

HOW STICKY ARE LOCAL EXPENDITURES IN ITALY?
ASSESSING THE RELEVANCE OF THE FLYPAPER EFFECT THROUGH
MUNICIPAL DATA

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How sticky are local expenditures in Italy? Assessing the relevance of the *flypaper effect* through municipal data.

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Preliminary version

May 2009

Introduction

The *flypaper effect* denotes an overreaction of local expenditures to varying transfers from upper-tier governments and it is one of the most explored subjects in the fiscal federalism literature. In the median voter neoclassical model, intergovernmental grants have the same effect of a lump-sum transfer to the residents: the fraction of the transfer spent in local public goods by the grantee is equal to residents propensity to spend on those goods. In this theoretical framework, grants produce a pure income effect and crowd out local revenues: a fraction is spent by the grantee to buy local public goods, and hence sticks to the public sector, while the rest is expected to flow into private consumption through a reduction in tax rates. But in the real world grant revenues have proved to be much more sticky in public budgets than the theory predicts, as local expenditures are strongly stimulated by intergovernmental transfers and are often accompanied by a significant asymmetrical effect, i.e. spending is more sensitive to increases than to cuts in transfers.

Testing the relevance of the *flypaper effect* is not just a fancy empirical exercise. The overreaction of expenditure to transfers can be put in relation with a violation of the assumption of coinciding interests between voters and politicians, which is crucial to the standard theory of fiscal federalism. It has been argued that the stickiness of local spending reveals phenomena of bureaucratic capture, with local policymakers using expenditures as a way to feed their clientele and to perpetuate their tenure (Mc Guire, 1975). This picture would cast some doubt upon decentralisation being *per se* efficiency-enhancing, at least if political control mechanisms are not strengthened, for example with an appropriate design of the electoral system, to enforce policymakers' accountability to local communities.

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In Italy, expectations that decentralisation would support efficiency are growing. The argument is that through a recomposition in subnational governments' receipts, by replacing transfers with own revenues, a more efficient provision of public goods can be achieved. In this framework, assessing the impact of intergovernmental transfers on local budgets is of fundamental importance; furthermore, recent data availability on local council elections allows to add interesting insights about the influence of political factors, in line with recent work by Tovmo and Falch (2008).

In Italy, despite growing emphasis on decentralisation being supportive for fiscal discipline, only few attempts have been made to measure subnational expenditures' sensitivity to State grants. Some evidence of a *flypaper* effect has been found by Levaggi and Zanola for regional health expenditure (2003).² Our research seeks to supplement this dearth of evidence by focusing on municipalities behaviour in the most recent years (2002-06).

In our opinion there are two distinguishing features in our analysis. First, we use data on individual balance sheets. This allows us to exploit a huge variability in the cross section dimension, so as to overcome one of the most substantial critiques to the *flypaper* empirical literature which is the need for micro-oriented studies (Gamkhar and Oates, 1996, p. 510; Bailey and Connolly, 1997, p. 357). Second, we take advantage of recent available information on local council elections and we build some political variables, such as the political orientation of local bodies, their degree of political heterogeneity, the number of days before following elections. Political variables are used - together with standard socio-demographic variables (income, population density, fraction of old, fraction of children, number of taxpayers, education level) - to model the process driving local expenditure decisions. We thus obtain a robust representation of the link between transfers and expenditures, which can also be viewed as a test for the presence of municipalities budget maximising behaviour.

The rest of the paper is structured as follows. The first section introduces the flypaper effect, which arises as a violation to the traditional theory of intergovernmental transfers. The second section focuses on the Italian context, describing the design of the transfer system to municipalities and how it has evolved along the path towards decentralisation in the last two decades. The third section is devoted to the empirical testing: it opens with a description of our data set, then it outlines our model and finally it discusses its results. The fourth section concludes by drawing the implications of our results for future lines of research.

Economics of intergovernmental transfers and the *flypaper* effect

An extensive literature analysed the impact of upper tier transfers on spending behaviour of lower level governments. According to the median voter framework, grants can induce income and price effects which shift local demand for public goods. More specifically, non-matching grants act as lump sum transfers and are thus associated with a pure income effect. Matching grants have instead a greater stimulatory power, as they couple income and substitution effects, the latter stemming from a reduction in public goods relative prices (see Gramlich, 1977 for an overview).

