Political Incentives and Financial Innovation: The Strategic Use of Toxic Loans by Local Governments

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Abstract

We examine the toxic loans sold by investment banks to local governments. Using proprietary data, we show that politicians strategically use these products to increase chances of being re-elected. Consistent with greater incentives to hide the cost of debt, toxic loans are utilized significantly more frequently within highly indebted local governments. Incumbent politicians from politically contested areas are also more likely to turn to toxic loans. Using a difference-in-differences methodology, we show that politicians time the election cycle by implementing more transactions immediately before an election than after. Politicians also exhibit herding behavior. Our findings demonstrate how financial innovation can foster strategic behaviors.

Keywords: Financial innovation, Political cycle, Herding, Structured debt
JEL codes: H74, G11, G32

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"It's a joke that we are in markets like this. 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

Financial innovation aims at improving risk-sharing by completing markets. However, politicians might use to innovative products, or new ways of implementing existing products by politicians for their own interests. This strategic use of financial innovation could lead to additional cost or risk to the taxpayer. For instance, in 2001, to comply with Eurozone requirements, Greece entered into an OTC cross-currency swap transaction to hide a significant amount of its debt. In the US, municipalities regularly use bond advance refunding that provide them with short-term budget relief at a high cost (Ang et al., 2013).

Does financial innovation facilitates politicians' self-serving strategies at the taxpayer expense? To answer this question, we study the use of innovative financial products by local governments. We focus on a type of structured loan that is termed toxic loans because of its high-risk profile (Erel et al., 2013). We hypothesize that these products are used as levers of rational self-serving strategies by governing politicians. Similar to the sophisticated mortgage borrowers studied by (Amromin et al., 2013), politicians may deliberately exploit certain characteristics of these loans to their own advantage, regardless of the long-term risks that are associated.

To empirically test this hypothesis, we exploit a unique dataset that includes actual positions with respect to toxic debt for nearly 3,000 French local governments. Using both cross-sectional analyses and difference-in-differences methodology, we show that politicians use these products more frequently and in a larger extent when their incentives to hide the cost of debt is high, when their area is politically contested, and when their peers implement similar transactions.

The structured loan phenomenon has been observed in Europe, Asia, and, to a lesser extent, the US. In France alone, outstanding products represent more than EUR20 billion and bear unrealized losses estimated in the range of EUR5-10 billion (Cour des Comptes, 2011). A structured loan has three defining features: a long maturity, a fixed/low interest rate for the first years of the loan, and an adjustable rate that depends on the value of a given financial index (e.g., six-month Libor). The deferral of interest costs from the initial period to some states of nature of the second period allows a user to hide a significant fraction of the cost of debt. Among these structured products, we define toxic loans as those presenting specific features that create substantial coupon risk in the second period, characterized by high leverage and/or being tied to a volatile underlying index (e.g., foreign exchange rate). Such loans typically offer low initial rates. During the recent financial crisis, as volatility spiked, the interest costs of toxic loan users increased to historically high levels and may even remain high for the remainder of their lifetimes. An interesting example is the City of Saint-Etienne, the 14th largest French city, which is currently suing its banks for pushing financial products that were alleged to be excessively risky. In 2010, the annual interest rate charged to one of its major loans increased from 4% to 24% as it was indexed on the British pound/Swiss franc exchange rate (Business Week, 2010). The total unrealized losses on Saint-Etienne toxic products reached EUR120 million in 2009, nearly doubling the citys nominal debt level of EUR125 million (Cour des Comptes, 2011). To obtain a sense of the geographic spread of structured debt among French local governments, Figure 1 displays an activity map for the second quarters of four consecutive years (2004-2007). The onset of toxic loans occurred around 2000; the market, which was largely developed by 2005, peaked in 2007.

[Insert Figure 1 here]

Although both global and severe, the toxic loan phenomenon remains underinvestigated.[1] This lack of research primarily results from a lack of comprehensive data. We rely on two proprietary datasets that adequately complement one another. The first dataset contains the entire debt portfolio for a sample of large French local governments as of the end of 2007. For each debt instrument, we access information pertaining to the notional amount, maturity, coupon rate, type of product, underlying financial index, and lender identity. The second dataset includes all of the structured transactions made by Dexia, the leading bank on the

[1] (Capriglione, 2014) studies the use of derivatives by Italian Local Governments.

French market for local government loans, between 2000 and 2009. This dataset provides loan-level information, including the mark to market and transaction date. This latter variable is critical for our identification strategy. Unlike the financial statements of local governments that do not distinguish structured loans from standard borrowing, these datasets provide detailed information on the types of loans that are used by each local government. In turn, these data allow us to address whether agency conflicts affect the financial decisions of politicians. We provide empirical evidence of the self-serving use of toxic loans by politicians. We begin by showing that structured loans account for more than 20% of all outstanding debt. More than 72% of the local governments in our sample use structured loans. Among these structured loans, 40% are toxic. A cross-section of our data illustrates how politicians in financially distressed local governments are significantly more likely to turn to this type of loan, evidencing their higher incentive to hide the cost of debt. Indeed, local governments in the top quartile of indebtedness are more than twice as likely to have toxic loans compared with those in the bottom quartile. We also find that incumbent politicians running in politically contested areas are more inclined to use toxic loans, which is consistent with the greater incentives to benefit from immediate savings to aid them in being reelected. We then exploit the time dimension of our data. We identify a treatment group that confronts elections during the sample period, as opposed to a control group that does not appoint management through elections (e.g., airports, harbors, and hospitals). Using a difference-in-differences methodology on these two subsamples, we find that the election timing plays a significant role: for the with-election group, transactions are more frequent shortly before elections than after them. Toxic loan usage also exhibits a herding pattern; politicians are more likely to enter into toxic loans if some of their neighbors have done so recently. This herding behavior reduces reputation concerns, while increasing the likelihood of a collective bail-out. Finally, we find that right-wing political parties are more likely to engage in structured loans to cater to the fiscal expectations of their voters while hiding the real costs of their strategy in some states of nature. Although measuring the exact role and extent of financial sophistication (Lusardi and Tufano, 2009) is beyond the scope of this study, we control for this factor in our analysis to ensure that it is not driving our results. We also empirically eliminate the possibility of hedging as a motive for these transactions. Our paper relates to several streams of literature. First, our work complements studies of the political agency problems (Besley and Case, 1995), political incentives (Rajan, 2010), their influence on financial decisions (Butler et al., 2009), and more generally on the political economy of finance: (Dinc, 2005) shows that government banks lend more in election years, and (Bertrand et al., 2007) document that politicians avoid layoffs prior to French elections by showing how politicians use innovative financial products for their own interests, and (Behn et al., 2014) investigate the effects of political determinants on bank bailouts.

This result constitutes the main contribution of the paper. Because toxic loans allow local governments to hide a significant fraction of the cost of debt, our work directly relates to the off-balance sheet borrowing of local governments (NovyMarx and Rauh, 2011). This study also adds to the abundant literature on peer effects and herding behavior in financial markets (Hong et al., 2005). Unlike previous studies on herding, we focus on the economic decisions of politicians. Finally, our paper addresses financial innovation and the associated risks (Rajan (2006), Gennaioli et al. (2012)). The paper proceeds as follows. In Section 2, we present the main types of structured loans and identify the toxic types. We describe our datasets in Section 3 and present our empirical analysis in Section 4. We conclude our study in Section 5.

