The Political Economy of Financial Innovation: Evidence from Local Governments

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Abstract

We present an empirical investigation of the political economy of financial innovation. Our findings show that financial innovation can amplify principal-agent problems within the political system. The adoption of structured loans, a high-risk type of borrowing for local governments, is more frequent for politicians from highly indebted local government, from politically contested areas, and during political campaigns. We also show that using structured loans helps incumbents get re-elected, and allows them to maintain lower taxes. Conversely, structured loan usage is hard to empirically reconcile with politicians' *ex post* claim that they do not understand the transactions.

Keywords: Financial innovation, Political Economy, Principal-agent problem, Structured debt

JEL codes: P16, H74, G11, G32

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"We are playing the dollar against the Swiss franc until 2042."
Cedric Grail, CEO of City of Saint Etienne, France (Business Week, 2010)

1 Introduction

The political economy of financial innovation arguably played an important role in the recent financial crisis (Zingales, 2015). Politicians' willingness to facilitate access to home-ownership might have fueled the mortgage-backed securities market (Rajan, 2010). To comply with Eurozone requirements, Greece entered into OTC swap transactions to hide a significant part of its debt. The role of political incentives in the development of innovative financial products remains, however, largely debated and difficult to identify empirically. The research question we address in this paper is whether financial innovation amplifies principal-agent problems in the political system. Because voters and politicians' interests do not necessarily align, agency costs frequently emerge in the political system. Innovative financial products might exacerbate these issues if they facilitate politicians' strategies.

To address this research question we exploit the recent development of an innovative form of borrowing by local governments: structured loans.[1] These loans have three defining features: a long maturity, a fixed/low interest rate for the initial period of the loan, and an adjustable rate that depends on the value of a given financial index (e.g., Libor, foreign exchange rate or swap rate spreads). When borrowing with the most popular type of structured loan, the so-called *Steepener*, a local government pays an interest rate such as:

Year 1-5: *2%*
Year 6-20: *2% if 10Y Swap Rate - 2Y Swap Rate* $\leq$ *1%*
10% - 8 $\times$ *(10Y Swap Rate - 2Y Swap Rate) otherwise*

These loans shift a large share of the borrower's immediate cost of debt to certain states of nature in the future, allowing budget relief for an initial period, which typically matches the politician's current term of office. Local government structured loans

[1] These loans embed derivatives, such as options. Designing asset or liability side financial products that embed options on a range of underlying financial assets is an innovation from the early 2000s.

represent an ideal laboratory for studying the political economy of financial innovation for three reasons: structured loans offer great flexibility to the borrowers in terms of cash-flow distribution across time and states of nature; these transactions are typically undisclosed to voters; and finally the large number of local governments using structured loans in France allow for a large sample empirical analysis.

The local government structured loan phenomenon has been observed in Europe, Asia, and, to a lesser extent, the US. In France alone, outstanding products represent more than EUR30 billion and bear unrealized losses exceeding EUR10 billion, or 0.5% of GDP (Cour des Comptes, 2011). During the recent financial crisis, as volatility spiked, the interest costs of structured loan users increased to double digit levels and may remain high for the remainder of their lifetimes.[2]

Using proprietary data from France, we provide empirical evidence consistent with politicians strategically using risky innovative financial products for their own interest. First, we document the extent to which politicians have been implementing these risky transactions: structured loans account for more than 20% of outstanding local government debt, and more than 72% of the 300 largest local governments use structured loans. Among these structured loans, 40% bear a significantly high level of risk.

Second, we show that the propensity, size, and timing of these transactions vary according to politicians' incentives. A cross-section of our data illustrates how politicians from highly indebted local governments are significantly more likely to turn to this type of loan, evidencing a higher incentive to hide the actual cost of debt. We provide additional evidence suggesting a causal link between the level of indebtedness and the local government's propensity to use structured debt by instrumenting the level of local government debt with floods, an arguably exogenous source of expenditures. We also find that incumbent politicians running in politically contested areas, as opposed to strongholds, are more inclined to use structured loans, which is consistent with them shifting cash-flows in the future to aid them in being re-elected in the short run. When comparing a treatment group that confronts elections during our sample period (municipalities and counties), to a control group that does not (regions, hospitals, and social housing entities), we find that structured loan transactions are more frequent during the political campaign than

[2]For instance, the City of Saint-Etienne saw the annual interest rate charged to one of its major loans increased from 4% to 24% in 2010, as the latter was indexed to the British pound/Swiss franc exchange rate (Business Week, 2010).

after the election.

Third, we explore the real effects of structured loan usage. By instrumenting the use of structured loans with the distance to the closest branch of the leading bank, we find that structured loan usage increases the likelihood for a politician to get re-elected. We also provide evidence suggesting that politicians using structured loans maintain lower local taxes, a political choice itself correlated with re-election.

Finally, our empirical evidence is hard to reconcile with other explanations for the development of the market: banks exploiting a potential lack of financial sophistication from politicians, and a hedging demand from local governments. First, controlling for local government size, politicians whose profession requires higher education are more inclined to use structured loans than politicians from a less educated background. Second, revenues of local governments do not correlate with the exposure provided by structured loans.

Our empirical analysis relies on two proprietary datasets that contain detailed information on structured loan usage in France. Our first dataset contains the entire debt portfolio for a sample of the 300 largest French local governments as of the end of 2007. For each debt instrument, we observe the notional amount, maturity, type of product, underlying financial index, and lender identity. Structured debt amounts to EUR10.4 billion for this sample, out of EUR52 billion total debt. Our second dataset includes all of the structured transactions made by Dexia, the leading bank on the French market for local government loans, between 2000 and 2009. This dataset provides loan-level information, including the mark to market and transaction date. It also contains information for more than 2,700 local governments (see Appendix A for more information on local government types), for a total of EUR23.7 billion of outstanding structured loans. We complement the second dataset with detailed accounting data, election results, list of floods, mayor demographics, and GPS coordinates.

Our methodology relies mainly on probit regressions where the dependent variable is an indicator of the use of structured loans. To strengthen identification, we complement these correlation specifications with two distinct instrumental variable analyses: we instrument indebtedness with the occurrence of floods, the most widespread type of natural catastrophe in France, and we instrument the propensity to use structured loans with the distance to the closest branch of the main lender. We also implement a

difference-in-differences specification when analyzing the role of election timing.

Our paper relates to two streams of literature. First, our work complements studies of the political economy of finance, including political agency problems (Besley and Case, 1995), political incentives and credit (Rajan, 2010), their influence on financial decisions for local governments (Butler et al. (2009), Ang et al. (2014)), or on bank bailouts (Behn et al., 2014). Aneja et al. (2015) show that politicians can use financial instruments as a way to signal their commitment. Tightly related to our findings on election timing, Dinc (2005) shows that government banks lend more in election years, while Bertrand et al. (2007) document that politicians influence CEOs to avoid layoffs prior to elections. Halling et al. (2014) document revenue transfers from government owned banks to local governments. We also complement findings on the economic effects of political uncertainty (Julio and Yook, 2012), with a public finance channel. Because structured loans allow local governments to cosmetically reduce their immediate cost of debt, our work directly relates to the off-balance sheet borrowing of local governments, mainly through pension fund liabilities (Novy-Marx and Rauh, 2011). Our study also offers a non-bank set-up to consider collective moral hazard (Farhi and Tirole, 2012).

Second, our paper contributes to the debate on the dark side of financial innovation (Shiller, 2013; Simsek, 2013), its associated risks (Gennaioli et al., 2012), motives (Célérier and Vallée, 2015), and effects (Rajan, 2006). Similar to the sophisticated mortgage borrowers studied by Amromin et al. (2013), politicians may deliberately exploit certain characteristics of innovative financial products to their own advantage, regardless of the long-term risks they impose on the taxpayer.

Through the alternative explanations we consider, our work also builds on the financial literacy literature (Lusardi and Mitchell, 2011), and studies of hedging policies by corporate firms (Baker et al., 2005).

The paper proceeds as follows. In Section 2, we provide background on the local government market for structured loans, and describe our datasets in Section 3. We develop our hypotheses in Section 4, which we subsequently test in Section 5 for structured loan usage, and in Section 6 for the effects of structured loan usage. We consider alternative explanations in Section 7. We conclude our study in Section 8.

2 Market Background

This section provides some background information on the local government market for structured loans, including a detailed structured product example, and classify structured loans by their level of risk.[3]

2.1 Structured Loan Characteristics

In this study, a structured loan refers to a bank loan obtained by a local government, in which the interest rate formula differs from either a constant fixed rate, or a floating rate such as Libor + a spread (referred to as "standard loans" throughout this study). Structured loans offer an initial period with a guaranteed low interest rate, which typically lasts between two and seven years. In a subsequent period, the interest rate follows a formula based on a given underlying financial index. The loan design embeds a sale of options on this underlying financial index by the borrower, meaning that the local government will pay a higher interest rate if the underlying reaches a certain threshold.[4] In exchange, the borrower receives the option premium, which is subtracted from the interest cost. As with any short position in options, the risk of the transaction increases with its maturity, the volatility of the underlying index, the leverage in the interest rate formula, and the cap level.[5] Local governments are among the issuers that have the longest debt maturity, typically ranging from 15 to 30 years, which is a prerequisite for structuring products with several years of guaranteed low interest rates. There are three main designs for obtaining a large option premium, thereby substantially decreasing the initial interest rate. First, the structured loan can be indexed to a highly volatile index, such as foreign exchange, which increases the likelihood that the threshold will be reached. Second, the formula can be levered, as in the *Steepener* example in the introduction. Third, the formula can rely on a carry-trade, for instance by creating a long position in a high interest rate currency and a short one in a low interest rate currency.

Below is an example of a structured loan subscribed by the Rhône, the French county

[3]These institutional details rely on product term sheets, on the French Congress investigation into the structured loan market (French National Assembly, 2011), and numerous discussions with professionals from both buy and sell sides.

[4]See Appendix B for a typology of the structured loans.

[5]Structured loans generally do not possess any cap feature, meaning that there is no ceiling to the interest rates the borrower may face.

that comprises the city of Lyon. The loan has an eight-year initial period with a low guaranteed interest rate of 1.75%, which is significantly lower than the interest rate on an equivalent standard loan at the time of issuance (4.50%). In the subsequent period, the loan offers a fixed rate that is conditioned on the EURCHF exchange rate. The loan therefore generates a leveraged and uncapped exposure to CHF appreciation against EUR for the remaining 17 years. At today's levels (as of December 2015), the interest rate on this loan is about 31%. Similar products with higher leverage or strikes result in some local governments currently paying more than a 50% interest rate per year.

Amount:	*EUR 80 million*
Trade Year:	*2006*
Loan Maturity:	*2031*
Year 2006-2013:	*1.75%*
Year 2014-2031:	*1.75%+ Max(1.40/EURCHF(t)-1,0%)*

As the equivalent fixed rate at the time of issuance was around 4.50%, the interest rate formula can be rewritten as:

Year 2006-2013:	*4.50%* ***- 2.75%***
Year 2014-2031:	*4.50%* ***- 2.75%****+ Max(1.40/EURCHF(t)-1,0%)*

This illustrates how the sale of an option on EURCHF during the years 2014-2031 provides the local government with a yearly premium of 2.75%.

2.2 Impact on Financial Statements

Structured loans allow local governments to immediately reduce the cost of their debt in their financial statements, and therefore provide an immediate budget relief. This relief is certain for the period during which the interest rate is guaranteed, and extends to the subsequent period subject to conditions. Local governments can budget this relief and immediately adapt expenditures accordingly.[6] Anecdotal evidence suggests that the

[6] An important aspect of French governmental accounting is that local governments are forbidden from borrowing to balance their operating budget. Loan proceeds can only be used for investment purposes. However, the cost of debt is considered as an operating expense: structured loans are therefore a way of balancing the budget and relaxing the financial constraint in the short term.

guaranteed period is often designed to cover the remaining length of the local politician's mandate. The subsidy is repaid in the future in certain states of nature, namely, when the options embedded in the derivative component of the loan end up in the money. Under most governmental accounting standards, derivatives (either stand-alone swaps or those embedded within structured loans) are not accounted for at fair value. In many countries, including France, governmental accounting standards do not even require the disclosure of derivatives transactions. Only the interests that are paid during the accounting year must appear in financial statements, which makes it challenging for taxpayers to identify the true cause behind a decrease in the cost of debt of a local government.

