

Fiscal Consolidation and Expenditure Arrears: Evidence from Local Governments' Investments

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Abstract

In this paper we theoretically and empirically investigate how hardening fiscal constraints (e.g., intergovernmental transfer cuts or stricter local fiscal rules) can lead local governments to postpone the payments for public investments. In fact, financially constrained local governments can use arrears as a form of trade debt to relax their short-run financial distress. We empirically assess our theoretical predictions, using information from accounting and financial reports of all Italian municipalities for the period 2003-2010. Exploiting the long-lasting effect of 1979 structural reform of Italian local public finance, we employ an instrumental variable approach to face endogeneity concerns. We find robust evidence that tighter fiscal and financial conditions of the local governments determine larger arrears for public investment expenditures.

Keywords: Fiscal Decentralization, Financial Constraints, Fiscal Rules, Narrative Analysis.

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1 Introduction

The international experience of fiscal consolidation implemented in several developed, emerging, and transition countries, at different times, has shown that central governments tend to mandate at least part of needed fiscal adjustment measures to local governments. The recent experience of OECD countries during the great recession is no exception. Intergovernmental transfer cuts, the unfunded decentralization of public expenditure and/or tax increases, the introduction of stricter local fiscal rules imposed on, or negotiated with local governments have been often used by central policy-makers to partly decentralize the fiscal consolidation process (OECD, 2013; European Commission, 2014).

Empirical studies have documented that fiscal decentralization institutions are crucial to afford the success of fiscal consolidation (e.g., De Mello (2000); Darby et al. (2005)). However, such empirical evidence also underlines the policy issue of the effectiveness of considered measures. In this paper we contribute to this literature with a theoretical and empirical analysis of the reaction of local governments to measures that harden their budget constraints. Local governments' revenues derive by: i) transfers from national and regional tiers of government, including tax-sharing arrangements; ii) local taxation and charges; iii) bank borrowing and other forms of local debt; and iv) trade credit. In our analysis, we specifically focus on the last source of revenues. Adapting the usual definition of trade debt to the local governments outsourced contracts, we refer to trade credit as to the postponed payments to firms supplying works (or goods and furniture), e.g., payment arrears on public investment expenditure. By "issuing" new arrears, local governments extend the deadlines of their financial commitments, relaxing their budget constraint.

We first present a simple model which highlights that local governments with tighter budget constraints (i.e., facing cuts of intergovernmental grants or stricter constraints on debt) decide to issue more new arrears (i.e., postpone part of the payment of new investments). Then, we empirically assess our theoretical predictions using information from accounting and financial reports of Italian municipalities from 2003 to 2010. Our theoretical predictions are confirmed using alternative estimation strategies. In particular, we address potential endogeneity that might derive by reverse causality and/or omitted variables. We employ an instrumental variable estimation approach, which consists in the use of historical breaks in the Italian local public finance to obtain an exogenous determinant of the current financial situation. In particular, our narrative analysis and our tests show that the State transfers to local governments in 1979, and their adjustment in 1994 have shaped the overall behavior of municipal public finance until the period under investigation.

As argued, this paper contributes to the literature on local fiscal policy reactions to changes of central policies (e.g., intergovernmental transfers and local fiscal rules). In particular, the impact of fiscal rules changes on expenditure and tax de-

cisions of Italian municipalities is the object of recent studies that try to exploit discontinuities in the legal framework, e.g., the introduction and later relaxation of the Domestic Stability Pact (DSP) for small Italian municipalities (Grembi et al., 2012) or the introduction of expenditure caps in the DSP (Gregori, 2014). However, some concerns about the relevance of these discontinuities may arise once we consider the narrative analysis of the Italian local public finance. Frequent (almost yearly) changes of several specific regulations featuring the DSP, and serious doubts about the enforcement (and the perception of possible punishment) of the DSP should suggest some caution on the reliability of the results that are obtained with a difference-in-discontinuity approach in this case. Thus our estimation strategy is based on an instrumental variable approach that relies on the structural break that deeply changed the Italian local public finance in 1979, and the central role played by intergovernmental transfers in driving local fiscal policy.

The main policy implication of our analysis is that hardening local financial constraints, in the framework of fiscal consolidation efforts, may be partly self-defeating. Part of the local fiscal consolidation effect determines the postponement of some payments (and possibly investment expenditure) to the future, instead of being fully compensated by local expenditure reductions and/or new local tax revenues.

The paper is organized as follows: Section 2 addresses a narrative analysis of long-run changes in local public finance in the last forty years; then, Section 3 introduces a simple theoretical model; in Section 4 the data set and the methodology are described, then the analysis, the robustness checks, and the results are presented and discussed; Section 5 draws concluding remarks.

2 A Narrative Analysis of Fiscal Decentralization in Italy

The regulatory framework of the local public finance in Italy has deeply changed in the last four decades. Two main institutional changes occurred during this period. In the middle years of the 1970s, a sequence of reforms centralized taxation and introduced a system of intergovernmental grants, which still plays a significant role in the financing of local governments (i.e., municipalities and provinces). Then, in the first half of 1990s, a new round of reforms of the local public finance partially restored fiscal autonomy.

A growing structural unbalance between revenues and current expenditures had affected the Italian local public finance since mid-1950s. Before the tax reform of 1973-1974, municipal revenues had heavily relied on taxes (i.e., the family tax, the consumption tax, and the tax upon the capital gains on building areas) that had proved to be quite inelastic to the growth of GDP and social wants. These stylized

facts explain the slow decline of tax and fiscal autonomy indicators during the 1960s and the stronger decline in the ratio between current revenues and expenditures (see Figure 1). The gap between current expenditures and revenues had been covered by loans granted by commercial banks and State financial institutions. The financial crisis of the fiscal decentralization model, namely the soft-budget constraint problem driving local-governments' policies seriously threatened the overall stability of the Italian public finance.

The initial design of the early-1970s tax reform aimed at solving the crisis of the local public finance by introducing new local taxes and tax-sharing mechanisms. In 1972, the main municipal taxes were suppressed and their revenues provisionally substituted by State grants. However, the initial design was never completed. Between 1972 and 1976, the outburst of inflation, and the consequent growth of nominal interest rates, widened the gap between nominally-set revenues and current expenditures of local governments. In 1977, the total stock of external debt of municipalities was more than three times as much as at the beginning of the decade. In turn, the central government was forced to bail-out the local public finance.

Sudden, somewhat unexpected emergency measures were implemented in 1977 by two central-government decrees¹: the State assumed direct liability for the municipal debt (including interests) issued before 1977; the future growth of current expenditures was capped by law (also, restrictions were put on local public employment); a budget-balance rule and restrictions on borrowing were introduced (in particular, debt-financing of current expenditures was prohibited); finally, State grants were increased to approximately balance the budget of each municipality, and established as ordinary financing mechanism with centrally-determined growth rate. In 1978, the amount of transfers was set to afford each municipality the expenditure incurred in the previous year (i.e., so-called "historical expenditure" criterion).

