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## Reputation, Competition, and Entry in Procurement

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## WORKING PAPER

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# **Reputation, Competition, and Entry in Procurement<sup>1</sup>**

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SITE, Tor Vergata, Eief & CEPR

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## **ABSTRACT**

Based on my recent work with several co-authors this paper explores the relationship between discretion, reputation, competition and entry in procurement markets. I focus especially on public procurement, which is highly regulated for accountability and trade reasons. In Europe regulation constrains the use of past performance information to select contractors while in the US its use is encouraged. I present some novel evidence on the benefits of allowing buyers to use reputational indicators based on past performance and discuss the complementary roles of discretion and restricted competition in reinforcing relational/reputational forces, both in theory and in a new empirical study on the effects restricted rather than open auctions. I conclude reporting preliminary results from a laboratory experiment showing that reputational mechanisms can be designed to stimulate rather than hindering new entry.

*Key-words:* Accountability, Discretion, Entry, Incomplete contracts, Limited enforcement, Past performance, Procurement, Quality, Relational contracts, Reputation, Restricted auctions

*JEL Codes:* H57, L14, L15, L24

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<sup>1</sup> This review essay follows closely my talk for the invited session on procurement at EARIE 2011. I am grateful to Martin Peitz for arranging the session and commenting on this piece, and to my fantastic co-authors for their excellent skills and enormous patience. I'm particularly grateful to Giacomo Calzolari, Andrea Guglielmo and Riccardo Pacini who took time to help with or to read this essay. Research funding from the Swedish Competition Authority (Konkurrensverket) is gratefully acknowledged.

Firms, governments and international organizations repeatedly procure large amounts of goods and services of different value and complexity from outside suppliers. The fall in transport costs and other trade barriers together with technological developments in ICT considerably reduced the transaction costs of outsourcing, shifting the balance of the “make-or-buy” decision towards procurement.<sup>2</sup>

For a number of different reasons, from poor/costly contract enforcement to the complexity of many goods and services, court-enforced contracts are often not sufficient to achieve an effective governance of the exchange. Since procurement exchanges are rarely occasional, reputational forces may be exploited to improve on what formal contracting allows achieving.

This essay briefly reviews some recent work of mine with several co-authors aimed at better understanding the role of long-term relationships (relational contracts) and reputational mechanisms in procurement. In particular, I focus on how these interact with other crucial forces, like supplier competition, entry, buyer’s discretion and the regulatory framework.

Public procurement is particularly interesting because - besides sharing the governance problems of private procurement - it also has to solve the major problem of public governance: how to keep public buyers accountable in the absence of market pressures and with the many layers of agency shielding them from tax-payers’ control. The interaction between this regulation and the governance of quality in procurement transactions is all but trivial. Therefore, I emphasize more often issues related to the current public procurement debates, although most of the results discussed are relevant for both private and public procurement.

The debate on public procurement regulation is particularly intense in Europe at the moment, where the revision of the 2004 Directives 17 and 18, which coordinate public procurement in all EU countries, is taking place (See the EU GREEN PAPER 2011). However, there is a lively debate also in the US, in particular on how much discretion should be left to public buyers in the attempt to reduce transaction costs (see e.g. Yukins 2008) and on whether the use of reputational indicators based on past performance encouraged by the Federal Acquisition Regulations reduce the ability of new contractors to enter the market.<sup>3</sup>

A caveat is in order at this point. Space limitations do not allow me to discuss the many excellent previous papers on which the work discussed here builds. However, each of the mentioned papers has (or will have) a rich discussion of the related literature the reader can look at.

The reminder of the paper unfolds as follows. Section 1 discusses the main reasons why reputational forces are important in procurement and how regulation affects them in the case of public procurement. Section 2 presents evidence on the gains that a reputation mechanism can produce in terms of higher quality looking at the introduction of such a mechanism in a large firm. Section 3 offers a tool for interpreting these effects by discussing a theoretical model of the relationship between competition, discretion and reputation for quality in procurement. Section 4

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<sup>2</sup> We are talking about a large part of the world economy: public procurement alone amounts to over 15% of GDP in most advanced countries.

<sup>3</sup> The US Government Accountability Office just released a report dealing with this concern for the US Senate (GAO-12-102R, October 18, 2011). The relationship between reputation and entry is a central theme of this essay.

presents empirical evidence on these forces using a Regression Discontinuity Design approach. Section 5 deals with the question whether reputational mechanisms deter entry by new contractors looking at the results of a laboratory experiment, and Section 6 concludes with some avenues for future research.

