

Cooperative Municipal Lending in Sweden ^{*}

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Abstract

This paper studies a municipal credit agency, which is a specialized financial institution facilitating municipalities' access to international capital markets. I document that gaining access to the agency's credit facility decreases municipal borrowing costs compared to commercial bank loans. Built in the agency's lending terms, I find support of a coinsurance mechanism across municipalities. Nevertheless, net gains of improved credit access must dominate since almost all municipalities have voluntarily joined. Finally, I could not detect evidence that a municipality's participation in such a municipal credit agency adversely affects its fiscal discipline.

Keywords: municipal borrowing costs, municipal credit agency, local government funding agency

JEL Classification: H74, G12, G21

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1 Introduction

Markets for municipal debt reflect country-specific features and attract in many cases only local investors. Butler (2008) shows that distance still matters regarding the outcome of municipal bond underwritings, even in a country with developed financial markets like the US. In particular small municipalities often have difficulties in obtaining financing. For that reason, many countries developed institutions that enhance municipalities' access to capital markets. Implementations range from tax-exempt treatments of municipal bonds in the US (see Ang et al., 2010, for instance) to specialized banks with public mandates.

This paper analyzes the impact of such a specialized bank on municipal credit terms. Throughout the paper I call a financial institution that solely functions as an intermediary between municipalities and capital markets a *municipal credit agency*. It is also referred to as a *local government funding agency*. These agencies have a long tradition in northern Europe and are legally organized as either government agencies or cooperative societies. Early examples are Kommunekredit in Denmark and BNG in Holland, founded in 1899 and 1914 respectively. Despite generally having a bond-focused funding culture, some states in the US and provinces in Canada began to adopt similar institutions in the 70s, which were called municipal bond banks (MBBs).¹

Recent developments in financial markets have again sparked interest in municipal credit agencies. After some municipalities faced severe problems in the recent financial crisis, France initiated an own municipal credit agency by founding l'Agence France Locale in 2013. Also the UK, Germany, and Italy discussed similar projects that have reached different stages to this date. Municipalities in developing countries, on the other hand, even

¹The following list specifies states with MBBs and their founding year: Vermont (1970), Maine (1972), New York (1972), Puerto Rico (1974), Alaska (1975), North Dakota (1975), New Hampshire (1978). In contrast to their European counterparts operating as traditional banks, MBBs often serve the purpose of a traditional bond underwriter while providing additional credit enhancements.

struggle with gaining access to long-term financing (see Peterson, 2003).²

This paper examines Sweden's municipal credit agency Kommuninvest that was founded in 1986 and started expanding in the middle of the 90s. By the end of 2011, 269 out of 290 municipalities in Sweden have decided to participate in its cooperative society. The company's charter is to issue long-term bonds in international capital markets and to offer credit access to its member municipalities at competitive terms. In particular small municipalities are supposed to profit from a reduction in transaction costs.

Kommuninvest's organizational structure suggests reasons why it may be a competitive alternative to commercial bank lending. The concept for this municipal credit agency was initiated by a group of municipalities showing that they believed in potential for improving their own access to credit markets. From the fact that member municipalities are the only shareholders of Kommuninvest with strong board representation I infer that offering competitive lending rates has priority over maximizing Kommuninvest's return on equity.

An even more essential advantage lies in Kommuninvest's financial structure. Despite having an extremely high leverage ratio³, Kommuninvest is able to maintain the best credit rating with all major rating agencies allowing cheap refinancing in international bond markets. Additionally, Swedish municipalities are tax-exempt entities such that all dividends distributed by Kommuninvest remain entirely untaxed, which further decreases the equity cost of capital. Both refinancing advantages are, arguably, passed through to borrowers creating desired competitive pricing levels in municipal credit markets.

On the other hand, the renewed interest in municipal credit agencies is also sparked by difficulties to generate the required credit within the commercial banking sector. Swedish

²Rhee and Stone (2004) discuss the initiation of such a concept in Asia comparing organizational structures of existing institutions around the world.

³The reported amount of book equity was 0.54% of issued securities in 2011. The board decided to slightly increase the capitalization in later years, nevertheless, Kommuninvest continues to have a significantly higher leverage ratio than commercial banks.

municipal debt has virtually no default risk, which makes it a low yield asset class. Increasing capital requirements through Basel III plus increasing refinancing costs during the financial crisis further reduce margins, making municipal lending less attractive for commercial banks. Under such market conditions, a municipal credit agency may guarantee a continuous distribution channel. In line with this argument I find that Kommuninvest gains significant market share at the outbreak of the financial crisis.

The core of my analysis is an examination of municipal credit spreads. My database consists of Kommuninvest's loan book plus hand-collected data of commercial bank lending with 29 municipalities between the years 2005-2010. Starting with a panel analysis that compares credit spreads provided by Kommuninvest and commercial banks, I find that Kommuninvest offers loans at a rate 10-16bp lower than commercial banks. This result holds after controlling for loan and yield curve characteristics, as well as municipality and time fixed effects. As a comparison, estimates for credit spreads of bonds issued by the largest municipalities in Sweden are 18-24bp lower than commercial bank loans. If I separate Kommuninvest's impact on credit spreads for small, medium, and large loan sizes, I find that the difference in comparison to commercial banks is particularly prevalent for small loans. This underlines Kommuninvest's role of fostering liquidity and competitiveness in all segments of municipal credit markets.

Kommuninvest's continuous expansion to acquire more member municipalities during my sample period enables an alternative estimation strategy. Before becoming a member of the cooperative society, municipalities are denied access to Kommuninvest's lending facility. The effect is identified by a municipality's change in credit spread around joining Kommuninvest using other municipalities that did not change their Kommuninvest status in the same year as a control group. Estimating such a participation effect is of interest because it suggests a causal interpretation. In addition, it also takes indirectly Kommuninvest's competitive bidding behavior against commercial banks into account. Point estimates

from this approach suggest that credit spreads decrease by 8-10bp when a municipality joins Kommuninvest.

The previous set of results poses the question as to why not all Swedish municipalities participate in Kommuninvest. Political resistance against municipal credit agencies is based on some local governments' reluctance to provide a joint guarantee for Kommuninvest's liabilities. Such a guarantee may create a coinsurance design through which municipalities with strong borrowing capacities subsidize weaker ones.⁴

To test for signs of a coinsurance mechanism in Kommuninvest's lending terms, I return to panel regressions. Instead of controlling for municipality fixed effects, I explicitly capture the impact of a municipality's population and debt on credit spreads. Looking at commercial bank loans, I find indeed evidence that smaller and more indebted municipalities face higher credit spreads. Interestingly, this is not the case for Kommuninvest loans. All estimates suggest that Kommuninvest loans are less sensitive with respect to municipality characteristics, which I interpret as evidence for coinsurance.

Finally, one may worry that a combination of enjoying coinsurance in addition to having cheaper access to credit stipulates incentives for moral hazard. If that is the case, a participation in Kommuninvest may affect the fiscal discipline of municipalities. Exploiting once more the time-series variation in municipalities joining Kommuninvest, I estimate how debt levels and other accounting items change. None of the tested variables change significantly, which makes me conclude that the overall fiscal behavior of municipalities remains unaffected. This is positive news for Sweden's experience with a municipal credit agency, however, its generalization should be considered with caution. Sweden's National Government strictly controls municipal budget deficits, and the non-result could simply

⁴In the case of a similar discussion for MBBs, Solano and Hoffman (1982) stress the importance of political opposition by commercial financial institutions and lobby groups to hinder further adoptions of MBBs.

reflect that this system of checks and balances is working.

This paper relates to studies highlighting the importance of competition for municipal credit outcomes. Kessel (1971) and Hopwell and Kaufman (1977) focus on legal distinctions between revenue bonds and general obligation bonds, which exclude deposit-taking institutions from underwriting revenue bonds. Joehnk and Kidwell (1979), Sorensen (1979), Benson (1979), and Simonsen and Robbins (1996) distinguish between publicly announced contests for bond underwriters and privately negotiated deals. Dagostino (2018) studies a discontinuity that gives bank-qualified bonds a favorable tax treatment if held by banks. The results in this paper suggest that municipalities' borrowing costs decrease after gaining access to a competitive municipal credit agency.

