23: First Stage Sensitivity Analysis

	$\mathbb{1}_{Toxic}$	$\mathbb{1}_{Toxic}$	$\mathbb{1}_{Toxic}$	$\mathbb{1}_{Toxic}$
	(1)	(2)	(3)	(4)
Log(DistCLF)	-.179***	-.154***	-.150***	-.151***
	(.027)	(.033)	(.035)	(.035)
Population	N	Y	Y	Y
Municipality Type	N	Y	Y	Y
Municipal Budget	N	Y	Y	Y
Population Char.	N	N	Y	Y
Incumbent Char.	N	N	N	Y
e(N)	9227	8951	8951	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 24: IV Sensitivity Analysis - Number of Candidacies

	Nb. Cand	Nb. Cand	Nb. Cand
	(1)	(2)	(3)
$\mathbb{1}_{Toxic}$	.844***	.778***	.738***
	(.208)	(.152)	(.146)
Population	Y	Y	Y
Municipality Type	Y	Y	Y
Municipal Budget	Y	Y	Y
Population Char.	N	Y	Y
Incumbent Char.	N	N	Y
e(N)	8951	8951	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 25: IV Sensitivity Analysis - Incumbent as Candidate

	$\mathbb{1}_{Incumbent}$	$\mathbb{1}_{Incumbent}$	$\mathbb{1}_{Incumbent}$
	(1)	(2)	(3)
$\mathbb{1}_{Toxic}$	.017	.031	-.037
	(.063)	(.059)	(.054)
Population	Y	Y	Y
Municipality Type	Y	Y	Y
Municipal Budget	Y	Y	Y
Population Char.	N	Y	Y
Incumbent Char.	N	N	Y
e(N)	8951	8951	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 26: IV Sensitivity Analysis - Extreme List

	X List	X List	X List
	(1)	(2)	(3)
$\mathbb{1}_{Toxic}$	.295***	.267***	.238***
	(.073)	(.052)	(.049)
Population	Y	Y	Y
Municipality Type	Y	Y	Y
Municipal Budget	Y	Y	Y
Population Char.	N	Y	Y
Incumbent Char.	N	N	Y
e(N)	8951	8951	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 27: IV Sensitivity Analysis - *Front National* list

	FN List	FN List	FN List
	(1)	(2)	(3)
$\mathbb{1}_{Toxic}$	.166***	.159***	.138***
	(.051)	(.040)	(.037)
Population	Y	Y	Y
Municipality Type	Y	Y	Y
Municipal Budget	Y	Y	Y
Population Char.	N	Y	Y
Incumbent Char.	N	N	Y
e(N)	8951	8951	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 28: IV Sensitivity Analysis - Extreme-left List

	X-Left List	X-Left List	X-Left List
	(1)	(2)	(3)
$\mathbb{1}_{Toxic}$	.238***	.205***	.186***
	(.058)	(.042)	(.040)
Population	Y	Y	Y
Municipality Type	Y	Y	Y
Municipal Budget	Y	Y	Y
Population Char.	N	Y	Y
Incumbent Char.	N	N	Y
e(N)	8951	8951	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Appendix 3 - The role of information: Access to the Internet and Layout of the *Libération* map

Since the treatment is based on information released through an online map, its effect on the political arena might be channeled through both the accessibility of this map and its specific features. In this section, we explore two particular mechanisms which might play a role.

First, we test whether treatment effects were different in municipalities with weak access to high-speed Internet connection compared to others. Our hypothesis is that in such municipalities, the revelation about toxic loans was likely to be discovered by less citizens, thus weakening the incentives for extreme lists to enter. Since we do not observe the speed of Internet connection at the municipality level in 2011, we proxy the quality of Internet access in 2011 by the share of premises eligible to an Internet speed of at least 3Mb/s in 2016. Such an Internet speed represented the average Internet speed in France in 2011[44] and can be therefore considered as low by the standards of 2016 (where the average Internet speed was of about 10Mb/s). A municipality with high shares of premises ineligible to such a speed in 2016 was thus likely to have slow Internet connection in 2011. In Table 29, we interact the presence of toxic loan(s) with this measure of Internet quality. Overall, while we find that toxic loans have a positive effect on the entry of extreme lists in municipalities with low Internet connection, we do find that this effect is larger when Internet quality increases. However, this interaction effect is only weakly significant for the entry of *Front National* lists and not significant for the entry of far-left lists. This suggests that the *Front National* may be slightly more likely to enter where the information is easily accessible and shared within the whole population.[45]

