AUSTERITY IN THE SUPPLY CHAIN: HOW MUNICIPAL FISCAL RULES RESHAPE PROCUREMENT AND SUBCONTRACTOR WAGES

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MOTIVATION

Where does municipal austerity actually land?

- Municipalities under tighter balanced-budget rules cut capital expenditure, chiefly public works investment, rather than current spending (Grembi et al. 2016; Cerrato et al. 2023)
- This adjustment leaves aggregate local labour markets largely unaffected, consistent with low local fiscal multipliers
- Yet municipalities procure public works through contractors and subcontractors, and firms in procurement are known to respond sharply to local fiscal shocks (Coviello et al. 2022)
- No study has traced this **shock beyond the contract award**, into the firms and workers that execute it. This paper fills that gap

RESEARCH QUESTIONS

- We exploit the cut in central-government transfers to municipalities above 5,000 residents, introduced in 2011 and raised to €2.5 billion a year from 2012, which left smaller municipalities untouched.

- **First:** H*ow do treated municipalities adjust the amount, composition and timing of public procurement?*
- **Second:** *Does this adjustment show up in aggregate municipal employment and resident wages?*
- **Third:** *Linking tenders to winning firms and their subcontractors who along the supply chain actually absorbs the shock?*

RELATED LITERATURE

- **Fiscal rules and municipal spending:** Tighter balanced-budget rules bind mainly on capital spending (Coviello et al. 2022: –(13–20)% infrastructure spending after the 2008 tightening, no effect on current spending; Cerrato et al. 2023). Relaxing the rules raises deficits (Grembi et al. 2016).
- **Local multipliers:** Cerrato et al. (2023), exploiting the 2013 extension to municipalities below 5,000, find a local multiplier close to zero, in contrast with the large multipliers of Nakamura and Steinsson (2014), Acconcia et al. (2014), Suárez et al. (2016).
- **Procurement and firms:** Firms exposed to procurement cuts adjust capital rather than labour (Coviello et al. 2022), whereas winning contracts fosters firm growth (Ferraz et al. 2015) and survival (Cappelletti et al. 2024).
- **Our contribution:** First evidence on how fiscal consolidation reshapes procurement itself, and on its pass-through to subcontractors.

THE CUT IN TRANSFERS TO LARGER MUNICIPALITIES

- In 2009–2012 the Domestic Stability Pact (DSP) applied to municipalities above 5,000 residents; smaller ones were exempt
- Art. 14 of DL 78/2010 cut transfers to municipalities above 5,000 by €1.5 billion in 2011 and €2.5 billion a year from 2012. Smaller municipalities were not affected
- DSP targets were adjusted to neutralise the cut: larger municipalities lost resources while remaining bound by the pact
- Until 2012, **nothing else changed at the same threshold** ➡ we have an ideal setting to test our research questions

PUBLIC PROCUREMENT RULES

- Italian public procurement is regulated nationally and supervised by ANAC (*Autorità Nazionale Anticorruzione*)
- During our sample period (2009–2014), the Public Contracts Code (Legislative Decree 163/2006) governed all procedures, mandating competitive tenders for works, services and supplies
- The Code standardised every stage of the process: publication of calls for tender, determination of the base contract value (*importo a base di asta*), evaluation criteria, and transparency requirements
- Municipalities act as contracting authorities for local public works, which is exactly why procurement is so sensitive to fiscal capacity: capital expenditure is the most DSP-constrained component of municipal budgets (Coviello and Gagliarducci, 2017; Cerrato et al. 2023)

SUBCONTRACTING REGULATION

- Subcontracting was permitted but tightly regulated: the contracting authority had to explicitly authorize it, while the main contractor remained legally responsible for the work.
- By law (Art. 118, Legislative Decree 163/2006), subcontracting was capped at 30%: for works, 30% of the value of the prevailing category; for services and supplies, 30% of the total contract value.
- Every subcontractor and subcontracted amount had to be disclosed, both ex ante and ex post
- Though absent from the tendering phase itself, subcontractors are directly exposed to municipal fiscal space and, being smaller and more local, particularly sensitive to procurement contractions (Coviello and Gagliarducci, 2017)