According to the traditional theory, the impact of lump sum transfers is the one depicted in figure 1a. The horizontal axis measures public expenditure G in both money and real terms (i.e. price is set equal to one), while the vertical axis represents total post-tax income Y . Local community preferences are exemplified by the indifference curves of a representative individual, the median

² The recent work by Legrenzi (2009) analyses in a more general framework local government revenues and expenditures at the aggregate national level finding evidence of a budget maximising behaviour of municipalities. There is not, however, any attempt to measure the size or to qualify the type of the flypaper effect.

voter. The constraint faced by the local decision-maker in allocating goods between public and private sectors is given by the budget line AB, whose slope is equal to the individual's local tax share h (i.e. one additional unit of public good can be provided at the expense of h units of private income). An unconditional grant of Z shifts the equilibrium from e_1 to e_2 , where the community indifference curve is tangent to the new budget line CD. The change in local expenditures is expected to be less than the size of the transfer: in the new equilibrium, Y increases along with G since the lump sum transfer substitutes for local taxes. Thus the standard prediction of the theory is the "equivalence theorem": from the point of view of local spending, transfers paid by central government produce the same effect as increases in private income (from the graph, if Y increased by $W=hZ$ units the budget line would in the same manner shift to CD).

The *a priori* theoretical equivalence between the stimulative impact of unconditional transfers and private income has been disproved by empirical literature. An active area of research has dealt with the so called *flypaper* effect, which points to the occurrence of two kinds of asymmetries in the reaction of local expenditure to unconditional transfers from upper tiers.

A first type of asymmetry concerns the magnitude of the elasticity to increases in private income as compared to lump-sum transfers: empirically the first has proved to be significantly smaller than the latter, thus contradicting the equivalence theorem. This is the standard *flypaper* effect as it was labelled by Arthur Okun since "*money sticks where it hits*" (Courant et al. , 1979), meaning that the reallocation of resources between public and private sector is limited and that money is mainly spent by the sector which receives it first. Graphically, this implies that the new equilibrium lies along a path as EP, which is located to the right of the e_1e_2 line in Figure 1b.

Additional sources of asymmetry are related to the sign of the variation in transfers (cuts versus increases). Losses in transfers may be partly compensated by local governments which are willing to preserve existing expenditures by raising additional taxes: this is the "fiscal replacement" effect observed by Gramlich (1987)³. Alternatively, local governments may magnify the spending response to cuts in grants by lowering own revenues as well: this gives rise to the "fiscal restraint" type of asymmetry also called *super-flypaper* effect by Gamkhar and Oates (1996). In the "fiscal replacement" case spending is less sensitive to cuts than to increases in central transfers, while the opposite occurs in the "fiscal restraint" case. For the sake of graphical representation, starting from e_2 , if the budget line moves from CD to AB the equilibrium path EP would lie to the right of e_2e_1 in the fiscal replacement case (Figure 2a), and to the left in the fiscal restraint case (Figure 2b).

Several tests of the *flypaper* have been carried out for the US transfer system and support the evidence of an elasticity of expenditures to grants ranging from 25 to 100 per cent, significantly greater than the estimated propensity to spend out of private income (see the reviews by Hines and Thaler (1995), Bailey and Connelly (1998), and Dollery and Worthington (1996)). The proliferation of such studies was undoubtedly favoured by the deepness of data availability as well as by the wide use of grants in the US economy⁴.

By contrast, the evidence on other countries is scattered and less conclusive: the *flypaper* seems to be relevant for British (Gemmell et al., 2002), Flemish (Heyndels, 2001) and Norwegian local governments (Tovmo and Falch, 2002), as opposed to Australian ones (as showed by Dollery and Worthington, 1999). Turning to the Italian case, some attempts to measure the sensitivity of

³ The fiscal restraint type of asymmetry as been dubbed as "money sticks where it hits, but it comes unstuck without leaving a gaping hole" (Gamkhar and Oates, 1996, p. 502).

⁴ The Census of Governments collects every five years budget data from states, counties, cities and other municipalities, independent school districts and special districts. For intergovernmental grants, the Census of Governments details the source or revenue destination of payments (federal, state or local) and the policy function to which it is dedicated.

subnational expenditures to State grants in Italy have been made by Levaggi and Zanola (2003), who found evidence of a standard and super *flypaper* effect in regional health expenditure in the years from 1989 to 1993. However, it is difficult to draw from this study a more general lesson, since the cross section dimension is very narrow (18 regions), and the time interval doesn't cover some relevant structural changes that could have impinged on regions' propensity to spend (i.e. the fiscal decentralisation reform of the late nineties). More recent evidence has been found by Legrenzi (2009) who also focused on Italian municipalities. This study detected a downward inflexibility of both local spending and local taxation in the period 1955-2003, but the empirical analysis is conducted at the macro level and could suffer from composition effects due to the substitution, in the period analysed, of state transfers with own revenues.

