European Journal of Political Economy 38 (2015) 140–152

Contents lists available at ScienceDirect

European Journal of Political Economy

journal homepage: www.elsevier.com/locate/ejpe

Common pool problems in voluntary municipal mergers

Tuukka Saarimaa *, Janne Tukiainen [1]

VATT Institute for Economic Research, P.O. Box 1279 (Arkadiankatu 7), FI-00101 Helsinki, Finland

ARTICLE INFO

Article history:
Received 13 November 2014
Received in revised form 17 February 2015
Accepted 17 February 2015
Available online 24 February 2015

JEL classification:
D72
H72
H74

Keywords:
Common pool
Difference-in-differences
Law of 1/*n*
Municipality mergers

ABSTRACT

We analyze free-riding behavior of Finnish municipalities prior to voluntary municipal mergers. The merger process creates a temporary common pool problem, because of a delay from the initial decision to the actual merger during which municipalities stay autonomous. Using a difference-in-differences strategy, we find that the stronger free-riding incentive a municipality faced the more it increased its debt and spent its cash reserves. These funds were spent mostly on investments and current expenditures.

© 2015 Elsevier B.V. All rights reserved.

1. Introduction

The size and number of local governments is a crucial policy decision from the point of view of efficient provision of local public goods and services (e.g., Miceli, 1993; Alesina and Spolaore, 1997; Ellingsen, 1998). Often municipality mergers are seen as an effective way of realizing economies of scale and such reforms are widespread.[2] Major municipal merger reforms have been implemented over time in a number of countries including Canada, Denmark, Germany, Israel, Japan, Sweden and Switzerland (Dafflon, 2012; Hansen, 2012; Hinnerich, 2009; Reingewetz, 2012; Weese, forthcoming). However, a possible and somewhat overlooked cost of municipality mergers is that the merger process itself creates a temporary common pool problem among the municipalities who are about to merge. This problem arises because usually there is a delay (in our case at least one calendar year) from the merger decision to the actual merger. Within this window, a single merging municipality can make autonomous decisions and shift some of the costs of additional expenditures or investments to its merger partners by increasing debt or liquidating assets.

These free-riding incentives are directly related to the "law of 1/*n*" as formalized by Weingast et al. (1981) in the case of multiple identical and geographically distinct jurisdictions.[3] In their model, the total size of the common pool increases in the number of

* Corresponding author. Tel.: +358 295519444.
E-mail addresses: tuukka.saarimaa@vatt.fi (T. Saarimaa), janne.tukiainen@vatt.fi (J. Tukiainen).
[1] Tel: +358 295519 451.

[2] Other potential benefits from larger jurisdictions include internalizing externalities, better state capacity and increased capacity to sustain spending or revenue shocks.

[3] Baron and Ferejohn (1987 and 1989) extend this line of argumentation into situations where decision-makers need to bargain over which projects are carried out. In this context, they show that the common pool creates incentives not only to increase spending in own jurisdiction, but also to restrain the spending in other jurisdictions. See also Knight (2008) for further results.

http://dx.doi.org/10.1016/j.ejpoleco.2015.02.006
0176-2680/© 2015 Elsevier B.V. All rights reserved.

districts (n) that form the common pool, which is an appropriate description of the municipal merger case.[4] A single representative speaks for each district and representatives are re-elected (or not) locally. Each jurisdiction can propose a project that is always passed (universalism) and funded through generalized taxation on all n jurisdictions. In this model, the share of the tax burden in each jurisdiction is $1/n$. Weingast et al. (1981) show that, in this setting, inefficiency increases with n because a single jurisdiction receives all the benefits from its project while the costs are shared among all districts.

Municipal mergers are a particularly clean case to test the law of $1/n$, because the universalism assumption holds as each merging municipality can make autonomous decisions before the merger actually takes place. However, there are two important distinctions. First, due to different population sizes and income levels of each municipality, the incentives to free-ride (share of costs) in the case of a merger are not directly related to the number of municipalities in the merger, but rather to the size of the participating municipalities relative to the size of the common pool.

Second, in the merger case, political decision makers may face electoral competition from the other districts and there is more than one decision maker per district. However, the local politicians from municipalities with strong free-riding incentives (typically small municipalities) face relatively low re-election prospects in the post-merger elections and, according to Hyytinen et al. (2014), they seem to be aware of this fact. Furthermore, Saarimaa and Tukiainen (2013) show that after a merger, councilors gain votes mostly from their old pre-merger constituencies. This means that some councilors are lame ducks effectively facing a term limit (e.g., Besley and Case, 1995; Ferraz and Finan, 2011), while others need to please (mostly) voters from their old districts to gain re-election. In both cases, electoral punishment from free-riding is unlikely. In fact, as suggested by Aidt and Shvets (2012), common pool problems may even be exacerbated because of re-election concerns if voters reward the politicians who are able to bring home most pork.[5]

The current empirical evidence of common pool problems related to municipality mergers is somewhat mixed and concerns only forced municipal mergers. Hinnerich (2009) and Jordahl and Liang (2010) study Swedish municipality mergers imposed by the central government in the 1950s, the 60s and the 70s. Hinnerich (2009) finds that the smaller a merged municipality was compared to its merger partners in terms of population the more the municipality increased its per capita debt prior to merging. Jordahl and Liang (2010), on the other hand, find that a merger as such (or the creation of a common pool) had an effect on debt accumulation, but the relative size of merging municipalities did not seem to matter. The latter evidence is somewhat hard to reconcile with free-riding behavior as predicted by the Weingast et al. (1981) model, where the size relative to the common pool is the key element.[6]

In this paper, we analyze free-riding behavior in Finnish municipal mergers. Our institutional setup differs from previous cases in an important way because the Finnish mergers were decided voluntarily at the local level by municipal councils. It is unclear whether we should expect common pool problems to arise in a voluntary setting because one might expect that municipalities can somehow agree or contract not to exploit the common pool or that extensive free-riding would result in a cancelation of the merger.[7]

Somewhat surprisingly though, using difference-in-differences (DID) methods with a continuous treatment, we find large free-riding effects also among voluntary mergers. Consistent with the law of $1/n$, the stronger free-riding incentive a municipality faced the more it increased per capita debt and used up its cash reserves. Overall, due to free-riding, the merged municipalities accumulated about 240 million Euros of debt, corresponding to roughly 20% of their pre-treatment debt stock, and also decreased their cash reserves substantially (140 million Euros). We can also follow the money in much more detail than the previous studies. We find that the extra funds extracted from the common pool were spent mostly on investment and on current expenditures. Municipalities did not lower their local income tax rate nor did they hire new employees. These results are in line with the Weingast et al. (1981) model also in the sense that investment spending can be spatially targeted.[8]

Besides the law of $1/n$, there are two interesting alternative explanations for our findings. The first alternative is that municipalities with strong free-riding incentives can anticipate to have limited political power in the post-merger council.[9] The councilors in these municipalities may want to hastily spend money to the benefit of their citizens while autonomous decisions are possible irrespective of whether the extra spending is funded from the common pool or not. Relatedly, as explained above, some councilors are very unlikely to get elected into the post-merger council, which may have a direct effect on their private incentives to spend. Unfortunately,

[4] Primo and Snyder (2008) present a model where the total population size of the common pool is fixed and the size of each district diminishes as n increases, which is not the case in municipal mergers.

[5] Aidt and Shvets (2012) present theoretical and empirical results in which re-election concerns exacerbate the common pool problem. This link arises in their theoretical model because politicians differ in their ability to bring home the pork and elections are an ex post selection device that voters use to oust politicians who are unable to deliver the pork.

[6] Hansen (2012) analyzes the Danish municipal merger reform of 2007. Due to central government imposed fiscal restrictions, he analyzes only current expenditures and budget overruns and concludes that free-riding took place. While his findings are certainly consistent with free-riding, they are not conclusive. Free-riding takes place only if some of the costs of increased current expenditure can be shifted to the merger partners and Hansen (2012) does not report debt accumulation or changes in asset positions. The common pool problem has been analyzed in a number of other contexts as well and the results from these papers are also somewhat mixed (see e.g., Baqir, 2002; Baskaran, 2013; Borge, 2005; MacDonald, 2008 and Petterson-Lidbom, 2012). In these papers, decisions are not based on universalism, but rather involve e.g., bargaining issues, and thus, these papers cannot be seen as clean tests of the law of $1/n$ proposed by Weingast et al. (1981).