In the previous example, the product provides a 2.75% annual subsidy for seven years, which is the difference between the rate on an equivalent standard loan and the one on the structured loan. If the entire debt of the local government consists of this type of financing, the cost of debt may therefore appear less than half of what it should be.

2.3 Supply Side Characteristics

The competitive landscape of the structured loan market in Europe consists of banks specialized in local governments, such as Dexia or Depfa, and universal banks. Both possess the necessary balance sheet, the local client portfolio, and the structuring expertise. Though the market for structured loans is dominated by national players who have historical relationships, some of the universal banks are active across several European countries, such as Royal Bank of Scotland and Deutsche Bank.[7]

Anecdotal evidence suggests that structured loan transactions are highly profitable for banks, with markups being significantly higher (around 5% of the loan notional) than for standard loans. This level of profitability is however lower than the one of retail structured products, which developed in the same period.[8]

Despite the long term credit exposure they generate, and the inexistence of CDS to hedge it, banks do not ask local government to post collateral on these transactions. Collateral requirements, typically in place with corporate clients, would hinder structured transactions for local governments, as margin calls would be both costly to manage and

[7]Both these banks are active in France. Goldman Sachs and Royal Bank of Canada also entered the market, however they never gained a significant market share.

[8]Although the magnitude of absolute markups is comparable (Célérier and Vallée, 2015), retail products maturity is much shorter, around five years on average, versus 15 for structured loans.

visible to voters.

2.4 Risk Classification

As many local governments are currently paying double-digit interest rates on their structured loans, the press has labeled them "toxic". Some structured loans indeed present unusually-high levels of risk, as local governments may pay significantly more in interest than the amount borrowed. In this study, we rely on the classification established by the French Government following the first litigations, the Gissler scale, to measure the risk of structured loans. Although they all rely on the same mechanism (an implicit sale of options, the premium of which is subtracted from the initial interest rate), structured loans exhibit diverse risk profiles, which also correspond to different magnitudes of short-term budget relief: the riskier the product, the lower the interest rate during the initial subsidy period, and/or the longer this period. The Gissler scale ranks structured loans according to their risk profile. For more details regarding the different types of structured loan, and the Gissler scale, see Appendix B.

We classify a structured product as high-risk if it is equal or higher than 3 on the Gissler scale. Given this definition, loans that are indexed to the interest rate curve slope, foreign interest rates, or to a foreign exchange rate are classified as high-risk. Products that are linked to domestic interest rates or inflation are not considered high-risk. High-risk products are a more recent development of the market.

This classification is based on loan characteristics at inception and is independent from the market conditions that prevail during the life of the product. A high-risk product may have offered a low interest rate level to its user *ex post*; nevertheless, the borrower entered into a transaction that would have created massive losses had the market situation been reversed. Structured products that are not classified as high-risk still bear significantly more risk than standard financing, as their nonlinear payoffs can trigger sudden increases in the cost of debt.

2.5 Post-Crisis Developments

The financial crisis led to a spike of volatility in all financial markets, which led to large unrealized losses on structured loans, and in many cases caused the interest rates to

jump to double-digit levels. Starting in 2010, local governments have been unwilling to pay these high interest rates, and have been suing banks for mis-advice and questioning whether these transactions are legal in the first place. Local governments across Europe attempted to obtain the cancellation of the structured loans, especially the high-risk ones, or to negotiate an exit at better terms.

In France, court outcomes have been mixed, but initially led to the cancellation of some structured loans. This decision was later repelled by the Higher Court of Justice in France, and a retroactive law was introduced to ensure the legality of all existing transactions. A partial government bailout was implemented in 2014, in the form of a 50% participation of the central government in unwinding costs. This government subsidy is financed half by a new tax on banks' systemic risk contributions. The amount allocated to this purpose has been increased from EUR1.5bn to EUR3bn at the beginning of 2015, following the change in the Swiss National Bank policy that led to severe losses on products indexed to the EURCHF exchange rate. The French government faces a trade-off between having only local taxpayers pay for the structured loan losses, or sharing the cost nationwide. Moreover, the main player in the market, Dexia, has been nationalized during the financial crisis.[9] Therefore, cancelling all local governments' unrealized losses would be extremely costly for the French central government, which may have played a role in implementing the new legislation.

3 Data

Our analysis relies on two proprietary datasets that contain a wealth of information on local governments' structured loans, traditionally undisclosed to voters.

Our analysis requires information on the composition – and not only the total amount – of the debt portfolio for a sample of local governments. We obtain this information from two separate sources. The first dataset contains the entire debt portfolio for almost all of the 300 largest French local governments (Dataset A) as of December 31, 2007. The second set includes loan level data on all the outstanding structured transactions in France of Dexia, the leading bank on the market (Dataset B) as of December 31, 2009.

[9]Dexia's bailout did not stem from its local government operations, which remained solvent throughout the crisis, but from losses at its US subsidiary, the monoliner FSA, and from a large loan made to troubled DEPFA bank.

We complement these two datasets with local governments' detailed financial statements, the list of floods in France, results of municipal elections in France, GPS data to measure distances, and demographic characteristics of mayors.

3.1 Local Government Level Debt Data (Dataset A)

Our first dataset, which covers 293 French local governments, comes from a leading European financial consulting firm for local governments. This dataset contains the entire debt portfolio, broken down by type of debt, for nearly all the largest local governments: French regions (25 out of 27) and French Counties (96 out of 100) as well as the largest cities (96) and intercity associations (76). Collectively, these local governments have a total debt of EUR52 billion, or 38.2% of the total debt of all French local governments, which includes EUR10 billion of structured debt, or a third of the total outstanding amount in France as estimated by the French Congress. Panel A of Table 1 provides summary statistics on the debt profile of the local governments from the sample.

[Insert Table 1 here]

We observe that virtually all local governments in our sample (95.6%) have debt, and this fraction remains high for all types of local government. Funding is achieved through the following channels: standard bank loans, bonds, revolving facilities, and structured debt. Standard bank loans are by far the main source of financing for local governments (constituting 62.9% of outstanding debt, while bonds account for a low 3.3% of outstanding debt).[10] Structured debt represents a significant share of the total debt of local governments, accounting for 20.1% of all outstanding debt and being used by more than 72% of the local governments in our sample. These ratios are particularly high for counties and cities. The fraction of structured debt varies extensively across local governments, with some local governments borrowing almost exclusively through this channel. Within the structured debt component, we also examine the specific amount of high-risk structured loans, as defined in the previous section.[11] Overall, high-risk

[10]Bonds are used by only 7.5% of local governments, likely because of the absence of tax incentives for Muni Bonds as opposed to the US, and complex legal documentations. On the opposite, the French central government's debt comprises almost only bonds and bills.

[11]See Table A1 in Appendix D for the breakdown of Table 1 by type of local government, and by type of structured product. The most popular products are those linked to domestic interest rates, which

structured loans represent 8.4% of total debt in our sample, and are used by 43% of the local governments. Again, there is significant heterogeneity among local governments in their use, with some governments having up to 71.7% of their total debt consisting of high-risk structured loans.

3.2 Loan Level Data on Structured Transactions (Dataset B)

Our second dataset contains loan level data for all structured loan transactions implemented with Dexia, the largest lender in this market, between 2000 and 2009. This second dataset is almost ten times larger than the first, as Dexia represents more than 60% of the market for public sector-structured loans (French National Assembly, 2011). The French newspaper *Libération* posted these confidential risk-management data on its website following an internal leak from the bank. This dataset contains 2,741 different public sector entities: 16 regions (vs. 25 in Dataset A); 66 counties (vs. 96); 539 intercities (vs. 76); 1,588 municipalities (vs. 96); 288 hospitals (vs. zero); 115 social housing entities (vs. zero); and 129 other borrowers, including airports, harbors, chambers of commerce, healthcare cooperatives, public-private joint ventures, schools, research institutes, nursing homes, fair organizers, and charities. The local governments in our sample vary significantly in terms of size; for instance, 37 cities have fewer than 1,000 inhabitants, and 29 cities have more than 100,000 inhabitants.[12]

Panel B of Table 1 provides summary statistics for this dataset.[13] By construction, every local government in this sample uses at least one structured loan, for a total amount of EUR23 billion, or more than two thirds of the total amount estimated by the French National Assembly. In this sample, more than EUR13 billion of structured loans are considered high-risk under our classification. The average amount of structured loan per local government is much lower than in the previous dataset, mostly due to the larger sample that includes many entities of small size. The average number of structured transactions is approximately two, but 163 entities have more than five structured loans

account for nearly half of the outstanding structured debt (47.7%). Other underlying indices (sorted by decreasing popularity) include the interest rate curve slope (26.8%), foreign exchange (14.8%), inflation (3.4%), and foreign interest rates (2.4%).

[12]There are more than 36,000 municipalities in France, the majority having less than 500 inhabitants.

[13]The number of observations is lower for total debt because Dataset B has to be matched with accounting data.

in their debt portfolio.[14]

The data also include information on trade inception dates, allowing us to build a panel to conduct time-series analysis.[15] The aggregated numbers of transactions per semester are plotted in Figure 1. We observe the rapid development of the market followed by a sharp contraction after 2007. The latter was exacerbated by media coverage of distressed local governments and by Dexia's own difficulties in the last quarter of 2008. This figure also evidences the evolution of the composition of the transactions implemented: high-risk structured loans, as defined in the previous section, become more and more prevalent over time.

[Insert Figure 1 here]

3.3 Complementary Datasets

We complement the previous structured loan data with five types of data: detailed accounting data, election results, mayor demographics, the list of floods in France, and GPS coordinates.[16] The accounting data, provided by the French Ministry of the Interior, include the highest level of detail possible for balance sheet and income statement, at an annual frequency for the period 2002-2012. These accounting data are under French governmental accounting standards. The dataset on election results, provided by the Center for Socio-Political Data (CDSP), includes the votes obtained by each political party during French municipal elections going back up to 1983. The sample covers all municipalities with more than 9,000 inhabitants. The third complementary dataset includes information on age, gender, political affiliation, and professional occupation for all the mayors in France since 2001. These data are collected by the French Ministry of the Interior and constitute the *Registre National des Elus*. We collect the list of floods, by municipality, from the Ministerial Decrees on natural catastrophes in France.[17] Floods

[14]The data also contain information on the mark-to-market of transactions as of the end of 2009. The mark-to-market corresponds to the market value of unwinding the derivative position, and is negative for local governments in 92% of the cases.

[15]For this purpose, we assume no loan repayments by local governments, and a linear amortization schedule for these loans. Both these assumptions come from discussions with practitioners, who informed us that loan early repayments are extremely rare, and that the majority of the structured loans follow this type of profile.

[16]Dataset A being anonymized, we only match these data to dataset B.

[17]The complete list of floods is available at: http://macommune.prim.net/gaspar.

are the most frequent type of natural disaster in France. These data are cleanly matched with the other datasets using municipalities unique identifier, *INSEE code*. GPS coordinates for municipalities and Dexia branches allow us to calculate distances as the crow flies for the purpose of our instrumental variable analysis.

4 Hypotheses

We build on the theory of incentives, more specifically principal-agent models, to structure our empirical analysis of the political economy of financial innovation.

The principal-agent model (Jensen and Meckling, 1976) is one of the most influential frameworks in both economics and political science. Because voters' (the principal) and politicians' (the agent) interests do not necessarily align, agency costs frequently emerge in the political system. As the sovereign debt crisis in Europe illustrates, politicians may focus on getting re-elected at the expense of implementing sound budget decisions. Agency problems are amplified in specific environments, for instance when agent actions are not observable by the principal, or when the cost of current decisions can be shifted in the future. A financial innovation may be designed to fulfill these conditions.