Closely related is the literature that investigates the credit provision of municipal bond banks (MBBs) formed in some states of the US and Canada. These studies suggest that MBBs lead to interest cost savings, in particular for small municipalities (Katzman (1980), Gilbert and Pike (1998)), during periods of market turmoil (Cole and Millar (1982)), and in comparison to privately negotiated bond issues (Kidwell and Rogowski (1983a) and Kidwell and Rogowski (1983b)). This paper documents conforming evidence in the case of a European municipal credit agency. In contrast to earlier papers, my results are based on panel regressions and variation in Kommuninvest's continuous expansion throughout Sweden. Particularly the latter analysis differs as it estimates a causal participation effect within municipalities. Since bank loans are the most likely alternative funding source for small municipalities outside the US, I use bank loans as a more representative reference point instead.

Cole and Millar (1982) have argued for the existence of a coinsurance mechanism through MBBs. They find cross-subsidization between highly rated and unrated municipalities, as well as large and small bond issues. Due to the virtual non-existence of default

risk among Swedish municipalities, the institutional context is very different. Yet, I find statistical evidence in line with coinsurance, particularly in support of the size argument. Vogt (1984) investigates whether there is evidence of deteriorating fiscal discipline of municipalities due to MBBs. Just like the evidence reported in this paper, he is not able to find support for the hypothesis. The link between municipal bond yields and other political risks has been examined recently, among them being corruption (Butler et al. (2009)), short-termism of politicians (Perignon and Vallee (2017)), and publicly backed real estate activity (Bai and Zhou (2018)).

2 Kommuninvest’s organizational structure and its competitive edge

Swedish municipalities have roughly speaking three funding sources: bonds, commercial bank credit, and borrowing through a cooperative bank named Kommuninvest. Due to the small size of potential debt issues, direct access to capital markets has been limited for many Swedish municipalities. Only Stockholm, Göteborg, and Uppsala, being among the largest municipalities, issue bonds on a regular basis. The rest largely relies on financial intermediaries. Such lending has been historically dominated by commercial, domestic institutions. Starting from the mid 90s, however, more and more municipalities decided to borrow at least partially through Kommuninvest.

Kommuninvest is organized as a cooperative society owned by its member municipalities. Its business model is based on the idea that a pool of municipalities realizes economies of scale and diversification gains in capital markets compared to a stand-alone entity. In line with that strategy, Kommuninvest raises funds through large, infrequent bond issues in international capital markets. Access to this credit facility is restricted to member municipalities, but every Swedish municipality has the possibility to become a member. This requires the contribution of equity capital (according to a municipality’s size) and signing

a joint guarantee for all of Kommuninvest's outstanding liabilities.⁵ Board representation, however, is independent of size as every municipality obtains the right to exercise *one* vote.

By the end of 2011, 267 of Sweden's 290 municipalities had signed their membership in Kommuninvest covering 65% of the Swedish population. The lending volume of Kommuninvest's credit facility has been growing even faster. Figure 1 shows the number and volume of new loans in million Swedish Krona (SEK) for each quarter from 2005 to 2010. By the end of 2010, average new lending in a quarter significantly exceeds SEK 10 billion.⁶ The documented increase in lending volume reflects not only the increased number of member municipalities but also a gain in Kommuninvest's market share.

Kommuninvest's organizational structure provides a couple of reasons for why it may have refinancing advantages over commercial banks. Most importantly, it maintains a AAA credit rating with the two major rating agencies, Standard & Poor's and Moody's, leading to very low borrowing cost. On the one hand, this reflects the low credit risk profile of Swedish municipalities.⁷ Together with shielding its balance sheet from idiosyncratic risk through a joint guarantee of borrowers and clearly defining systematic risk factors by creating a uniform asset class, this is well appreciated by institutional investors. On the other hand, the good credit standing may also reflect the existence of an implicit bailout

⁵Such a joint guarantee exhibits features similar to group lending in microfinance. Yet, the microfinance guarantee enables borrowers to access credit markets, while the municipal guarantee has the intention to boost Kommuninvest's credit rating.

⁶There is an extreme spike in the third quarter of 2008, with new lending being more than twice its regular size. Apart from the outbreak of the financial crisis, there are largely two driving factors: First, some municipalities had used call options of their Kommuninvest loans before the crisis to borrow instead from commercial banks. At the end of 2008, they switched back to Kommuninvest. Second, Kommuninvest took over the portfolio of municipal loans from a private competitor.

⁷There was only one incidence when a municipality was on the verge of default. On November 19th, 1992, in the aftermath of the Swedish banking crisis, the municipality Haninge, just south of Stockholm, was unable to roll over an outstanding debt issue. It was a result of vast real estate activities, in which a municipal subsidiary company was involved. The National Government decided to sign a national bail-out package that absorbed all losses to private investors and injected 1.1 billion SEK, of which most could be recovered later on. Financial markets can presumably expect a similar decision for such cases in the future. The events of the 90s led to a municipal reform that legally prohibits persistent municipal budget deficits and demands early restructurings.

guarantee. Sweden's National Government would arguably protect Kommuninvest should it be on the verge of default, while the government's response with respect to commercial banks is less clear.

Furthermore, Kommuninvest is able to maintain its excellent credit rating despite having a very low capital ratio of about 0.5% of book value of assets. This stands in sharp contrast to capital ratios required in Basel III and faced by commercial banks. The difference becomes even more striking when also taking the equity cost of capital into account. First, the only equity holders of Kommuninvest are member municipalities who, at the same time, get compensated through competitive borrowing rates. Their required yield on equity may be lower than the one required by profit-seeking shareholders of commercial banks. Second, due to the fact that municipalities are tax-exempt entities in Sweden, they do not pay taxes on dividends received from Kommuninvest. This leads to a situation where distributions of Kommuninvest's income remain untaxed. Ultimately, these arguments provide compelling reasons why Kommuninvest could be able to offer competitive lending terms.

The second issue examined in this paper relates to variation of credit terms across municipalities. By jointly guaranteeing for Kommuninvest's liabilities, municipalities effectively tie their financial solvability together. This creates a coinsurance mechanism, which may lead to more homogenous credit terms of Kommuninvest loans and, in extreme cases, undermines a municipality's incentives for fiscal discipline.

To be able to interpret the evidence presented later on, it is important to mention that Sweden's central government manages two other policy tools that work against this channel. First, there is an extensive transfer system through which economically stronger municipalities subsidize weaker ones.⁸ This alleviates economic discrepancies at the local

⁸See Johansson (2003) or Petterson-Lidbom (2010) for a more detailed discussion of this transfer system.

level, which in return may lead to more homogeneous credit terms. Second, the lessons from the Swedish banking crisis in the 90s led to a municipal reform that legally prohibits persistent municipal deficits. The National Government strictly controls budgets and demands prompt restructurings if necessary limiting a municipality's scope for moral hazard.

Figure 2 attempts to display the discussed mechanisms in one graph. To summarize the remaining agenda, my analysis centers around two topics. First, do municipalities' credit terms improve by gaining access to Kommuninvest? Second, is there evidence for a coinsurance mechanism, captured by either less sensitive credit terms or deteriorating fiscal discipline?

3 Data

For my analysis I construct a proprietary loan-level database from three sources: Kommuninvest's entire loan book, hand-collected data voluntarily provided by 29 municipalities about all new commercial bank loans during my sample period, and publicly traded bonds issued by large municipalities. The sample covers a 6-year period from 2005 to 2010. Demographic and accounting information about municipalities is collected from Statistics Sweden.

The main variable of interest is the credit spread of a loan. I closely follow Gilchrist and Zakrajšek (2012) when I define credit spreads as yields in excess of a (hypothetical) Swedish treasury security with the same payment schedule.⁹ Interest rates of municipal loans in Sweden can be broadly categorized into three groups: fixed interest rates, floating rates linked to STIBOR, and floating rates with bank-internal benchmarks. Since the Swedish treasury market consists largely of securities with fixed interest rates, I use interest rate swaps to transform floating-rate loans into fixed-rate loans before computing credit spreads.

⁹The computation of all credit spreads is explained in more detail in Appendix A.

This procedure is particularly challenging for loans linked to bank-internal rates, which I do not observe.¹⁰ In this case I am forced to take assumptions, which is why these loans need to be considered with more caution. Finally, I winsorize credit spreads at the 1% level.

Table 1 reports summary statistics of computed credit spreads and other relevant loan characteristics in my sample: Panel A reports Kommuninvest loans, Panel B commercial bank loans, and Panel C bonds. Credit spreads of Kommuninvest loans are on average 3.5bp higher than commercial bank loans, and the average principal amount is 30% smaller. However, these statistics cover different sets of municipalities. It mirrors Kommuninvest's agenda to give particularly small municipalities better access to credit markets. Bonds, on the other hand, have by far the largest principal amounts and longest maturities.