## **1. Limited Enforcement, Reputation, Discretion and Accountability**

Reputational considerations are important in private procurement, whether they are informal and subjective or formalized in a feedback mechanism/vendor rating system (e.g. Bannerjee and Duflo, 2000). There are several reasons why complementing explicit contracts with reputational mechanisms based on ex-post evaluations of contractor performance may improve the governance of procurement transactions. These are linked to the inability of explicit contracts to describe or of the courts system to verify important aspects of the procurement transactions at reasonable cost, but also to the high costs of enforcing explicit contracts through litigation. Several important quality aspects of supplied goods and services, particularly of more complex and valuable ones, are either difficult to appropriately specify in an explicit contingent contract in a practical and cost effective way, or they are impossible to observe or properly evaluate ex-post for a third party that could enforce the contract (like a court or an arbitrator). Even when a qualitative dimension or choice could be specified contractually and verified by a court, the cost of enforcing the contractual remedies and the negative effects that this may have on the continuation of the buyer-supplier relationship often prevent an effective purely contractual governance.<sup>4</sup>

Even in the formal world of public procurement, contracts are often not enforced. For example, some years ago there was an in depth investigation of how public buyers manage the framework procurement contract auctioned off by Consip, the central Italian Public Procurement Agency. A specialized audit firms collected information on the execution of a sample of these contracts between 2005 and 2008 for a total of 4457 audits. It recorded whether the contractor violated contractual terms (technical and quality characteristics of the goods/services, timing of delivery and installation, accounting standards, after-sale support) and whether a penalty was enforced in case of violation of one of the terms of contract for which a penalty is required. Descriptive statistics in Table 1 indicate that the percentage of contracts in which an infringement (no-conformity to the contract) has been detected and registered by the buyer is relatively high, about 36%, 53% of which are identified as major non-conformities. However, the enforcement of penalties, the main contractual remedy, is dramatically low: only 3.4% of the major non-conformities detected and registered by the buyer are contractually sanctioned.

Corruption could of course be one of the reasons why contracts are not enforced in public procurement, the civil servant in charge may be bribed to accommodate lower performance without exercising remedies. We do not believe this to be the main explanation for these data, however, because we would expect a corrupt civil servant in charge of contract management to hide the low

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<sup>4</sup> In his classic study of relational contracting Macaulay (1963) discusses extensively the latter problem and reports a purchasing manager saying: “One doesn’t run to lawyers if he wants to stay in business because one must behave decently” (p. 61). On the often very high costs of contract enforcement see the discussion in Iossa and Spagnolo (2011) and references therein.

performance rather than recording it in the books, as this makes the non-enforcement of the contract evident. Moreover, lack of enforcement of explicit contractual remedies after low performance seems to be common in other countries where corruption is less of a problem than in Italy. Analogous anecdotal evidence on non-application of deduction exists for large procurement of complex services in the UK (e.g. HM Treasury, 2006) and for elderly care procurement contracts in Sweden, where in over  $\frac{3}{4}$  of the 120 procurement contracts we analysed, credible contractual remedies were not even present in the contract (e.g. Bergman et al., in progress).

***Table 1. Nonconformity and enforcement of penalties (2005-2008)***

	<b>No.</b>	<b>Penalties</b>	<b>% of penalties</b>
<b>Non-conformities, of which</b>	1614	63	3,90%
Major	848	29	3,42%
Minor	137	4	2,92%
Other nonconformities (not clearly identified)	629	30	4,77%
<b>Conformity</b>	2843		
<b>Total</b>	4457	63	1,41%

In private procurement past performance indicators affect the selection of suppliers and their behaviour because buyers can act upon past performance, refraining from selecting suppliers with a poor track record and favouring those with a good one. In public procurement this type of ‘discretion’ is typically limited. The need to prevent favouritism and corruption led lawmakers around the world to ensure that open and transparent auctions where bidders have equal treatment (even when in some dimensions they have very different track records) are used as often as possible. Open competition is not only seen as an instrument to achieve efficiency and value for taxpayer money, but also to keep public buyers accountable by limiting their discretion in the allocation of public funds.<sup>5</sup>

In many countries this attempt to reduce discretion led to a two-stage contractor selection process where a qualification stage that excludes firms without the basic ability to supply is followed by an awarding stage in which only the bids are evaluated, with no reference to the characteristic of the bidder. This amounted (almost) to a ban on reputation, as exclusion from the bidding stage is justified only for extremely poor past performance.

The fact that limiting discretion to ensure public buyers’ accountability comes at the possibly large cost of not allowing reputational forces to complement incomplete procurement contracts was stressed for example by Kelman (1990). A recent study by Bandiera, Pratt and Valletti (2009), exploiting the introduction of a central procurement agency in Italy as a policy experiment, shows that accountability gains from a tighter regulation reducing autonomy may be small. They find that semi-autonomous public buyers (universities and health authorities), which are endowed with more

<sup>5</sup>Another way by which lawmakers limit civil servants’ discretion is constraining ‘discretionary’ payments, i.e. monetary transfers not based on observable but non-contractible tasks. Public buyers then tend to recover their discretion – for the good or for the bad - at the contract management/enforcement stage; see Iossa and Spagnolo (2011) for an analysis of discretionary contract enforcement.

discretion, are significantly more efficient and are not more corrupt than more rigidly regulated ones (central administrations).

