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Evidence from Local Governments' Investments[*]

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Abstract

In this paper, we investigate how tightening fiscal constraints (e.g., through intergovernmental transfer cuts) can lead local governments to postpone investment payments. We first provide a simple model showing how local governments can use arrears to relax their short-run financial constraints. We then empirically assess our theoretical prediction using information from accounting and financial reports from all Italian municipalities for the period 2003-2010. Exploiting the long-lasting effect of the 1979 structural reform of Italian local public finance, we employ an instrumental variable approach to face endogeneity concerns. We find robust empirical evidence that the tighter the local government's fiscal and financial conditions, the larger the arrears in public investment expenditures.

Keywords: Intergovernmental Grants, Payment in Government to Business (G2B) Transactions, Instrumental Variables, Panel Data.
JEL classification: H30, H72, H77, C33, C36.

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1   Introduction

The experience of fiscal consolidation implemented at different times in several developed, emerging, and transition countries has shown that central governments tend to mandate part of the necessary fiscal adjustments to local governments (OECD (2013); European Commission (2014)). And during the recent great recession, OECD countries were not an exception. From this perspective, intergovernmental transfer cuts, unfunded decentralization of public expenditure and/or tax increases, and stricter local fiscal rules imposed on or negotiated with local governments have been commonly adopted by central policy makers to partly decentralize fiscal consolidation (see Hagemann (2012)). As stressed by the OECD Report on Fiscal Federalism (OECD (2013)), the specific attention on intergovernmental grants as a powerful lever to address fiscal consolidation is explained by the fact that they account for around 4% of the GDP, 8% of total government spending, and around 50% of the total sub-central governments' revenues in OECD countries.

In this paper we investigate a possible perverse effect of reducing central government grants to municipalities: facing a tighter financial constraint, municipalities could react by increasing expenditure arrears, a form of *trade debt* that eventually frustrates fiscal consolidation itself.

We set a simple theoretical model where a local government - with a ceiling on local debt and the usual budget constraint - maximizes a standard inter-temporal objective function. Under reasonable assumptions, the local government can optimally react to a cut in transfers from the central government by increasing arrears in its investment expenditure, i.e., postponing payments for public works contracts, everything else held equal. We then take this prediction to a large dataset of accounting and financial reports from Italian municipalities for the period 2003-2010. Our dataset includes 6,700 municipalities: they are, on the one side, different in size and have different social, economic, and political features, and, on the other, they belong to a common regulatory framework. These features of our dataset permit us to exploit the cross-sectional and over-time variability in the variables of interest, as well as limiting omitted variable problems. To control for endogeneity problems and to obtain an exogenous determinant of the current transfers, we adopt a novel instrumental variable approach, which consists of the use of historical breaks in Italian local public finance. In particular, our narrative analysis and our empirical evidence show that the criteria for the allocation of transfers from the central to the local governments adopted in 1979 have shaped the availability of intergovernmental grants for municipalities since their introduction and over the entire period under investigation. Our main empirical finding, corroborated by several robustness tests, highlights that lower transfers from the central government determine higher local government expenditure arrears. This effect is not trivial, as we find that a 10% decrease in transfers is associated with about a 1.2% increase in arrears for local

public investments.

As underlined by Diamond and Schiller (1993) and more recently by Checcherita-Westphal et al. (2015), arrears in payments may be undesirable for three main reasons: (i) arrears determine a "camouflage" of local government's debt position; (ii) they may dampen the effectiveness of fiscal consolidation at the local level; (iii) they directly affect the supplier firms' financial conditions, particularly in the case of small and medium enterprises facing bad credit ratings, and by this channel may undermine macroeconomic and financial stability.[1] This paper adds novel results as regards the effects (i) and (ii).

Our analysis is related to two main strands of the economic literature: the first is the vast literature that investigates the link between intergovernmental grants and local government debt; the second is the more recent literature on the link between fiscal consolidation and fiscal federalism.

Empirical results on the first issue are inconclusive and open to several interpretations (see De Mello (2007) for a review of the literature). In particular, it is not clear the causality between changes of intergovernmental transfers and local public debt decisions. Using a panel of OECD countries for the period 1980-2005, De Mello (2007) finds a stable long-term relationship between transfer receipts and local government net worth for the case of current transfers but underlines that the direction of causality is sensitive to the estimation techniques. In fact, other studies have highlighted a possible reverse causality: whenever cuts in central government transfers are not credible, expectations of future bailouts may induce local governments' fiscal profligacy in the form of larger borrowing to finance public expenditure (Goodspeed, 2002). The credibility of the institutional framework of federal systems and, in particular, of intergovernmental fiscal relations plays a central role to determine which one of these two alternative theories is relevant (Wildasin, 2004).

To exclude the reverse causality effect, in our analysis we use an instrumental variable approach. Everything else held equal (in particular, the level of formal debt), we look at the relationship that goes from transfers to the arrears for investment expenditure (i.e., a form of trade debt). To the best of our knowledge, we are the first to investigate how local governments react to a change in intergovernmental transfers in terms of trade debt. This form of debt is particularly relevant, especially where hard budget constraints, such as cap to formal debt, are imposed on the municipalities. Our results tend to corroborate the view that facing inter-

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[1]Expenditure arrears - in the form of payment delays by government to business (G2B) - could also determine distortions at the firm level, as empirically documented in a recent EU study on late payments (EU (2014)) and in Flynn and Pessoa (2014). The latter investigation highlights that, during economic and financial crisis, the government delayed payments could affect the survival of firms, as access to credit is more restricted; moreover, they could increase cost of investment/service provision as suppliers will adjust their prices upward to mitigate the risk/cost of delayed payments, thus contributing to economy-wide inflation.

governmental transfer cuts, local governments will increase expenditure arrears as long as the opportunity cost of this form of trade debt is lower compared to other sources of borrowing.

A different strand of the literature focuses on the way fiscal rules affect local fiscal policies (see Glaeser (2013) for a recent review of the economics literature on local governments and their finances). Fiscal rules are tools, alternative to the cut in intergovernmental grants, through which the fiscal consolidation can be implemented. However, as underlined by Grembi et al. (2012) "there has been limited investigation on fiscal rules at the local government level, where forms of "hidden" public debt can grow and raise fears about the overall financial sustainability of a country" (p. 1). Grembi et al. (2012) contribute to filling this gap by exploiting a difference-in-discontinuity design to assess the effect of fiscal rules (in the form of cap to debt of Italian municipalities) on deficit and taxation.

The paper is organized as follows. In Section 2, we provide a simple model in which we show local governments' options in reacting to a cut in transfers from the central government. In Section 3, we present our dataset (3.1) and the empirical model (3.2). In Section 4, we introduce and discuss our instrumental variable strategy. In Section 5, we provide our main results (5.1), along with robustness checks (5.2). Section 6 offers concluding remarks.

2   Theoretical model

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

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

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

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

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

The local government faces the following budget constraint:

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

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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 decided at time t. 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: $b_t \leq \bar{b}_t$.[2]

To keep the model as simple as possible, we assume that the stock of capital is fully depreciated each year and its amount available at time t is determined as follows:

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

The stock of capital depends on the total investment that is decided in the previous period, i_{t-1}, and also on a random shock, $\theta_t \sim F(\theta)$ (with $E(\theta_t) = 0$), that affects the actual capital cost during the execution of public works contracts.

We introduce θ_t for two reasons. First, we want to take into account non-deterministic discrepancies between the investment decided at time $t - 1$ and the stock of capital available at time t. Second, in this simple way, we model 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 the structural features of the 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 also has 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.[3] To avoid the unrealistic case in which local governments issue debt only in the form of arrears, we assume that $\rho > r$ (i.e., issuing formal debt is less costly than relying on trade debt).

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

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[2]This ceiling is determined by the combination of all fiscal rules imposed on debt issuing (e.g., the golden rule linking local public debt to investments, the absolute maximum level of debt service expenditure, the Domestic Stability Pact provisions). We do not include any lower bound to gross public debt, considering that the local government may issue negative debt (i.e., buy assets). The latter case is particularly relevant when we consider the provisions of the Domestic Stability Pact.

[3]In 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.