Table 2 takes a closer look at the composition of municipalities in my loan data. Panel A highlights differences between Kommuninvest member and non-member municipalities as of 2005. Kommuninvest members are significantly smaller in terms of population, have higher debt per capita, and generate marginally smaller tax income. On average, member municipalities also borrow less short-term. Such differences are in line with my expectations since smaller and economically weaker municipalities should gain disproportionately through the coinsurance mechanism.

Since my data only covers a subset of commercial bank loans in Sweden, it is important to understand whether this introduces any form of sample bias. I obtained this data through a survey distributed in cooperation with Kommuninvest to 100 municipalities. These 100 municipalities were selected by a stratified sampling approach, disproportionately overweighing large municipalities and new Kommuninvest members. Specifically, I selected Sweden's 30 most populated municipalities, I randomly picked 20 municipalities joining

¹⁰Internally-indexed loans often have relatively short maturities. Their benchmark rates usually change on a daily or weekly basis according to a schedule defined by each bank individually.

Kommuninvest during the first and second half of my sample period, and I randomly selected 30 of the remaining municipalities.

Particularly worrisome would be a selection bias in which municipalities with a good credit standing among commercial banks are less likely to respond. This would increase the average observed credit spread among commercial bank loans in my sample, leading to an upward bias in some of my test statistics.¹¹ Panel B in Table 2 compares characteristics between responding and non-responding municipalities. Despite being statistically insignificant, it appears like more populated municipalities are less likely to respond. This difference, however, is almost entirely explained by Stockholm and Göteborg being among the non-respondents. As frequent bond issuers, they are not representative of an average Swedish municipality and they did not borrow through Kommuninvest either. The other characteristics reported in Panel B look relatively innocent.

As a second test, I compare whether credit terms of Kommuninvest loans differ between responding and non-responding municipalities. This is no direct test for a selection bias due to unobserved commercial bank loans, it may nevertheless provide suggestive evidence. In these tests (as in my entire later analysis), it is important to control for time trends because credit spreads over Swedish treasury rates increased during the financial crisis. Therefore, I regress loan characteristics on a survey response dummy and year fixed effects. The results are insignificant and reported in Panel C.

¹¹Equally plausible, however, is in my opinion the opposite bias, in which case municipalities with poor outside options are less likely to share that information with Kommuninvest in fear of getting stigmatized.

4 Kommuninvest's impact on credit spreads

4.1 Baseline analysis

I begin the analysis of credit spreads with panel regressions at the loan level. Of main interest is a dummy variable for Kommuninvest loans, which captures the estimated difference in borrowing costs with respect to commercial bank loans. I estimate a similar bond effect as well. All regression specifications include a set of fixed effects controlling for common time trends and time-invariant municipality characteristics, plus additional control variables discussed further below.

To address concerns about a selection bias differently, I verify the robustness of results by conducting the same analysis in two samples of municipalities. Sample ALL simply covers my entire database, while sample SUB includes only loans given to the 26 municipalities for which I observe Kommuninvest and commercial bank borrowing.¹² Estimates in the SUB-sample are unbiased for the set of covered municipalities, but they may be unrepresentative of the Swedish population. Since I find fairly similar magnitudes in both samples, it provides at least suggestive evidence in support of external validity.

Table 3 reports the regression output. Estimates in both samples suggest that credit spreads of Kommuninvest loans are about 18bp smaller than the ones of commercial banks. As a comparison, credit spreads of bonds issued by large municipalities are 20bp smaller. Both coefficients are statistically significant at the 1% level. I add additional yield curve and loan-specific control variables in column 3 and 4. Specifically, I control for the 5-year treasury rate, the difference between the 10-year and 3-month treasury rate, a loan's time to maturity and principal size, and whether a loan is amortizing. The coefficients remain statistically significant in the range of 16bp.

¹²Three municipalities returned the questionnaire but are not members in Kommuninvest or members that have never borrowed through it. I exclude them as well from the sample SUB.

Columns 5-10 in Table 3 report results from another sample split according to the interest type of a loan. Using the sample of fixed-rate loans, I find that credit spreads of Kommuninvest loans are about 19bp smaller compared to commercial bank loans with similar characteristics. The statistical significance for floating-rate loans is weaker: point estimates are in the range of 7-11bp for STIBOR-linked loans and 6-12bp for internally-indexed loans. This may reflect problems related to sample size (only 57 STIBOR-linked bank loans) or the computation of spreads in case of internally-indexed loans. Alternatively, commercial banks could be more competitive in this market segment. The interest risk remains with the borrower and the terms of internally-indexed loans are what is known in Sweden as until further notice, i.e. callable and putable, making them effectively lending products with short-term commitment.¹³

One of Kommuninvest's explicitly stated goals is to improve credit market access for all Swedish municipalities. In particular small municipalities face higher transaction costs due to smaller amounts borrowed. Therefore, Kommuninvest may exert effort to improve credit terms in the small market segment. To test this hypothesis, I refine the model by estimating Kommuninvest's effect on credit spreads separately for different loan size segments. I split the sample according to their principal values into 3 quantiles. Results are reported in Table 4.

In most specifications Kommuninvest's relative impact on credit spreads lines up linearly, growing from large to small loans. For instance, I find an increase from 14bp lower credit spreads among large loans to 21bp among small loans in the SUB-sample, while there is still an increase from 15 to 18bp in the entire sample. Keep in mind that these estimates are derived from within municipality variation in credit spreads. Among fixed-rate loans the effect gets amplified, while it becomes smaller for STIBOR-linked loans. Among

¹³This is also the reason why there is no variation in the maturity of internally-indexed loans, which is why I cannot control for time to maturity in column 9 and 10.

internally-indexed loans there is no visible relationship.¹⁴

4.2 Kommuninvest participation and credit spreads

The sequential entries of new Kommuninvest members allows me to conduct an alternative estimation that is based on time-series changes in a municipality's credit terms before and after Kommuninvest membership. Time fixed effects help to separate the participation effect from general time trends. Such an estimation has the advantage that it renders a causal interpretation to the effect. Furthermore, it captures a more general impact of Kommuninvest's competitive bidding behavior, irrespective of whether a loan has ultimately been provided by Kommuninvest or not.

Essential to this approach is time-series variation in municipalities joining Kommuninvest, which is illustrated in Figure 3. The graph plots how many municipalities signed up each year. While fewer municipalities were joining Kommuninvest in the late '90s and early 2000s, there are at least 10 new members for most of the years. Naturally, all estimations with loan characteristics are restricted to the period 2005-2010. The coefficient of interest is in this case identified through loans of 13 municipalities, for which I observe loans from commercial banks and that became Kommuninvest member between 2005 and 2009.

It is important to note here that there is no selection process from Kommuninvest's side taking place. After having signed a joint guarantee for Kommuninvest's liabilities, any Swedish municipality is eligible to become a member at any time. A municipality's decision to participate in Kommuninvest, on the other hand, is certainly not random. The only reason for a municipality to consider a participation is to get access to Kommuninvest's lending facility. I expect that municipalities are more inclined to join if they have

¹⁴The estimations of the SUB-sample in column 6 and 8 suggest a counter-intuitive positive relationship between credit spreads and principal size, which I cannot explain. This also affects the interaction terms discussed here.

large financing needs in the foreseeable future (either for investment purposes or to roll-over existing debt) or if they are dissatisfied with credit terms currently provided through existing bank relationships. Therefore, the estimates have to be interpreted as an average treatment effect on the treated (ATT), which may actually overstate the average treatment effect (ATE). However, given that by now so many municipalities were triggered to join suggests that the effects are of general importance.

Estimation results of the outlined model are reported in Table 5. To gauge the statistical power of my short sample period, I first estimate a model in Panel A that does not explicitly allow for potential pre-trends. The coefficient of interest is for a variable that indicates whether a municipality has been a Kommuninvest member or not. The estimation in Column 1 suggests that credit spreads of new loans decrease on average by 8bp after a municipality participates in Kommuninvest. The coefficient is statistically significant at the 1% level and largely unaffected if I control for loan characteristics as reported in Column 2.

Panel B extends the model by separating two additional effects, one for the year a municipality joined Kommuninvest and one for the year before that. This analysis may reveal insights about which municipalities decide to join Kommuninvest. It also provides more details on the precise timing when the participation effect begins to materialize. On the other hand, the model is more demanding on already scarce data identifying some coefficients of interest with even fewer observations.

