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15003-EEF

Does intermunicipal cooperation create inefficiency? A comparison of interest rates paid by intermunicipal organizations, amalgamated municipalities and not recently amalgamated municipalities.

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March, 2015

Abstract

In many countries, local governments operating on a small scale face a choice between amalgamation and cooperation. This paper applies a novel methodology to investigate the implications of this choice for operating efficiency. Using a unique micro-level dataset of over 11,000 loans made to both municipalities and intermunicipal organizations in the Netherlands, we show that the latter consistently pay higher interest rates than the former. That is remarkable, because credit risk is zero in both cases, and we control for loan characteristics like amortization and maturity. In contrast, municipal amalgamation does not result in higher interest rates. Possible legal or administrative costs associated with enforcing loan guarantees cannot explain the higher interest paid by intermunicipal organizations. That is because we find that public companies (which may default) do not pay higher interest rates than public bodies (which never default). Surprisingly, the number of partners cooperating in an intermunicipal organization does not affect interest rates. Thus, we find no evidence for the "law of 1/n".

Keywords: intermunicipal cooperation, municipal amalgamation, efficiency, common pool, law of 1/n, local government borrowing

Acknowledgements: the authors thank BNG Bank for letting us use their data, Hans Moerman for helping us access the data, Ralph Boltong for explaining individual transactions, Remco Zwetheul for his insights in municipal lending procedures, Hans Leenaars, Hans de Groot and Jacob Veenstra for comments on a previous version of this paper and Marloes van Gelder and Lieneke Janzen for excellent research assistance.

1. Introduction

In many countries, local governments are believed to have a suboptimal scale for offering public services efficiently, because of scale economies and because of spending spillovers. That is especially true in countries where amalgamation is rare or non-existent or where substantial public tasks have been decentralized recently. There are several ways local government can increase operating scale: through amalgamation, through cooperation with other governments and by contracting out or partnering with the private sector.

Contracting out requires a competitive market, which does not exist for many services for which local government is responsible. Where it has been applied, results have often been disappointing (Bel et al. 2010). The same goes for public-private partnership (Andrews and Entwistle 2010). This paper focuses on amalgamation and cooperation. *Municipal amalgamations* have been conducted in, e.g., Belgium (1977), New Zealand (1989), Israel (2003), Denmark (2007) and the Netherlands (continually), and are currently being considered in both Norway and Finland. Amalgamations often lead to public resistance because communities fear loss of autonomy or identity. In case of preference heterogeneity among the inhabitants of the merging jurisdictions, amalgamations may reduce allocative efficiency. That is because larger jurisdictions are less able to tailor local services to local demand, which is the basic rationale for decentralization (Oates 1972).

Another problem with amalgamation is that it is a blunt instrument. Services offered by local governments are quite heterogeneous. While for some (e.g., capital intensive) services the local government might operate under economies of scale, for other services the opposite may be true. Hence, an overall upscaling could invoke efficiency gains in some public services and efficiency losses in others. Also, amalgamation may result in more bureaucracy, reducing efficiency.

Intermunicipal cooperation offers municipalities a way to increase scale of production for selected public services only, while continuing to provide other public services on a municipal level, and preserving local autonomy. Although intermunicipal cooperation is a wide-spread phenomenon (Hulst and Van Montfort 2012), it has not been extensively studied.

Cooperation may allow municipalities to exploit economies of scale and thereby improve efficiency, but it may also have effects that reduce efficiency. Agency theory predicts that cooperation exacerbates agency costs, especially as a result of dispersed ownership.

Intermunicipal cooperation in effect creates a common pool. When a particular municipality puts a lot of effort into monitoring the intermunicipal organization, most of the gains from that effort will benefit the other participants. As a result of this disincentive, the level of monitoring is likely to be lower than that for the operations of the municipality itself. This could lead to inefficiencies, as managers of intermunicipal organizations will have goals which do not necessarily match those of the cooperating municipalities.

As this disincentive to monitor is linked to the existence of a common pool, its strength may depend on the size of this pool. Efficiency of intermunicipal organizations could, e.g., increase with the inverse of the number of participants, a phenomenon called the "law of 1/n" (Weingast 1979). Other theories, however, predict an "inverse law of 1/n" (Primo and Snyder 2008), e.g., because an increase in the number of participants reduces the scope for political meddling, or because it creates the need to curb inefficiency lest some participants will leave.

Empirical studies of intergovernmental cooperation often focus on the determinants of cooperation (e.g., Blaeschke 2014; Di Porto et al. 2013; Feiock et al. 2009; Hefetz and Warner 2011, LeRoux et al. 2010). Studies on the effects of intermunicipal cooperation are mostly case studies or survey studies (e.g., see Dollery et al. 2009). Bel and Warner (forthcoming) survey the literature, and find just eight econometric studies of the effect of cooperation on public service costs or spending. All of these study solid waste services, one of them in combination with water, electricity and gas (Garrone et al. 2013). Most use spending on solid waste collection or waste disposal fees as dependent variable; some but not all control for differences in output and quality. Five conclude that cooperation reduces costs (Bel and Costas 2006; Bel and Mur 2009; Dijkgraaf and Gradus 2013; Zafra-Gómez et al. 2013; Bel et al. 2014), two find rising costs (Sørensen 2007; Garrone et al. 2013) and one has insignificant results (Dijkgraaf and Gradus 2014). A Dutch study finds no differences in efficiency between municipalities providing household solid waste services alone or in cooperation with other municipalities (Felsö et al. 2011). Frère et al. (2014) find no effect of cooperation on total spending of French municipalities.

The empirical literature on the effects of municipal amalgamations is mixed as well. Lüchinger and Stutzer (2002), Hansen (2011) and Moisio and Uusitalo (2013) find higher spending after amalgamation, Reingewertz (2012) and Blesse and Baskaran (2013) find lower spending and Hanes (2014) finds lower spending for small municipalities and higher spending

for bigger ones. Allers and Geertsema (2014) find no effect on aggregate spending, nor on local house prices (used as an indicator for efficiency).

Empirical studies of the effects of cooperation or amalgamation often focus on spending levels. Higher spending does not necessarily point to increased inefficiency, however. It may simply reflect rising public service levels. Unfortunately, efficiency of municipalities is hard to measure, because output is often ill-defined, heterogeneous and hard to quantify. Empirical studies in this field suffer from two fundamental problems (Geys and Moesen 2009). They have to make do with the scarce output indicators that are available, which usually are at best crude proxies for the true level of public good provision. Moreover, they rely on strong assumptions (e.g., regarding the cost function), or they are vulnerable to data errors (if data envelopment analysis is used to measure efficiency). Because all previous papers on the effects of intermunicipal cooperation focus on a service, waste, for which output is easy to quantify, the first problem does not necessarily apply to them. Indeed, output and quality are controlled for in some of these studies (e.g., Bel and Costas 2006 and Zafra-Gómez et al. 2013).