$\mu_t \geq 0$, 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[4] (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), $m'_t = \delta^2 E(v'_{t+2})(1+\rho) + \delta E(\mu_{t+1}) > \delta^2 E(v'_{t+2})(1+r)$. That brings to a contradiction. ■

By Lemma 1 and inspection of the local public budget constraint (3), we see that: the local public debt level becomes a parameter of the local government optimization problem, 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, decrease (or do not increase) as the local local budget constraints are relaxed (i.e., $\bar{b}_t$ or g_t grow).*

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 $(\bar{b}_t, g_t)$. Hence, the proposition follows. ■

3   Data and empirical framework

The model presented in Section 2 shows that larger restrictions to the municipality's financial constraints, in the form of lower grants from the central government, lead

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[4]Note that, at each time t, h'_t, m'_t, and v'_t are the marginal cost of public funds, the marginal benefit of current expenditure, and the marginal benefit of available capital, respectively.

to higher municipality's arrears in investment payments. In what follows, we introduce the empirical analysis we performed to offer evidence of this relationship. In particular, in Section 3.1, we present the dataset consisting of information from the accounting and financial reports for a panel of Italian municipalities in the period 2003-2010, and the available measures that better capture the financial constraints and the expenditure arrears. In Section 3.2 we discuss the reduced form empirical model that we estimate using different approaches.

We focus our empirical analysis on a single country, Italy, with a large number of municipalities of different sizes, located in different socio-economic environments. This allows us to analyze constituencies governed by a common regulatory framework, without losing the cross-sectional and over-time variability of the variables of interest. For this reason, we believe that lessons from this empirical analysis are not specific to Italy.

3.1 Municipalities' accounting and financial reports

In Italy, municipalities are the smallest administrative units and they provide public goods and services in several policy areas, such as local transport, local police, culture and recreation, land management and environment (waste disposal, water, sewage), nursery school and complementary education services, and registry services. About half of the total 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).[5]

Annually, each municipality is obliged to transmit its accounting and financial report to the Ministry of Interior (the so-called *Certificati di Conto Consuntivo*). This source of information allows us to have a clear picture of the financial situation of the municipalities for each year for both the revenues and the expenditures sides of the budget.

In this analysis, we focus on the 6,700 municipalities belonging to the 15 ordinary regions; we do not consider the about 1,400 municipalities of the remaining 5 regions since the latter enjoy a larger degree of legislative and financial autonomy and respond to different regulations in many fields.[6]

Following the theoretical model in Section 2, we study the financial restraints of the municipalities by focusing on one of the main sources of revenues: grants from the central government to a municipality (i.e., State transfers). Over the

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[5]See, for the years of our analysis, the Annual Reports (*Relazione annuale*) of the Italian Authority for the Supervision of Public Contracts (*AVCP*); documents available at www.avcp.it and www.anticorruzione.it.

[6]Note that in our analysis we cannot use about 4% of the municipality-year observations because of some missing data in some of the control variables.

last three decades, State transfers have shaped the financial conditions of Italian municipalities, and in the period 2003-2010, on average, they accounted for about 40% of the municipalities' total revenues. Together with the 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. In turn, State transfers drive the "marginal" adjustments required to fulfill the budget balance rule, which municipalities are forced by law to pursue each year.

Our dataset of accounting and financial reports contains the annual amount of transfers from the central government to each municipality. In the period of our analysis (2003-2010), on average, in per capita terms, State transfers represent about 200 euros (in 1995 constant prices), and this value vary across municipalities. Table 1 shows large overall and between variations (128 and 117 euros, respectively) and a within municipality variation of 55 euros.[7]

From the accounting and financial reports, we are able to obtain a measure of arrears for investment expenditures, which is the (dependent) variable we want to explain. This variable gives us the information for each municipality on the amount of investment expenditures for the year that have not been paid and are postponed to the future payments.

Descriptive statistics show that, on average and in per capita terms, the arrears for investment expenditures are about 380 euros (with a standard deviation of 772 euros). To give a better idea of the weight of the arrears in the municipalities' budgets, each year, on average, the new arrears are about the 34% of the stock of arrears at the beginning of the year, and they represent about the 87% of the investment expenditures. (Table 1 reports the summary statistics for the variables with municipality-year variations in per capita terms and constant prices, from the accounting and financial reports).

The amount of planned expenditures in investments is naturally the variable that explains much of the variability in the arrears for two main reasons. First, because of a scale effect, a larger amount of payments for investments is more difficult to be financially sustained, everything else being equal. Second, because according to the Italian legislation, during the period of analysis, multi-year investments "automatically" generated arrears for the part of the payments due in future years.

A simple correlation between the (log of per capita) transfers and the (log of per capita) arrears, conditional on the (log of per capita) investment expenditure, is statistically significant and negative (-0.05). However, this simple and descriptive evidence does not take into account other potential determinants of the arrears.

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[7]We stopped our analysis in 2010 because of the substantial changes to the Italian local public finance that were implemented between 2011 and 2014. In particular, different measures have affected the structure of local tax revenues and introduced a new, provisional tax-sharing and intergovernmental transfer scheme. This has caused a discontinuity in the time series of transfers to the municipalities, which makes it particularly difficult the comparison with previous years.

Table 1: Summary statistics (Real euros per capita). Period 2003-2010.

VARIABLES	Mean	SD		
		Overall	Between	Within
Arrears (Inv.)	380.79	771.83	512.27	583.67
Transfers from central gov.	200.56	127.65	117.32	54.75
Investment expenditure	436.84	822.21	564.09	603.62
Debt Interest expenditure	33.68	28.45	26.87	9.23
Av. Taxable income	14691.02	2299.82	2236.85	568.37
Population	7500.07	44072.47	43252.87	1217.41
1979 Transfers	203.46	106.74	108.45	0

Among the variables included in the municipalities' accounting and financial reports, we consider the debt interest expenditure. This variable controls for the cost of the stock of debt of the municipality and the influence of the ceilings to local debt on the formation of expenditure arrears (which is, as previously said, another aspect influenced by the fiscal consolidation process).

3.2   Empirical model

The reduced form empirical model that we estimate using different approaches to analyze the relationship between State transfers and investment expenditure arrears is as follows:

$$a_{mt} = \alpha + \beta g_{mt} + \gamma MT_{mt} + \epsilon_{mt}. \tag{9}$$

All monetary variables are expressed in logs of the per-capita values at constant prices. The dependent variable a denotes the arrears from investments in year t by municipality m. The main explanatory variable of interest is g, which represents the transfers received from the central government by the municipality in any year. MT is the set of controls from the annual accounting and financial report of each municipality for each year (i.e. investment expenditure and debt interest expenditure). The error term ϵ captures all factors that influence the arrears but that are not captured by the model specification and consists of the following: (i) municipality-specific time-invariant effects, (ii) 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 approaches. The first approach consists of augmenting the model specification (9) with a set of municipality-level control variables (M) that aim to control for the constituency's structural characteristics. In particular, we control for the munici-

pality being a touristic location (proxied by the number of per-capita bed places in tourist accommodations), the location being in a mountainous area, the population density, the categories of population size,[8] the extension of the existing road network in the municipality, the socio-economic situation proxied by the unemployment rate, and the share of young and old population (data for all these variables come from the Italian National Institute of Statistics - ISTAT; summary statistics in Table A1 in the Online Appendix). All these characteristics aim at representing several dimensions of the demand for and composition of public spending in the municipality.[9] Furthermore, we augment equation (9) with province-fixed effects to control for factors that influence municipalities operating in contexts with similar socio-institutional qualities (such as social capital, crime, and effectiveness of the judicial system) and levels of economic and financial development. The second alternative approach to reducing municipality-level time-invariant omitted variables involves the inclusion of municipality-fixed effects in the model specification (9). This approach fully captures the cross-sectional variability and allows us to exploit the within-municipality variability.

Considering (ii), that is, to better take into account time-varying municipality-specific effects, in addition to (MT) controls from the accounting and financial reports, we introduce in the model specification the average taxable income in each municipality m in year t, which controls for the socio-economic development of the municipality.

Finally, we include year-fixed effects (T) in the model specification to deal with time-varying macro effects (iii) and capture country-level shocks both on macro/financial conditions as well as regulation changes during the years of analysis. Both types of shocks could have affected municipalities' public finance choices, and thus the arrears, in any given year.[10]

4   Instrumental variable approach

The inclusion of additional control variables in the estimated equation (9) reduces the omitted variable and reverse causality problems of the relationship between a municipality's current transfers and arrears, but it does not fully control for endogeneity. For instance, each year the municipality might receive larger transfers from the central government to deal with the payment difficulties (i.e., to reduce the formation of new arrears). To further reduce endogeneity concerns, we propose

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[8]We include dummy variables for populations below 1,000 inhabitants, between 1,000 and 5,000, between 5,000 and 15,000, between 15,000 and 200,000, and above 200,000.

[9]In Section 5.2, we also show robustness checks including an additional set of municipality-level variables.