Examining the pre-trend of credit spreads in Column 4 and 5, I actually find a significant positive coefficient in the year prior to joining Kommuninvest. The coefficient for the membership year itself is negative but not statistically significant. This implies that there is indeed a structural break during the year a municipality becomes Kommuninvest member, which suggests a causal negative effect on borrowing costs. At the same time, however, it is

evidence for the existence of a selection problem. Looking at the principal amount of loans in Column 6, I find that municipalities also take significantly larger loans during the year of their Kommuninvest membership. Both results are in line with a selection of participating municipalities outlined before. Finally, point estimates for the long-run impact on credit spreads are even slightly larger than reported in Panel A at about 10bp. However, the statistical support gets weaker.

Given the evidence reported in Section 4.1 and 4.2, it seems fair to quantify Kommuninvest's impact on credit spreads in the area of 10bp. This does not seem huge in absolute terms, but it represents 15% of the average credit spread observed in my sample. Since municipalities have to contribute (costly) equity to Kommuninvest's operations, it raises the question whether a net effect would still be positive. Due to its high leverage, Kommuninvest generates on average 220SEK in lending per 1SEK in book equity during my sample period. Assuming interest cost savings of 10bp/SEK corresponds to a 22% implied return on equity, and that number does not even include Kommuninvest's actually positive net income. Since this return is staggering for a low-risk investment, I conclude that a significant proportion of the estimated effect remains after accounting for the cost of equity.

5 Coinsurance, moral hazard, and further discussions

5.1 Coinsurance

Gaining access to Kommuninvest's credit facility requires municipalities to sign a joint guarantee for Kommuninvest's outstanding liabilities, which implicitly creates a coinsurance mechanism among municipalities. This raises the question whether Kommuninvest would only redistribute resources across municipalities in case of default, or whether it provides

risk sharing already through its day-to-day lending terms. First evidence for a coinsurance mechanism has been documented in Table 4 showing that Kommuninvest’s relative credit spreads tend to be particularly low for small loans. Now I will take a closer look at municipality characteristics instead.

To study the impact of municipality characteristics on credit spreads, I return to panel regressions. This time, instead of using municipality fixed effects, I explicitly include two municipal variables that are arguably most relevant to determine credit spreads: a municipality’s population and debt per capita. Of interest is not only whether these characteristics are reflected in credit spreads, but also whether there are systematic differences between Kommuninvest loans and commercial bank loans. According to the coinsurance hypothesis, credit spreads of Kommuninvest loans should be less sensitive with respect to municipality characteristics. The model captures such differences by interaction terms of the Kommuninvest dummy with municipality characteristics. Due to the high correlation between population and municipalities’ average loan size, I exclude the principal amount from the set of controls. I still control for other loan and yield curve characteristics and quarter fixed effects. Table 6 reports the regression output.

The results suggest that both characteristics are relevant for the pricing of commercial bank loans. For instance, I estimate in Column 1 that a one standard deviation increase in log population leads to 7.8bp ($= 0.91 \cdot -0.086$) lower credit spreads. Similarly, a one standard deviation increase in per capita debt leads to 5bp ($= 16.6 \cdot 0.003$) higher credit spreads. Any cross-sectional effects found for commercial bank loans are basically neutralized for Kommuninvest loans. The coefficients for the interaction terms tend to be statistically significant, of similar magnitude, and in the opposite direction, which I interpret as evidence that Kommuninvest provides coinsurance through its lending.

Table 6 also reports results for sub-samples split by interest types. The statistical

support for the size effect is stronger for fixed-rate loans, while the statistical support for the debt effect mainly comes from floating-rate loans. The size effect is economically more important among fixed-rate and STIBOR-linked loans, only Internally-indexed loans show weak signs of a size effect.

5.2 Kommuninvest Participation and Fiscal Discipline

Based on common agency theories, the combination of gaining cheaper access to financing while at the same time being able to unload individual default risks on a collective account sounds like a dangerous mix because it stipulates incentives for moral hazard. Yet, these are precisely the economic implications a Kommuninvest membership entails according to my analysis. Therefore, it is of general interest to study how a municipality's decision to join Kommuninvest affects its fiscal discipline in the long run.

To estimate how a Kommuninvest membership affects important budget items, I rely on the model introduced in Section 4.2. Time-series variation in Kommuninvest entries enables the estimation of a participation effect while it still allows to control for time and municipality fixed effects. In order to maximize the sample period and number of events, I use a balanced panel that includes all Swedish municipalities from 1998-2010.¹⁵ Accounting information comes from annual reports accessed via Statistics Sweden. The results are reported in Table 7.

Of main interest is the effect of Kommuninvest participation on per capita debt reported in Column 3, but I also show tests for other accounting items related to municipal deficits, like expenses, tax income, relative short-term debt, or expense/revenue ratio. None of the specifications provide statistically significant results. This holds irrespective of whether I

¹⁵Running the estimation on the shorter period that coincides with my loan sample leads to very similar results.

exclude or include pre-trends to the estimation. Looking at the point estimate in Column 3, I find an (insignificant) increase in per capita debt of SEK 962, which is also in economic terms relatively small corresponding to 2% of the sample mean or 6% of the standard deviation. Thus, there is no evidence that Kommuninvest participation distorts a municipality's fiscal discipline dramatically.

Unfortunately, these results have to be interpreted within the Swedish context and cannot be generalized. As discussed in Section 2, Sweden's National Government strictly regulates municipal deficits, which to some extent also keeps debt levels in check. It is hard to predict what would happen if municipalities could choose deficits and debt levels more independently.

5.3 Further Discussion

In this final section I would like to discuss some aspects about Sweden's experience with a municipal credit agency in more detail. Kommuninvest was initiated in 1986 by 10 local governments in Örebro county in an attempt to realize diversification gains and economies of scale in financial markets. By now more than 90% of municipalities have voluntarily joined. Given that recently even Sweden's largest municipalities started to consider participating in Kommuninvest indicates that it has some general appeal exceeding a small municipality effect.

I emphasized refinancing advantages embedded in Kommuninvest's structure as a driving factor for its competitiveness in comparison to commercial banks. There is, however, also anecdotal evidence that some banks decided to downsize municipal lending during the financial crisis. An additional benefit of a municipal credit agency could be that it is able to provide a stable distribution channel during such periods of scarce credit supply. Suggestive evidence for this is shown in Figure 4, which plots the quarterly volume of new

loans for the 26 municipalities where I observe the entire borrowing.

Over the first half of the sample Kommuninvest and commercial banks have a market share of approximately 50% each. During the third quarter of 2008 there seems to be a structural break, after which the volume of Kommuninvest lending is on average more than twice as large as commercial bank lending. Since the sample of 26 municipalities is tilted towards municipalities joining Kommuninvest during my sample period, this figure overstates the effect expected for the population of Swedish municipalities. Yet, looking at the change of lending volume in Kommuninvest's portfolio around the third quarter of 2008, which I plotted in Figure 1, I still expect an overall sizable effect.

I have been asked which features of Kommuninvest's structure discussed in Section 2 are economically most relevant. Tax exemptions are the least compelling argument in favor of a municipal credit agency because all interest cost savings of local governments would be immediate tax losses to the National Government. However, these tax exemptions are unable to explain the entire effect. Assuming interest cost savings of 10bp through Kommuninvest lending, the distribution of Kommuninvest's entire net income at a 30% dividend tax rate during my sample period would only explain about 15% of the effect. Cleanly separating the remaining factors from each other is unfortunately not possible. Yet, it is fair to assume that minimizing transaction costs through large bond issues and gearing the capital structure by implicitly leveraging on the credibility of the National Government play economically important roles.

Finally, I conclude with a brief comparison between Kommuninvest's structure and some features of the Eurozone, which allows me to emphasize aspects I consider critical in the design of such a municipal credit agency. In both cases, at least some entities (countries or municipalities) gain cheaper access to credit through coinsurance. While I did not uncover evidence of increasing deficits or capital spending for Swedish municipalities, this issue is

heatedly debated within Euro countries.

Municipalities in Sweden agree to jointly guarantee for all outstanding liabilities before they join Kommuninvest. This stands in sharp contrast to Article 104 of the Maastricht Treaty, which explicitly states that no Euro country can assume another country's commitments. During the European sovereign debt crisis, this tough stand was softened and a stability mechanism introduced. If such a no-bailout clause cannot be maintained, it leads to severe coordination problems at the worst point in time. Another advantage of Kommuninvest's structure is that it has in Sweden's National Government a clearly assigned supra-ordinate authority, which plays an active monitoring role. Importantly, there is already a legal framework in place that allows Sweden's National Government to strictly enforce fiscal discipline on local governments if necessary.