Our approach is completely different from that of previous studies. Whereas previous studies on the effects of intermunicipal cooperation on costs cover all costs of providing a single service, we focus on a single cost in a broad range of public services. We exploit a unique micro-level dataset on the price both municipalities and intermunicipal organizations pay for a standard commodity: credit. We compare interest rates on loans to Dutch intermunicipal organizations, amalgamated municipalities, and municipalities that were not amalgamated. The credit risk for these loans is identical (i.e., zero). Our rich dataset allows us to control for loan characteristics that influence interest rates. Consequently, any differences we find point ceteris paribus to differences in efficiency, without having to rely on strong assumptions inherent in the approaches chosen by previous studies.

2. Institutional background

Municipalities and intermunicipal organizations

Dutch municipalities are democratically governed jurisdictions with a broad set of responsibilities. They depend heavily on grants provided by the central government, with limited power to raise taxes. Municipalities account for 25 percent of total government spending, which amounts to 10 percent of gdp (Allers et al. 2013). The central government

has decentralized many tasks to municipalities, a process that is still ongoing. Partly as a result of this, municipalities often cooperate to perform specific tasks, ranging from refuse collection to administering social welfare benefits.[1] To this end, many intermunicipal organizations have been created. Cooperation is often aimed at reaping economies of scale. Other reasons to cooperate are that some municipalities are simply too small to perform every task independently, or that the catchment area of a public service exceeds the municipality's boundaries.

Intermunicipal organizations may take different forms (Hulst and Van Montfort 2007). There are no limitations with respect to the number of cooperative arrangements, and municipalities are free to choose different partners for each (except for some cases where cooperation is mandatory). The Joint Provisions Act (*Wet gemeenschappelijke regelingen*) enables municipalities to create *public bodies*, which are separate administrative entities that may employ staff, own assets, borrow money, etcetera. A public body is governed by a general board containing members of municipal councils or aldermen from the participating municipalities. The general board can delegate its authority to an executive board. It is the general board, not the councils of the participating municipalities, that adopts the public body's budget. The municipal councils may express their views on the proposed budget, but the public body's board decides.

Municipalities may also create *public companies* under private law. The management of public companies enjoys almost complete autonomy vis-à-vis local government (Hulst and Van Montfort 2007). The advisory and the executive boards may (partly) consist of representatives of the participating jurisdictions, but they must act in the interest of the company and are not accountable to the municipal councils.

Apart from these two main forms, several other types exist, e.g., foundations and informal communities of government officials in charge of specific public services. The exact number of intermunicipal organizations is not known; no central register exists. However, every municipality participates in several, if not scores, of cooperative arrangements.

An alternative to intermunicipal cooperation is municipal amalgamation. Almost every year, some Dutch municipalities are amalgamated. As a result, the number of municipalities

[1] Some tasks are also contracted out to the private sector, e.g., refuse collection. This is outside the scope of this paper.

gradually decreased from 572 in 1997 to 408 in 2013. With over 40,000 inhabitants on average, Dutch municipalities are large compared with those in other countries (Allers and Geertsema 2014).

Local government borrowing

There are no legal limits to the amounts municipalities or intermunicipal organizations can borrow (Allers forthcoming). Although Dutch municipalities are legally obliged to present balanced budgets, this does not rule out deficit financing. Because municipalities use accrual accounting, expenditures to acquire assets do not burden the budget in the year of acquisition for the full amount, but are spread out over the economic life of the assets, in the form of interest and depreciation, in a way similar to that in business. Thus, a municipality may borrow while at the same time presenting a balanced budget.

There is no default risk associated with loans to municipalities. Dutch municipalities never go bankrupt (Allers forthcoming), and neither do intermunicipal public bodies. Article 12 of the Financial Relations Act (*Financiële verhoudingswet*) stipulates that a municipality may apply for a supplementary grant if revenues are significantly and structurally insufficient to cover necessary outlays, while local tax rates are sufficiently high. This explicit bailout guarantee enables Dutch municipalities to borrow cheaply. According to Article 2.8 of the *Regeling solvabiliteitseisen kredietrisico en grote posities Wft 2010* ("Rules on solvability requirements, credit risk and large positions"), the credit risk associated with loans to municipalities and intermunicipal public bodies is equal to that of loans to the central government. Such loans are not subject to solvency requirements, i.e., the bank is not required to hold more capital if it makes more of these loans.

Unlike public bodies, public companies sometimes go bankrupt, although this happens rarely. Some of the loans to such companies are guaranteed by local governments. Those loans are not subject to solvency requirements as credit risk is zero. If necessary, the bank will contact the municipality acting as a guarantor and receive its money back. Non-guaranteed debt of public companies does carry credit risk, and is excluded from this study.

Loans must be approved by the municipality's board of aldermen or the general board of the intermunicipal organization, or by a civil servant mandated by the relevant board. A representative of the municipality or the intermunicipal organization contacts the client desk of one or more financial institutions, sets out the specifics of the requested loan, and is offered an interest rate. After selecting the best offer, the loan is quickly arranged.

Lending to local government

Two Dutch banks specialize in loans to local governments, BNG Bank and NWB bank. Both enjoy triple-A ratings.[2] Apart from these banks, of which shares are held by the central government and subnational governments, municipalities and intermunicipal organizations may borrow from commercial banks. As bank loans are easily available, local governments do not normally issue bonds. Credit ratings of individual municipalities are not available.

In 2012, the most recent year for which this figure is available, subnational public bodies (mostly, but not exclusively, intermunicipal bodies) had a combined debt of 3.6 billion euro.[3] Countrywide data on debt of other intermunicipal organizations is not available. In the same year, intermunicipal organizations owed BNG Bank 3.5 billion euro and NWB Bank 0.5 billion euro.[4] Intermunicipal public bodies account for 1 billion (BNG) and 0.2 billion (NWB) of these totals. Outstanding debt of municipalities totaled 46 billion euro in 2012.[5] Of this, 27 billion euro was owed to BNG Bank and 7 billion euro to NWB Bank.[6]

We interviewed representatives of BNG Bank on the way interest rates are set.[7] To make long term loans, BNG Bank borrows money on the international capital market. The proceeds of the bonds issues, paying a fixed interest rate, are swapped to Euribor (European inter-bank offered rates) immediately to mitigate interest risk. Short term funding is obtained through the money market. Short term lending rates are based on Euribor rates, long term lending rates are based on swap rates. Before the start of every business day, the bank builds a so called pricing yield curve by first connecting the funding interest rates for different maturities, and then adding surcharges for profit and cost (which may depend on principal and maturity), a liquidity premium (if applicable) [8] and a surcharge for cost of capital ("usage of balance sheet").