2 The Toxic Loan Market

This section explains the specifications and functioning of structured debt, defines toxic loans, and provides a real-life example of a toxic loan. These characteristics were identified from product term sheets and abundant discussions with professionals from both buy and sell sides.

2.1 Common Characteristics of Structured Loans

Structured loans typically offer an initial period with a guaranteed low interest rate and a second period during which the interest rate may increase according to an explicit pre-specified formula. The loan structuring relies on an implicit sale of options by the borrowing local government. The options premium is initially subtracted from the interest cost. The risk of a structured product increases with its maturity, the volatility of the underlying financial index, the leverage in the coupon formula, and the cap level. We provide a real-life example at the end of this section and detail how toxic loans translate into hiding the actual cost of debt. Under most government accounting standards, derivatives (either stand-alone swaps or those embedded within a structured loan) are not accounted for at fair value. In many countries, accounting standards do not even require the disclosure of structured transactions. Only the interests that are actually paid must appear in financial statements; thus, a derivative, regardless of the evolution of its fair value and future cash flows, will generate accounting revenues as long as the flows that it creates in a given accounting year favor the local government. By construction, this situation always occurs during the initial low-interest period of three to five years, regardless of the market evolution during that time. Losses can appear in financial statements only when the guaranteed period is over. Long-maturity debt is a prerequisite for structuring products with initial periods of low interest rates. Local governments are among the issuers that have the longest horizon. Furthermore, only local governments have the credit quality that is necessary for banks to accept such long credit exposure, which cannot be perfectly hedged. In discussions with practitioners, we learned that these transactions are also significantly more profitable than vanilla loans (approximately 5% of mark-up for toxic loans vs. less than 1% for vanilla loans). Counterparty risk is likely to be underestimated because of the widespread view that the state is implicitly guaranteeing local governments. As opposed to corporate clients, no collateral agreement is required. Such requirements would jeopardize structured transactions, as the negative fair value of a derivative position would lead to immediate margin calls. Structured products are easily transposable from one country to another. The legal documentation is limited to a three- or four-page contract. Structuring mechanics rely on worldwide known indices, such as the US Libor or EURUSD exchange rate. As global players, financial institutions simultaneously market the same products in different countries. Even if their diffusion is global, market penetration is higher in Europe than in the US, partly because cities and regional governments in Europe receive their financing primarily from banks whereas those in the US primarily raise funds by issuing bonds. Therefore, local governments in Europe may be more easily persuaded to use structured products. Another critical difference between Europe and the US concerns the level of complexity of the products. Indeed, local governments in Europe use much more complex products. Complexity often increases each time a product class must be restructured.

2.2 Which Structured Loans Are Toxic?

While some structured loans appear as toxic in the sense that local government are currently paying double-digit coupon rates, classifying their risk objectively ex ante is not trivial. We rely on the classification established by the French Government following the first legal actions: the Gissler Chart. Indeed, although they rely on the same mechanism (an implicit sale of options, the premium of which is subtracted from the initial coupon rate), structured loans exhibit diverse risk profiles, which correspond to different level of short term budget relief: the riskier a product, the higher the initial savings. The Gissler chart classify structured loans along two dimensions: the underlying asset, and the pay-off structure. Due to data constraint, we only use the first dimension to assess the ex-ante risk of the product. This scale ranges from Eurozone interest rate (minimum risk), to foreign exchange (maximum risk), and is based on the volatility of these underlying. For more details regarding the different types of structured loans, and the Gissler Classification, see the appendix.

We classify a structured product as toxic if it ranks higher than 3 on the Gissler Chart underlying risk table. Given this definition, loans that are indexed on the interest rate curve slope, foreign interest rates or on a foreign exchange rate are classified as toxic. Products that are linked to domestic interest rates or inflation are not considered toxic. We also use the full granularity of this risk classification.

This classification is ex ante based on the characteristics of a product at inception and is independent from the market conditions that prevail during the life of the product. A toxic product may have offered a low coupon level to its user ex post; nevertheless, the borrower entered into a high-risk transaction that would have created massive losses had the market situation been reversed. Furthermore, toxic products often exhibit swings in their mark to market. Structured products that are not classified as toxic still bear more risk than vanilla financing. The subsidy that such products offer in the favorable state of the world is financed by a higher coupon than in the unfavorable state. The nonlinear payoffs of such loans are also challenging to manage in practice, as they can create moderate but sudden increases in the cost of debt. Importantly,

2.3 Example of a Toxic Loan

Below, we present an actual toxic loan subscribed by the Rhne, the French county that comprises the city of Lyon. We observe an eight-year initial period with a low guaranteed coupon of 1.75%, which is significantly lower than the interest rate on an equivalent vanilla loan (slightly higher than Euribor or 4.50%). This initial fixed low rate is followed by a 12-month Euribor floating rate, coupled with uncapped exposure to CHF appreciation against EUR for the remaining 17 years. At todays levels (as of May 2014), the interest rate on this loan is more than 16%. Similar products with higher leverage or strikes have led some local governments to pay more than a 50% interest rate per year.

$$
\begin{array}{ll}
Amount: & EUR\ 80\ million \\
Trade\ Year: & 2006 \\
Loan\ Maturity: & 2031 \\
Year\ 2006-2013: & Coupon(t) = 1.75\% \\
Year\ 2014-2031: & Coupon(t) = EURIBOR\ 12M(t) - 0.80\% \times Max(1.40/EURCHF(t) - 1, 0\%)
\end{array}
$$

2.4 Local Government Rationale

Toxic loans allow local governments to hide a significant fraction of the cost of their debt, and to provide with a secure budget relief for the period where the coupon is guaranteed. By deferring the payment of most of the interest of this period to a later date and only in certain states of nature, a local government cosmetically decreases its current cost of debt when entering into a toxic loan. Returning to the example in Section 2.3, the product provides a 2.75% annual subsidy, which is the difference between the rates on an equivalent vanilla loan and those on a toxic loan. If the entire debt of the local government consists in this type of financing, the cost of debt appear less than half than what it should be.

This hidden cost of debt 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. The details of structured loans do not appear in public filings; only their current interest rates appear. This lack of disclosure makes toxic loans difficult to detect for voters and therefore permits local governments to cosmetically reduce their cost of debt.

2.5 Post-crisis developments

The financial crisis led to a spike of implied volatility, which drove the mark-to-markets up, and often led the options to get in the money. Starting in 2010, local governments have been unwilling to pay two digit interest rates, and have been suing banks for mis-advice and questioned the validity of the transactions. They try to obtain the cancellation of the toxic loans, or to negotiate an exit at better terms. Court outcomes have been mixed, but led to the cancellation of the structured loans that had not stipulated an actuarial rate when implemented. A nationwide solution has however been implemented in 2014, in the form of a 50% participation of the central government in the unwinding costs. This spending is financed by a new tax on banks. This represent a partial bail-out, and exhibit a trade-off between having only local taxpayers pay for the toxic loans, or sharing it over the all French population. An additional issue facing the central government is that the main player in the market, Dexia, has been nationalized during the crisis. Therefore forfeiting all the mark-to-markets would be extremely costly for the French Government.