The effects of the financial crisis of Italian local public finance and of 1977 emergency measures on the municipalities' fiscal autonomy have been dramatic and long-lasting. Local tax autonomy dropped from about 50% in 1972 to less than 10% by 1978. Correspondingly, grants from the central government rose from less than 30% of total current revenues in 1972 to about 80% in 1978. The "historical expenditure" criterion for the determination of State transfers to each municipality remained in force for over a decade. Until early 1990s transfers were negotiated between local and central governments each year. Funds were mostly earmarked and allocated in such a way to compensate for individual differences between past expenditures and

¹The so-called "Stammati" decrees (upon the name of the Treasury Minister), namely: the 'Stammati I', Decree n. 2 of January 17, 1977, 'Consolidation of short-term overdrafts of municipalities and provinces' converted with amendments into Law n. 62 of March 17, 1977; the 'Stammati II', Decree n. 946 of December 29, 1977, 'Urgent provisions for local finance' converted into Law n. 43 of February 27, 1978.

autonomous revenues.²

At the beginning of the 1990s, the severe financial and political crisis (culminated in Italy's falling out of the European Monetary System and the devaluation of Lira in 1992) as well as the fiscal discipline imposed by the Maastricht Treaty leading to the monetary unification called Italy to imperatively engage in budget consolidation. Decentralization gained momentum as an important driver of fiscal discipline by mid-1990s. Several reforms were implemented with the aim to harden the local budget constraints and to improve accountability and responsibility of local governments.

Early-1990s reforms increased tax and fiscal autonomy. In the second half of 1990s, new administrative (and expenditure) functions were devolved from central to local governments.³ The revenue structure of municipalities was reformed in 1992 (Decree law n. 504/1992), with the assignment, from 1993, of a property tax (ICI)⁴ along with the rationalization of transfers from State, which became largely unconditional.⁵ State transfers to each municipality were reduced by the same amount of its ICI base revenue (i.e., revenues calculated at the minimum rate of 0.4%). To finance new local expenditures devolved by the central government, since 1999, municipalities were allowed to levy a surcharge on their residents personal income tax (PIT).⁶

Figure 2 shows the evolution of real per-capita transfers from central to local governments. We can observe a sharp fall of transfers in 1993-1994: which is a composition effect due to the introduction of the municipal property tax (see also tax

²Several reforms were tried to change the transfer apportionment scheme. According to Emiliani (1997), at the beginning of the 1990s, more than 50% of the transfers paid to local governments still depended on the debt accumulated in the 1970s.

³The main functions of municipalities were revised in 1998 with the implementation of the two decentralization laws of 1997 (the so-called "Bassanini" laws, upon the name of the Public Function Minister).

⁴Municipalities were allowed to choose the ICI tax rate in a given interval (from 0.4% to 0.7%). Progressively they have been given more autonomy in determining tax deductions and in monitoring the tax base.

⁵The framework set by the decree law was made-up by five different kind of transfers: three in current account, that are mandatory, non-earmarked and general purpose and two in capital account, that are mandatory but earmarked.

⁶Central government maintained its full powers on PIT, including the definition of tax base and tax brackets while municipal governments could only raise a flat surcharge on their PIT base. Originally municipalities were empowered to set the rate up to a maximum level of 0.5%, being enabled to reach the maximum level only in a three years period, with annual tax rate increases not larger than 0.2%; no power were instead given over tax relief. However the rates were frozen in 2003 and liberalized in 2007, when the maximum rate was also increased to 0.8%. The freeze allowed those municipalities that had never used the PIT surcharge tax before 2003 to introduce it after, while for the others, they could maintain the PIT surcharge at the level that they had already chosen, but could not increase it further. More precisely, in the period from 2004 to 2006, municipalities that had not made use of the PIT surcharge before, could introduce it at a constrained rate of 0,1% per fiscal year.

autonomy in Figure 1). The trend for transfers kept on downwards, with a temporarily interruption in 2001, when municipalities were granted a financial compensation for the abolition of some minor local taxes.⁷

The reduction in the amount granted to municipalities was not, however, accompanied by a significant change of allocation criteria. Indeed, the reform of the transfer system during the 1990s failed, letting substantially unchanged the design of intergovernmental grants.⁸

Since early 2000s Italy has been involved in a complex, confuse and still ongoing process of fiscal decentralization. This formally begun in 2001 when the Parliament approved a constitutional reform which modified a number of articles concerning the powers of sub-national governments and their financial relationships with the central government. The 2001 constitutional reform has proved to be too revolutionary to be implemented.⁹ In spite of the reform, local governments kept on to be financed as they were already in the 1990s. In particular, the amount to be granted to municipalities is set annually by the “Financial Law” passed by the national Parliament, on the basis of a bargaining process between representatives of the municipalities and the central government. Similarly, the framework of the intergovernmental transfers and its allocation criteria largely reflected the system settled by Decree law n. 504/1992 which modified only slightly the post-1978 local public finance mechanisms characterized by the recursive link between local revenues (i.e., essentially State transfers) and past expenditures, while the equalization component (based on structural parameters) continued to play only a marginal role.

An important conclusion of our narrative overview of municipal public finance in

⁷In 1997, in exchange for the abolished municipal business tax (ICIAP), they received a sharing quota in the regional business tax (IRAP) that, starting from 2001 was turned into grant.

⁸Decree law n. 504/92 explicitly provided the progressive reduction, over a period of 16 years, of the role of “historical expenditure” criterion in the determination of transfers. The objective was to base the new regime of intergovernmental transfers on structural parameters in order to strengthening the equalization component of intergovernmental grants. However, the new model was applied only in 1994. In 1995, the law n. 539/1995 introduced a new model of intergovernmental transfers, which was never applied. Further changes occurred in 1997, when some minor revisions of the allocation criteria were put in place, and in 2002 (in application of Financial law n. 448/2001), when the annual amount of transfers to be distributed among municipalities was set as a proportion of the receipts from national personal income tax.

⁹Several attempts to implement the 2001 constitutional reforms have failed. Also, constitutional reforms to complete the federalization process, proposed in the last decade, have failed. A number of reasons explain such difficulties. First, the large economic and fiscal divide between rich (i.e., northern and central) and poor (southern) regions of Italy poses major distributional and political challenges on the way of the proper implementation of (any) fiscal federalism model aiming at warranting at least some common standards in terms of citizens’ social rights. Second, the slowdown of Italian productivity in the last fifteen years has exacerbated the distributional conflict among rich and poor regions. Third, the need for fiscal consolidation has justified new rules (often sustained by judgments of the Constitutional Court) in the direction of fiscal centralization.

Italy is that the way fiscal decentralization was re-introduced in 1990s only slightly affected the strong cross-sectional correlation between State transfers/local revenues and past expenditures (in particular, pre-1977 expenditures, that - as explained above - can be represented by 1979 State transfers).

3 Theoretical Model

The economy is made by a large number of local governments. Each local government maximizes the following inter-temporal objective function

$$u_t = x_t + \delta E_t(u_{t+1}) \quad (1)$$

where $\delta < 1$ is the inter-temporal discount factor, and

$$x_t = y_t - h(\tau_t) + m(e_t) + v(k_t) \quad (2)$$

with y_t the income of local constituency after national and regional taxes and transfers in the fiscal year t , τ_t the local tax revenues, e_t the local primary current expenditure, and k_t the stock of local public infrastructures that is available in the year t . We assume that: the monetary cost of local taxes in each year, $h(\cdot)$, is strictly increasing, convex, and goes to infinity when τ_t approaches y_t ; the monetary benefit of current expenditure, $m(\cdot)$, and public infrastructure, $v(\cdot)$, in each year are strictly increasing and concave. For the sake of simplicity, we assume that the monetary benefit of current expenditure is linear (i.e., $m''(\cdot) = 0$).

