Favouritism and Inefficiency in Procurement: Evidence from Public Works in Italy

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This paper shows how favoritism in public procurement can emerge despite the use of rigid procedures for awarding contracts and of transparent criteria for allowing firms to bid. The paper analyzes data on the awarding of public works in Italy to illustrate how differences in fine regulation details across Italian local administrations have major implications in terms of favoritism toward local contractors and the overall efficiency of the procurement process. The findings are a cautionary tale about the benefits and risks of a decentralized procurement regulation and a warning about the problems facing green and innovation procurement.
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1. - Introduction[1]

The procurement of public works is typically characterized by the use of rigid and transparent institutions to foster competition between contractors and limit the risk of corruption. In terms of the procedures used to award the contracts, this is often reflected in the widespread usage of sealed bid auctions. Moreover, the right to enter and bid in these auctions is granted on the basis of objective qualification criteria that should not create favoritism toward any specific contractor. Nevertheless, this paper shows that, even in systems that are formally rigid and transparent, favoritism can emerge through the fine design of the regulations for entry criteria and the awarding rules.

In particular, this paper analyzes the case of the procurement of public works in Italy focusing on different changes that occurred at local levels in the regulations of both the entry criteria and the awarding rules. In the next section, the paper describes in detail the legal framework to illustrate how formally these local reforms appeared not to alter the rigidity and transparency characterizing the national public procurement regulation. Then, it presents a theoretical framework that permits us to discern virtuous and vicious local reforms in terms of whether they induced an unfair advantage to local contractors. Exploiting differences in the timing of the adoption of these reforms, data from the years 2000 to 2008 are used to quantify the effects of these regulatory changes on the auction outcomes. Finally, the paper concludes with a series of policy implications describing the challenges an excessively decentralized procurement regulation poses for green and innovation procurement.

2. - The Legal Framework: Entry Criteria and Awarding Rules

Local authorities (regions, counties and municipalities) award around 54 percent of all the public work contracts. Since each of the 20 regions, 110 counties and 8,092 municipalities can produce regulations affecting public work contracts, the Italian regulation of public works is a rather complex blend of national and local regulations. The national regulation is contained in the Public Procurement Code (henceforth the "PPC"). Article 4.3 of the PPC expressly prohibits local

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regulation, among other things, of the qualification and selection of private contractors, award procedures and criteria. However, local administrations have frequently produced regulation in violation of this article and attempted to defende their doing so as a constitutional right. On different occasions the Constitutional Court has intervened to affirm the legitimacy of the provisions of Article 4 of the PPC, rejecting the appeals of many regions alleging infringement of the division of competences under Article 117 of the Constitution, and linking the principles of publicity, transparency and equal treatment to the protection of competition, attributed to the exclusive legislative powers of the State pursuant to Article 117(2)(e) of the Constitution.[2]

The national regulation governing public works has undergone a number of reforms over the last fifteen years[3] in response to, among other things, EU law aimed at improving the "design" of award procedures and enforcing the principles of publicity, transparency and equal treatment[4]. Currently, the national legislation related to procedures for the awarding of public works contracts is mainly contained in Legislative Decree no. 163 of 12 April 2006, which was enacted on 1 July 2006, and Presidential Decree no. 207 of 5 October 2010, that includes the

[2] See, among others, the sentences of 23 November 2007, no. 401; 14 December 2007, no. 431; 2 August 2008, no. 322; 18 December 2008, no. 411. Before the reform of Title V (pursuant to Constitutional Law no. 3 of 18 October 2001, *Amendments to Title V of Part II of the Constitution*), the field of public works of regional interest fell within the concurring legislation: then regions could dictate legislative provisions within the limits of the fundamental principles established by the laws of the State, insofar as the same are not in conflict with the national interest or that of other regions (see Article 117(1) of the Constitution, in the formulation prior to the reform). However, greater degrees of autonomy were granted to special statute regions and autonomous provinces, in accordance with their respective statutes. Se De NICTOLIS R. (2010).

[3] See DECAROLIS F., GIORGIANTONIO C. and GIOVANNIELLO V. (2010).

[4] There are now three different systems for selecting contractors: *i*) for "strategic infrastructures", aimed at giving high priority to these projects; *ii*) as introduced by Law 2009/2 of 28 January 2009, for projects falling within the National Strategic Framework; *iii*) the "ordinary" system, governed by Legislative Decree no. 163 of 12 April 2006, known as the Public Procurement Code (PPC), for all other types of project. In this paper we analyse the "ordinary" system, which applies to most projects. Note the existence of derogations for tenders involving contracts below the EU threshold, which is currently €5,000,000 for tenders for public works and concessions (see DECAROLIS F., GIORGIANTONIO C. and GIOVANNIELLO V., 2010). This paper focuses on traditional procedures for the assignment of public works. *In-house* contracts, which are strictly limited by the PPC, are not dealt with, nor are concession contracts (construction and management), which are characterized by very specific issues. For the peculiarities of public-private partnership contracts, see GIORGIANTONIO C. and GIOVANNIELLO V. (2009); CORI R. - GIORGIANTONIO C. - PARADISI I., 2010).

regulation for the implementation and execution of the PPC and entered into force, subject to certain conditions, on 9 June 2011. A brief discussion follows, also acknowledging the changes that occurred between 2000 and 2010 – the time period to which the dataset analyzed in this paper refers. In particular, we will focus on the following aspects: *i*) entry qualification requirements for companies; *ii*) award procedures (and the assessment of so-called abnormal tenders or abnormally low offers). For each of these two aspects, after having discussed the national regulation, we discuss the local reforms that affected it.

2.1 *Entry Criteria for Contractors*

The national regulation about entry criteria is rather straightforward. It mandates that the contracting authority finds, on the basis of the law and the characteristics of the work, the objective and non-discriminatory requirements which must be satisfied by companies to participate in the tender. The possession of these requirements is mainly certified through a system called qualification of enterprises, introduced by Law no. 415 of 18 November 1998 (the "Merloni-*ter*" law) and Presidential Decree no. 34 of 25 January 2000 (now replaced respectively by the PPC and Presidential Decree no. 207 of 5 October 2010). Under this system the certifying bodies ("SOA"s) are responsible for ensuring that companies meet the technical, financial and management requirements necessary for the purposes of the granting of public works contracts.[5] The possession of the certificate issued by the SOA is a necessary requirement for participation in the award procedure of public works contracts for amounts exceeding €150,000. The qualification has a five-year term. In the third year, however, the firm has to prove it still satisfies all the requirements.

Under this system, the administration awarding the contract has little discretion. Once it has determined the contract reserve price (*i.e.*, the maximum price it is willing to pay) and the typology of work (using a predefined classification system), then it must admit to the auction all the firms that have the SOA certification adequate for the type of work and contract reserve price.

As regards the regional legislation, numerous changes relative to the national regulation were introduced. Some of these modifications were short lived since they were declared unconstitutional by the Constitutional Court because they were in violation of the principles concerning the protection of competition and

[5] See DECAROLIS F., GIORGIANTONIO C. and GIOVANNIELLO V. (2010).

equal treatment. We will focus on three cases of local reforms affecting the Valle d'Aosta, Friuli Venezia Giulia and Sardinia regions.