The pricing yield curve gives a norm price on which the actual interest rate of a loan is based. Actual interest rates usually differ from this norm price; they are a result of negotiations

[2] In 2013, one of the three major credit rating agencies downgraded the rating of the Kingdom of the Netherlands to AA+. As a result, the rating of these banks was downgraded as well by this agency.

[3] Source: Statistics Netherlands.

[4] Sources: internal data BNG Bank; NWB (2013).

[5] Source: Statistics Netherlands. This includes debts to non-banks (e.g., unpaid bills).

[6] Sources: internal data BNG Bank; NWB (2013).

[7] We interviewed a member of the Board of Directors and persons working at the client desk of the bank.

[8] A liquidity premium was introduced during the financial crisis of 2008, when international credit market liquidity was low.

between the lender and the borrower. E.g., lower rates may be offered to attract extra business on days with ample supply, or when the interest rate on the international market has gone down during the day after the pricing yield curve has been fixed. Borrowers who are aware of the latter are likely to secure better deals than borrowers who do not spend time to collect market information.

Sometimes long term loans have a forward start. This means that the borrowed money is not made available on the day the loan is arranged (and the interest rate set), but at a later date. Interest rates on loans with a forward start are usually higher, because pricing is based on immediately borrowing by the bank, on the capital market, until maturity, and lending to a third party against a usually lower rate for the period until the loan starts. The resulting loss in the first period has to be compensated by a premium on the interest rate during the second period, leading to a higher interest rate. A forward start can be attractive because it provides the borrower with certainty about the interest to be paid, even though the loan has not actually started yet, or because the borrower anticipates rising interest rates. It may also be convenient for intermunicipal organizations where loans have to be approved by a board that does not meet very often. It that case, the board may also give permission to borrow money on certain conditions at a later moment.

3. Theory and hypotheses

Risk and interest rate

Suppose that a bank can choose between two options. This first is a risk-free investment earning a return of $R^* = 1 + r^*$. The second option is a loan to a borrower i who will default with probability P_i, at interest rate r_i. In case of default, the bank recoups a proportion τ of the loan, but this is accompanied by extra costs T, such as judicial or procedural costs. Assume T is fixed, i.e., independent of L, the size of the loan. If borrower i does not default, the bank lends L and gets back LR_i, so the return of investment is R_i. In case of default, the bank receives $\tau LR_i - T$, so the return is $\frac{\tau LR_i - T}{L}$.

Risk neutrality implies that the loan should have the same expected return as the risk-free investment:

$$R^* = (1 - P_i)R_i + P_i\left(\tau R_i - \frac{T}{L}\right) \quad (1)$$

Solving for R_i gives:

$$R_i = \frac{R^* + P_i \frac{T}{L}}{1-(1-\tau)P_i} \quad (2)$$

For Dutch municipalities and public bodies, which never default, P_i is zero and the required rate of return equals the risk-free rate of return:

$$R_i^{municipality} = R_i^{public\ body} = R^* \quad (3)$$

For public companies, default risk is positive, but credit risk is zero, as their debt is guaranteed by default-free municipalities.[9] This means that τ, the proportion of the return that the lender recoups in case of default, equals 1. However, some effort might be needed (and thus costs T be made) in case of financial distress for the borrower, despite the official legal mechanisms in place for such situations. Thus, for public companies, equation (2) simplifies into:

$$R_i^{public\ company} = R^* + P_i \frac{T}{L} \quad (4)$$

The above implies that there is no theoretical reason for banks to require different interest rates for loans to municipalities and to public bodies (equation 3). Loans to public companies may carry more interest if enforcing loan guarantees in case of default is costly (equation 4). However, interest rates are not determined solely by the rate of return the bank requires; they are the result of negotiations between lenders and borrowers. The outcomes of these negotiations are the result of the effort put in by both parties, where the effort put in by the borrower is expected to be determined by the extent to which efficiency is monitored.

Monitoring

The decision to outsource tasks to private firms complicates the decision making process. Agency theory describes how monitoring, sanctions and awards are needed to align the agent's objectives with those of the principal (e.g., Fama and Jensen 1983). This carries transaction costs with it. Stewardship theory suggests that such costs are lower when tasks are carried out by other governmental organizations, as objectives are likely to be more aligned in that case (Van Slyke 2007). However, it seems that monitoring in such cases is less

[9] We abstract from operational risk, which includes, e.g., the possibility that contractual stipulations prove unenforceable or have been incorrectly documented.

productive, because of the difficulty to induce service-providing governments to react to the contracting government's evaluation of the services provided, due to weak sanctioning power (Marvel and Marvel 2008).

Corporate governance theory suggests that, in the case of intermunicipal cooperation, there is an additional problem: dispersed ownership (Sørensen 2007). Public services provided through intermunicipal cooperation are financed from a common pool; hence, the costs are shared with other municipalities. Consequently, when a municipality decides on the amount of effort (cost) that should be put into monitoring an intermunicipal organization, it will take into account that any gains from putting in that effort will only partly benefit the municipality itself, since they will be shared with all other participants. This is likely to result in a level of monitoring that is lower than that for the operations of the municipality itself. According to corporate governance theory, this incentive for undermonitoring will lead to inefficient service provision. It allows functionaries of intermunicipal organizations to engage in, e.g., budget-maximizing behavior (Niskanen 1971).

However, the public choice literature provides a different perspective, with a different outcome. According to this literature, citizens are unable to effectively oversee their elected representatives. This allows politicians to collect rent: they can divert public resources to further their own goals, e.g., to improve their chances to be reelected. Decision making in intermunicipal organizations is further removed from politicians than decision making in municipalities. As a result, it is more difficult for politicians to exploit the organization's resources as transaction costs are higher (Sørensen 2007).

Thus, theoretically, intermunicipal cooperation may result in lower efficiency because of reduced monitoring (agency theory), and to higher efficiency because of less political meddling (public choice). The net effect is uncertain. However, in the case we study, borrowing money, political meddling seems to be less relevant. It is hard to see how politicians could benefit from intermunicipal organizations paying unnecessarily high interest rates. We hypothesize that intermunicipal cooperation reduces monitoring effort and therefore leads to higher interest costs:

> Hypothesis 1: intermunicipal organizations pay higher interest rates than municipalities.