[7] In the Finnish case, the municipalities could decide whether to merge and with whom to merge totally voluntarily. In the mergers analyzed by Hinnerich (2009), both of these decisions were forced by the central government, whereas in the mergers analyzed by Jordahl and Liang (2010) and Hansen (2012) there was some but limited leeway in the choice of the partner, but municipalities had to comply to minimum population thresholds.

[8] Anecdotal evidence and public discussion suggest that smaller merging municipalities typically invested in local services, such as new local schools or health care facilities. See e.g., the main national newspaper in Finland Helsingin Sanomat (in Finnish): 5th October, 2013, http://www.hs.fi/kotimaa/a1380861189136 and 6th August, 2014, http://www.hs.fi/paakirjoitukset/a1407212731455.

[9] This happens because the elections in the new merged municipalities are at-large-elections without any regional quotas. Due to an open-list proportional representation system, candidates from the small municipalities are fully exposed to competition with the candidates from the larger municipalities. See Hyytinen et al. (2014) for details.

it is very difficult to measure the expectations that municipalities (or councilors) had on their post-merger political power prior to merging. Nonetheless, we try to separate between the free-riding and anticipated loss of power effect by using variation in the number of merging partners in a given merger.[10] The results suggest that municipalities respond to the free-riding incentives rather than to the anticipated loss of political power. They are not conclusive, however, because the number of municipalities in a merger is only a proxy for the post-merger political power. Nonetheless, it is important to note that both free-riding and responding to loss of political power lead to inefficient spending.

The second alternative explanation for free-riding in the context of voluntary mergers is Coasean type transfers between the merging municipalities (Coase, 1960). This case arises when a merger increases the welfare of the merger partners as a whole, but decreases the welfare of some of the individual partners. If the benefits are large enough, in principle, the winners can compensate the losers in order buy their approval of the merger. This explanation is, however, unlikely in our case. The municipalities with strong free-riding incentives who exploited the common pool are on average poorer (in per capita terms) than those with weaker free-riding incentives, and thus, do not seem to be attractive partners. One would expect that any transfers would go to the other direction. We also show that municipalities that were less keen to merge, proxied by the share of councilors who voted in favor of the merger, do not accumulate more debt relative to more keen municipalities. This suggests that we can rule out a major role for Coasean transfers with some confidence. Moreover, Acemoglu (2003) explains why Coasean bargaining is unlikely to occur in a political context.

Why do we observe free-riding behavior in voluntary mergers? First, a close examination of the merger agreements reveals that municipalities did foresee a possible common pool problem, at least to a certain extent. Most merger agreements included phrases, such as, "municipalities should behave responsibly in their economic decision-making prior to merging" or "major investment decisions should be made jointly". However, the agreements do not include any contingency plans over possible breaches or what exactly would constitute a breach.[11]

Second, it might be difficult for merger partners to observe the exact behavior of their future partners because of delays in accounting and production of official statistics. The financial statements from the final pre-merger year are available only after the merger has already taken place.[12]

Naturally, the fact that the Finnish mergers were decided voluntarily raises issues of non-random selection that may bias our results.[13] This selection may relate both to the decision to merge and to the extent of free-riding incentives within the mergers. Reassuringly, we are able to show long common pre-treatment trends for the control and the merger group (to address selection into merging) and for various treatment groups based on the level of free-riding incentives (to address selection based on free-riding incentives). We also show that changes in the financial situation coinciding with increases in per capita debt (taxable income, corporate tax revenue and central government grants) cannot explain our findings. The results are also robust to using alternative control groups, placebo tests and adding control variables. Furthermore, a generous merger subsidy scheme promoted by the central government may confound out findings. However, we show that explicitly controlling for the amount of subsidy does not affect our results. Moreover, our estimates suggest that the increases in debt and decreases in cash reserves were in total much larger than the overall amount of central government subsidies granted to the mergers (217 million Euros). Likewise, based on our reading of the merger agreements by the municipalities, fixed of costs of merging, such as harmonizing data systems or wages, are very unlikely to explain the results.

The rest of the paper is organized as follows. In Section 2, we present a short overview of the institutional setting of Finland and especially the merger process. In Section 3, we describe the empirical approach. We describe our data and present the econometric results in Section 4. Section 5 concludes.

2. The Finnish mergers

Finland has a two-tier system of government consisting of the central government and municipalities as the local level. In international comparison, Finnish municipalities have extensive tasks. In addition to the usual local public goods and services, municipalities are responsible for providing most of social and health care services and primary and secondary education. This makes municipalities of considerable importance to the whole economy. The GDP share of municipality spending is roughly 18% and they employ around 20% of the total workforce.

In addition to extensive tasks, Finnish municipalities have extensive fiscal autonomy.[14] Most importantly for our purposes, there are no restrictions on municipal use of debt. Moreover, interest rates do not depend on individual municipality conditions due to a joint liability scheme.[15] These features may increase the free-riding incentives. Furthermore, the central government does not enforce additional restrictions on the merging municipalities concerning how they handle their finances before the mergers take place. Municipalities fund their expenses mostly using own revenue sources. The most important sources are local taxes and operating revenues, such as fees. The most important tax instrument is the local income tax. The tax rate is flat and the municipalities can set the level freely. The property tax is of much less importance and municipalities can set the property tax rates only within limits set

[10] As an example, consider a small municipality merging with two other municipalities of equal size versus merging with one municipality twice its size. The free-riding incentives are the same in these two cases (municipality's relative size to the common pool), but the distribution of post-merger political power is very different, especially due to coalition formation opportunities, but also due to political competition in the elections.

[11] We are unaware of any cases where a merger was canceled after it was formally accepted by the municipal councils.

[12] The final financial statements of municipalities are handled by municipal councils in June of the following year.

[13] Also the forced mergers may be subject to selection due to the behavior of central government politicians for example.

[14] Finnish municipalities are self-governing entities by constitution, which means that the central government cannot assign new tasks to municipalities without passing legislation.

[15] This is organized through Municipality Finance Plc, a credit institution owned by the local government sector.

by the central government. The corporate income tax is a state level tax, but municipalities receive a share of this tax revenue based on profits and employment of firms within their borders. In 2012, the average share of the income tax of total revenue was 46%, while the shares of the property and corporate taxes were only 3%, respectively.

There are clear regional tax base and cost disparities, which are offset by a central government grant system. The system is based on estimates of average costs and tax bases so municipalities have few possibilities to influence the amount of grants that they receive. The grant system covers about 20% of total municipal revenues, but this share varies a great deal. The system covers more than 50% of all revenues for every fourth municipality.

Due to aging related expected increase in municipal spending and disparities in revenue bases, the central government initiated a plan in 2005 that aimed at reforming the municipal revenue structure and more importantly making the production of statutory municipal services more efficient. The main tool for strengthening the operating environment of municipalities in the government plan was municipality mergers. A provisional law enacted in 2007 clearly states that municipalities should have strong enough revenue and labor force bases to cope with the production of statutory municipal services. The municipalities were allowed to decide voluntarily whether and with whom to merge. Following the central government plan, 14 mergers took place in 2007, 1 in 2008 and 32 in 2009. The number of municipalities involved in a given merger ranged from 2 up to 10 municipalities.[16]

The central government encouraged mergers using three important policies. First, central government grants were guaranteed not to decrease for the first five years after merging. Second, municipalities were not allowed to lay off their employees during the first five post-merger years. This policy is likely to make it difficult to achieve any substantial efficiency gains from merging in the short term. Third, the central government granted generous merger subsidies to merged municipalities. The subsidy amount depends on the populations of the pre-merger municipalities, the population of the resulting new municipality, the number of participating municipalities in the merger and timing of the merger. The mergers from 2008 and 2009 received more subsidies than the subsequent ones, possibly explaining why most mergers took place in 2009.[17]

The merger process is as follows. The process usually starts with unofficial discussions which may lead to an initial feasibility study that is conducted by an external consultant. Based on the consultant's report, municipal boards make a proposal of the merger to the municipal councils.[18] This proposal is voted on by the councils. If the proposed merger gains a majority in all the participating councils, the merger goes through. If not, it is canceled and all the municipalities continue as they were and are free to seek a new coalition.

