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JEL Classification: K23, L22, L74, D44, H57

Keywords: Centralization, Procurement, Public Contracts

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Procurement Centralization in the EU: the Case of Italy

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January 4, 2018

Abstract

This paper analyzes the process of centralization of public procurement in Europe, with an emphasis on the Italian case. It illustrates the main normative and regulatory reforms that took place between 2000 and 2016 at both EU and Italian levels. It then empirically evaluates the potential distortions induced by the most recent wave of centralization reforms. Using procurement data on all Italian public contracts awarded between 2015 and 2017, it finds that administrations expecting to lose their ability to contract independently game the centralization requirements in three ways. In the short run, they anticipate their purchases to avoid delegating to a central body. In the longer run, they both manipulate contract values, breaking down purchases into smaller lots of amounts below the thresholds driving centralization requirements, and, when given the option, aggregate into the smallest types of centralized purchasing bodies. These three distortions partially offset the potential benefits of the centralization reforms.

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I Introduction

The importance of public procurement for the dynamics of public administration in the EU is increasing. Fostering efficiency in public spending, enhancing the cooperation among Member States and establishing a common regulatory framework are the main forces pushing for public procurement reforms at EU and national level (Piga and Tatrai (2017)). Every year, over 250,000 public authorities in the EU spend around 14% of the GDP on purchase of services, works and supplies for an amount of over 2 trillion euros (EU Commission, 2017), around the 29% of the total public expenditures. Improving the quality and reliability of public procurement systems can thus foster major savings: even a 1% efficiency gain could save around €20 billion per year (EU Commission, 2017). Effective procurement can also be an instrument for job creation, growth and investments (Bedin et al.; 2015).

Various key issues related to public procurement are currently debated among scholars and practitioners: discrimination (Alkadry and Tower (2011)), race, gender and government contracting (Fernandez et al. (2013)), e-procurement (Hardy and Williams (2011)), state and local government relationship in procurement (Potoski (2008)), compliance with rules and performance (Kassel (2008)). This study focuses on procurement centralization. While there is a scant literature on this topic (notable exceptions being Bandiera et al. (2009), Albano and Sparro (2010), Schotanus et al. (2011) and Walker et al. (2013)), this is a central issue at a time when many governments worldwide have to cut spending in response to the recent economic crisis. Stimulating cooperation among central and local purchasing bodies and, more specifically, encouraging smaller, local procurement centers to pool or share purchasing volumes, information, and resources is indeed seen as a way to achieve savings (Schotanus et al. (2011)). But while there is a policy imperative for collaborative procurement, public administrations often face difficulties in forging and sustaining interorganizational relationships in the form of purchasing collaborations (Schotanus et al.; 2011; Walker et al.; 2013).

The current EU strategy on public procurement has been redesigned by the Procurement Directive 24/2014. The Directive promotes better cooperation between local and central pur-

chasing bodies to improve efficiency and transparency of public spending. In October 2017, the EU Commission has further specified its strategy by establishing six policy priorities for public procurement: ensuring wider uptake of innovative, green, and social procurement; professionalising public buyers; increasing access to procurement markets for SMEs; improving transparency, integrity and data availability; boosting the digital transformation of procurement; strengthening purchasing cooperation. Centralization is seen as a useful mean to achieve these goals, especially the second and the sixth. The latter looks particularly important because, as the Commission (2017) writes, "Contracting authorities are rarely buying together – only 11% of procedures are carried out through cooperative procurement. This is a missed opportunity as buying in bulk can result in better prices and higher quality goods and services." On the basis of these recommendations and under the 2014 Procurement Directives many countries strengthened the cooperation among contracting authorities establishing or enforcing the role of central purchasing bodies.

In Italy, the volume of public procurement in 2015 was around €157 billion (OECD, 2015), representing more than 10% of the GDP and around 20% of the total public expenditure. The volume of contracts valued over €40,000 was around €112 billion in 2016 according to the latest data available (ANAC, 2016). The procurement system has been undergoing multiple reforms since the early 1990's. Some of them have followed a cycling pattern: for instance, the use of more discretionary awarding procedures (forms of flexible negotiations, as opposed to rigid price-based sealed bid auctions) has been first strongly restricted in 1994, after a series of corruption scandals, only to be later reintroduced (first in 2006 and then, even more forcefully, in 2016) after the system became perceived as too rigid. But the centralization process appears to be following a different pattern: this process has been ongoing at least since the early 2000's, although at different speeds over time.[1] Most recently, a series of reforms occurring between 2014 and the first semester of 2016, partially driven by the need to implement the Directive 24/2014, caused a marked acceleration in the centralization process. Under the political slogan of *"reducing the number of purchasing*

[1]Examples where the centralization process itself has been subject to a cycling behavior exist. For instance, in the case of the procurement of school meals in Colombia the decentralized *Programa de Alimentacion Escolar*, PAE that was started in 1936 is currently undergoing major revisions aimed at increasing the role of centralized purchasing bodies.

bodies from 35,000 to 35," the government enacted new, strict limits on what small, local entities can autonomously buy.

This paper begins with a description of the EU and Italian reforms and their goals. Increasing the efficiency and transparency of public spending has been on the agenda of Italian governments in the last two decades. Great effort has been exerted to reduce the amount of waste and to simplify the intricate legislative framework. In this context, centralization is has been identified by the essentially governments in charge over this period as a major instrument to reduce waste, achieve lower prices, curb transaction costs and bureaucratic overload. The paper will describe the most recent reforms, as well as the role of CONSIP, the main Italian centralized public buyer, and briefly compare it to the similar entities present in some other Member States.