Amalgamation, which is an alternative to cooperation, might also affect monitoring effort. It is conceivable that recently amalgamated municipalities are not able to monitor their borrowing activities as well as municipalities that did not amalgamate. Amalgamation is an arduous process that may have severe disruptive effects on managerial behavior and organizational outcomes, e.g., because of poor staff morale, loss of managerial expertise due to increased turnover, and work overload (Andrews and Boyne 2012). On the other hand, amalgamation might have a beneficial effect on efficiency. Existing organizations usually have well established ways of doing things, which might have become outdated. Amalgamation forces organizations to reconsider procedures and operations, possibly resulting in the adoption of more efficient practices (Hansen et al. 2014). Again, the net effect is uncertain. We hypothesize that the first, efficiency-reducing, effect dominates, but that it is smaller than for cooperation:

> Hypothesis 2a: in the first few years after amalgamation, municipalities pay higher interest rates than not (recently) amalgamated municipalities.
>
> Hypothesis 2b: interest rates paid by recently amalgamated municipalities are lower than those paid by intermunicipal organizations.

We expect that the extent to which intermunicipal organizations pay higher interest rates than municipalities depends on two crucial characteristics of such organizations. The first is legal form. Because public bodies are default-free and public companies are not, different risk-free rates of return apply (see equation 3 and 4, respectively). For public companies, costs T might be involved in case of default (equation 4). Thus, we expect public companies to pay higher interest rates than public bodies:

> Hypothesis 3: interest rates paid by public companies are higher than those paid by public bodies.

The second characteristic of intermunicipal organizations that may affect the interest rate is the number of cooperating municipalities. Several papers argue that inefficiency due to common pool effects increases with the number of participants, a phenomenon called the "law of 1/n" (Weingast 1979; Weingast et al. 1981; Primo and Snyder 2008). Originally, this law is based on models where (i) individual legislators care mainly about the public projects that flow into their own districts (or benefit their inhabitants), (ii) funding of public projects is fixed and not connected to individual projects and (iii) all projects proposed are passed.

Although empirical findings supporting this hypothesis are presented by several authors (e.g., Baquir 2002; Bradbury and Stephenson 2003), others have raised questions.

Primo and Snyder (2008) argue that the effect of the number of participants depends on factors like the degree of publicness of the goods provided. They also give examples of cases where a "reverse law of 1/n" may hold. This is in line with Tornell and Lane (1999), who propose a non-monotonic relationship between the number of competing powerful groups in an economy and the growth rate of the efficient sector: a shift from n = 1 to n = 2 reduces efficiency, while, starting at $n \geq 2$, a further increase reduces power concentration and improves outcomes. Tornell and Lane (1999) model a situation where each participant has an outside option. This means that, for the most efficient organization as well as for others, participating must be at least as attractive as leaving. As n goes up, inefficiency must be curbed to satisfy that condition. As municipalities are free to join or leave intermunicipal organizations, this model is relevant here.

The public choice literature provides another reason to expect a "reverse law of 1/n" to apply. As describe above, according to this literature, decision making in intermunicipal organizations may be more efficient because it is further removed from politicians than decision making in municipalities. As the number of participants grows, it gets more difficult for politicians from one of them to exploit the organization's resources, as transaction costs are higher. This suggests a "reverse law of 1/n".

Thus, theoretically, a higher number of cooperating municipalities may result in lower efficiency because of reduced monitoring, and to higher efficiency because exit should remain unattractive and because of less political meddling. The net effect is uncertain. Leaving an intermunicipal organization and setting up an operation on one's own will probably be unattractive in many cases, especially where service provision is capital-intensive. Therefore, we hypothesize that the first effects dominates.

> Hypothesis 4: the interest rate paid by intermunicipal organizations is higher if the number of participating municipalities is higher (i.e. the "law of 1/n" holds).

4. Method and data

Our units of observation are individual loans. We have data on four types of loans with fixed interest rates made by BNG Bank, which is the market leader in this field:

1) Short term loans (up to one year) where payment of principal and interest is due at maturity.
2) Long term loans where amortization and interest is paid in equal installments (Annuity).
3) Long term loan where the principal is paid back in equal installments (Linear).
4) Long term loans where the principal is paid back at maturity (Bullet).

Purchase or sale of loans, refinancing, restructuring, consolidation of loans and loans with no fixed interest rate or standard amortization schedules are left out of our selection. We select loans to municipalities and public bodies, which both never default in the Netherlands, and loans to public companies which are guaranteed by municipalities. All loans in our sample are officially free of credit risk.

Interest rates vary a lot over time and over amortization schemes. In order to compare interest rates of different loans, we relate them to reference interest rates that apply to the same dates and amortization schedules. Our dependent variable is the interest rate differential (IRD), defined as the relative difference between the actual interest rate r_j on loan j and the reference interest rate r_{ref}: $IRD_j = \frac{r_j - r_{ref}}{r_{ref}}$. We use a relative measure because different loan types have different interest rates, and because interest fluctuates considerably over time. The IRD may be interpreted as follows: if, e.g., intermunicipal organizations have an average IRD that is 0.05 higher than that of municipalities, then, other things being equal, they spend 5 percent more on interest payments.[10]

We use the interest rate indicated by BNG Bank's pricing yield curve as the reference interest rate. Although the bank keeps records of pricing yield curves for many years back, these data are not available for all possible maturities. For long term loans, reference rates based on the bank's pricing yield curve are available for the most common maturities only: both 5 and 10 years for bullet loans, 5, 10, 15, 20 and 25 years for loans with linear amortization and 10, 15,

[10] More precisely, if the IRD of intermunicipal organizations exceeds the IRD of municipalities by x, the former pay $x\frac{r_{ref}}{r_{municip}}$ as much in interest. That is because $IRD^{interm} = IRD^{municip}$+x implies $\frac{r_{interm} - r_{ref}}{r_{ref}} = \frac{r_{municip} - r_{ref}}{r_{ref}} + x$. Rewriting yields $\frac{r_{interm} - r_{municip}}{r_{municip}} = x\frac{r_{ref}}{r_{municip}}$. As the average value of $\frac{r_{ref}}{r_{municip}}$ in our sample is 1.02, this factor will usually be negligible. Thus, if we find a difference in IRD of 0.05, that implies that 5.1 percent more is paid on interest ($0.05 \times 1.02 \times 100\%$).

20 and 25 years for loans with annuity amortization.[11] We select loans for which reference rates are available, and exclude loans with less common maturities from our basic analysis. In our sensitivity analysis, we will check whether this affects results.

For each loan, BNG Bank creates a paper file and a record in its computer system. We were allowed to use data from the latter, for 1997–2013. For short term loans, however, data is available for 2006-2013 only, because the bank's (computerized) administration does not allow going further back in time. For each loan, we have data on the identity of the borrower and on the loan characteristics that influence interest rates. These include date of contract, amortization schedule, principal borrowed, maturity and forward start (number of days between contract and start of the loan).