Besley (2006) develops an agency model of politics, where incumbent politicians signal their type through their fiscal policy. In this framework, structured loans would allow incumbents from the bad type to imitate the actions of the ones from the good type by maintaining lower taxes.

Structured loans fit well into this theoretical framework because: (1) their flexible payoff profile allows for easily shifting economically large cash-flows to the future and/or to certain states of nature with relatively low probability and (2) these transactions are undisclosed to voters. A parallel can be drawn with the reaching for yield phenomenon, where institutional investors improve the yield of their investments by increasing their risk on unobserved dimensions (Becker and Ivashina, 2014).[18] We derive two sets of empirically testable predictions from the principal agent framework.

The first set of predictions relate to which politicians are more likely to implement these innovative financial transactions. First, the incentive to shift costs to the future/to

[18]Local governments are strictly regulated on the financial assets they can hold, but can implement such strategy on the liability side of their balance sheet.

certain states of nature should be higher for politicians from highly indebted entities, as the financial constraint is more likely to be currently binding and limit the politician's actions.[19] Second, the incentives for incumbents to implement such transactions should be higher when the coming elections are expected to be contested. Third, incumbent politicians should have higher incentives to implement structured loans prior to the election in order to benefit from the immediate budget relief that they provide during the election campaign.[20]

The second set of predictions cover the effects of implementing structured loans. First, implementing structured loans should help incumbent politicians achieve their goal: getting re-elected. Politicians who used structured loans should be more likely to stay in office, *ceteris paribus*. Second, when using structured loans, politicians should allocate the immediate cash flows from these transactions towards budget decisions that send a positive signal about their type, such as cutting tax. The following two sections test empirically these predictions.

5 Structured Loan Usage

5.1 Indebtedness and Structured Loan Usage

Figure 2 provides an initial overview of the popularity of structured loans by quartiles of indebtedness for the local governments in Dataset A. The figure shows unconditional statistics that suggest that highly indebted local governments use structured loans more frequently and to a larger extent. The economic magnitude is particularly large: local governments from the last quartile of indebtedness are more than twice as likely to implement structured loans than entities from the first quartile of indebtedness.

[Insert Figure 2 here]

We extend the analysis in Table 2 and run several probit regressions on the use of structured loans by local governments based on Dataset A. In column 1 (respectively 2), the explained variable is an indicator variable that is equal to one if the local government

[19] Assuming voters do not understand or observe the transactions, politicians can also communicate on immediate budget improvements, which might be a salient topic.

[20] These transactions can have such an immediate effect as the budget relief they provide is typically accounted for at the beginning of the period, when projecting the annual budget.

has some structured (respectively high-risk) products in its debt portfolio, and zero otherwise. Column 3 (respectively 4) corresponds to a tobit regression where the dependent variable is the share of structured (respectively high-risk) loans as a percentage of the local government's total debt.[21] For each specification, we include a large set of control variables: debt per inhabitant, equipment expenditure per inhabitant, share of wages in operating expenditure, log(population), debt average maturity, lender fixed effects, and local government type fixed effects (regions, counties, intercities, and cities).[22] We cluster standard errors by local government types, as for instance municipality and region budget structures differ. Finally, columns 5 and 6 replicate columns 1 and 2 on dataset B, and provide consistent results.

[Insert Table 2 here]

All these specifications confirm that a higher level of debt is associated with a higher propensity for, and a larger magnitude of, structured loans usage. All coefficients on the debt over population ratio are positive and highly statistically significant. This robust correlation is consistent with the existence of greater incentives for highly indebted local governments to shift the actual cost of debt to certain future states of nature, likely due to a closer monitoring of their debt. An alternative explanation for this empirical result would be that indebted local governments turn to structured loans as last-resort financing when other means of financing are unavailable to them. However, our data are inconsistent with this alternative hypothesis, as numerous highly indebted local governments only have standard loans; thus, a high level of indebtedness does not prevent from accessing standard financing.

To strengthen the case for a causal relationship between the level of indebtedness and the propensity to use local governments, we conduct two complementary analyses: we first instrument the level of debt by the occurrence of local floods, and we then implement a placebo analysis where we test the relationship between indebtedness and other types of borrowing instrument.

[21] We use tobit models as our dependent variable is mechanically truncated (Wooldridge, 2002). Because some local governments do not use structured loans, we use a left-censoring at zero, and a righ-censoring at one as borrowers cannot have more than 100% of their debt made of structured loans.

[22] Debt average maturity provides us with an important control, as structured loans require long-maturity debt (recall that these loans rely on an implicit sale of options). However, the results are robust when not including this control.

Instrumenting Indebtedness with Floods

An abundant literature uses natural disasters as a source of exogenous variation, for instance as a shock to school placement (Imberman et al., 2012), personal spending (Morse, 2011), risk salience (Dessaint and Matray, 2015), and supplier-client networks (Barrot and Sauvagnat, 2015). We rely on this literature and focus on the most frequent type of natural disaster in France: floods. These catastrophes generate significant damages to local public infrastructures, which in turn generate costs to local governments. We therefore hypothesize that floods will be positively correlated with indebtedness. Floods, by their exogenous nature, should however be orthogonal to other potential drivers of structured loans usage, which ensures the absence of exclusion restriction violations. Floods are frequent enough in France to address concerns over statistical power and external validity: around one third of French municipalities witnessed at least one flood episode during the 2000-2010 decade.

We define as *affected*, municipalities that encountered at least one flood during the period 2002-2008.[23] We then regress debt per inhabitant on the *Floods* indicator variable, which takes value one if the municipality has had a flood during the 2002-2008 period, and zero otherwise. We control for county fixed effects, as some zones are more likely to be affected due to their geography.[24]

Column 1 in Table 3 shows that affected municipalities have on average more debt than non-affected ones, which is likely to come from the damages floods generate.[25] Columns 2 and 3 display the results of the instrumental variable analysis. We find that an exogenous increase in indebtedness is associated with a higher likelihood of using structured loans. Coefficients in the second stage of the instrumental variable analysis are larger than in the simple probit from Table 2, which suggests that potential sources of endogeneity are biasing against the positive correlation we document.[26]

[Insert Table 3 here]

[23] This period corresponds to our financial accounting data, which is also when structured loans developed. 2008 is the year of the municipal elections.

[24] We therefore assume that within a given county, being hit by a flood during the 2002-2008 period is a random event.

[25] Local governments' insurance policies against natural disasters, when existent, can only be partial.

[26] Coefficients might also be inflated as the first stage shows that our instrument is moderately strong (Stock and Yogo, 2005).

To rule out any mechanical effects driving our initial correlation result, we also conduct a placebo analysis. We replicate columns 1 and 2 of Table 2 on dataset A, using indicator variables for using revolving loans, bonds, and floating rate loans as dependent variables. Results are presented in Table A2 of the Appendix D. We do not find any positive correlation between the level of indebtedness and the likelihood of using these other types of funding instrument. Our result on structured loan usage is therefore unlikely to come from a specification artifact.

5.2 Politically Contested Areas and Structured Loan Usage

We test whether local governments with a less established party are implementing more structured loan transactions than political strongholds. For all municipalities with more than 9,000 inhabitants, for which past elections results are available since 1983, we proxy political strongholds with an indicator variable equal to one if the governing party during the development of the structured loan market has been in power for more than 12 years. We also conduct robustness checks with the number of years for which the party of the incumbent mayor has been in power before the 2001 election, the number of political swings during the period 1983-2001, and an indicator variable equal to one if the margin of victory was below 5% in the 2001 election.[27] We conduct probit regressions on the use of structured loans, using our stronghold indicator variable as an explanatory variable. We include the usual controls.

[Insert Table 4 here]

The results in Table 4 provide supportive evidence for a positive effect of political contestation on the use of structured loans. Strongholds are significantly less likely to implement structured loans. When calculating the marginal probability effect, we find that incumbents from politically contested municipalities are 8% more likely to implement structured loans, which is sizable when compared to the average participation. This result is robust to our alternative measures of political stability. The longer a political party has been uninterruptedly in power when the structured loan market develops, the less likely it is that its politicians use structured loans. The more political swings there has been in a given area before the development of the market, the more likely it is that structured

[27] All these measures are built with data anterior to the development of structured loans.

loans are used. When the preceding election is won by a tight margin, politicians are also more likely to implement these transactions. These findings provide robust evidence that politicians with challenging re-elections are more likely to enter into risky transactions.

5.3 Election Timing and Structured Loan Usage

We use a difference-in-differences approach to test whether local governments engage more frequently in structured loans in the period prior to an election, which coincides with their re-election campaign. We compare a treatment group that includes counties, municipalities, and intercities that held elections at the end of 2008Q1, with a control group consisting of regions, whose elections were in 2004 and 2010, and public entities with no elections (e.g., hospitals and social housing entities).[28] The governing teams of the entities from the treatment group are chosen simultaneously following the same election cycle. Those from the control group are either chosen at a different time, or have management renewals according to idiosyncratic timing. Hospitals and social housing entities are state-owned in France, with processes and statuses very similar to local governments: these entities fulfill a public service while having a budget independent from the central state.[29] Both groups are typically covered by the same department in banks and consulting firms. We use panel conditional logit regressions in a difference-in-differences setup, as is appropriate to account for individual fixed effects (Wooldridge, 2002). We examine the likelihood of implementing a structured transaction in a given quarter before and after the election (for periods of 12 and 18 months before and after the election) for both groups, controlling for quarter fixed effects. The exact model specification is as follows:

$$\Pr(Transaction)_{i,t} = Q_t + \alpha_i + \beta \times I_{\{Treatment\ Group\ =\ 1\ \cap\ Pre\ Treatment\ =\ 1\}} + \varepsilon_{i,t} \qquad (1)$$

where the dependent variable is the probability that local government i conducts a transaction in quarter t, Q_t are the time fixed effects for each quarter, α_i are individual fixed effects, and the $I_{\{Treatment\ Group\ =\ 1\ \cap\ Pre\ Treatment\ =\ 1\}}$ variable is an interaction term between an indicator variable that is equal to one if local government i is in the treatment

[28] We cannot only use regions as a control group due to a small sample issue: there are only 22 regions in France.

[29] For instance, these entities comply with public procurement rules.

group and an indicator variable that is equal to one if quarter t is before the election. Results are shown in Table 5.

[Insert Table 5 here]

When comparing to the control group with no elections in 2008, we observe that local governments in the treatment group are significantly more likely to implement structured transactions in the period preceding the election than in the period following it. When calculating the marginal probability effect, we find that politicians are 10% more likely to implement structured loans before an election than after. The results are robust to the time window under consideration, and cannot be explained by a downward trend in the market, due to the identification strategy. We also conduct a placebo analysis in which we randomly select a sample of the same size as our initial treatment group and use it for the interaction term. The coefficients obtained are much lower in magnitude and not significantly different from zero, which is consistent with our previous result being driven by the election cycle. To further ensure robustness, we replicate both analyses in panel B, using OLS instead of conditional logit as a regression model. Results are unchanged.

6 The Effects of Structured Loan Usage

We explore the effects of using structured loans on both electoral outcomes and budget decisions by instrumenting the use of structured loans with the geographic distance to the closest Dexia branch. Controlling for potential sources of endogeneity, we find that structured loan usage is associated with a higher likelihood of being re-elected, and with lower taxes.

For comparison purposes, we first run a probit regression on being re-elected, using an indicator variable for using structured loans as the main explanatory variable. Results are presented in column 1 of Table 6. We do not find a significant relationship between using structured loans and the likelihood of being re-elected. We also find in column 2 that politicians using structured loans increased relatively more local taxes.

These two coefficients should however be considered as subject to strong selection effects. As described in the previous sections, the decision to enter into structured loan transactions is indeed highly correlated with variables that are likely to affect both electoral outcomes and budget decisions. For instance, the selection effect on financially

constrained local governments may bias against being re-elected, and in favor of increasing taxes.

Adequately measuring the effects of using structured loans therefore calls again for an instrumental variable analysis.