The analysis of the recent reforms allows us to identify three main dimensions along which these reforms might produce unintended effects. Distortions might involve both short and long run effects. The former consist of anticipatory effects driving those administrations expecting to lose their ability to contract independently to anticipate their purchases. The latter involve more structural changes regarding two aspects. First, since the reforms introduced monetary threshold below which local procurers can avoid delegating their purchases to central entities, we expect manipulations of contract values, breaking down purchases into smaller lots of amounts below the thresholds at which centralization requirements kick in. Second, when local buyers are given the option to aggregate into new entities, differing in their degree of centralization, their choice might be to opt for the least centralized ones.

Using an original dataset on the universe of Italian public contracts awarded during the period 2015-2017, our empirical assessment provides evidence in favor of the presence of all these three types of distortions. These are relevant findings as such distortions can partially offset the potential benefits of the centralization reform. More generally, they illustrate the difficulties of pushing for procurement centralization in an economically sizable part of the EU market. A few practical implications that can be distilled from the evidence analyzed are offered in the conclusions.

II The EU Procurement Directives

From an historical perspective Centralized Procurement Bodies (CPB) were firstly introduced to EU public procurement law through Directive 18/2004. This Directive contained a few, basic provisions dealing with CPB as a form of demand aggregation. By 2012 all Member States (MS) except for Estonia, Germany and the Luxembourg had included a provision in their national law contemplating CPB. Building upon the CPB's growth during the last decade across the EU, the new Procurement Directive 24/2014 introduced several changes increasing CPB's functions, modifying their nature and improving the basic regulation of Directive 18/2004. The new Directive states (art. 69): "Centralised purchasing techniques are increasingly used in most Member States. Central purchasing bodies are responsible for making acquisitions, managing dynamic purchasing systems or awarding public contracts/framework agreements for other contracting authorities, with or without remuneration. The contracting authorities for whom a framework agreement is concluded should be able to use it for individual or repetitive purchases. In view of the large volumes purchased, such techniques may help increase competition and should help to professionalise public purchasing." Dynamic purchasing systems are completely electronic provisioning processes aimed at the supply of standardized and widely used goods and services. Framework agreements, instead, are indefinite time/quantity contracts underwritten by CPBs and more than a single economic operator. They set the rules that will regulate specific public contracts.[2]

According to Anchustegui (2015), Directive 24/2014 allows contracting authorities to employ CPBs' services in four ways: i) acquire goods through public contracts awarded by the CPB; ii) use dynamic purchasing systems run by the CPB; iii) employ framework agreements that have been concluded by a CPB; and iv) employ their ancillary purchasing services. Framework agreements are a contractual arrangement that is peculiar of CPB and characterizes their activity. Indeed, the few instances where the existing literature has

[2]Framework agreements - with their pre-determined general rules and successive personalization by authorities - find their logical fit somewhere between the framework contracts that are used for standardized product categories and the calls for tender designed to meet the specific requirements of individual contracting authorities. For a discussion of aggregated procurement techniques in the light of the Directive 24/2014 see, inter alia: (Sanchez-Graells and Herrera Anchustegui; 2014; Hamer; 2014; Racca; 2010).

looked at the activity of CPB is indeed in relationship to their usage of framework agreements (Bandiera et al. (2009), Gur et al. (2017)). However, to synthesize even further the content of art. 69, it can be said that the Directive establishes two manners by which central purchasing bodies operate. First, they should be able to act as wholesalers by buying, stocking and reselling. Second, they should be able to act as intermediaries by awarding contracts. Such an intermediary role might in some cases be carried out by conducting the relevant award procedures autonomously, without detailed instructions from the contracting authorities concerned; in other cases, by conducting the relevant award procedures under the instructions of the contracting authorities concerned, on their behalf and for their account.

Furthermore, article 37(1) of Directive 24/2014 clarifies that MS may require contracting authorities to conduct purchases through CPBs (either in general or designating a specific body). The Directive, however, did not impose a general obligation to force purchases through CPBs. Such a possibility was discussed during the Directive's negotiations, as it is a common practice among some MS concerning central government administrations. But in the end, not imposing a general duty to employ CPB was seen as an better policy to grant wider MS discretion when organizing their public services.

Finally, article 37(2) regulates the relation between the CPB and contracting authorities concerning both compliance with the provisions of EU public procurement and contractual responsibility vis-à-vis economic operators. It clarifies which entity is responsible for which part of the procurement, crucially stating that a contracting authority is exempted from complying with public procurement rules when it acquires goods through centralized purchasing services. However, the contracting authority must comply with the procurement provisions when it carries out by itself part of contract award phases such as: awarding the definitive contract under a CPB operated dynamic purchasing system, conducting calls off and mini competitions under framework agreements, and determining which economic operator party to a framework agreement shall perform a particular task. A key provision implicit in this article is that CPBs are bound to comply with the Directive when performing its functions vis-à-vis economic operators.

III Central Purchasing Bodies: Italy's CONSIP

In Italy, the current institutional arrangement devised by the 2016 reform that we review below allows for an handful of CPB. Nevertheless, CONSIP, the oldest CPB, fully owned and managed by the Ministry of Economy and Finance plays a special role. It represents the pillar upon which the centralization process was founded and the role model around which the other Italian CPB have been designed. This section offers a short description of CONSIP and of the similar institutions existing in other EU counties.[3] CONSIP was founded in 1997, initially to manage the information technology change in the former Ministry of Treasury. Two years later, it was designed as the structure to buy goods and services for the Public Administration in order to rationalize the public expenditure through standardized purchase orders. In 2001, its role was reinforced, as it became mandatory for all central administrations to use the framework contracts subscribed by CONSIP, while it remained as an option for other public administrations. Nevertheless, since 2002, if a local administration decides to follow its own procedure for purchasing a specific good, even in the case of the existence of a framework for that good already signed by CONSIP, it is compulsory to use the prices negotiated by CONSIP as a starting point for its procurements. In fact, starting from 2003, new rules modified the compulsory requirements for public administrations as well as the range of CONSIP's functions: essentially, CONSIP's agreements became mandatory for State administrations, while all the other public entities were required to use CONSIP prices and quality requirements as a benchmark for their own tenders for goods and services.