At this point, we have to decide whether or not to control for such loan characteristics in our regressions. It could be argued that borrowers should choose loan characteristics which minimize interest payments, under the restriction that enough funds are available at the moments these are needed. Controlling for loan characteristics would then eliminate inefficiencies resulting from poor treasury management. For municipalities, loans are not usually linked to specific investments. Rather, the municipality's treasurer reviews the entire capital needs of his or her organization and borrows accordingly. Loan characteristics such as amortization schedule, principal borrowed, maturity and forward start can then be chosen to minimize interest payments. Municipal organizations, however, usually borrow money for specific projects. Thus, their choice with respect to such characteristics is more limited. For that reason, we decide to control for loan characteristics. In that way, we compare interest paid on equivalent loans. In our regressions, we use principal, maturity and forward start as controls, and we run separate regressions for different amortization schedules. In order to allow for non-linearity, we also include the square of these variables. Furthermore, we include year dummies to control for nationwide factors influencing IRDs.

Data taken from the bank's administration are combined with data we collected through a survey of intermunicipal organizations. We collected data on the number of participating municipalities, on the field of activity and on their legal form. These variables are not all constant over time; especially the number of partners may vary as municipalities join, leave or amalgamate. For some organizations, we were unable to collect all data for all relevant years.

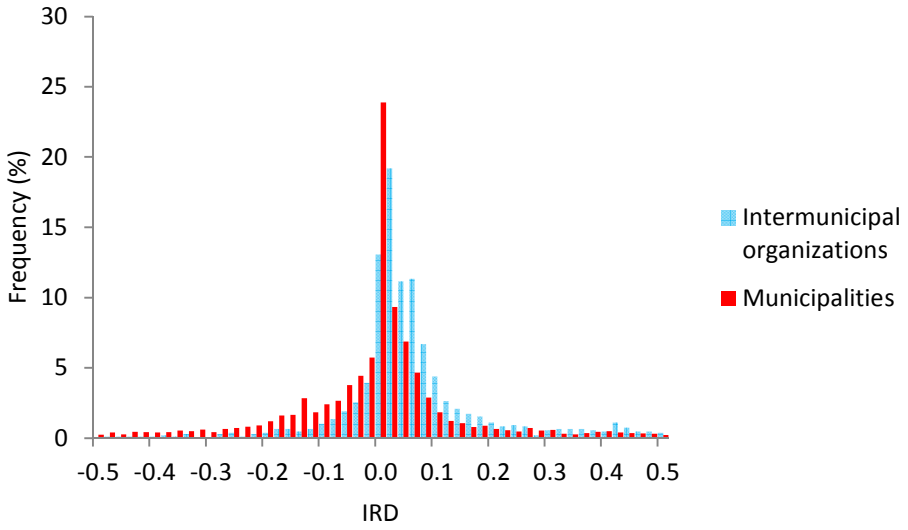
[11] For 5 year loans with linear amortization, reference interest rates are available from July 16, 1999 onward.

It proved especially difficult to gather data for the earlier years of our research period. We define number of partners as equal to 1 in case of loans to municipalities and equal to the number of participating municipalities for loans to intermunicipal organizations.

For all municipalities, we collected data on amalgamations. We construct two dummy variables: one indicating whether a municipality has been amalgamated in the year of the loan or up to 3 years before, and one indicating whether it has been amalgamated 4-8 years before the loan was made. This way we can discriminate between short run and long term effects of amalgamation.

Figure 1 shows the frequency distribution of IRDs for municipalities and for intermunicipal organizations. Although most observations are in the range [-0.1, 0.1], the distribution exhibits long tails on both sides. That might be problematic, e.g., in case these result from data errors, especially if systematic differences exist between municipalities and municipal organizations. To investigate this, we accessed the paper files of the ten loans with highest IRDs and the ten loans with lowest IRDs, both for short term loans and for long term loans, and both for municipalities and for intermunicipal organizations, i.e., 80 loans in total. Table 1 summarizes the results. For long term loans, a forward start is the most common reason for an extremely high IRD (six out of ten cases, for both municipalities and intermunicipal organizations). In two cases, this coincided with a price guarantee, where intermunicipal organizations pay extra to secure the right to borrow at a certain IRD in a certain period. A small loan size may also result in a high IRD, as the administrative costs of making a loan are fixed.

Figure 1. Frequency distribution of IRDs for municipalities and for intermunicipal organizations (percentages)



One high IRD was the result of a mistake made by the client desk of the bank, and three outliers proved to be data errors (in the computerized data we use). For long term loans, the reason for very low IRDs is, apart from one data error, that the bank sometimes offers interest rates below the reference rate given by the pricing yield curve, e.g., when market rates drop during the day (the pricing curve is fixed before business starts, early in the morning).

For short term loans, small loan size and price guarantee explain most of the very high IRDs; there was one data error. Very low IRDs are caused by large loan sizes, mistakes made by the bank's client desk, and, in two cases, a borrower with a strong bargaining position. In these cases, the representative from the intermunicipal organization which took up the loan had recently negotiated cheap, big loans for a municipality, and demanded the same low IRD, which the bank accepted.

The only systematic difference between municipalities and municipal organizations we find among these outliers is that the latter sometimes pay a premium in order to get a price guarantee. This is not observed in our dataset, so we cannot control for it in our regressions. In most cases, outliers are related to forward start and loan size, which we do control for. However, the number of data errors is rather high among outliers. In order to avoid results driven by outliers, we exclude observations where the absolute value of IRD exceeds 0.25 from our main analysis. In our sensitivity analysis, we will check whether our results are robust for dropping or changing this threshold.

Table 2 presents descriptive statistics. Our dataset contains 11,307 observations, of which 10,313 are loans to 433 different municipalities, and 994 are loans to 113 different intermunicipal organizations. In those 113 intermunicipal organizations, 389 different municipalities participate, ranging from very small to very large. Table A1 in the Appendix offers a detailed breakdown of the dataset by loan type and borrower characteristics.

5. Comparing interest paid by intermunicipal organizations, amalgamated municipalities and not-amalgamated municipalities

In this section, we test whether there exist significant differences between IRDs of intermunicipal organizations and municipalities (hypothesis 1), municipalities which are amalgamated and municipalities which are not (hypothesis 2a), and intermunicipal organizations and amalgamated municipalities (hypothesis 2b). In the next section, we examine whether intermunicipal organizations' characteristics affect IRDs.

It is obvious from Figure 1 that IRDs are often higher for intermunicipal organizations. However, this may be due to differences in loan characteristics or timing. To test whether the type of organization really matters, we conduct a number of regression analyses. Reported standard errors are robust for heteroscedasticity and for correlation between observations for identical organizations.