6.1 First Stage

We instrument the propensity to use structured loans with the geographic distance of the local government to the closest Dexia branch, as the crow flies. Geographic distance has been established as an important determinant of lending activity (Degryse and Ongena, 2005). More specifically, Bharath et al. (2011) also instrument lending relationship with distance. The list of Dexia branches is provided in Appendix C, and roughly corresponds to the list of French regional capitals.[30]

In the first stage, we test whether distance to Dexia branches is correlated with structured loan usage, and whether the previously documented effect of distance on lending also holds for structured loans. We regress with a probit model the propensity to use structured loans on the distance to the closest Dexia branch, controlling for the main determinants of structured loan usage, such as population and indebtedness.[31] Results are shown in columns 3 of Table 6. The negative relationship between distance to branch and propensity to implement structured loans appear both statistically significant and robust to a battery of controls.

[Insert Table 6 here]

6.2 Second Stage

Using the instrument described in the previous subsection, we can now test whether using structured loans indeed helps local politicians get re-elected. We run the following

[30]There are no branch openings or closings during our sample period, which limits concerns over endogenous entries or exits. One limitation of the instrument, however, is that distance to the closest branch is partially correlated with being in a rural area. We mitigate this concern by cleanly controlling for population categories in the first stage. Although, for the same level of population, being in a rural area can affect the *level* of budget items and the political color of a municipality, it is more difficult to link it to the evolution of budget items, and to *changes* in political color.

[31]Since the dependent variable in the first stage is a binary variable, we follow the same methodology as in Faulkender and Petersen (2006). Wooldridge (2002) shows that this approach yields consistent coefficients and correct standard errors. We restrict our sample to municipalities to maximize comparability.

regression:

$$Pr(re-election) = \alpha + \beta \times I_{StructuredLoan(Instrumented)} + \gamma \times X_i + \epsilon_i \quad (2)$$

where $re-election$ is an indicator variable for having the same political party stay in power after the 2008 municipal election, $I_{StructuredLoan(Instrumented)}$ is the instrumented variable obtained in the first stage, and X_i is a set of controls. Column 4 of Table 6 present the results. We observe that the quasi-exogenous increase in the propensity of using structured loans is associated with an increase in the likelihood of having the same party re-elected. The coefficient on the instrumented indicator variable for structured loan usage is positive and statistically significant. This result is robust to a battery of controls, and represents evidence consistent with structured loans helping politicians get re-elected in the short-run.[32]

Another test made possible by the use of the instrumental variable analysis is to assess whether using structured loans has an impact on tax policy. As structured loans provide immediate savings, we specifically test the hypotheses regarding the allocation of these cash flows: whether their usage allowed politicians to decrease local taxes. We run an OLS regression with the following difference specification, which implicitly controls for local government fixed effects in column 5 of Table 6:

$$\Delta(Tax)_{2002-2007} = \alpha + \beta \times I_{StructuredLoan(Instrumented)} + \gamma \times X_i + \epsilon_i \quad (3)$$

where $\Delta(Tax)_{2002-2007}$ corresponds to the difference between the beginning and the end of the political mandate for municipalities. We find that the coefficient on the indicator variable for structured loan use is negative and statistically significant. This result suggests that politicians use the short term savings provided by structured loans to relatively decrease the amount of tax per inhabitant.[33] This action is consistent with politicians seeking re-election by catering to taxpayers' preference for low taxes, which represents a likely channel for the previous re-election result.

[32]However, the observation of no effects would not necessarily have ruled out the *ex ante* motives we document in the previous sections.

[33]As the amount of tax per inhabitant is structurally increasing during the period, this coefficient means that local governments using structured loans have less increased their tax over the period.

6.3 Discussion

To better assess these results, we conduct two complementary analyses. First, we regress the re-election indicator variable on tax evolution, to test whether reducing tax is associated with a higher likelihood of being re-elected. Results are displayed in Table A3 of Appendix D. We find that maintaining lower taxes is associated with a higher likelihood of being re-elected, which suggests that tax policy might indeed be the channel through which structured loans help incumbents being re-elected.

Second, we separately replicate Table 6, substituting to the indicator variable for structured loan usage: (1) an indicator variable for high-risk structured loan usage (2) an indicator variable for exclusively non-high-risk structured loan usage. Results are displayed in Table A4 of Appendix D, and show that in the instrumental variable analysis, high-risk structured loans are associated with an even larger decrease in tax, which is consistent with the larger subsidy they initially provide. In the OLS setting, selection and treatment effects appear to cancel out, as high-risk structured loan usage is not associated with a higher likelihood of being re-elected. On the other hand, non-high-risk structured loans have a lower impact on tax, but appear to be associated with a similarly higher likelihood of incumbent re-election. Selection effects appear to be lower for these loans, as their usage is associated with a higher likelihood of re-election in the OLS setting.

7 Alternative Explanations

In this section, we consider three additional and non mutually-exclusive mechanisms for explaining politicians' implementations of structured loans. First, banks may exploit a lack of financial literacy from politicians and convince them to implement structured loan transactions to extract a high markup. Second, politicians may use structured loans to hedge some exposure from the local government. Third, politicians may be coordinating to implement these transactions, either to increase the likelihood of a collective bailout, or for behavioral reasons.

7.1 Financial Literacy

In this subsection, we consider the hypothesis that the structured loan market developed due to the exploitation by banks of a lack of financial sophistication from local government politicians.[34] We find two stylized facts that are hard to reconcile with this view: politicians whose profession requires higher education are more inclined to use structured loans than politicians from less educated backgrounds, and this effect is even stronger for high-risk structured loans. Larger cities, which have access to more resources such as financial consultants, are more likely to use both structured and high-risk structured loans than smaller cities.

Local politicians have been vocal *ex post* both in the media and in French Congress about their lack of understanding of the risks embedded in the structured loan transactions they implemented. For instance, in his testimony before the French Congress' committee on structured loans, the deputy mayor of the city of Saint Etienne, who originally decided to take on some structured loans, stated that *"[he] was not able to read the information [he] received because [he was] not a financial expert"*. To assess the role of financial sophistication on the use of structured debt, we estimate probit models where the dependent variable takes a value of one if the local government made use of structured debt during our sample period on proxies for financial sophistication.[35]

We use mayor's current or former occupation, age on election date, and education level as explanatory variables. These variables are known to be correlated with financial sophistication (Lusardi and Mitchell, 2011). As politicians in larger local governments are likely to benefit from more resources and support from specialized staff and advisors, we include a series of indicator variables for several size brackets. We therefore compare municipalities of the same size, but with mayors of different background. We first report in Figure 3 the regression coefficients, along with 95% confidence intervals, for the different occupations fixed effects. The results suggest that mayors from more educated backgrounds are more likely to use structured loans than the others. The six occupations that are associated with the highest point estimates are, in decreasing order, senior civil servants ("haut-fonctionnaires"), politicians, executives, regulated profession

[34] Although some aspects of the debt management can be delegated to a civil servant, important decisions such as loan issuances typically require a signature from the highest ranked elected representative.

[35] For this purpose, we merge the national registry of mayors with Dataset B on Dexia's client portfolio.

(doctors, lawyers), engineers, and A-level civil servants.[36]

[Insert Figure 3 here]

Table 7 provides the coefficients of probit regressions where the dependent variable is an indicator variable for the use of structured loans in columns 1, 3, and 5, and for the use of high-risk structured loans in columns 2, 4, and 6. We observe that the likelihood to use structured loans significantly increases with local government size, and decreases with mayor age.[37] We conduct a more precise test in columns 5 and 6: when restricting the sample to mayors who are public servants, for whom we can precisely infer their education level, we find that more educated mayors are more likely to have implemented structured transactions. Overall, these results are hard to reconcile with the hypothesis that the development of this market is due to banks exploiting politicians' lack of financial sophistication.

[Insert Table 7 here]

7.2 Hedging

Structured loans may have been used as hedging devices. However, there are two main reasons to rule out this alternative hypothesis. First, the payoffs of structured products are typically nonlinear and convex because of the embedded sale of out-of-the-money options. Therefore, to hedge through these instruments, a local government needs to have operational cash flows that present a strong surplus during tail events for the structured loan underlying indices, such as EURUSD or the slope of the interest rate curve, which seems unlikely. Second, French local government revenues appear to be uncorrelated with the financial indices on which structured loans rely. We indeed calculate the correlation between French local government revenues and the main indices that are used in structured products: Euribor 3 months, Swap Rate 10Y - Swap Rate 2Y, EURCHF, and EURUSD. Our analysis covers all French regions, counties, and the 100 largest cities, for the 1999-2010 period. Overall, we find little to no correlation between revenues and financial indices (results are available in Table A5 in the Appendix D). We also run a pooled

[36] A-level civil servants are defined as roles for which a college degree is required to apply, B-level civil servants are defined as roles for which a high school diploma is required to apply, and C-level civil servants are defined as role for which no degree is required.

[37] The average mayor's age is 54 years old.

regression of the change in operating revenues for all local governments on the change in the financial indices used to structure the loans while controlling for inflation. The estimated parameters that are associated with the financial indices also remain insignificant. This finding is consistent with empirical evidence of corporations using so-called hedging policies to make directional bets (Baker et al., 2005).

7.3 Coordination between Politicians

Coordination between local government politicians might amplify the adoption of innovative financial instruments, all the more so as local government members and civil servants belong to strong local and political networks, and as structured transactions typically remain private. We find empirical evidence suggestive of coordination, namely geographic local correlation on the adoption of the innovative products we study, which may come from collective moral hazard or herding. To obtain a sense of the geographic spread of structured debt among French local governments, Figure 4 displays an activity map for the second quarters of four consecutive years (2004-2007). Structured loan usage exhibits geographic clustering.

[Insert Figure 4 here]

We then implement a panel data specification that controls for individual fixed effects. We construct an explanatory variable that is equal to the number of active local governments from the same geographical zone (county level). An active local government is defined as a local government that entered into at least one structured transaction in the previous quarter (or the previous two quarters). We use a panel conditional logit model to estimate the effect of the number of active neighbors of a local government on its likelihood of entering into a similar trade in the current period. We also run a panel OLS regression to explain how large the new transactions are. The model specification is as follows:

$$\Pr(Transaction)_{i,t} = Q_t + \alpha_i + \beta \times \sum_{k \in J(i)} I_{k,t-1,\{Active\,=\,1\}} + \varepsilon_{i,t} \tag{4}$$

where the explained variable is the probability that local government i conducts a transaction in quarter t, Q_t are quarterly fixed effects, α_i are individual fixed effects,

$J(i)$ is the set of local governments from the same county as local government i, and $I_{k,t-1,\{Active\,=\,1\}}$ is an indicator variable that is equal to one if local government k was active in quarter $t-1$. In the OLS specification, the left-hand-side variable is replaced by the aggregated notional amount of transactions implemented by local government i in quarter t. Table 8 displays the conditional logit and OLS regression coefficients. The coefficients on the number of active local governments is positive and statistically significant in all specifications. The likelihood and the extent to which a local government enters into structured debt transactions appears therefore to increase with the number of active neighbors in the previous period. This result cannot be caused by a time trend, as we use quarter fixed effects. This effect shows relatively low persistence, as the estimated coefficients decrease when we consider two quarters.

[Insert Table 8 here]

Politicians might coordinate to decrease their reputation costs in case the transactions go wrong (Scharfstein and Stein, 1990), or to increase the likelihood of a bailout by the central government, which would represent a form of collective moral hazard, as rationalized in Farhi and Tirole (2012).[38] Alternatively, the local correlation can also stem from a purely behavioral herding, where politicians are intrigued or reassured by other politicians following the same strategy.[39]

8 Conclusion

In this paper, we present evidence consistent with financial innovation acting as an amplifier of principal-agent problems in the political system. We find that most local politicians implemented structured loan transactions, as these types of loans account for a surprisingly high 20% of their total outstanding debt. We find that such loans are utilized

[38] As the bailout would be implemented by the central state, this is a departure from the principal-agent framework we developed. Principal and agent indeed have aligned incentives to obtain a bailout. Although this bailout did happen, it is important to note that it was only partial. The central state seemed therefore wary not to create moral hazard.