The local government faces the following budget constraint:

$$\tau_t + g_t + b_t - b_{t-1} = e_t + rb_{t-1} + i_t \quad (3)$$

where g_t are transfers by national or regional governments, b_t is local (gross) public debt issued at time t , r is the interest rate on local public debt, and i_t is the local capital expenditure. In our analysis, we assume that the local government faces a fiscal rule imposing a ceiling to the total debt that can be issued each year: $b_t \leq \bar{b}_t$.¹⁰

To keep the model as simple as possible we assume that the stock of capital in each year is determined as follows:

$$k_t = i_{t-1} + \theta_t - a_t + a_{t-1} \cdot (1 + \rho). \quad (4)$$

In particular, without loss of generality we assume that the capital is fully depreciated in a single period. The stock of capital depends on the total investment that is decided in the previous period, i_{t-1} , but also on a random shock, $\theta_t \sim F(\theta)$ (with

¹⁰We do not include any lower bound to gross public debt, considering that local government may issue negative debt (i.e., buy assets).

$E(\theta_t) = 0$), that affects the actual capital cost during the implementation of public works contracts.

We rely on θ_t to represent a number of selection problems (i.e., cost overruns due to firms' behavior or pre-contractual features, as well as to the capacity of the local government to monitor contractors' behaviors), that depend on structural features of local government and local constituency (e.g., demography, human and social capital). The overall capital expenditure is also determined by the dynamics of arrears (i.e., trade debt of the local government with respect to public-works contractors in the year t). In other words, the local government may roll-over part of investments to the future by "issuing" new arrears, a_t . Quite naturally we assume that the local government cannot issue negative arrears, i.e., $a_t \geq 0$. However, the local government has also to take into account that past arrears have to be paid, including an implicit rate of return ρ that the local government has to concede to the private firm.¹¹ We assume that $\rho > r$, i.e., issuing (formal) debt is less costly than relying on trade debt (i.e., agreeing with private contractors a delay in payments and incurring in *voluntary* cost overruns).

3.1 Local Fiscal Policy

Each local government maximizes its intertemporal objective function under the budget constraint. To simplify the analysis, we substitute e_t by (3), k_t by (4) in the objective function, and we maximize with respect to the sequence of τ_t , i_t , b_t , and a_t for all t , taking into account the non-negativity constraint on arrears, $a_t \geq 0$ (with $\mu_t \geq 0$ the corresponding Lagrangian multiplier), and the upper bound on gross local public debt, $b_t \leq \bar{b}_t$ (with $\nu_t \geq 0$ the corresponding Lagrangian multiplier).

By the first conditions (corresponding to controls at time t),

$$\tau_t : \quad -h'_t + m'_t = 0 \tag{5}$$

$$i_t : \quad -m'_t + \delta E(v'_{t+1}) = 0 \tag{6}$$

$$b_t : \quad m'_t - \delta E(h'_{t+1})(1+r) - \nu_t = 0 \tag{7}$$

$$a_t : \quad -v'_t + \delta E(v'_{t+1})(1+\rho) + \mu_t = 0, \tag{8}$$

we obtain the following

Lemma 1 *The optimal local fiscal policy is such that $b_t = \bar{b}_t$ (and $\nu_t > 0$) for all t .*

Proof. Assume, by contradiction, that $b_t < \bar{b}_t$ (hence $\nu_t = 0$). Substituting (6) in (7), $m'_t = \delta^2 E(v'_{t+2})(1+r)$. Substituting (8) in (6), $m'_t = \delta^2 E(v'_{t+2})(1+\rho) +$

¹¹In our analysis, ρ is given; we implicitly assume that the local government has all the bargaining power when determining the delay in payment (and works), a_t . A thorough analysis of the bargaining process is beyond the scope of this work.

$\delta E(\mu_{t+1}) > \delta^2 E(v'_{t+2})(1+r)$. That brings to a contradiction. ■

By Lemma 1 and by inspection of the local public budget constraint (3), we see that: the local public debt level becomes a parameter; and its effect on the optimal fiscal policy (τ_t, i_t, a_t) has the same sign as intergovernmental transfers, g_t . Thus, a marginal growth of \bar{b}_t or g_t involves the same relaxation effect on the local public budget constraint.

The optimal fiscal policy is determined by the first order conditions (5), (6), and (8), and we have:

Proposition 2 *The optimal local fiscal policy is such that arrears, a_t , and tax revenues, τ_t , decrease (or do not increase), and capital expenditure, i_t , increases (or does not decrease) as the local local budget constraints is relaxed (i.e., \bar{b}_t or g_t grows) or actual capital accumulation is below the expected level (i.e., θ_t is negative).*

Proof. By Lemma 1, the local public debt is a parameter of the optimization problem of the local government. By inspection of the second-order cross derivatives of the objective function with respect to controls and parameters, we can see that the objective function of the local government is supermodular in $(-\tau_t, i_t, -a_t)$ and it has increasing differences in $(\bar{b}_t, g_t, -\theta_t)$. Hence, the proposition follows. ■

4 Empirical Analysis

The previous section states the prediction of a positive relationship between the degree of exogenous restrictions of municipality's financial constraint and the level of arrears for investment payments. In this section, we offer empirical evidence of this relationship. In particular, we discuss the data analyzed, the empirical framework and the estimation strategy we adopt to identify the relationship and to overcome potential endogeneity problems. Firstly, referring to the theoretical framework, we present the measures that better capture the financial constraints and the expenditure arrears, available in the accounting and financial reports of a panel of Italian municipalities in the period 2003-2010. Then, we discuss the identification strategy and the rationale for exploiting the impact of the main historical breaks of Italian local public finance, e.g., late 1970s and early 1990s reforms, to find exogenous instruments to overcome possible endogeneity problems. Finally, we present our estimation results and robustness checks.

4.1 Municipalities accounting and financial reports

In Italy, municipalities are the smallest administrative units and they provide public goods and services in several areas, such as local transportation, welfare, and management of public utilities. About half of the general government investment expenditure is managed by municipalities. For instance, municipalities manage the outsourcing (through competitive auctions, to private suppliers) of about 50% of the public works (such as road works and building constructions).

Each municipality is obliged to transmit, annually, its accounting and financial report to the Ministry of Interior. Bank of Italy collects and harmonizes (where needed) this information and provide a ready-to-use panel containing information about the budget of the municipality. This source of information allows us to have a clear picture of the financial situation of the municipality in each year both on revenue and expenditure sides of the budget.

In Italy, there are 8,100 municipalities. We focus on the 6,700 municipalities belonging to the 15 ordinary regions, while we do not consider the municipalities of the remaining 5 regions, as the latter enjoy a larger degree of legislative autonomy and respond to different regulations. Focusing on a single country, Italy, with a large number of municipalities of different sizes, located in different socio-economic environment, has the advantage of having a common regulatory framework, without losing the cross-sectional and over-time variability of the variables of interest.

Searching for proxies of the financial situation of municipal budgets is not an easy task. The financial restraints can be related to various dimensions of the budget. In our empirical analysis, we follow the theoretical model of Section 3, and we focus on a single source of revenues: State *Transfers* to local governments. As illustrated in the narrative analysis (Section 2), State transfers have shaped the financial conditions (both on the revenue and expenditure sides) of Italian municipalities in the last three decades. Together with (constraints put on) the local public debt (which we control for in our analysis), State transfers are a key variable influenced by the fiscal consolidation process. They account, on average, for about the 40% of the total revenues. In turn, State transfers drive the “marginal” adjustments that are required to fulfill the budget balance rule, that municipalities are forced to pursue by law each year.