A number of theoretical explanations have been found for the flypaper effect. Following Bailey and Connelly (1998), supply as well as demand factors may produce asymmetries in the spending response to intergovernmental grants. On one hand, the overreaction of expenditure can derive from the lack of a cohesion of interests between voters and their representatives, which is viceversa assumed in the median voter's model. Decision makers may aim at maximising their own (instead of the community) utility function whose arguments depend positively on local budget.; in that case a rise in voters income is expected to have a lower impact than an equivalent increase in intergovernmental grants (Niskanen, 1968). A similar explanation can be advanced on the basis of the "greedy politicians" model developed by McGuire (1975), who argued that politicians seek at perpetuating their tenure and use local expenditure to feed their clientele. Demand-side factors may also be relevant; in particular several studies point to the flypaper effect as an evidence of voters' fiscal illusion (Oates, 1979 and Courant, Gramlich, Rubinfeld 1979). When spending is financed by lump sum transfers, the tax price of the services provided by local governments is reduced on average but is unaffected at the margin. Voters set the desired level of local expenditure confusing the marginal price with the lower average price: lump-sum grants have thus not only an income but also a substitution effect and this generates the flypaper effect. Finally, according to Hines and Thaler (1995), the phenomenon may arise because of loss aversion of taxpayers, i.e. higher sensitivity to decreases than to increases in income, and of lack of fungibility, i.e. a different treatment of the various types of fund (such as grants and tax cuts).

An alternative empirical explanation is that the overreaction of spending is merely an econometric artefact, resulting from some kind of model misspecification. According to Becker (1996) an inappropriate functional form as well as the possible endogeneity of grants in spending decisions tend to overestimate the size of the flypaper effect⁵. The empirical results may also be biased by the type of grants analysed: grants perceived as unconditional by the researcher may implicitly include some matching elements and thus produce a greater stimulatory impact than pure lump sum transfers.

A descriptive analysis of transfers from government to municipalities in Italy

State transfers are crucial to the financing of local spending in Italy, though their role has been decreasing over the last two decades as a mirror to an ongoing process of fiscal decentralisation. According to national accounts data, intergovernmental transfers currently cover two fifths of

⁵ Becker (1996) shows that the choice of a linear rather than a logarithmic specification inflates the spending elasticity to grants by a factor of six. Similarly endogeneity creates an upward bias by a factor of almost ten.

subnational governments' expenditures⁶; that ratio was three fifths in the nineties and three quarters in the eighties (Figure 5).

Up to the early nineties local public finance was substantially based on State financing. As for municipalities, their revenues drew heavily upon transfers, which resulted from yearly negotiations with central government⁷. Most transfers were earmarked and were allocated in such a way to compensate for individual differences between spending and own revenues. This weakened local administrators' budget constraint and generated overspending, contributing to the deterioration of the overall fiscal framework.

With the start of the monetary unification process the need for Italy to engage in budget consolidation became imperative. Decentralisation gained momentum as a means to improve fiscal discipline by establishing a closer relationship between expenditure and revenue responsibilities for subnational governments⁸. Local public finance was subject to substantial changes: own taxes were enhanced, whilst decreasing the share of expenditures covered by intergovernmental transfers. In line with the experience of other countries, the reform of subnational governments' financing system became an important instrument in the fiscal adjustment process which started in the mid nineties (Figure 3)⁹.

From the point of view of timing, municipalities led the transformation of Italian local public finance: their revenue structure was reformed in 1992, with the assignment of a property tax along with the rationalisation of transfers from State. The latter were grouped into five categories, three of which were devoted to the financing of current expenditures and were largely unconditional¹⁰. The criteria for grant allocation were renewed so as to reflect structural parameters (i.e. demographic, socio-economic and fiscal indicators), the aim being to break the recursive link between transfers and local expenditures that had been so noxious for fiscal discipline in the previous decades. Further changes occurred in 1997, when some minor revisions of the allocation criteria were put in place¹¹, and in 2001, when the annual amount of transfers to be allocated among municipalities was set as a proportion of the receipts from national personal income tax¹².

The evolution of municipal tax revenues, primary expenditures and transfers from public governments is depicted in figure 4. The figure is based on national accounts data, expressed in real

⁶ Local public finance in Italy comprises three levels of government: Regions (Regioni), Provinces (Province) and Municipalities (Comuni). Municipal functions include public illumination, waste disposal, road maintenance, local transports, social aid, childcare and primary schooling.

⁷ This was a consequence of the fiscal reform of the early seventies, which centralized most of taxing and collecting powers to the State. The reform suppressed several local taxes (such as the family tax, the consumption tax and the tax upon the value increases of building areas), compensated by the provision of transfers from central government.

⁸ For a thorough description of the path towards fiscal decentralisation in Italy see Franco, Messina, Zotteri (2004).

⁹ Darby, Roy and Muscatelli (2004) collect evidence for a panel of 15 OECD countries concerning the timing of expenditures, taxation and intergovernmental grant shifts around periods of fiscal consolidation. They show how attempts for consolidation at central government bring substantial changes in lower-tiers financing system.