3 Data

Our unique datasets allow us to provide new insight into the effect of political incentives on the borrowing choices of local governments. Indeed, these data enable us to analyze risky strategies that are hidden from the public view. In most countries, the financial statements of local governments do not present the precise breakdown of debt by instrument. In particular, structured loans and swaps are not distinguished from vanilla loans. Whereas aggregate debt analysis can be conducted using public information only, our analysis of toxic loans requires that we know the exact composition of the debt portfolio of each local government. This requirement can be met using two proprietary datasets. The first dataset contains the entire debt portfolio for a sample of large French local governments (Dataset A) as of December 31, 2007. The second set includes all of the outstanding structured transactions of the leading bank on the market (Dataset B) as of December 31, 2009.

3.1 Local Government-Level Data from a Leading Consulting Firm (Dataset A)

A leading European financial consulting firm for local governments provided us with a detailed proprietary dataset for a sample of 293 French local governments. As shown in Table 1, our dataset includes nearly all French regions (25) and French Counties (96) as well as a number of intercity associations (76) and the largest cities (96). Collectively, these local governments have a total debt of EUR52 billion. Although our sample covers only a fraction of the French local governments, the overall debt coverage is extensive, as it includes the largest entities. Indeed, the sample aggregate debt represents 38.2% of the total debt of all French local governments and more than 52% of their structured debt (Fitch Ratings, 2008).

[Insert Table 1 here]

We observe that virtually all local governments (95.6%) have some type of debt, and this fraction remains high for all types of local governments. However, the standard deviations and min-max ranges indicate that there are some large differences in the levels of indebtedness across local governments. The lower panel of Table 1 indicates that the maturity of the debt is on the long side (in the range of 12-15 years).

[Insert Table 2 here]

Table 2 presents the breakdown by type of debt. Funding is achieved through the following channels: vanilla bank loans, bonds, revolving facilities, and structured debt. Overall, we find vast differences across local governments in terms of debt instruments. Some municipalities borrow through a single source (e.g., fixed rate loans, floating rate loans, structured debt, or revolving facilities), whereas others follow a more diversified financing strategy. Bank loans are by far the main source of financing for local governments (constituting 62.9% of outstanding debt and being used by more than 90% of local governments), with an approximately 50/50 breakdown between fixed and floating rates. Bonds account for a surprisingly low percentage of total debt: 3.3% of outstanding debt. Bonds are used by only 7.5% of local governments, likely because of the relatively higher cost for bonds and the numerous constraints that issuers encounter (rating requirements, the legal framework, and constraints on maturity) and that are not offset by tax breaks, as is the case in the US. It is interesting to compare the debt composition of local governments with that of the French Central Government, which comprises almost only bonds and bills. Finally, 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. Interestingly, we observe that 100% of the debt of some local governments is in structured products. We now examine the specific composition of the structured debt of local governments. It is important to differentiate between the different types of structured products because they convey different levels of risk and because some structured products should not be considered toxic. A detailed breakdown of structured debt by type of structured product can be found in the appendix. The most popular products are those linked to domestic interest rates, which 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%). Despite this overall range of products, there is significant heterogeneity among local governments. Some of these governments are massively exposed to toxic loans, with up to 70.5% of their total debt being exposed to the interest rate curve slope or 66.7% of the total debt to foreign exchange rate variations.

3.2 Bank-Level Data on Structured Transactions from Dexia (Dataset B)

Our second dataset is 10 times larger than the first set and contains detailed information on the structured products themselves. This internal risk management data were made public by the French newspaper Libration on its website and, to the best of our knowledge, have not yet been used in academia. The dataset contains information on structured transactions from only one bank (i.e., Dexia), but this bank has a 70% market share for public sector-structured loans (French National Assembly, 2011) and an extremely diverse customer base. 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.

[Insert Table 3 here]

Table 3 provides summary statistics on the number of trades, notional amounts of structured products, associated mark to market, and foreign exchange-linked toxic products. The average number of structured transactions is approximately two, but 163 entities have more than five structured loans in their debt portfolio. On average, counties, regions, and social housing entities engage in more structured loans than other entities, likely because of the size of their total debt, as they are the largest entities. The notional amounts of structured products exhibit the same pattern but with greater dispersion across various types of borrowers. Some mark to market figures are surprisingly high: 72 entities have more than EUR10 million of mark to market, with additional products potentially booked in other banks. Therefore, it would be extremely costly for these entities to convert their structured debt into vanilla debt. Counties are again the most strongly affected local governments according to this indicator, followed by regions. The mark to market scaled by notional amounts illustrate products relative risk ex post and expected future losses to bear on top of principal repayment. Although these losses should be absorbable on average, as they represent approximately 10% of the borrowed amount through structured products, a fat tail of aggressive products with mark to market greater than 30% of the underlying notional amount increases the risk of default for some entities. This tail risk largely results from foreign exchange products. Their frequency appears to be consistent with our observation from the previous dataset, in which 20% of the local governments using structured debt had foreign exchange products in their portfolios. These figures indicate that the level of contamination is severe for some entities, as their mark to market values sometimes reach record levels of 80% of the underlying loan notional amount. The data also include information on trade initiation dates. The aggregated numbers of transactions per quarter are plotted in Figure 2. We observe the rapid expansion of the market followed by a sharp contraction after 2007. The latter was exacerbated by media coverage of distressed local governments and by banks own difficulties in 2008Q4.

[Insert Figure 2 here]

4 Empirical Analysis

In this section, we study the role of political incentives in fostering the use of structured and toxic loans among local governments.

4.1 Incentives to Hide the Cost of Debt

Given their accounting treatment, structured products can be considered hiding a significant fraction of the cost of debt, which will be repaid only in some specific states of nature. Politicians have an incentive to hide the actual cost of debt and to spend money today while shifting the tax burden onto future generations (Novy-Marx and Rauh, 2011). We hypothesize that the incentive to hide a fraction of the cost of debt will be greater for highly indebted local governments, as monitoring by voters and other stakeholders is likely to be closer.

[Insert Table 4 here]

Panel A in Table 4 provides an initial overview of the popularity of toxic loan usage for the top and bottom indebtedness quartiles of the local governments in Dataset A. The panel shows unconditional statistics that suggest that highly indebted local governments use structured and toxic loans more frequently and to a greater extent. We extend the analysis in Table 5 and run several probit regressions on the use of structured and toxic loans by local governments based on Dataset A. In columns 1 and 2 (3 and 4), the explained variable is an indicator variable that is equal to one if the local government has some structured (toxic) products in its debt portfolio and zero otherwise. Columns 5 and 6 present the coefficients from an ordered probit regression in which the dependent variable is equal to the sum of the two previous dummies; namely, the dependent variable takes a value of two if toxic loans are used, one if structured but not toxic loans are used, and zero otherwise. For each specification, we assess the robustness of our conclusions using a set of extra control variables, including the debt average maturity, population, banking relationships (indicator variables for lending relationships with Dexia, Credit Agricole, Socit Gnrale, and others), and territory characteristics (unemployment rate, share of agriculture, and industry in the active population). Furthermore, we control for several other economic variables and for fixed effects by local government types (regions, counties, intercities, and cities) in each regression and cluster standard errors by local government types.