Valle d'Aosta set up a regional register for firms and provided that entry in the register was a mandatory requirement for participation in award procedures for contracts whose value is below the EU threshold.[6] These provisions were declared unconstitutional in 2001, but the register was only finally repealed in 2005.[7] However, Valle d'Aosta immediately introduced other measures to favor firms located within the region.[8] In particular, it introduced "better suitability of localization" among the selection criteria. Only in 2006, when this latter regulation was ruled unconstitutional, Valle d'Aosta reverted to the national regulation in terms of entry criteria.[9]

Friuli Venezia Giulia contracting authorities to establish selection criteria to give priority to firms located in the region allowed until 2003.[10] Starting from November 2006, for the award of public works contracts whose value was below the EU threshold through restricted procedures (see definition below),[11] Friuli

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[6] Entry in the register was conditional on the adequate and efficient organization of the firm in the Region.

[7] See Article 23 of Regional Law no. 12 of 20 June 1996, amended by Regional Law no. 29 of 9 September 1999. The Constitutional Court declared the unconstitutionality of this provision with the sentence of 26 June 2001, no. 207. Article 23 was definitively repealed by Article 45(1), letter *a*), of Regional Law no. 19 of 5 August 2005.

[8] Public works contracts whose value was equal or less than €1.2 million: see Article 26(2) of Regional Law no. 12 of 20 June 1996.

[9] See the sentence of 22 December 2006, no. 440, which declared the unconstitutionality of Article 26(2), (c), of Regional Law no. 12 of 20 June 1996, as amended by Article 25 of Regional Law no. 19 of 5 August 2005, which provided that – if the number of qualified participants exceeds the maximum set by the tender – the contracting authorities could choose the firms to be invited according to the requirement of the "better suitability of localization", determined by both the absolute value and the percentage of the number of employees of the firms registered with the regional offices of the National Institute of Social Security in the year prior to publication of the call for tenders.

[10] See Article 24 of Regional Law no. 14 of 31 May 2002, which states that "contracting authorities are free to introduce into the "economically most advantageous offer criterion" priority criteria for firms that meet the following requirements: *a*) registered office with at least three years in the region at the date of the call for tender; *b*) works carried out in the region in the three years preceding the date of the call for tender, similar to those to be carried out". This provision was repealed with effect from April 2003, leaving the option for the contracting authorities to require the contractor to maintain an operational office in the region for the duration of the works: see Article 24 of Regional Law no. 14 of 31 May 2002, modified by Regional Law no. 12 of 30 April 2003, which became effective on 5 May 2003.

[11] See Article 20 of Regional Law no. 14 of 31 May 2002.

Venezia Giulia introduced another requirement for the selection of firms. "Organizational and dimensional suitability" criteria were added and, importantly, among the parameters used there was the number of employees of the firm registered with the Friuli Venezia Giulia National Institute for Social Security. In essence, this meant that only firms employing a sufficiently large number of Friuli workers were allowed to bid.[12]

Sardinia in 2002 set up a regional register for firms and mandated inclusion in that register for participation in award procedures. These provisions were amended in 2003 eliminating entry in the register as a mandatory requirement and they were declared unconstitutional in late 2011, because they damaged the exclusive legislative powers of the State in the field of protection of competition.[13]

2.2 *Award Rules*

What the economics literature defines as award rule (or auction formats) is determined in the Italian regulation by the combination of three elements: *i)* the award procedure, *ii)* the award criterion and *iii)* the automatic exclusion of abnormal tenders. As regards the award procedures, the PPC distinguishes between open and restricted. In the open procedure[14] the administration publishes a call for tender containing, among other things, an accurate description of the subject of the contract. The call for tender precedes the presentation of the offers by all interested parties, whose fulfillment of the requisites is verified when the bids are assessed. The restricted procedure[15] and the "simplified restricted procedure" applying to works worth less than €1.5 million[16] provide for an initial prequalification phase to ascertain requisites and identify the enterprises to invite on the basis of predetermined objectives and non-discriminatory criteria, and a subsequent

[12] See Article 3 (1) (c) of Presidential Decree no. 374 of 11 November 2004, as modified by Article 1(1) of Presidential Decree no. 328 of 27 October 2006, which became effective on 23 November 2006.

[13] See Article 2(1) of Regional Law no. 14 of 9 August 2002, which became effective on 9 August 2002, and Article 4(10) of Regional Law no. 13 of 23 December 2003, which was declared unconstitutional by the sentence of 7 December 2011, no. 328.

[14] Called "*pubblico incanto*" (public invitation to bid) in Law no. 109 of 11 February 1994, (the Merloni law).

[15] Which the Merloni law calls "*licitazione privata*" (closed tender).

[16] This threshold, originally €750,000, was raised to €1 million by Legislative Decree no. 152 of 17 October 2008 (known as the Third Corrective Decree of the Public Procurement Code) and entered into force on 17 October 2008. The threshold was then raised to €1.5 million under Decree Law no. 70 of 13 May 2011 (known as the Development Decree) and became effective on 14 May 2011, converted into Law no. 106 of 12 July 2011.

phase, where the entity only invites bids from the chosen subjects. In short, in open procedures the administration must specify the full characteristics of the service both in the call for tender and in the related auction documentation, while in the restricted procedure these descriptions can be included in the invitation letters. However, in the Italian system there is not that great of a difference between the open and restricted procedures. The regulation says that in all "ordinary" restricted procedures for the assignment of public works worth less than €40 million all applicants possessing the requirements listed in the call for tender must be invited to participate.[17] Therefore, all procedures are essentially open procedures.

The second key rule concerning contract awards is the specification of the criterion for determining the winner. Both procedures can use either the "lowest price" criterion or the "economically most advantageous offer" criterion (until 1 July 2006, when the Public Contracts Code was enacted, the lowest price was the "ordinary" award criterion).[18] Under the "lowest price" criterion, the enterprise offering the lowest price is awarded the contract, provided that this price is judged to be "reliable", pursuant to the regulations governing abnormal tenders; under the "economically most advantageous offer" criterion, not only price but a range of other parameters specified in the call for tender are assessed (e.g. the quality of the work or the time for completion as provided for in Article 83 of the PPC).

The third key element concerns the special rules for the assessment of so-called abnormal tenders or abnormally low offers (contained in Articles 86-89 of the PPC and Article 121 of the new Execution and Implementation Regulations), *i.e.* discounts on the publicly announced reserve price that fall below a threshold of "presumed anomaly". This threshold is generally an endogenous function of

[17] See Article 55(6) of the Code. Articles 62(1) and 62(2) state that in restricted procedures for works worth €40 million or more, a general government entity – when so required owing to the difficulty or complexity of the work – may limit the number of candidates invited. When it does so, the PA must indicate in the call for tender the objective, non-discriminatory criteria, according to the principle of proportionality, that it intends to apply, the minimum number of candidates it intends to invite and – if it thinks is appropriate for motivated needs – the maximum number. In any case, the minimum number of candidates may not be less than ten, provided that there at least that many suitable candidates. See DECAROLIS F., GIORGIANTONIO C. and GIOVANNIELLO V. (2010).