¹⁰ More specifically the funds envisaged by decree n. 504/1992 were the following. As for current expenditures: *i*) the ordinary fund ("fondo ordinario"), which was the most relevant and was devoted to the financing of the fundamental services provided by municipalities; *ii*) the consolidated fund ("fondo consolidato"), which encompassed all financial flows coming from previous special laws; *iii*) the equalization fund ("fondo perequativo degli squilibri della fiscalità locale"), aimed at compensating low fiscal capacity municipalities. As for capital expenditures: *i*) the ordinary fund for investments ("fondo nazionale ordinario per gli investimenti"), addressed to the generality of municipalities; *ii*) the special fund for investments ("fondo nazionale speciale per gli investimenti"), subject to *ad hoc* assignments.

¹¹ Decree n. 544/1997 introduced new parameters concerning the broadness of the services provided, the presence of military bases and indicators of socio-economic decay and of fiscal effort.

¹² In application of the financial law 448/2001, in 2002 each municipality was granted with a fixed share of 4,5 per cent of the receipts from personal income tax (to be deducted from the amount of ordinary transfers); the share was subsequently increased to 6,5 per cent in the years from 2003 to 2006..

terms on a per capita basis. We can observe a sharp fall of transfers in 1992-1993, which is a composition effect due to the introduction of the municipal property tax. The trend for transfers kept on downwards up to 1995, and was then followed by periods of alternating dynamics: a slight increase from 1996 to 1998, a decline from 1999 up to 2005, which was temporarily interrupted in 2001 (when municipalities were granted a financial compensation for the abolition of some minor local taxes) and in 2004, and a strained growth in the last two years. The evolution of expenditures was similar and apparently sensible to that of transfers, particularly in the years from 1995 to 2001. A change seems to have occurred by 2002: expenditures kept on growing, although transfers were not, and was partly financed by increases in tax revenues. The trend inverted in 2004, when expenditure resumed to follow the path of decreasing transfers; it has to be noticed that from 2003 to 2006 municipalities were prevented to use some of their fiscal powers as a way to curb local expenditures¹³.

Overall, the aggregate data seem to show anecdotic evidence of a strong reaction of local expenditures to State transfers up to 2001, and of a somewhat fiscal replacement behaviour in the two subsequent years. But this analysis can be misleading and has to be supplemented by an investigation at the micro level, that we present in the following section.

Testing the flypaper effect

The dataset on municipalities

In order to test for the presence of the flypaper we gathered information using various data sources: on municipal accounts, income tax returns, demography, education, administrative elections. Data cover the period 2002-06 and approximately all (around 8,000) Italian municipalities.

Data on municipal expenditures, revenues and grants are disclosed by the Italian Home Office, which gathers information on expenditures and revenues from all Italian municipalities on a yearly basis. As a proxy of the median voter income we use the average personal income coming from the database on income tax returns of the Revenue Agency which also provides data on the number of tax payers at municipal level.

In order to avoid an “artificial” flypaper effect as a result of the omission of relevant variables, we control for other factors: demography, the socioeconomic status of residents and political variables, which represent the most innovative part of our data set.

As to demography, we include population size, population density, population class (i.e. an index that varies from 1 to 5 according to the population size) and the percentage of children up to 10 years. The latter is important in order to account for the population age, which may influence the pattern of local spending as municipalities deal with the provision of many social services to old-age people.

Following Wickoff (1991), we used the educational level of the community as additional explanatory variable, as an indicator of the type of residents in the municipal jurisdiction. Following Hamilton (1983) and some works by Oates (1977, 1981) the socioeconomic status of the residents could influence the possibility of attaining a given standard in the provision of public services with

¹³ In particular, municipalities were not allowed to increase rates for the local surcharge on personal income tax. For this kind of tax, the revenue effects of varying rates are observed with a one year lag.

a lower level of expenditures. Data on education have been drawn from a comprehensive municipal dataset released by the National Statistical Office (Istat)¹⁴.

Political factors generally play a major role in the level and the dynamics of local public expenditure. As a matter of fact, one of the most popular explanations for the flypaper effect is represented by the misalignments between the objectives of the local politician and the preferences of the median voter so that grants to municipalities are not viewed in the same light as additional income available to the community. The politician may seek to maximise his own utility function and thus, for instance, the probability of being re-elected. This is first accounted for by the introduction of a variable which measures the number of days before the following local council election, the rationale being that incentives to spend public money are higher when elections are near.

Spending decisions are also likely to be influenced by bureaucratic power, which in turn depends on the political structure. Some recent contributions (Tovmo and Falch, 2008) showed that fiscal policy is affected by the strength of political leadership, which is negatively related to spending, deficit and tax rates. To take account of this effect we have constructed a variable representing political strength (*COMP*) similar to that reported in Borge *et al.* (2008). *COMP* measures the compactness of local bodies through an Herfindal index of the share of each party figuring in local councils, i.e.

$$COMP_i = \sum_{p=1}^P Q_{ip}^2$$

where, for each local council i , Q_p is the fraction of representatives belonging to party p . The index ranges from $1/n$, when the seats in the council are equally divided among the n parties (maximum political fragmentation), to a value of 1, which is attained when only one party is locally represented (minimum political fragmentation). One economic rationale for *Comp* is that a weak government would be more prone to bargaining and more reluctant to cut spending, as it would find it difficult to resist to pressures from local interest groups. On the other side, however, political fragmentation can be the expression of some sort of heterogeneity in municipal community and this can make spending decisions more difficult¹⁵.