Our second test about the role of information concerns the layout of the *Libération* map itself. Municipalities with toxic loan(s) were represented by dots of different colors depending on the amount of the overhead ratio: green for a few negative ones, yellow for ratios between 0% and 10%, orange for ratios between 10% and 20%, red for ratios between 20% and 50%, and brown for ratios above 50%. While we do not find any effect of the overhead ratio, it might have been that the color of the dot influenced *per se* the entry decision of politicians (especially since the overhead ratios were available only after clicking on the dots). To test this hypothesis, we run Regression Discontinuity Designs where our treatment is the discontinuous change of color around the two most important thresholds of the overall overhead ratio: 10% (from yellow to orange) and 20% (from orange to red). Figures 5 and 6 show graphically how the main outcome variables vary respectively at the 10% and 20% thresholds of the overhead ratio. We

[44] According to a study from Akamai technology. Data on access to high-speed Internet connection at the municipal level were provided by the *Observatoire France Très Haut Débit*.
Source: *https://fr.statista.com/statistiques/472220/vitesse-de-connexion-internet-france/*

[45] Coefficients for the interaction between the dummy variable *"having toxic loan(s)"* and the Internet quality are large. However, it is only due to the fact that the share of premises eligible to an Internet speed of at least 3Mb/s ranges from 0 to 1 and thus is not expressed in percentage.

Table 29: IV Regressions: Candidate entry and the information channel

	Nb. cand.	X cand.	FN cand.	X-Left cand.	$\mathbb{1}_{Incumbent}$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	.673***	.218***	.124***	.175***	-.044
	(.148)	(.048)	(.037)	(.040)	(.055)
Share 3Mb+	-.085**	-.015	-.005	-.011	-.034
	(.041)	(.010)	(.007)	(.008)	(.024)
$\mathbb{1}_{Toxic}$ x Share 3Mb+	.659	.241*	.190*	.120	.035
	(.479)	(.137)	(.114)	(.121)	(.155)
Controls	Y	Y	Y	Y	Y
e(N)	8917	8917	8917	8917	8917

Data on internet access were given by the Open data observatory but were only available for 2016. However, it seems plausible that areas for which internet speed was sufficiently high in 2016 were also covered in 2011.
Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, median income, winsorized employment rate and change in median income and in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also control for winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: capital expenditure, local taxation, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included, and robust standard errors are presented in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

graphically find no evidence of discontinuous variations of the number of candidacies, the entry of extreme lists and the presence of the incumbent, neither at the 10% nor at the 20% threshold.[46] We confirm this absence of effect in Table 30, where we estimate the discontinuity of the outcome variables at both thresholds, following optimal bandwidth computation developed by Calonico et al. (2014) and using a fourth-order polynom and a triangular kernel.

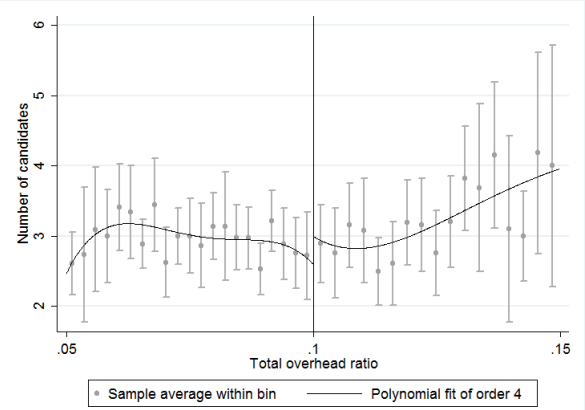
Table 30: Regression Discontinuity Design: Color of the dots

	(1)	(2)	(3)	(4)	(5)
10% Threshold	Nb. cand.	X list	FN list	X-Left list	$\mathbb{1}_{Incumbent}$
10% Threshold - Yellow to Orange	0.288	-0.111	-0.021	-0.146	0.240
	(0.452)	(0.153)	(0.124)	(0.125)	(0.148)
Bandwidth	0.073	0.060	0.061	0.062	0.061
N (Left)	789	726	731	736	735
N (Right)	430	391	396	397	396
	(1)	(2)	(3)	(4)	(5)
20% Threshold	Nb. cand.	X list	FN list	X-Left list	$\mathbb{1}_{Incumbent}$
20% Threshold - Orange to Red	0.683	0.158	-0.032	0.306	-0.314
	(0.943)	(0.272)	(0.257)	(0.261)	(0.213)
Bandwidth	0.127	0.130	0.144	0.122	0.111
N (Left)	875	921	1068	806	630
N (Right)	130	130	142	128	121