Our dataset of municipalities’ accounting and financial reports contains the annual amount of transfers from the central government. On average, in per capita terms, transfers represent about 245 euros, with a standard deviation of 220 euros. Figures 3 and 4 show both large cross-sectional and over-time variability of the transfers in the period of our analysis (2003-2010).¹²

¹²In Figure 4, we observe an average reduction of State transfers from 2003 to 2006, then an average increase in 2008 and 2009. The latter is due to the partial abolition of the municipal property tax, that was followed by an increase in State transfers aiming at compensating municipalities for

Let us consider the (dependent) variable we want to explain, the *Arrears*. From our dataset, we are able to obtain a measure that, for each municipality and each year, gives us the information of the amount of planned investments for the year that have not been paid. Such a variable represents the endogenous variable for which we have obtained predictions in our theoretical model (Section 3). Descriptive statistics show that, on average and in per capita terms, the *Arrears* are about euros 395 euros (with a standard deviation of 852 euros; see Figure 5 for the log-distribution of the variable). Each year, on average, the new arrears are about the 35% of the stock of arrears at the beginning of the year.

A simple correlation between the (log of per capita) *Transfers* and the (log of per capita) *Arrears* shows a strong and significant correlation of +0.35 (see Figure 6). However, this simple and descriptive evidence does not take into account other potential determinants of the arrears for which information can be recalled from municipalities’ accounting and financial reports. Among these variables, there naturally is the amount of planned expenditure in investments (*Investment expenditure*), as a larger amount of investments is expected to be strongly associated with larger arrears for two main reasons. Firstly, because of a scale effect: a larger amount of payments is more difficult to be financially sustained, everything else being equal. Secondly, because according to the Italian legislation, during the period of analysis, multi-year investments “automatically” generate arrears for the part of payments due in the future years. Furthermore, to control for the influence of ceilings to local debt (that is, as previously discussed, another aspect influenced by the fiscal consolidation process) on the formation of expenditure arrears, we should take into account the debt burden of the municipality. In particular, we control for the cost of the debt, proxied with the *Debt interest expenditure*. (Table 1 reports summary statistics for the variables with municipality-year variation, in per capita terms and constant prices, coming from the accounting and financial reports).

4.2 Empirical model and IV strategy

To summarize our empirical model, let y denote the *Arrears* from investments planned to be paid in year t by municipality m and consider the following reduced form model, where all monetary variables are expressed in per-capita terms:

$$y_{mt} = \alpha + \beta Transfers_{mt} + \gamma MT_{mt} + \epsilon_{mt}. \quad (9)$$

where MT is the set of controls from the annual accounting and financial report (i.e. investment expenditure and expenditure for debt interests) of each municipality. The error term ϵ captures all factors that influence the arrears but are not captured by

lower revenues. However, the composition effect of transfers increase and property tax reduction determined a net reduction of overall municipal revenues.

the model specification and consists of the following: (i) municipality-specific time-invariant effects, (ii) a component of municipality-specific time-varying effects, and (iii) time-varying macro effects that influence all municipalities.

To reduce omitted variables problems and deal with (i), we follow two alternative strategies. Firstly, we introduce in (9) a set of municipality-level time-invariant control variables (M) that aim to control for the constituency's characteristics that do not vary over-time. In particular, we control for the municipality being a touristic location (proxied by the number of per-capita bed places in tourist accommodations), for the location being in the mountains or sea-side, for the extension of the existing road network in the municipality, for the socio-economic situation proxied by the unemployment rate and the share of tertiary educated population. Furthermore, following a large economic literature on Italian regional analysis, we augment equation (9) with province-fixed effects, to control for factors that influence municipalities operating in contexts with similar socio-institutional quality (such as social capital, crime, effectiveness of judicial system) and economic and financial development. A second, alternative approach to reduce municipality-level time-invariant omitted variables consists in the inclusion in the model specification (9) of municipality-fixed effects. The former approach does not fully ensure to fully control for municipality-level time-invariant omitted variables, it allows us to assess the effect of our explanatory variables on the overall (both cross-sectional and over-time) variability of our dependent variable. The latter approach aims to fully capture the cross-sectional variability and allows us to exploit the within-municipality variability.

To deal with (ii), that is, to better take into account time-varying municipality-specific effects, in addition to (MT) controls, we introduce in any model specification the *Average Taxable income* in each municipality m in year t , to control for socio-economic development of the municipality. To deal with time-varying macro effects (iii), in any model specification, we include year-fixed effects (T), which aim to capture country-level shocks both on macro/financial conditions as well as regulation changes during the years of analysis that might affect municipality public finance choices and, thus, arrears in a given year.

Although the inclusion of additional control variables and fixed effects, the estimation of the relationship between municipality's *Transfers* and *Arrears* in the investment expenditures might be still affected by endogeneity problems. To this end, we propose an instrumental variable (IV) approach to exploit a source of exogeneity that has affected the current budgetary situation of the municipality and, in particular, the level of current transfers. Searching for exogenous discontinuities in the evolution of the Italian local public finance is not an easy task. The economic literature focusing on Italy offers some insights, such as the introduction (and, later, relaxation) of the DSP at the beginning of 2000s. However, on the one hand, these changes mainly influenced the regulation of the debt ceilings of the municipalities (e.g., Grembi et al. (2012)), while, in the present study, we aim to focus on the

other mechanism through which fiscal consolidation can take place (namely, the adjustments of State transfers). On the other hand, looking at the regulation, we can notice that the terms of DSP change yearly on several dimensions, which can create problems of confounding effects and limited time span for the analysis. In this paper, we employ the levels of *1979 transfers* as a new IV for the level of current transfers.

Following our narrative analysis (Section 2), in 1977-1978 there was a big (largely exogenous) break in the institutional setting of Italian public finance. In the early 1970s, public finance reforms in Italy were in the direction of “more” (not less) fiscal decentralization and autonomy. In the following years, one of the consequences was the fast-growing debt of Italian local governments that led the central government to determine a sudden change in the policy stance. In 1977-1978, with the so-called “Stammati decrees”, very limited tax autonomy was given to local governments and larger transfers from the central government were granted. The basic determinant of the new granting system were to become the pre-1977 expenditure levels (i.e., transfers were based on “historical expenditure”, pre-1977). The timing and features of this change were largely unexpected by the municipal policy-makers (that, in turn, could not anticipate the mechanism by increasing their levels of expenditure to ensure larger future transfers). The municipalities that enjoyed larger State transfers from 1979 on faced more relaxed budget constraints and continued to keep higher expenditure levels. The criterion of the “historical expenditure” for granting the transfers to local governments is still partly at work. The correlation between correlation between *1979 transfers* and current *Transfers* from the central government is about 0.45 (see Figure 7).¹³

4.3 Estimation approaches and results

To estimate the augmented equation (9), we employ five different estimators that will allow us to capture different dimensions of variability of our data and to deal with different concerns on endogeneity problems.

In column 1 of Table 2, we employ a pooled-ordinary least square estimator (pooled-OLS) that includes the controls at the municipality level (M), the municipality-

¹³Beyond this simple correlation, to assess the validity of *1979 transfers* as instrumental variable for current *Transfers*, we will report the first stage estimation results, which show the correlation among the two variables conditional on the other controls. A concern for the validity of the instrument is that *1979 transfers* have influenced the formation of current arrears through channels for which we do not control for. For instance, one might argue that 1979 transfers have shaped the municipality’s subsequent spending and revenue capacity, or socio-economic conditions and taxation levels; all factors that can have a direct effect on the arrears. Our set of control variables in (M) and (MT), fixed effects as well as the level of *Average Taxable income* in each year in each municipality can account for a very large set of (possible) other channels through which the 1979 transfers might have an effect on the dependent variable.

year level (MT), and province-fixed and year-fixed effects. As previously discussed, in this framework, which aims to capture both the cross-sectional and over-time variability of the *Arrears*, we also deal with an IV approach, using the *1979 transfers* as an instrument for the current *Transfers*. In column 2, we report the results of the first stage and, in column 3, the second stage of the pooled two-stage least squares estimation (pooled-2SLS). Estimation results in column 4 are from the within-group estimator (i.e., municipality-fixed effects) that allows us to exploit the time dimension of our data.