3. Econometric framework

Our identification strategy is based on the difference-in-differences (DID) method, where a control group of municipalities is compared to treated municipalities before and after a treatment has taken place. In order to have a clean and illustrative DID setup with respect to treatment timing, we focus only on the 32 mergers consisting of 99 municipalities that merged at the start of 2009.[19] Of these mergers, one was decided in 2006, four in early 2008 and the rest in 2007. This means that most merging municipalities had up to 2 years (for all at least 2008, and for most also 2007) to exploit the common pool.[20]

According to the law of $1/n$, the free-riding incentive for a municipality should depend on its relative size with respect to the size of the total common pool, i.e., the tax base. In the context of municipality mergers, municipality i with a total income tax base of $taxbase_i$ in merger j with a total income tax base of $taxbase_j$ internalizes only $taxbase_i$ / $taxbase_j$ of the marginal costs of funds.

For municipality i in merger j, we define the free-ride treatment variable as

$$freeride_{ij} = 1 - \frac{taxbase_i}{taxbase_j}, \tag{1}$$

where the total income tax base ($taxbase$) includes all income except capital income.[21] The tax bases are measured in 2005. The treatment intensity is high when a municipality is poor and/or small compared to the merger as a whole. This happens when a municipality

[16] Saarimaa and Tukiainen (2014) study the determinants of the 2007–09 Finnish mergers at an aggregate merger level and find evidence that voter preferences for location of services, local politics, previous cooperation and fiscal distress of one of the potential merger partner are associated with merging. Their results suggest that well-off municipalities are willing to merge with less well-off partners only if they maintain political power in the post-merger council. Hyytinen et al. (2014) study individual councilors' voting behavior concerning these mergers and find that politicians' desire to avoid electoral competition is reflected in their decision-making.

[17] The subsidies were paid to the mergers in annual installments over a three year period after the mergers had taken place. Nevertheless, municipalities could spend the subsidy before the merger by accumulating debt. Thus, these subsidies potentially confound our results. We address this concern carefully later.

[18] Municipal councils are the main seat of power in the Finnish municipal decision making. Finland has a proportional open-list election system. Currently, there are eight parties that dominate municipal politics, but some local lists are prevalent as well. Municipal elections are held every four years on simultaneous election dates. The councils that voted for the mergers under scrutiny were elected in October 2004. The elections in October 2008 already used the new post-merger municipal division, although the merger came to effect at the start of 2009.

[19] We report descriptive statistics on the size of these 32 individual mergers in Table A1 in Appendix A.

[20] A further reason not use the 2007 and 2008 mergers is that all but one of these mergers were decided in the previous year, and thus, had a shorter time to exploit the common pool than the 2009 mergers. This difference between the lengths of the treatment periods and the treatment timing makes it difficult to provide illustrative DID graphs. However, we conduct robustness checks by including all the 2007–09 mergers to the analysis and accounting for the exact treatment timing. These results are reported in Table B3 in online Appendix B.

[21] Finland has a dual income tax system where capital income is taxed with a different rate compared to other income. The capital income tax revenues go to the central government. Due to many different types of municipal taxes, it is not clear whether relative tax bases are more appropriate than e.g., relative population size used in previous studies (Hinnerich, 2009 and Jordahl and Liang, 2010). Since the correlation between the income tax base and population based measures is extremely high in our data (0.99), it makes no practical difference. To facilitate comparison to previous studies that use a population based measure, we report our main results using also a population based measure in Table B1 in online Appendix B.

is part of a merger involving many municipalities and/or merges with a much larger (and richer) partner(s). The treatment is equal to zero for municipalities that did not merge. The *freeride* measure varies substantially between the municipalities in the merger group as can be seen from Fig. A1 in Appendix A.

We also estimate models where we include a dummy indicating whether a municipality decided to merge. The intuition is that simply the creation of a common pool, i.e., the merger decision, leads to free-riding regardless of relative size. Jordahl and Liang (2010) argue that this may be the case if municipalities have limited understanding of all the incentives at work or limited opportunity to exploit the common pool, for example if they can only launch a limited number of investment projects each year. In our case, directly controlling for the merger dummy also alleviates problems related to the merger subsidies.

Since we have municipal level panel data from multiple years, we estimate the following type of models:

$$y_{it} = \mathbf{x}'_{it}\boldsymbol{\beta} + \mu_i + \tau_t + \delta_1 \cdot merger_i \cdot d2007_t + \delta_2 \cdot merger_i \cdot d2008_t + \alpha_1 \cdot freeride_i \cdot d2007_t + \alpha_2 \cdot freeride_i \cdot d2008_t + u_{it}, \quad (2)$$

where y is one of our outcomes of interest. The vector $\mathbf{x}$ includes time-varying control variables, μ is a municipality fixed effect and τ a year fixed effect. The key explanatory variables in this setup are the interaction terms that include the merger-dummy and the *freeride* measure. The dummy variables *d*2007 and *d*2008 indicate that the observation is from 2007 and 2008, respectively.

We allow the treatment effect to vary between the two treatment years for three reasons. First, 2007 may be contaminated in the sense that some of the mergers were decided only late during that year and may not have had time to respond during 2007. Second, exploiting the common pool by investing may require some preparation time and may be effective only in 2008. Third, it may be optimal to spend cash reserves as late as possible because a certain level of cash reserves is needed to run the day to day operations of the municipality. It should be noted that some free-riding could have taken place already during the control period year of 2006 due to possible anticipation.

Since the mergers in our data were decided voluntarily by the municipalities the treatments are not randomly assigned. The main concerns are that the unobservables or the outcomes have different trends. To alleviate these concerns we subject our results to a number of validity and robustness tests.

4. Empirical results

4.1. Data

In presenting our results, we will rely heavily on graphical evidence, but we will also provide regression results to confirm that our findings are statistically significant. In the graphical analysis, we divide the municipalities into three groups. The first group consists of the municipalities that did not merge. In addition, we divide the merged municipalities into two equal sized groups based on the *freeride* measure. We label the group of municipalities with an above median value of *freeride* as the "strong incentive" group and the "weak incentive" group consists of the municipalities with a below median value of *freeride*. The municipalities in the strong incentive group are typically small and/or are involved in mergers with more than two municipalities. Of course, this division is somewhat arbitrary and we will fully exploit the continuity of the treatment variable using regression analysis.

We use three sets of variables in our empirical analysis. First, we test the free-riding hypothesis using municipality's per capita debt stock and cash reserves. Increasing debt or decreasing liquid funds are the most obvious ways a municipality can shift the costs of current expenditures or investments to future merger partners. Second, we use control variables to capture any changes in a municipality's fiscal situation that may coincide with the merger process. Third, we analyze how municipalities spend the possible extra funds.

Table 1 presents descriptive statistics for our key variables for the groups described above. The data in Table 1 are from 2005, i.e., just before any of these municipalities had decided to merge. The municipalities in the strong incentives group are on average

Table 1
Descriptive statistics for municipalities prior to merger decisions (in 2005).