[18] While the recourse to the economically most advantageous offer criterion was limited to specific circumstances: see Article 21 of the Merloni law.

the bids.[19] Different methods to compute the threshold are used when the criterion is the economically most advantageous offer.[20] Offers thus identified, presumably too low to be considered reliable, must be subjected to a congruity check in debate with the interested parties before any exclusion decision.[21] An anomaly check is carried out in the next phase of the bid assessment, with a request to the bidder to supply justifications for the price offered.[22] In any case, before any exclusion the interested parties must be heard, so that they may indicate any element considered useful. Until 1 July 2006, for contracts below the EU threshold (about €5 million) awarded at the lowest price, for which at least five tenders were submitted, it was imperative to automatically exclude (without hearing the enterprise) all bids below the anomaly threshold. After that date, the latter mode of exclusion became purely optional (provided it was stated in the call for tender). Then, when

[19] In this case, verification is made on offers with a discount equal to or larger than the arithmetic mean of the percentage discounts of all the offers admitted, excluding the highest 10% and lowest 10% of offers (rounded to the next highest integer), increased by the mean arithmetic deviation of the discount percentages that exceed the aforementioned mean; however, if the number of offers admitted is less than 5, this criterion is not applied and the verification is made on offers that appear incongruous on the basis of specific elements. When the criterion of automatic identification of the anomaly threshold is not applied, the administration verifies bid reliability.

[20] In this case a check is made of bids in which both the scores relating to the price and the sum of scores relating to the other assessment elements are equal to or greater than four-fifths of the corresponding maximum scores stated in the call for tender.

[21] The choice of subjecting to a congruity assessment any other bid that appears abnormally low according to specific elements remains in any case at the government entity's discretion.

[22] In particular, general government entities require the justifications concerning the price items and other assessment elements of the offer and judge these elements (Article 86 of the PPC). These justifications may concern, for example, the costs of the construction procedure or of the production process, the technical solutions adopted, the exceptionally advantageous terms that the bidder can offer, and so on. However, the purpose of the anomaly check is not to detect specific individual inaccuracies but to ascertain the reliability of the offer as a whole (the decision of the Supervisory Authority for Public Procurement (AVCP), 8 July 2009, no. 6). Law no. 123 of 3 August 2007 added to Article 86 of the PPC paragraphs 3-*bis* and 3-*ter*, specifying that the contracting entities are required to determine that the economic value is appropriate and sufficient in respect to cost of labour and costs related to safety, which must be specifically indicated and must prove to be congruous with the extent and characteristics of the work to be carried out. Safety costs cannot be the object of bidding discounts. It is also possible to nominate a specific commission to carry out assessments regarding the congruousness of the offer: as stated in Article 121, paragraph 5, of the new implementing regulations, this commission should be composed of personnel internal to the administration, except in cases of motivated staff shortages or lack of the necessary technical competencies.

the Third Corrective Decree of the PPC became effective (17 October 2008), this possibility was limited to contracts with a value of less than or equal to €1 million and only if at least ten bids were admitted.[23] Recently, the Development Decree (enacted on 14 May 2011) provided again (until 31 December 2013) for the possibility to automatically exclude all bids below the anomaly threshold for contracts below the EU threshold (see Article 253 (20-*bis*) of the PPC).

Moreover, there is the possibility to use negotiated procedures, marked by significant discretionary powers for the administration, given that general government entities consult their chosen economic agents and negotiate the conditions of the contract with one or more of them. Insofar as these procedures represent a derogation to the general ban on renegotiating offers, they should be exceptional, being admissible only when specific conditions apply (chiefly those related to urgency or lack of appropriate offers or applicants). In this essay, we will ignore these procedures albeit in recent years their importance has grown thanks to the enlargement of the set of contracts for which they are usable.

To summarize the national regulation concerning award rules and to link it to the economic literature, note that what this literature calls "auction formats" corresponds to a combination of three parts: an award procedure, an award criterion and an (automatic or non-automatic) exclusion procedure for abnormal tenders. More particularly, it is possible to reduce the prescribed procedures and criteria to four "auction formats": *i*) *first price auctions*, FP; *ii*) *average bid auctions*, AB; *iii*) *scoring rule auctions*, SR); *iv*) – *negotiations*, N (cfr. Table 1)[24].

[23] See Articles 122(9), and 86(1) of the PPC. These changes were introduced in the wake of criticisms against Italy in relation to the contrast of the previous regime with the EU principles on competition law: cfr. ECJ judgment of 15 May 2008, joined cases C-147/06 and C-148/06.

[24] In more detail, *i*) FP auctions consist of open and restricted procedures adjudicated with the criterion of the lowest price without the automatic exclusion of abnormal tenders; *ii*) AB auctions consist of open and restricted procedures adjudicated with the criterion of the lowest price and the automatic exclusion of abnormal tenders according to the "averaged mean" method; *iii*) SR auctions consist of open and restricted procedures adjudicated according to the criterion of the most economically advantageous tender; *iv*) negotiations consist of negotiated procedures and piecework contracts. From the point of view of economic theory, competitive dialogue (which has been in place in Italy since 8 June 2011) can be considered, given its characteristics, as a particular type of negotiated procedure. On the subject of why the Italian system is structured according to this quadripartition and on the associated costs and benefits, see DECAROLIS F., GIORGIANTONIO C. and GIOVANNIELLO V. (2010).

TABLE 1

ITALIAN AUCTION FORMATS

Award procedures	Auction (Open Procedure + Restricted Procedure + Simplified Restricted procedure)			Negotiation (Negotiated Procedure + Piecework contracts)
Award Criterion and Exclusion Method for Anomalous Offers	First Price (without automatic exclusion)	First Price (with automatic exclusion)	Economically Most Advantageous Offer (without automatic exclusion)	Economically Most Advantageous Offer and First Price (with and without automatic exclusion)
Format	**FP**	**AB**	**SR**	**N**

**Source*: DECAROLIS F., GIORGIANTONIO C. and GIOVANNIELLO V. (2010).

As regards the local regulation of award rules, it differs from the national legislation in a number of profiles. For this reason, the Constitutional Court has intervened several times to censor local legislation. The most salient departures concern the AB auctions and thus we mostly focus on this format. The local legislation seems to prefer the automatic exclusion of abnormal tenders for public works contracts whose value is below the EU threshold, awarded in accordance with the criterion of the lowest price, albeit with many variations especially as regards to methods for computing the threshold of "presumed anomaly". This is illustrated by Table 2 which reports the main deviations from the national AB induced by local changes in the regulation.

TABLE 2

AB FORMAT IN THE NATIONAL AND LOCAL REGULATIONS

	Validity	*AB Auction Rules*
National Criterion	Since 1998	The winner is the firm offering the highest discount among those lower than A2, where A2 is the average between all the discounts that remain after excluding from the pool of bids 10% of the highest discounts and those equal or lower than A1, where A1 is the mean of all the discounts that remain after excluding the top and bottom 10% of all discounts.
Valle d'Aosta Region	Since 2005	Calculate A1 and A2 as in the national criterion. Then, the winner is the firm offering the discount closest to the mean between A1 and a randomly chosen number (among the 9 numbers partitioning in equal subintervals the distance between A2 and 10 percent of bids).
Friuli Venezia Giulia Region	Since 2002	The winner is the firm offering the discount closest (from below) to the mean of all the discounts remaining after excluding the top and bottom 10% of all discounts received.
Sicily Region	Since 2005	The winner is the firm offering the discount equal (or closest from below) to a value A3 calculated as follows: draw an integer between 11 and 40, this number will be the percentage of the bottom discount to exclude, while the difference between 50 and this number is the percentage of top offers to exclude. Calculate the mean of the remaining offers and then, if the integer previously drawn is between 11 and 24, add the standard deviation of bids and call this A3. If instead the integer was between 26 and 40, subtract from the mean the standard deviation and call this A3. If the integer is equal to 25, then A3 is equal to the mean. This bids elimination process occurs only with at least 5 bids.
	Since 2010	Reintroduction of the national criterion.
Sardinia Region	Since 2007	Automatic exclusion occurs if at least 5 (not 10) offers are placed.
	Since 2011	Reintroduction of the national criterion.
Turin City and Province	Various	It is forbidden to use any form of automatic exclusion of bids.