At the peak of the recent economic crisis hitting Italy, an urgent decree enacted in 2012 further modified the extent of public procurement centralization. To achieve savings, the Italian Government placed its trust in centralized procurement and in information and communication technologies (ICTs): purchases from internet platforms and newly established CPB - in addition to CONSIP - were imposed for certain types of purchases. The set of public entities obliged to use CONSIP's contract frameworks was expanded and their usage was imposed for products such as fuel, electricity, telecommunication services.

[3]See Albano and Sparro (2010) for a more extensive discussion of CONSIP.

Table 1: Main Central Purchasing Bodies in the EU

Member State	Description
France	The Union des Groupements d'Achats publics – UGAP (Union of Public Purchasing Groups) was established in 1985 as a public body with legal personality. UGAP acquires goods and services for the state, local authorities and hospitals. A new entity, the Service des Achats de l'Etat – SAE (State Procurement Office), was set up in 2009. SAE's mission is to coordinate the common purchases of the state and to ensure the professionalisation of state procurement officers. SAE may award framework agreements and procurement contracts, but in general it requests a ministry or UGAP to award framework agreements on behalf of the public authorities whose needs have been grouped. The services of SAE are mandatory for state administrations in defined areas and voluntary for other agencies under the state supervision.
Germany	Germany has four central purchasing bodies at the federal level, which are thematically specialised. The Central Purchasing Body of the Ministry of the Interior plays the most important role as it procures for all federal agencies, manages the main e-procurement platform and carries out other supportive functions. For contracts involving higher spending, the procurement review chambers are in charge of the first instance review procedure. Each Federal State has such a chamber in addition to the federal procurement review chamber, which is located within the Federal Competition Authority.
United Kingdom	Departments and government agencies are responsible and accountable for obtaining value-for-money from their expenditures on goods and services, and most departments have procurement units. Central buying agencies exist, but there is no obligation to use them. The central purchasing body is Buying Solutions and its supervised by the Crown Commercial Service Office, an independent office of the Treasury. It is the largest of over 40 Professional Buying Organisations (PBOs) in the wider public sector. The primary role of Buying Solutions is to maximise the value-for-money obtained by government departments and other public bodies through the procurement and supply of goods and services. The company provides easy access to more than 500,000 products and services, through a range of framework agreements as well as a number of managed services, including telecommunications, e-mail and Internet services, energy and e-commerce.
Spain	The Ministry of Finance and Public Administrations is in charge of national public procurement policy through two main bodies. The first is the Directorate General for State Assets, which is responsible for the general regulatory framework on public procurement, setting the national strategy for e-procurement and operating the national e-procurement platform. The second, the Directorate General for Rationalisation and Centralisation of Procurement, focuses on the harmonisation and centralisation of national public procurement, operates as the central purchasing body for the State administration and State-related entities, and has developed a centralised procurement catalogue called Conecta-Centralización, directly connected to the State e-procurement platform.
Sweden	Sweden relies on a system for the central award of framework agreements with call-off arrangements for procuring entities within the government sector. In 1998, the Swedish Government established a coordination function for government procurement, with the objective of increasing efficiency in public spending. Today Sweden has two main institutions for procurement policy, the Swedish Competition Authority (KKV), which operates under the Ministry of Enterprise and Innovation (MoE) and the newly created National Agency for Public Procurement (UHM) which operates under the Ministry of Finance (MoF). The KKV plays an important supervisory role, overseeing procurement for efficiency and adherence to regulations, and is empowered to forward irregularities to the administrative courts for investigations and eventually sanctions. In addition to its supervisory role, the KKV provides administrative and methodological support to both contracting authorities and economic operators on issues relating to public procurement, particularly in the fields of innovation and sustainability. The UHM is responsible for developing and maintaining support functions to public procurement.

These reforms placed CONSIP in a prominent role in the public procurement national structure and created a system that remained more or less stable until the 2015 changes that we discuss next. Before that, however, it is interesting to briefly compare the position of CONSIP to that of other, similar entities in a few other EU countries. In Table 1 we present such comparison focusing on France, Germany, the United Kingdom, Spain and Sweden.

IV The Recent Reforms of the 2014-2016 Period

Three major legislative changes have impacted public procurement centralization in the period between 2014 and 2016. To clarify this fragmented, changing and intricate legislation, Table 2 summarizes the main reforms. First, in 2014 new CPB were created as "local CONSIP": they replicate at local level the CONSIP model. They include Regional Purchasing Bodies and Metropolitan Area Purchasing Bodies. The same reform also reduced the ability of smaller municipalities (those that are not provincial capitals) to purchase goods and services over €40,000 and works over €150,000. Above these thresholds, these municipalities can merge their public procurement offices with those of either other municipalities (forming a "Centrale Unica di Committenza," CUC, the smallest form of CPB) or with their Province procurement office (the "Stazione Unica Appaltante," SUA, the next level of centralization) or, for some purchases, relying on Regional or national (CONSIP) CPB (called "Soggetti Aggregatori", SA, which also include the CPB of the nine largest municipalties).