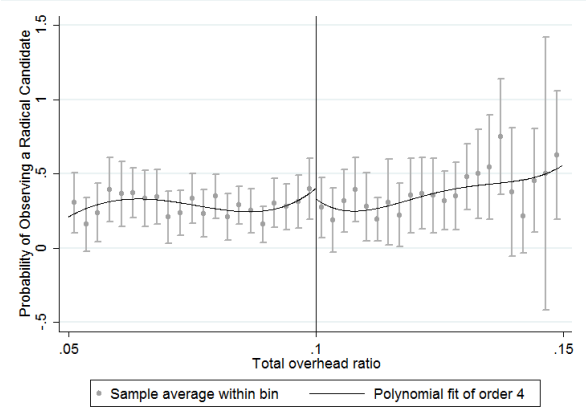
The table presents the results of an RD estimation with an optimal bandwidth calculated using the Calonico et al. (2014). We employ a triangular kernel and control for an order-four polynom of the overhead ratio.
Robust standard error.
* p<0.1, ** p<0.05, *** p<0.01

[46] Our graphical results suggest as well the absence of clear trends of these outcome variables depending on the overhead ratio.

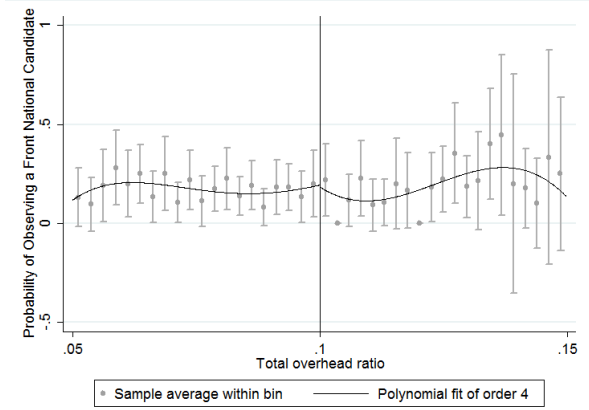
Figure 5: Regression Discontinuity Design: 10% threshold of the overhead ratio (Yellow to Orange)