6 Conclusion

Municipalities have developed institutions of various forms designed to optimize their access to credit. This paper analyzes the lending terms of a financial intermediary that exclusively specializes on municipal debt in Sweden, a municipal credit agency called Kommuninvest. The business model is based on the idea to raise long-term funds through the issuance of bonds in international capital markets and to distribute them among participating municipalities. The primary objective, thereby, is to overcome transaction costs by stimulating competition in a market segment with low margins, and to gain refinancing advantages due to its financial structure, including a layer of public guarantees. The economic conclusions from my analysis are threefold: I find evidence suggestive of coinsurance in Kommuninvest's lending terms, I document that access to its credit facility decreases credit spreads, and I cannot detect evidence that improved credit terms undermine the fiscal discipline of municipalities.

Having seen recent incidents of municipal distress throughout the world, and recognizing insufficient credit access of municipalities in developing countries, one wonders to what extent such a municipal credit agency could be transferred to other countries. The analysis in this paper provides useful reference points. In my opinion, the following conditions make a strong case: a National Government with moderate levels of debt because a municipal credit agency indirectly leverages on the country's borrowing capacity; a legal framework in place that assigns a supra-ordinate authority to intervene if annual deficits get out of control; and local governments that are considered prudent borrowers. Ultimately, it may be no coincidence that this form of credit agency originates from the Nordic countries where the fiscal discipline of governments has been traditionally strong.

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7 Appendix

A Details of credit spread computations

The analysis in this paper uses chiefly credit spreads of Kommuninvest and commercial bank loans to Swedish municipalities. I compute these spreads with respect to the Swedish treasury yield curve as the risk-free asset. Bank loans may be roughly divided into three categories, which require a separate treatment when backing out credit spreads: fixed interest rate loans, floating-rate loans linked to a public benchmark, or floating-rate loans linked to an internal bank rate. This section explains in detail how I define credit spreads for each category respectively.

When computing credit spreads of fixed-rate loans, I closely follow the strategy employed by Gilchrist and Zakrajšek (2012) among others. I project interest and principal payments of a loan and discount each cash flow with a respective treasury yield. If the required maturity of a treasury yield is stale or unobserved, I approximate it through linear interpolation of the two closest observable maturities. The resulting present value is the price of a hypothetical treasury security that pays exactly the same cash flows. The credit spread is then computed as the difference in yields between the bank loan and the hypothetical treasury bond.

Since all outstanding Swedish treasury bonds are securities with fixed coupon rates, the computation of credit spreads for floating-rate loans requires additional steps. Almost all floating-rate loans with a public benchmark rate are based on the 3-month STIBOR plus/minus a loan-specific spread. STIBOR refers to the Stockholm Interbank Offered Rate, which is set by the major banks in Stockholm every day at 11am. I transform the floating nature of a loan into a fixed interest rate with the help of interest rate swaps. Interest rate swaps on the 3-month STIBOR are traded for various maturities of up to 20

years. Using similar interpolation strategies as applied to the treasury yields, I am able to express floating-rate loans in terms of fixed interest rates. Then, I am able to apply the methodology used for fixed-rate loans to compute credit spreads.

Some of Kommuninvest's STIBOR-linked and internally-indexed loans are what is known in Sweden as until further notice products, i.e. they are callable and puttable upon a short notice period. Since both contracting parties are granted options and since these products are all floating-rate loans, the option is significantly less valuable. To take the option feature into account, I treat them as short-term loans (even though the assigned maturity might be longer or undefined). For time-varying STIBOR-linked loans, I define credit spreads as the 3-month STIBOR rate plus spread minus the 3-month treasury yield.

The pricing of internally-indexed loans requires additional ad-hoc assumptions. The internal benchmark rates of commercial banks are unobserved. Kommuninvest's internal rate is closely tied to short-term market rates. This, however, may differ from bank to bank. Using the same benchmark rates may then be one source that creates an undesired bias in credit spreads across banks. My general approach for these types of products is to consider them as short-term lending contracts. Since it is important to match a benchmark rate with a treasury yield of equal maturity, I rely on the shortest available treasury yield, the 1-month rate. The credit spread is then defined as the 1-month STIBOR plus spread in excess of the 1-month treasury yield. While I believe that this strategy provides a reasonable assessment of short-term lending products, it may nevertheless contain biases in credit spreads across banks. Therefore, I place more confidence into results that are based on fixed-rate and STIBOR-linked loans.

8 Figures and Tables

Figure 1: Kommuninvest's development

Figure 1 shows the development of Kommuninvest's portfolio of new loans over the sample period 2005 until 2010. The solid line represents the quarterly volume of new loans in Million SEK. The scatter plot represents the number of new loans that have been signed during the quarter.