Municipalities with less than 10,000 inhabitants were bound to buy all goods, services and works through one of these three types of CPB. For municipalities with more than 10,000 inhabitants it was possible to purchase good and services up to the threshold of €40,000 and works up to €150,000. Provincial capitals could, instead, buy autonomously. The coming into force of this regulatory regime was postponed so that these rules started to operate only on November 1st, 2015. Two months later, however, the Budget Law 2016, approved by the end of December 2015, eliminated the distinction between municipalities with more/less than 10,000 inhabitants and larger municipalities. The thresholds of €40,000 and of €150,000 became the same for all municipalities.

Table 2: Legislative changes per year

2014	2015	2016
a) Introduced 35 regional and metropolitan qualified contracting authorities called "Soggetti Aggregatori". These entities are able to purchase on behalf of local governments; b) Municipalities divided into three classes: 1) Provincial Capital 2) Municipalities with more than 10,000 inhabitant and 3) Municipalities with less than 10,000 inhabitants. c) Different thresholds introduced in public purchasing for each class of Municipalities. Provincial Capital were able to purchase independently over thresholds; municipalities with more than 10,000 inhabitants were allowed to purchase independently up to €40,000 for services and furnitures and up to €150,000 for works; municipalities with less than 10,000 inhabitants were allowed to purchase services, furnitures and work only up to €40,000. d) Over these thresholds municipalities were obliged to purchase through Consip or Soggetti Aggregatori or merging with others Comuni's contracting authorities in a entity called "Stazione Appaltante Unica".	a) By November 1st, all the centralization provisions of 2014 became effective; b) By December 28th (Budget Law), the legislator eliminated the division made on the number of inhabitants for Municipalities; c) With the new regime Provincial capital remained able to purchase independently up to European thresholds; d) All the others Municipalities (non-provincial capital) were able to purchase up to €40,000 of furniture and services and up to €150,000 of works.	a) On April 19th, the new Code for Public Contracts came into force; b) The division based on Provincial Capital and municipalities is abolished in favor of a regime based exclusively on contracting authorities' qualification; c) To purchase furniture and services over €40,000 and works over €150,000 contracting authorities have to obtain a qualification meeting dimensional, organizational and skills requirements established by the legislator. d) If the contracting authority does not meet the requirements and it does not achieve its qualification to purchase over the thresholds it is obliged to purchase through Consip or Soggetti Aggregatori or merging with others non-qualified contracting authorities in a entity called "Stazione Appaltante Unica" in order to achieve qualification; e) Qualification is essential to every contracting authorities for public purchasing over the thresholds established by the law. f) Only the Soggetti Aggregatori are contracting authorities qualified-by-law and they do not need to meet requirement to obtain qualification.

Finally, in April 2016, Italy enacted a fully redesigned Code of Contracts incorporating in the national law the EU Directive 24/2014. This reform touched on many salient features of the system. Regarding centralization, the legislator established a new system imposing technical, economical and organizational requirements to qualify public procurers: higher qualifications are required to purchase contracts of higher value. When its contracting authority does not meet the requirements to obtain qualification, a public entity must purchase through a qualified CPB. Among the three types of CPB (CUC, SUA and SA), only the latter are automatically qualified for all kinds of purchases. CPB of the former two types must, instead, apply and meet requirements for qualification like any other contracting authority.

While this approach appears very reasonable, its effective functioning cannot yet be assessed as major controversies over the specific criteria to use for the qualification system have blocked the implementation of this part of the reform. The current system is thus still the one introduced by the Budget Law 2016.

V Potential Effects of the Recent Reforms: Hypotheses

There are three main directions along which it is interesting to evaluate the above reforms and which represent our research hypotheses to be empirically tested below. First and foremost, the reforms should change the identity of the public entities involved in the procurement process. Less procurement activity should be undertaken by the smaller, local buyers and more by the CPB. Furthermore, the flexibility given to municipalities to freely choose which of the three types of CPB to use suggests the possibility of a distorted use of this choice. In particular, the first hypothesis is:

(H.1) Centralization: The November 2015 reform should lead to an increase in the number of contracts procured by CPB and, conversely, to a decrease in the number of contracts awarded by decentralized authorities. Among the CPB, a concentration of purchases among aggregators of small municipalities (the CUC) can signal a distorted use of centralization.

Second, many authors have shown how the introduction of monetary thresholds in public

procurement can lead to manipulations of contract value and or timing by the contracting officers aimed at keeping control over the auction process, avoid bureaucratic burdens or monitoring (Palguta and Pertold; 2017; Giuffrida and Rovigatti; 2017; Coviello and Mariniello; 2014). The second and third hypotheses look, respectively, at distortions due to the timing of the centralization reforms and to the newly created monetary thresholds:

(H.2) Anticipation: Local procurement officers foreseeing the effects of the November 2015 and January 2016 reforms anticipate their purchasing right before the reforms enactment dates, purchasing less afterwards.

(H.3) Manipulation Local procurement officials have an incentive to manipulate the ex-ante contract value in order not to be subject to the centralization provisions.

The first and third hypotheses regard structural changes to the procurement system that can display their effects long after the reforms' enactment. The second hypothesis, instead, regards a phenomenon that is necessarily short lived, given its linkage to the reforms' date of enactment. In this respect, since for a regular law it takes 15 days to become effective at after its publication, it was around mid October 2015 that public administrators became aware that the centralization reform of 2014 was not going to be further postponed past November 1st, 2015. Methodologically, assessing the first hypothesis is relatively straightforward given that the availability of data on the universe of procurement contracts allows us to count those awarded both before and after the reforms. The latter two hypotheses, instead, require a slightly more sophisticated approach. Indeed, to argue about manipulations in terms of timing or amount of the contracts, we need to correctly specify a benchmark. Below, we explain the procedures followed along with the results obtained.