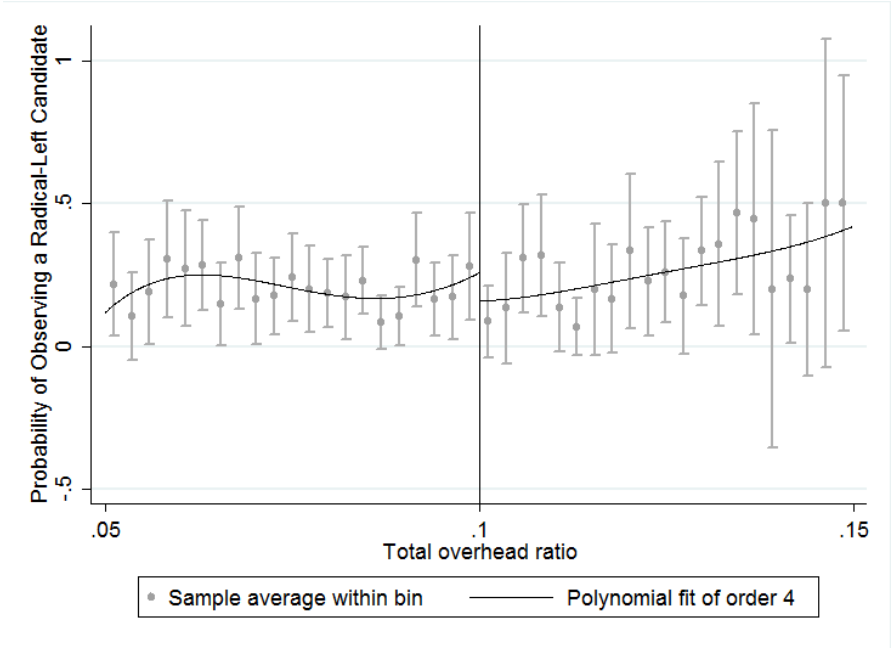
Number of candidacies



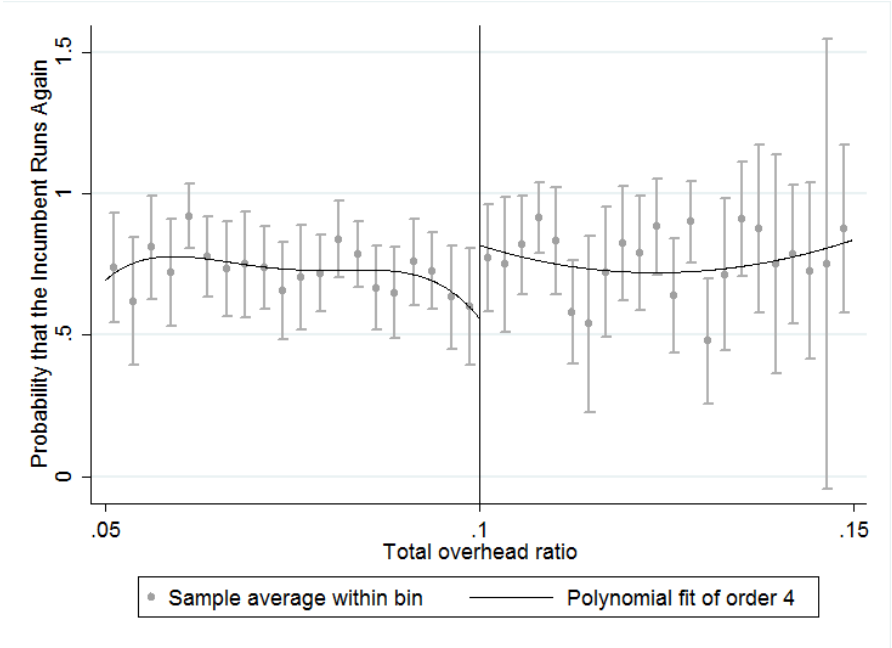
Extreme List



FN List

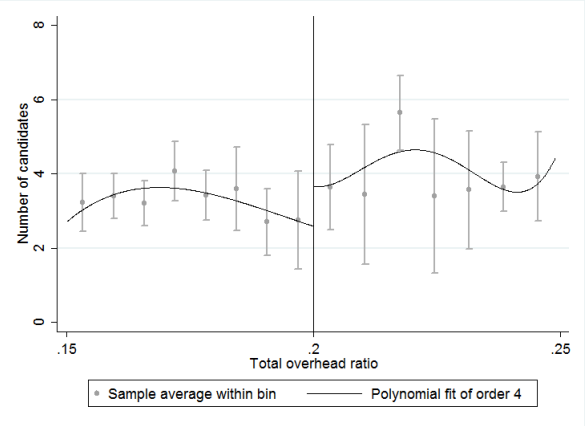


Extreme-Left List

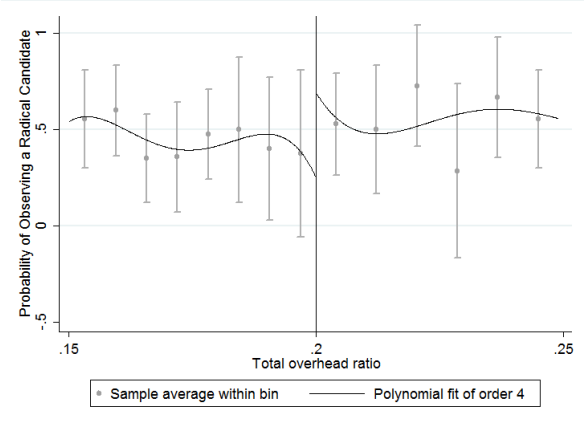


Incumbent Candidacy

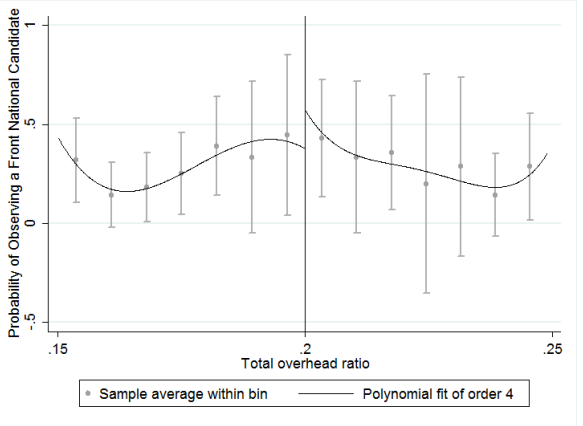
Figure 6: Regression Discontinuity Design: 20% threshold of the overhead ratio (Orange to Red)