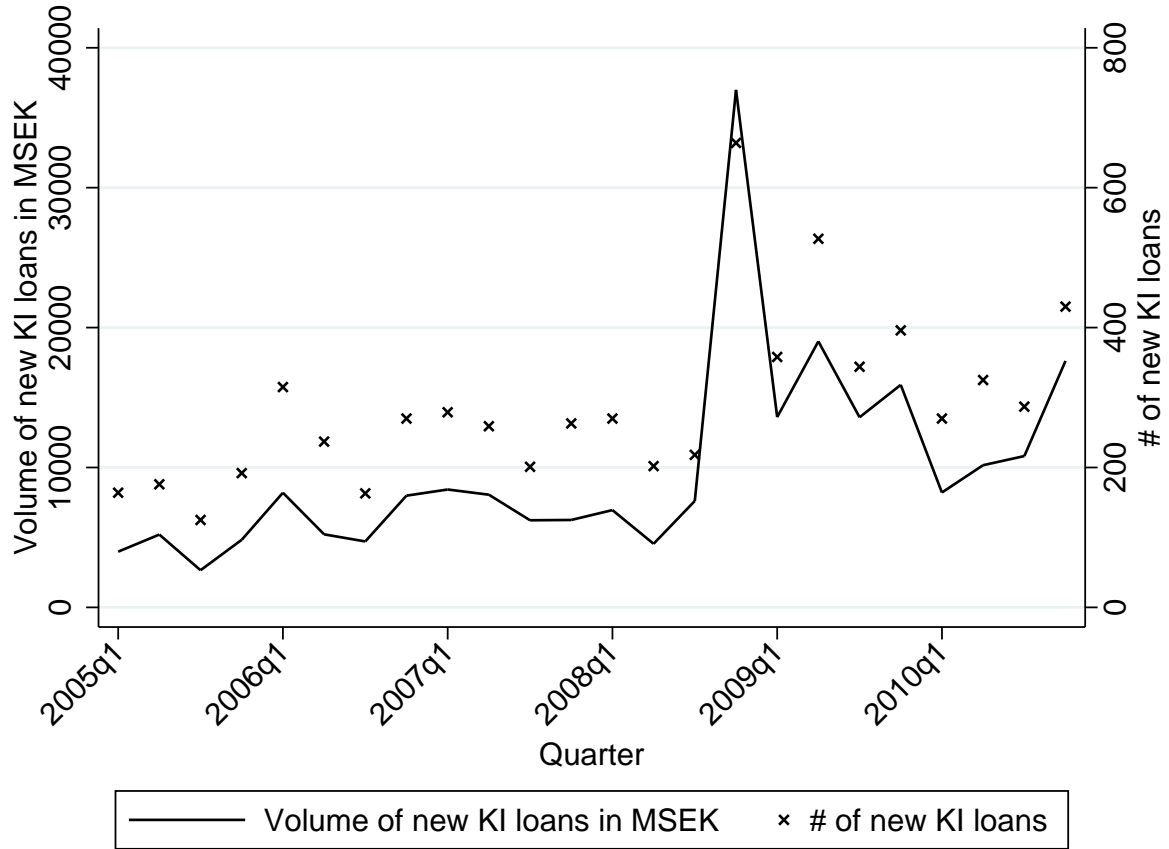


Figure 2: A sketch of main economic mechanisms

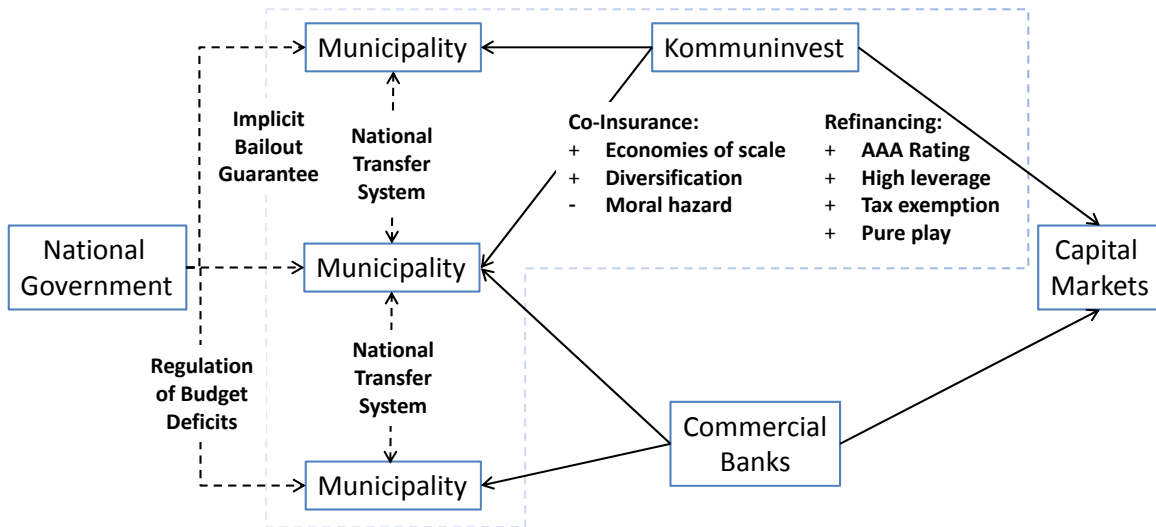


Figure 3: Time-series of municipalities joining Kommuninvest

This figure plots the number of Swedish municipalities that sign a membership agreement with Kommuninvest in each year. At the end of 2011, 267 of Sweden's 290 municipalities were members in Kommuninvest cooperative society.

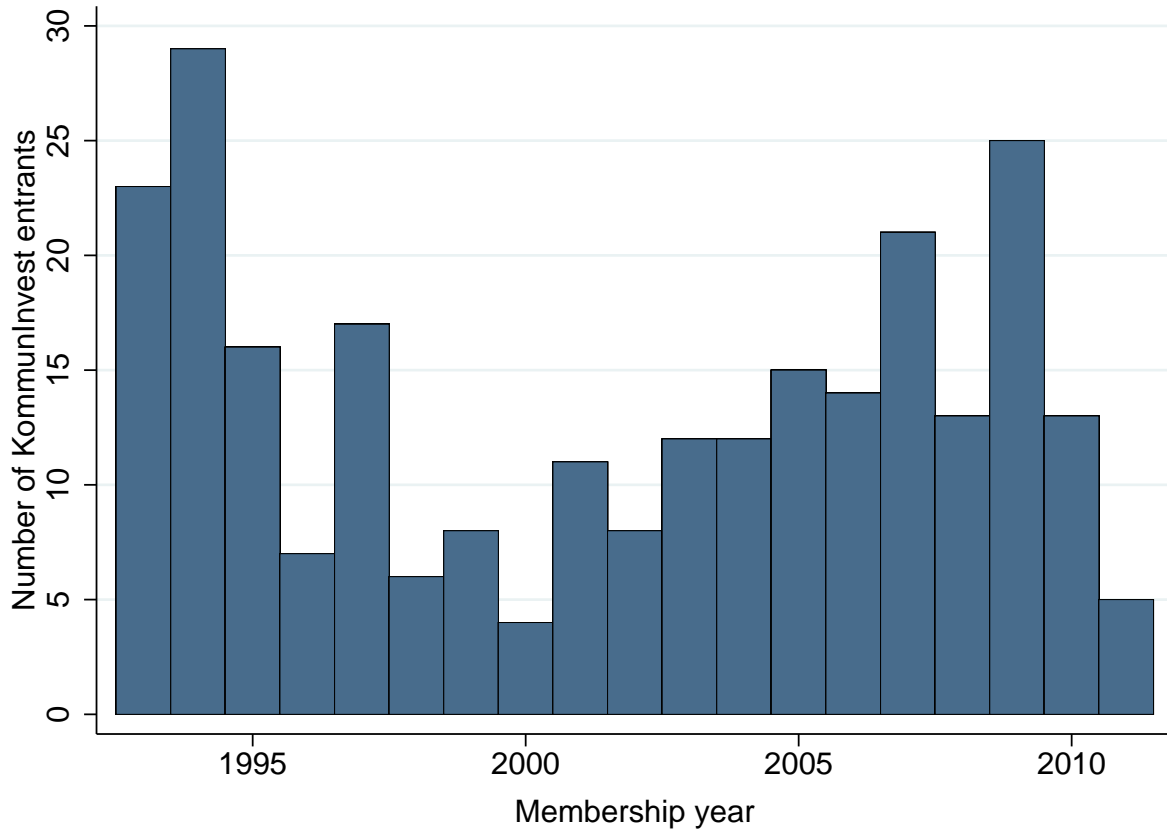


Figure 4: Comparative lending since 2005

Figure 4 compares the volume of new lending between Kommuninvest and commercial banks for each quarter of the period 2005 until 2010. I only consider loans to the 26 municipalities in sample SUB, for which I observe all Kommuninvest and commercial bank loans. Black plots refer to Kommuninvest lending whereas gray ones to commercial bank lending. The lines represent new lending volume in million Swedish Krona and are measured on the left axis. The scatter plots count the number of loans and can be read on the right axis.

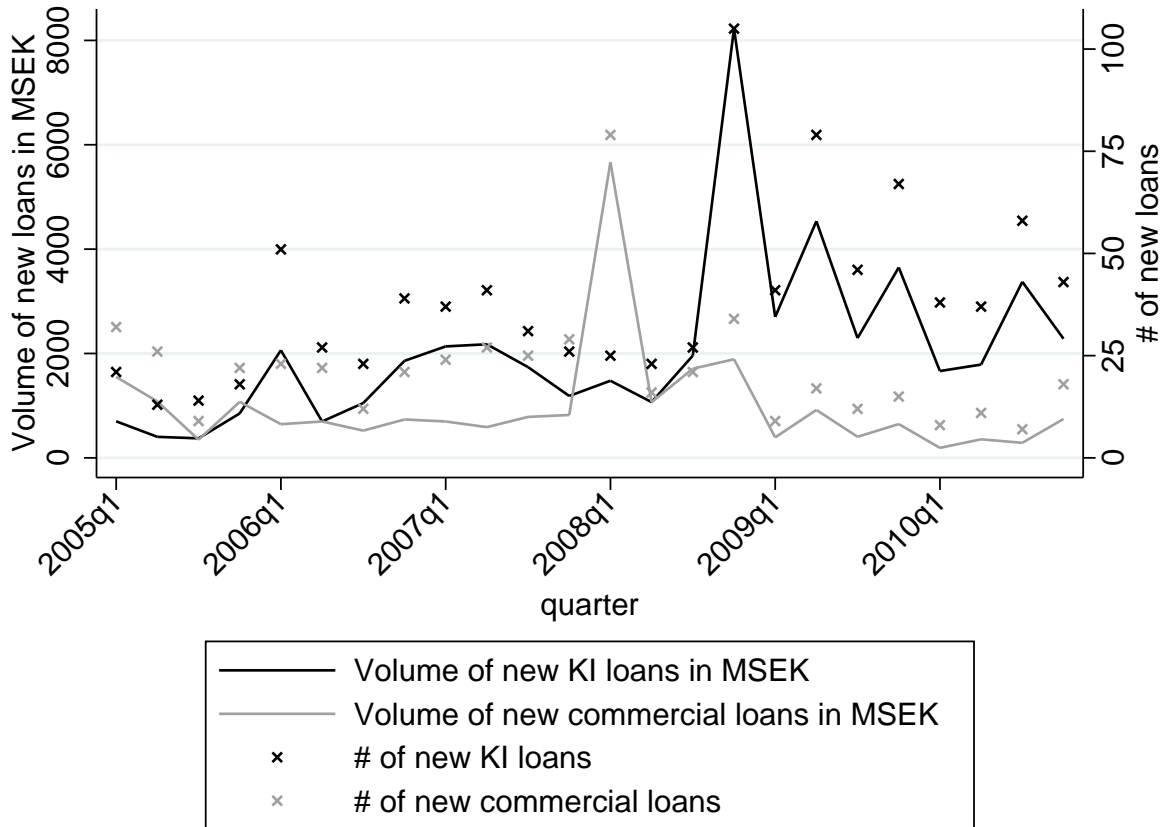


Table 1: Loan summary statistics

Table 1 reports summary statistics for important loan characteristics. It covers loans and bonds that were issued between 2005 and 2010. Panel A summarizes Kommuninvest loans, Panel B commercial bank loans and Panel C bonds. Credit spreads are computed with respect to Swedish treasury rates, winsorized at the 1% level, and denoted in percent. Details about credit spread computations can be found in Appendix A. I also report credit spreads for fixed-rate, STIBOR-linked, or internally-indexed loans separately. *Time to maturity* is denoted in years, and *Principal amounts* in million Swedish Krona. *Floating rate* is a dummy variable defining the interest type.