VI Data and Analysis

The analysis uses an original dataset based on several data sources. The main source is the universe of public contracts collected from the ANAC, the Italian Anticorruption Authority, which is the public body supervising the sector. Essentially all contracts above €40,000

shall be communicated to the ANAC and registered on its portal. The data is available starting from January 2015 and we collected data up until April 2017. We complemented this data with a subset of contracts that, due to their nature, are communicated only to the Ministry of Infrastructure and Transportation. We also added demographic data at the municipal level provided by the National Statistical Office and the list of qualified CPB (*Soggetti Aggregatori*).

The data report several variables related to the allotment (the auction ID, the contract type - goods, works or services -, the object, the contracting authority and the awarded firm), the relevant dates (tender publication, awarding date, validity date, completion date) and the auction process (base and awarding amount, the final amount and the number of bids accepted). The overall dataset contains bout 800,000 awarded contracts.[4]

Hypothesis (H.1): Centralization

To explore the extent of centralization and the types of CPB, table 3 reports the total amount and the number of contracts (the latter is reported in parenthesis) per type of public buyer. In the table, the data span two months before (November 1 to November 30, 2015 - *pre*) and after (December 1 to December 30, 2015 - *post*) the introduction of the new regulation in November 2015. The first two columns are for contracts involving public works, the next two for services and the latter two for supplies.

Panel a) focuses on the three types of CPB, whereas panel b) looks at decentralized purchasing authorities. There are clear data patterns supporting H.1: the qualified CPB and the CUC experience a dramatic increase in the number and value for all contract objects. Interestingly, the CUC show a +612% on public works contract value and the qualified CPB supplies contract value reveal a +255% figure. The striking increase in the role of CUC is also underscore in the growth in their number which nearly triples (from less than 10 to nearly 30). Furthermore, an analysis of the identity of the most active CUC reveals that most of them are relatively small and derive from the aggregation of micro-municipalities (those with less than 10,000 inhabitants). This seems a clear flaw relative to the stated intent of the reform to drastically reduce the number of contracting authorities.

[4]See Castellani et al. (2017) for a more in depth discussion of the data.

Panel b) indicates that, as expected, contracts awarded by municipalities decrease in number and value (-46% and -51% in public works, respectively). Regarding public administrations that are not municipalities (last group), the decline after the reform is evident especially for public works. Contracts for supplies and services, instead, remain nearly identical, as it should be expected since the group indicated as "other administrations" contains mostly State administrations already procuring supplies and services through CONSIP. Furthermore, for goods and services the €40,000 threshold is low enough that the ANAC data, which covers contracts above €40,000, does not allow a clear monitoring of their behavior.[5]

Table 3: Total Amount and Number of Contracts per type - November 1, 2015

	Public Works		Services		Supplies	
Panel a): **CPB**	Pre	Post	Pre	Post	Pre	Post
Qualified CPB (SA)	83	150	775	2,756	283	720
	(190)	(412)	(310)	(411)	(352)	(304)
SUA	157	71	11	27	5	5
	(188)	(252)	(57)	(118)	(19)	(32)
CUC	16	114	10	30	0	9
	(125)	(178)	(33)	(100)	(8)	(31)
# Qualified CPB (SA)	17	20	24	28	18	19
# SUA	25	28	14	27	7	9
# CUC	11	26	8	21	2	6
Observations	503	842	400	629	379	367
Panel b): **Non-CPB**	Pre	Post	Pre	Post	Pre	Post
Municipalities	1,597	778	2,249	1,311	202	182
	(4,704)	(2,509)	(2,963)	(2,398)	(668)	(922)
Other Administrations	4,865	2,845	5,199	6,425	3,881	4,145
	(4,679)	(5,838)	(6,851)	(8,991)	(9,548)	(10,174)
# Municipalities	1375	698	893	680	262	356
# Other Administrations	593	644	1061	1205	737	866
Observations	9,383	8,347	9,814	11,389	10,216	11,096

Note: Contract Amounts (in million euro) by object, period and type of contracting office in a 2-months window around November 1, 2015. Total number of contracts is reported in parentheses.

[5]Table 3 reports a two-months window around the November 2015 regulation change date, but the centralization effect is long-lasting and the descriptive results are robust to the choice of different window sizes. Additional tables are available from the authors upon request.

Hypothesis (H.2): Anticipation

To explore the second hypothesis, we first resort to a graphical analysis in fig 1. In panel a) we split the sample in two "classes" according to the contract amount, either below or above €150,000, and plot the relative time series. We highlight with vertical, dashed lines the three reform dates: November 1, 2015, January 1, 2016 and April 18, 2016. There are spikes associated with each of these dates, but there are overall three clear spikes. Two of them are associated with the end-of-the-year increases due to expiring budgets (see Liebman and Mahoney (2017) for a comprehensive explanation of the phenomenon) around December, 31^{st} of 2015 and 2016. The third spike is right before April, 18^{th} - i.e., the day before the introduction of the new code. To better assess the changes around the reform dates, in panels b), c) and d) we show the same series "zoomed" in two-months windows around the reform dates. They show how the spikes are due to an excess mass of contracts accrued right before the threshold date. This is an indication in favor of H.2: that is, local purchasing authorities actually manipulated the awarding dates in order not to be subject to the new regulation (i.e., exploited the last possible days to award autonomously contracts with face values above the threshold).