Kelman pushed for a deep reform of the US system when he was the head of public procurement during the Clinton administration. The reform pointed at reducing the rigidity of procurement rules in the Federal Acquisition Regulations and allowing public buyers to adopt more flexible purchasing practices common in the private sector, among which giving more weight to suppliers' past performance.<sup>6</sup> Since the Federal Acquisitions Streamlining Act in 1994, US Federal Departments and Agencies are expected to record past contractors' performance evaluations and share them through common platforms for use in future contractor selection.

In the EU things developed rather differently, almost in the opposite direction for member states countries with a tradition of decentralization flexible regulation. The EU Procurement Directives that coordinate public procurement regulation in the various European states considerably limit the possibility to use past performance information in the process of selecting offers. This has been one of the features under broader attack during the 2011 consultation for the revision of the EU Directives.<sup>7</sup> Curiously enough, current European regulation acknowledges the importance of reputation for some types of procurement. For example, the European Research Council (ERC) funds top researchers in Europe, selected through peer review, and the track record of the researchers is then the main awarding criterion. ERC funding is distributed almost only on reputation criteria in order to reach the best and the brightest. Other European instruments for the procurement of research, such as the FET-OPEN program, are based on a completely anonymous evaluation instead.<sup>8</sup> The reason why these two instruments are managed in such opposite ways is not clear. This is not surprising: the relationship between reputational forces, competition, entry and supplied quality/innovation is not yet fully understood, both in theory and in practice.

## **2. Reputation and Quality in Procurement: Suggestive Evidence from a Recent Experiment**

While the US has been increasingly emphasizing the importance of collecting, sharing and using past performance evaluations for selecting federal contractors, the European Union has been moving in the opposite direction. Not considering differences in past performance may clearly favour poor suppliers, possibly lowering final quality and value for money even if prices fall. But how large are these costs? What do we lose by not allowing reputation to work?

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<sup>6</sup>As in the case of independent central banks, maintaining accountability after an increase in public buyers' ex-ante discretion (independence) requires more stringent ex-post controls in terms of performance measurement and evaluation. A real of perceived lack of stronger ex-post performance controls may be at the root of recent concerns that this process may have led to excessive discretion and poor accountability in US public procurement (e.g. Yukins 2008).

<sup>7</sup>See the summary of the replies to the consultation at [http://ec.europa.eu/internal\\_market/consultations/docs/2011/public\\_procurement/synthesis\\_document\\_en.pdf](http://ec.europa.eu/internal_market/consultations/docs/2011/public_procurement/synthesis_document_en.pdf).

<sup>8</sup>Indeed, on the dedicated homepage of these programs one reads that: "The anonymity policy applied to short proposals has changed and is strictly applied. The part B of a short STREP proposal may not include the name of any organization involved in the consortium nor any other information that could identify an applicant. Furthermore, strictly no bibliographic references are permitted."

To appreciate the extent to which reputational forces may improve procurement outcomes, I briefly describe the preliminary results from an experiment we carried out in Italy, documented in Pacini and Spagnolo (2011). The experiment - unfortunately not a randomized one (the firm we worked for did not allow it) - suggests that reputational incentives may be very strong, able to greatly influence suppliers' behaviour already after a first generic announcement that past performance measures will be collected and used in the future for selection purposes.

The experiment relates to the introduction of a vendor rating system by one of the largest public multi-utility companies listed on the Italian exchange. The firm operates in the sale and distribution of energy, water services and public lighting. In order to maintain an orderly functioning of its power grid, the firm outsources works worth over 300 millions euro each year. Since this firm is controlled by a public administration, it has to apply the Italian Code of Public Contracts when selecting contractors and awarding contracts.<sup>9</sup>

Being a multi-utilities company, this firm falls in the "special sectors" which enjoy some flexibility in applying the Code. Starting from the second semester of 2007, it introduced a system of vendor rating for suppliers with the aim of using ratings to reward good past performance with a bonus at the contract awarding stage. The plan to introduce such a mechanism was announced to contractors, gradually disclosing details on its functioning and timing, along 5 main announcement events: the 20<sup>th</sup> of December 2007, the 4<sup>th</sup> of April 2008, the 10<sup>th</sup> of July 2008, the 21<sup>st</sup> of October 2008 and the 16<sup>th</sup> of January 2009.

The vendor rating score was a weighted average of 134 criteria linked to the stringent quality and safety regulation of this industry. These parameters were collected by a team of (rotating) auditors in a number on site visits. Auditors attributed a score to each parameter inspected and the set of parameters is divided into two macro-classes, Safety (51) and Quality (83), further sub-grouped according to 12 Safety and Quality dimensions (7 for Safety and 5 for Quality).

These Safety and Quality dimensions could in principle be governed contractually, but in Italy contract enforcement is slow and costly. Moreover, managers in charge of contract management found it difficult to exercise explicit contractual sanctions without worsening the prospects of long-term cooperation with suppliers.