	Panel A - Kommuninvest Loans					
	mean	median	sd	min	max	N
Spread over treasury	.6343	.61	.4972	-.18	2.215	6591
Spread fixed-rate loans	.7301	.6437	.5094	-.18	2.215	2362
Spread STIBOR loans	.6453	.6892	.4116	-.1086	1.923	1529
Spread internally-indexed loans	.5442	.57	.5143	-.18	2.215	2700
Time to Maturity (years)	1.822	.25	2.276	.01918	14.98	6591
Principal amount (MSEK)	33.52	20	49.87	.1034	950	6591
Floating rate	.6416	1	.4796	0	1	6591
	Panel B - Commercial Banks Loans					
	mean	median	sd	min	max	N
Spread over treasury	.6009	.4785	.4797	-.583	2.22	485
Spread fixed-rate loans	.6902	.5145	.5745	-.583	2.22	218
Spread STIBOR loans	.9824	1.026	.4435	.1815	1.809	57
Spread internally-indexed loans	.4046	.3569	.2253	.0942	1.571	210
Time to Maturity (years)	2.042	.2685	2.645	.1667	15	485
Principal amount (MSEK)	48.03	31.3	63.78	.177	714	485
Floating rate	.5505	1	.498	0	1	485
	Panel C - Bonds					
	mean	median	sd	min	max	N
Spread over treasury	.6342	.5368	.434	-.001661	1.876	69
Spread fixed-rate loans	.5239	.3201	.4443	-.001661	1.876	33
Spread STIBOR loans	.7353	.6585	.4043	.08623	1.413	36
Time to Maturity (years)	3.41	3.027	1.919	1.005	10.11	69
Principal amount (MSEK)	322.1	300	208.3	50	1000	69
Floating rate	.5217	1	.5032	0	1	69

Table 2: Municipality statistics and sample selection

Table 2 summarizes which municipalities are represented in my data. Panel A compares municipality characteristics between municipalities that are Kommuninvest members as of 2005 and the ones that are not. *Debt/pop. tSEK* and *Tax/pop. tSEK* are denoted in thousand Swedish Kronor, and *ST-debt/debt* refers to the fraction of debt that is due within one year. Panel B highlights differences in the same characteristics between municipalities that responded to my data request and the ones that did not. Panel C provides similar evidence at the loan level by comparing how Kommuninvest's loan terms differ between respondents and non-respondents. Therefore, I regress loan characteristics on a respondent dummy and year fixed effects.

	PANEL A: ALL MUNICIPALITIES						PANEL B: SAMPLE SELECTION					
	No KI-member		KI-member		Difference		No response		Response		Difference	
	mean	N	mean	N	Δ	t-stat	mean	N	mean	N	Δ	t-stat
Population	43804	122	22045	168	21758	2.69	58159	72	40693	28	17466	1.16
Debt/pop. (tSEK)	40.10	122	44.25	167	-4.15	-2.02	45.50	72	43.22	28	2.28	0.56
Tax/pop. (tSEK)	30.95	122	30.20	168	0.75	1.93	30.59	72	31.05	28	-0.46	-0.98
ST-debt/debt	0.32	122	0.27	167	0.05	3.27	0.29	72	0.32	28	-0.03	-0.80
Expenses/revenue	3.12	122	3.13	167	-0.00	-0.05	3.00	72	3.01	28	-0.01	-0.05

PANEL C: SAMPLE SELECTION (KI LOAN CHARACTERISTICS)						
	Spread		Time to maturity	Principal (MSEK)	Floating rate	
	(1)	(2)	(3)	(4)	(5)	
With response	-0.016 (0.027)	-0.003 (0.026)	-0.201 (0.406)	6.024 (12.377)	0.071 (0.068)	
Observations	2,078	2,078	2,078	2,078	2,078	
R-squared	0.53	0.58	0.03	0.02	0.02	
Year FE	Yes	Yes	Yes	Yes	Yes	
Loan controls	No	Yes	No	No	No	
Cluster	Muni	Muni	Muni	Muni	Muni	

Table 3: Municipal credit spreads and financing sources

Table 3 reports the output of my baseline panel regressions. The dependent variable is the credit spread in excess of the treasury rate as reported in Table 1. The right-hand side variables of interest are two dummy variables indicating whether the source of financing is Kommuninvest or a directly issued bond leaving commercial bank loans as the benchmark. In columns 3-10 I add loan-specific variables and yield curve characteristics to the model. *Time to maturity* is measured in years and $\ln(\text{Principal})$ is the natural log of the principal amount in SEK. The dummy variables *Floating rate* and *Amortizing* characterize further details of a loan. The level of the yield curve is captured by *Treasury Bond 5 Year* and the corresponding slope by *Treasury 10Y - 3M*. All specifications include municipality and quarter fixed effects and the standard errors are clustered on the municipality level. I report all model specifications for the complete sample ALL and the sub-sample SUB, which only includes the 26 municipalities with at least one Kommuninvest loan and one commercial bank loan. The panel in columns 1 to 4 covers all loans, whereas later panels report a sample split: columns 5-6 are fixed-rate loans, columns 7-8 are STIBOR-linked loans, and columns 9-10 are internally-indexed loans.

	All loans				Fixed-rate		STIBOR-linked		Internally-indexed	
	(1) ALL	(2) SUB	(3) ALL	(4) SUB	(5) ALL	(6) SUB	(7) ALL	(8) SUB	(9) ALL	(10) SUB
KommunInvest	-0.168*** (0.043)	-0.182*** (0.051)	-0.162*** (0.037)	-0.160*** (0.035)	-0.194*** (0.054)	-0.198*** (0.060)	-0.072 (0.076)	-0.107 (0.066)	-0.115** (0.052)	-0.059 (0.056)
Bond	-0.189*** (0.069)		-0.240*** (0.053)		-0.183*** (0.044)		-0.176*** (0.029)			
Time to maturity			0.022*** (0.004)	0.003 (0.007)	-0.004 (0.006)	-0.011 (0.013)	0.043*** (0.005)	0.042*** (0.009)		
ln(Principal)			-0.006 (0.006)	-0.003 (0.017)	-0.015 (0.012)	-0.017 (0.018)	0.003 (0.006)	0.014 (0.010)	-0.004 (0.007)	0.031 (0.020)
Amortizing			0.000 (0.015)	-0.005 (0.028)	-0.032 (0.022)	0.019 (0.054)	0.002 (0.017)	-0.022 (0.040)	-0.028 (0.020)	-0.052 (0.062)
Floating rate			-0.151*** (0.025)	-0.269*** (0.061)						
Treasury Bond 5 Year			-0.213*** (0.027)	-0.264*** (0.075)	-0.431*** (0.035)	-0.481*** (0.080)	-0.079** (0.031)	-0.125 (0.078)	-0.130** (0.051)	-0.211* (0.111)
Treasury 10Y - 3M			-0.038* (0.021)	-0.023 (0.052)	-0.028 (0.040)	-0.017 (0.074)	-0.011 (0.029)	0.078* (0.045)	0.007 (0.044)	0.030 (0.118)
Observations	7,145	1,329	7,145	1,329	2,613	500	1,622	254	2,910	575
R-squared	0.70	0.60	0.75	0.67	0.69	0.61	0.89	0.90	0.88	0.81
Muni FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Muni	Muni	Muni	Muni	Muni	Muni	Muni	Muni	Muni	Muni

Table 4: Kommuninvest's impact on credit spreads by issue size

This table refines the regression model of Table 3. The dependent variable is still the credit spread in excess of the treasury rate. The right-hand side dummy variables, that indicate whether the source of financing is Kommuninvest is interacted with a proxy for the loan size. I split all loans according to principal values into *Small*, *Medium*, and *Large* loans. The remaining variables and model specifications follow the description of Table 3.