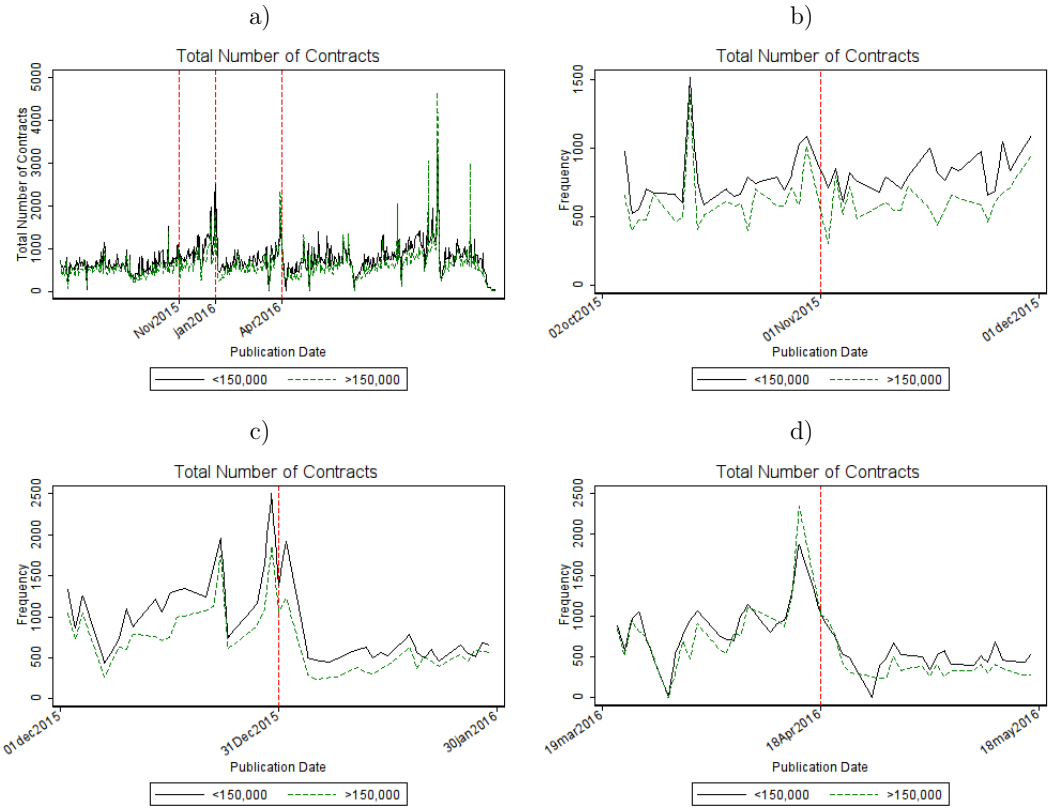
Our data allow us to take a step further in characterizing such an anticipation effect. In table 4 we quantify it in terms of excessive number of contracts awarded. In order to do that, we first split the sample in five contract amount classes and make use of the methodology proposed by Chetty et al. (2011) to quantify how many contracts "in excess" contributed to inflate the distribution right below the cutoff date.[6] In other words, the test is aimed

[6]The methodology involves several steps. We divide the support of the variable of interest in J bins, and generate the contract frequency *per bin* (C_j, $j \in [1, ..., J]$). We then fit a q^{th} order polynomial based on the empirical distribution of $C.$ using the regression

$$C_j = \sum_{i=0}^{q} \beta_i^0 (Z_j)^i + \sum_{i=-R}^{R} \gamma_i^0 1[Z_j = i]$$

where Z_j is the contract amount of the j^{th} bin minus the threshold amount (in our case, $Z_j = [-1.500, ..., 1.500]$) and R is the number of excluded bins around the threshold. These have to be carefully chosen, as excluding big regions can bias results, whereas keeping bins in the proximity of the excessive mass could invalidate the test. The first counterfactual density estimation is then given by $\hat{C}_j^0 = \sum_{i=0}^{q} \beta_i^0 (Z_j)^i$, where the effect of the excluded region is eliminated. Using this result, the number of "excessive" contracts at the threshold (B_N) can be estimated as $\hat{B}_N^0 = \sum_{j=-R}^{R} C_j - \hat{C}_j^0 = \sum_{i=-R}^{R} \hat{\gamma}_i^0$. Such a counterfactual density, however, must be corrected taking into account that the excess mass before the threshold has been in some sense taken from the density after the threshold - in an "anticipation" attempt, indeed. In order to correct

Figure 1: Excess mass decomposition around centralization dates



Note: total number of contracts 2014-2017 (panel a) and in a two-months window around November 1, 2015 (panel b), December 31, 2015 (panel c) and April 18, 2016 (panel d).

at finding how the distribution of contracts would have been absent the reform (this is the *counterfactual distribution*) by excluding the inflated region around the threshold date and "filling" the gap created with a function of the included data. The second step, then, is to quantify the difference between how many contracts would have been awarded in the counterfactual case, and how many have been actually awarded. We repeat the test on each of the contract categories individually (columns 1-5) and on the full sample. We perform the test with three different time windows around the threshold - i.e., with an excluded region of a week before the enactment day and 1, 3 or 5 days afterwards. Panels a), b) and c) refer

this bias, the counterfactual density is augmented proportionally to the number of excessive contracts, and becomes

$$C_j\left(1+1[j>R]\frac{\hat{B}_N^0}{\sum_{j=R+1}^{\infty}C_j}\right)=\sum_{i=0}^{q}\beta_i^0(Z_j)^i+\sum_{i=-R}^{R}\gamma_i^0 1[Z_j=i]$$

which can be used to determine the excessive number of contracts as $\hat{b}=\frac{\hat{B}_N}{\sum_{i=-R}^{R}\hat{C}_j/(2R+1)}$

to November 1, 2015, January 1, 2016 and April 18, 2016, respectively.