[10]In Section 5.2, we also show robustness checks including province-year-fixed effects.

an instrumental variable (IV) approach that exploits a source of exogeneity shaping the current budgetary situation of Italian municipalities. Specifically, we employ the 1979 levels of transfers from the central government to the municipalities as a new IV for the current level of transfers. In what follows, we present the rational for using this exogenous instrument (Section 4.1), show its empirical relationship with the current transfers (4.2), and discuss its validity (4.3).

4.1 Instrumenting intergovernmental grants

An analysis of the history of Italian local public finance clearly shows that the 1977-1978 reforms of the allocation of State transfers were an exogenous event that had an important role in allocation criteria until 2010.[11]

During the 1950s and 1960s, the tax and fiscal autonomy of Italian municipalities was quite inelastic to the rapid growth of the GDP and social needs. In 1972-1973, a reform drastically reduced the autonomy of the revenue-side of the municipalities, which was replaced by a larger amount of State transfers. However, between 1972 and 1976, the outburst of inflation (and the consequent growth of nominal interest rates) widened the gap between nominally set revenues and the current expenditures of local governments, which was covered by loans granted by commercial banks and State financial institutions. The result was that in 1977, the total stock of outstanding debt of municipalities was more than three times as much as at the beginning of the decade.

In 1977-1978, emergency measures were implemented by two central-government decrees (the so-called "Stammati decrees"). The State assumed direct liability for the municipal debt (including interests) issued before 1977; thus, the central government was forced to bail-out the local public finance. The future growth of current expenditures was capped by law, and 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 they were established as an ordinary financing mechanism with a centrally determined growth rate. Thus, the basic determinant of the new granting system was the pre-1978 expenditure levels (the so-called "historical expenditure" criterion).

The timing and features of this change were largely unexpected by municipal policy makers, who, in turn, could not anticipate the mechanism by increasing before 1978 the levels of expenditure to ensure larger future transfers. This anticipation would have meant that municipalities increased their expenditures because they expected a bail-out by the central government, followed by the introduction of the

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[11]For a detailed narrative analysis of the main changes in the allocation of intergovernmental grants in Italy in the last four decades, refer to the Appendix A.1.

"historical expenditure" criterion for the allocation of future transfers. However, we have not found any evidence of the presence of such an expectation in the political debate or among the stakeholders of that period.

To better understand how the 1978 reform in the allocation of transfers has influenced future transfers, consider that each year, the amount of State transfers to each municipality decided by the central government is composed, for sake of simplicity, by (i) the amount of transfers the municipality has received in the previous year, (ii) an adjustment factor that depends on (a) an annual growth rate common to all municipalities, and (b) a compensation component specific for each municipality.

When determining the amount of granted transfers, the weight of each component can change from one year to the another. However, a larger weight has been attached to the first component, which is influenced by the 1979 transfers. In fact, after 1979, each year the transfers to the municipality have largely reflected the amount of transfers received in the previous year. For example, the distribution of transfers across municipalities in 1980 replicated, with marginal changes, the 1979 distribution of transfers (that, as discussed, were suddenly set in 1978 to cover each municipality's pre-1978 expenditure); in a similar way, the 1981 transfers reflected the 1980 transfers, the 1982 transfers reflected the 1981 transfers, and so on.

This recursive process has clearly led to a gradual reduction of the direct effect of the 1979 transfers overtime because of the annual marginal adjustments of distribution criteria and, in particular, of some specific events that have reduced the weight of the "historical expenditure" criterion in the allocation of transfers to municipalities (such as the 1992 introduction of a local property tax that was compensated for by a corresponding drop in a municipality's transfers). But the small weight assigned to alternative apportionment criteria and, more generally, the failure of several attempts to reform intergovernmental transfers during the 1990s and 2000s have maintained a distribution of State transfers that is still based on the "historical expenditure" criterion. Thus, municipalities that enjoyed larger State transfers in 1979 have continued to receive larger amount of transfers. At the beginning of the 1990s, more than 50% of the transfers paid to local governments still depended on the debt accumulated (to cover the expenditures) before the 1978 reform (Emiliani, 1997). In May 2009, a new law on fiscal federalism was approved (Law n. 42/09) and included the following among its main objectives in the first article: "[..] ensuring revenue and expenditure autonomy of municipalities [..], so as to gradually replace, for all levels of government, the criterion of historical expenditure." In other words, more than three decades after the 1977-1978 reform the Italian municipal finance framework is still largely affected by that criterion. This is also supported by +0.37 value of the simple correlation between the (log of per capita of) 1979 transfers and the (log of per capita) current transfers from the central government in the period 2003-2010 (see Figure 1).
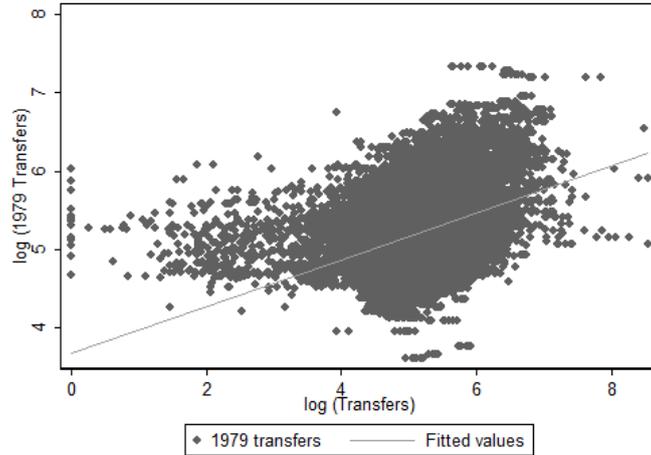
Figure 1: Correlation between transfers pc and 1979 transfers pc

4.2 First-stage results

In this context, beyond the simple correlation shown above, we study the relationship among the two variables conditional on other controls. These estimations are the first-stage of a 2SLS estimation approach of the empirical model in equation 9, where the 1979 transfers are employed as excluded instrument for the level of the current transfers.

If the adjustment component specific for each municipality in any year is particularly small (let's say infinitesimal), the influence of the 1979 transfers on the current transfers would be linear across the years, once we control for the year-fixed effects; in fact, the latter aim at capturing the annual growth rate of the amount transfers common to all municipalities and set by the central government.

The estimation results of this specification are presented in column 1 of Table 2 and confirm a positive and statistically significant relationship between the 1979 transfers and the current transfers, after controlling for other covariates with municipality-fixed and time-varying dimensions (as discussed in Section 3.2). In particular, the estimated elasticity indicates that municipalities that received 10% larger amount of transfers in 1979 still receive on average 1.8% larger transfers in the period 2003-2010.

Table 2: First stage results

Column	(1)	(2)
Estimator	OLS	OLS
Dependent var.	log of	
	Transfers	Transfers
log of:		
1979 transfers	0.177***	0.159***
	(0.012)	(0.014)
1979 transfers*y2004		0.037***
		(0.009)
1979 transfers*y2005		0.062***
		(0.010)
1979 transfers*y2006		0.050***
		(0.010)
1979 transfers*y2007		0.035***
		(0.011)
1979 transfers*y2008		-0.004
		(0.010)
1979 transfers*y2009		-0.023*
		(0.012)
1979 transfers*y2010		-0.016
		(0.011)
Investment expenditure	0.020***	0.020***
	(0.003)	(0.003)
Interest expenditure	0.034***	0.034***
	(0.006)	(0.006)
Av. Taxable income	-0.545***	-0.544***
	(0.040)	(0.040)
Municipality-level controls	YES	YES
Province-fixed effects	YES	YES
Year-fixed effects	YES	YES
Observations	51,246	51,246
R-squared	0.563	0.563

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. Municipality-level controls include: population size categories; density of population; number of bed places in tourist accommodations; km of roads within the municipality; share of young, and share of old population; unemployment rate; dummy variables for the municipality being located in a mountainous area.

To take into account the different weights that the central government assigns to the marginal adjustment component each year for determining the new amount of transfers to each municipality (and, inversely, the relevance of the transfers allocated in the previous year, which are influenced by the 1979 transfers), we augmented the first stage equation with the interaction terms between the 1979 transfers and the year dummies. It is worth emphasizing that this exercise allows us to capture the exogenous component linked to the 1979 transfers that influences the allocation of transfers across municipalities every year and it is not intended to artificially augment the number of instruments or give a time dimension to a cross-section instrument. The interaction terms indicate the differential effect in each given year with respect to the effect in 2003, where the latter is captured by the coefficient of the (non-interacted) variable of the 1979 transfers.