We had access to the results of inspections in the period between the 16<sup>th</sup> October 2007 and the 19<sup>th</sup> November 2009 across 45 different contractors, 222 contracts and 1,952 works sites of a sample of 120 corresponding tenders. The inspections were carried out over the above-mentioned 134 criteria that were checked for a total of 64,537 times throughout the sample period. This has generated a time series of 64,537 observations (i.e. inspected parameters). Figure 1 shows the monthly distribution of the observations throughout the sample period (see the green bars), also with respect to the announcements. Moreover, we had access to data concerning 120 auctions used to award the contract, whilst for the remaining 102 contracts the corresponding auction data were missing. We carried out three simple statistical tests: i) a series of t-test on the 5 announcements relating the introduction of the vendor rating in the awarding phase on the reputation score and auction discount

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<sup>9</sup> The Code is the law that has implemented the European Union public procurement directives 17/2004 and 18/2004.



time series; ii) a probit estimation on the single parameters scores; and iii) the correlation between reputation score and auction discounts.

FIGURE 1 AND TABLE 1 ABOUT HERE

The results show a strong increase in provided quality/safety levels starting after the first announcement (see Figure 1, Overall Reputation). Significant jumps (structural breaks) take also place at the other announcements reviewing the collected individual performance indicators and giving further information on the development of the project.

FIGURE 2 ABOUT HERE

On the other hand, no structural breaks are observed in winning discounts/prices (see Figure 2): it appears that there is no correlation between discounts/prices and quality/safety of works. Apparently, the strong increase in quality and safety has come as a (almost) free lunch to this firm.

### **3. Discretion, Restricted Competition, Relationships and Quality: Theoretical Background**

The relationship between discretion, the provision of non-contractible quality and the degree of competition and collusion is the focus of Calzolari and Spagnolo's (2009) theoretical analysis. In that paper we address the possible trade off between a principal's need to let agents compete to screen them for ability and appropriate surplus, and the need to leave agents sufficient future rents to enforce provision of non-contractible quality/investments. We study a dynamic model with adverse selection and moral hazard where a principal trades recurrently with one among multiple, heterogeneous, privately informed agents when non-contractible dimensions of the exchange are more or less important.

We characterize the optimal relational contract, defined in the broad sense to include equilibrium choices on explicitly contracted features, on non-contractible dimensions and on the competitive screening policy. We consider both the case in which the principal can operate discretionary monetary transfers – like bonuses conditional on non-contractible performance – and when he cannot like in public procurement; and situations where agents compete in the auctions and when collusion among agents is an issue.

We find that when agents compete and performance bonuses conditional on non-verifiable performance are available, like in private procurement, the buyer optimally chooses: (i) recurrent open competition (open auctions) with ex-post performance bonuses when non-contractible dimensions are not too important or there are few and heterogeneous potential suppliers; (ii) negotiations with a single agent on an indefinitely renewed contract conditional on non-contractible performance when quality is crucial and there are many homogeneous potential suppliers; (iii) in all other cases restricted competition (restricted auctions) with past performance based incentives, i.e. recurrent competitive screening among a stable subset of qualified/loyal agents (the more important non-contractible performance, the smaller the subset), under the threat of exclusion.

In public procurement direct negotiations and discretionary transfers are typically not possible, but restricted auctions can often be used.<sup>10</sup> For this case we find that the buyer optimally chooses restricted auctions with the threat not to invite suppliers with poor past performance when non-contractible quality is crucial and/or there are many homogeneous competing suppliers. When there are few heterogeneous suppliers - unless non-contractible quality is important - the public buyer optimally chooses instead open competition, coupled with the threat to switch to restricted competition excluding non-performing suppliers if provided quality is too low. That is, when potential suppliers are not too many or too homogeneous, public buyers' discretion – their ability to switch to restricted competition and refrain to invite suppliers that performed poorly – is sufficient to elicit the desired quality without the need to restrict competition from the beginning.

This implies that restricted auctions should be more often optimal now that globalization widened the supply market and increased competition, driving out more inefficient firms. Restricted auctions coupled with dynamic strategies that penalize poor past performance should also be more often optimal when the buyer cannot pay performance bonuses conditional on non-contractible performance, as is the case in public procurement (and in international organizations and some large firms with internal accountability problems). Private buyers may elicit more competition without losing non-verifiable quality because they can use informal performance bonuses to enforce it, provided their temptation to renege on promised bonuses is kept under control by their own reputational concerns.

The paper then goes on studying optimal contract duration and the case in which agents could collude against the principal, identifying a general trade off between reputation and collusion.<sup>11</sup>

#### 4. Restricted vs. Open Auctions in Procurement: Preliminary Empirical Evidence

Calzolari and Spagnolo's (2009) results highlight the complementary but different roles of buyer's *discretion* and of *restricted competition* in eliciting non-contractible quality through long-term relationships, whatever the reason why quality is not contractible.