Basic results

Table 3 shows regressions of IRDs on a dummy that takes the value of one if the loan was made to an intermunicipal organization, and on a number of control variables. The first column includes all loans in our dataset. Columns 2-5 concern specific types of loans. In many cases, the control variables are highly significant, especially for long term loans which are more heterogeneous than short term loans. Overall, the variables included in the regression explain differences in IRDs quite well.

We now turn to the central question of this paper: do intermunicipal organizations pay higher interest rates than municipalities? The answer is surprisingly straightforward. The coefficients of the intermunicipal organization dummy are positive and highly significant for all loan types. On average, the IRD for intermunicipal organizations is 0.027 (linear amortization) to 0.048 (short term loans) higher than for municipalities. Intermunicipal organizations pay 3-5 percent more interest on equivalent loans. This confirms hypothesis 1.

Thus, presumably, intermunicipal organizations could pay less interest, but no doubt this would require more effort (collecting market information; negotiating). Would that be cost effective? A rough calculation can put this into perspective. For intermunicipal organizations in our sample, average loan size is 4.9 million euro and average interest rate 1.7 percent (Table 2). Thus, yearly interest paid on the average loan is 83,000 euro. Paying 3-5 percent more in interest means paying 2,500 – 4,000 euro more annually. Over 3.8 years (average maturity, Table 2) that amounts to 10,000-15,000 euro per loan. Assuming wage costs of 100,000 euro (rather generous) and 228 working days per year (the Dutch average), 10,000 euro buys 23 days of staff. Thus, spending an extra couple of hours or even days in order to secure a lower interest rate would be a very profitable investment. This suggests that intermunicipal organizations borrow inefficiently.

Table 4 reports estimates of similar regressions as in Table 3, but with two amalgamation dummy variables added (coefficients of control variables are not reported). The coefficient of none of these is significant for any of the loan types. Municipal amalgamation does not affect IRDs, neither in the short run nor in the long run. Thus, hypothesis 2a, which states that amalgamation temporarily leads to higher interest rates, is rejected. Moreover, this confirms hypothesis 2b, that amalgamated municipalities have lower IRDs than intermunicipal organizations.

Sensitivity analysis

We test the robustness of the findings described above in three ways. First, we re-run the regressions including uncommon maturities for which no reference interest rates are available, using interpolated values for reference interest rates. Secondly, we drop municipalities that do not participate in at least one of the intermunicipal organizations we study from the analysis. Finally, we allow previously excluded observations with an IRD above 0.25 or below -0.25 in our regressions, and apply different thresholds.

Because reference interest rates for long term loans are only available for the most common maturities, we excluded observations with other maturities from the analysis. This may have affected our conclusions. In order to check this, we now include all maturities. To find the reference interest rates for non-common maturities, we linearly interpolate the reference rates that are available. E.g., we find the reference rate for a 12 year loan by interpolating the rate for a 10 year loan and that of a 15 year loan. For relatively short terms, we interpolate between the 1 year Euribor rate and the lowest available swap reference rate. For long term

loans, over 10 years for bullet loans and over 25 for other long term loans, we use the reference rate for 10 years and 25 years, respectively. Table A2 in the Appendix presents the results of regressions similar to those in Table 4, but including observations with non-standard maturities. Columns 2 of both tables are identical, because reference rates are available for all short term loans. The R-squared values are somewhat lower in Table A2, which is not surprising as our method of interpolating and extrapolating reference interest rates is rather crude (yield curves not normally being linear). The coefficients of the intermunicipal organization dummy are hardly affected, though. Now, we do find a significant short-term effect of amalgamation, but only at the 10 percent confidence level, and only for bullet loans. We conclude that our basic results are not affected by exclusion of loans with non-standard maturities.

It might be argued that the decision to cooperate may not be independent of a municipality's efficiency. E.g., efficient municipalities could be less likely to cooperate because they already enjoy low costs, or more likely to cooperate because they are more attractive partners. In that case, we would be comparing intermunicipal organizations, which comprise relatively (in)efficient municipalities, with a group of both inefficient and efficient municipalities. As we have seen, however, the intermunicipal organizations included in our database have participants from 389 different municipalities, while the total number of municipalities was 572 in 1997 and 408 in 2013. Thus, the majority of municipalities participates in the intermunicipal organizations we study. Still, as a robustness check, we dropped municipalities that do not participate in at least one of the intermunicipal organizations we study and ran the regressions in Table 4 again. The results are virtually identical (see Table A3 in the Appendix).

In order to prevent outliers from influencing our results, we excluded observations with an IRD above 0.25 or below -0.25 from our regressions. We now test whether our conclusions change if we include these observations, or if we instead set a lower threshold. Table A4 in the Appendix shows results of regressions similar to those in Table 3, reporting only the coefficients of the intermunicipal organization dummy and the number of observations. Column 1 presents coefficients from regressions where observations with extreme IRDs are not excluded. Column 2 presents coefficients from the main analysis as reported in Table 3, excluding IRDs above 0.25 or below -0.25. We see that including extreme observations strongly increases the coefficient for short term loans, while the coefficients for the other loan types are hardly affected. In Columns 3–5, we exclude observations with an absolute IRD

above 0.15, 0.10 and 0.05, respectively. Obviously, the coefficients are downwardly affected, but they stay positive and highly significant in all cases. Thus, our results are not driven by IRDs of a specific magnitude.

6. Effect of intermunicipal organizations' characteristics on IRDs

Having established that intermunicipal organizations pay higher interest rates than municipalities, and that municipal amalgamation does not affect interest rates, we now turn to possible relevant characteristics of intermunicipal organizations. Table 5 presents regression results for intermunicipal organizations only. Thus, municipalities are excluded from these regressions. As extra control variables we add dummies representing the fields in which these organizations are active. That is because in some fields, a particular legal form or number of participants is more prevalent than in others. The control variables concerning individual loan characteristics (as shown in Table 3) are included as well, but we do not report their coefficients.

First, we consider legal form. Because public companies can (and sometimes do) go bankrupt and public bodies cannot, lenders might want to charge the former higher interest rates in order to cover costs associated with enforcing loan guarantees (equation 4). One might even argue that our result that intermunicipal organizations pay higher interest rates may be driven partly by this reason. In that case, we would expect public companies to pay higher interest rates than public bodies (hypothesis 3). In Table 5 we test whether the legal form of intermunicipal organizations affects the IRD. Our dataset does not contain any annuity or bullet loans to public companies (see Table A1 in the Appendix), which explains the blanks in those columns. For the other loan types, the coefficients of the dummy variable public body are far from significant. That means that there is no difference in interest rates compared with public companies. Thus, we find no evidence supporting hypothesis 3. That is not entirely surprising. Defaults of public companies are exceptional in the Netherlands. Moreover, when interviewing officials of BNG Bank, we were informed that the costs of retrieving a loan in such a case are negligible, as the municipalities that guaranteed it pay up swiftly.