[Insert Table 5 here]

The results from Table 5 are consistent with the existence of greater incentives to hide the actual cost of debt for local governments that are swamped with debt. Such governments tend to use structured and toxic loans more frequently. Indeed the estimated coefficient on the debt/population is positive and statistically significant in all specifications. Because the level of debt will be more closely monitored in these local governments, they have stronger incentives to enter into such transactions. In a further robustness check (not presented), we also include the operating income per inhabitant and central government subsidy per inhabitant. Because regression coefficients are not statistically significant, we conclude that the debt burden dominates the effects of revenues or dependence on the central government. Another possible explanation for these empirical results would be that indebted local governments turn to toxic loans as last-resort financing when other means of financing are unavailable to them. However, our data are inconsistent with this alternative hypothesis, as some highly indebted local governments have no structured debt at all (thus, even these local governments can access standard financing). We also report a negative relationship between the use of structured products and investments (measured by equipment expenditure per inhabitant). If we consider high investment expenditure, as opposed to operating expenditure, to be a signal of sound management, then it is reasonable to believe that well-managed local governments that are concerned about the future are more reluctant to take unnecessary risks in the financial markets. We believe that this negative coefficient is not due to reverse causality. In 2007, most products were in their guaranteed coupon period; thus, it is unlikely that local governments had to decrease their investments because of ballooning interest rates. However, the absence of satisfying instruments for the use of these products prevents us from using investments as a left-hand-side variable and being able to neatly identify the real effects of toxic loans. Overstaffing, which signals short-term spending and is measured through wages over operating costs, also shows a significant positive correlation with the use of toxic loans. Debt average maturity provides us with another important control, as toxic loans require long-maturity debt (recall that these loans rely on an implicit sale of options). The type of banking relationship is also a critical driving factor for toxic loan usage. The presence of banks having a broad structured loan offering in their financing pool significantly increases the likelihood of a local government eventually using these products. The effect is greater for banks that specialize in loans to local governments, such as Dexia or Depfa, than for universal banks. To complement our analysis, in columns 7 and 8 of Table 5, we conduct additional regressions to measure the extent to which the level of indebtedness influences borrowing choices. We analyze the structured debt/total debt ratio, the toxic loans/total debt ratio, and the foreign exchange loans/total debt ratio using OLS, thereby capturing the extent to which these products have been used. We control for the exact same variables as in Table 5. These additional regressions confirm our previous results regarding the importance of the level of indebtedness. Thus, a per capita debt increase of EUR1,000 leads to an increase of more than 12.8% of the share of structured loans in the total debt and 4.2% of the share of toxic loans. Table 6 also underlines the role of debt maturity, especially for foreign exchange-linked toxic loans that exploit the long end of the FX forward curves. Longer maturities also allow higher subsidies in a manner that is more than proportional and thus magnify the temptation to hide the cost of debt.

4.2 Political Cycle

Toxic loans represent a way of hiding the real cost of debt. We hypothesize that the political cycle interacts with incentives to hide the cost of debt, thus creating cross-sectional and time-series variations according to each local governments political situation. When their re-elections are likely to be contested or when the next election draws closer, incumbent politicians may desperately seek immediate savings for a limited time, possibly corresponding to their political mandate period. One means of achieving this short-term financial release without raising the suspicion of voters is the use of structured financial instruments. Toxic loans allow budget window dressing as a result of their initial low-coupon guaranteed period, as mentioned previously. This hidden characteristic and the accompanying short-term financial release may cause structured loans to be used more frequently in politically contested areas, whereas strongholds should exhibit lower usage. The timing of these transactions should also depend on the date of the next election in a local government; incumbent politicians have an incentive to implement transactions before the election to benefit from the immediate savings that they provide. Politically contested areas For a subsample of local governments in Dataset B for which past elections results are available, we proxy political stability by the number of years for which the party of the incumbent mayor (or its equivalent) has been in power. Toxic loans may catalyze agency problems, as they allow politicians to implement hidden self-serving strategies. The data appear to be consistent with this hypothesis. Indeed, Panel B in Table 4 illustrates how politically contested local governments make more important use of structured loans compared with political strongholds. We also conduct OLS regressions on three different measures of the usage intensity of structured loans: (1) structured debt/total debt ratio, (2) mark to market/total debt ratio, and (3) toxic debt/total debt ratio. The results are presented in Table 6.

[Insert Table 6 here]

The results in Table 6 provide further favorable evidence for a positive effect of political uncertainty on the use of toxic loans: strongholds are less inclined to enter into these transactions. All of the estimated coefficients on the number of years in power are indeed significantly negative. This finding indicates the increased incentives for politicians with challenging re-elections to enter into risky transactions, which can be either a form of risk-shifting strategy or a poison pill for the next government because losses require several years to materialize. It has been shown that political uncertainty reduces firm investment (Julio and Yook, 2012), and we complement this stream of literature by demonstrating the influence of this uncertainty on the economic decisions of politicians. We control for political affiliations and the size of local authorities. The latter proxies for financial sophistication, as larger local governments devote more staff and resources (e.g., consulting and software) to the management of their debt and thus have greater expertise in this area. Finally, our results indicate that small local governments use more structured products than large governments do. All three measures of the relative use of structured and toxic loans are significantly negatively correlated with the log of the population. This finding suggests that banks have more successfully marketed these products to clients that are less likely to possess the requisite financial knowledge to fully understand and adequately monitor them. Small local governments appear to use structured loans in larger quantities and to be more inclined to enter into the riskiest transactions; this finding is consistent with overindebtedness patterns in households with low debt literacy (Lusardi and Tufano, 2009). Effect of election timing We use a difference-in-differences approach to test whether local governments engage more frequently in structured debt prior to an election. We compare a treatment group that includes counties, municipalities, and intercities that hold elections at the end of 2008Q1, with a control group consisting of public entities with no elections (e.g., hospitals, social housing entities, and airports). The management teams of the entities from the treatment group are chosen simultaneously following the same election cycle. Those from the control group have management renewals according to individual and random timing. The control group also includes political entities that have electoral cycles but no election during that particular year (regions). We implement difference-in-differences methodology by comparing the difference of the probability of implementing a trade before and after the election between the two groups. The purpose of this approach is to be able to precisely identify the influence of election timing on structured transaction implementation. Using panel conditional logit regressions, 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) by controlling for quarter fixed effects. The model specification is as follows:

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

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 a dummy variable that is equal to one if local government i is in the treatment group and a dummy variable that is equal to one if quarter t is before the election. The results are shown in Table 7.

[Insert Table 7 here]

When comparing to the control group with no elections, we observe that the local governments in the treatment group are significantly more likely to implement structured and toxic transactions in the period preceding the election than in the period following it. The results are robust to the time window under consideration. 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 smaller in magnitude and statistically insignificant, which is consistent with our results being driven by the election cycle.