In column 2 of Table 2, the estimated coefficient of the single term of the 1979 transfers indicates that municipalities that received 10% larger amount of transfers in 1979 receive, on average, 1.6% larger transfers in 2003. This effects is very similar to that showed in column 1, indicating that the non-linear effects of the 1979 transfers across the years introduced in column 2 do not have a dominant role. Accordingly, the coefficients of the interaction terms (i) are small in magnitude, confirming the limited differential effects across the years; (ii) are positive and statistically significant until 2007, indicating that municipalities receiving a larger amount of transfers in 1979 not only received larger amount of transfers in 2003, but have also received even higher transfers than other municipalities every year until 2007 (such behavior is consistent with the fact that the 2003-2007 period was characterized by annual cuts of State transfers to municipalities); and, (iii) are negative and non-significant in the years 2008-2010, reflecting the impact of the 2008 central government's decision to cut the local property tax and to partially compensate lost revenues in the municipalities by higher State transfers (such behavior has reduced the differential effects across municipalities but has not altered the relevant role of the 1979 transfers, given the small and statistical non-significant magnitude of the interaction coefficients).

4.3 Discussion

A concern regarding the validity of the instrument is that the 1979 transfers have influenced the current rise of investment expenditure arrears through channels we do not control for. For instance, one might argue that the 1979 transfers have shaped the municipality's subsequent spending and revenue capacity, and socio-economic conditions, which are all factors that can have a direct effect on the arrears. Our set of control variables in (M), (MT), and particularly the current level of average taxable income, observed each year and in each municipality, can account for a very large set of (possible) other channels through which the 1979 transfers might have

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an effect on the dependent variable.

A specific concern is related to the municipalities lacking "budget responsibility". In fact, because higher 1979 transfers were allocated to those municipalities that had higher pre-1978 expenditure levels, one might suspect that those municipalities had a tendency to non-accurately use public money. If for some reasons this behavior is still at work in those municipalities, there might be a positive correlation between the 1979 transfers and the lack of "budget responsibility" in municipalities. Although we cannot exclude this channel, two facts have to be underlined. First, "financially irresponsible" municipalities typically tend to increase their current expenditures (e.g., for employees, for consultancy services, etc.), while our focus is on the arrears for investment expenditures. Second, in cases of a perpetuation over decades of non-accurate use of public money within a municipality, we would observe that today's higher transfers (because of higher 1979 transfers, and thus higher pre-1978 expenditure) are associated with higher arrears (i.e., a higher level of missing expenditure payments). Thus, if this were the case, the coefficient of transfers on arrears would be upward biased.

To the best of our knowledge, we are the first to exploit the 1977-1978 relevant and largely exogenous break in the institutional setting of Italian local public finance and to take into account the effect of the "historical expenditure" criterion for instrumenting the current State transfers.

Other papers have analyzed the political determinants of the heterogeneity in the transfers (see, among others, Solé-Ollé and Sorribas-Navarro (2008), Bracco and Brugnoli (2012), Brollo and Nannicini (2012), and Bracco et al. (2015)) and underlined the need for an instrumental variable approach. For instance, Bracco et al. (2015) suggest the use of a municipality's political alignment with the central government as a variable for instrumenting annual changes in transfers. They show the validity of this instrument in a fixed effect framework exploiting a regression-discontinuity design for a subsample of large Italian municipalities for which the mayor's political affiliation can be classified. In particular, they "compare municipalities where the elected mayor is just aligned with central governments with ones where the mayor is just unaligned, where 'just aligned' means that the mayor won the election with a small margin and that the mayor and the central government belong to the same party" (Bracco et al. (2015): 2). In our paper, we do not use the alignment of the mayor with respect to the political party/orientation of the central government as an instrument for transfers for two main reasons. First, we are interested in the analysis of all the Italian municipalities, but in most of the municipalities (about 64% of our sample), we were not able to identify the political affiliation of the mayor as it is labeled with *lista civica* (i.e., independent civic coalitions). Indeed, Bracco et al. (2015) also point out that during the period 1998-2008, in 66% of the smallest Italian municipalities, the party affiliation of the mayor can-

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not be classified because of *liste civiche*, and they look at a subsample of 526 large Italian municipalities (i.e., those municipalities with a population above 15,000, for which they could identify the political affiliation of the mayor). Second, we aim to study the overall variation (not only over-time) in the current transfers and, to this end, we exploit the impact of the 1979 historical institutional reform in the Italian public finance to capture an exogenous component of this variation. However, we will show that our main results and the validity of the instrument hold even when we include political economy features of the municipalities in the model specification.[12]

5 Estimation results

5.1 Main results

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

In Table 3, we report our main estimation results. In column 1, we employ a pooled-ordinary least square estimator (pooled-OLS) that includes the controls at the municipality level (M), the municipality-year level (MT), and province-fixed and year-fixed effects. The estimation results in column 2 are from the within-group estimator (i.e., municipality-fixed effects), which allows us to exploit the time dimension of our data. As previously discussed, in a framework that aims to capture both the cross-sectional and over-time variability of the arrears, we also employ an IV approach that is based on the 1979 transfers as an instrument for the current transfers. In column 3, we report the second stage of the pooled two-stage least squares estimation (pooled-2SLS) using the 1979 transfers as instruments for the current transfers (which is an exactly identified model). In column 4, we show evidence from an overidentified 2SLS, where the 1979 transfers that interacted with year dummies are the excluded instruments for the current transfers.[13] In all specifications, we report standard errors clustered at the municipality level, which are robust for serial correlation and heteroscedasticity.[14]

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[12]Other studies focusing on Italy exploit different exogenous changes in the local public finance: for instance, the relaxation of the Domestic Stability Pact in 2001 for municipalities below 5,000 inhabitants (see Grembi et al. (2012)). We do not use this approach for three main reasons. First, these changes mainly influenced the regulation of the debt ceilings of the municipalities, 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). Second, looking at the regulation, we can notice that the terms of the Domestic Stability Pact changed yearly on several dimensions, which can create problems of confounding effects and a limited time span for the analysis. Third, the 2001 change falls outside the period of our analysis.

[13]Hansen J test of overidentifying restrictions is reported.

[14]Due to space constraints, the coefficients for the time-invariant socio-economic controls at

Our primary interest is in the estimated coefficient of current transfers, which indicates whether a municipality's change in transfers is reflected on the formation of arrears for investment expenditure. The estimated coefficients for transfers are negative and statistically significant at the 1% level (or 5% level in column 1). In the OLS and panel fixed effects estimations, we estimate that a reduction of 10% in the transfers per capita is associated with an increase of about 0.3% in arrears. In the 2SLS estimations, we estimate that a reduction of 10% in the transfers per capita is associated with an increase of about 1.2% in arrears.[15] As predicted by our model (2), 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 other control variables, it is hardly surprising that the coefficient of investment expenditure is positive and statistically significant (indicating an elasticity of about 1). As for the interest expenditure variable, 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, 3, and 4. This means that the larger the capacity for issuing new debt (or weaker the limits to local debt growth), the more the municipality is able to keep up with the payments for investment expenditure and to reduce the amount of arrears. Note that, on average, the debt interest expenditure of the municipalities does not often vary overtime and this can explain the statistical non-significance of the coefficients in column 2, when municipality-fixed effects are included.[16]

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the municipality-level are not reported; we only report coefficients related to time-varying public finance variables.

[15]For example, in a municipality with average transfers per capita of 200 euros and average arrears per capita of 380 euros, a decrease of about 20 euros in the transfers per capita is associated with an increase in the arrears per capita of 4.60 euros.

[16]Note that our main estimation results do not change when we alternatively use the ratio between debt interest expenditure and total revenues.

Table 3: Main estimation

Column	(1) OLS	(2) FE	(3) 2SLS	(4) 2SLS
Estimator				
Dependent var.	Arrears	Arrears	Arrears	Arrears
		log of		
log of:				
Transfers	-0.022**	-0.031***	-0.132***	-0.116***
	(0.009)	(0.012)	(0.049)	(0.044)
Investment expenditure	1.054***	1.068***	1.057***	1.056***
	(0.004)	(0.005)	(0.004)	(0.004)
Interest expenditure	-0.017***	-0.010	-0.012**	-0.013**
	(0.005)	(0.013)	(0.005)	(0.005)
Av. Taxable income	0.007	0.012	-0.047	-0.040
	(0.024)	(0.066)	(0.034)	(0.032)
Municipality-level controls	YES	NO	YES	YES
Municipality-fixed effects	NO	YES	NO	NO
Province-fixed effects	YES	NO	YES	YES
Year-fixed effects	YES	YES	YES	YES
Observations	51,246	51,246	51,246	51,246
R-squared	0.889	0.856	0.888	0.889
Endogeneity(p-value)			0.024	
Hansen J (p-value)				0.216

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5.2 Further results and robustness checks

In this section, we propose a set of robustness checks to further control for the validity of our estimation results and the consistency of their interpretation with the predictions of the model presented in Section (2). Each introduced change in the estimated empirical model or analyzed sample is estimated using different approaches. However, for reasons of space, in Table 4, we only report the estimation results obtained with the 2SLS estimator, while the full set of results are reported in the Online Appendix A.2.