Next we consider the number of participants (n) which, in our dataset, can be as high as 35 (Table 2). In order to directly test the "law of 1/n", we include 1/n in the regressions. For none of the loan types do we find a significant coefficient (Table 5). If we enter n, rather than 1/n, into the regressions, the coefficient for linear loans is significant at the 10 percent confidence level; for other loan types, the coefficients are again insignificant (not shown in Table 5).

Thus, hypothesis 4 is not supported. Intermunicipal organizations pay higher interest rates, but this is not linked to the number of cooperating partners.

The coefficients of the control variables representing fields of activity do not point to consistently higher interest rates paid by organizations active in specific fields, although some coefficients are significant for one or two loan types. Note that, for some combinations of field of activity and loan type, we have few or even no observations (see Table A1 in the Appendix).

7. Conclusions

In many countries, local governments operating on a small scale face a choice between amalgamation and cooperation in order to increase their scale of operation. This paper applies a novel methodology to investigate the implications of this choice for operating efficiency.

We compare the price Dutch intermunicipal organizations, amalgamated municipalities and not-amalgamated municipalities pay for an identical commodity: risk-free credit. We find that intermunicipal organizations pay significantly higher interest rates, even after controlling for loan characteristics like principal and maturity. Amalgamation, often seen as an alternative to cooperation, does not lead to higher interest rates.

The higher interest paid by intermunicipal organizations cannot be explained by possible legal or administrative costs associated with recouping loaned money after the default of public companies. That is because there is no significant difference in interest on loans to public companies (which may default, but which borrow under guarantee from the participating municipalities) and public bodies (which never default). Moreover, we show that it is extremely unlikely that the higher interest rates paid by intermunicipal organizations are justified by savings on staff costs because less time is spent on negotiating interest rates.

Consequently, we interpret the higher interest paid by intermunicipal organizations as a form of inefficiency. The outcome that cooperation leads to higher interest costs is consistent with corporate governance theory, but not with public choice theory. Corporate governance theory suggests that dispersed ownership reduces monitoring and thus increases inefficiency.

The number of cooperating municipalities does not influence interest rates of intermunicipal organizations. Thus, we find no evidence supporting the “law of 1/n”. This implies that it is cooperation as such that results in higher interest rates (the difference between n = 1 and n >

1), not the number of parties involved once the choice for cooperation has been made. The absence of such an effect might be the result of opposite forces. Consistent with corporate governance theory, more partners might result in less monitoring, which could drive up costs. On the other hand, because each participant has an outside option, inefficiency must be curbed to prevent the most efficient organization from leaving.

Previous econometric research on the effects of intermunicipal cooperation on costs is scarce and almost exclusively focused on one particular service: solid waste collection. We add to the literature by showing that, in the Netherlands, intermunicipal organizations providing a wide array of different services pay significantly more interest than municipalities, even though there does not seem to be an economic requirement to do so. Of course, interest is only one of many costs affecting efficiency. It would be an interesting subject for future research to investigate whether municipal cooperation creates inefficiencies that extend beyond paying unnecessarily high interest rates.

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Table 1
Explanations for IRD outliers

	Municipality	Intermunicipal organization
	Long term loans	
High IRD		
Forward start	6	6
Small loan	0	4
Price guarantee	0	2
Mistake (too high interest rate offered & accepted)	1	0
Data error	3	0
Low IRD		
Low rate offered because of market conditions	10	9
Data error	0	1
	Short term loans	
High IRD		
Small loan	9	0
Price guarantee	0	9
Data error	1	1
Low IRD		
Big loan	10	6
Mistake (too low interest rate offered)	0	2
Strong bargaining position borrower	0	2

Table 2
Summary statistics

	(1) N	(2) mean	(3) st.dev	(4) min	(5) max
Entire sample					
Interest rate	11,307	2.095	1.924	0.050	6.820
Principal (million euro)	11,307	7.663	12.25	0.091	278.495
Maturity (years)	11,307	5.977	8.413	0	25
Forward start (days)	11,307	25.34	129.4	0	2,193
Number of partners	11,307	1.543	2.399	1	35
IRD	11,307	-0.012	0.084	-0.250	0.250
Intermunicipal organizations					
Interest rate	994	1.684	1.561	0.090	5.620
Principal (million euro)	994	4.911	8.273	0.010	66.086
Maturity (years)	994	3.782	6.502	0	25
Forward start (days)	994	15.59	74.20	0	923
Number of partners	994	7.178	5.539	2	35
IRD	994	0.027	0.072	-0.248	0.250

This Table describes the observations used in regressions reported in Tables 3-5, i.e., excluding observations with an absolute value of IRD exceeding 0.25 and excluding observations with uncommon maturities.

Table 3
Regressions of IRD: basic analysis

	(1) All loans	(2) Short term	(3) Annuity	(4) Linear	(5) Bullet
Intermunicipal organization	0.0430***	0.0476***	0.0450***	0.0271***	0.0437***
	(0.00405)	(0.00537)	(0.00999)	(0.00330)	(0.00842)
Principal (million euro)	-0.000838**	-0.000897*	-0.000917	-0.000603***	-0.000602**
	(0.000399)	(0.000505)	(0.000795)	(0.000155)	(0.000243)
Principal squared	3.33e-06	3.49e-06	2.73e-05	6.22e-06***	3.46e-06
	(3.03e-06)	(3.38e-06)	(2.25e-05)	(2.06e-06)	(3.70e-06)
Maturity (years)	-0.00170***	-0.00607	-0.00850***	0.00194***	
	(0.000542)	(0.0134)	(0.00299)	(0.000661)	
Maturity squared	5.10e-05***	0.00365	0.000238***	-5.61e-05***	4.58e-05
	(1.68e-05)	(0.00842)	(8.45e-05)	(1.89e-05)	(4.30e-05)
Forward start (days)	0.000210***	0.00158	0.000215***	0.000195***	0.000339***
	(1.41e-05)	(0.00142)	(1.37e-05)	(1.40e-05)	(4.45e-05)
Forward start squared	-6.14e-08***	-4.38e-05	-7.03e-08***	-4.62e-08***	-2.07e-07***
	(1.01e-08)	(6.08e-05)	(9.50e-09)	(8.10e-09)	(4.90e-08)
Observations	11,307	6,822	309	3,676	500
R-squared	0.206	0.160	0.709	0.695	0.674

