



# Fiscal Rules and Public Spending: Evidence from Italian Municipalities

Wildmer Daniel Gregori

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Italian Municipalities' financial stability is a key issue for the Central Government.

Since 1999, in Italy has been implemented a set of rules called Domestic Stability Pact (DSP), in order to coordinate and control subnational budget balances. These rules are set every year by the National level and there are variations in both the fiscal rules typology and in the number of Municipalities subject to the DSP.

The aim of this paper is to analyze the effectiveness of subnational fiscal rules, studying their impact on Italian Municipalities' budget spending composition.

## Motivation

In order to coordinate different Government levels, fiscal rules are desirable. Why?

- To achieve greater efficiency through decentralization at local level.
- Opportunity costs: due to the fiscal gaps financed by the central government through transfers, there may be an incentive to increase excessively local expenditure.
- Moral hazard: in case of large deficits, the national level intervenes transferring more resources, therefore local fiscal imbalances are charged onto the overall population.
- are in charge of providing a large variety of public goods and services and they manage about 50% of total direct public investment expenditure (1.3% of GDP).
- To guarantee macroeconomic stability: local defaults may generate economic instability.

**Figure:** Number of Italian municipalities' default in the period 1989-2012

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Piemonte		1	2	1	1																				5
Lombardia		3	3	5	1	1					1												1		15
Liguria	1			2																			1		4
Veneto	1			1				1																	3
Emilia Romagna	1		4	1		1			1																8
Toscana	3	1																					1		5
Umbria	2	1				1																			4
Marche	2	1	1			1										1									6
Lazio	7	2	5	2	7	3	3	2		1		2		1			1	1		1	2	2	1		43
Abruzzo	6	1	1	4	1	1	3														1				18
Molise	4	4		1	2	1															1	2			15
Campania	18	18	10	12	22	14	2	1	5		2	1		1	1	1		2		1		3	4	3	121
Puglia	21	4	2	4	2		1												1						35
Basilicata	4	3	3	1	3	2	2	1																	19
Calabria	51	22	13	10	11	7	2	3	1		1		1	1	1					3		1	1	2	131
Sicilia	2	3	1	2	2	6	3	1			1						2	1					1		25
Sardegna	2													1											3
	<b>125</b>	<b>64</b>	<b>45</b>	<b>46</b>	<b>52</b>	<b>38</b>	<b>16</b>	<b>9</b>	<b>7</b>	<b>1</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>5</b>	<b>4</b>	<b>8</b>	<b>10</b>	<b>5</b>	<b>460</b>

From an empirical point of view, previous works have shown:

- (Compliance) The ability of subnational levels to meet the DSP requirement (Patrizzii et al., 2006; Giurato and Gastaldi, 2009);
- (Effectiveness) Grembi, Nannicini, Troiano (2013) study the effect of relaxing the DSP considering the period from 1999 to 2004: fiscal rules are effective in reducing debt accumulation and adjustments are on the revenues side.

What am I adding?

- (Effectiveness) I study the the extent to which fiscal rules variations affect public spending composition.

## The Domestic Stability Pact:

- has been introduced in 1999;
- the number of inhabitants is used to discriminate whether a Municipality is subject to the DSP;
- There are penalties in case of non-compliance: impossibility to hire employees, prohibition to use debt to finance investments;
- Prizes: reduction of the expenses on interests for loans contracted with central government; virtuous municipalities have higher cap levels;
- fiscal rules have often changed.

# Normative framework

Year	Number of inhabitants		
	<3000	Between 3000 and 5000	>5000
2004	no	no	yes
2005	no	yes	yes
2006	no	no	yes

Fiscal rule in:

- 2004. Budget balance: the total amount of revenues has to be equal to the total amount of expenditures.
- 2005. Total expenditure cap: total expenditures cannot exceed the average of years 2001, 2002 and 2003 augmented of 11.5%;
- 2006. A cap on Consumption, equal to 2004 decreased by 6.5%, and on Investment, equal to 2004 increased by 8.1%.
- Golden rule: new loans can be used only to finance Investment (in order to align the long run benefit with the related costs).