Furthermore, we take into account the fact that our results might be affected by the endogeneity problems that are related to the level of investment expenditure that is decided by the municipality each year. In fact, it might be the case that more financially constrained municipalities decide to lower the level of investments¹⁴, resulting in lower arrears. Although, we do not have unreporting problems (i.e. any municipality has a positive and reported level of investments), we have decided to instrument also the level of investment expenditure to check whether this would influence our results. This test has the implication that we need to deal with two variables to be instrumented (both *Transfers* and level of *Investment expenditure*). A first candidate instrumental variable for the level of expenditure in investment is again the level of 1979 transfers. In fact, as illustrated in our narrative analysis (Section 2), the criterion of “historical expenditure” has allowed some municipalities to enjoy larger transfers and, thus, higher expenditure capacity because of higher revenues. It should be noted that in a municipality-fixed effects framework, the potential endogeneity of the current *Transfers* is reduced, because short term changes in transfers are decided by the central government, according to its annual budget constraints, and follow a similar path for all municipalities. In a municipality-fixed effects framework, it is then possible to assign a lower degree of concern at the endogeneity problems of the current *Transfers* and to use the *1979 transfers* as an instrument for the *Investment expenditure*.¹⁵ In this context, to allow our IV to vary over-time, we interact the *1979 transfers* with year dummies

¹⁶ and, in column 5, we report the estimation results obtained when municipality-fixed effects are included and *Investment expenditure* instrumented.

Finally, in column 6, we report estimation results obtained using the 2-steps GMM (Arellano and Bond, 1991; Arellano and Bover, 1995). In this case, the estimated model still includes the municipality-fixed effects and the *Investment expenditure* are instrumented, but it is also augmented with the lagged value of arrears (*L. Arrears*) to control for the presence of a persistent process in the accumulation

¹⁴As the extended version of the model in Section 3 predicts.

¹⁵Note that, contrary to *Transfers*, yearly changes in *Investments expenditure* might still suffer of endogeneity problems as they are actually decided by the municipality.

¹⁶For a similar approach, see Benfratello et al. (2008) and Moretti (2014). Hansen J test of overidentifying restrictions is reported.

of arrears.

In Table 2, we report our main estimation results. Our primary interest is in the estimated coefficient of *Transfers*, which indicates whether a municipality's level of transfers is reflected on the formation of *Arrears* for investment expenditure. Estimated coefficients for *Transfers* are negative, statistically significant at the 1% level, and their magnitude is stable across different estimators and model specifications. In particular, we estimate that a reduction of 1% in the transfers per capita is associated with an increase of about 0.6% in arrears. As predicted by our model (3), lower transfers from the central government harden the municipality's financial constraints, and force the municipal government to increase payment arrears for (new) investment expenditure.

Concerning the estimated coefficients of control variables of interest, it is hardly surprising that the coefficient of *Investment expenditure* is positive and statistically significant with a coefficient of about 1 (that is in line with the descriptive evidence that, on average, the new arrears accounts for about 93% of the investments decided in the year). As for the variable *Interest expenditure*, which is a proxy of the cost of the debt of the municipality and, thus, of the municipality's capacity to issue new debt and access to credit, the estimated coefficients are negative and statistically significant in columns 1 and 3. This means that larger is the capacity of issuing new debt (or weaker the limits to local debt growth), higher is capacity of municipality to keep up with the payments for investment expenditure and to reduce the amount of arrears. On average, the debt burden (and its cost) of the municipalities does not often vary over-time and this can explain the non-statistical significance of the coefficients in columns 4 to 6, when municipality-fixed effects are included.

4.4 Robustness checks

In this section, we propose a set of robustness checks to further control for the validity of our estimation results. Each change in the estimated empirical model or analyzed sample that we introduce is again estimated using the five different approaches.

The first concern is about the role of the stock of arrears at the beginning of the year. One might argue that the formation of arrears in each year is influenced by the previous stocks of arrears. In fact, municipality with larger stock of arrears could face additional payment difficulties and this could lead to the formation of larger arrears in the year. To this end, we include in the model specification the *Stock of the arrears* for investments, taken at the beginning of the year. Estimation results in Table 3 confirm the previously estimated sign, statistical significance, and magnitude of the effects of *Transfers*, *Investment expenditure*, and *Interest expenditure* on the *Arrears*.

The second robustness check deals with the overidentification restrictions. So

far, we have proposed one instrumental variable (*1979 transfers*) for one potentially endogenous variable (current *Transfers*, or *Investment expenditure*). This have allowed us to exactly identify the model. To offer additional evidence from overidentified 2SLS estimations, we need at least one additional instrument. Although, the variable we propose is related to historical evolution of the criteria governing the transfers from the central to the local government, like the *1979 transfers*, we believe that it can offer some insights on the robustness of our main estimation results. In particular, we use the *1993-1994 change in transfers* from the central government. As underlined in the narrative analysis (Section 2), after the 1993 introduction of a local propriety tax, the central government decided to reduce the transfers as form of compensation for this new tax. The reduction of the transfers was proportional to the increase in tax revenues for each municipality. In Table 4, we show estimation results using both *1979 transfers* and *1993-1994 change in transfers* to instrument the current *Transfers* (in column 3) and (after having interacted both instruments with time dummies) the *Investment expenditure* (in columns 5 and 6). Hansen’s J tests do not reject the null hypothesis that the instruments are valid instruments, i.e., uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. Estimation results are in line with our main results.

The third robustness check has to do with the dimension of the municipalities and the related political economy concerns because of different electoral systems. In fact, in Italy, municipalities below 15,000 inhabitants have a different electoral system respect to larger municipalities (a single ballot system applies to municipalities with less than 15,000 inhabitants, while a dual ballot system is in place above that threshold; see, among others, Barone and de Blasio (2013)) and one might argue that our results are not valid for the entire sample and might be driven by very different political contexts and size of the municipalities. Although the panel-fixed effects estimations already deal with this problem, we show estimations for a subsample of municipalities with a population ranging from 1,000 to 15,000 inhabitants. Estimation results in Table 5 show that estimated coefficients of the variables of interest are in line with those obtained in our main estimation results.

Finally, the next three robustness show estimation results for different dependent variables. The idea is to offer evidence of the goodness of our dataset and model specification in predicting the effects of the *Transfers* on alternative outcomes for which we had predictions from our theoretical model (Section 3) or we can make solid conjectures. (i) A secondary prediction of our model (Section 3) is that higher transfers leads to lower tax revenues (*Tax revenues*). Even if we are not interest in this paper on the effect of transfers of taxation choices, we show that estimation results in Table 6 indicates that, in our data, higher transfers are actually significantly associated with lower tax revenues. (ii) If higher transfers reduce formation of arrears, we would expect that higher transfers should increase payments for in-

vestment expenditure planned in the year *Payments*. Estimation results in Table 7 confirm this conjecture. (iii) If higher transfers reduce the formation of *Arrears* in a given year, we would expect that higher transfers should reduce the *Annual change in the stock of arrears*. Estimation results in Table 8 confirm this hypothesis.¹⁷

5 Conclusion

[...]