4.3 Herding

Local government members and civil servants belong to strong local and political networks that facilitate word-of-mouth diffusion. This channel of communication is critical for triggering herding, as structured transactions typically remain private. Therefore, peer effects should play an important role in terms of both ignoring personal beliefs and managing ones reputation (Scharfstein and Stein, 1990) to create a cascade effect. Following the crowd can indeed be a rational strategy. First, when structured products perform well, structured loan users benefit from a low interest rate on their debt. Second, when structured products perform poorly, all structured loan users confront the same turmoil, and a collective solution must be found. This risk taking from the herd also relates to models of collective moral hazard, as it increases the likelihood of being bailed out if risk materializes (Farhi and Tirole, 2012). Therefore, the propensity of a given local government to use structured loans increases with the number of contaminated local governments in the same geographical zone. To identify this behavior, we again exploit the time dimension of Dataset B. Although the majority of the variables studied in the previous section exhibit low time variation, the number of trades in a given geographical zone shows both time-varying and cross-sectional heterogeneity, which calls for a panel data identification strategy that controls for individual fixed effects.

[Insert Table 8 here]

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 again 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:

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

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 the $I_{k,t-1,\{Active\,=\,1\}}$ variable is a dummy 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 shows the conditional logit and OLS regression coefficients. We show that the number of active neighbors in the previous quarter and semester appears to significantly increase both the likelihood and the extent to which a local government enters into structured debt transactions. Note that this result cannot be caused by a time trend, as we use quarter fixed effects. Because time lags alleviate endogeneity concerns, we conclude that this market exhibits herding behavior. This effect shows low persistence, as the estimated coefficients decrease when we consider two quarters. To the best of our knowledge, this finding is the first empirical evidence of the peer effects for liability-side decisions and the first illustration of herding in the economic decisions of politicians. An alternative explanation for this correlation in borrowing choices would be the existence of regional shocks on the supply side. However, as Dexia covered the entire French territory before the inception of the structured debt market, this finding is unlikely to be driven by new branch openings. The arrival of a highly convincing salesperson in a given region could also create such local shock. However, because of the long-term relationships within this industry and the low employee turnover thus implied, effects are unlikely to occur at quarterly frequency or simultaneously in different geographic zones.

4.4 Political Affiliation and Fiscal Policy

Political affiliations play an important role in financial decisions (Bonaparte et al. (2012), Hong and Kostovetsky (2012)). Belonging to a right- or left-wing political party can influence the economic opinions of leaders, optimism, and relationships with banks, which may in turn affect the appetite of politicians for risky loans. More specifically, right-wing politicians typically implement tighter fiscal policy (Hibbs, 1977). Structured loans are consistent with this purpose because they reduce the cost of debt in the short term without increasing nominal valuean indicator that is closely monitored by voters. Pressure has increased on the budgets of local governments. Therefore, local governments that are controlled by a right-wing party should more heavily rely on structured loans, as their incentives to lower the debt nominal level and balance the budget are higher. Right-wing voters are typically more sensitive to these aspects, as evidenced by recent polls on partisan issues. Right-wing politicians may use toxic loans to cater to voter expectations, if only for the short term. Panel C in Table 4 shows that local governments that are managed by right-wing parties tend to exhibit greater and more widespread use of structured loans, especially toxic loans. Thus, such governments hold 50% more toxic debt in their balance sheets than authorities under left-wing control. Moreover, the regressions in Tables 5 and 6 include an indicator variable of right-wing-managed local authorities, which shows significant explanatory power for the use of structured and toxic products. This result supports our hypothesis that right-wing politicians aim to minimize public spending and may have a less defensive posture toward financial markets and innovation (Kaustia and Torstila, 2011). The economic significance of this result is confirmed by the estimated coefficients for the right-wing dummy with different model specifications in Table hide, which are based on a different and larger dataset.

4.5 Alternative Motive: Hedging

One may wonder whether structured loans have been used as hedging devices. From a theoretical perspective, it appears unlikely that toxic loans are used for hedging purposes. Indeed, as shown in Section 2.2, the payoffs of structured products are typically nonlinear and convex because of the embedded sale of out-of-the-money options. Therefore, a local government would benefit from hedging through these instruments only if its operational cash flows presented a strong surplus in some tail events. To eliminate this alternative explanation, we examine the correlation between French local government revenues and the main indices that are used in structured products: Euribor 3 months, CMS 10Y CMS 2Y, EURCHF, and EURUSD. Our analysis is based on all French regions, French counties, and the 100 largest cities, and it covers the 1999-2010 period. Overall, we find little correlation between revenues and financial indices (all results are available in Table A2 in the appendix). We also run a pooled 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. We also perform similar regressions at the local government level and again find no significant results. This additional analysis suggests that structured debt is unlikely to serve as a hedging device for local governments. This conclusion is consistent with empirical evidence of corporations using hedging policies to make directional bets (Baker et al., 2005). Finally, the hedging motive was never suggested during our conversations with buy-side and sell-side practitioners.

5 Conclusion

In this paper, we present an empirical investigation of the role of political incentives in the use of complex financial products. Although it is commonly believed that users of complex products do not have sufficient information or understanding of the risks involved, we show in this paper that local governments make strategic use of complex debt products. We find that most local governments use structured loans and that these types of loans account for a surprisingly high 20% of their total outstanding debt. Furthermore, such loans are utilized significantly more frequently within local governments that are highly indebted, which is consistent with their greater incentives to hide the actual cost of debt. Incumbent politicians from politically contested areas are more likely to use structured debts, and transactions are more frequent before elections than after elections. Toxic loan users appear to exhibit herding behavior. Participation in structured transactions by ones neighbor during the previous period significantly increases the likelihood of behaving similarly. Moreover, right-wing politicians are more inclined to use structured loans than their counterparts from the left. During the subprime crisis, securitization facilitated a political agenda of easy access to home ownership. Similarly, we show that financial institutions have innovated to design financial securities that are aligned with the political incentives of local government members. 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. Furthermore, changing public accounting standards to account for mark to market losses and gains should curb the incentives at play by increasing transparency, as observed in comparable markets (Jenter et al., 2011). Such changes would limit the use of toxic loans while maintaining the autonomy of local governments in terms of financial decisions. However, the greatest risk of toxic loans likely lies in outstanding transactions and the accompanying non-realized losses. The recent bailout answer only partially to this challenge.