IMPLICATIONS FOR IDENTIFICATION

- Two institutional features, taken together, are what make this identification strategy possible.
- **First:** the 2012 reform created a sharp, exogenous contraction in fiscal space only for municipalities just above 5,000 residents, those just below were unaffected.
- **Second:** Italy's procurement regulation, the disclosure obligations tied to subcontracting, makes the complete contracting chain observable through openANAC.
- These let us trace not only how municipalities respond to fiscal consolidation, but how that shock propagates to winning firms and subcontractors alike

DATA: SAMPLE AND SOURCES

- **Procurement data come from openANAC**, covering the universe of contracts awarded by Italian contracting authorities. For each contract, the winning firm, the awarded amount, the contract type, and every disclosed subcontractor.
- **Municipal labour-market outcomes come from INPS administrative archives**: municipality-year employment counts and average annual wages of resident workers.
- **Firm-level outcomes are built by matching procurement records to two separate administrative sources via fiscal codes**: INPS for employee's wages, and Istat's ASIA archive for employment stock
- **The sample covers Italian municipalities observed between 2009 and 2014**, restricted to a symmetric bandwidth around the 5,000-resident threshold based on legal population in 2012.

DATA CONSTRUCTION AND LINKAGE

- The unit of observation in openANAC is the **CIG code**, which identifies individual contract lots and allows consistent linking across datasets even when a single tender spans multiple lots.
- **The sample is restricted to contracts above €40,000 awarded by municipal contracting authorities**, with a final status of ‘’awarded’’ excluding most direct awards and focusing on procedures subject to standard competitive rules.
- **Firms are identified through fiscal codes**
- The resulting datasets allow to analyze the effects of the same fiscal shock on three different outcomes: **municipal procurement volumes, aggregate local labour-market outcomes, and firm-level employment and wages for both winners and subcontractors.**

DESCRIPTIVE STATISTICS

Procurement	Below 5,000	Above 5,000
N	7,199	4,846
Population (2012, mean)	4,229	5,719
Supply — tender (M€)	34.7	39.1
Supply — awarded (M€)	32.6	36.1
Works — tender (M€)	393.4	418.4
Works — awarded (M€)	324.1	349.9
Services — tender (M€)	180.2	220.8
Services — awarded (M€)	147.5	188.1
Total — tender (M€)	608.3	678.2
Total — awarded (M€)	504.1	574.0

Local labour market	Below 5,000	Above 5,000
N	2,648	1,764
Population (2012, mean)	4,244	5,725
Weekly wage (€)	459.9	460.8
Weekly wage — construction (€)	427.8	437.2
Weekly wage — elementary occ. (€)	366.0	367.1
Employment (mean)	147.8	213.3
Employment — construction	13.8	20.1
Employment — elementary occ.	17.5	24.1

Sample means by treatment status (municipalities above vs. below the 5,000-resident threshold). Regional composition is balanced across groups and omitted here for space.

DESCRIPTIVE STATISTICS

Wages	Winners Below 5,000	Winners Above 5,000	Subcontractors Below 5,000	Subcontractors Above 5,000
N	12,237	9,411	832	516
Population (2012, mean)	4,267	5,753	4,297	5,790
Average annual wage, deflated (€)	27,924	28,324	26,953	27,223

Employment	Winners Below 5,000	Winners Above 5,000	Subcontractors Below 5,000	Subcontractors Above 5,000
N	2,523	1,596	158	109
Population (2012, mean)	4,237	5,717	4,415	5,857
Average annual firm employment	290	340	32	30

Wages and employment come from separate matched samples (INPS and ASIA respectively), so sample sizes differ across the two panels for the same firm type

EMPIRICAL STRATEGY

- A **difference-in-discontinuities design** (as in Grembi et al. 2016) exploiting the discontinuity generated by the 2012 reform at the 5,000-resident threshold:

$$y_{it} = \gamma_i + \delta_t + \beta_4(T_t \times D_i) + \beta_5(T_t \times P_i) + \beta_7(T_t \times D_i \times P_i) + \varepsilon_{it}$$

- y_{it} = outcome for municipality *i* in year *t* (log procurement value, employment, average wages; firm-level outcomes for winners and subcontractors estimated analogously)
- D_i =1 if legal population in 2012 > 5,000
- T_t =1 from 2012 onward
- P_i = legal population normalised to the 5,000 threshold (running variable)
- γ_i, δ_t = municipality and year fixed effects
- **β_4 = change in the discontinuity at 5,000 residents** after the reform ⟶ **Local causal effect** of the transfer cuts
- Standard errors are clustered at the municipality level