To illustrate how the rules described in Table 2 are applied, the following example shows how to determine the winner under various forms of the AB rule given a fixed set of 17 discounts offered. These 17 discounts are reported, in increasing order in the first row (Discount).

TABLE 3

EXAMPLE OF THE FUNCTIONING OF THE AB FORMAT

Discount	1	4	5	7	10	12	13	15	16.1	17.3	18.1	18.5	19	19.3	19.5	19.7	20
National										W							
Friuli V.G.							W										
V. Aosta					W												
Sicily									W								

In a FP auction, the winner is the firm offering a discount of 20. Instead, according to the national criterion for the AB format, the winner is determined by excluding the top and bottom 10% of the bids (*i.e.* the bids equal to 1, 4, 19.7 and 20), then calculating the mean of the reaming discounts (called A1, in the above example A1=14.6), then calculating the mean of the discounts above A1 and below the top 10% of bids (*i.e.*, above 14.6 and below 19.7). This second mean is called A2 and equals 17.85. The winner is the closest contender from below to A2 and in the example this is the discount equal to 17.3. Under the Friuli version of the AB format, the winner is the closest from below to A1, this is the bid equal to 13. For the Valle d'Aosta region, an integer must be drawn at random among the 9 numbers partitioning in subintervals of equal size the interval between the distance between A2 and the first discount higher than the bottom 10% discounts (*i.e.* a discount of 5 in this example). Assuming that we draw the lowest of the 9 values and then take the mean between this value and A2, we find that the winning bid is the closest from below to 11.2, which is the discount equal to 10. The last case is that of Sicily[25]. We need to draw an integer and we assume that we draw 40. Thus, we exclude 40% of the lowest bids and 10% of the highest bids. The mean among the remaining bids equals 18.25. We subtract from this number the bids standard deviation (equal to 1.21) and find that the winner is the firm offering the discount equal or closer from below to 17.04: this is the discount of 16.1. As a last remark, note that to illustrate the functioning of the different AB rules we held fixed the values of the 17 bids. However, it is very unlikely that these different AB formats would lead to observing the same bids distribution.

[25] See Article 1(6)(b) of Regional Law no. 16 of 29 November 2005, became effective on 3 December 2005. Starting from 2010, Sicily established a substantial reference to national legislation: see Regional Law no. 16 of 3 August 2010 became effective on 7 August 2010 and - after - Regional Law no. 12 of 12 July 2011 became effective on 29 July 2011.

Finally, note that Valle d'Aosta and Friuli Venezia Giulia[26] still require the mandatory use of the automatic exclusion of abnormal tenders for contracts of value is below the EU threshold, awarded in accordance with the criterion of the lowest price. Sardinia had also made provision for the automatic exclusion of abnormal tenders for public works contracts whose value is below the EU threshold, awarded in accordance with the criterion of the lowest price, but only on a voluntary basis. However, recently (June 2011), the Constitutional Court declared the unconstitutionality of the system adopted by Sardinia, stating the applicability of the PPC.[27]

3. - Theory Overview

This section begins with an illustration of why rigid awarding rules and transparent entry admission criteria play a central role in public procurement.[28] Then it presents the theoretical arguments according to which we assess the *pros and cons* of the local regulation reforms.

3.1 *Award Rules and Entry Criteria*

The element that most markedly differentiates private from public procurement is the separation, present only in the latter, between the entity awarding the contract and that paying its cost. This has lead the literature to cast the public procurement problem as a form of principal-agency problem where the general public is the principal benefiting from the realized public work and the administration is the agent awarding the contract. Since the principal cannot perfectly monitor the agent, the principal faces the risk that the agent deviates from what would be ideal for the principal. Seen in this light, the institutions governing public procurement are meant to discipline the behavior of the administration in order to ensure that its acts benefit the citizens.

[26] See, for Valle d'Aosta, Article 25 of Regional Law no. 12 of 20 June 1996, amended by Regional Law no. 29 of 9 September 1999, became effective on 22 September 1999, and was later amended by Regional Law no. 19 of 5 August 2005, which became effective on 21 September 2005; for Trento, Article 40 of Provincial Law no. 26 of 10 September 1993 and Article 24 of Presidential Decree no. 12-10/LEG of 30 September 1994; for Friuli Venezia Giulia, Article 25 (2) of Regional Law no. 14 of 31 May 2002 became effective on 19 June 2002.

[27] See the sentence of 20 June 2011, no. 184, wich declamed the incostitutionality of Article 20 (8) on Article 20 (9) of regional Law no. 5 of 7 August 2007.

[28] A more in depth discussion is contained in DECAROLIS F., GIORGIANTONIO C. and GIOVANNIELLO V. (2010)

Corruption and similar cases where the agent gains a personal benefit at the direct expense of the principal are the situations where the preferences of the principal and the agent diverge the most. To contain the risk of corruption, procurement regulations give a prominent role to the use of rigid procedures to procure public contracts: constraining the actions of the agent and imposing transparency are thus essential.[29]

Regulations often implement these ideas by mandating the use of sealed bid auctions that are both rigid and transparent mechanisms. Moreover, auctions have additional benefits. For outsourced works, when the sole objective is cost minimization and there are at least two enterprises capable of carrying out the works, the optimal mechanism is the lowest-price auction (FP) with an optimally set reserve price[30]. This mechanism makes it possible to overcome the information asymmetry between PAs and enterprises[31], as competition pushes the latter to disclose their costs, at least in part[32]. What is more, the mechanism also gives the enterprise with the lowest cost the best chance of winning (ensuring "allocative efficiency").

Regulating entry is equally important to prevent corruption. No matter what auction format is used, the administrations should not be allowed to discretionally exclude firms. Furthermore, to foster competition, open auctions where all bidders can enter are typically recommended. Nevertheless, a second major risk characterizing procurement is that of bidders default. We take a broad view according

[29] See LENGWILER Y., WOLFSTETTER E. (2006) and the references mentioned therein.

[30] MYERSON R.B. (1981). The term auction reserve price (or starting price) is the highest price the PA is willing to pay. One obstacle to optimality of FP auctions is that determining an optimum starting price implies the PA's knowledge of the distribution of costs of the enterprises. But even in absence of such data, theory suggests that the price ought to be: *i*) lower than the opportunity cost of not awarding the contract when firms' costs are mutually independent; *ii*) equal to the opportunity cost when firms' costs are not independent. In the Italian context, this opportunity cost consists of the total cost of a second auction (*i.e.* the expected cost of the works, plus that of the second auction and of the delay). The intuition underlying the result, by which the optimal starting price is below the opportunity cost, is that this should prompt enterprises to offer lower prices. Naturally, this also implies that in some cases the contract may not be awarded.

[31] Information asymmetry is the essence of the problem of selecting the private contractor: LAFFONT J.J. and TIROLE J. (1993).