*Discretion* is necessary and alone sufficient to enforce moderate levels of non-contractible quality even with open competition, particularly in procurement markets with few and heterogeneous potential suppliers. In private procurement discretion takes the form of the ability to pay a bonus conditional on non-verifiable performance measures; in public procurement such payments are not permitted and discretion takes instead the form of ability to use restricted auctions in the future and avoid inviting a supplier that performed poorly today.<sup>12</sup>

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<sup>10</sup> Under most procurement regulations we are aware of there are conditions that allow the buyer to resort to restricted auctions where only the invited bidders can participate, typically with some constraints on the minimum number of invited bidders.

<sup>11</sup> The design choices that allow the principal to enforce higher non-contractible quality – restricted competition and shorter contract duration – also facilitate the enforcement of bidding rings between suppliers. The study also identifies situations in which supplier collusion is beneficial to the buyer deriving a theory of optimal consortia and joint bidding.

<sup>12</sup> Another way in which public buyers recover the discretion that accountability rules try to remove is changing the execution of the signed contracts, something we unfortunately don't have room to discuss. See Iossa and Spagnolo (2011) for an analysis of the ex-post choice whether or not to enforce contractual clauses and of how this discretion

*Restricted competition* must complement and reinforce discretion when non-contractible dimension are crucial and many homogeneous suppliers compete to serve the buyer, so that the informational rents with open competition are insufficient to elicit the optimal level of quality.

*Entry* of new suppliers is then also limited in order to provide sufficient rents to incumbents to induce them to provide non-contractible quality.

Of course discretion and restricted competition can generate corruption, i.e. they can be used to extract bribes from suppliers much in the same way in which they can be used to enforce non-contractible quality. Ex-post data collection and controls become then crucial to keep public buyers accountable. Whether higher corruption or higher quality is the dominant effect of increased discretion in a given environment is an interesting empirical question.

In Coviello, Guglielmo and Spagnolo (2011) we try to quantify the causal effects of the increased discretion and reduced competition linked to the use of restricted auctions in public procurement. We analyse a large database of Italian public construction procurements to estimate the causal effect of the use of restricted rather than open auctions on both ex-ante (number of bids, awarding price) and ex-post outcomes (completion time, cost overrun). The latter outcomes are in principle contractible, but regulatory limits to penalties for contract violations and high contract enforcement costs severely limit the scope for contractual governance. Moreover, cost overrun still create problems to buyers who may then prefer contractors that do not incur in them too frequently. We also try to identify the presence and effects of repeated procurement relationships sustained by the higher discretion left to public buyers when they are allowed to use restricted auctions.

We collect data on a large sample of procurements for public works in Italy for the years 2000-2005, with the characteristic that the award mechanism discretely changes across them. Procurements are assigned by law to an award mechanism on the basis of the reserve price of the procurement project, which should be rigidly based on engineering estimates of the costs of completion performed according to codified criteria. Procurements with reserve price/estimated value below an exogenous threshold can be awarded with a restricted auction where a minimum of 15 suppliers are invited, while those above threshold must be awarded with an open auction. A Regression Discontinuity Design (RDD) can then be used to compare auctions with reserve prices immediately above or below the discontinuity. Absent sorting/bunching around the threshold, these two groups of procurements have different awarding mechanisms but should otherwise be identical in terms of observable and unobservable characteristics determining the outcomes of interest.

We first look at the effects on ex-ante variables like number of bidders, entry and the winning rebate. We find that restricted auctions mildly reduce the number of bids but do not have any significant effect on the winning rebate. This is likely due to the legal constraint that requires at least 15 bidders to be invited in a restricted auction. It may be ensuring that although they allow for

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interacts with relational contracts inducing parties to include in their contract clauses that at a first sight appear highly inefficient.

discretion - in the sense of opening the possibility of excluding (not inviting) a given bidder - restricted auctions do not significantly reduce competition.<sup>13</sup>

We then look at the effects on ex-post outcome variables related to the efficiency in contract execution. We focus mainly on work length and cost overrun. We find that the use of restricted auctions does not significantly affect cost overrun or completion time, but leads to larger limitedly liable firms winning more often. Since limitedly liable firms are the largest, it appears that contracting authorities choose larger firms when they can, thanks to the use of restricted auctions.

We next study the effect of the awarding mechanism on the winning probability of incumbents, i.e. suppliers that already served that buyer in the recent past (defined in different ways). We find that relative to restricted auctions, the use of open auctions reduces the probability (frequency) of awarding the contract to a previous winner by 83% (one interaction). It appears therefore that open auctions considerably limit long-term relationships between contracting authority and firms, whether aimed at improving quality or at sustaining corruption.

These are preliminary results that need to be checked for robustness to several possible problems. Still, they seem to suggest that, at least in the Italian public construction sector, the use of restricted auctions may have improved ex post outcomes (completion time) by unleashing buyers' discretion without reducing competition but limiting the entry of suppliers coming from other areas. They also seem to square well with Bandiera et al.'s (2009) finding that public bodies with more autonomy/discretion were not more corrupt but were significantly more efficient in procuring public goods and services in Italy during about the same period.