Nearly all tests show strongly positive values, even for the most conservative test hypotheses, and this is true in particular for larger amounts. This is a strong statistical evidence in favor of H.2, as it clearly indicates that contracting authorities anticipated purchases due to the introduction of the new regulation, and they did so mostly for the largest contract amounts, which were the most affected by the centralization.

Table 4: Chetty et al. (2011) test on public works contracts around concentration dates

	$\leq 100,000$	$\leq 150,000$	$\leq 200,000$	$\leq 250,000$	$> 250,000$	total
Panel a) November 1, 2015						
Window 1	622	326	264	126	285	1339
Window 3	1101	447	439	123	624	2110
Window 5	1574	367	520	218	1170	2678
Panel b) January 1, 2016						
Window 1	3129	1296	921	467	2583	5809
Window 3	2641	821	727	346	2057	4533
Window 5	487	-84	345	98	593	831
Panel c) April 18, 2016						
Window 1	2403	1059	1038	602	3272	5098
Window 3	2785	1065	1258	574	3870	5669
Window 5	1364	489	886	271	2591	2996
Average Est	2,184	871	1,061	482	3,244	4,588

Note: Chetty et al. (2011) test on the excessive mass around the reform dates. For each date, the test has been run

Hypothesis (H.3): Manipulation

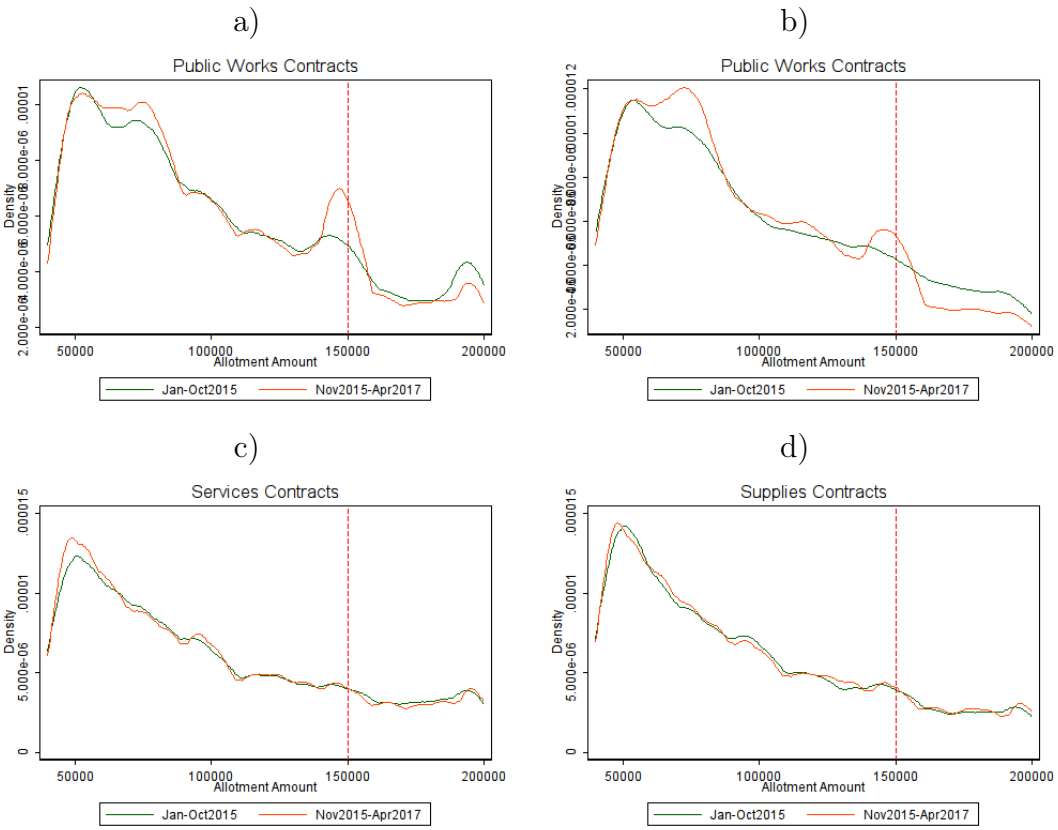
In applied contexts, it is very hard to quantify what "purchasing level" an administration would have chosen with an without a mandate to purchase through CPB. To fix ideas, assume that the value of project X, $value_X$, lies above the centralized purchasing threshold T - i.e., $T - value_X \leq 0$. In such case, a local purchasing authority can do one of the following three things: *i)* turn to a central authority to purchase the good X; *ii)* divide the contract in multiple lots, each below the threshold: $value_X = value_{X'} + value_{X''}$, where $T - value_{X'} \geq 0$ and $T - value_{X''} \geq 0$, and *iii)* either purchase lower amount of goods/services (X') or lower the quality requirements in order to decrease the value, $value_X \geq T > value_{X'}$. In all cases but *i)* this would reflect into an abnormally high number of contracts right below the threshold T - i.e., there would be evidence of *bunching* at the threshold.

In order to test whether there has been manipulation of the contract amount - either by dividing contract orders or by purchasing lower amounts of goods and services - we follow two approaches; both of them imply testing the observed distribution against a counterfactual.

On the one hand, we provide graphical evidence that the most affected contract object, public work contracts, show a remarkable pattern of bunching at the regulation threshold after its introduction. On the other hand, we show that this effect is heterogeneous with respect to purchasing authorities: in line with H.3, those most affected by the new regulation show a higher intensity of contract manipulation.