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Year dummies included

Table 4
Regressions of IRD on cooperation and amalgamation

	(1) All loans	(2) Short term	(3) Annuity	(4) Linear	(5) Bullet
Intermunicipal organization	0.0424***	0.0464***	0.0468***	0.0272***	0.0437***
	(0.00419)	(0.00564)	(0.00930)	(0.00331)	(0.00842)
Amalgamated 0-3 years before	-0.00334	-0.0119	0.0140	0.00129	8.50e-05
	(0.00593)	(0.00993)	(0.0105)	(0.00122)	(0.00411)
Amalgamated 4-8 years before	-0.00461	-0.00757	0.000540	-0.000200	0.000217
	(0.00485)	(0.00790)	(0.00442)	(0.00145)	(0.00355)
Observations	11,307	6,822	309	3,676	500
R-squared	0.206	0.161	0.713	0.695	0.674

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Control variables (see Table 3) and year dummies included

Table 5
Regressions of IRD of intermunicipal organizations

	(1) All loans	(2) Short term	(3) Annuity	(4) Linear	(5) Bullet
Legal form: public body	0.00214	0.00263		0.00655	
	(0.0120)	(0.0140)		(0.0125)	
Inverse of number of partners (1/n)	-0.0295	-0.0152	-0.484	-0.0118	-0.0863
	(0.0383)	(0.0586)	(3.585)	(0.0259)	(0.0545)
Field: welfare provision	-0.0226	-0.0172	0.190	-0.0509***	
	(0.0190)	(0.0211)	(1.849)	(0.0128)	
Field: work provision for disabled	-0.00734	0.00449	-0.328	-0.0365***	-0.0427**
	(0.00978)	(0.0102)	(0.383)	(0.0103)	(0.0155)
Field: environmental services	0.00806	0.0241**	0.0350	-0.0223*	-0.0194
	(0.0107)	(0.0102)	(0.435)	(0.0129)	(0.0246)
Field: public health	-0.00559	-0.0145		-0.0166	0.00632
	(0.0131)	(0.0240)		(0.0151)	(0.0415)
Field: public safety	-0.00975	-0.00673	-0.286	-0.0399***	-0.0579***
	(0.0147)	(0.0217)	(0.558)	(0.0117)	(0.0152)
Field: business development	0.0123	0.0138			-0.00455
	(0.0187)	(0.0202)			(0.0130)
Observations	889	631	25	197	36
R-squared	0.095	0.081	0.959	0.386	0.970

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls and year dummies included
Observations where legal form is missing are excluded

APPENDIX

Table A1
Number of observations by amortization schedule

	All loans	Short term	Annuity	Linear	Bullet
Intermunicipal organization	994	698	28	231	37
Municipality, amalgamated 0-3 years before	640	289	23	309	19
Municipality, amalgamated 4-8 years before	915	530	19	326	40
Municipality, not recently amalgamated	8,758	5,305	239	2,810	404
Total	11,307	6,822	309	3,676	500
	Intermunicipal organizations: field of activity				
Welfare provision	41	36	2	3	0
Work provision for disabled	529	404	3	116	6
Environmental services	70	37	5	27	1
Public health	43	19	0	21	3
Public safety	98	29	16	47	6
Business development	120	115	0	0	5
Other	93	58	2	17	16
Total	994	698	28	231	37
	Intermunicipal organizations: legal form				
Public body	799	553	25	185	36
Public company	90	78	0	12	0
Unknown	105	67	3	34	1
Total	994	698	28	231	37

This Table describes the observations used in regressions reported in Tables 3-5, i.e., excluding observations with an absolute value of IRD exceeding 0.25 and excluding observations with uncommon maturities.

Table A2
Regressions of IRD with observations with interpolated reference interest rates included

	(1) All loans	(2) Short term	(3) Annuity	(4) Linear	(5) Bullet
Intermunicipal organization	0.0421***	0.0464***	0.0417***	0.0294***	0.0511***
	(0.00378)	(0.00564)	(0.00869)	(0.00306)	(0.00652)
Amalgamated 0-3 years before	-0.00132	-0.0119	0.0147	0.00110	0.0185*
	(0.00520)	(0.00993)	(0.0109)	(0.00148)	(0.00943)
Amalgamated 4-8 years before	-0.00258	-0.00757	0.00390	-0.000668	0.0161
	(0.00469)	(0.00790)	(0.00496)	(0.00162)	(0.00991)
Observations	12,643	6,822	448	4,121	1,252
R-squared	0.206	0.161	0.585	0.648	0.453

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls and year dummies included

Table A3
Regressions of IRDs with only municipalities that participate in intermunicipal organizations included in regressions

	(1) All loans	(2) Short term	(3) Annuity	(4) Linear	(5) Bullet
Intermunicipal organization	0.0398***	0.0438***	0.0500***	0.0267***	0.0441***
	(0.00468)	(0.00636)	(0.00952)	(0.00329)	(0.00914)
Amalgamated 0-3 years before	0.000734	-0.00620	0.0210	0.00162	-0.000906
	(0.00719)	(0.0110)	(0.0129)	(0.00138)	(0.00587)
Amalgamated 4-8 years before	-0.00399	-0.00632	0.000377	0.000474	0.00519
	(0.00564)	(0.00848)	(0.00536)	(0.00190)	(0.00389)
Observations	8,715	5,405	235	2,737	338
R-squared	0.208	0.168	0.748	0.689	0.664

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls and year dummies included

Table A4
Regressions of IRD with observations with absolute value of IRD above threshold dropped

	(1)	(2)	(3)	(4)	(5)
	No threshold	IRD<=0.25	IRD <=0.15	IRD <=0.1	IRD <=0.05
			All loans		
Intermunicipal organization	0.120***	0.0430***	0.0310***	0.0205***	0.0102***
	(0.0360)	(0.00405)	(0.00265)	(0.00193)	(0.00106)
Observations	14,222	11,307	9,962	8,859	6,819
			Short term loans		
Intermunicipal organization	0.156***	0.0476***	0.0319***	0.0187***	0.00624***
	(0.0449)	(0.00537)	(0.00339)	(0.00248)	(0.00125)
Observations	9,695	6,822	5,569	4,593	3,035
			Annuity		
Intermunicipal organization	0.0445***	0.0450***	0.0369***	0.0378***	0.0216***
	(0.0100)	(0.00999)	(0.00984)	(0.00868)	(0.00480)
Observations	312	309	292	267	229
			Linear		
Intermunicipal organization	0.0296***	0.0271***	0.0270***	0.0224***	0.0158***
	(0.00438)	(0.00330)	(0.00322)	(0.00264)	(0.00164)
Observations	3,704	3,676	3,615	3,528	3,155
			Bullet		
Intermunicipal organization	0.0426***	0.0437***	0.0402***	0.0304***	0.0216***
	(0.00898)	(0.00842)	(0.00728)	(0.00396)	(0.00367)
Observations	511	500	486	471	400

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls and year dummies included

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