## 5. Reputation and Entry

Let me now turn to the folk wisdom among European lawyers and officials that the use of reputational indicators based on past performance would hinder entry of new suppliers and cross-border procurement. This concern is apparently shared also across the ocean. As mentioned in the introduction, on October 18, 2011 the US GAO published the results of an inquiry on Federal agencies' use of past performance information for contractors selection, in reply to US Senators asking whether this could reduce the ability for new or smaller firms to enter the procurement market ([GAO-12-102R](#), 2011).

It is natural to think that if past performance is important incumbent firms are likely to have an advantage that might deter entrants. The first formal analyses of reputation for quality in the 80s were indeed concerned with how reputational forces sustaining quality could be compatible with free entry (Klein and Leffler 1981, Shapiro 1983). However, in the case of public procurement and of firms' vendor rating systems, we are talking about reputational mechanisms based on public rules, known and accepted by suppliers, like in eBay. Formal mechanisms and rules give commitment power to the buyer and can be designed in quite different ways (Dellarocas et al. 2006). A common mistake is to assume that they must be designed along the line of the eBay

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<sup>13</sup> Indeed the average number of bidders with open auctions is similar to the minimum number of invited bidders in the restricted one, so that with costly bidding the invitation may be playing the role of a coordination device for participation.

feedback system, where new sellers start with zero reputation. This is a mistake in the sense that a reputational mechanism may well award a positive rating to new entrants - e.g. the maximum, or the average rating in the market – even if they never interacted with the buyer before.

Private corporations often have vendor rating systems in which suppliers start off with the same maximal reputational capital - a given number of points - and then lose points when performing poorly and may recover them by performing well, but keeping below or at best maintaining the initial level. In these quality assurance systems incumbents that already served the buyer may have lost some of the initial reputational capital while any new entrant would start off with the full initial reputational capital. This type of vendor rating system creates an advantage for new suppliers, stimulating rather than hindering entry. This suggests that it is possible to design a reputational mechanism in public procurement that sustains at the same time quality and entry.

To verify this conjecture in Butler, Carbone, Conzo and Spagnolo (2011) we develop a simple 3-period model of competitive procurement with non-contractible quality provision/investment and possible entry (in the third and final period) and implement it in the lab. We use it to ask whether reputation-based procurement must necessarily deter entry and which are the effects of a vendor rating system on quality and price when an entrant can have a positive entry reputation. A reputational scheme rewarding past provision of high quality with a bid subsidy in the next auctions is then introduced. The potential entrant in the third period has also a bid subsidy in some of the treatments.

We find that in the absence of a reputation mechanism quality provided was low in all periods, prices were higher than production costs and there was a high frequency of entry. When a reputation mechanism is introduced that rewards an incumbent that produce high quality with a bid subsidy in the next auction, provided quality was high, prices were not much higher than in the no reputation treatment and entry became much more rare. When incumbents that produced high quality and the potential entrant have the same reputation/bidding subsidy, delivered quality remained high, prices did not increase significantly but entry was as frequent as in the no-reputation treatment.

If confirmed by other experiments, these findings imply that there is no real trade-off between reputation and entry, i.e. there is no need to give up reputation and quality to increase entry and cross-border procurement in the EU. It is sufficient to appropriately design the reputational mechanism.

## **6. Conclusion**

The interaction between the shape of explicit procurement contracts and the design and functioning reputational mechanisms remains an important topic for future research. Relatedly, contract theory has developed under the assumption that contracts are either enforced or renegotiated. In reality explicit contracts are used in a much more flexible way. Theoretical and empirical studies of optimal procurement design with endogenous contract management and costly contract enforcement, in the spirit of Iossa and Rey (2011) and Iossa and Spagnolo (2011), will be of sure value both from a positive and a normative point of view.

Of course, increased discretion and restricted competition can facilitate corruption besides eliciting quality. Whether higher corruption or higher quality is the dominant effect of increased public buyer, discretion in different environments is an interesting theoretical and empirical question. A main empirical problem is data availability, as most accountability checks and data collection focus on the bidding and contract awarding phases. Controls and data collection on the final outcomes - the really delivered quality and total payments – are instead necessary for reputational mechanisms to work but also to ensure real accountability (corruption can easily be relocated from the bidding/awarding phase to the contract management/execution stage). National and international oversight bodies should therefore focus much more intensively on coordinating the collection and publication of these ex-post outcome data that can then be used by researchers for doing more serious policy evaluations than those currently available.

Procurement regulation has been and is currently changing in Europe, and the policy evaluation studies commissioned until now by the Commission have been poor from all points of view. Provided the Commission and member states improve data collection and make their data publicly available, an interesting and useful avenue for future research is certainly the application of modern policy evaluation techniques to assess the impact of changes in the procurement regulation.