[32] The enterprise faces a trade-off: the lower its mark-up, the more likely it is to win, but the lower the expected profits. For a business that wants to maximize profits, as the number of competitors increases the mark-up has to be reduced, to offset the decreased likelihood of winning (with more competitors, there is a higher probability of finding a very efficient enterprise to award the contract to). MYERSON R.B. (1981).

to which a bidder default encompasses every type of misperformance on a contract obligation. Thus, not only fully failing to deliver, but also delaying the project completion and requiring price renegotiations. The aim of limiting the risk that the winning firm may fail to carry out what it promised in the tender phase is the idea motivating the widespread use of entry criteria like those described earlier for the national regulation.

Similarly, the risk of default also shapes the types of auction formats. In contrast to a simple setting where bids are binding commitments, the presence of default risk makes the FP undesirable. As discussed in Decarolis (2009), an ample literature in auction theory shows that FP by exacerbating competition produces low awarding prices, but high chances of *ex post* default, typically causing a cost of procurement that is overall higher than under alternative mechanisms.

The AB auction is an auction format that was designed with the explicit purpose of limiting the default risk. Decarolis (2009) who shows that the type of ABA used in Italy has a unique equilibrium in which all bidders offer a price equal to the auction reserve price. Since a fair lottery is used to award the contract when this happens, the allocation of the contract is random across all bidders. This bidding behavior has an intuitive explanation: in order to win, every bidder (or coalition of bidders[33]) tries to guess where the other bidders are guessing where the relevant trim mean will lie, which creates a concentration of bids in a narrow range. The public disclosure of past winning discounts implies that these discounts can work as a simple coordination device to determine the range within which discounts will lie. Taken together, these findings imply that low *ex post* performance is less likely in AB relative to FP auctions because: *(i)* due to the randomization the most risky firms are not more likely to win and *(ii)* due to the high winning price the winner receives a larger payment from completing the job.

Avoiding defaults is possible through mechanisms different from the AB auction. For instance, to preserve the benefits of FP auctions while limiting the performance risk, three main systems are typically used: *(i)* financial guarantees to support bids, *(ii)* ex ante pre-qualification requirements for bidders and *(iii) ex post* screening of bids reliability. From a theoretical perspective, each of the three systems, or their combinations, could in principle solve the risk of *ex post* per-

[33] Conley T.G. and Decarolis F. (2012) extend the analysis to the case of bidders forming coalitions. They show that previously described equilibrium under full competition is weak to collusion, but that even with collusion the allocation resembles an unfair lottery and the awarding price is higher than in an FP, although lower than the reserve price.

formance. The Italian system requires only partial insurance, bidder pre-qualification (in the form of the entry crietria described earlier) and allows administrations to conduct *ex post* screening. However, since the regulations mandate that administrations screen bids using in-house personnel, the process is onerous for small administrations lacking the engineers and lawyers that typically follow this process. This explains the frequent use of AB auctions which ensure low default risk without the need to screen bids. However, this format is clearly highly inefficient given its quasi-random allocation of the contract.

3.2 *An Evaluation of the Local Reforms*

The previous discussion allows us to better understand the content of the local reforms described in section 2. Starting from the reforms of the award rule, a negative assessment can and must be given to those reforms that have introduced variations to AB auctions in contrast with national rules and without tackling the fundamental problems this format presents. At the level of economic theory, all the various AB formats introduced at the local level share the national criterion's characteristic of generating an equilibrium in which all firms offer a 0% discount. These changes, therefore, are unable to modify the fundamental inefficiency implied by the national system, *i.e.* it has become a sort of lottery, in which offers are disjointed from real production costs and it is a system that is highly vulnerable to risks of collusion. In view of these considerations, it seems reasonable to explain these changes as a tool for closing the market to enterprises from other regions, making it more difficult for them to adapt to an adjudication mechanism that differs from the national standard. In contrast, the reform in Turin in 2003 which forbade the AB in favour of the FP auction is an example of a virtuous local reform that improves over the national regulation. This is especially true because in Turin it was understood that a *naïve* substitution of AB with FP auctions was doomed to fail if implemented without a strengthening of the conditions guaranteeing bid reliability. In the case of Turin, this was achieved through an increase in the *ex post* bid screening in FP auctions.

As regards the reform of the entry criteria, though some of the reforms carried out at the local level may be useful to identify selective parameters for firms adhering to the specificities of the local territory (stricter measures against criminal infiltration, for example), most of the reforms illustrated in the previous section do not seem to be motivated by such aims, but rather by the attempt to reduce competition in favour of local firms. In particular, both the introduction of re-

gional registers (for example in Valle d'Aosta), and of the requirement for a connection with the territory (like the obligation of having an office in the region which was imposed by Friuli Venezia Giulia), do not guarantee greater reliability on the part of firms, but merely reduce potential competition.

In general, this translates into worse performance by the selection mechanisms for private contractors, in terms of higher costs for the contracting authority (and hence a possible waste of resources), due to the fact that the firm with the lowest cost will not be the one that is awarded the contract. Thus, favouring local firms tends to damage the community[34]. This is clearly evident if one considers the combined effect of these additional entry criteria and of the auction format used. Since the use of the AB auction already kept default risk at bay, the additional entry criteria were very unlikely needed to further reduce this risk and, instead, served for favouritism reasons.

4. - Empirical Analysis

This econometric analysis uses a previously constructed data set[35] containing information on approximately 150,000 contracts awarded by all Italian administrations between 2000 and early 2008 and reported to the Authority for the Supervision of Public Contracts[36] (AVCP from now on). Considering that this analysis addresses exclusively execution only contracts (not management contracts) for works assigned to external contractors and that the AVCP data is incomplete in parts, the present work only makes use of information about approximately 60,000 contracts awarded by local administrations.

This examination concentrates on three basic aspects concerning the performance of the adjudication process: *i*) the winning discount; *ii*) the number of offers

[34] However, due to the existence of residual contexts, where the damage created by the reduction of potential competition is limited or non-existent, only empirical analysis can establish whether the damage ensuing from these rules exists and how widespread it may be. For some preliminary answers on this subject, see the next paragraph.

[35] A detailed description of the data set is available in DECAROLIS F. (2009).

[36] The AVCP is the Italian Authority for the Supervision of Public Contracts for Works, Services and Supplies. Until today reports to the AVCP have been required for contracts over €150,000. On the basis of the data available for the first time in 2011, it is estimated that works worth over €150,000 account for 50% of all contracts awarded in terms of number and 94% in terms of value. These estimates obviously do not include military and civil contracts covered by secrecy rules.

received; *iii*) the probability that the winning firm is registered with one of the boards of trade in the contracting authority's region ("local winner"). For each of the Regions interested by one of the local reforms described early Table 4 shows the subdivision of contracts awarded between 2000 and 2008 according to the four auction formats: FP, AB, SR and N. For each region and each format the table indicates the mean value of the winning discount, the mean value of the number of offers, the probability of a local winner, and the number of tenders.