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6 Figures

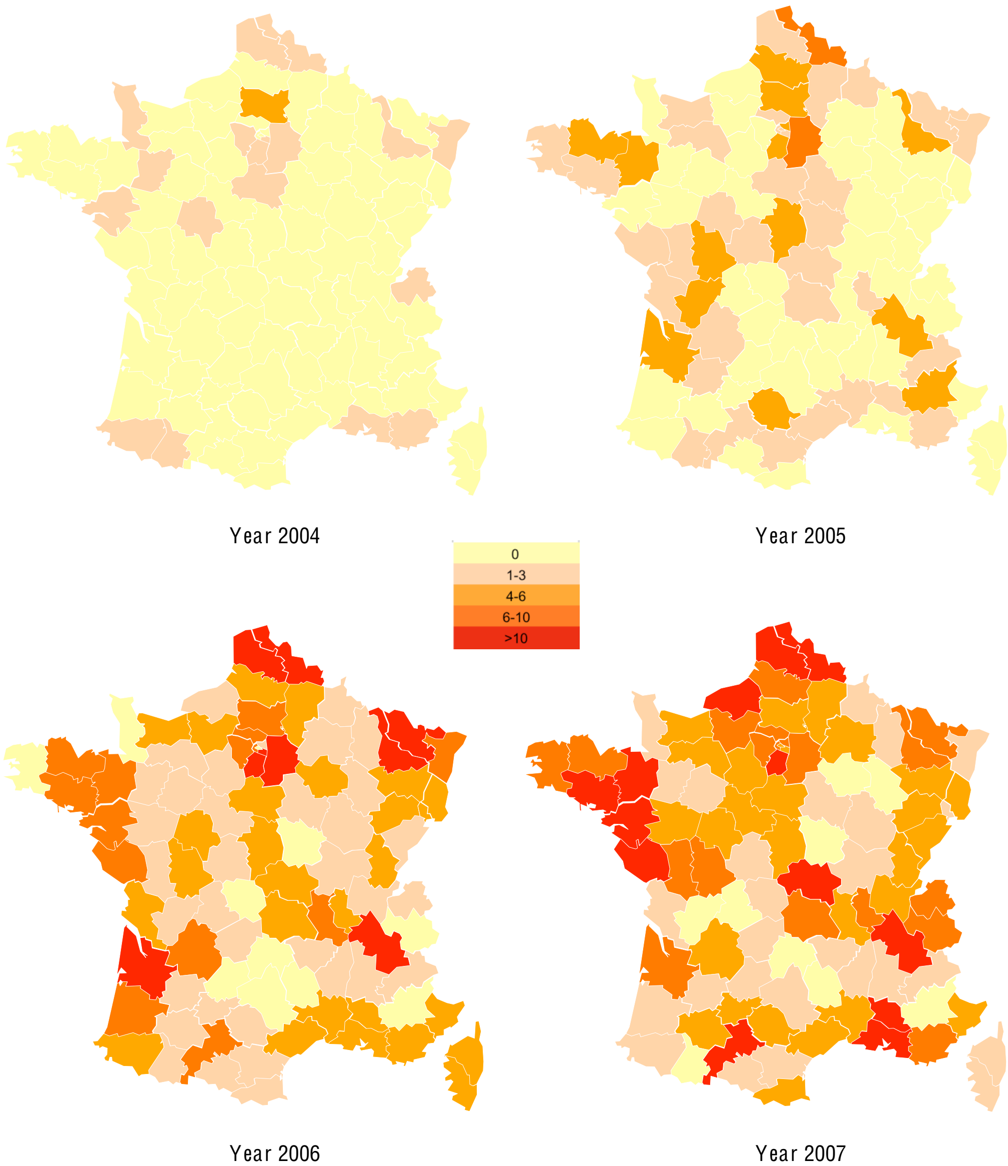

Figure 1: Geographical Evolution of Structured Debt Activity

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 Dexias client portfolio (Dataset B).

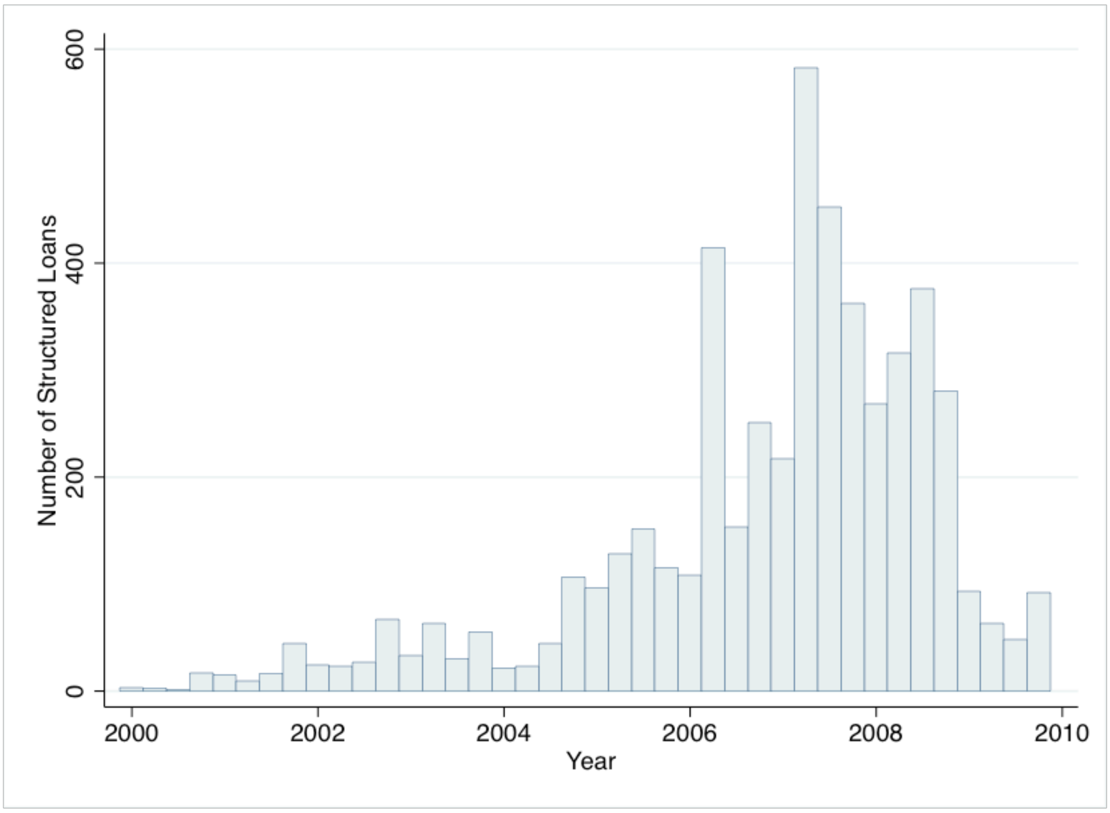

Figure 2: Number of Structured Debt Transactions per Quarter

This figure displays the number of structured loans initiated during a given quarter by local governments in France for the 2000-2009 period. The data are obtained from Dexias client portfolio (Dataset B).

7 Tables

Table 1: Debt Profile of Local Governments

	All	Regions	Counties	Intercities	Cities
Sample observations	293	25	96	76	96
% of Total	-	92.60%	96.00%	42.50%	10.10%
Total Debt					
Amount	51,994.7	10,369.9	21,162.4	7,874.6	12,587.7
Mean	177.5	414.8	220.4	103.6	131.1
Stdev	248.5	375.5	178.7	194.4	263.8
Min	0	0	0	0	0
Max	1850.5	1405.3	834	1013.8	1850.5
% of use	95.60%	96.00%	99.00%	89.50%	96.90%
Average Maturity					
Mean	12.9	14.6	12.4	14	12.3
Stdev	4.3	3.9	3.6	5.4	3.8
Min	0	5.8	4	1.9	0
Max	32	22.8	22.3	32	21.9

Note: This Table details the different type of debt relief with their effect on liabilities. Cash and Exchange Tender offers coincide with the postponement of bond repayment. The numerical example is based on a hybrid bond with a EUR1bn notional amount, a 4% yearly coupon and a current refinancing cost of 7%