	No merger		Weak incentives		Strong incentives	
	Mean	SD	Mean	SD	Mean	SD
Number of observations	306		49		50	
Population	12,732	40,029	19,298	23,807	3455	3316
Merger population	12,732	40,029	32,434	32,702	44,992	30,111
Merger size (number of municipalities)	1	1	3.06	1.52	4.94	2.74
Merger subsidy (€ per capita)	0	0	381.2	267.0	326.1	180.9
Freeride	0	0	0.43	0.27	0.92	0.05
Debt stock (€ per capita)	1406	886	1347	1102	1097	894
Cash reserves (€ per capita)	500.7	646.5	496.1	641.8	418.8	586.4
Taxable income (€ per capita)	10,226	2148	11,368	1796	10,085	1443
Corporate income tax (€ per capita)	163.9	96.9	192.7	245.3	138.1	81.8
Central government grants (€ per capita)	1553	572.0	1222	566.3	1404	472.5
Municipal tax rate (%)	18.68	0.64	18.55	0.85	18.69	0.68
Operating margin (€ per capita)	−3718	427.4	−3580	417.9	−3609	404.7
Municipal employees (per capita)	0.060	0.014	0.054	0.013	0.052	0.015
Investment expenses (€ capita)	440.7	363.4	467.2	291.9	487.9	586.7

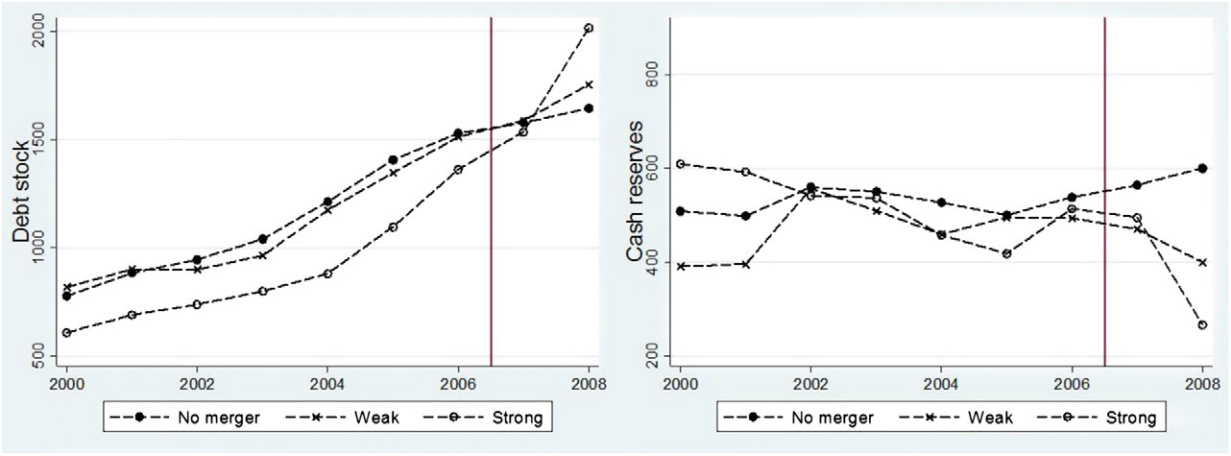

Fig. 1. Debt stock and cash reserves in different free-rider groups (€ per capita).

smaller and were involved in larger mergers both in terms of merger population and number of municipalities in the merger compared to the weak incentives group. In other respects, the groups are quite similar. The municipalities in the strong incentives group are slightly poorer than those in the weak incentive group in terms of income tax base (taxable income) and corporate tax revenue, but they receive slightly larger grants.

We use operating margin as our measure of municipal expenditures (apart from investments). Operating margin is an accounting concept which measures the difference between operating revenues (such as fees) and operating costs. This means that the operating margin equals the revenue that municipalities need to collect using taxes and central government grants.[22] Once you add these revenue sources, the resulting amount is available for investment and depreciation or write-offs.

4.2. DID results

Next we report our main results. Fig. 1 presents the development of the per capita debt stock and cash reserves from 2000 to 2008, which is the last year the merged municipalities existed as independent entities, and therefore, the last year for which municipal level statistics are available for this group. The vertical line highlights the beginning of the treatment period.

Two observations stand out from Fig. 1. First, both debt stock and cash reserves seem to have common pre-treatment trends in the different groups, although the groups differ slightly in terms of cash reserves in 2000 and 2001. Second, group differences emerge in both outcomes in 2007 and especially in 2008. The debt stock increases much faster in the strong incentives group compared to both the weak incentives and the no-merger group. The weak incentive group also clearly differs from the no-merger group. A similar story is true for cash reserves. Municipalities in both the weak and strong incentives group use up their cash reserves compared to the control group, although the strong incentives group clearly stands out. The evolution of group differences in these outcomes is consistent with free-riding behavior.

Despite the fact that the groups had similar pre-treatment common trends, a merger decision could coincide with a worsening of municipal finances or population changes. This would mean that increases in per capita debt, for example, are not necessarily driven by free-riding incentives, but instead simply a reaction to simultaneous fiscal distress.

To alleviate these concerns, in Fig. 2 we present the development of per capita taxable income, per capita corporate income tax revenue and per capita grants. Together with service fees, these comprise all the relevant municipal income sources.[23] Again, all these variables seem to have clear common pre-treatment trends and more importantly, the trends or differences in trends do not change during the treatment period. This gives us confidence that the observed increases in debt and decreases in cash reserves are not driven by group specific changes in fiscal conditions. We also show the development of population levels in different groups to illustrate that the merger decisions did not cause any sorting responses from citizens.

Figs. 1 and 2 alleviate our two potential selection issues: selection into merging and selection based on the extent of free-riding incentives. Fig. 1 reports common trends both in mergers compared to not merged and between different free-riding incentive groups. Fig. 2 shows that fiscal conditions and population develop identically in different groups. Therefore, either type of selection is unlikely to be an issue for our analysis.[24] Moreover, the treatment period seems to be very typical from a financial perspective, e.g., the emerging financial crisis does not seem to be yet influencing the municipalities under scrutiny here.

[22] Operating margin is a good measure also because some municipalities produce or sell services to other municipalities. These services show up on the municipality's expenditure side, but they also receive operating revenue from the sale of these services that we need to net-out.

[23] Reliable data on itemized service fees are not available, partly because many of the service fees are channeled through various municipal cooperation organizations and the related accounting practices vary across municipalities.

[24] We also tested for common pre-trends using placebo reforms (see Table B4 in online Appendix B).