In addition to the political variables described above we also consider the political side of the local majority. The first dummy (*majority*) takes the value 1 if the majority in the local council is the same of the central government, the second if it belongs to the left wing party (*left*)¹⁶. All data on political variables come from the database on local and general elections of the Home Office.

Finally, to account for the higher costs due to a different orography we include a variable (*altimetry*) representing the altitude of the local chief town.

As pointed out before, there are five Italian regions whose, under a fiscal point of view, have a “special” status. These regions have a different financing system and enjoy greater autonomy from the central government with respect to spending behaviour. Municipalities belonging to these regions somewhat share this special status and we thus add a dummy variable which takes the value 1 if the unit belongs to one of these five regions and 0 otherwise.

¹⁴ Statistical atlas on municipalities (Atlante statistico dei Comuni).

¹⁵ This is the justification given by Heyndels (2001) for the introduction of a measure of income dispersion in an analogous model of local expenditures.

¹⁶ We do not include the dummy for the right wing party since the conclusions would be analogous.

In table 1 we report some descriptive statistics of our dataset, the mean, the standard deviation, minimum and maximum of the variables described above.

Table 1

	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
<i>Per capita expenditures</i>	1451	1520	0	78118
<i>Per capita transfers</i>	280	241	0	4012
<i>Per capita Income</i>	17865	2852	9331	83244
<i>Population density</i>	2.94	6.33	0.01	127.83
<i>Population size</i>	7286	43512	32	2705603
<i>% of population < 10 years</i>	9.48	2.09	0.00	18.90
<i>Educational level</i>	27.60	6.32	5.26	72.11
<i>Days before next election</i>	1243	528	74	2322
<i>Index of coalition compactness (COMP)</i>	75.52	28.10	7.00	100.00
<i>Number of taxpayers (per capita)</i>	0.73	0.08	0.32	1.66
<i>Altimetry index</i>	340	289	0	2035

The estimated model

Our empirical analysis is aimed at detecting the *flypaper* effect by measuring two types of asymmetries in the reaction of expenditures to transfers: the first type concerns the magnitude of the elasticity to increases in private income as compared to lump-sum transfers (this is the standard *flypaper* effect); the second type of asymmetry is related to the sign of the variation in transfers (cuts versus increases). In particular, our analysis is based upon the estimation of the following panel data model:

$$S_{it} = \alpha_0 + \alpha_1 T_{it} + \alpha_2 A_{it} + \alpha_3 Y_{it} + \bar{\beta} X_{it} \quad \text{Eq. 1}$$

where S_{it} is the level of total expenditure, T_{it} is the level of transfers from the central government, A_{it} is introduced to capture an asymmetric effect on transfers, Y_{it} is the private income and X_{it} is the vector of controls described above.

The model is estimated using random-effects to exploit both cross sectional and time variation. As a matter of fact the use of fixed effect estimation implies wiping out the most relevant information, which is given by the variability across municipalities, to exploit only the time variability of each municipality. The issue of possible correlation between the error term and explanatory variables, which makes the random effect estimator inconsistent, is dealt with introducing as many controls as possible¹⁷.

We actually estimate different types of model according to the control variables included. In model I (table 2) we include the controls above described for demography, for education, taxpayers and include also the political factors (the number of days before next election and the Herfindal index

¹⁷ We also checked whether the fixed effect estimates are in line (magnitude and significance) with the random effect ones.

for compactness of local bodies). In model II-IV we add, in turn, the dummy majority, the dummy left and the municipal class. Following Gamkhar and Oates (1996), Heyndels (2001) and others we include a variable to account for a possible asymmetrical effect of transfers on expenditure. The variable is the following:

$$D_t(G_t - G_{(t-1)})$$

where D_t is a dummy variable which is equal to 1 when transfer at time t are lower than those at time $t-1$. Results highlight the presence of a significant flypaper effect: the coefficient of the grant variable is more than 40 times the one of the average income variable¹⁸. There is, however, no strong evidence of an asymmetrical effect of transfers on expenditures.

Demographic factors influence local expenditures which are lower when the percentage of young population is higher. Population size matters as well as population density. The higher the municipal class, the lower are per capita expenditures, pointing out at some economy of scale in the administration costs. Moreover, as expected, the altitude of the municipality raises the costs. The coefficient of the level of education attained by the population in the municipality is instead not significant. There is thus no particular evidence of a correlation between the “quality” of the population measured by its education level and the amount of local public expenditure. Belonging to a region with “special status” implies as expected a higher level of per capita expenditure as a result of higher funding from the central government.