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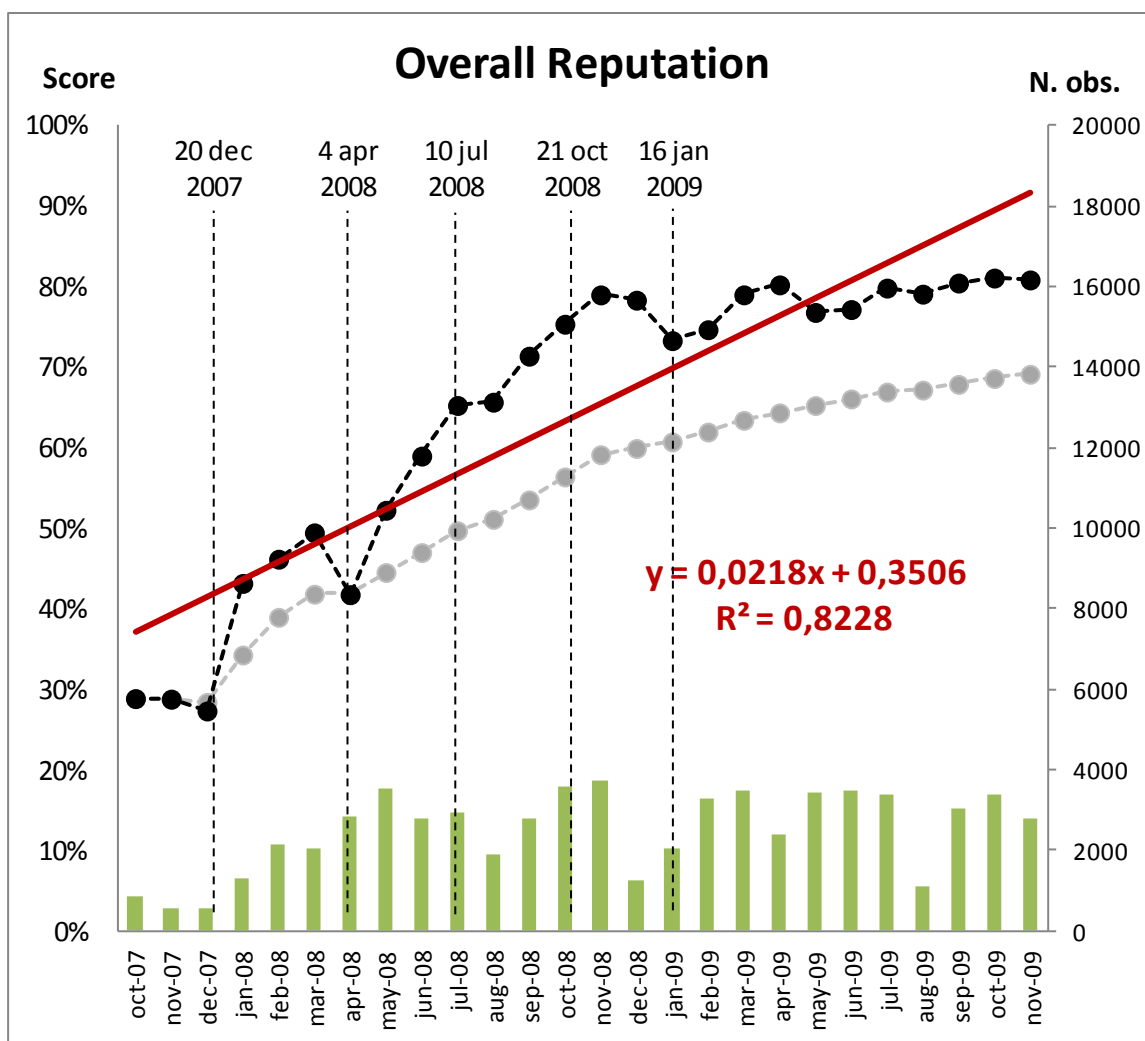


Figure 1

**Legend:**

The black line shows the average score calculated on all parameters inspected in the month of reference.  
The grey line shows the cumulated average score calculated on all parameters inspected until month of reference.

The red line is the trend calculated out of the black line.

The green bars are the total number of parameters checked throughout the month of reference.

The vertical dashed line identifies each announcement date.



<b>T-test</b>					
	<i>Announcements</i>				
	<b>1st</b> 20 dec 07	<b>2nd</b> 4 apr 08	<b>3rd</b> 10 jul 08	<b>4th</b> 21 oct 08	<b>5th</b> 16 jan 09
Overall	–	–	–	–	–
<i>Main Dimensions</i>					
Safety (S)	–	–	–	–	–
Quality (Q)	–	–	–	–	–
<i>Specific Safety and Quality Dimensions</i>					
S - Equipment and machinery	–	–	–	–	–
S - Documentation	–	–	–	–	–
S - Works execution	–	–	–	–	–
Q - Works on joints	+	0	–	–	–
Q - Customer relationship management	+	+	–	–	–
Q - Air works	n.a.	–	–	0	0
Q - Underground works	–	–	–	–	–
Q - Transformer station works	0	0	0	0	0
S - Personnel	–	–	–	–	–
S - Works site regularity	–	–	–	–	–
S - Works site safety	–	–	–	–	–
S - Works site controls	n.a.	n.a.	n.a.	0	0
<i>Most awarded and audited firms</i>					
AC	–	–	–	–	–
AF	–	–	–	–	–
AI	–	–	–	–	–
AL	–	0	–	–	–
D	–	–	–	–	–
G	–	–	–	–	–
L	n.a.	–	–	–	–
M	–	–	–	–	–
U	–	–	–	–	–

Table 2

**Legend:**

–/+ = score before the announcement is significantly (5%) lower/higher than after

0 = score not significantly different

n.a. = not available

Each test is run between the group of all parameters inspected before the specific announcement and the group of all parameters inspected after the specific announcement, for each category in each row.