[39] A final explanation for this correlation in borrowing choices would be the existence of local supply shocks. However, as Dexia covered the entire French territory before the inception of the structured debt market, this finding cannot be driven by new branch openings. The arrival of a highly convincing salesperson in a given region might also create such local shock, although this appears unlikely to drive our results over the whole French territory.

significantly more frequently within local governments that are highly indebted, which is consistent with their greater incentives to shift interest payments to the future. Incumbent politicians from politically contested areas are also more likely to use structured debts, and transactions are more frequent before elections than after elections. We finally show that using structured loans helps politicians get re-elected, and that they allowed politicians to maintain lower local tax for their voters.

During the subprime crisis, securitization facilitated a political agenda of easy access to home ownership. Similarly, we show that financial institutions designed financial securities fitting politicians' agenda.

Our results convey potential regulatory implications. Rather than banning structured loans, we suggest imposing strict public disclosure requirements on transactions by local governments to increase reputation risk and facilitate monitoring by voters, which has been proven to be efficient (Ferraz and Finan, 2008). Furthermore, changing public accounting standards to account for mark-to-market losses and gains should curb the incentives by increasing transparency, as observed in comparable markets (Jenter et al., 2011). Such changes would limit the use of structured loans while maintaining the autonomy of local governments in terms of financial decisions. However, the greatest risk of structured loans likely lies in outstanding transactions and the accompanying non-realized losses. The recent bailout of structured loan users answers only partially to this challenge.

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9 Figures

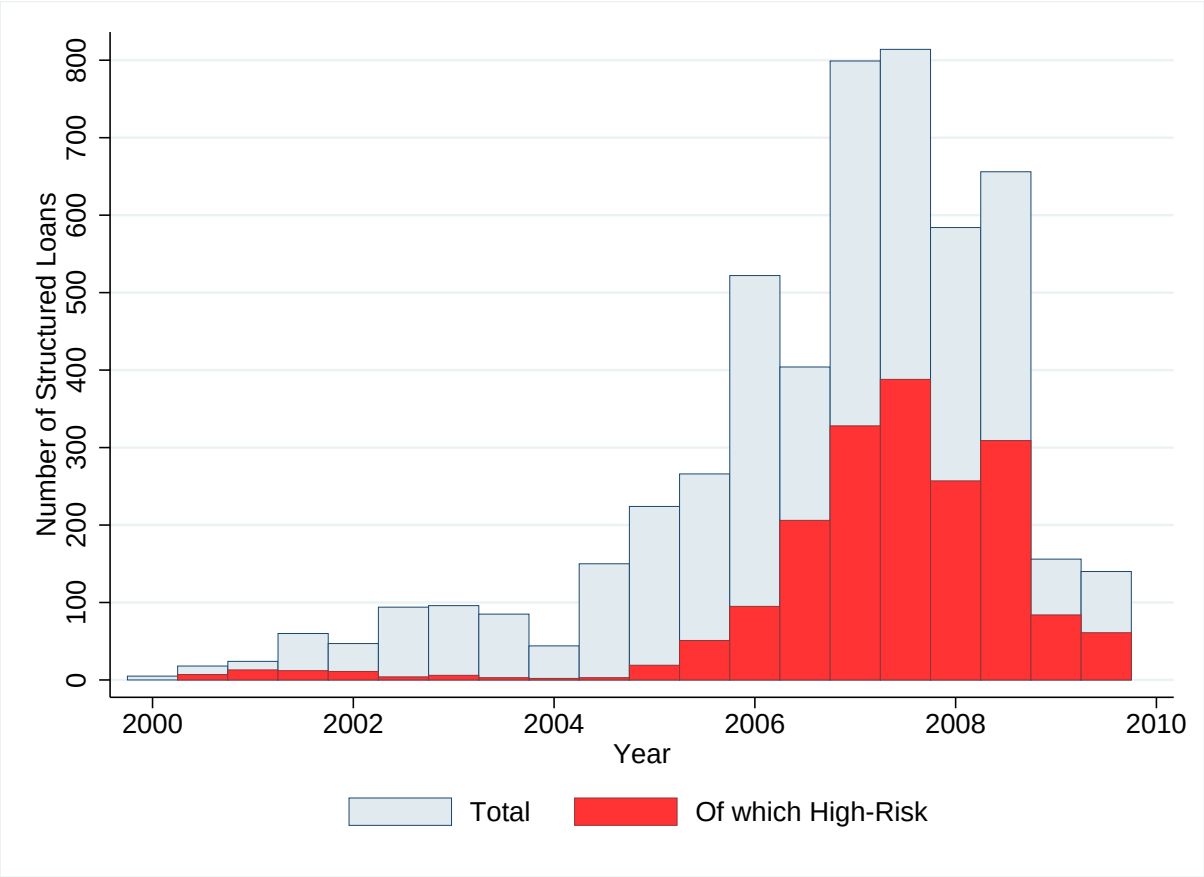
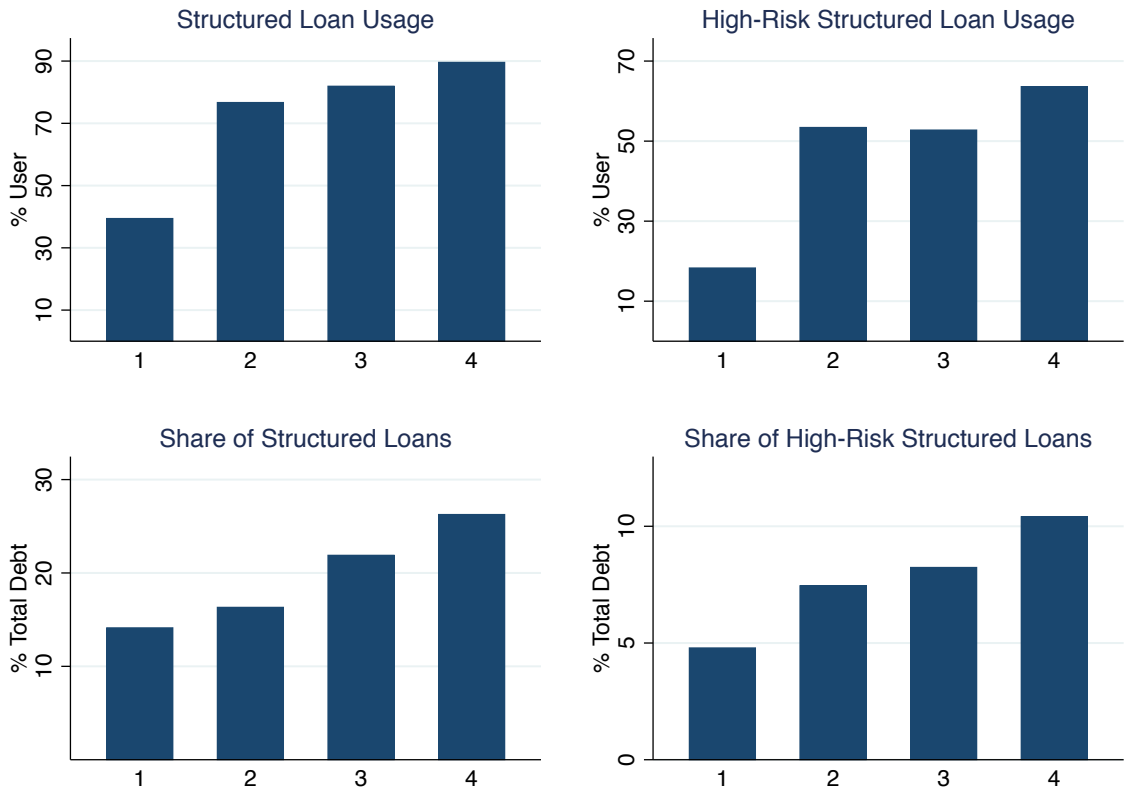


Figure 1: Number of Structured Debt Transactions per Semester

Note: This figure displays the number of structured loans initiated during a given semester by local governments in France for the 2000-2009 period. The data are obtained from Dexia's client portfolio (Dataset B). High-risk structured loans include structured loans indexed to the slope of the interest curve and to foreign exchange rates.

Figure 2: Structured Loan Usage and Indebtedness



Note: This figure displays summary statistics on the frequency and the extent of structured and high-risk structured loan usage for Dataset A. The local governments are ranked into quartiles of indebtedness, calculated as total debt / population. Quartile 1 represents the local governments with the lowest indebtedness, and quartile 4 the ones with the highest.

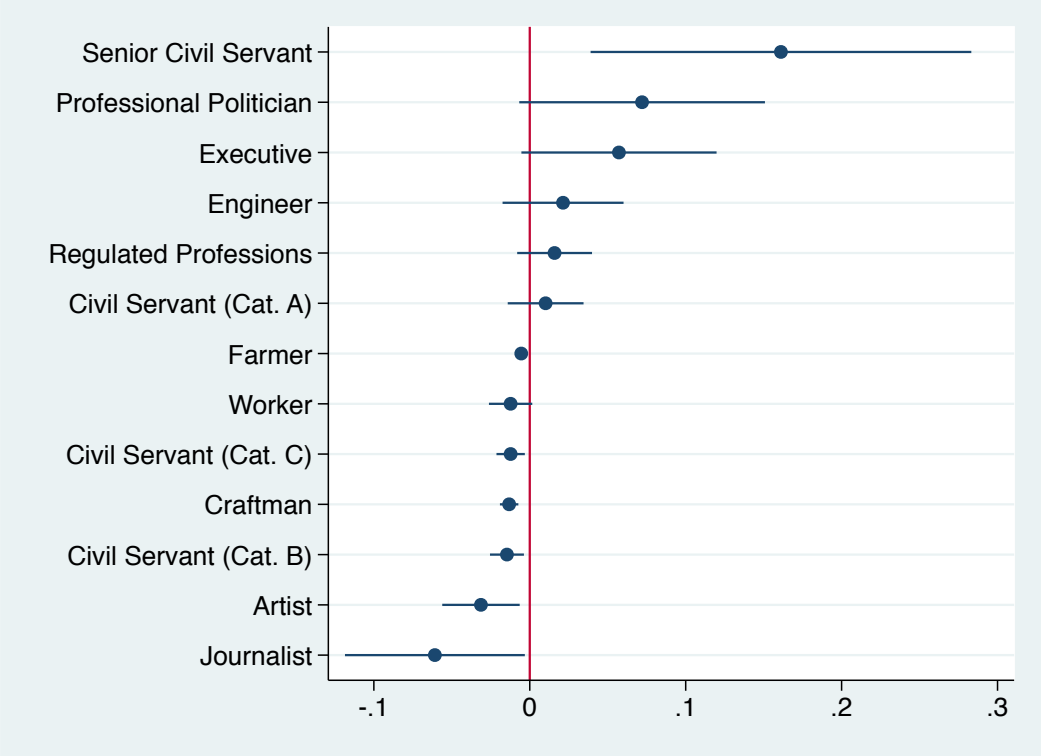


Figure 3: Occupation Fixed Effect

Note: This figure displays the estimated coefficients on mayor occupation title fixed effects from a probit regression of using structured loans on local government characteristics and elected mayor demographic variables. The data are from dataset B merged with data provided by the French Ministry of the Interior. The sample is restricted to municipalities. Dots represent the coefficient estimates, and lines the 95% confidence interval, using standard errors clustered at the county level.