Political factors are important. The number of days left to local administrators before next voting negatively affects expenditures, i.e. when voting is approaching, expenditures soar. The strength of the coalition in the local board is significant and positive: this means that the lower is the political fragmentation, i.e. the higher is the political strength of the majority, the higher the expenditure per capita. The accordance of the local majority with the one of central government is however, never significant, nor is the political side.

Exploring the link between municipal own revenues and upper tier transfers

On the basis of the evidence found in the previous section, per capita municipal expenditures vary according to central government transfers in a symmetrical manner. This means that there isn't any fiscal replacement mechanism at work. To check whether this is the case we look at the behaviour of municipal own revenues. We do not expect any asymmetric effect in local revenue response either.

¹⁸ The magnitude of the coefficients is comparable to the one obtained by Heyndels (2001) using a dataset on Flemish municipalities whose coefficient are equal to 1.13 for grants and 0.039 for income.

Table 2. Dependent variable: per capita expenditures

	(i)	(ii)	(iii)	(iv)
<i>Per capita income</i>	0,03646	0,03655	0,03675	0,03588
	0,000	0,000	0,000	0,000
<i>Per capita transfers</i>	1,58898	1,58820	1,59049	1,59256
	0,000	0,000	0,000	0,000
<i>Asymmetrical term on transfers</i>	-0,00038	-0,00038	-0,00038	-0,00038
	0,120	0,121	0,118	0,122
<i>Population size</i>	0,00052	0,00053	0,00052	0,00039
	0,015	0,015	0,016	0,074
<i>Population density</i>	5,64381	5,66473	5,61538	4,38201
	0,001	0,001	0,001	0,009
<i>% of population < 10 years</i>	-26,30799	-26,59789	-26,04440	-26,62496
	0,000	0,000	0,000	0,000
<i>Educational level</i>	1,72674	1,73246	1,61780	0,95857
	0,350	0,348	0,382	0,607
<i>Days before next election</i>	-0,09725	-0,09575	-0,09670	-0,09715
	0,000	0,000	0,000	0,000
<i>Index of coalition compactness (COMP)</i>	1,16768	1,25857	1,34758	1,67655
	0,001	0,000	0,000	0,000
<i>Number of taxpayers (per capita)</i>	2508,6	2511,3	2508,2	2529,2
	0,000	0,000	0,000	0,000
<i>Altimetry index</i>	1,39401	1,39486	1,39600	1,40887
	0,000	0,000	0,000	0,000
<i>Municipality Class</i>				-39,61086
				0,004
<i>Dummy Majority</i>		22,39693		
		0,395		
<i>Dummy Left</i>			29,81082	
			0,209	
<i>Dummy RSS</i>	997,9102	998,0651	999,539	995,4145
	0,000	0,000	0,000	0,000
<i>Constant</i>	-1881,697	-1895,033	-1908,103	-1723,224
	0,000	0,000	0,000	0,000
<i>Obs</i>	20118	20118	20118	20118
<i>R²</i>				
<i>within</i>	0,2619	0,262	0,2618	0,2622
<i>between</i>	0,2986	0,2984	0,2988	0,2989
<i>overall</i>	0,2774	0,2774	0,2774	0,2777

Following Stine (1994) we thus estimate an additional equation for municipal own revenues R_{it} :

$$R_{it} = \gamma_0 + \gamma_1 T_{it} + \gamma_2 A_{it} + \gamma_3 Y_{it} + \gamma_4 S_{it} + \theta D_i \quad Eq. 2$$

where the only control variable introduced here is the dummy for the special status regions. The additional equation is estimated using random effect where local expenditures are here instrumented with the variables in equation 1.

Results (table 3) show a negative correlation between central government transfers and municipal own revenues but no significant asymmetrical effect. Results are thus coherent with those found in the previous section. As pointed out before, this may also be the result of the particular time span use in this analysis in which municipalities were largely prevented from varying their own taxation to cope with transfers cuts.

Table 3. Dependent variable: per capita own revenues

<i>Per capita income</i>	0.01729
	0.000
<i>Per capita transfers</i>	-0.221
	0.000
<i>Asymmetrical term on transfers</i>	8.2E-06
	0.823
<i>Total Expenditure per capita</i>	0.68402
	0.000
<i>Dummy RSS</i>	-258.87
	0.000
<i>Constant</i>	-336.83
	0.000
<i>Obs</i>	20118
R^2	
<i>within</i>	0.6385
<i>between</i>	0.6976
<i>overall</i>	0.6632

Concluding remarks

The *flypaper* effect is one of the most popular and documented subjects in the fiscal federalism literature. Despite a widespread success overseas, in Italy the empirical research on this matter is only at an embryonic stage. Our work has started to fill this gap, by investigating the extent to which spending decisions by municipal governments are influenced by changes in their revenue structure.