	All loans		Fixed-rate		STIBOR-linked		Internally-indexed	
	(1) ALL	(2) SUB	(3) ALL	(4) SUB	(5) ALL	(6) SUB	(7) ALL	(8) SUB
KI * Small	-0.183*** (0.046)	-0.214*** (0.064)	-0.238*** (0.051)	-0.297*** (0.061)	-0.088 (0.080)	-0.037 (0.050)	-0.115* (0.069)	-0.006 (0.096)
KI * Medium	-0.163*** (0.039)	-0.164*** (0.038)	-0.197*** (0.050)	-0.214*** (0.049)	-0.077 (0.078)	-0.130** (0.061)	-0.110* (0.058)	0.036 (0.073)
KI * Large	-0.153*** (0.033)	-0.138*** (0.035)	-0.159** (0.063)	-0.128 (0.099)	-0.069 (0.077)	-0.105 (0.070)	-0.116** (0.048)	-0.098* (0.048)
Bond	-0.241*** (0.053)		-0.194*** (0.046)		-0.176*** (0.030)			
ln(Principal)	-0.015 (0.011)	-0.016 (0.026)	-0.038** (0.019)	-0.046 (0.032)	-0.002 (0.012)	0.031** (0.014)	-0.004 (0.014)	0.047* (0.024)
Time to Maturity	0.022*** (0.004)	0.004 (0.007)	-0.004 (0.006)	-0.010 (0.012)	0.043*** (0.005)	0.042*** (0.009)		
Amortizing	-0.001 (0.015)	-0.007 (0.027)	-0.035 (0.022)	0.014 (0.054)	0.002 (0.017)	-0.025 (0.040)	-0.028 (0.020)	-0.074 (0.055)
Floating rate	-0.151*** (0.025)	-0.261*** (0.063)						
Treasury Bond 5 Year	-0.212*** (0.027)	-0.258*** (0.077)	-0.429*** (0.034)	-0.461*** (0.085)	-0.077** (0.031)	-0.143* (0.077)	-0.130** (0.051)	-0.215* (0.106)
Treasury 10Y - 3M	-0.037* (0.021)	-0.021 (0.053)	-0.026 (0.040)	-0.009 (0.074)	-0.011 (0.029)	0.078 (0.046)	0.007 (0.044)	0.032 (0.116)
Observations	7,145	1,329	2,613	500	1,622	254	2,910	575
R-squared	0.75	0.67	0.69	0.62	0.89	0.90	0.88	0.82
Muni FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Muni	Muni	Muni	Muni	Muni	Muni	Muni	Muni

Table 5: Kommuninvest membership and loan characteristics

This table reports regression results exploiting time-series variation when municipalities become Kommuninvest members. Dependent variables are credit spreads of loans over Swedish treasury rates and principal amounts. The right-hand side variable *KI-Member* in Panel A is a dummy variable that switches to one if a municipality is a Kommuninvest member for the entire year. Panel B includes additional dummy variables tagging the year before and the year of joining Kommuninvest. All specifications include quarter and municipality fixed effects. Loan controls consist of the time to maturity, the principal amount, and indicators whether a loan is floating-rate or amortizing. Standard errors are clustered at the municipality level.

PANEL A: SIMPLE DIFFERENCE EFFECT				PANEL B: MODEL WITH PRE-TRENDS			
	(1)	(2)	(3)		(4)	(5)	(6)
	Spread	Spread	Principal		Spread	Spread	Principal
				KI-Year _{t-1}	0.190*** (0.036)	0.200*** (0.039)	1.754 (7.462)
				KI-Membership year	-0.087 (0.057)	-0.041 (0.067)	13.252** (5.881)
KI-Member	-0.086*** (0.027)	-0.080*** (0.025)	-5.522 (7.882)	Year ≥ KI-Year _{t+1}	-0.135** (0.055)	-0.094 (0.065)	4.663 (5.769)
Observations	7,145	7,145	7,145	Observations	7,145	7,145	7,145
R-squared	0.69	0.73	0.58	R-squared	0.69	0.73	0.58
Muni FE	Yes	Yes	Yes	Muni FE	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Quarter FE	Yes	Yes	Yes
Loan controls	No	Yes	No	Loan controls	No	Yes	No
Cluster	Muni	Muni	Muni	Cluster	Muni	Muni	Muni

Table 6: Credit spreads and municipality characteristics

Table 6 relates the credit spread at issuance to municipality characteristics. Columns 1 and 2 cover the entire sample, columns 3 and 4 fixed-rate loans, columns 5 and 6 STIBOR-linked loans, and columns 7 and 8 internally-indexed loans. Independent variables are the natural log of population and debt per capita. I estimate separate coefficients for municipality characteristics of Kommuninvest loans and commercial bank loans by interacting a Kommuninvest dummy with municipality characteristics. Unreported in Table 6 but included in each estimation are a Kommuninvest dummy, loan characteristics (except principal amounts), yield curve characteristics, and quarter fixed effects. Standard errors are clustered at the municipality level.

	All loans		Fixed-rate		STIBOR-linked		Internally-indexed	
	(1) ALL	(2) SUB	(3) ALL	(4) SUB	(5) ALL	(6) SUB	(7) ALL	(8) SUB
KI × ln(Population)	0.072** (0.030)	0.107*** (0.019)	0.092*** (0.023)	0.103*** (0.024)	0.030 (0.039)	0.121 (0.090)	-0.004 (0.043)	-0.000 (0.045)
ln(Population)	-0.086*** (0.030)	-0.113*** (0.015)	-0.102*** (0.023)	-0.102*** (0.028)	-0.054 (0.039)	-0.150* (0.086)	-0.016 (0.042)	-0.043 (0.034)
KI × Debt/pop.	-0.003*** (0.001)	-0.004*** (0.001)	-0.002 (0.002)	-0.001 (0.003)	-0.004** (0.001)	-0.003 (0.002)	-0.004** (0.002)	-0.005** (0.002)
Debt/pop. tSEK	0.003*** (0.001)	0.005*** (0.001)	0.003 (0.002)	0.004 (0.003)	0.004*** (0.001)	0.005*** (0.002)	0.003** (0.002)	0.005*** (0.001)
Observations	6,988	1,329	2,563	500	1,562	254	2,863	575
R-squared	0.73	0.67	0.63	0.58	0.87	0.88	0.87	0.79
Kommuninvest dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Muni FE	No	No	No	No	No	No	No	No
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Muni	Muni	Muni	Muni	Muni	Muni	Muni	Muni

Table 7: Kommuninvest membership and accounting measures

This table reports balanced panel regressions including all Swedish municipalities from 1998 until 2010. Dependent variables are accounting measures at the municipal level from Statistics Sweden (SCB). *Expenses*, *Taxes*, *Debt* are all scaled by a municipality's population and defined in thousand SEK. *Relative debt* denotes the fraction of short term debt divided by total debt. *Relative expenses* denotes the fraction of expenses divided by all revenues. The right-hand side variable *KI-Member* in Panel A is a dummy variable that switches to one if a municipality is a Kommuninvest member for the entire year. Panel B includes additional dummy variables tagging the year before and the year of joining Kommuninvest. All specifications include year and municipality fixed effects. Standard errors are clustered at the municipality level.

	(1)	(2)	(3)	(4)	(5)
	Expenses	Taxes	Debt	Rel. Debt	Rel. exp
PANEL A: SIMPLE DIFFERENCE EFFECT (FULL SAMPLE)					
KI-Member	-0.011 (0.367)	-0.044 (0.115)	0.962 (0.916)	-0.003 (0.006)	-0.031 (0.030)
Observations	3,761	3,761	3,747	3,747	3,747
R-squared	0.93	0.97	0.87	0.78	0.87
Muni FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster	Muni	Muni	Muni	Muni	Muni
PANEL B: MODEL WITH PRE-TRENDS					
Year _{t-1}	-0.446 (0.288)	-0.047 (0.106)	-0.658 (0.727)	-0.000 (0.005)	0.014 (0.025)
KI-Membership year	-0.411 (0.317)	-0.078 (0.116)	-0.550 (0.834)	-0.004 (0.006)	0.019 (0.030)
Year \geq KI-Year _{t+1}	-0.229 (0.471)	-0.077 (0.150)	0.656 (1.140)	-0.004 (0.008)	-0.022 (0.037)
Observations	3,761	3,761	3,747	3,747	3,747
R-squared	0.93	0.97	0.88	0.78	0.87
Muni FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster	Muni	Muni	Muni	Muni	Muni