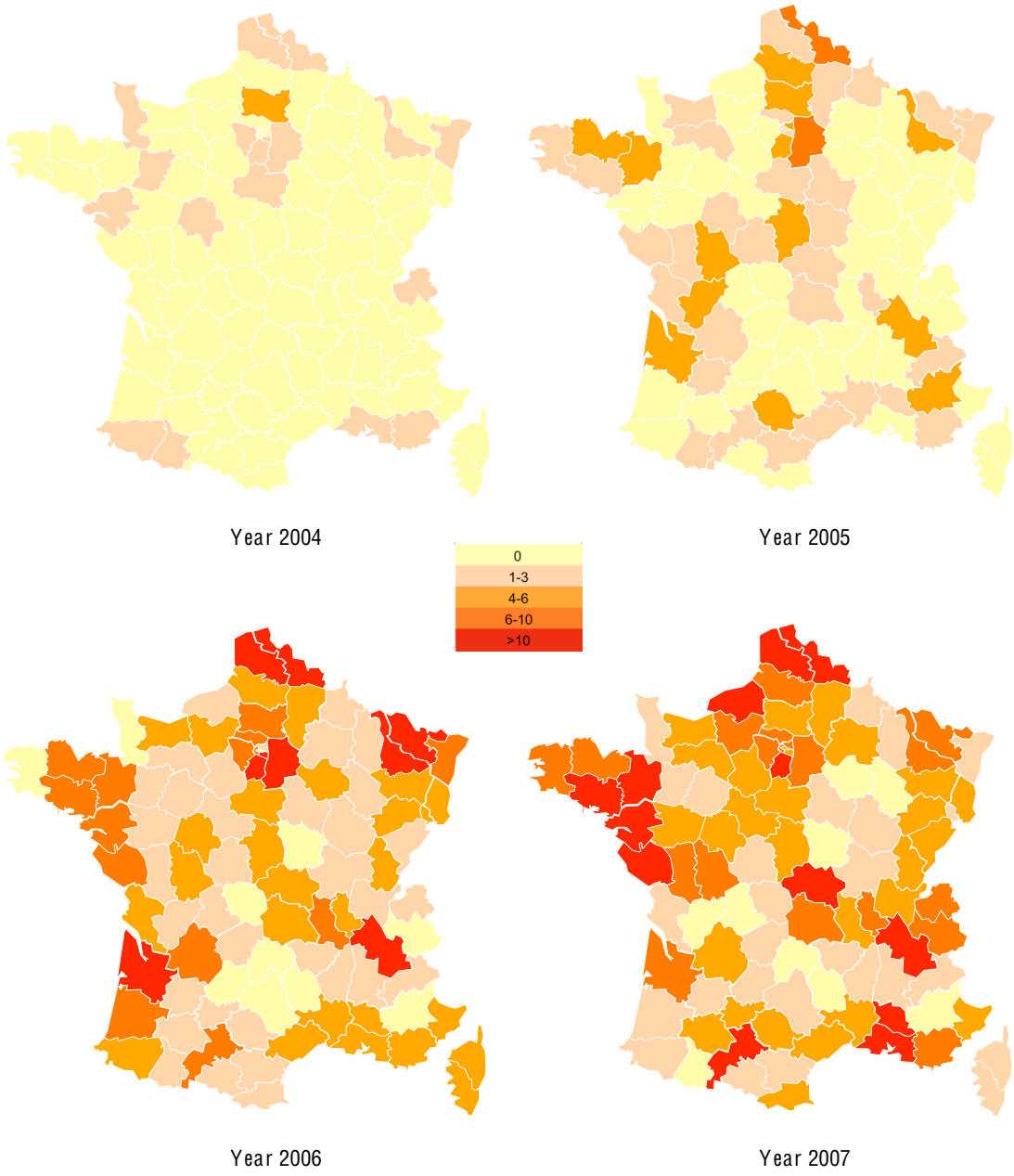


Figure 4: Geographical Evolution of Structured Debt Activity

Note: This figure displays the number of active local governments, which are defined as those that have implemented at least one structured debt transaction in the second quarter of the displayed years (from 2004 to 2007). Q2 is the period in which the recently voted budget is financed. Map division is at the French county level. The data are obtained from Dexia's client portfolio (Dataset B).

10 Tables

Table 1: Debt Profile of Local Governments

				Amount		% Total Debt	
(in Million Euros)	N	Aggregate	% Use	Mean	Max	Mean	Max
Dataset A: Local Government Debt Portfolios							
Total Debt	293	51,994.7	95.6%	177.5	1,850.5	-	-
Standard Loans and Bonds	293	34,611.5	94.9%	118.1	1,265.6	66.6%	100%
Revolving Facilities	293	6,953.2	58.4%	23.7	646.2	13.4%	100%
Structured Loans	293	10,429.9	72.4%	35.6	648.3	20.1%	95.5%
High-Risk Str. Loans	293	4,372.0	43.0%	14.9	509.9	8.4%	71.7%
Dataset B: Loan Level Data on Structured Loans							
Total Debt	1,579	33,423.1	100.0%	21.2	1,870.50	-	-
Structured Loans	2,742	23,680.0	100.0%	8.6	459.3	49.7%	-
High-Risk Str. Loans	2,742	13,462.0	42.7%	4.9	459.3	28.3%	-
Negative MtM	2,742	3,884.1	99.1%	1.4	147.4	8.1%	-
# Structured Loans	2,742	-	-	1.9	20	-	-

Note: This table contains summary statistics on debt profile for two samples of French local governments. All debt figures are expressed in millions of euros. Dataset A is obtained from a survey conducted by a specialized consulting firm as of December 31, 2007, and includes 25 regions, 96 counties, 76 intercities, and 96 municipalities. Dataset B is obtained from Dexia and covers the entire client portfolio of this bank as of December 31, 2009. The sample aggregated total debt represents 38% of all-local-government aggregated total debt. *High-Risk Str. Loans* are high-risk structured loans, as defined in Section 2. *Negative MtM* represents the unwinding costs for converting structured loans into market-rate vanilla loans.

Table 2: Indebtedness and Structured Loan Usage

	Dataset A				**Dataset B**	
	Usage (Probit)		Magnitude (Tobit)		Usage (Probit)	
	Structured	High-Risk	Structured	High-Risk	Structured	High-Risk
	(1)	(2)	(3)	(4)	(5)	(6)
Debt/Population	2.081***	0.679***	0.182***	0.090***	0.334***	0.243***
	4.29	7.53	6.22	10.52	4.07	4.23
Equipment Expenditure/Pop.	-0.004***	-0.001*	-0.000**	-0.000**	0.000***	0.000
	-3.71	-1.67	-2.07	-2.44	3.57	0.61
Wages/Operating Expenditure	3.809***	0.965	0.128*	0.043	0.066	0.928
	5.51	0.94	1.76	0.26	0.11	0.89
Log (Population)	0.070***	0.085***	0.013***	0.012***	1.510***	1.547***
	3.56	8.13	4.79	6.06	29.09	20.39
Debt Average Maturity	0.075***	0.057***	0.015***	0.015***	-	-
	2.99	3.05	3.31	4.50		
Lender FE	Yes	Yes	Yes	Yes	-	-
Local Government Type FE	Yes	Yes	Yes	Yes	Yes	Yes
County FE	-	-	-	-	Yes	Yes
Pseudo R^2 / R^2	0.304	0.181	0.522	0.475	0.436	0.445
Observations	275	275	263	263	25,023	22,701

Note: This table contains the probit and tobit regression coefficients using debt portfolio data from a sample of local governments (Dataset A) for columns 1 to 4, and data from Dexia's client portfolio (Dataset B) for columns 5 and 6. The dependent variable is an indicator variable for the use of structured products for columns 1 and 5, and an indicator variable for the use of high-risk structured loans (as defined in section 2) for columns 2 and 6. For columns 3 and 4, the dependent variable is equal to the ratio of structured debt over total debt, and high-risk structured debt over total debt. Local governments with no debt are excluded from the regressions of columns 3 and 4. We estimate tobit regressions with left-censoring at zero, and right-censoring at one. Standard errors of the coefficients are clustered by types of local government, and z/t-statistics are reported below the coefficients. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 3: Indebtedness and Structured Loan Usage: IV Analysis

	Dataset B		
	Debt/Population	Probit	
	First Stage	Structured	High-Risk
	(1)	(2)	(3)
Affected (Floods)	0.134**		
	2.21		
Debt/Population		1.791***	2.151**
		2.90	2.22
Equipment Expenditure/Pop.	0.002	-0.003***	-0.003**
	1.52	-2.30	-1.78
Wages/Operating Expenditure	-0.668*	3.042***	3.254***
	-1.96	5.81	3.61
Population Category FE	Yes	Yes	Yes
County FE	Yes	Yes	Yes
Pseudo R^2 / R^2	0.026	0.357	0.350
Observations	32,699	33,739	31,151

Note: This table contains coefficients for an instrumental variable analysis. Column 1 presents the OLS coefficients of the first stage, using floods as an instrument for indebtedness. The floods indicator variable is equal to 1 if the municipality suffered from floods between 2002 and 2008. Columns 2 and 3 display the coefficients of the second stage of the IV analysis, where the dependent variable is a indicator variable for having implemented structured loans during the 2002-2008 period in column 2, and an indicator variable for having implemented high-risk structured loans during the 2002-2008 period in column 3. Indebtedness is instrumented as per the first stage. Sample is restricted to municipalities. Standard errors of the coefficients are clustered at the county level, and z/t-statistics are reported below the coefficients. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 4: Politically Contested Areas

	Dataset B			
	Structured Loan Usage			
	(1)	(2)	(3)	(4)
Stronghold	-0.336**			
	-2.07			
Years in Power		-0.124**		
		-2.06		
# Swings			0.185*	
			1.77	
Close 2001 Election				0.524*
				1.82
Margin of Victory in 2001				0.305
				0.82
Equipment Spending / Population	0.002	0.002	0.002	0.002
	1.28	1.28	1.37	1.39
Wage / Operation Expenditure	0.151	0.102	0.331	0.198
	0.12	0.08	0.26	0.15
Log(Population)	0.408***	0.409***	0.405***	0.412***
	3.22	3.19	3.22	3.20
Pseudo R^2	0.018	0.006	0.007	0.009
Observations	571	571	571	571

Note: This table contains probit regression coefficients using data from Dexia's client portfolio (Dataset B). The dependent variable is an indicator variable for the use of structured products. *Stronghold* is an indicator variable equal to one when the local governments have been ruled by the same party for more than 12 years. $Yearsinpower$ refers to the number of years during which the political party of the incumbent (as of year 2001) has been managing the local government. $\#Swings$ is the number of changes in political color during the period 1983-2001. *Close 2001 Election* is an indicator variable equal to one if the margin of victory was below 5% in the 2001 election. Sample is restricted to municipalities with more than 9,000 inhabitants, for which elections results are available. Standard errors of the coefficients are clustered by types of local government, and z/t-statistics are reported below the coefficients. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 5: Difference-in-Differences Estimation of Election Timing Effects

Panel A

	C-logit Structured Trade		Placebo C-logit	
	+\- 18 months	+ \- 12 months	+ \- 18 months	+ \- 12 months
	(1)	(2)	(3)	(4)
Pre-Election*Treatment	0.3522***	0.3350***	0.0262	0.0275
	2.88	3.28	0.10	0.07
Local Governments FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
Regression Type	Panel	Panel	Panel	Panel
R^2 / Pseudo R^2	0.082	0.055	0.053	0.081
Periods	12	8	12	8
Local Governments	2,741	2,741	2,741	2,741
Observations	32,892	21,928	32,892	21,928

Panel B

	OLS Structured Trade		Placebo OLS	
	+\- 18 months	+ \- 12 months	+ \- 18 months	+ \- 12 months
	(1)	(2)	(3)	(4)
Pre-Election*Treatment	0.0218*	0.0280**	0.0010	0.0001
	2.03	2.77	0.00	0.01
Local Governments FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
Regression Type	Panel	Panel	Panel	Panel
R^2 / Pseudo R^2	0.0961	0.1240	0.096	0.124
Periods	12	8	12	8
Local Governments	2,741	2,741	2,741	2,741
Observations	32,892	21,928	32,892	21,928

Note: Panel A of this table contains the conditional logit (C-logit) regression coefficients that are estimated using data from Dexia's client portfolio (Dataset B). The dependent variable is an indicator variable of a structured trade for a given local government in a given quarter. In columns 1 and 2, the explanatory variable is an interaction variable between an indicator variable for the treatment group (local governments having an election at the end of 2008Q1) and an indicator variable for the pre-election period. Columns 3 and 4 present a placebo analysis in which the treatment group indicator variable that is used in the interaction term has been replaced by an indicator variable on a random sample of similar size. Panel B replicates Panel A using OLS regressions. Standard errors are clustered by type of public entity. Z/t-statistics are reported below the coefficients. The time window is 18 months before and after the election (end of March 2008) for columns 1 and 3, and 12 months for columns 2 and 4. Standard errors are clustered at the local government level. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 6: Political Effects of Structured Loan Usage: IV Analysis