¹⁷Note that the sign of the estimated coefficient are in line with the our main estimation results, however, since about half of the values of the variable *Annual change in the stock of arrears* are negative, we cannot take its log transformation. The estimation is thus in linear-log terms. This explain the very large coefficients and standard errors respect to the estimation results showed in the previous tables, where we estimated log-log model specifications.

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Figures and Tables

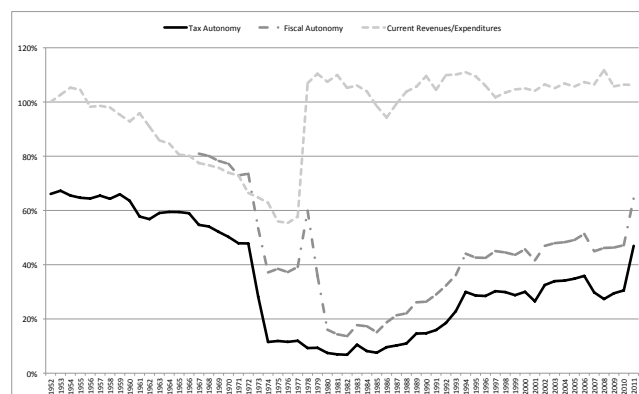


Figure 1: Municipal Public Finance in Italy: 1952-2011

Source: our elaboration on Istat dataset.

Legend: Tax Autonomy: ratio between tax revenues and total revenues; Fiscal Autonomy: ratio between autonomous revenues (i.e., all revenues excluding intergovernmental grants) and total revenues; Current Revenues/Expenditure: ratio between current revenues and current expenditures.

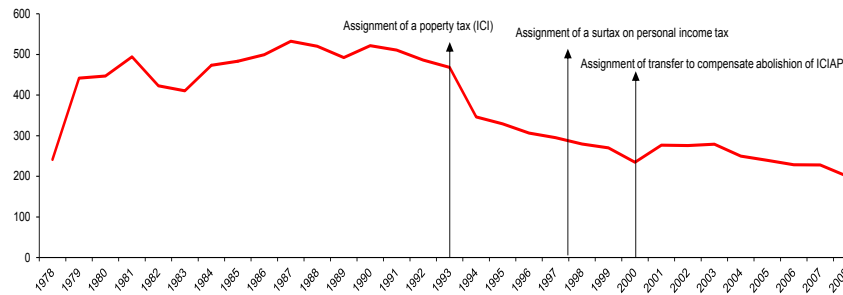


Figure 2: Real per-capita current account transfers from the state to municipalities
 Source: Italian Home Office. Legend: euro, base year 2008

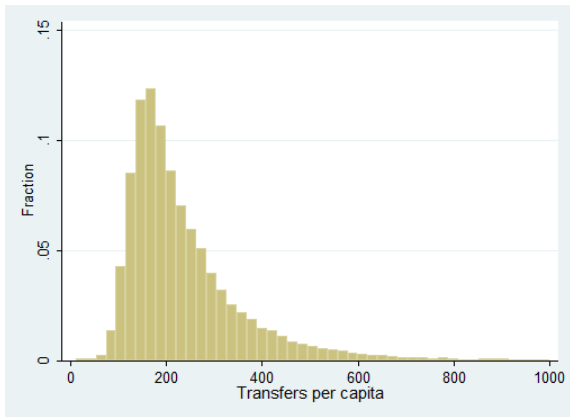


Figure 3: Distribution of the variable

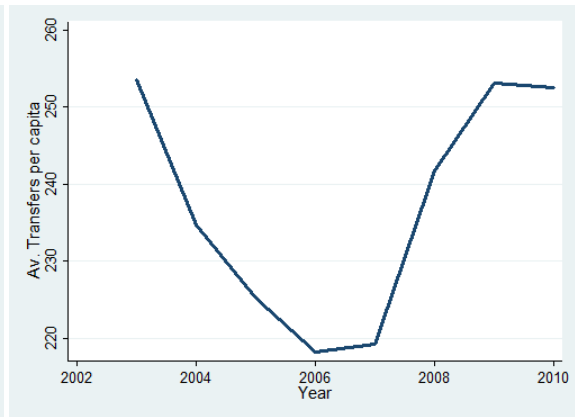


Figure 4: Distribution of the average transfers per capita over time

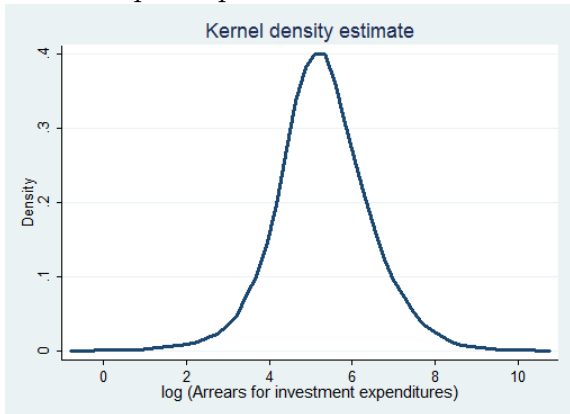


Figure 5: Kernel density estimation of the

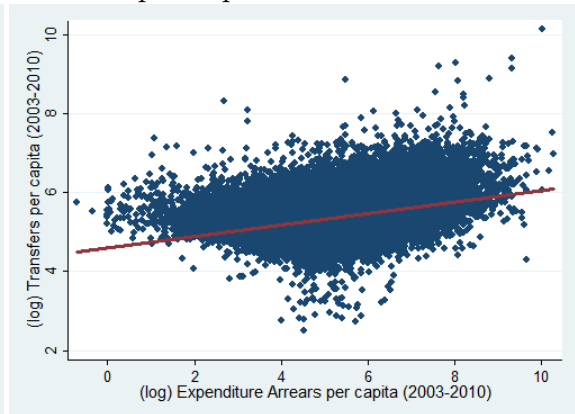


Figure 6: Correlation between arrears and transfers per capita

Table 1. Sample summary statistics

VARIABLES	Real euros (per capita)	
	Mean	SD
Arrears (Inv.)	395.148	852.450
Payments (Inv.)	62.7419	172.568
Transfers from central gov.	245.450	219.792
Investment expenditure (comm.)	434.674	818.777
Debt interest expenditure	33.659	28.453
Av. Taxable income	14630.18	2307.02
Stock Arrears (Inv.)	1147.438	2064.381
Tax revenues	246.631	164.154

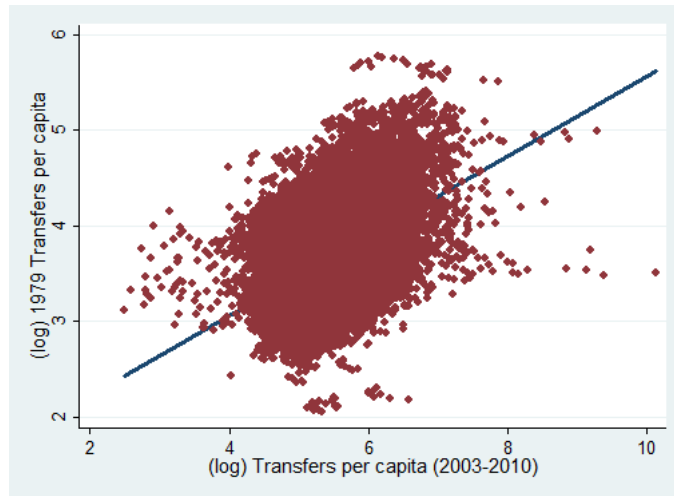


Figure 7: Correlation between per-capita current transfers and 1979 per capita transfers