In figure 2, panel a) we plot the empirical distribution of public work contracts valued €40,000 to €200,000, between January and October 2015 (*pre*, solid green line) and between November 2015 and April 2017 (*post*, solid red line). It is useful to remark that the empirical distribution is invariant to the total number of contracts, hence our exercise is not biased by the asymmetry of pre/post period lengths. The graph shows a clear spike right below the €150,000 threshold in the *post* period; it means that purchasing authorities awarded a relatively higher number of contracts below the threshold with respect to the *pre* period. A similar picture is shown in panel b), where we plot the same measure relative to municipalities that are not provincial capitals - i.e., those most affected by the November 1, 2015 reform. In contrast, panel c) and d) report the distributions for unaffected contractual categories (i.e.,

Figure 2: Distribution of contract amount



Notes: contract amount density pre (Jan-Oct 2015) and post (Nov 2015 - Apr 2017) the introduction of the centralization. We report the overall distribution for public works contracts (panel a), for *not capoluogo* municipalities' public works contracts (panel b), for service (panel c) and supplies contracts (panel d).

those involving services and supplies, respectively). None of them shows any bunching at the threshold after the regulation change and this strengthens the evidence on the existence of manipulations involving the amounts of public work contracts.

We then run a simple and transparent test to investigate the extent to which the regulation changes led to manipulations of contract value distribution. In particular, we perform a series of t-tests on contract amount average differences splitting the sample in two classes, either below the €150,000 threshold, or between €150,000 and 300,000. The rationale is straightforward and recalls the previous exercise: affected authorities (e.g., non provincial capitals) are supposed to bunch below the threshold, possibly splitting higher contracts in smaller lots; this, in turn, would reflect in higher average contract amount value in the lower contract class, and possibly lower amounts above. On the other hand, CPBs like CUC should

Table 5: T-tests on average import - public works

	<150,000			>150,000		
	μ_{pre}	μ_{post}	t-test	μ_{pre}	μ_{post}	t-test
Full Sample	86,747	85,275	-2.253	214,851	213,615	-0.941
			(0.024)			(0.347)
Provincial Capital	83,159	88,575	1.968	205,190	199,291	-1.075
			(0.050)			(0.284)
Not Provincial Capital	85,174	84,299	-0.716	214,848	209,950	-1.825
			(0.474)			(0.068)
CUC	87,288	69,153	-3.762	183,413	221,378	5.219
			(0.000)			(0.000)
SUA	78,223	84,890	1.795	199,934	197,008	-0.341
			(0.074)			(0.734)

experience the opposite, with negative shifts in average contract value below the threshold, and positive shifts afterwards. In table 5 we report the results of the above outlined exercise, alongside the average contract value. Results are in line with the predictions, showing a high degree of manipulation for non provincial capitals above the threshold and for CPBs in the aftermath of the reform, giving strong and robust support to H.3.

VII Conclusions

Our findings on the Italian case indicate five keys policy suggestions which can be considered generally valid.

1) Establishing an effective and stable regulation is useful to avoid anticipation and manipulation effects. Uncertain, fragmented and byzantine national procurement regulation may undermine reforms (Amirkhanyan, Meier, O'Toole, 2016). Indeed, as the case of Italy shows, too many legislative changes and derogations are an obstacle to a more efficient procurement system because they induce distortions in the form of anticipation and contracts' manipulation effects.

2) Design an effective and binding process of centralization for decentralized contracting authorities. In the Italian case, the risk is that the centralization effect may be weakened because decentralized contracting authorities, as smaller municipalities, still have legal loopholes to exploit. Indeed, we find that they opted to merge their procurement offices at the smallest centralization level (i.e., CUC) when given the possibility. With the maintenance of this mechanism, the new Italian legislation is still providing incentives for decentralized contracting authorities rather than centralized ones. These incentives will be stronger if the implementation of the new qualification system (the system based on technical and economic requirements that was established in April 2016, but that has not yet been implemented) for contracting authorities will be relaxed. In this case, the risk is a policy failure in terms of savings and to transform centralization in a mere formality without any improvements in terms of efficiency.

3) Controlling lots size to protect competition. In Italy there is not a policy directive on lots size in public procurement and this might undermine SMEs participation to auctions. Our findings indicate that the centralization reforms impacted lot size both because manipulations by local authorities reduced the lot value to be below threshold and because the lots awarded by central purchasing bodies are, on average larger. Since larger size lots may hinder SMEs' participation, a policy directive that identifies the best practices for contracting authorities in partitioning lots should be undertaken by central government.

4) Centralization is different from aggregation and they are not interdependent. Centralization concerns the mechanism of purchasing while aggregation is related to the organization of tender procedure. As we have seen yet aggregation in very big lots may undermine SMEs access to public procurement market. Piga (2016) properly argues that to centralize procurement is not to aggregate lots. Indeed, while centralization of public purchasing is important to create economy of scale, it does not implies to create big size lots, and to endanger SMEs access to market, to achieve centralization's positive outcomes. The optimal policy should be to centralize public procurement in regional and central purchasing bodies without aggregates tenders into too big size lots. With this strategy, the economies of scale effect is created, but without impinging on the participation of SMEs to the auction. In conclusion,

combining centralization and protection of competition the policy-makers can achieve better outcomes in public purchasing.

5) A final policy prescription regards the broad impacts of centralization on the industry market structure. While from the government perspective increasing its buyer power can serve to improve savings, this can have relevant impacts on the number and size of firms active in the market. The pervasiveness of purchases from central and local public entities in a multiplicity of sectors imply that careful considerations should be paid to how these sectors might react to an increase in buyer power arising from centralized procurement bodies. This aspect can also have implications from an antitrust perspective.

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