Table 2: Local Government Debt Breakdown by Types of Instruments

	All	Regions	Counties	Intercities	Cities
1.Vanilla Financing					
Aggregate	34611.5	7831.4	13100	5780.1	7900.1
Share in %	66.60%	75.50%	61.90%	73.40%	62.80%
Mean	118.1	313.3	136.5	76.05	82.3
Stdev	182.9	308.9	123	159.1	174.8
Max	1265.6	1081.2	608.3	888.7	1265.6
% of use	94.90%	96.00%	97.90%	88.20%	96.90%
2. Revolving Facilities					
Aggregate	6953.2	1410.1	3260.6	759.8	1522.7
Share in %	13.40%	13.60%	15.40%	9.60%	12.10%
Mean	23.7	56.4	34	10	15.9
Stdev	55.2	77.5	48.4	22.6	67.1
Max	646.2	308.4	282	110	646.2
% of use	58.40%	64.00%	74.00%	40.80%	55.20%
3. Structured Debt					
Aggregate	10429.9	1128.5	4801.9	1334.7	3164.9
Share in %	20.10%	10.90%	22.70%	16.90%	25.10%
Mean	35.6	45.1	50	17.6	33
Stdev	70.2	59.1	92.8	35.9	64.3
Max	648.3	215.3	648.3	241.5	501.7
% of use	72.40%	72.00%	74.00%	63.20%	78.10%
Of Which Toxic Loans					
Aggregate	4372	401.3	2393.2	481.9	1095.6
Share in %	8.40%	3.90%	11.30%	6.10%	8.70%
Mean	14.9	16.1	24.9	6.3	11.4
Stdev	44.4	44.4	65.1	15.6	30.7
Max	509.9	215.2	509.9	92.4	218.7
% of use	43.00%	36.00%	52.10%	35.50%	41.70%

Note: This table contains summary statistics on the different types of debt for a sample of French local governments. The data are obtained from a survey conducted by a specialized consulting firm as of December 31, 2007 (Dataset A). Aggregate denotes the sum of the debt notional amount over all local governments. Total debt is the sum of all debt instruments for a given local government. This table displays statistics on aggregated and local government-level amounts of debt. Notional figures are in millions of euros, except for share in % and % of use. Share in % represents the aggregated amount of a given debt instrument in the sample divided by the aggregated total debt of the sample. Vanilla financing includes fixed rate and floating rate loans as well as bonds. A revolving facility is a credit line that allows a borrower to flexibly draw down, repay, and redraw loans advanced to it.

Table 3: Structured Transactions

	All	Regions	Depart.	Intercit.	Muni.	Hospit.	Social Housing	Others
Number of Trades								
Mean	1.9	2.8	3.4	1.8	1.9	1.8	2.7	1.7
Stdev	1.6	3.3	2.5	1.5	1.3	1.3	2.7	2.1
Max	20	14	11	12	13	9	16	20
Structured Notional								
Mean	8.6	37.2	50.6	7.8	5.6	11.2	15.3	11.9
Stdev	22.6	46.3	82.1	19	12.9	24.4	19.1	30.9
Max	459.3	175.5	459.3	282.1	271.6	219.5	135.6	214.9
Mark to Market								
Mean	1.4	4.7	8.5	1.3	0.9	1.7	2.4	2.3
Stdev	5.1	7.2	22	3.8	2.8	3.9	4.1	9
Max	147.4	23	147.4	49.2	54	31.7	18.5	75.3
Mark to Market/Notional								
Mean	11.80%	9.00%	10.90%	11.60%	11.50%	13.20%	13.10%	12.50%
Stdev	8.90%	5.10%	8.10%	8.20%	8.60%	9.10%	13.60%	9.00%
Max	79.30%	21.40%	40.90%	51.00%	79.30%	50.40%	59.70%	53.80%
FX Products								
% of use	17.70%	25.00%	36.40%	17.80%	16.20%	22.20%	21.40%	10.10%
Max notional	400	91.7	400	232.7	70.1	104.2	68.9	94.4
Max mtm	134.1	16.1	134.1	43.8	23.4	36	14.8	38.6
Max ratio	86.80%	45.90%	45.40%	59.00%	86.80%	61.10%	75.50%	61.30%

Note: This table contains summary statistics regarding the number of structured transactions, the total structured notional amount, the total mark to market, and the use of FX products at the local government level of the entire client portfolio of Dexia as of December 31, 2009 (Dataset B). The table includes the following types of public entities: regions, counties, intercities, municipalities, hospitals, social housing entities, and others (airports, harbors, chambers of commerce, healthcare cooperatives, public-private joint ventures, schools, research institutes, nursing homes, fair organizers, and charities). All notional and mark-to-market figures are expressed in millions of euros. Mark to market represents the amount that a local government should pay to the bank to unwind the derivative component of a structured debt (i.e., to convert it into vanilla debt).

Table 4: Toxic Loan Usage and Political Incentives

	Debt Hiding Incentives (A)			Political Stability (B)			Political Affiliation (C)		
	First Quartile Indebted	Last Quartile Indebted	Test	Strongholds	Non-Strongholds	Test	Left Wing	Right Wing	Test
% of use: Struct.	41.00%	89.60%	***	n.a.	n.a.		70.30%	74.60%	
% of use: Toxic	19.30%	54.50%	***	n.a.	n.a.		38.10%	48.60%	**
Structured/Total	14.50%	26.30%	***	23.40%	29.10%	***	19.00%	21.00%	
Toxic/Total	5.10%	9.90%	**	13.10%	16.50%	*	5.90%	9.10%	**
Mtm/Total	n.a.	n.a.		3.40%	4.80%	***	n.a.	n.a.	
Observations	83	77		163	173		138	155	

Note: This table contains summary statistics regarding the frequency and the extent of structured and toxic loan usage for sub-samples of the local government survey data (Panel A and B) as well as for Dexias client portfolio (Panel C). In Panel A, the first (last) quartile of the indebted sample includes the 25% least (most) indebted local governments. In Panel B, the stronghold sample includes local governments that have been ruled by the same party for more than 20 years, whereas the non-stronghold sample includes local governments that have been ruled by the same party for fewer than 10 years. In Panel C, the left-wing (right-wing) sample includes all local governments managed by a left-wing (right-wing) party. % of use: Struct (% of use: Toxic) denotes the percentage of local governments in the sub-sample that have at least one structured (toxic) loan in their debt. Structured/Total is the mean value of structured debt over total debt, whereas Toxic/Total is the mean value of toxic debt over total debt. Mtm is an abbreviation for mark to market, which is the amount that a local government must pay to the bank to unwind the derivative component of a structured debt (i.e., to convert it into vanilla debt). Therefore, Mtm/Total denotes the mark to market over total debt. The Test columns display the level of statistical significance of a t-test between the mean values of the right column minus the left column. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 5: Incentives to Hide Cost of Debt