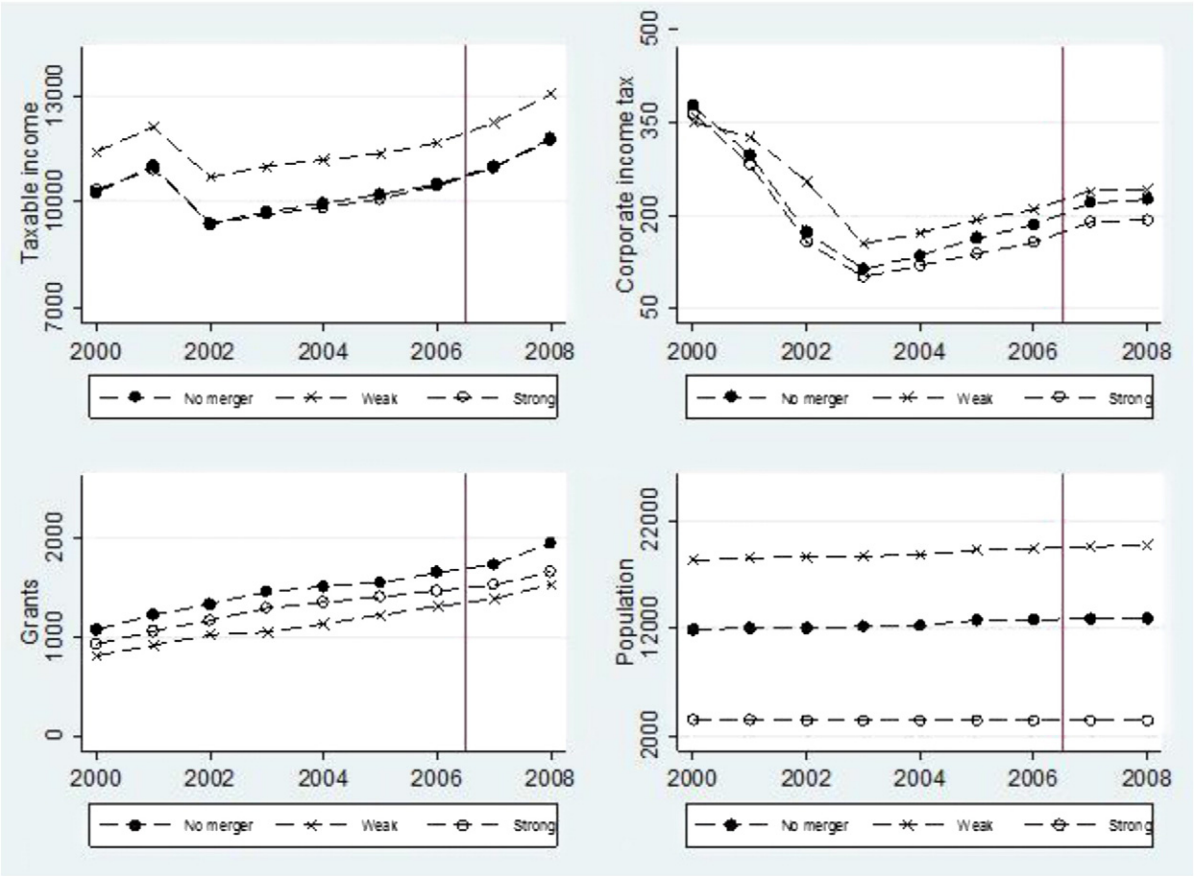

Fig. 2. Income tax base, corporate tax revenue, grants and population in different free-rider groups (monetary amounts in per capita terms).

In Table 2, we report DID results based on Eq. (2). For each model specification and outcome, we report results both with and without control variables (see Fig. 2).[25] We first report results from a model with only the discrete merger dummy (Panel A), and then a model with only the *freeride* variable (Panel B). In both cases, the results are consistent with free-riding behavior and coefficients are large and statistically significant. Finally, we subject the merger-dummy and *freeride* to a horserace and report results from models where we include both the merger-dummy and the *freeride* variable (Panel C).

It is evident from the results that the merger-dummy is not statistically significant when the *freeride* variable is also included, and thus, the free-riding behavior is tightly connected to free-riding incentives as predicted by the law of $1/n$. Adding control variables has very little effect on the point estimates, which is, of course, what one would expect after seeing Fig. 2.[26] In Panel C, the results for cash reserves are somewhat imprecise, but this is likely due to multicollinearity between the merger-dummy and the *freeride* variable. As can be seen from Panel B, once we omit the merger-dummy, also the cash reserves results become highly statistically significant. Based on these results, our preferred specification is the one in Panel B, which we focus on in subsequent analyses.

Increasing the *freeride* variable from zero to one increases (decreases) per capita municipal debt stock (cash reserves) on average by 570 (320) Euros by the end of year 2008. These are substantial amounts compared to the starting level of these variables. Overall, due to free-riding, the merged municipalities accumulated about 240 million Euros more debt, corresponding to almost 20% of their 2006 debt stock. The decrease in cash reserves is also substantial, roughly 140 million Euros.[27]

We are also interested in how municipalities spend the extra money from the common pool. There are a number of ways that municipalities can spend the money that benefits only local taxpayers. First, municipalities can lower either municipal tax rates or service fees and fund the normal level of municipal expenditures using debt and liquid assets. Second, municipalities can increase

[25] We also estimated the models using a log-linear specification. The results are similar to those in Table 2 (see Table B2 in online Appendix B).

[26] All the results are similar and statistically significant also if we do not allow for a different treatment effect for different treatment years, but rather use only one after period (not reported for brevity). We also checked that results can be replicated with a shorter panel to alleviate potential concerns of statistical inference raised by Bertrand et al. (2004) (not reported for brevity).

[27] These estimates are based on the point estimates from the models in Panel B of Table 2 with the control variables. We take the difference of the predicted debt level of our model to a counterfactual prediction where we set the free-riding coefficients to zero. The calculation accounts for the fact that effects are larger in smaller municipalities and that these outcomes are stock variables.

Table 2
DID results for debt stock and cash reserves.

	Debt stock	Debt stock	Cash reserves	Cash reserves
Panel A: Discrete treatment				
*merger*2007	108.3	95.87	−44.92	−48.17
	[67.56]	[67.58]	[48.16]	[48.17]
*merger*2008	357.6***	336.9***	−234.0***	−222.7***
	[87.97]	[88.04]	[59.23]	[60.92]
R^2	0.42	0.43	0.02	0.05
Panel B: Continuous treatment				
*freeride*2007	189.5*	176.0*	−83.11	−75.13
	[101.9]	[101.5]	[66.94]	[65.97]
*freeride*2008	587.4***	566.2***	−353.2***	−324.8***
	[131.1]	[130.7]	[80.26]	[83.84]
R^2	0.42	0.43	0.02	0.05
Panel C: Discrete and continuous treatment				
*merger*2007	−81.46	−100.6	51.23	13.43
	[104.1]	[108.2]	[101.2]	[108.5]
*merger*2008	−159.3	−188.6	20.62	−15.06
	[119.13]	[122.54]	[124.52]	[129.70]
*freeride*2007	283.7	292.8	−142.1	−90.6
	[174.8]	[178.2]	[141.5]	[148.0]
*freeride*2008	771.5***	784.6***	−376.9**	−307.5*
	[214.3]	[216.0]	[172.0]	[180.6]
R^2	0.42	0.44	0.02	0.05
Controls	No	Yes	No	Yes
N	3634	3634	3717	3717

Notes: The data in the regressions come from 2000 to 2008. All the models include year and municipality fixed effects. The control variables include taxable income, corporate income tax revenue, grants and population. Standard errors are clustered at the municipality level and reported in brackets. ***, ** and * indicate statistical significance at 1, 5 and 10% levels, respectively.

current spending. Third, municipalities can invest the money into local projects. An example would be an investment into local schools or other service facilities serving mostly or only local taxpayers also after the merger.

Fig. 3 shows trends in municipal income tax rate, operating margin per capita, municipal employees per capita and total investments per capita.[28] There is no visible change in municipal income tax rate in the treatment period, but the municipalities in the strong incentives group do increase both expenditures (lower operating margin) and investments, although the former is slightly difficult to detect from the figure due to scale differences. Interestingly, the additional expenditure is not directed towards hiring more municipal employees. This result is consistent with free-riding behavior. Hiring new employees does not guarantee that the benefits from the services they provide remain in the old municipality because employees can be easily shuffled around after a merger. All these variables, except for investments, follow clean pre-treatment common trends.

Table 3 confirms that the effects in Fig. 3 are also statistically significant.[29] Increasing *freeride* from zero to one increases municipal expenditure flows on average by 70 Euros per capita in 2007 and 150 in 2008. Investments increase by 320 Euros per capita in 2008. Overall, due to free-riding, the spending of merged municipalities' increased about 100 million Euros and they invested about 140 million Euros more. Therefore, while we can follow some of the money, increases in expenditures and investments only account for about half of what we observe in debt and cash changes.[30]

4.3. Testing alternative explanations

Next we turn to alternative explanations. First, there has been some discussion in the literature on whether the relative size (*freeride*) is the relevant measure when it comes to free-riding incentives in merger situations. For example, Hansen (2012) uses the number of municipalities in a merger as a measure of free-riding incentives. He argues that the relevant measure of free-riding incentives is the number of decision-makers, which in our case is the number of municipalities, not the relative size of the tax bases. This is also what the result by Weingast et al. (1981) is indeed about. However, the law of $1/n$ arises only because the districts in their model are of equal size, and thus, the share of the cost burden for each district follows the law of $1/n$. When districts or in our case municipalities are asymmetric in size within a merger, free-riding incentives, i.e., the share of cost burden, depend on the relative size of municipalities. Nevertheless, we subject these two measures to a horserace in Table 4.[31] Even though the measures are highly

[28] See Table B5 in online Appendix B for results of placebo reforms concerning these variables.

[29] According to Table 3, also tax rates increase slightly with free-riding incentives. However, the result is very small in economic terms. Increasing freeriding incentives from zero to one would only lead to about 0.13 percentage point increase in tax rates. The minimum legally possible annual tax increase is 0.25 percentage points, and thus, the effect on tax rates in not substantial.