MAIN RESULTS (1): PROCUREMENT

No detectable effect on municipal procurement

	Total amount	Supplies	Services	Works	Days to completion
ATE	**-0.066**	**0.144**	**-0.629**	**0.022**	**-0.150**
	(0.553)	*(0.746)*	*(0.298)*	*(0.966)*	*(0.206)*
Bandwidth	1.815	1.907	2.002	2.081	1.904
Observations	5,717	6,068	6,462	6,745	5,999
Clusters	1,244	1,322	1,411	1,475	1,318
Adj. R^2	0.19	0.20	0.25	0.16	0.14
Municipality FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES

*Note: Fixed-effects panel regression with optimal-MSE bandwidth and cluster-robust standard errors. All outcomes are expressed in logs. p-values in parentheses. Standard errors clustered at the municipality level. * p<0.10, ** p<0.05, *** p<0.01.*

- None of the five coefficients is statistically significant once municipality and year fixed effects are included.
- Point estimates vary in sign and magnitude across outcomes, offering no clear evidence of a procurement-volume response.

MAIN RESULTS (2): LOCAL LABOUR MARKET

Little sign of an aggregate labour-market effect

	Weekly wage (deflated)	Weekly wage — constr.	Weekly wage — elem. occ.	Employment	Employment — constr.	Employment — elem. occ.
ATE	**-3.570**	**7.591**	**2.811**	**-2.759**	**0.606**	**-1.952***
	(0.508)	*(0.352)*	*(0.723)*	*(0.353)*	*(0.472)*	*(0.089)*
Bandwidth	1.340	1.649	1.796	1.910	1.989	1.792
Observations	3,949	4,863	5,372	5,765	6,091	5,347
Clusters	818	1,009	1,115	1,199	1,268	1,109
Adj. R^2	0.74	0.50	0.39	0.97	0.83	0.85
Municipality FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

*Note: Fixed-effects panel regression with optimal-MSE bandwidth and cluster-robust standard errors. All outcomes are expressed in logs. p-values in parentheses. Standard errors clustered at the municipality level. * p<0.10, ** p<0.05, *** p<0.01.*

- Five of six coefficients are not statistically significant. The one exception, employment in elementary occupations (−1.952*, p = 0.089) is significant only at 10% and calls for a closer look at bandwidth sensitivity

MAIN RESULTS (3): FIRMS IN THE SUPPLY CHAIN

Winners seems to be protected; subcontractors are not

	Wages (winners)	Wages (subcontractors)	Employment (winners)	Employment (subcontractors)
ATE	**-0.005**	**-0.105***	**0.241**	**-0.306***
	(0.824)	*(0.054)*	*(0.166)*	*(0.069)*
Bandwidth	7.745	7.753	2.141	6.622
Observations	32,096	1,014	6,163	968
Clusters	3,984	280	1,286	278
Adj. R^2	0.13	0.14	0.27	0.19
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

*Note: Fixed-effects panel regression with optimal-MSE bandwidth and cluster-robust standard errors. All outcomes are expressed in logs. p-values in parentheses. Standard errors clustered at the municipality level. * p<0.10, ** p<0.05, *** p<0.01.*

- Winning firms show no significant change in wages or employment.
- Subcontractors show a significant decline in both, roughly a 10% wage decline and a 31-log-point fall in employment

INTERPRETATION

- At the municipal and aggregate labour-market level, the evidence seems to be inconclusive: **procurement volumes show no statistically significant change,** and only one of six local labour-market outcomes is significant, and only at the 10% level.
- A sharper pattern emerges once we move to firm-level outcomes: **Winning firms show no significant change in employment or wages**
- **Subcontractors**, by contrast, **show a significant decline in both wages and employment**
- **A distributional channel operates** below the resolution of municipal and aggregate labour-market data

CONCLUSION AND POLICY IMPLICATIONS

- Fiscal consolidation does not necessarily dissipate at the municipal level, **it can propagate along the supply chain instead**
- The incidence of the shock shifts downstream: it lands on **the wages of subcontractors**, not on aggregate local employment or income
- A direct implication for the design of fiscal rules: evaluating policy' cost through municipal or aggregate labour-market indicators alone **may understate the true incidence of adjustment**
- The incidence materialises at the level of the firms that execute contracts, **a channel that current monitoring frameworks do not capture**.

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