Results have highlighted a remarkable flypaper effect but no evidence of an asymmetrical response of expenditures to central government transfers. Political factors have a strong link to local spending which is higher when there is strong majority in the municipal council and when administrative voting approaches. Demography matters as well but the educational level of the community does not. Coherently with what is found on the expenditure model, municipal own revenues do not react asymmetrically to changes in State transfers.

Our work is to be put in perspective as it tries to shed light on the underground mechanism which may drive subnational governments decisions. One of the limit is, however, that it does not assess the welfare implications of the *flypaper*, which was obviously beyond the scope of our analysis. The excessive stimulus coming from upper-tier transfers may, in fact, well be welfare improving, if the right type of spending is encouraged and citizens get their value for money. The US literature has started to study the non fiscal outcomes of the *flypaper* effect: as an example, the work by Baicker and Stager (2005) concludes that federal grants, although sticky, have significant impacts on hospital care and mortality. As Gramlich (1977, p. 235) observed: “past empirical work has made a start – it is better to know how much money was spent than nothing – but there is clearly more to grant evaluation”.

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Lump-sum transfers and local expenditure

Fig 1a: traditional theory

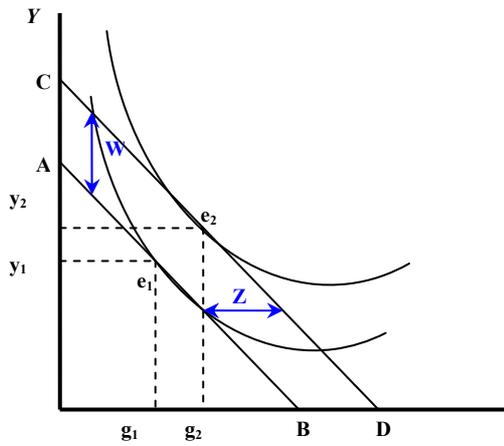
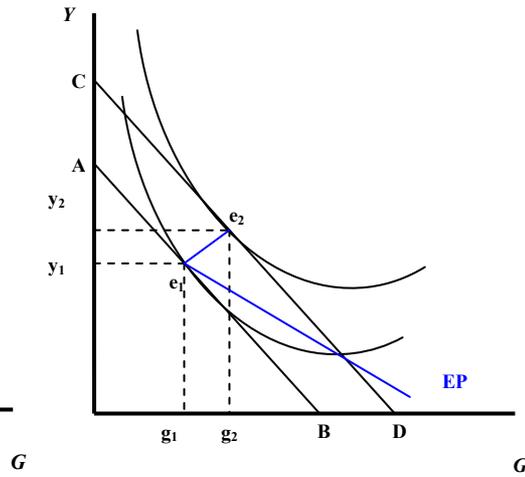