[30] Our asset data is not detailed enough to track all the money. In public discussion, there has been speculation that municipalities try to protect their assets e.g., by setting up foundations that can be used to distribute benefits to residents of the old municipality even after a merger (see e.g., Helsingin Sanomat (In Finnish): 2nd November, 2014, http://www.hs.fi/kotimaa/a1393652536029). This type of asset conversion cannot be detected from our data.

[31] For comparison, columns (1) and (8) of Table 4 report the benchmark results from Table 2.

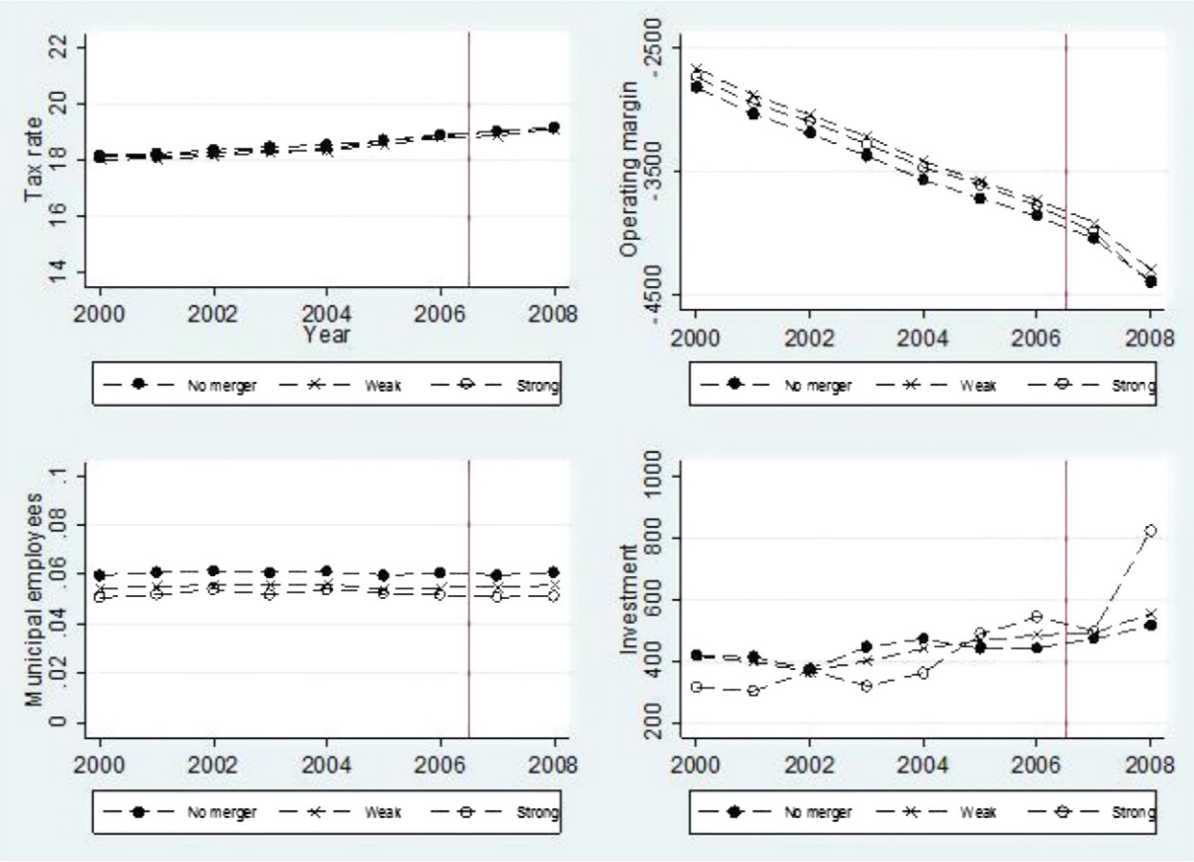

Fig. 3. Tax rate, operating margin, municipal employees and investment expenses in different free-rider groups.

correlated, it becomes evident from columns (2), (5), (9) and (12) that the municipalities respond according to their relative size to the common pool rather than according to the number of partners (*coalition size*).

Second, municipalities that expect to lose most of their political representation in the post-merger council may want to spend as much as possible when they can still make autonomous spending decisions. This is mainly because in the post-merger council bargaining considerations, in the spirit of Baron and Ferejohn (1987, 1989), start to play a role. Moreover, politicians who in practice face a term limit may also have private incentives to spend. The results in Tables 2 and 3 could be due to these considerations, because the free-ride measure is positively correlated with anticipated loss of power.

Fortunately, the horserace between the number of merging partners and *freeride* also provides a discriminatory test between the loss of power hypothesis and the law of $1/n$. From the point of view of a small municipality, a merger with a single much larger partner and a merger with two roughly same sized municipalities can be very similar in terms of population shares or tax base, and therefore, in terms of the free-rider incentives (*freeride*). However, these mergers are different when it comes to post-merger political power. Proposal power, coalition formation and bargaining possibilities are very different when councilors from a small pre-merger municipality negotiate with two equal sided municipalities compared to one much larger municipality. In fact, the relative political power of a pre-merger municipality in the post-merger council is increasing in the number of municipalities for a given value of *freeride*. Thus, debt accumulation could even decrease with the number of municipalities in a merger given *freeride* if concerns over loss of power are driving the results.

From Table 4, it is evident that this is not the case. The coefficient for coalition size is close to zero and is statistically insignificant for both outcomes when *freeride* is included in the model. At the same time, the coefficient for *freeride* is robust to including *coalition size* in the model and remains statistically significant for debt accumulation. Of course, the number of participating municipalities is only a proxy for the expectations that municipalities had prior to merging on post-merger political power and re-election prospects. Nonetheless, these results suggest that expectations over the distribution of post-merger political power are unlikely to be responsible for our findings.

Third, merged municipalities received merger subsidies, which were paid out after the merger was implemented. The concern here is that municipalities are simply responding to an increase in future revenues and not to the free-riding incentives. This concern has two aspects to it. First, all of the merged municipalities receive subsidies, whereas the other municipalities do not. So the merged municipalities are fundamentally different from the ones who did not merge. However, we can directly control for merging in our

Table 3
DID results for tax rate, operating margin, municipal employees and investment.

	Tax rate	Tax rate	Operating margin	Operating margin
*freeride**2007	0.073	0.069	−53.87	−66.48**
	[0.052]	[0.053]	[34.22]	[32.02]
*freeride**2008	0.132**	0.129*	−109.3**	−154.2***
	[0.066]	[0.067]	[51.47]	[46.48]
Controls	No	Yes	No	Yes
N	3727	3727	3727	3727
R^2	0.61	0.61	0.93	0.94
	Municipal employees	Municipal employees	Investment	Investment
*freeride**2007	−0.0005	−0.0003	54.95	51.67
	[0.001]	[0.001]	[69.85]	[70.61]
*freeride**2008	−0.001	−0.001	323.4***	311.2***
	[0.002]	[0.002]	[86.75]	[88.22]
Controls	No	Yes	No	Yes
N	3727	3727	3723	3723
R^2	0.01	0.03	0.03	0.03

Notes: The data in the regressions come from 2000 to 2008. All the models include year and municipality fixed effects. The control variables include taxable income, corporate income tax revenue, grants and population. Standard errors are clustered at the municipality level and reported in brackets. ***, ** and * indicate statistical significance at 1, 5 and 10% levels, respectively.

Table 4
Tests for alternative explanations.