	Probit				Ordered Probit		Magnitude	
	Structured	Structured	Toxic	Toxic			Structured	Toxic
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Debt/Population	1.564***	2.081***	0.751***	0.679***	0.812***	0.817***	12.831***	0.021**
	4.28	4.29	5.07	7.53	4.55	8.07	7.71	4.32
Right-Wing Dummy	0.226***	0.364	0.223**	0.365***	0.210**	0.323***	2.317	0.018*
	3.56	1.47	2.15	8.05	2.44	3.27	0.79	2.62
Equipment Expenditure/Pop.		-0.004***		-0.001*		-0.002***	-0.02	-0.000**
		-3.71		-1.67		-2.88	-2.08	-3.29
Wages/Operating Expenditure		3.809***		0.965		2.350***	-0.592	0.006
		5.51		0.94		4.38	-0.04	0.23
Debt Average Maturity		0.075***		0.057***		0.083***	1.204**	0.004**
		2.99		3.05		4.94	3.65	3.75
Log (Population)		0.070***		0.085***		0.082***	1.110**	0.003**
		3.56		8.13		18.87	5.5	4.97
Unemployment		0.019		0.046*		0.030*	-0.239	0.001**
		0.84		1.65		1.66	-1.14	3.42
Agriculture		0.003		0.076**		0.039***	-0.914	0.002**
		0.09		2.33		2.71	-2.19	4.29
Industry		0.047**		0.025		0.039	0.309	0.002
		1.98		1.53		1.45	0.89	1.83
Lender Relationship FE	NO	YES	NO	YES	NO	YES	YES	YES
Local Government Type FE	YES	YES	YES	YES	YES	YES	YES	YES
Pseudo $\hat{R2}$ / $\hat{R2}$	0.135	0.304	0.065	0.181	0.04	0.129	0.243	0.259
Number of Observations	293	275	293	275	293	275	263	263

Note: This table contains the probit regression coefficients using debt portfolio data from a sample of local governments (Dataset A). The dependent variable is a dummy variable for the use of structured products for the first two columns, a dummy variable for the use of toxic loans (as defined in section 2) for columns 3 and 4, and a variable covering the 6 levels of underlying risk for columns 5 and 6. Standard errors of the coefficients are clustered by types of local governments, and Z-statistics are reported in brackets. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 6: Politically Contested Areas

	Structured Debt /Total Debt (1)	Structured Debt /Total Debt (2)	Mark to Market /Total Debt (3)	Mark to Market /Total Debt (4)	Toxic Debt /Total Debt (5)	Toxic Debt /Total Debt (6)
Years in Power	-0.1683*	-0.1761**	-0.0401**	-0.0373**	-0.0785*	-0.1245***
	-2.97	-4.94	-5.37	-6.9	-3.1	-9.91
Right-Wing Dummy		1.5221***		0.0204		2.8585**
		9.52		0.48		7.3
Log (Population)		-5.9739*		-0.8441*		-3.2835*
		-3.42		-2.91		-3.37
Local Gov. Type FE	YES	YES	YES	YES	YES	YES
R2 / Pseudo R2	0.1267	0.1603	0.0513	0.0614	0.0507	0.0665
Observations	389	389	389	389	389	389

Note: This table contains cross-sectional OLS regression coefficients using data from Dexias client portfolio (Dataset B). The dependent variable is the measure of structured loan use intensity as indicated in the column header. Years in power refers to the number of years during which the political party of the incumbent (as of December 31, 2009) has been managing the local government. Standard errors of the coefficients are clustered by types of local governments, and t-statistics are reported in brackets. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 7: Difference-in-Differences Estimation of Election Timing Effects

	C-logit Structured Trade		Placebo C-logit Structured Trade	
	+\- 18 months	+ \- 12 months	+ \- 18 months	+ \- 12 months
	(1)	(2)	(3)	(4)
Interaction Pre-Election/Treatment	0.3522***	0.3350***	0.0275	0.0262
	2.88	3.28	0.39	0.26
Quarter Fixed Effects	YES	YES	YES	YES
Regression Type	PANEL	PANEL	PANEL	PANEL
R2 / Pseudo R2	0.0815	0.0545	0.0805	0.0534
Number of Periods	12	8	12	8
Observations	2741	2741	2741	2741

Note: This table contains the conditional logit (C-logit) regression coefficients that are estimated using data from Dexias 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 a dummy for the treatment group (local governments having an election at the end of 2008Q1) and a dummy for the pre-election period. Columns 3 and 4 present a placebo analysis in which the treatment group dummy that is used in the interaction term has been replaced by a dummy on a random sample of similar size; the regressions include individual public entity fixed effects. Standard errors are clustered by type of public entity. Z statistics are reported into brackets. The time window is 18 months before and after the election (the end of March 2008) for columns 1 and 3, and the window is 12 months for columns 2 and 4. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 8: Herding Behavior in the Borrowing Choices of Politicians

	C-logit Structured Trade		OLS (Structured Debt Notional)	
	(1)	(2)	(3)	(4)
# of Active Public Entity in Same Zone the Previous Quarter	0.0183***		10.3991***	
	5.53		3.03	
# of Active Public Entity in Same Zone the Previous Two Quarters		0.0064**		4.3144*
		1.91		1.81
Quarter Fixed Effects	YES	YES	YES	YES
Regression Type	PANEL	PANEL	PANEL	PANEL
R2 / Pseudo R2	0.155	0.1486	0.0101	0.0098
Number of Periods	40	39	40	39
Number of Public Entities	2741	2741	2741	2741

Note: This table contains the conditional logit (C-logit) and OLS panel data regression coefficients that are estimated using data from Dexias 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 public entity in a given quarter (or semester) for the OLS regressions. The explanatory variable is the number of active public entities 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 public entity fixed effects. Standard errors are clustered by type of public entity. *, **, and *** represent statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

8 Appendix

8.1 Types of Structured Debt Products and Risk Classification

Products are presented by increasing level of risk according to the Gissler classification. For each type of products, summary statistics are provided in Table A2.

Barriers on Domestic Rate (Underlying Risk Level: 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:

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

The underlying index is a very liquid interest rate. Coupon structure does not include any leverage effect. Both the subsidy offered to client and the bank margin are low (¡0.50% of notional). Barriers were the first products to enter the market in the late 1990s. Their coupon formula can be broken down into its vanilla loan component and an embedded short put option:

$$Vanilla\ loan\ coupon: \qquad US\ Libor(t)$$

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

Inflation Products (Underlying Risk Level: 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:

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

This illustrates the clients 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 historically higher inflation.

Steepeners (Underlying Risk Level: 3):
In a Steepener structure, the coupon 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:

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

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 coupon formula, usually without any cap.

Quantos (Underlying Risk Level: 4):
They represent variable interest rate products that are indexed on 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:

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

FX Products (Underlying Risk Level: Out of Scale):
FX products are also based on an implicit sale of options. However FX options 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 clients view. An example of payoff for an FX product is:

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

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

Cumulative Structures: (Underlying Risk Level: 1 ; Structure Risk Level: Out of Scale)
Cumulative structures can be structured on any underlying: domestic/foreign interest rates, FX rates, or inflation rates. They are based on an iterating coupon formula. Coupon 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 coupon profile is:

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

Due to the iterating definition of the coupon, frequency of coupon 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).

8.2 Appendix Tables

Table 9: 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. The data are obtained from a survey conducted by a specialized consulting firm 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 vanilla bank loans and EUR30m of FX linked debt will be considered as a local government with 30% of FX linked debt.

Table 10: Structured-Debt Breakdown

	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 coupon. 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.