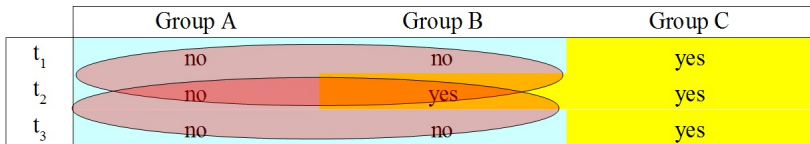
The peculiarity of this institutional framework provides an opportunity to study the impact of the DSP through a “natural experiment”.



# Identification Strategy

## Step 1 (Case 1)

	Group A	Group B	Group C
$t_1$	no	no	yes
$t_2$	no	yes	yes
$t_3$	no	no	yes

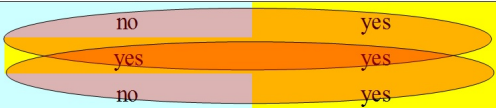


- Cut-off level is at 3,000 inhabitants;
- Assignment is based on population level;
- Outcomes of interest are budget items;
- Control (Group A) vs Treated (Group B) group;
- The treatment is either the introduction of the DSP (**Case 1A**) or its exemption (**Case 1B**).

# Identification Strategy

## Step 2 (Case 2)

	Group A	Group B	Group C
$t_1$	no	no	yes
$t_2$	no	yes	yes
$t_3$	no	no	yes



- Cutoff level is at 5,000 inhabitants;
- Assignment is based on population level;
- Outcomes of interest are budget items;
- Control (Group B) vs Treated (Group C) Group;
- The treatment is the variation of the fiscal rule. Thus, I analyze the effect, in **Case 2A**, of the “budget balance” rule, while in **Case 2B** the “cap on Consumption and Investment separately”;

# Identification Strategy

- There is a confounding discontinuity at the cutoff: the mayor and the members of the executive committee receive different wages and therefore perform differently (Gagliarducci and Nannicini, 2011), thus Continuity of potential outcome does not hold (no RDD).
- Difference-in-discontinuity design. Considering the following assumptions:
  - ① The confounding discontinuity needs to be time invariant. This is true because mayors' wages do not change in the analyzed period.
  - ② The interaction between the treatment and the confounding discontinuity has to be irrelevant. Thus, there should not be an interaction between mayors' wages and the DSP.

# Identification Strategy

Under these assumptions, there is an estimator  $\hat{\phi}$  that identifies the local treatment effect  $\phi$ :

$$\hat{\phi} \equiv \left( \lim_{P_m \uparrow P_c} E[Y_{mt} | P_m, t = t_1] - \lim_{P_m \downarrow P_c} E[Y_{mt} | P_m, t = t_1] \right) + \\ - \left( \lim_{P_m \uparrow P_c} E[Y_{mt} | P_m, t = t_0] - \lim_{P_m \downarrow P_c} E[Y_{mt} | P_m, t = t_0] \right) \quad (1)$$

where  $Y_{mt}$  is the potential budget outcome for municipality  $m$  at time  $t$ ,  $P_m$  is the population level,  $t_1$  is the year of the treatment and  $t_0$  is the previous one.

For each case, the assignment to the treatment is given by the dummy  $D_{mt}$  which takes the value:

$$D_{mt} = \begin{cases} 0 & \text{if } t = t_0 \\ 0 & \text{if } P_m \leq P_c, t = t_1 \\ 1 & \text{if } P_m > P_c, t = t_1 \end{cases}$$

## Data:

- come from the Italian Ministry of the Interior and Istat website;
- Special autonomous provinces (Trento and Bolzano) and regions (Trentino-Alto-Adige, Friuli-Venezia-Giulia, Valle d'Aosta, Sicilia, Sardegna) are not considered;
- Values are in Euro per-capita, and deflated using as reference year 2006;

The database includes, among others, the following variables:

- Public spending: Consumption (Wages, Services); Investment (Infrastructure)
- Robustness checks:
  - Total surface (in  $Km^2$ ); Altitude (in meters);
  - Altitude zone (dummies): Inland mountain, Coastal mountain, Inland Hill, Coastal Hill, Plain;
  - Macro-area (dummies): Northwest, Northeast, Center, South.