TABLE 4

DESCRIPTIVE STATISTICS BY AUCTION FORMATS

		Auction formats			
Dependent Variables:	Regions:	FP	AB	SR	N
Winning bid (mean)	Friuli	22.41	6.75	12.52	5.61
Number of bids (mean)	Venezia Giulia	10.58	14.16	8.24	5.65
Probability of local winner		0.08	0.66	0.71	0.85
Number of auctions		8	585	5	1,090
Winning bid (mean)	Sardinia	20.84	14.27	14.52	9.92
Number of bids (mean)		13.53	15.99	11.84	5.51
Probability of local winner		0.48	0.72	0.61	0.63
Number of auctions		59	3,693	75	184
Winning bid (mean)	Sicily	14	12.83	1.27	9.39
Number of bids (mean)		48.07	79.74	109.2	11.69
Probability of local winner		0.65	0.81	0.67	0.79
Number of auctions		214	5,828	53	401
Winning bid (mean)	Piedmont	29.4	14.95	14.2	12.18
Number of bids (mean)		11.62	29.64	18.28	5.96
Probability of local winner		0.73	0.65	0.5	0.75
Number of auctions		659	6,888	139	520
Winning bid (mean)	Valle d'Aosta	18.33	15.11	16.23	12.99
Number of bids (mean)		8.12	36.73	24.61	5.76
Probability of local winner		0.18	0.55	0.5	0.79
Number of auctions		2	873	28	258
Winning bid (mean)	Veneto	11.95	11	11.49	9.89
Number of bids (mean)		23.5	37.18	19.95	6.59
Probability of local winner		0.64	0.73	0.75	0.89
Number of auctions		201	5,711	98	1,706

Table 4 reveals several interesting facts. First of all there is an absolute preponderance of AB auctions over all the other formats. We also notice a considerable heterogeneity in the different regions in the use of the remaining three

formats. Secondly, in AB auctions we witness a lower discount in comparison to FP auctions, though the AB auctions receive a higher number of bids. The probability of having a local winner is markedly higher in the N format, even if in some Regions SRs present even higher values. While these results suggest significantly different performances in the contract award systems of the various regions because of the differences in local regulations and in line with the theoretical predictions of the previous paragraph, the detection of a causal relationship between the reforms under analysis and the performance measures has to, in any case, overcome the usual difficulties in estimating *causal effects*.

The following analysis exploits the local reforms discussed earlier to assess their effects on auction outcomes. Unfortunately, due to gaps in the available data and to the overlapping of several reforms in the same region at the same time, it has not been possible to analyse all the local reforms.

4.1 *Qualification Requirements*

Several local reforms among those described in Section 3 seem to be aimed at closing the local market to competition from external firms. The aim of this section is to empirically quantify the effectiveness of these rules in reducing the number of total bidders and in increasing the probability of a local contractor winning. Though the AVCP data does not allow us to know the geographical origin of all participants, they do allow this type of analysis for the winning firm. Table 5 below shows the results of a comparative analysis of the probability that an auction will have a local winner. The AB auctions are divided into two groups: those which took place before the reform under analysis and those which took place after it. The table illustrates how, for all three reforms, the change in the fraction of local winners takes place as expected: it decreases in Sardinia and Valle d'Aosta and increases in Friuli. However, only in the case of Sardinia do we find a statistically significant difference. This is a significant result, insofar as the geographical structure of Sardinia already makes the region a market with stricter barriers for external firms. In any case, the analysis shows that as well as the natural barriers, regulatory limitations could have played a role in Sardinia's closure to competition from non-local firms.

TABLE 5

EFFECT OF THE MARKET OPENING/CLOSING REFORMS ON THE PROBABILITY OF THE WINNER BEING LOCAL

	Opening		Closing
Dependent Variable:	Sardinia	Valle d'Aosta	Friuli
Dummy for Local Winner	AB	AB	AB
Pre-reform average	0.72	0.67	0.76
Post-reform average	0.66	0.57	0.81
Difference	-0.06***	-0.10	0.05
No. Observations	1,811	1,369	1,848

Level of significance of the t-test for the differences in the averages: *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Although suggestive of the presence of an effect of these local reforms, the comparisons in Table 5 might differ from the causal effect of the reforms. To investigate this issue further, we looked at the effect on participation of what took place in Valle d'Aosta and in Friuli, using a *difference-in-differences* methodology. In Valle d'Aosta, in December 2006, there was a period of opening up to the market with the special restricted procedure introduced by the region the year before it was declared unconstitutional. By contrast, in Friuli in November 2006 we witnessed a period of closure towards the market, with the introduction of a required minimum number of employees registered with the INPS Pensions Institute in the Friuli Region as a requirement for firms to participate in restricted procedure auctions. To carry out the *difference-in-differences* analysis we compare the outcomes in the auctions in Valle d'Aosta to those in the auctions of the neighbouring Piedmont region. Similarly, for the auctions in Friuli, our control group consists of the auctions held in the neighbouring Veneto region. Sardinia was excluded because of the difficulty in finding an appropriate control group. We chose time windows which would avoid any conflicts with other potentially relevant reforms.[37]

The dependent variables considered are the number of bidders, the winning discount and a dummy for the winner being local. The estimates reported in Table 6 indicate that the Friuli reform, a "closing" episode, is associated with a sharp decline in the number of bidders, but the statistical significance of the effect is not robust across different model specifications. A similar comment, but with the difference that the effect is positive on the number of bidders can be made for the reform in Valle d'Aosta, an "opening" episode. Nevertheless, for Valle

[37] For Friuli the time span is June 2003-August 2007; for Valle d'Aosta September 2005-September 2008.

d'Aosta this did not lead to savings in terms of awarding prices as, indeed, the winning discount is estimated to decline by about 2 percent.

TABLE 6.1

ESTIMATE OF THE EFFECTS OF THE FRIULI ENTRY CRITERIA CHANGE (CLOSING)

	Number of Bids		Winning Discount		Local Winner	
	(1)	(2)	(3)	(4)	(5)	(6)
Reform Effect	-18.54**	-13.28	-3.045**	-1.390	0.144	0.141
	(9.144)	(8.670)	(1.388)	(1.623)	(0.110)	(0.218)
No. Obs.	1,794	1,794	1,725	1,725	1,797	1,797
R^2	0.091	0.536	0.183	0.527	0.008	0.306

TABLE 6.2

ESTIMATE OF THE EFFECTS OF THE VALLE D'AOSTA ENTRY CRITERIA CHANGE (OPENIG)

	Number of Bids		Winning Discount		Local Winner	
	(1)	(2)	(3)	(4)	(5)	(6)
Reform Effect	14.80	17.42***	-2.344*	-2.063**	-0.006	-0.029
	(14.80)	(5.264)	(1.395)	(0.984)	(0.109)	(0.100)
No. Obs.	1,369	1,369	1,322	1,322	1,399	1,399
R^2	0.024	0.490	0.078	0.508	0.006	0.006

Robust standard errors in parenthesis. Significance: *** $p<0.01$, ** $p<0.05$, * $p<0.10$. Model (1) includes dummy variables for regions and years. Model (2) includes model (1) controls and also dummy variables: for the administration identity, its type (municipality or province), the level of the reserve price and the type of work.

Finally, in terms of whether these reforms increased the share of auctions awarded to local bidders, the signs of the estimates are consistent with the effects we predicted. However, the variability of the estimate does not allow us to identify any statistically significant effect once a series of checks for the type of work and of contracting authority are included in the regression.

4.2 *Auction formats: The Switch from the AB to the FP Auction*

A case of virtuous change of auction formats is that of the Municipality of Turin, which replaced the AB with the FP format in 2003. This choice, shortly afterwards made by the Turin province as well, was explained by the local legislator as necessary due to collusion between firms and to the total incongruity of the bids (always in great numbers) in relation to execution costs.