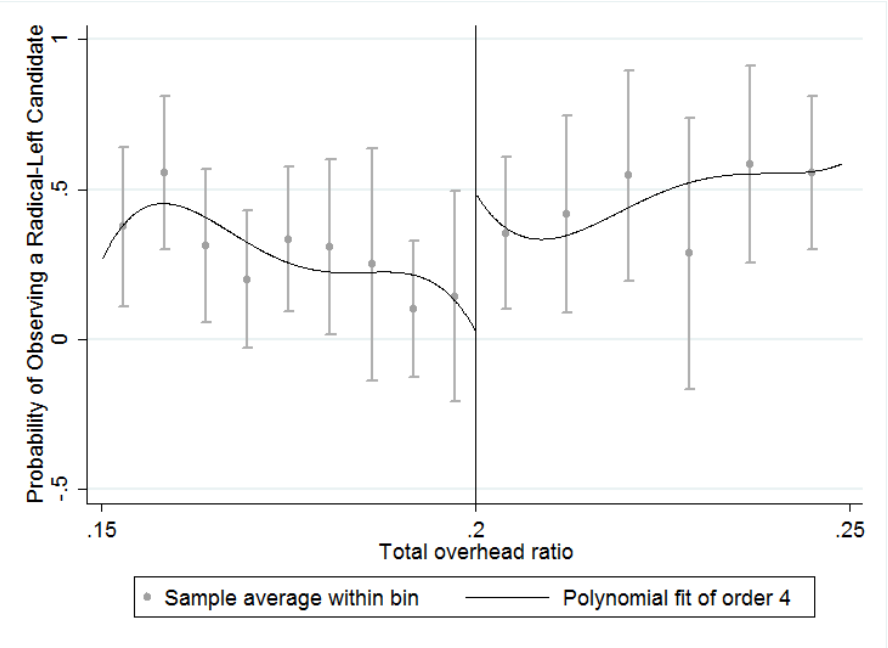
Number of candidacies



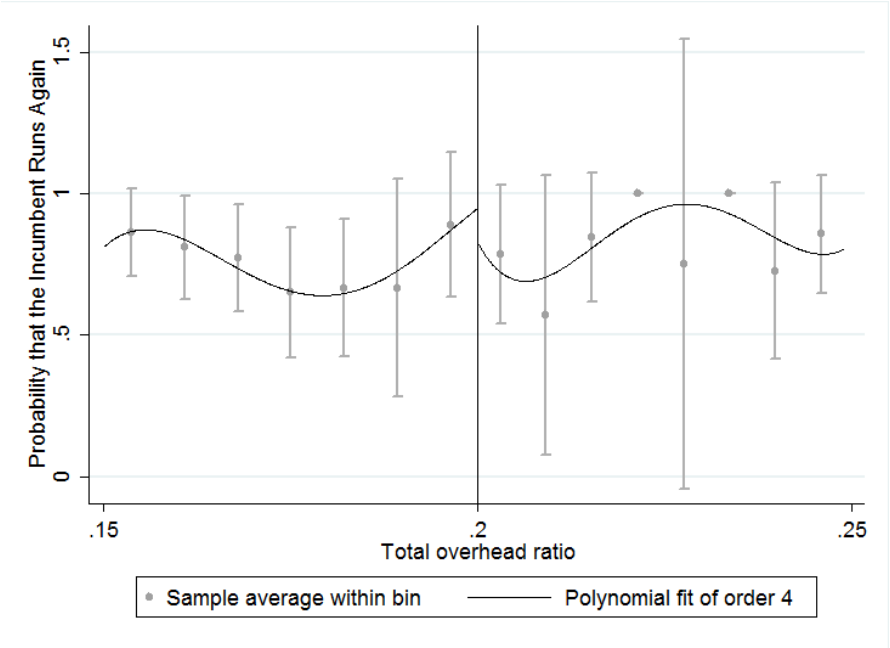
Extreme List



FN List



Extreme-Left List



Incumbent Candidacy

Appendix 4 - The role of incumbent's characteristics: accountability and gender

Here, we test whether treatment effect differs upon the characteristics of the mayor. More specifically, we investigate the roles of accountability and gender of the incumbent.