Panel A: Debt stock	(1)	(2)	(3)	(4)	(5)	(6)	(7)
*freeride**2007	176.0*				202.1	51.24	122.1
	[101.5]				[189.0]	[157.0]	[147.5]
*freeride**2008	566.2***				502.1**	432.6**	629.4***
	[130.7]				[244.8]	[188.9]	[194.0]
*coalition size**2007		21.56			−5.038		
		[13.50]			[25.44]		
*coalition size**2008		78.53***			12.26		
		[17.95]			[34.20]		
*subsidy**2007			0.358*			0.295	
			[0.196]			[0.302]	
*subsidy**2008			0.851***			0.314	
			[0.244]			[0.354]	
*voteshare**2007				145.8*			67.65
				[80.09]			[122.0]
*voteshare**2008				378.6***			20.00
				[103.0]			[136.1]
N	3634	3634	3634	3553	3634	3634	3553
R^2	0.43	0.43	0.43	0.43	0.43	0.44	0.43
Panel B: Cash reserves	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*freeride**2007	−75.13				−13.55	−13.03	−80.14
	[65.97]				[101.6]	[66.61]	[88.40]
*freeride**2008	−324.8***				−259.8	−162.5*	−264.8**
	[83.84]				[180.3]	[87.58]	[117.3]
*coalition size**2007		−13.40			−11.65		
		[8.358]			[11.51]		
*coalition size**2008		−46.21***			−12.26		
		[9.601]			[22.85]		
*subsidy**2007			−0.163			−0.146	
			[0.137]			[0.162]	
*subsidy**2008			−0.591***			−0.385**	
			[0.152]			[0.167]	
*voteshare**2007				−52.87			−9.196
				[55.53]			[74.03]
*voteshare**2008				−255.4***			−77.25
				[71.23]			[105.8]
N	3717	3717	3717	3637	3717	3717	3637
R^2	0.05	0.05	0.05	0.05	0.05	0.05	0.05

Notes: The data in the regressions come from 2000 to 2008. All the models include year and municipality fixed effects. All the models include the following control variables: taxable income, corporate income tax revenue, grants and population. Standard errors are clustered at the municipality level and reported in brackets. ***, ** and * indicate statistical significance at 1, 5 and 10% levels, respectively.

main regression (see Table 2) and we can also replicate our key results using only the subsample of merged municipalities (see Table B6 in online Appendix B). This means that our findings cannot be explained by this simple difference between merged and not-merged municipalities. Second, the size of the subsidy to each merger is correlated with our free-riding measure. This is because the subsidy depends on the populations of the pre-merger municipalities, the population of the new municipality and the number of municipalities in the merger. Based on columns (3), (6), (10) and (13) of Table 4, we can overrule this alternative explanation as well because directly controlling for the amount of subsidy does not change the point estimates or statistical significance of *freeride* for the debt outcome. However, the subsidy does seem to play a role in explaining the decrease in cash reserves. Yet the total amount of subsidies paid to these mergers (217 million Euros) was only about half of the total free-riding we observe.

Fourth, instead of free-riding, our findings could be due to Coasean transfers between the voluntarily merging municipalities. This case arises when a merger increases the welfare of the merger partners as a whole, but decreases the welfare of some of the individual partners. If the benefits are large enough, the winners may wish to buy the approval of the losers and debt-financed investment may be the mechanism to achieve this credibly. However, this explanation does not seem plausible because the municipalities with strong free-riding incentives are on average poorer than merging municipalities with a weaker free-riding incentive, and thus, do not seem to be attractive partners (see Fig. 2). In addition, we can test whether municipalities that were reluctant to merge accumulate more debt. We measured this reluctance using the vote share of councilors in favor of the merger in the municipality council merger votes.[32] Controlling for the vote share does not change the results concerning free-riding behavior (Table 4, columns (7) and (14)).

Fifth, the results could be due to fixed costs of merging that are unrelated to municipalities' size. In this case, small merging municipalities would have to accumulate more per capita debt than large municipalities which would result in a correlation between the fixed costs and free-riding incentives. However, it seems unlikely that these fixed costs would amount to hundreds of millions, given that the most important costs, such as wage harmonization, take place only after the mergers. Moreover, based on our careful reading of the merger contracts, municipalities estimate the cost of the merger to be an order of magnitude smaller than the observed debt accumulation and cash reserve decrease.

4.4. Internal and external validity

We subject our results to a number of additional validity checks, which are reported and discussed in more detail in online Appendix B. First, we test formally for the common pre-trends assumption concerning our main outcomes of interest, and operating margin and investment using placebo treatment periods (Tables B4 and B5). Second, we use an alternative control group, which might be more similar to the treatment group (the mergers) in terms of unobservables (Fig. B1). Third, we repeat our main analysis using only the subsample of municipalities that merged (Table B6). Fourth, we check whether outliers are driving the results (Table B7). Based on our main results, the analysis concerning alternative explanations and the additional validity checks, the results seem to be internally valid.

The generalizability of our results is more tentative as they concern 99 municipalities from an unusual period in the developed world due to the financial crisis. However, the mergers in our data involve over every fourth Finnish municipality and for the Finnish municipalities the year 2008 was business as usual (see Fig. 2). Moreover, most the mergers were decided already in 2007. At the very least, the results are likely to generalize to countries with similar institutional features, since the severity of this problem depends especially on the extent of fiscal autonomy of local governments. Free-riding should also depend on the time lag between the decision and the actual implementation of a merger. The analysis has broader relevance as it shows that mergers can create a free-rider problem even when they are voluntary.

5. Conclusions

In this paper, we analyze free-riding behavior of Finnish municipalities during a recent wave of municipal mergers using DID methods. Consistent with the law of $1/n$, the stronger free-riding incentive a municipality faced, the more it increased per capita debt and used up its cash reserves prior to merging. We also find that the funds were spent mostly on new investment and on current expenditures. Municipalities did not lower their local income tax rate nor did they hire new employees.

The results are somewhat surprising given that these mergers were decided voluntarily at the local level by municipality councils. One would expect that municipalities could pre-empt free-riding using binding mergers agreements or that free-riding would lead to a cancelation of the merger. However, this does not seem to be the case. Although the contents of the formal merger agreements suggest that municipalities were anticipating these issues, they seem to have had only limited ability to observe free-riding or write free-riding contingent contracts. These results show that free-riding is a concern not only in forced (see e.g., Hinnerich, 2009), but also in voluntary mergers.

Our results should be of wider interest. This is because local jurisdiction boundary reforms are a widely used policy tool. In particular, local jurisdiction mergers are likely to involve a substantial one-time cost due to free-riding, regardless of whether they are forced or voluntary. This finding has two implications. First, during a merger process, some financial constraints on the local level may be a good idea in order to mitigate common pool problems. Second, the scale economies from merging need to be fairly large for the merger policy to achieve its proposed goal of decreasing public expenditure without reducing service quality.

[32] We were unable to obtain the council voting data for 9 of the merged municipalities. The average council share of votes in favor of merging among merged municipalities (*voteshare*) is 0.8 with a standard deviation of 0.16.

Prior evidence on the effects of mergers on municipal expenditures is mixed. Some studies find quite large decreases in expenditures (see e.g., Reingewetz, 2012 and Blom-Hansen et al., 2014), while others find no effects (Moisio and Uusitalo, 2013, Allers and Geertsema 2014). A recent study by Blesse and Baskaran (2014) suggests the expenditure effects may depend on whether the mergers are forced or voluntary. Due to the institutional constraints on municipal employee lay-off after the mergers, analyzing of the effects of the mergers studied here is not possible yet, and thus, left for future work.

Acknowledgments

We thank Manuel Bagues, Thushyanthan Baskaran, Marta Curto Grau, Essi Eerola, Zohel Hessami, Mika Kortelainen, Antti Moisio, anonymous referees, the Editor Toke Aidt and the seminar participants at EPCS 2014, EPSA 2014, Empirical Political Economics and Political Science Workshop in Helsinki, FEEAM 2013, HECER, IIPF 2014, Nordic Workshop on Tax Policy and Public Economics in Helsinki, 2014 Political Economy Workshop in Milan, UEA 2014, Workshop on Federalism and Regional Policy in Siegen for useful comments. We especially thank Jenni Pääkkönen for her collaboration in the earlier stages of this project.