The first concern is about the role of the stock of the expenditure arrears at the beginning of the year. One might argue that the formation of new arrears in each year is influenced by the stocks of arrears accumulated in previous years. In fact, on the one hand, municipalities with a larger stock of arrears could tend to systematically have higher new arrears, with respect to the other municipalities. On the other hand, a municipality with a larger stock of past arrears could tend to reduce the formation of new arrears in the year to avoid greater difficulties in future payments. To control for this factor, we include in the model specification (9) the stock of the arrears for investments, taken at the beginning of the year. Estimation results in Table 4, column 1, confirm the previously estimated sign, statistical significance of the effects of transfers, investment expenditure, and debt interest expenditure on the arrears.[17]

In column 2 of Table 4, we report estimation results after including province-year fixed effects in the model specification. This is to control for additional time-varying characteristics and exploit variation, in any given year, among the municipalities within each of the 86 provinces in our sample. The results confirm our main estimation.[18]

An additional robustness check deals with the concerns related to political features. The economic literature shows that the electoral cycle and the alignment of local politicians to national governments are among the determinants of the differences in intergovernmental grants among the municipalities (see, among others, Solé-Ollé and Sorribas-Navarro (2008), Bracco and Brugnoli (2012), Brollo and Nannicini (2012), and Bracco et al. (2015)). Although a deep analysis of these political economy factors is beyond the scope of the present paper, we add political controls

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[17]See, in the Online Appendix A.2, Table A2 for the full set of estimations about this robustness check, and Table A1 for further summary statistics. Note that the coefficient of the stock of the arrears is positive and significant in the pooled-OLS and pooled-2SLS estimations, and negative and significant in the panel fixed effect estimation. This suggests that when we compare the effects across municipalities and over-time, those municipalities with higher stocks of arrears tend to maintain higher levels of new arrears, while an increase in the stock of arrears within a municipality translates into a smaller amount of new arrears.

[18]See, in the Online Appendix A.2, Table A3 for the full set of estimations about this robustness check.

to our model specification (9). Specifically, we include a dummy variable indicating whether a municipality's mayor is in his/her first mandate and a set of dummy variables indicating the year passed from the last municipal election (data come from the Ministry of Interior) to control for the political and electoral cycles. In Italy, in each municipality, the mayor and city's council are elected for a five-year term and each mayor has a limit of two consecutive terms. Mayors might have different expenditure incentives/choices in their first mandate than in their second mandate, as well as in the years just before the election compared to the years just after the elections (see, for instance, Besley and Case (2003) and Cioffi et al. (2012)).[19] Note that elections in the Italian municipalities do not take place at the same time and this allows us to better empirically identify the effects of the political cycle. In addition we add to our model specification a proxy of social capital (i.e., the number of non-profit organizations per capita; data are from Nannicini et al. (2013)), and a variable representing the share of tertiary educated people (data come from ISTAT) in the municipality to control for the accountability on local politicians (see Nannicini et al. (2013)).

We also run an additional robustness check to verify whether our estimated relationship also holds in smal municipalities and it is not driven by larger municipalities (in Italy, and in our sample, about 91% of the municipalities have a population below 15,000 inhabitants). Although we already control for population size in our model specifications, we estimate our model (9) on the sub-sample of municipalities with a population below 15,000 inhabitants. In fact, in Italy, municipalities below 15,000 inhabitants have a different electoral system than larger municipalities, and we might be interested in assessing whether different political contexts influence our results (a single ballot system is in place 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)). The estimation results reported in Table 4, columns 3 and 4, show that our main estimation results are not influenced by the inclusion of these political controls in the model specifications and the limitation of the sample to small municipalities, respectively.[20]

Further insight about the consistency of the interpretation of the estimated relationship between transfers and arrears can be gained by interacting the transfers with the (cost of) debt of the municipality (*Transfers*Interest expenditure*). To bring further evidence to the interpretation of arrears as a form of trade debt, in-

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[19]Note that we also control for a proxy for mayors' level of education (data come from the Ministry of Interior).

[20]See, in the Online Appendix A.2, Table A4 and Table A5 for the full set of estimations about these robustness checks. Note that our IV approach maintains its validity when we include municipality-level political controls in the model specification. Note also that in further controls, we do not find any significant interaction effect between transfers and electoral and political cycle on the arrears.

tuition suggests that it should be verified whether a reduction in transfers increases arrears by a smaller percentage in municipalities with a higher level of debt than in municipalities with a lower level of debt. When a municipality is highly constrained in the formation of additional bank debt, it will also have difficulties to use the trade debt channel (i.e., arrears) to relax its constraints more than in a less-constrained municipality. Thus, the net marginal effect of lower transfers on the increase of arrears is expected to be smaller in the former than in the latter municipality. The estimation results in Table 4, column 5, show that the estimated coefficient of the interaction term between transfers and expenditure for debt interests is positive and statistically significant, while the estimated coefficients for the single terms of transfers and debt remain negative on the arrears.[21]

Finally, we show a robustness check that aims at taking into account the fact that our results might be affected by endogeneity problems that are related to the level of investment expenditure decided by the municipalities each year. In fact, it might be the case that municipalities that tend to accumulate arrears decide to lower their level of investments to limit the formation of new arrears. We have instrumented the level of investment expenditure to check whether its potential endogeneity influences our results. This test implies that we need to deal with two variables to be instrumented (both the levels of transfers and investment expenditure). In Table 4, column 6, we report the estimation results of our model specification obtained using the 2-steps GMM. The model is augmented with the lagged value of arrears (*L. Arrears*) to control for the presence of a persistent process in the accumulation of arrears. Estimated coefficients confirm the presence of a statistically significant and negative relationship between transfers and arrears.[22]

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[21]See, in the Online Appendix A.2, Table A6 for the full set of estimations about this robustness check.

[22]Note that in the Online Appendix A.3 we report two further robustness checks showing the estimation results for different dependent variables (i.e., tax revenues and payments). 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 have predictions from our theoretical model (Section 2) or we can make solid conjectures.

Table 4: Extensions and robustness checks

	(1)	(2)	(3)	(4)	(5)	(6)
Column						
Estimator	2SLS	2SLS	2SLS	2SLS	2SLS	2-steps GMM
Dependent var.				log of		
	Arrears	Arrears	Arrears	Arrears	Arrears	Arrears
Sample	Full	Full	Full	<15,000 inh.	Full	Full
log of:						
Transfers	-0.179***	-0.099**	-0.099**	-0.147**	-0.293***	-0.144**
	(0.047)	(0.043)	(0.048)	(0.058)	(0.094)	(0.066)
Investment expenditure	1.054***	1.055***	1.060***	1.063***	1.056***	1.080***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.042)
Stock of arrears	0.033***					
	(0.005)					
Interest expenditure	-0.016***	-0.014***	-0.010**	-0.010*	-0.248**	-0.017***
	(0.005)	(0.005)	(0.005)	(0.006)	(0.097)	(0.005)
Av. Taxable income	-0.078**	-0.030	-0.029	-0.053	-0.054	-0.059
	(0.032)	(0.031)	(0.038)	(0.043)	(0.033)	(0.044)
Transfers* Interest expenditure					0.045**	
					(0.019)	
L.Arrears						0.004
						(0.008)
Municipality-level controls	YES	YES	YES	YES	YES	YES
Political controls	NO	NO	YES	YES	NO	NO
Province-fixed effects	YES	YES	YES	YES	YES	YES
Province-year-fixed effects	NO	YES	NO	NO	NO	NO
Year-fixed effects	YES	YES	YES	YES	YES	YES
Observations	51,166	51,246	47,275	43,165	51,246	43,312
R-squared	0.890	0.891	0.893	0.893	0.888	0.906
Hansen J (p-value)	0.318		0.450	0.143	0.102	0.699

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. In columns 1 to 4 the excluded instruments are the 1979 transfers interacted with year dummies; Transfers is the instrumented variable. In column 5 the excluded instruments are the 1979 transfers interacted with year dummies as well as the 1979 transfers interacted with debt interest expenditures and with year dummies; Transfers and Transfers*Interest expenditure are the instrumented variables. In column 6 the excluded instruments are the 1979 transfers interacted with year dummies; Investment expenditure and the Transfers are the instrumented variables. Municipality-level controls include: population size categories; density of population; number of bed places in tourist accommodations; km of roads within the municipality; share of young, and share of old population; unemployment rate; dummy variables for the municipality being located in a mountainous area. Municipality-level political controls include: index of tertiary educated people; number of non profit organizations per capita; dummies for the years from the past elections; dummy for mayor's first mandate period; dummies for mayor's level of education. 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.