First of all, we test whether incumbent mayors responsible for contracting face tougher electoral competition than those who were not. To answer this question, we focus on loans taken between the municipal elections of 2001 and 2008 (which account for 56% of all toxic loans), and compare them with municipalities with no toxic loans at all. The treatment variable then becomes the fact of having contracted toxic loan(s) between 2001 and 2008, as opposed to not having contracted toxic loan(s). We interact this variable with a dummy variable indicating whether the incumbent of the 2014 election was in office between 2001 and 2008. The results are summarized in Table 31. Overall, while we find similar effects as the ones measured in our main estimation among incumbent who were not accountable (i.e. who were in office between 2008 and 2014 but not between 2001 and 2008), we do not find significant differences of this effect among mayors who could be held accountable (i.e. who were in office between 2008 and 2014 and between 2001 and 2008). However, this effect does not reflect a pure accountability mechanism. As it compares incumbents in their first term to incumbents with at least two terms, it also includes the impact of experience or of popularity. Therefore, one potential explanation for this absence of heterogeneity is that accountable mayors - who were also more experienced - were also more effective in addressing the issues arising from toxic loans, for example by trying to break the contract in court. Thus it may have counterbalanced the potential negative effect of being effectively accountable. Due to data availability, this hypothesis is however hard to assess empirically in our setting.

Table 31: IV Regressions: Candidate entry and accountability

	Nb. cand.	X list	FN list	X-Left list	$\mathbb{1}_{Incumbent}$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	1.222***	.260***	.123*	.209***	-.027
	(.272)	(.085)	(.065)	(.073)	(.099)
$\mathbb{1}_{Reelected}$	-.091***	-.002	-.002	-.005	-.039***
	(.025)	(.007)	(.005)	(.006)	(.013)
$\mathbb{1}_{Toxic}$ x $\mathbb{1}_{Reelected}$	-.413*	.028	.017	.073	.017
	(.247)	(.076)	(.065)	(.065)	(.078)
Controls	Y	Y	Y	Y	Y
e(N)	8334	8334	8334	8334	8334

Here we focus on a sub-sample of municipalities, i.e. municipalities which took loans only between 2001 and 2008 or which did not over the entire period (1996-2011).
Control variables: For population characteristics, we use the 2011 French Census data. We control for socio-professional categories, age distribution, level of education, housing, status of municipality, median income, winsorized employment rate and change in median income and in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: capital expenditure, local taxation, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Last but not least, fixed effects at the county level are also included and standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Moreover, we test whether variations due to toxic loans in number of candidacies or entry differ depending on the gender of the incumbent. The results presented in Table 32 show that this is not the case. The rise in number of candidacies or the increased entry of extreme lists was not different in municipalities ran by a man or a woman.

Table 32: IV Regressions: Electoral supply and heterogeneous effects (Gender)

	Nb. cand.	X list	FN list	X-Left list	$\mathbb{1}_{Incumbent}$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	.738***	.238***	.138***	.186***	-.037
	(.146)	(.049)	(.037)	(.040)	(.054)
Female Mayor	.137***	-.010	-.003	-.007	-.083***
	(.033)	(.008)	(.005)	(.007)	(.019)
$\mathbb{1}_{Toxic}$ x Female Mayor	-.017	.029	.014	.025	.052
	(.196)	(.066)	(.055)	(.060)	(.067)
Controls	Y	Y	Y	Y	Y
e(N)	8917	8917	8917	8917	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for socio-professional categories, age distribution, level of education, housing, status of municipality, median income, winsorized employment rate and change in median income and in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also control for winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: capital expenditure, local taxation, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included, and robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Appendix 5 - Additional Figures