	Probit/OLS		First Stage	IV	
	Re-election (Probit)	Δ Local Tax per Inhabitant	Structured Loan Usage	re-election (Probit)	Δ Local Tax per Inhabitant
	(1)	(2)	(3)	(4)	(5)
Distance to Dexia Branch			-0.002**		
			-2.18		
Structured Loan Usage	0.015	11.760**		1.634***	-48.221*
	0.68	2.45		2.97	-1.72
Debt per Inhabitant	0.002	0.284	0.141***	-0.007	0.799
	1.36	0.72	4.23	-1.03	1.59
Dexia Branch FE	Yes	Yes	Yes	Yes	Yes
Political Party FE	Yes	Yes	Yes	Yes	Yes
Mayor Profession FE	Yes	Yes	Yes	Yes	Yes
Population Bracket FE	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.146	0.027	0.363	0.108	0.026
Observations	24,948	25,527	25,190	24,420	25,725

Note: This table contains the coefficients for OLS and an instrumental variable analysis, using distance to the closest Dexia branch as an instrument for structured loan usage. Columns 1 and 2 display the Probit/OLS coefficients. Column 3 presents probit coefficients for the first stage, where the dependent variable is an indicator variable equal to one if the local government has borrowed with a structured loan between 2002 and 2007. Columns 4 and 5 display the coefficients of the second stage, where the dependent variable is an indicator variable equal to one if voters elect in 2008 a politician from the same party as the one elected in 2002 in column 4, and the variation in local tax per inhabitant between year end 2002 and year end 2007 in column 5. The variable structured loan usage is instrumented as per the first stage. Z/t-statistics are reported below the coefficients. Standard errors are clustered at the Dexia branch level. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 7: Financial Sophistication

	Probit					
	Structured (1)	High-Risk (2)	Structured (3)	High-Risk (4)	Structured (5)	High-Risk (6)
1,000 < Pop ≤ 5,000	0.558***	0.142*				
	10.365	1.792				
5,000 < Pop ≤ 10,000	1.721***	1.300***				
	30.216	14.575				
10,000 < Pop ≤ 50,000	2.104***	1.774***				
	22.978	16.012				
50,000 < Pop ≤ 100,000	2.537***	2.494***				
	10.203	10.892				
100,000 < Pop ≤ 200,000	2.256***	2.226***				
	6.211	5.990				
200,000 < Pop	3.027***	2.880***				
	4.578	5.159				
Age at Election			-0.004*	-0.008**		
			-1.890	-2.166		
Senior Civil Servant					0.945***	4.586***
					2.577	10.024
College Degree					0.455**	4.442***
					1.973	15.690
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Population Control	No	No	Yes	Yes	Yes	Yes
Cluster	County	County	County	County	County	County
Pseudo R^2	0.280	0.275	0.333	0.327	0.458	0.439
Observations	35,712	31,084	26,068	20,027	765	768

Note: This table presents coefficients from probit regressions, where the dependent variable is an indicator variable equal to one if the local government has borrowed with at least one structured loan in columns 1, 3 and 5, and with at least one high-risk structured loan in columns 2, 4 and 6, during the period 2002-2007. Explanatory variables X < Pop ≤ Y represents indicator variables on whether the local government population is between X and Y. Sample is restricted to municipalities. Age at election represents the mayor's age when elected in the 2001 elections. Columns 5 and 6 further restrict the sample to municipalities whose mayor is a civil servant. *Senior Civil Servant* is an indicator variable for the mayor being a "Haut Fonctionnaire", a highly selective status associated with graduating from Elite schools. *College Degree* is an indicator variable for the mayor having a civil servant status requiring a college degree. Standard errors are clustered at the county level. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 8: Local Correlation in the Borrowing Choices of Politicians

	C-logit Structured Trade		OLS Δ(Structured Debt Notional)	
	(1)	(2)	(3)	(4)
# of Active Neighbors (Previous Quarter)	0.0183***		10.3991***	
	5.53		3.03	
# of Active Neighbors (Previous Semester)		0.0064**		4.3144*
		1.91		1.81
Quarter FE	Yes	Yes	Yes	Yes
Regression Type	Panel	Panel	Panel	Panel
R^2 / Pseudo R^2	0.155	0.149	0.010	0.010
Periods	40	39	40	39
Local Governments	2,741	2,741	2,741	2,741
Observations	109,640	106,899	109,640	106,899

Note: This table contains the conditional logit (C-logit) and OLS panel data regression coefficients that are estimated using data from Dexia's client portfolio (Dataset B). The dependent variable is an indicator variable of a structured trade for a given local government in a given quarter (or semester) for the conditional logit regressions and the incremental exposure on structured debt entered into by a local government in a given quarter (or semester) for the OLS regressions. The explanatory variable is the number of active local governments in the same geographical zone (county level), which is defined as the number of public entities that have implemented at least one structured transaction in the previous quarter (or semester). The regressions include individual local government fixed effects. Standard errors are clustered by type of local government. Z/t-statistics are reported below the coefficients. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

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Appendix A - Types of French Local Government

Regions *(Régions)*: Metropolitan France is divided into 22 administrative regions, which are in turn divided in 2 to 8 counties *(Départements)*. Regions were created in 1982, and do not possess separate legislative authority. One of their primary responsibility is to build high schools, and regional transport infrastructures. In 2004, the median population of a region in metropolitan France was 2.3 million inhabitants. Regions are funded partly by the central government, partly by local taxes. Regions are governed by a directly elected council, the *Conseil Régional*, which in turn elects the council president.

Counties *(Départements)*: Metropolitian France is divided into 96 counties. They were created in 1791 following the French Revolution, and do not possess separate legislative authority. One of their primary responsibility is to build junior high schools, and county-level transport infrastructures. In 2004, the median population of a county in metropolitan France was 520,000 inhabitants. Counties are funded partly by the central government, partly by local taxes. Counties are governed by a directly elected council, the *Conseil Général*, which in turn elects the council president.

Municipalities *(Communes)*: Metropolitian France is divided into 36,681 municipalities. Municipalities were created in 1789, at the beginning of the French Revolution. Municipalities build primary schools, touristic equipments, and local transport infrastructure. Municipalities population varies widely, from 10 inhabitants to 2.2 million in Paris. Municipalities are funded partly by the central government, partly by local taxes. Municipalities are governed by a directly elected council, the *Conseil Municipal*, which in turn elects the mayor.

Intercities *(Communautés d'Aglomération)*: Intercities are associations of municipalities. Intercities typically cover a commuting zone. Their primary motive is to finance infrastructures that cover several municipalities, for instance swimming pools and public transport. Intercities are mainly funded by its members, which are municipalities. Intercities are governed by a council that comprises the mayors and counsellors of the participating municipalities. The council in turn elects the intercity president.

Social Housing Entities *(Organismes HLM)*: Social housing entities own and manage more than 4 millions housing units, or 17% of primary residences in France. The board members are appointed by local governments (counties or municipalities) and the French central government. The board nominates a CEO, who has a significant autonomy.

Hospitals *(Centres Hospitaliers)*: Hospitals in France are state-owned, have a general interest mission, and are non-profit. Hospitals are funded by health insurance organisms, local governments, and the central government. Their CEOs are appointed by the Health Ministry.

Appendix B - Structured Loan Types

Products are presented by increasing level of risk according to the Gissler classification. For each type of products, summary statistics are provided in Table A1.

Barriers on Domestic Rate (Gissler Scale: 1)
These products lower cost of funding as long as the underlying index is above/under a predefined barrier. Subsidy comes from the premium of the options sold, which could be interest rate caps or floors. An example is the implicit sale of a floor:

$$Rate(t) = \begin{cases} US\ Libor(t) - x\ bps & if\ US\ Libor(t) > 3\% \\ 3\% & otherwise. \end{cases}$$

Coupon structure does not include any leverage effect. Both the subsidy offered to client and the bank margin are low ($\leq 0.50\%$ of notional). Barriers were the first products to enter the market in the late 1990s. Their interest rate formula can be broken down into its standard loan component and an embedded short put option:

$$\begin{array}{rl} Standard\ loan\ interestrate: & US\ Libor(t) \\ Sale\ of\ a\ put\ with\ a\ 3\%\ strike: & \begin{cases} -\ x\ bps & if\ US\ Libor(t) > 3\% \\ 3\% - US\ Libor(t) & otherwise. \end{cases} \end{array}$$

Inflation Products (Gissler Scale: 2)
This type of products is usually based on a barrier or on an inflation spread. They often include leverage to provide with sufficient subsidy, as inflation volatility is very low. A standard payoff is:

$$Rate(t) = Midswap(t) - 50\ bps + 2 \times Max(French\ Inflation(t) - Euro\ Inflation(t),\ 0\%).$$

This illustrates the client's view that the French inflation rate should remain below the European inflation rate, which could be caused by entrance of new EU members from Eastern Europe with higher inflation.

Steepeners (Gissler Scale: 3)
In a Steepener structure, the interest rate is indexed to the Constant Maturity Swap (hereafter CMS) curve slope and decreases the cost of funding when the slope of the curve is steep; but increases the cost when the curve is flat or inverted. The CMS curve is built with the equivalent fixed rates obtained when swapping Libor for all possible maturities. They are based on different measures of the slope: [20-year swap rate - two-year swap rate], [30-year swap rate - one-year swap rate], and in most cases [10-year swap rate - two-year swap rate]. An example of payoff is:

$$Rate(t) = 7\% - 5 \times (CMS\ 10Y(t) - CMS\ 2Y(t)).$$

Entering into a Steepener transaction represents a bet against the realization of forward levels, which typically anticipate a flattening of the swap curve. The risk profile of these

products is higher than the one of Barrier products. This is mainly due to the introduction of leverage in the interest rate formula, usually without any cap.

Quantos (Gissler Scale: 4)
They represent variable interest rate products that are indexed to a foreign interest rate with an affine formula. They exploit low spot rates and higher forward levels. Risk is moderate as leverage is generally low and the underlying foreign interest rate has low volatility. They are mainly structured on indices from countries with low interest rates, such as Japan or Switzerland. A standard Quanto payoff is:

$$Rate(t) = 2 \times JPY\ Libor(t) \quad or \quad Rate(t) = 1.5 \times CHF\ Libor(t) + 1\%.$$

FX Products (Gissler Scale: Out of Scale)
FX products are also based on an implicit sale of options. However FX option premiums are much higher due to the high volatility of foreign exchange rates and remain high even when strike levels are far from spot prices. This comes from the absence of mean-reversion of foreign exchange rates in banks' pricing models. This feature allows to structure products with seemingly unreachable strikes, especially when historical levels bias the client's view. An example of payoff for an FX product is:

$$Rate(t) = 3\% + 50\% \times Max(1.44 - EURCHF(t),\ 0\%).$$

These products offer very high interest rate subsidy, especially on long maturity loans when they bear no caps. One example is the 0% interest rate loan by Depfa with Ville de Saint Etienne on a 32-year maturity loan. The interest rate is set at 0% for 9 years and remains at this level afterwards as long as EURCHF is above EURUSD.

Cumulative Structures (Gissler Scale: Out of Scale)
Cumulative structures can be structured on any underlying index: domestic/foreign interest rates, FX rates, or inflation rates. They are based on an iterating interest rate formula. Rate degradations therefore add up to each other. The formula often includes a click feature that makes all degradations permanent; hence their nickname: snow balls. Cumulative instrument structuring is based on selling a portfolio of forward-start options. A typical interest rate profile is:

$$Rate(t) = Rate(t-1) + 2 \times Max(USD\ Libor\ 12M(t) - 6\%,\ 0\%).$$

Due to the iterating definition of the interest rate, frequency of interest rate payment is key for the risk profile of the product. For a given leverage level, a quarterly cumulative structure is four times more aggressive than an annual one. These products have been dramatically impacted by the increase in volatility during the financial crisis, as they bear no cap. They are usually more sensitive to volatility than to market direction (i.e., vega dominates delta).