Empirical model (1), Local Linear Regression - LLR:

$$Y_{mt} = \alpha_0 + \alpha_1 \tilde{P}_m + G_m(\beta_0 + \beta_1 \tilde{P}_m) + t_1(\gamma_0 + \gamma_1 \tilde{P}_m + G_m(\delta_0 + \delta_1 \tilde{P}_m)) + \epsilon_{mt} \quad (2)$$

- $Y_{mt}$  is the budget outcome for municipality  $m$  at time  $t$
- $\tilde{P}_m$  is the normalized population size ( $\tilde{P}_m = P_m - P_c$ )
- $G_m$  is a dummy equal to 1 when a city is part of the treated group and 0 otherwise
- $t_1$  is the treatment year;  $\epsilon_{mt}$  is the error term.
- Considering that the treatment is  $D_{mt} = G_m t_1$ , the coefficient  $\delta_0$  is the DiDisc estimator

The sample is limited to the bandwidth  $P_m \in [P_c - b, P_c + b]$ , with  $b=1,500$  ( $LLR_1$ ) or  $b=1,300$  ( $LLR_2$ ).

Empirical model (2), Spline Polynomial Approximation - SPA:

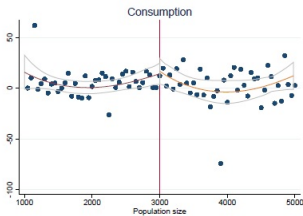
$$\begin{aligned} Y_{mt} = & \sum_{n=0}^{\eta} (\alpha_k \tilde{P}_m^{\eta}) + G_m \sum_{n=0}^{\eta} (\beta_k \tilde{P}_m^{\eta}) + \\ & + t_1 \left[ \sum_{n=0}^{\eta} (\gamma_k \tilde{P}_m^{\eta}) + G_m \sum_{n=0}^{\eta} (\delta_k \tilde{P}_m^{\eta}) \right] + \epsilon_{mt} \end{aligned} \quad (3)$$

where the variables and the DiDisc estimator are defined as in the LLR method.

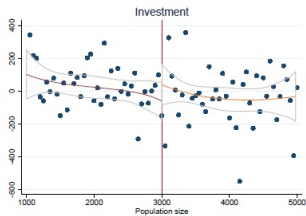
**Table:** Domestic Stability Pact effects in Case I.

	$LLR_1$	$LLR_2$	$SPA$
<b>Case IA</b>			
Consumption	6.78 (9.32)	7.54 (10.58)	7.70 (11.54))
Investment	90.74 (68.40)	111.72 (74.20)	74.46 (93.21)
<b>Case IB</b>			
Consumption	2.07 (8.06)	2.81 (9.31)	-5.59 (12.50)
Investment	4.62 (63.52)	-22.04 (65.61)	-85.55 (87.76)
Obs.	4,078	3,446	5,870