Figure 7: Share of emitted contracts in municipalities within the *CLF* capital

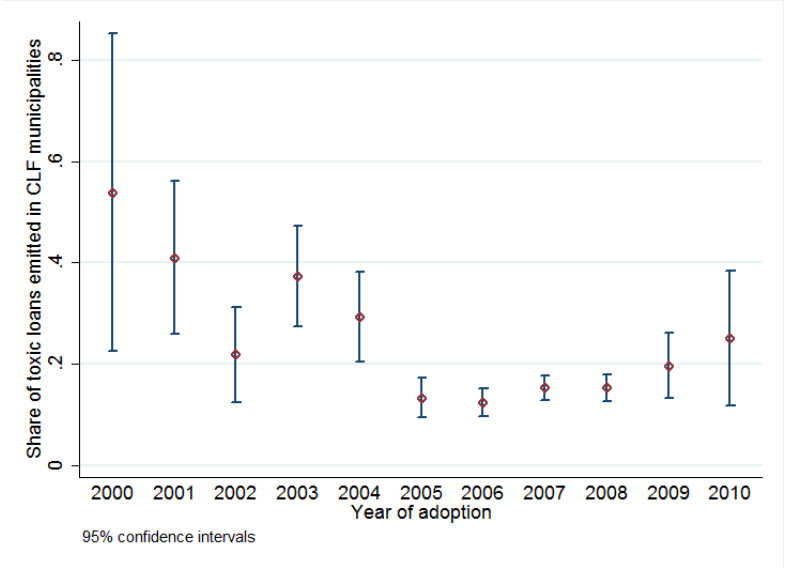
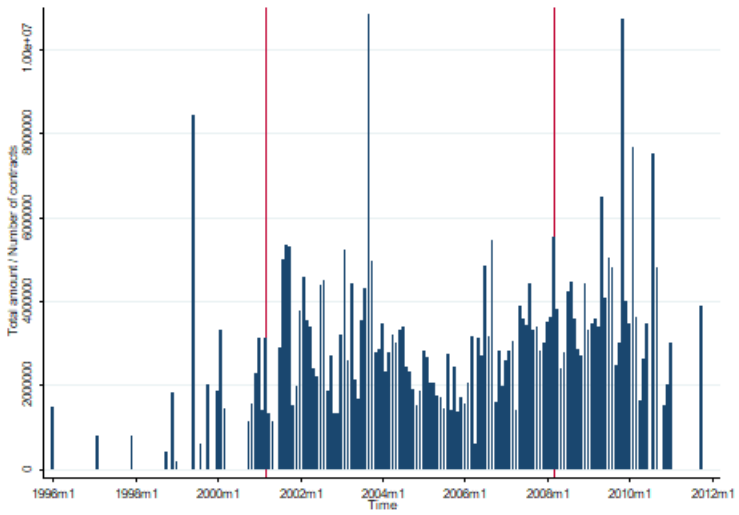


Figure 8: Average amount per contract over time



Appendix 6 - Additional Tables

Table 33: IV Regressions: Electoral entry (Moderate-Left and Moderate-Right)

	Left list (OLS)	Left list (IV)	Right list (OLS)	Right list (IV)
	(1)	(2)	(3)	(4)
$\mathbb{1}_{Toxic}$	.065***	.082*	.058***	.062
	(.013)	(.049)	(.014)	(.052)
Controls	Y	Y	Y	Y
e(N)	8933	8917	8933	8917
e(r2)	.407	.406	.314	.314

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses. P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 34: IV Regressions: Electoral entry and heterogeneous effects (Unemployment rate, Local taxation, Capital expenditure)

	Nb. cand.	X list	FN list	X-Left list	$\mathbb{1}_{Incumb.}$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	.537***	.127***	.034	.133***	.029
	(.143)	(.045)	(.035)	(.039)	(.058)
Unemployment Rate	1.681***	.316**	.051	.194*	.501**
	(.440)	(.132)	(.097)	(.112)	(.226)
$\mathbb{1}_{Toxic}$ x Unemployment Rate	2.329**	1.224***	1.449***	.517	-.409
	(1.051)	(.345)	(.291)	(.319)	(.385)
Local Taxes	.0004***	.00005*	.00004*	5.45e-06	.00008
	(.00009)	(.00003)	(.00002)	(.00002)	(.00005)
$\mathbb{1}_{Toxic}$ x Local Taxes	.0005	.0003**	.0002*	.0001	-.0002
	(.0004)	(.0001)	(.0001)	(.0001)	(.0001)
Capital Expenditure	-.0001***	1.81e-06	-6.64e-06	1.00e-05	.00003
	(.00004)	(1.00e-05)	(7.72e-06)	(8.87e-06)	(.00002)
Local Taxes x Capital Expend.	-.0001	-.00004	-.00004	-7.20e-06	7.55e-08
	(.0002)	(.00007)	(.00006)	(.00006)	(.00009)
Controls	Y	Y	Y	Y	Y
e(N)	8917	8917	8917	8917	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses. P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 35: IV Regressions: Electoral entry and heterogeneous effects (Annual repayments)

	Nb. cand.	X list	FN list	X-Left list	$\mathbb{1}_{Incumb.}$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	.658***	.242***	.129***	.201***	-.045
	(.145)	(.048)	(.038)	(.041)	(.055)
Annual repayments	-.0002	.00003	.00003	2.51e-06	.0001
	(.0002)	(.00006)	(.00005)	(.00004)	(.0001)
$\mathbb{1}_{Toxic}$ x Annual repayments	.0007	-.0001	.00002	-.0002	.00006
	(.0008)	(.0002)	(.0002)	(.0002)	(.0003)
Annual repayment Growth Rate	.004	.002	.002	.002	.0007
	(.009)	(.002)	(.002)	(.002)	(.005)
$\mathbb{1}_{Toxic}$ x Annual repayment Growth Rate	-.151	-.041	-.055*	-.018	-.022
	(.122)	(.036)	(.032)	(.032)	(.065)
Controls	Y	Y	Y	Y	Y
e(N)	8917	8917	8917	8917	8917