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6 Conclusion

The reduction of transfers from the central government to local ones is widely adopted in the aim to decentralize the fiscal consolidation process; however, if a cut in transfers translates at the municipal level to higher *trade debt* - in the form of expenditure arrears - the pursued objective will be partly frustrated.

This paper has addressed the effect of central government cuts to transfers on municipalities' payment for local public investments. Our simple model predicts that hardening fiscal constraints at the municipal level by cutting State transfers can lead local governments to increase their expenditure arrears.

We test these predictions using a large dataset of Italian municipalities in the period 2003-2010. Our empirical strategy is based on an instrumental variable approach, relying on the structural break that deeply changed the Italian local public finance in 1979 and on the central role played by intergovernmental transfers in driving local fiscal policy. Our empirical results - implemented with several robustness checks - are largely consistent with our theoretical predictions. In particular, we find that a reduction of 10% in the transfer per capita from the central government to municipality is associated with an increase of 1.2% in local expenditure arrears.

These empirical results, confirmed by several robustness checks, highlight a novel and perverse effect driven by the (mis)management of intergovernmental transfers. In particular, on the one hand, our findings provide new evidence about the costs of hardening financial constraints in the fiscal decentralization process; on the other hand, our findings suggest that further research on the design of optimal exogenously imposed fiscal restraints should carefully take into account local government response.

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A   ONLINE APPENDIX

A.1 Narrative analysis of the allocation of intergovernmental transfers in Italy

This section presents the regulatory framework of the local public finance in Italy the last four decades.

Up to the early 1970s. The vigorous economic growth of the 1950s and 1960s significantly expanded the financial needs of local authorities for the provision of public services and infrastructure facilities. However Italian municipalities' revenues, which heavily relied on their own taxes (i.e., the family tax, the consumption tax, and the tax on capital gains on building areas), had proven to be quite inelastic to the growth of the GDP and to the new societal challenges. 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 Italian public finance.

First half of the 1970s. In 1972-73, a massive tax reform was introduced. The main municipal taxes were suppressed and their revenues provisionally substituted by State grants. Other taxes, such as IGE (General Tax on Revenues), where municipalities shared revenues, were substituted by IVA (the new VAT required by the European Economic Community) which did not allow for any revenue sharing at the local level. The reform also introduced some new local taxes (Invim, a tax on capital gains on housing assets, Tarsu on waste collection, Tosap on the use of urban territory, and Ilor on all incomes other than dependent labor income) that proved to be highly inelastic to income and their real revenue easily eroded by inflation. Indeed, 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 outstanding 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 Italian local public finance.

Second half of the 1970s. In 1977, emergency measures were implemented by two central-government decrees, the so-called "Stammati" decrees (upon the name of the Treasury Minister): the Decree n. 2/77, converted into Law n. 62/77, and the Decree n. 946/77, converted into Law n. 43/78. The State assumed direct liability for municipal debt (including interests) issued before 1977; the future growth of current expenditures was capped by law (restrictions were also 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 mechanisms with a 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 both the financial crisis of Italian local public finance and the 1977 emergency measures on 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 1980s. The "historical expenditure" criterion for the determination and allocation among municipality of State transfers remained substantially in force for over a decade, despite several legislative measures attempting to change the transfer apportionment scheme. In 1981, with Law n. 154/81, the government established for the first time an equalization fund that represented only a marginal share of total transfers. In the mid-1980s, transfers from the higher tiers of government still accounted for almost 70% of municipalities' total revenues. Funds were mostly earmarked and allocated in such a way to compensate for individual differences between past expenditures and autonomous revenues. In 1989, in order to strengthen fiscal autonomy, a new local tax was introduced (Iciap, the municipal business tax).

First half of the 1990s. At the beginning of the 1990s, when more than 50% of the transfers paid to local governments still depended on the debt accumulated in the 1970s, the severe financial and political crisis (which culminated in Italy's falling out of the European Monetary System and the devaluation of the Lira in 1992) as well as the fiscal discipline imposed by the Maastricht Treaty, leading to the monetary unification, made it imperative for Italy to engage in budget consolidation. Decentralization gained momentum as an important driver of fiscal discipline by the mid-1990s. Several reforms were implemented with the aim to harden the local budget constraints and to improve the accountability and responsibility of local governments. A turning point in the Italian history of public finance occurred in 1992 when important reforms of local government financing were approved in order to increase their tax and fiscal autonomy. The central government's attitude regarding local public finances changed dramatically: rather than attempting to control local expenditures by the center, responsibility at the local level was increased by reducing the role of transfers and by increasing the revenue and expenditure autonomy of the local governments (Law n. 142/90). The revenue structure of municipalities was reformed (Decree law n. 504/92), with the assignment, from 1993, of a property tax (ICI), in which municipalities were allowed to choose the tax rate in a given interval, along with the rationalization of the State grant framework, which com-

prised five different kind of transfers: three mandatory, non-earmarked and general purpose in the current account, and two mandatory and earmarked in the capital account. Transfers to municipalities were reduced in 1993 by the same amount of the ICI base revenue. In the same year, Invim was abolished. Moreover, Decree law n. 504/92 explicitly provided the progressive reduction, over a period of 16 years, of the role of the "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 strengthen the equalization component of intergovernmental grants. However, the new model was applied only in 1994. In 1995, Law n. 539/95 introduced a new model of intergovernmental transfers, which was never applied.

Second half of the 1990s. At the end of the 1990s, new administrative (and expenditure) functions were devolved from central to local governments. The 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): Law n. 59/97 ("Bassanini I") and Law n. 127/97 ("Bassanini II") and the subsequent Legislative Decrees (in particular Legislative Decree n. 112/98). In 1997, in exchange for the abolished municipal business tax (Iciap), municipalities received a sharing quota in the regional business tax (Irap) that, starting from 2001, was turned into grant. To finance new local expenditures devolved by the central government, starting in 1999, municipalities were allowed to levy a surcharge on their residents' personal income tax (PIT), with a corresponding reduction in State transfers. The central government maintained its full powers over PIT, including the definition of tax base and tax brackets, while municipal governments could only raise a flat surcharge on their PIT base. The reduction in the amount granted to municipalities was not, however, accompanied by a significant change in the allocation criteria. Despite further changes in late 1990s and early 2000s, when some minor revisions of the allocation criteria were put in place (for example in 2002 the annual amount of transfers to be distributed among municipalities was set as a proportion of the receipts from national PIT), the design of intergovernmental grants remained substantially unchanged.

The 2000s. Since the early 2000s, Italy has been involved in a complex, confused, and still ongoing process of fiscal decentralization. This formally begun in 2001 when the Parliament approved a constitutional reform that 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, and several attempts to implement the reforms have failed. In May 2009, an enabling law on fiscal federalism was approved (Law n. 42/09). This law authorized the Government to issue decrees to regulate

the financial autonomy of local authorities and laid down some rules of a general nature concerning local tax resources, tax equalization, and coordination between the various levels of government. One of the key principles underpinning the law, as stated by art. 1, is "[..] ensuring revenue and expenditure autonomy of municipalities [..], so as to gradually replace, for all levels of government, the criterion of historical expenditure," reflecting the fact that, more than 30 years after the "Stammati decrees" the Italian municipal finance framework is still largely affected by such a criterion. The transition to the new regime of the assessment of the equalization resources (supposed to take place over five years) is still under way and the timing for full implementation of the decrees is long and uncertain. In particular, Legislative Decree n. 23 of 2011 (one of several legislative decrees enacted by the implementation of Law 42/2009 on fiscal federalism) has significantly changed the way in which local governments are financed and, in particular, the design of intergovernmental grants. For the municipalities of ordinary-statute regions, from 2011, central government transfers were replaced with a portion of the proceeds of property taxes and VAT. These resources were allocated to an "experimental rebalancing fund", distributed according to criteria that essentially duplicated the distribution of the abrogated transfer payments. In 2013, such a fund was replaced by a "solidarity fund," powered by a share of the new property tax ("IMU - Imposta Municipale sugli Immobili"). In the same year, the national budget law established the suspension of the VAT revenue sharing for 2013 and 2014.