Appendix C - Figures

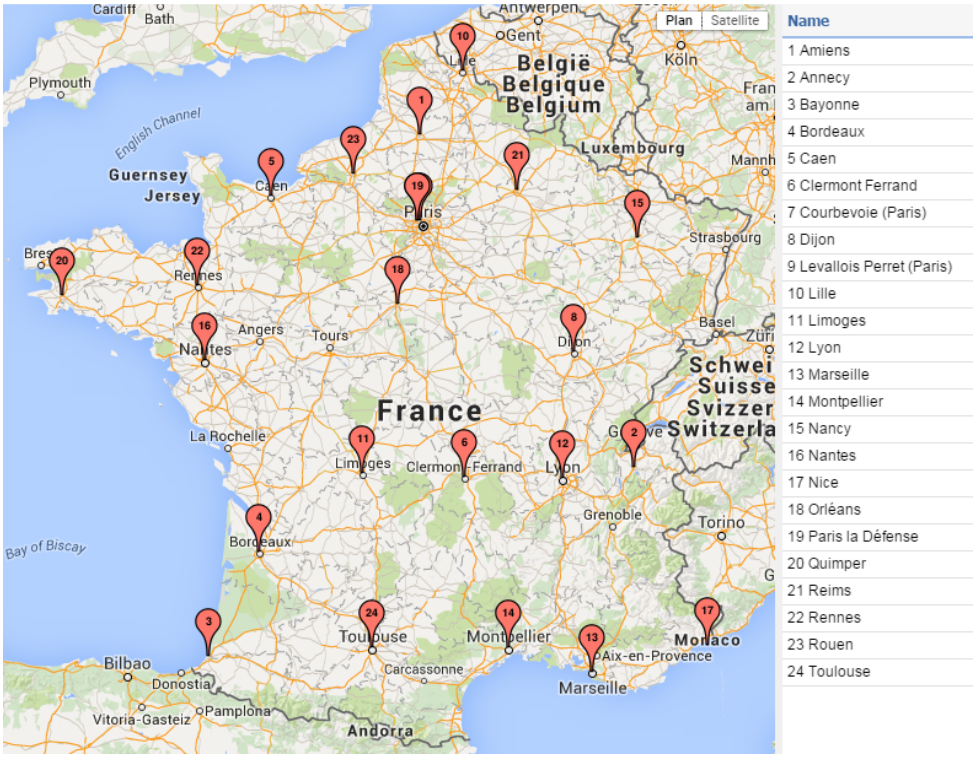

Figure A1: Map of Dexia Branches

Appendix D - Tables

Table A1: Structured-Debt Breakdown

	Notional					Notional / Local Gov. Total Debt				
	All	Regions	Counties	Intercities	Cities	All	Regions	Counties	Intercities	Cities
Aggregate	10429.9	1128.5	4801.9	1334.7	3164.9					
1. Barriers										
Aggregate	4970.7	532.3	1959.8	746.8	1731.8					
Share in %	47.70%	47.20%	40.80%	56.00%	54.70%					
Mean	17	21.3	20.4	9.8	18	10.20%	6.50%	8.80%	9.90%	12.70%
Stdev	33.3	29.2	33.3	24	39.7	14.10%	8.70%	11.90%	17.20%	14.60%
Max	342	99.2	161.7	167.9	342	95.50%	33.30%	67.90%	95.50%	69.90%
% of use	57.70%	56.00%	60.40%	44.70%	65.60%					
2. Steepeners										
Aggregate	2794.8	301.1	1417.5	329.4	746.7					
Share in %	26.80%	26.70%	29.50%	24.70%	23.60%					
Mean	9.5	12	14.8	4.3	7.8	5.20%	3.50%	5.80%	4.90%	5.30%
Stdev	25.4	33.8	33.5	10.1	21	9.70%	11.20%	8.80%	9.30%	10.50%
Max	275.8	162.4	275.8	54.4	151.4	70.50%	54.10%	41.60%	44.70%	70.50%
% of use	39.90%	32.00%	51.00%	31.50%	37.50%					
3. FX										
Aggregate	1543.9	87.2	968.3	152.5	335.8					
Share in %	14.80%	7.70%	20.20%	11.40%	10.60%					
Mean	5.3	3.5	10.1	2	3.5	2.10%	1.10%	2.50%	2.50%	1.80%
Stdev	24.1	11.4	38.4	7.2	14.2	7.40%	3.80%	7.70%	9.40%	6.20%
Max	240.8	52.9	240.8	47.4	112.6	66.70%	17.60%	44.00%	66.70%	36.80%
% of use	14.00%	12.00%	18.80%	13.20%	10.40%					
4. Inflation										
Aggregate	357.8	102.3	120.2	30.7	104.5					
Share in %	3.40%	9.10%	2.50%	2.30%	3.30%					
Mean	1.2	4.1	1.3	0.4	1.1	0.60%	1.40%	0.40%	0.30%	0.70%
Stdev	6.6	12.4	7	2.1	6.4	3.50%	5.50%	1.70%	1.50%	4.90%
Max	64.4	49	64.4	12.9	60	46.10%	27.00%	11.90%	8.70%	46.10%
% of use	7.20%	16.00%	8.30%	3.90%	6.30%					
5. Quantos										
Aggregate	249.4	33.5	89.4	28.6	98					
Share in %	2.40%	3.00%	1.90%	2.10%	3.10%					
Mean	0.9	1.3	0.9	0.4	1	0.50%	0.40%	0.40%	0.30%	0.80%
Stdev	3.5	4.2	3.4	2.4	4	1.90%	1.20%	1.30%	1.20%	2.70%
Max	33.2	15.8	25.6	20.7	33.2	16.40%	1.20%	8.10%	7.80%	16.40%
% of use	12.30%	12.00%	12.50%	6.60%	16.70%					
6. Cumulative										
Aggregate	33.4	13	7.4	0	13					
Share in %	0.30%	1.20%	0.20%	0.00%	0.40%					
Mean	0.1	0.5	0.1	0	0.1	0.00%	0.10%	0.00%	0.00%	0.00%
Stdev	1	2.6	0.8	0	0.8	0.30%	0.40%	0.30%	0.00%	0.30%
Max	13	13	7.4	0	7.1	3.20%	2.00%	3.20%	0.00%	1.90%
% of use	1.70%	4.00%	1.00%	0.00%	3.10%					
7. Others										
Aggregate	300.9	30	143.6	28.9	98.5					
Share in %	2.90%	2.70%	3.00%	2.20%	3.10%					
Mean	1	1.2	1.5	0.4	1	0.80%	0.30%	1.00%	0.50%	1.00%
Stdev	4	4.4	4.6	2	4.5	3.70%	1.00%	3.70%	2.90%	4.50%
Max	35.8	20	23.6	12.9	35.8	36.10%	3.40%	27.90%	22.10%	36.10%
% of use	8.50%	8.00%	11.50%	3.90%	9.40%					

Note: This table contains summary statistics on the different types of structured debt for a sample of French local governments, as of December 31, 2007 (Dataset A). The left panel of this table displays statistics on aggregated and local government-level amounts of debt. Figures are in millions of euros, except for share in % and % of use. Aggregate denotes the sum of the debt notional amount over all local governments. Share in % represents aggregated amount of a given debt instrument in the sample divided by aggregated total structured debt of the sample. The right panel displays statistics on the relative breakdown by debt instruments at the local government level. For instance, a local government whose debt consists in EUR70m of standard bank loans and EUR30m of FX linked debt will be considered as a local government with 30% of FX linked debt.

Table A2: Indebtedness and Type of Borrowing Instrument

	Dataset A		
	Probit		
	Revolving Loans	Bonds	Floating Rate Loans
	(1)	(2)	(3)
Debt / Population	0.000	0.000	0.002
	0.00	0.68	0.97
Equipment Spending / Population	-0.001	0.002***	-0.002
	-1.50	2.80	-0.84
Wages / Operation Expenditure	2.118	6.421***	8.421***
	1.18	7.07	18.30
Debt Average Maturity	0.027**	0.021	0.198***
	2.20	0.60	7.33
Log(Population)	-0.006	0.663	-0.166
	-0.80	1.12	-1.16
Lender FE	Yes	Yes	Yes
Local Government Type FE	Yes	Yes	Yes
Pseudo R^2	0.185	0.526	0.682
Observations	275	275	229

Note: This table contains coefficents of probit regressions. The dependent variable is an indicator variable for the use of revolving loans in column 1, and an indicator variable for the use of bonds in column 2, and an indicator variable for the use of floating rate loans in column 3. Sample data are as of December 31, 2007. Standard errors of the coefficients are clustered by types of local government, and z/t-statistics are reported below the coefficients. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table A3: Re-election and Tax Evolution

	Logit	
	Re-election	
	(1)	(2)
Δ Local Tax per Inhabitant	-0.0004**	-0.0003*
	-2.08	-1.90
Equipment Spending / Population		0.0000
		1.11
Wages / Operation Expenditure		-0.4302**
		-2.15
Log(Population)		0.0074
		0.24
Pseudo R^2	0.001	0.001
Observations	26,181	25,884

Note: This table contains coefficents of logit regressions. The dependent variable is an indicator variable equal to one if voters elect in 2008 a politician from the same party as the one elected in 2002. Standard errors are clustered at the Dexia branch level, and z/t-statistics are reported below the coefficients. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table A4: Effects of Structured Loan Usage: Breakdown

	High-Risk				Non-High-Risk			
	OLS		IV		OLS		IV	
	Re-election	Δ Local Tax per Inhab.	Re-election (Probit)	Δ Local Tax per Inhab.	Re-election	Δ Local Tax per Inhab.	Re-election (Probit)	Δ Local Tax per Inhab.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Structured Loan Usage	-0.053	-3.835			0.040**	16.232***		
	-1.386	-0.439			2.461	3.308		
Structured Loan Usage (IV)			2.209***	-136.300**			2.312****	-40.299
			2.673	-2.216			2.999	-0.76
Debt per Inhabitant	0.002	0.410	0	1.207*	0.002	0.343	0.010	0.529
	1.597	0.970	0.027	1.746	1.388	0.869	0.954	1.320
Dexia Branch FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Political Party FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mayor Profession FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Population Bracket FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.146	0.026	0.109	0.206	0.146	0.027	0.108	0.026
Observations	24,948	25,527	21,962	22,791	24,948	25,527	24,025	24,878

Note: This table contains the coefficients for OLS and an instrumental variable analysis, using distance to the closest Dexia branch as an instrument for structured loan usage. The specification replicates Table 6, using as the main explanatory variable an indicator variable for high-risk structured loan usage in columns 1 to 4, and an indicator variable for using non-high-risk structured loans only. Standard errors are clustered at the Dexia branch level. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table A5: Hedging

	Pooled Regression			Individual Regressions			
	Coefficient	St. Err.	P-value	Mean Coeff.	St. Dev. Coeff.	% Coeff > 0 at 10% signif.	% Coeff < 0 at 10% signif.
Euribor 3m	-0.0162	0.0168	0.436	0.0122	0.047	3.98%	0.00%
CMS 10y - CMS 2y	-0.0601	0.0504	0.355	-0.0193	0.0404	13.72%	1.33%
EURCHF	-0.112	0.0963	0.364	0.237	0.3277	15.49%	3.54%
EURUSD	0.1681	0.1577	0.398	0.0982	0.2713	3.98%	0.00%

Note: This table contains summary statistics on regression coefficients between the annual percentage change in revenues and the percentage change in several financial indices. The pooled regression is run on the four indices, controlling for inflation and with local authorities type fixed effects. Standard errors of coefficients are clustered by type of local authorities. Individual regressions are conducted for each local government on each individual index, also controlling for inflation. Euribor 3m is the 3-month Euro interbank offered rate and CMS stands for Constant Maturity Swap and corresponds to the fixed rate obtained by swapping a Euribor interest rate. For CMS 10y - CMS 2y, we use the first difference. The sample includes all French regions, departments, as well as the 100 largest cities (226 French local authorities in total) for which we have revenue data between 1999 and 2010. Index data are from Datastream and local authorities' revenues are from the French Finance Ministry.