This reform has been analysed by a few recent studies. Decarolis and Conley (2011), analyses the behaviour of firms in AB auctions and develops two statistical tests aimed at identifying respectively the coordination in the offers and in the participation of colluding enterprises. These tests manage to replicate almost perfectly the structure of the Turin area cartels as identified by the Turin Tribunal in 2008 – which led to convictions on bid rigging charges of several firms active in the procurement sector through 8 cartels between 1998 and 2003.[38] The study illustrates how, paradoxically, the presence of several cartels is the only possible form of competition in AB auctions and thus reveals that, though the activity of the cartels is an offence, it also allows general government entities to substantially improve the contract price.

Although this result clearly illustrates the problems connected to the AB format, the presence of both default and corruption risks explains why the abandonment of the AB auction in favour of FP auctions is not necessarily positive, unless it is accompanied by measures aimed at reducing these two risks. If we analyse the effects both of the Turin reform and of the national reform adopted with the 2006 PPC, which made the automatic exclusion in cases of abnormal tenders for public contracts under the EU threshold optional and no longer compulsory,[39] we find that the shift from AB auctions to FP is associated with a substantial increase in winning discounts, but also with an increase in renegotiations. In particular, Decarolis (2013) estimates that the switch from AB to FP auctions in Turin caused an increase of the winning discount between 8 and 12 percent of the value of the reserve price. At the same time, the higher discounts in the adjudication phase are partly balanced by an increase in the final price paid. In particular, it can be estimated that the passage from automatic exclusion for abnormal tenders to first price auctions involves an increase of the renegotiated quota of the contract equal to approximately 6% of its value. Therefore, the total effect on execution costs can be obtained by subtracting the increase of the renegotiated quota from the increased discount and, ideally, adding the costs for screening tenders for their reliability.[40]

[38] See Trib. Torino, Prima Sezione Penale, 28 April 2008.

[39] See DECAROLIS F. (2009).

[40] From a more general point of view, the analysis of the total cost for general government entities should also take into account two costs the data does not reveal: *i*) transition costs associated to renegotiation and *ii*) the costs of carrying out the auction procedure. Furthermore, the time frame of costs itself is not necessarily irrelevant. For example, an entity with financial difficulties or one whose directors are about to leave office, may be inclined to benefit from the immediate savings produced by FP, knowing that an increase will only take place in renegotiation in a successive phase.

The increase in renegotiations proves the limits of the FP format, which is extremely vulnerable to the risk of failure to complete the work. These shortcomings, together with the expenses for bid screening, are probably the reason behind the new assessments made by Turin Province which, as already mentioned, decided in 2010 to revert to the automatic exclusion criterion for abnormal tenders for works worth €500,000 or less and with a maximum of ten tenders allowed.[41] Indeed, the data clearly shows how verifying congruity generates costs for the administration: with FP the adjudication process takes approximately 50 days longer than with AB auctions; in addition, in approximately 15% of cases, at least one offer is excluded, and this nearly always generates a further dispute.[42]

4.3 *Auction Formats: The Switch from the National to the Local AB Auction*

While for some administrations, given the current system, abandoning the AB auction without the appropriate precautions may not be optimal, it is reasonable to argue that there are no valid economic justifications for the various regional reforms aimed at keeping the AB format while modifying certain aspects of it. Many of these reforms, listed in Table 2, are difficult to understand from the point of view of improving the efficiency of the award system.

Particularly significant is the case of the reform in Sicily in 2005. The changes are only apparently a matter of detail: the lowest discount (or that equal to the abnormality threshold) wins, not the discount strictly below this threshold. From a theoretical point of view this radically changes the possible equilibria of the auction, allowing the presence of multiple equilibria where all firms offer the same identical discount, which has nothing to do with their costs. To evaluate this concern, we obtained a random sample of all the bids submitted in 131 AB auctions for roadwork contracts (*i.e.* work type: OG3) awarded in Sicily between 2005 and 2010. Strikingly, we find that more than half of all auctions are awarded at a discount of exactly 7.3%. The histogram on the right reports on the horizontal axis the number of bids submitted in each of the 131 auctions. This is consistent with what the firms had explained to us: the AB reform in Sicily increased the

[41] Also reserving the right to employ other procedures, if justified by the particular characteristics of a project.

[42] Again, in view of these considerations, we should not look unfavourably at the Regional Laws applied by several Regions in the South (Campania, Puglia, Calabria and Sicily), which, after the entry into force of the Public Procurement Code, prohibited the application of FP in favour of AB, thus guaranteeing that an inefficient process for assessing bids (mainly because of high corruption risks, not only because of technical inefficiencies) failed to produce significant damage on the award system.

randomness of the allocations even further, transforming the AB auctions in lotteries awarded at a fixed discount of 7.3 percent. Interestingly, an extremely high number of bids is submitted in these auctions: the average is around 100 and auctions with even more than 400 bidders are frequent. The Sicilian case is emblematic of this since the very large number of identical discounts often leads to the use of a lottery to award to one of the various firms with the same winning discount. In our sample of 131 auctions, as many as 76 auctions required a draw between firms to assign the project.

In a region like Sicily where, as we have seen, the regional legislator was particularly concerned about attempting to limit corruption risks, a random lottery undoubtedly has its advantages as a mechanism that can be made difficult to manipulate (for example, with a computerized draw process) and one which makes it easy for corruptive phenomena to be identified (for example, via statistical tests to identify the firms that tend to win more frequently compared to the frequency that non-fixed draws should allow). However, this mechanism inevitably implies an enormous waste of resources – an early survey of auctions held after the scrapping of automatic exclusion of abnormal tenders after 2010 reveals increases in the winning discounts that are on average 20 per cent of the value of the contract – without considering that, as already stressed, it is not advisable to combat corruption risks using the auction format itself as a weapon.

Therefore, for regions like Valle d'Aosta and Friuli where corruption is likely less relevant than Sicily any reform of the AB auction should have consisted in its abandonment, as Turin did. Instead, the reforms undertaken by Valle d'Aosta in 2005 or by Friuli in 2002 to slightly modify the AB rule do not solve the problems of the national AB format. In line with this prediction, Table 7 shows the results of *difference-in-differences* estimates of the effects these two reforms had on the number of bidders, the winning discount and the dummy for local winner.[43]

Results point out how in Friuli changes to AB increased the share of contracts awarded to local firms. There is also weak evidence that the winning discount worsened as a consequence of this reform. An effect on the winning discount that

[43] More specifically, for Friuli the control group was constructed using comparable contracts awarded in Veneto, while for Valle d'Aosta the same procedure was used taking Piedmont as the control group. For the analysis of Friuli, auctions that took place between August 2001 and June 2003 were used, so as to isolate only the effect of the change in definition criteria for abnormal offers which came into effect in 2002. For the same reason, the analogous reform in Valle d'Aosta, which became effective in September 2005, uses auctions announced between September 2002 and December 2006.

is strongly significant and large in magnitude is found for the Valle d'Aosta reform where the winning discount declines by about 6.5 percent. Therefore, the new award criterion in Valle d'Aosta, even more unpredictable than the national criterion, because of the random extraction of a value included in calculating the abnormality threshold, seems to have increased expenses for the contracting authorities in that Region.