Concluding remarks. A number of reasons can explain the difficulties for the transition to the new regime of the assessment of equalization resources. 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 regarding the proper implementation of (any) fiscal federalism model aimed 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.

A.2 Full set of empirical results

The following estimation results presented in Tables 2 to A6 complement the results presented in Tables 3 and 4.
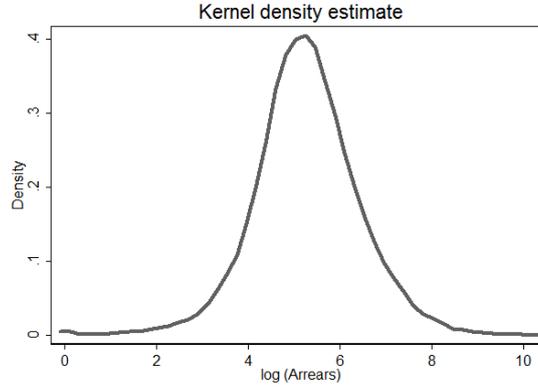
Figure A1: Density of log of Arrears

Table A1: Further summary statistics (Real euros per capita)

VARIABLES	Mean	SD
Payments (Inv.)	61.73	169.62
Stock Arrears (Inv.)	1128.74	1993.88
Tax revenues	247.06	166.83
Touristics bed places per cap.(x100)	11.17	39.61
Roads (km)	81.44	140.20
Non-Mountainous	0.52	0.50
Partially-Mountainous	0.08	0.27
Mountainous	0.41	0.49
Unemployment rate	8.93	7.76
Dependence young pop.	0.20	0.04
Dependence old pop.	0.36	0.14
Population density	313.33	654.65
Tertiary education	4.74	2.25
Non profit organizations per cap. (x1000)	0.52	0.39
Years after elections	1.93	1.48
Mayor first mandate	0.67	0.47
Mayor education	3.30	0.70

Table A2: Stock of arrears at the beginning of the year as an additional control

Column	(1)	(2)	(3)	(4)	(5)
Estimator	OLS	FE	1' stage: 2SLS	2' stage: 2SLS	2' stage: 2SLS
Dependent var.	Arrears	Arrears	log of Transfers	Arrears	Arrears
log of:					
Transfers	-0.027***	-0.033***		-0.199***	-0.179***
	(0.009)	(0.012)		(0.052)	(0.047)
Investment expenditure	1.051***	1.070***	0.013***	1.054***	1.054***
	(0.004)	(0.004)	(0.002)	(0.004)	(0.004)
Interest expenditure	-0.022***	-0.009	0.028***	-0.015***	-0.016***
	(0.005)	(0.013)	(0.006)	(0.005)	(0.005)
Av. Taxable income	-0.001	0.031	-0.551***	-0.089**	-0.078**
	(0.023)	(0.066)	(0.039)	(0.035)	(0.032)
Stock of arrears	0.026***	-0.021***	0.037***	0.034***	0.033***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)
1979 transfers			0.165***		
			(0.012)		
Municipality-level controls	YES	NO	YES	YES	YES
Municipality-fixed effects	NO	YES	NO	NO	NO
Province-fixed effects	YES	NO	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES
Observations	51,166	51,166	51,166	51,166	51,166
R-squared	0.892	0.860	0.565	0.889	0.890
Hansen J (p-value)					0.318

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. In column 4 the excluded instrument is the 1979 transfers, and Transfers is the instrumented variable. In column 5 the excluded instruments are the 1979 transfers interacted with year dummies; Transfers is the instrumented variable. Municipality-level controls include: population size categories; density of population; number of bed places in tourist accommodations; share of young, and share of old population; unemployment rate; dummy variables for the municipality being located in a mountainous area. 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 A3: Province-year dummy variable as additional controls

Column	(1)	(2)	(3)	(4)	(5)
Estimator	OLS	FE	1' stage: 2SLS	2' stage: 2SLS	2' stage: 2SLS
Dependent var.	Arrears	Arrears	log of Transfers	Arrears	Arrears
log of:					
Transfers	-0.021**	-0.031**		-0.128***	-0.099**
	(0.009)	(0.012)		(0.049)	(0.043)
Investment expenditure	1.053***	1.068***	0.021***	1.056***	1.055***
	(0.004)	(0.005)	(0.003)	(0.004)	(0.004)
Interest expenditure	-0.018***	-0.015	0.038***	-0.013**	-0.014***
	(0.005)	(0.013)	(0.006)	(0.005)	(0.005)
Av. Taxable income	0.009	0.034	-0.536***	-0.044	-0.030
	(0.025)	(0.077)	(0.040)	(0.034)	(0.031)
1979 transfers			0.175***		
			(0.012)		
Municipality-level controls	YES	NO	YES	YES	YES
Municipality-fixed effects	NO	YES	NO	NO	NO
Province-fixed effects	YES	NO	YES	YES	YES
Province-year-fixed effects	YES	YES	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES
Observations	51,246	51,246	51,246	51,246	51,246
R-squared	0.891	0.859	0.574	0.890	0.891

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. In column 4 the excluded instrument is the 1979 transfers, and Transfers is the instrumented variable. In column 5 the excluded instruments are the 1979 transfers interacted with year dummies; Transfers is the instrumented variable. Municipality-level controls include: population size categories; density of population; number of bed places in tourist accommodations; km of roads within the municipality; share of young, and share of old population; unemployment rate; dummy variables for the municipality being located in a mountainous area.

Table A4: Political factors as additional controls

	(1)	(2)	(3)		(4)	(5)
Column	(1)	(2)	(3)		(4)	(5)
Estimator	OLS	FE	1' stage: 2SLS	2' stage: 2SLS	2' stage: 2SLS	2' stage: 2SLS
Dependent var.	Arrears	Arrears	Transfers	Arrears	Arrears	Arrears
			log of			
log of:						
Transfers	-0.014*	-0.023***			-0.110**	-0.099**
	(0.007)	(0.007)			(0.053)	(0.048)
Investment expenditure	1.058***	1.073***	0.016***		1.060***	1.060***
	(0.004)	(0.004)	(0.003)		(0.004)	(0.004)
Interest expenditure	-0.013***	-0.005	0.025***		-0.010*	-0.010**
	(0.005)	(0.013)	(0.006)		(0.005)	(0.005)
Av. Taxable income	0.013	-0.035	-0.508***		-0.035	-0.029
	(0.031)	(0.066)	(0.043)		(0.040)	(0.038)
1979 transfers			0.163***			
			(0.012)			
Municipality-level controls	YES	NO	YES		YES	YES
Municipality-level political controls	YES	YES	YES		YES	YES
Municipality-fixed effects	NO	YES	NO		NO	NO
Province-fixed effects	YES	NO	YES		YES	YES
Year-fixed effects	YES	YES	YES		YES	YES
Observations	47,275	47,275	47,275		47,275	47,275
R-squared	0.893	0.861	0.559		0.892	0.893
Hansen J (p-value)						0.450

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. In column 4 the excluded instrument is the 1979 transfers, and Transfers is the instrumented variable. In column 5 the excluded instruments are the 1979 transfers interacted with year dummies; Transfers is the instrumented variable. Municipality-level controls include: population size categories; density of population; number of bed places in tourist accommodations; km of roads within the municipality; share of young, and share of old population; unemployment rate; dummy variables for the municipality being located in a mountainous area. Municipality-level political controls include: index of tertiary educated people; number of non profit organizations per capita; dummies for the years from the past elections; dummy for mayor's first mandate period; dummies for mayor's level of education. 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.