Appendix A. Additional descriptive statistics

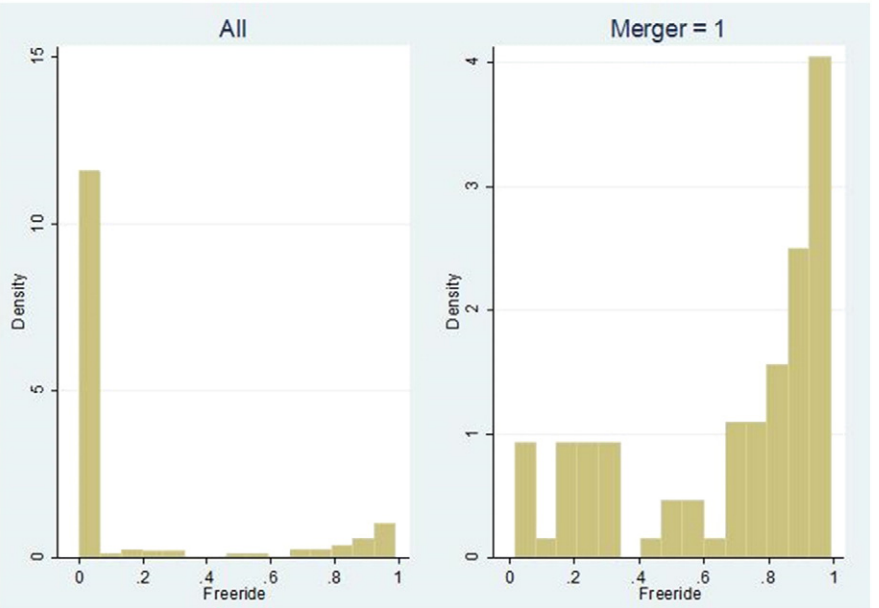

Fig. A1. Histograms of *freeride* for all municipalities (left) and merged municipalities (right).

Table A1
Descriptive statistics of individual mergers.

Merger ID	Number of municipalities	Merger population	Maximum population	Minimum population
1	2	5654	3781	1873
2	2	8371	6232	2139
3	2	10,768	9064	1704
4	2	10,910	8980	1930
5	2	11,048	10,041	1007
6	2	11,982	6525	5457
7	2	12,807	9449	3358
8	2	15,019	10,533	4486
9	2	22,654	15,164	7490
10	2	25,796	23,035	2761
11	2	28,456	27,239	1217
12	2	28,967	21,943	7024
13	2	37,885	36,585	1300
14	2	39,856	36,589	3267
15	2	69,922	59,073	10,849

(*continued on next page*)

Table A1 (*continued*)

Merger ID	Number of municipalities	Merger population	Maximum population	Minimum population
16	2	132,321	128,962	3359
17	3	7462	3365	804
18	3	8606	6031	940
19	3	17,300	13,098	1225
20	3	23,197	15,228	3014
21	3	28,396	14,566	4874
22	3	53,965	36,409	5588
23	3	72,292	57,858	6764
24	3	124,205	84,434	4997
25	4	6688	2055	1337
26	4	17,788	13,960	245
27	4	18,248	8025	2385
28	4	44,627	36,267	995
29	5	15,298	12,063	253
30	6	64,271	47,335	1564
31	6	89,924	31,054	1928
32	10	53,672	25,201	741

Appendix B. Supplementary material

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.ejpoleco.2015.02.006.

References

Acemoglu, D., 2003. Why not a political Coase theorem? Social conflict, commitment, and politics. J. Comp. Econ. 31, 620–652.
Aidt, T., Shvets, J., 2012. Distributive politics and electoral incentives: evidence from seven US state legislatures. Am. Econ. J. Econ. Pol. 4, 1–29.
Alesina, A., Spolaore, E., 1997. On the number and size of nations. Q. J. Econ. 112, 1027–1056.
Allers, M.A., Geertsema, J.B., 2014. The effects of local government amalgamation on public spending and service levels. Evidence from 15 years of municipal boundary reform. University of Groningen Research reports 14019-EEF.
Baqir, R., 2002. Districting and government overspending. J. Polit. Econ. 110, 1318–1354.
Baron, D.P., Ferejohn, J.A., 1987. Bargaining and agenda formation in legislatures. Am. Econ. Rev. 77, 303–309.
Baron, D.P., Ferejohn, J.A., 1989. Bargaining in legislatures. Am. Polit. Sci. Rev. 83, 1181–1206.
Baskaran, T., 2013. Coalition governments, cabinet size, and the common pool problem: evidence from the German states. Eur. J. Polit. Econ. 32, 356–376.
Bertrand, M., Duflo, E., Mullainathan, S., 2004. How much should we trust differences-in-differences estimates? Q. J. Econ. 119, 249–275.
Besley, T., Case, A., 1995. Does electoral accountability affect economic policy choices? Evidence from gubernatorial term limits. Q. J. Econ. 110, 769–798.
Blesse, S., Baskaran, T., 2014. Do municipal mergers reduce costs? Evidence from a German federal state. Center for European Governance and Economic Development Research, Discussion Papers No. 176.
Blom-Hansen, J., Houlberg, K., Serritzlew, S., 2014. Size, democracy, and the economic costs of running the political system. Am. J. Polit. Sci. 58, 790–803.
Borge, L.-E., 2005. Strong politicians, small deficits: evidence from Norwegian local governments. Eur. J. Polit. Econ. 21, 325–344.
Coase, R., 1960. The problem of social cost. J. Law Econ. 3, 1–44.
Dafflon, B., 2012. Voluntary amalgamation of local governments: the Swiss debate in the European context. International Center for Public Policy Working Paper 12-04.
Ellingsen, T., 1998. Externalities vs internalities: a model of political integration. J. Public Econ. 68, 251–268.
Ferraz, C., Finan, F., 2011. Electoral accountability and corruption in local governments: evidence from audit reports. Am. Econ. Rev. 101, 1274–1311.
Hansen, S.W., 2012. Common pool size and project size: an empirical test on expenditures using Danish municipal mergers. Public Choice http://dx.doi.org/10.1007/s11127-012-0009-y.
Hinnerich, B.T., 2009. Do merging local governments free ride on their counterparts when facing boundary reform? J. Public Econ. 93, 721–728.
Hyytinen, A., Saarimaa, T., Tukiainen, J., 2014. Electoral vulnerability and size of local governments: evidence from voting on municipal mergers. J. Public Econ. 120, 193–204.
Jordahl, H., Liang, C.-Y., 2010. Merged municipalities, higher debt: on free-riding and the common pool problem in politics. Public Choice 143, 157–172.
Knight, B., 2008. Legislative representation, bargaining power and the distribution of federal funds: evidence from the US congress. Econ. J. 118, 1785–1803.
MacDonald, L., 2008. The impact of government structure on local public expenditures. Public Choice 136, 457–473.
Miceli, T.J., 1993. The decision to regionalize in the provision of education: an application of the Tiebout model. J. Urban Econ. 33, 344–360.
Moisio, A., Uusitalo, R., 2013. The impact of municipal mergers on local public expenditures in Finland. Public Financ. Manag. 13, 148–166.
Petterson-Lidbom, P., 2012. Does the size of the legislature affect the size of government? Evidence from two natural experiments. J. Public Econ. 96, 268–278.
Primo, D.M., Snyder Jr., J.M., 2008. Distributive politics and the law of 1/n. J. Polit. 70, 477–486.
Reingewetz, Y., 2012. Do municipal amalgamations work? Evidence from municipalities in Israel. J. Urban Econ. 72, 240–251.
Saarimaa, T., Tukiainen, J., 2013. Local representation and strategic voting: evidence from electoral boundary reforms. IEB Working Papers 2013/032.
Saarimaa, T., Tukiainen, J., 2014. I don't care to belong to any club that will have me as a member: empirical analysis of municipal mergers. Polit. Sci. Res. Methods 2, 97–117.
Weese, E., 2014. Political mergers as coalition formation: an analysis of the Heisei municipal amalgamations. Quant. Econ. (forthcoming).
Weingast, B.R., Shepsle, K.A., Johnsen, C., 1981. The political economy of benefits and costs: a neoclassical approach to distributive politics. J. Polit. Econ. 89, 642–664.