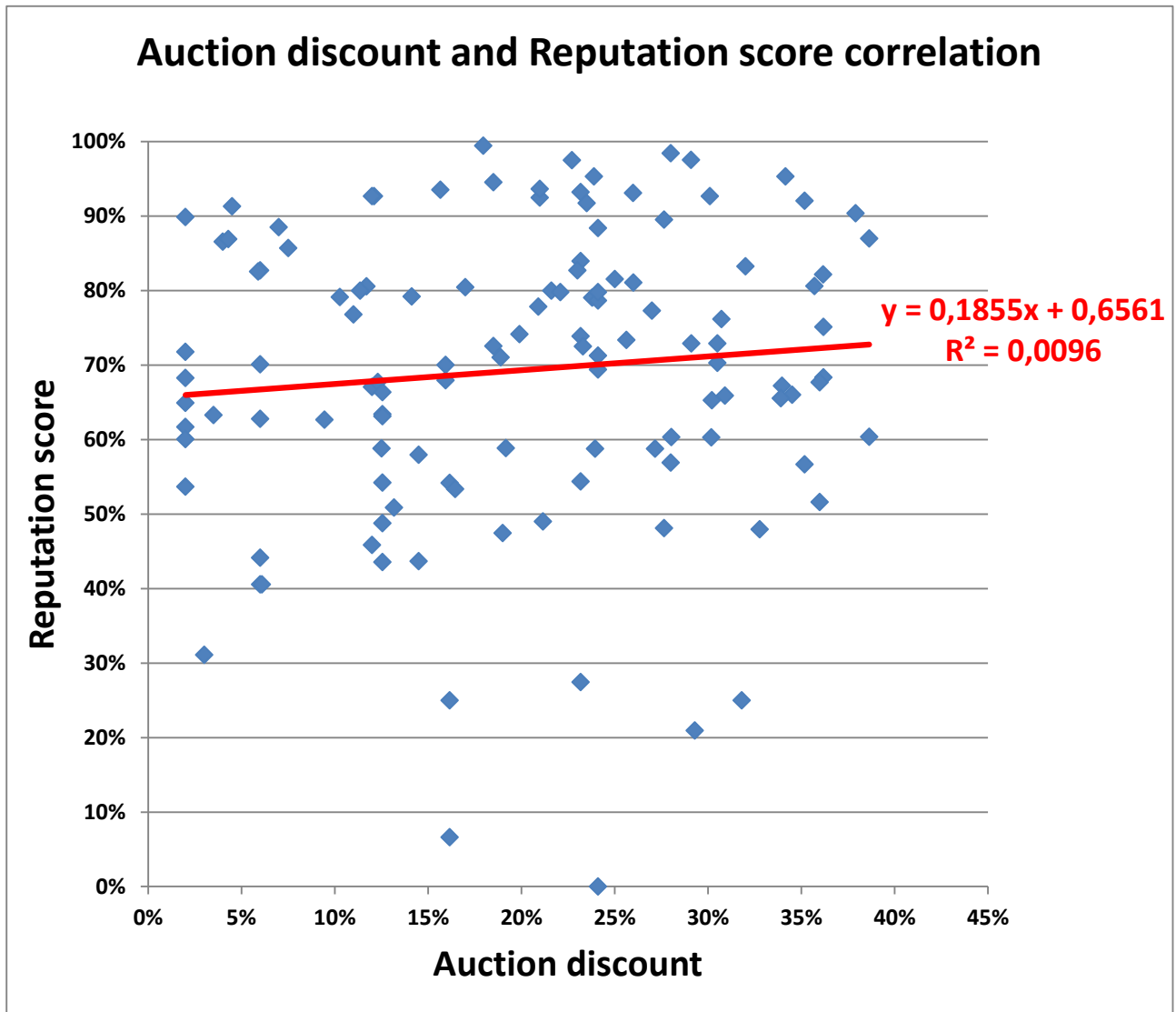


Figure 2

**Legend:**

Each blue dot identifies one contract to which is associated the discount offered by the winning firm (on the x-axis) at the auction where the contract was awarded and the score calculated on all parameters inspected throughout the same contract life (on the y-axis). The red line is the linear regression line calculated out of the 120 auction discount / reputational score combinations, where the reputational score is the dependent variable and the auction discount is the independent variable. The auction regression coefficient, 0.1855, is not statistically significant (p value = 0.29).