Table 2. Main estimation

Column	(1)	(2)	(3)	(4)	(5)	(6)
Estimator	pooled OLS	1' stage: pooled 2SLS	2' stage: pooled 2SLS	Within	Within 2SLS	2-steps GMM
Dependent var.	Arrears	Transfers	log of Arrears	Arrears	Arrears	Arrears
log of:						
Transfers	-0.043*** (0.009)		-0.066*** (0.021)	-0.064*** (0.016)	-0.084*** (0.024)	-0.059*** (0.021)
Investment expenditure	1.054*** (0.004)	0.061*** (0.003)	1.056*** (0.004)	1.070*** (0.004)	1.139*** (0.058)	1.124*** (0.056)
Interest expenditure	-0.018*** (0.004)	0.095*** (0.006)	-0.015*** (0.005)	-0.010 (0.009)	0.008 (0.018)	0.013 (0.019)
Av. Taxable income	0.038 (0.029)	-0.889*** (0.051)	0.015 (0.032)	0.044 (0.064)	0.048 (0.065)	0.076 (0.075)
1979 transfers		0.371*** (0.016)				
L.Arrears						-0.011** (0.005)
Municipality-level controls	YES	YES	YES	NO	NO	NO
Municipality-fixed effects	NO	NO	NO	YES	YES	YES
Province-fixed effects	YES	YES	YES	NO	NO	NO
Year-fixed effects	YES	YES	YES	YES	YES	YES
Observations	50,432	50,347	50,347	50,437	50,341	43,542
R-squared	0.910	0.601	0.910	0.883	0.880	0.884
Endogeneity (p-value)			0.254			
Hansen J (p-value)					0.448	0.724

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. In columns 3 and 5 the excluded instrument are the 1979 transfers. In column 3 Transfers is the instrumented variable. In column 5 Investment expenditures is the instrumented variable. Municipality-level controls include: number of bed places in tourist accommodations; index of tertiary educated people; km of roads within the municipality; unemployment rate; dummy variables for the municipality being located in a mountainous or sea-side area. Monetary variables are pc in 2000 constant prices. Exogeneity is the regression-based form of the Durbin-Wu-Hausman test. If the null hypothesis is not rejected, OLS estimations are preferred; p-values are reported. The Sargan-Hansen test is a test of overidentifying restrictions. The joint null hypothesis is that the instruments are valid instruments, i.e., uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation.

Table 3: Stock of arrears at the beginning of the year as an additional control

Column	(1)	(2)	(3)	(4)	(5)	(6)
Estimator	pooled OLS		2' stage: pooled 2SLS		2-steps GMM	
Dependent var.	1' stage: pooled 2SLS		log of		Within 2SLS	
	Arrears	Transfers	Arrears	Arrears	Arrears	Arrears
log of:						
Transfers	-0.059*** (0.009)		-0.108*** (0.023)	-0.064*** (0.016)	-0.082*** (0.025)	-0.058** (0.023)
Investment expenditure	1.051*** (0.004)	0.044*** (0.002)	1.054*** (0.004)	1.072*** (0.004)	1.130*** (0.059)	1.120*** (0.061)
Stock of arrears	0.027*** (0.003)	0.080*** (0.004)	0.033*** (0.004)	-0.019*** (0.004)	-0.008 (0.013)	-0.004 (0.017)
Interest expenditure	-0.023*** (0.004)	0.079*** (0.006)	-0.018*** (0.005)	-0.009 (0.009)	0.003 (0.016)	0.012 (0.018)
Av. Taxable income	0.041 (0.027)	-0.854*** (0.050)	-0.005 (0.031)	0.061 (0.063)	0.062 (0.064)	0.077 (0.074)
1979 transfers		0.337*** (0.016)				
L. Arrears						-0.011*** (0.003)
Municipality-level controls	YES	YES	YES	NO	NO	NO
Municipality-fixed effects	NO	NO	NO	YES	YES	YES
Province-fixed effects	YES	YES	YES	NO	NO	NO
Year-fixed effects	YES	YES	YES	YES	YES	YES
Observations	50,349	50,264	50,264	50,353	50,258	43,513
R-squared	0.913	0.614	0.913	0.887	0.885	0.885
Hansen J (p-value)					0.745	0.869

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. In columns 3 and 5 the excluded instrument are the 1979 transfers. In column 3 Transfers is the instrumented variable. In column 5 Investment expenditures is the instrumented variable. Municipality-level controls include: number of bed places in tourist accommodations; index of tertiary educated people; km of roads within the municipality; unemployment rate; dummy variables for the municipality being located in a mountainous or sea-side area. Monetary variables are pc in 2000 constant prices.

Table 4: 1994-1993 change of transfers as additional instrument

Column	(1)	(2)	(3)	(4)	(5)	(6)
Estimator	pooled OLS		2 nd stage: pooled 2SLS		Within 2SLS	2-steps GMM
Dependent var.	Arrears	Transfers	Arrears	Arrears	Arrears	Arrears
log of:						
Transfers	-0.043*** (0.009)		-0.042** (0.019)	-0.064*** (0.016)	-0.080*** (0.019)	-0.059*** (0.017)
Investment expenditure	1.054*** (0.004)	0.064*** (0.003)	1.054*** (0.004)	1.070*** (0.004)	1.125*** (0.040)	1.122*** (0.039)
Interest expenditure	-0.018*** (0.004)	0.106*** (0.006)	-0.018*** (0.005)	-0.010 (0.009)	0.004 (0.014)	0.013 (0.015)
Av. Taxable income	0.038 (0.029)	-0.689*** (0.052)	0.037 (0.032)	0.044 (0.064)	0.046 (0.065)	0.076 (0.073)
1979 transfers		0.428*** (0.017)				
1994-1993 changes in transfers		0.705*** (0.062)				
L.Arrears						-0.011*** (0.004)
Municipality-level controls	YES	YES	YES	NO	NO	NO
Municipality-fixed effects	NO	NO	NO	YES	YES	YES
Province-fixed effects	YES	YES	YES	NO	NO	NO
Year-fixed effects	YES	YES	YES	YES	YES	YES
Observations	50,432	50,301	50,301	50,437	50,295	43,502
R-squared	0.910	0.631	0.910	0.883	0.881	0.884
Hansen J (p-value)			0.167		0.896	0.977

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. In columns 3 and 5 the excluded instrument are the 1979 transfers and 1994-1993 changes of transfers. In column 3 Transfers is the instrumented variable. In column 5 Investment expenditures is the instrumented variable. Municipality-level controls include: number of bed places in tourist accommodations; index of tertiary educated people; km of roads within the municipality; unemployment rate; dummy variables for the municipality being located in a mountainous or sea-side area. Monetary variables are pc in 2000 constant prices.