TABLE 7.1

ESTIMATE OF THE EFFECTS OF THE FRIULI AB RULE CHANGE

	Number of Bids		Winning Discount		Local Winner	
	(1)	(2)	(3)	(4)	(5)	(6)
Reform Effect	-2.867	-1.675	-1.714**	-0.909	0.186***	0.134**
	(2.660)	(2.495)	(0.734)	(0.766)	(0.061)	(0.055)
No. Obs.	1,561	1,561	1,430	1,430	1,564	1,564
R^2	0.058	0.545	0.059	0.467	0.013	0.345

TABLE 7.2

ESTIMATE OF THE EFFECTS OF THE VALLE D'AOSTA AB RULE CHANGE

	Number of Bids		Winning Discount		Local Winner	
	(1)	(2)	(3)	(4)	(5)	(6)
Reform Effect	1.371	3.230	-6.562***	-6.482***	-0.026	-0.036
	(10.737)	(3.378)	(0.970)	(0.693)	(0.092)	(0.057)
No. Obs.	4,112	4,112	3,882	3,882	4,146	4,146
R^2	0.072	0.472	0.072	0.494	0.003	0.268

Robust standard errors in parenthesis. Significance: *** $p<0.01$, ** $p<0.05$, * $p<0.10$. Model (1) includes dummy variables for regions and years. Model (2) includes model (1) controls and also dummy variables: for the administration identity, its type (municipality or province), the level of the reserve price and the type of work.

5. - Some Policy Implications

A decentralized public procurement system in which local administrations draft salient parts of the regulation creates a *trade-off* between the ability of the system to respond to the specific needs of the territory and its capacity to produce benefit, at the aggregate level in terms of reductions in public expenditure and an effective allocation of resources. Local regulation may help the contracting authorities to respond better to the structural factors of their own geographical area, for instance, a particularly severe risk of corruption. From the opposite point of

view, however, local regulations can have heavily distorting effects on competition in the award of public contracts and hence come to increase the costs for contracting authorities and cause inefficiencies.

In the case of Italy, the local reforms that we described in the previous section appeared, with the exception of that of Turin, either ineffective or perverse. Their provisions entail a reduction in competition, in the form of both explicit forms of favouritism towards local firms and higher participation costs for external firms, which find themselves having to employ additional resources to adapt to the local regulations in question. Therefore, the first and most general implication of this study is to suggest a greater coordination of reforms between the central and local levels. Improvements could be achieved by the strengthening of the channels between the state, region and local authorities both in the process of rule-making and in that of *ex post* evaluation of the regulations. Furthermore, it would be desirable to create *ad hoc* technical structures within the AVCP with tasks of analysis and study of the reforms at the local level for the award of public works contracts, with the aim – on the one hand – to derive information about the specific characteristics of the area to which they relate.

A second set of policy implications regards the specific regulations that we analysed. It is clear that restraints to entry like those based on the geographical location of firms are a threat to the efficient allocation of contracts and should be eliminated. The implication regarding how to reform the AB auction is more nuanced. Ideally, because of the large inefficiencies that this format produces this mechanism, as well as any other auction with an automatic exclusion mechanism for low prices should be barred. In practice, however, this reform is advisable only if it could be accompanied by the introduction of stronger measures against breach of contract by the eventual awardee. In particular, for the case of Italy it may be useful to favor centralization in assessing anomalies and putting specialized technical bodies in charge[44] (following the model of the central purchasing agencies).[45] This could reduce the corruption risk of lowest-price adjudications and

[44] Under the regulations, the responsibility for assessing anomalies can be assigned to either an auction commission (where established) or to the technical organs of the adjudicating authority *i.e.* to the special commission pursuant to Article 88(1)(b) of the Public Procurement Code, preferably made up of personnel from the administration, with the possibility, however, of naming outside experts in the case of justified technical deficiencies and/or lack of resources. But these solutions appear unworkable for small authorities, which would find it hard to ensure satisfactory assessment of the congruity of bids with acceptable costs.

also contain the costs sustained by the single adjudicating authorities, which mainly reflect the checking of abnormalities.[46] Moreover, it would be appropriate to strengthen the system of guarantees, increasing the surety amount and to extend gradually the use of performance bonds, as done in the US.

A third set of conclusions regards green and innovation procurement. These new areas of procurement that have recently received substantial attention both at national and European levels will need regulations that carefully account for the problems documented in this essay. As regards green procurement, this activity seems particularly prone to manipulations on the side of local authorities. The tendency of local administrations to foreclose the market could be exacerbated by a regulation of green procurement that gives new margins to administrations to discriminate across firms. This is particularly salient because, given the tendency of administrations to favor local firms, green public procurement might be exploited as a justification for why the contract has to be awarded to firms located close to the location of the work. It is clearly extremely hard to evaluate the relative merits of having a contractor that is local, and so, for instance, produces fewer emissions to move its machineries to the location of the work, and a far away contractor that uses a greener production technology than the local contractor. This difficulty could be used strategically by administrations to promote favoritism. Therefore, clear and transparent national rules are greatly needed in this area.

The argument about risks for the procurement of innovation, instead, is based on the high regulatory fragmentation that this study revealed. Innovation procurement is an area in which due to the non-standardized nature of the good, competition is necessarily less fierce than for the procurement of standardized public works, like roadway repairs. Therefore, the barriers to competition posed by the

[45] The purchasing centre is an adjudicating administration that can directly purchase supplies and services assigned to other adjudicating authorities or proceed to award contracts or conclude framework agreements for projects, supplies or services in favour of those other administrations (Articles 3(34) and 33 of the Public Procurement Code). From this point of view, the measures enacted by Law 136/2010 (Special Anti-Mafia Plan and Delegation to the Government for Anti-Mafia Provisions) are of special interest. To rationalize and improve the quality of structures, the law provides for the institution, at a regional level, of one or more adjudication authorities to guarantee transparency, regularity and fair costs in the management of public contracts and to prevent the risk of mafia infiltration. The implementing procedures are defined in a presidential decree. These authorities could play a significant role in the assessment of abnormal offers. See DECAROLIS F., GIORGIANTONIO C. and GIOVANNIELLO V. (2010).

[46] See DECAROLIS F. (2009).

substantial degree of fragmentation of the regulation could be an insurmountable obstacle for innovation procurement. It is discouraging to observe how distorted and inefficient the procurement of simple public works appears to be in Italy. It is therefore essential that maximum attention is given to fixing the procurement system of the most traditional type of contracts. Otherwise, it seems only hopeless that innovation procurement can effectively work in a country like Italy.

6. - Conclusions

This paper has presented an analysis of how the fine details of the regulations governing the entry criteria and the award rules can significantly impact the functioning of a procurement system. Drawing from the case of a series of local reforms that took place recently in Italy, we have shown how even rigid and transparent institutions can be distorted to favour local contractors, thus creating inefficiencies.

The analysis presented is a cautionary tale against the risks of decentralizing the design of important aspects of the procurement regulations. The lessons learned for green and innovation procurement are twofold. On the one hand, the propensity of local administration to restrict the entry into auctions suggests that the green requirements might be used in a distortive manner to perpetrate favouritism. On the other hand, the excessive fragmentation of the Italian procurement regulation reveals the presence of severe barriers to competition that, for such a sophisticated type of procurement as the procurement of innovation, are likely to be a formidable obstacle to its proper functioning.

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