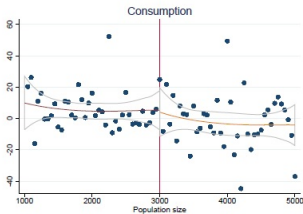




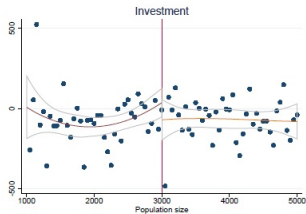
(a) Case IA



(b) Case IA



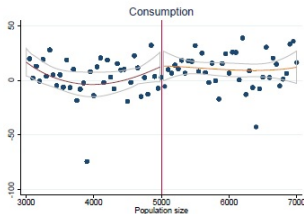
(c) Case IB



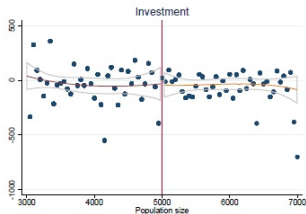
(d) Case IB

**Table:** Domestic Stability Pact effects in Case II.

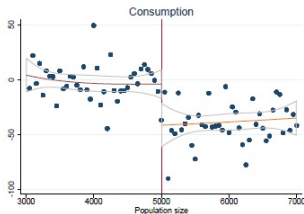
	$LLR_1$	$LLR_2$	$SPA$
<b>Case IIA</b>			
Consumption	9.60 (9.49)	-2.05 (12.62)	4.69 (15.77)
Investment	4.44 (80.13)	6.70 (90.19)	-44.68 (119.15)
<b>Case IIB</b>			
Consumption	-27.97*** (10.20)	-23.03* (11.84)	-28.54* (14.61)
Investment	179.58*** (69.04)	188.45** (76.66)	193.83** (93.59)
Obs.	1,880	1,618	2,728



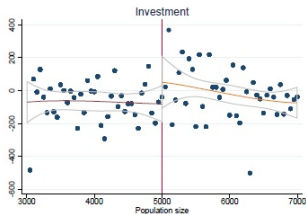
(a) Case IIA



(b) Case IIA



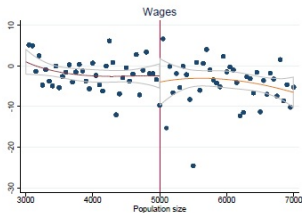
(c) Case IIB



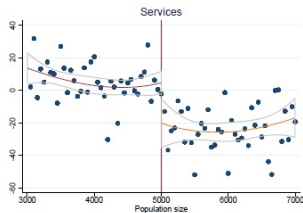
(d) Case IIB

**Table:** Domestic Stability Pact effects in Case II B.

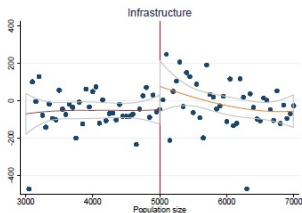
	$LLR_1$	$LLR_2$	$SPA$
<b>Case IIB</b>			
Consumption	-27.97*** (10.20)	-23.03* (11.84)	-28.54* (14.61)
Wages	11.03*** (3.00)	12.93*** (3.53)	10.73** (4.40)
Services	-35.40*** (6.72)	-34.05*** (7.67)	-37.22*** (9.49)
Investment	179.58*** (69.04)	188.45** (76.66)	193.83** (93.59)
Infrastructure	149.97*** (54.03)	164.44*** (60.12)	171.69** (73.21)
Deficit	103.22** (41.28)	110.40** (46.17)	141.07** (56.96)
Obs.	1,880	1,618	2,728



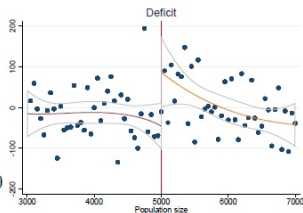
(e) Case IIB



(f) Case IIB



(g) Case IIB



(h) Case IIB

Sound public finance at the local level is important to guarantee economic stability and fiscal rules play a key role. This work shows that:

- there are fiscal rules that are not binding (i.e. overall expenditure cap and Budget balance).
- the imposition of caps on both Consumption and Investment generates:
  - ① a decrease in Consumption, driven by variations in the level of services (-3.8% with respect to the total budget)
  - ② an increase in Investment, driven by variations in the level of infrastructure (+15.2%)
  - ③ an increase in the deficit (+10.5%)
- (Speculation) The policy-maker faces a trade-off: rules who favor Investment also cause Deficit. New rules could take into account this issue (should the Golden rule be revised?)



**Thank you.**

*E-mail: [wildmer.gregori@unibo.it](mailto:wildmer.gregori@unibo.it)*

*Website: <http://www2.dse.unibo.it/gregori/>*