Table 5: Subsample: Municipalities between 1,000 and 15,000 inhabitants: limited to 2003-2008

Column	(1)	(2)	(3)	(4)	(5)	(6)
Estimator	pooled OLS	1' stage: pooled 2SLS	2' stage: pooled 2SLS	Within	Within 2SLS	2-steps GMM
Dependent var.	Arrears	Transfers	log of Arrears	Arrears	Arrears	Arrears
log of:						
Transfers	-0.026** (0.013)		-0.056 (0.059)	-0.048*** (0.017)	-0.093*** (0.036)	-0.027 (0.028)
Investment expenditure	1.050*** (0.004)	0.040*** (0.003)	1.052*** (0.005)	1.071*** (0.005)	1.232*** (0.105)	1.067*** (0.073)
Interest expenditure	-0.030*** (0.005)	0.067*** (0.008)	-0.027*** (0.007)	-0.035*** (0.013)	0.032 (0.046)	-0.040 (0.038)
Av. Taxable income	-0.016 (0.041)	-0.740*** (0.058)	-0.041 (0.060)	0.042 (0.083)	0.046 (0.090)	0.040 (0.097)
1979 transfers		0.186*** (0.019)				
L.Arrears						-0.024** (0.011)
Municipality-level controls	YES	YES	YES	NO	NO	NO
Municipality-fixed effects	NO	NO	NO	YES	YES	YES
Province-fixed effects	YES	YES	YES	NO	NO	NO
Year-fixed effects	YES	YES	YES	YES	YES	YES
Observations	25,995	25,937	25,937	25,999	25,908	21,388
R-squared	0.910	0.571	0.910	0.894	0.875	0.896
Hansen J (p-value)					0.539	0.617

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. In columns 3 and 5 the excluded instrument are the 1979 transfers. In column 3 Transfers is the instrumented variable. In column 5 Investment expenditures is the instrumented variable. Municipality-level controls include: number of bed places in tourist accommodations; index of tertiary educated people; km of roads within the municipality; unemployment rate; dummy variables for the municipality being located in a mountainous or sea-side area. Monetary variables are pc in 2000 constant prices.

Table 6: Testing the model's secondary prediction: higher transfers leads to lower tax revenues

Column	(1)	(2)	(3)	(4)	(5)	(6)
Estimator	pooled OLS	1' stage: pooled 2SLS	2' stage: pooled 2SLS	Within	Within 2SLS	2-steps GMM
Dependent var.	Tax Rev.	Transfers	log of Tax Rev.	Tax Rev.	Tax Rev.	Tax Rev.
log of:						
Transfers	-0.150*** (0.015)		0.498*** (0.045)	-0.131*** (0.012)	-0.196*** (0.018)	-0.155*** (0.012)
Investment expenditure	0.057*** (0.003)	0.059*** (0.003)	0.004 (0.004)	0.011*** (0.001)	0.235*** (0.043)	0.085*** (0.022)
Interest expenditure	0.167*** (0.008)	0.095*** (0.006)	0.077*** (0.009)	0.078*** (0.006)	0.139*** (0.013)	0.077*** (0.008)
Av. Taxable income	0.590*** (0.061)	-0.887*** (0.051)	1.226*** (0.078)	0.160*** (0.035)	0.203*** (0.049)	0.158*** (0.035)
1979 transfers		0.374*** (0.017)				
L.Tax revenues						0.349*** (0.019)
Municipality-level controls	YES	YES	YES	NO	NO	NO
Municipality-fixed effects	NO	NO	NO	YES	YES	YES
Province-fixed effects	YES	YES	YES	NO	NO	NO
Year-fixed effects	YES	YES	YES	YES	YES	YES
Observations	51,045	50,960	50,960	51,050	50,955	43,401
R-squared	0.527	0.601	0.336	0.110		0.078

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. In columns 3 and 5 the excluded instrument are the 1979 transfers. In column 3 Transfers is the instrumented variable. In column 5 Investment expenditures is the instrumented variable. Municipality-level controls include: number of bed places in tourist accommodations; index of tertiary educated people; km of roads within the municipality; unemployment rate; dummy variables for the municipality being located in a mountainous or sea-side area. Monetary variables are pc in 2000 constant prices.

Table 7: Payments for investment planned in the year as dependet variable

Column	(1)	(2)	(3)	(4)	(5)	(6)
Estimator	pooled OLS	1' stage: pooled 2SLS	2' stage: pooled 2SLS	Within	Within 2SLS	2-steps GMM
Dependent var.	Payments	Transfers	log of Payments	Payments	Payments	Payments
log of:						
Transfers	0.137*** (0.021)		0.348*** (0.065)	0.180*** (0.035)	0.167*** (0.059)	0.220*** (0.055)
Investment expenditure	0.564*** (0.007)	0.064*** (0.003)	0.546*** (0.009)	0.460*** (0.007)	0.503*** (0.166)	0.265* (0.158)
Interest expenditure	0.085*** (0.013)	0.093*** (0.007)	0.056*** (0.016)	-0.064*** (0.024)	-0.052 (0.049)	-0.152*** (0.056)
Av. Taxable income	0.027 (0.091)	-0.876*** (0.052)	0.232** (0.108)	0.001 (0.173)	0.006 (0.176)	-0.084 (0.200)
1979 transfers		0.367*** (0.017)				
L.Payments						-0.008 (0.007)
Municipality-level controls	YES	YES	YES	NO	NO	NO
Municipality-fixed effects	NO	NO	NO	YES	YES	YES
Province-fixed effects	YES	YES	YES	NO	NO	NO
Year-fixed effects	YES	YES	YES	YES	YES	YES
Observations	49,324	49,241	49,241	49,329	49,221	41,730
R-squared	0.350	0.595	0.347	0.170	0.169	0.134

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. In columns 3 and 5 the excluded instrument are the 1979 transfers. In column 3 Transfers is the instrumented variable. In column 5 Investment expenditures is the instrumented variable. Municipality-level controls include: number of bed places in tourist accommodations; index of tertiary educated people; km of roads within the municipality; unemployment rate; dummy variables for the municipality being located in a mountainous or sea-side area. Monetary variables are pc in 2000 constant prices.

Table 8: Changes in the stock of arrears as dependent variable

Column	(1)	(2)	(3)	(4)	(5)	(6)
Estimator	pooled OLS	1' stage: pooled 2SLS	2' stage: pooled 2SLS	Within	Within 2SLS	2-steps GMM
Dependent var.	Ch. Stock arr.	Transfers	Ch. Stock arr.	Ch. Stock arr.	Ch. Stock arr.	Ch. Stock arr.
log of:						
Transfers	-192.096*** (23.540)		-426.427*** (37.136)	-42.336 (60.805)	-98.462 (70.379)	-100.226 (68.857)
Investment expenditure	285.402*** (9.084)	0.062*** (0.003)	305.283*** (10.117)	429.223*** (12.999)	641.310*** (147.346)	833.220*** (142.565)
Interest expenditure	-84.190*** (8.459)	0.092*** (0.007)	-52.682*** (8.525)	9.214 (20.688)	74.798 (52.813)	109.153** (51.339)
Av. Taxable income	-34.894 (54.159)	-0.903*** (0.055)	-266.831*** (64.118)	-162.494 (256.536)	-104.528 (265.648)	-398.789* (227.202)
1979 transfers		0.375*** (0.017)				
L.Ch. Stock arr.						-0.455*** (0.030)
Municipality-level controls	YES	YES	YES	NO	NO	NO
Municipality-fixed effects	NO	NO	NO	YES	YES	YES
Province-fixed effects	YES	YES	YES	NO	NO	NO
Year-fixed effects	YES	YES	YES	YES	YES	YES
Observations	43,664	43,590	43,590	43,669	43,572	36,788
R-squared	0.090	0.598	0.082	0.137	0.104	0.239

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. In columns 3 and 5 the excluded instrument are the 1979 transfers. In column 3 Transfers is the instrumented variable. In column 5 Investment expenditures is the instrumented variable. Municipality-level controls include: number of bed places in tourist accommodations; index of tertiary educated people; km of roads within the municipality; unemployment rate; dummy variables for the municipality being located in a mountainous or sea-side area. Monetary variables are pc in 2000 constant prices.