Fig 1b: standard *flypaper* effect



Lump-sum transfers and local expenditure

Fig 2a: fiscal replacement

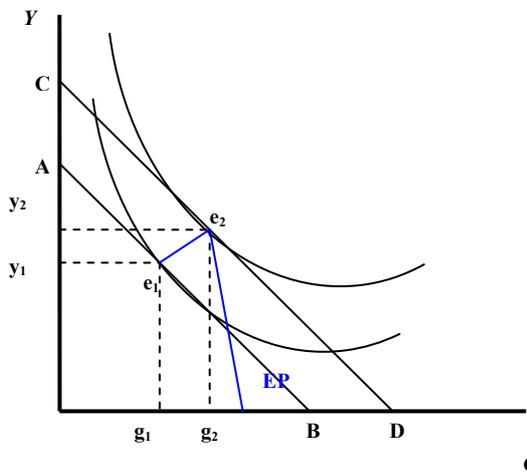


Fig 2b: super *flypaper* effect

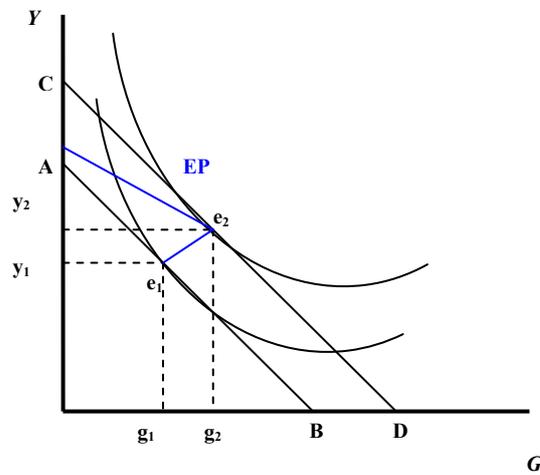
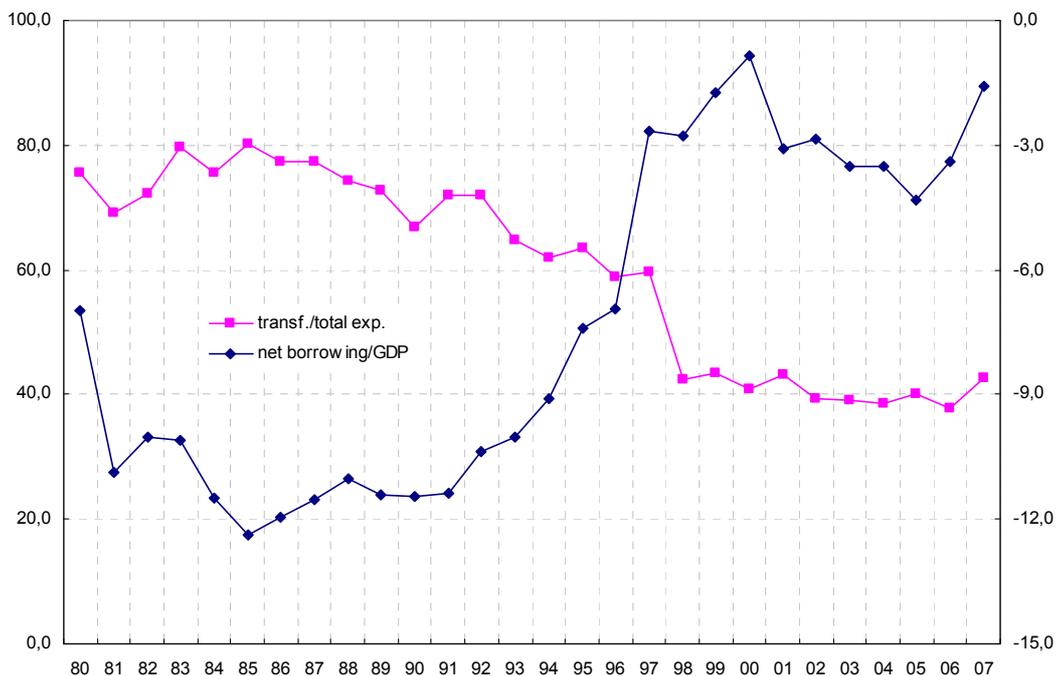


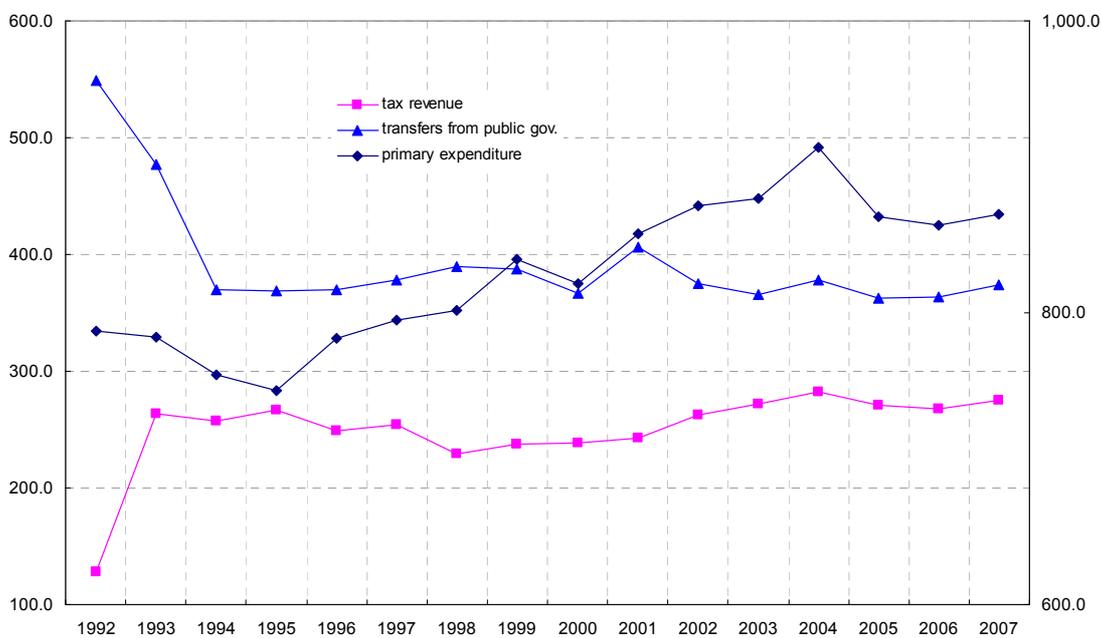
Fig. 3

Transfers to subnational governments and net borrowing from 1980 to 2007
(as a percentage of local expenditures and of GDP respectively)



Source: Istat, *Local Government Accounts* (for transfers and local expenditures; scale on the left) and *General Government Accounts* (for net borrowing; scale on the right).

Fig. 4



Source: Istat, *Local Government Accounts*.