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Table A5: Subsample: Municipalities below 15,000 inhabitants and political factors as additional controls

Column	(1)	(2)	(3)	(4)	(5)
Estimator	OLS	FE	1' stage: 2SLS	2' stage: 2SLS	2' stage: 2SLS
Dependent var.	Arrears	Arrears	log of Transfers	Arrears	Arrears
log of:					
Transfers	-0.014*	-0.021***		-0.189***	-0.147**
	(0.008)	(0.007)		(0.069)	(0.058)
Investment expenditure	1.060***	1.076***	0.016***	1.064***	1.063***
	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)
Interest expenditure	-0.015***	-0.003	0.030***	-0.008	-0.010*
	(0.005)	(0.014)	(0.006)	(0.006)	(0.006)
Av. Taxable income	0.014	-0.029	-0.513***	-0.074	-0.053
	(0.032)	(0.067)	(0.046)	(0.047)	(0.043)
1979 transfers			0.136***		
			(0.013)		
Municipality-level controls	YES	NO	YES	YES	YES
Municipality-fixed effects	NO	YES	NO	NO	NO
Municipality-level political controls	YES	YES	YES	YES	YES
Province-fixed effects	YES	NO	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES
Observations	43,165	43,165	43,165	43,165	43,165
R-squared	0.895	0.863	0.571	0.892	0.893
Hansen J (p-value)					0.144

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. In column 4 the excluded instrument is the 1979 transfers, and Transfers is the instrumented variable. In column 5 the excluded instruments are the 1979 transfers interacted with year dummies; Transfers is the instrumented variable. Municipality-level controls include: population size categories; density of population; number of bed places in tourist accommodations; km of roads within the municipality; share of young, and share of old population; unemployment rate; dummy variables for the municipality being located in a mountainous area. Municipality-level political controls include: index of tertiary educated people; number of non profit organizations per capita; dummies for mayor's first mandate period; dummy for mayor's level of education. 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 A6: Interaction effects

Column	(1)	(2)	(3)	(4)	(5)	(6)
Estimator	OLS	FE	1' stage: 2SLS	1' stage: 2SLS	2' stage: 2SLS	2' stage: 2SLS
Dependent var.	Arrears	Arrears	Transfers	log of Transfers*Inter. exp.	Arrears	Arrears
log of:						
Transfers	-0.055	-0.215***			-0.303***	-0.293***
	(0.038)	(0.063)			(0.103)	(0.094)
Transfers* Interest expenditure	0.010	0.055***	0.019***	0.071***	0.045**	0.045**
	(0.010)	(0.017)	(0.003)	(0.011)	(0.020)	(0.019)
Investment expenditure	1.054***	1.069***	-0.365***	1.197***	1.056***	1.056***
	(0.004)	(0.004)	(0.068)	(0.317)	(0.004)	(0.004)
Interest expenditure	-0.068	-0.303***	-0.550***	-1.859***	-0.249**	-0.248**
	(0.048)	(0.090)	(0.040)	(0.156)	(0.102)	(0.097)
Av. Taxable income	0.007	0.017	-0.087*	-2.080***	-0.059*	-0.054
	(0.025)	(0.066)	(0.045)	(0.193)	(0.036)	(0.033)
1979 transfers			0.076***	0.792***		
			(0.013)	(0.060)		
1979 transfers* Interest expenditure						
Municipality-level controls	YES	NO	YES	YES	YES	YES
Municipality-fixed effects	NO	YES	NO	NO	NO	NO
Province-fixed effects	YES	NO	YES	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES	YES
Observations	51,246	51,246	51,246	51,246	51,246	51,246
R-squared	0.889	0.856	0.565	0.919	0.888	0.888
Hansen J (p-value)						0.102

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. In column 5 the excluded instruments are the 1979 transfers and the 1979 transfers interacted with debt interest expenditures; Transfers and Transfers*Interest expenditure are the instrumented variables. In column 6 the excluded instruments are the 1979 transfers interacted with year dummies as well as the 1979 transfers interacted with debt interest expenditures and with year dummies; Transfers and Transfers*Interest expenditure are the instrumented variables. Municipality-level controls include: population size categories; density of population; number of bed places in tourist accommodations; km of roads within the municipality; share of young, and share of old population; unemployment rate; dummy variables for the municipality being located in a mountainous area. 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.

A.3 Further results

A further prediction of our theoretical model (Section 2) is that higher transfers lead to lower tax revenues (*Tax revenues*). The estimation results in Table A7, columns 1 and 2, indicate that, in our data, higher transfers are actually significantly associated with lower tax revenues. It can also be noted that the coefficient *Av. Taxable income* is positive and statistically significant and smaller than the coefficient of transfers: a unit increase in the taxable income is thus associated with an increase in the tax revenues by a smaller quantity than a decrease in the transfers. These findings are particularly interesting in the light of the literature on the flypaper effect - the empirical phenomenon that results when an increase of one euro of transfers leads to (i) significantly greater public spending than an equivalent euro of citizen income, and (ii) it does not translate in a one-euro reduction of tax revenues or increase in public spending (see Inman (2008) for a survey, and Gennari and Messina (2014) and Bracco et al (2015) for recent empirical analyses on Italy).[23] Although in this paper we are not directly interested in the effect of transfers on taxation choices, these findings, together with the results reported in Table 3 (about the negative effect of the transfers and a non-significant effect of the taxable income on arrears), suggest that one of the reasons why transfers do not fully translate into a similar reduction in tax revenues could be related to the presence of a third channel: part of the transfers are allocated to reduce trade debt (i.e., the expenditure for arrears). Further research in this direction is needed.

We also test the conjecture that if higher transfers reduce the formation of arrears, we would expect that higher transfers should increase payments for investment expenditure planned in the year *Payments*. The estimation results in Table A7, columns 3 and 4, confirm this conjecture.

Finally, Table A8 present our main results after excluding extreme values from the sample. Our findings are confirmed.

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[23]Bracco, E., Lockwood, B., Porcelli, F., and Redoano, M. (2015). Intergovernmental grants as signals and the alignment effect: Theory and evidence. *Journal of Public Economics*, forthcoming.
Gennari, E. and Messina, G. (2014). How sticky are local expenditures in Italy? Assessing the relevance of the flypaper effect through municipal data. *International Tax and Public Finance*, 21: 324-344.
Inman, R. (2008). The flypaper effect. NBER Working Papers 14579. National Bureau of Economic Research, Inc.

Table A7: Further results

Column	(1)	(2)	(3)	(4)
Estimator	OLS	FE	OLS	FE
Dependent var.			log of	
	Tax revenues	Tax revenues	log of Payments	log of Payments
Transfers	-0.194***	-0.059***	0.033*	0.069***
	(0.035)	(0.013)	(0.017)	(0.018)
Investment expenditure	1.949***	0.417***	0.564***	0.469***
	(0.275)	(0.064)	(0.007)	(0.007)
Interest expenditure	0.016***	0.002**	0.079***	-0.080***
	(0.002)	(0.001)	(0.013)	(0.024)
Av. Taxable income			0.173**	0.019
			(0.074)	(0.158)
Municipality-level controls	YES	NO	YES	NO
Municipality-fixed effects	NO	YES	NO	YES
Province-fixed effects	YES	NO	YES	NO
Year-fixed effects	YES	YES	YES	YES
Observations	51,246	51,246	49,725	49,725
R-squared	0.465	0.044	0.350	0.180

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. Note that only in columns 3 and 4 we use logs of dependent and explanatory variables. Municipality-level controls include: population size categories; density of population; number of bed places in tourist accommodations; km of roads within the municipality; share of young, and share of old population; unemployment rate; dummy variables for the municipality being located in a mountainous area.

Table A8: Excluding extreme values

Column	(1)	(2)	(3)	(4)	(5)
Estimator	OLS	FE	1' stage: 2SLS	2' stage: 2SLS	2' stage: 2SLS
Dependent var.			log of		
	Arrears	Arrears	Transfers	Arrears	Arrears
log of:					
Transfers	-0.025***	-0.020**		-0.098**	-0.099**
	(0.007)	(0.010)		(0.049)	(0.046)
Investment expenditure	1.053***	1.069***	0.017***	1.055***	1.055***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)
Interest expenditure	-0.015***	-0.001	0.031***	-0.012***	-0.011***
	(0.004)	(0.008)	(0.005)	(0.004)	(0.004)
Av. Taxable income	-0.002	0.018	-0.449***	-0.032	-0.032
	(0.020)	(0.050)	(0.029)	(0.028)	(0.027)
1979 transfers			0.151***		
			(0.010)		
Municipality-level controls	YES	NO	YES	YES	YES
Municipality-fixed effects	NO	YES	NO	NO	NO
Province-fixed effects	YES	NO	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES
Observations	47,462	47,462	47,462	47,462	47,462
R-squared	0.918	0.900	0.685	0.918	0.918
Hansen J (p-value)					0.170

Notes: Values belonging to the first and last deciles of the distributions of the Arrears, Transfers, Investment expenditure, Debt interest expenditure, and Tax revenues are excluded from the sample. Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. In column 4 the excluded instrument is the 1979 transfers, and Transfers is the instrumented variable. In column 5 the excluded instruments are the 1979 transfers interacted with year dummies; Transfers is the instrumented variable. Municipality-level controls include: population size categories; density of population; number of bed places in tourist accommodations; km of roads within the municipality; share of young, and share of old population; unemployment rate; dummy variables for the municipality being located in a mountainous area. 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.