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 36: IV Regressions: Electoral entry and continuous treatment (Overhead debt ratio)

	Nb. cand.	X list	FN list	X-Left list	$\mathbb{1}_{Incumbent}$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}_{Toxic}$	.946***	.262***	.154***	.212***	.002
	(.142)	(.041)	(.031)	(.035)	(.074)
$\mathbb{1}_{Toxic}$ x Overhead Debt Ratio	-.380***	-.039	-.017	-.050	-.070
	(.124)	(.036)	(.027)	(.031)	(.065)
Controls	Y	Y	Y	Y	Y
e(N)	8921	8921	8921	8921	8921
e(F)	39.757	26.991	17.584	25.469	10.234

The overhead debt ratio is the total overhead (due to the increased in the interest rate) divided by annual repayments. This variable (i.e. the intensity of treatment) is instrumented by the presence of structured loan(s) based on the Swiss Franc exchange rate. Note that the the overhead debt ratio is winsorized at the 1% and 99% level. Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 37: IV Regressions: Electoral Results (Median income, Local taxation and capital expenditure)

	Abst.	Share Inc. Orient.
	(1)	(2)
$\mathbb{1}_{Toxic}$	.009	-11.767***
	(.009)	(4.348)
Median Income	.004***	.836**
	(.0007)	(.343)
$\mathbb{1}_{Toxic}$ x Median Income	-.002**	1.046**
	(.0008)	(.445)
Local Taxes	-8.14e-07	-.0003
	(8.18e-06)	(.004)
$\mathbb{1}_{Toxic}$ x Local Taxes	1.00e-05	-.001
	(.00002)	(.011)
Capital Expenditure	7.98e-07	.006***
	(4.12e-06)	(.002)
$\mathbb{1}_{Toxic}$ x Capital Expend.	-.00003**	-.0002
	(1.00e-05)	(.007)
Controls	Y	Y
e(N)	8917	7828

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 38: IV Regressions: Electoral Results - Continuous treatment (Overhead ratio and Overhead Debt Ratio)

	Abst.	Abst.	Sh. I's po. orient.	Sh. I's po. orient.
	(1)	(2)	(3)	(4)
$\mathbb{1}_{Toxic}$	.006	.006	-15.804**	-14.759**
	(.013)	(.012)	(6.523)	(5.904)
$\mathbb{1}_{Toxic}$ x Overhead Ratio	.048		27.888	
	(.050)		(24.775)	
$\mathbb{1}_{Toxic}$ x Overhead Debt Ratio		.011		5.085
		(.010)		(5.087)
Controls	Y	Y	Y	Y
e(N)	8921	8921	7851	7851

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 39: IV Regressions: Electoral Results (ADSL)

	Abst.	Share Inc. Orient.
	(1)	(2)
$\mathbb{1}_{Toxic}$	.015*	-13.429***
	(.009)	(4.321)
Share 3Mb+	.013***	1.029
	(.004)	(2.089)
$\mathbb{1}_{Toxic}$ x Share 3Mb+	-.016	7.277
	(.026)	(11.576)
Controls	Y	Y
e(N)	8917	7828

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 40: IV Regressions: Electoral Results (Gender)

	Abst.	Sh. I's po orient.
	(1)	(2)
$\mathbb{1}_{Toxic}$	.013	-13.103***
	(.009)	(4.247)
Former female mayor	-.006**	-3.537**
	(.003)	(1.560)
$\mathbb{1}_{Toxic}$ x Former female mayor	-.002	3.184
	(.009)	(4.696)
Controls	Y	Y
e(N)	8917	7828

Control variables: For population characteristics, we use the 2011 French Census data. We control for population, socio-professional categories, age distribution, level of education, housing, status of municipality, winsorized unemployment rate, median income and change in median income and change in winsorized employment rate between 2008 and 2013. Thanks to the DGFiP, we also include winsorized budgetary variables at the level 1% and 99% and their changes between 2008 and 2013. Such variables are defined per inhabitants: local taxation, capital expenditure, debt stock, debt repayment plus interests and overall budget result. Thanks to the National Registry of Representatives, incumbent characteristics are also taken into account such as gender, socio-professional category and political party. Fixed effects at the county level are included. Robust standard errors are indicated in parentheses.
P-values: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$