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Out of sight, out of mind? Supplier spatial proximity in French public procurement

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Abstract

Purpose – The purpose of this paper is to study the impact of spatial proximity on supplier selection in the French public sector. While French public procurement legislation forbids consideration of supplier location in the procurement process, public contractors may still rely on spatial proximity for complex transactions necessitating mutual adjustments with suppliers.

Design/methodology/approach – Using French Official Journals (BOAMP), the authors compiled 565,557 transactions completed on three public procurement markets between 6,182 contractors and 26,570 suppliers, over a period of six years (between 2006 and 2011). The authors conducted a two-level hierarchical linear auto-regression analysis and a feature evaluation analysis for all transactions.

Findings – The paper finds significant variation between the transactions on different markets: a negative effect of spatial proximity on the number of contract notices in the public market and a positive effect of spatial proximity on the number of notices in the services and supplies markets. The difference lies in the levels of mutual adjustment required to optimally manage the relationship between public contractor and supplier.

Research limitations/implications – The research is based on an econometric analysis conducted uniquely in the French context, which calls into question the external validity of the results obtained. The study also rests on segmentation into three aggregate markets, which might be considered too general.

Originality/value – Rather than analyze public contractors' perceptions of the importance of the criterion of spatial proximity, the paper examines 565,557 actual transactions. The results point to the emergence of a new type of relationship with certain suppliers, which should lead public contractors to integrate relationship management competencies, in addition to legal and economic competencies, in the organization of calls for tenders.

Keywords Public procurement, France, Supplier selection, Spatial proximity

Paper type Research paper

Introduction

Relationships between customers (public contractors or procurers) and suppliers on public markets are governed by precise rules. Inviting suppliers to reply to calls for tenders is a powerful institutional basis to manage this relationship. Competition is notably encouraged when a public contractor awards a scarce resource (oil concession), a usage right in the public domain (cellular telephone frequencies), or a right to meet demand (water distribution) and when it privatizes an activity carried out by the public sector (highway operation). In such situations, suppliers that can offer users

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high service quality at the lowest cost to taxpayers play a crucial role in helping minimize public expenditures. The question of selecting the suppliers with the lowest cost and highest service quality pertains not only to the state level, concerning proposals for large infrastructures (Olympic stadium, museum, etc.), but also to rural towns that seek to procure services for school cafeterias or repair the roof of the municipal building.

The legal framework of public procurement constrains not only supplier selection but also governance of exchange relationships (Burnes and Anastasiadis, 2003; Adam *et al.*, 2012). A number of contractual arrangements issuing from long and complex call for tenders processes are intended to guarantee the effectiveness of purchasing procedures, notably by eliminating favoritism and corruption (Tadelis, 2012). The contract thus defines the general requirements and essential obligations that govern relationships between the public contractor and supplier. It stipulates in detail the procedures and objectives imposed on both parties during the conduct of the exchange: price, service quality, delivery times, payment conditions, penalties, dispute settlement procedures, etc. Lastly, suppliers are chosen based on their capacity to respond effectively to criteria retained by the public contractor (Thai, 2009).

Ostensibly, the supplier's spatial proximity does not appear to be a central variable in the selection process. Granted, one can imagine that for services such as supplying school cafeterias, suppliers in the vicinity can provide more rapid delivery. However, one can also envision that, thanks to advances in logistics techniques, firms can supply school cafeterias each day from a warehouse located many kilometers away. This is seen in sparsely populated areas in France like Lot and Corrèze. How important is suppliers' spatial proximity for public contractors? This question deserves in-depth investigation. Spatial proximity may indeed play an important role when mutual adjustments are required during execution of a public contract, in cases of short-term dysfunction or adaptation to unforeseen climatic, social or economic conditions. It is evidently easier to put in place dialogue tools between customers and suppliers that are close to one another, because their face-to-face interaction can be arranged quickly (Torre and Rallet, 2005).

Lastly, do public contractors favor spatial proximity criteria when choosing suppliers, to facilitate governance of the relationship, despite the strict regulatory framework that governs public markets? In this case, the implementation logics of suppliers that serve public markets would undoubtedly be deeply impacted. The use of organizational structures based on centralization, or even off-shoring, of industrial and commercial operations and services may be called into question. The study of relationships between public contractors and their suppliers is far from new: many researchers have explored it, particularly regarding the organization and management of calls for tenders, e.g. in reverse electronic auctions (Brisset *et al.*, 2002; Shalev and Asbjørnsen, 2010; Doherty *et al.*, 2013). However, the problem of supplier proximity has not been addressed directly. As Walker *et al.* (2008) maintain, few empirical studies have looked at this singular type of customer-supplier relationship, although public procurement conduct has received much attention from the media and politicians.

The objective of this paper is to investigate the following research question:

RQ1. Is spatial proximity between customer and supplier relevant to understand the construction and development of inter-organizational relationships in the public sector?

Contributions compiled by Thai (2009) indicate that this theme is not examined often in the academic literature; this is why it is urgent to add to this knowledge. To do so, we do not rely on perceptual or declaratory measures taken from a sample of respondents, but rather on actual procurement decisions made by public contractors. Accordingly, we use original econometric data from the *Bulletin Officiel des Annonces des Marchés Publics* (BOAMP), which contains all transactions officially concluded by public contractors in France, valued at more than €4,000 before taxes. The investigation is thus based on an econometric study conducted in the context of French public procurement, involving 565,557 transactions completed between 6,182 public contractors and 26,570 suppliers, between 2006 and 2011.

The paper is divided into four sections. First we introduce public procurement, and underline how it tends to align with practices used by private businesses. The second section specifically covers the question of proximity in the academic literature. The recognized importance of spatial proximity to improve governance of customer-supplier relationships is emphasized. This third section presents the methodology and results of the econometric study conducted in the French context. In some cases, the geographically closer the supplier is to the public contractor's decision center, the higher the number of contract notices. The fourth section contains a discussion of the implications of results for future research and for practice.

Public procurement at a glance

Few empirical studies have looked at public procurement from the supplier selection perspective (Murray, 2001; Shahadat, 2003; Walker *et al.*, 2008; Arlbjørn and Freytag, 2012; Oruezabala and Rico, 2012). This is especially surprising given that the government purchasing market constitutes the largest business sector in the world (Hawkins *et al.*, 2011). Depending on the country, public expenditures represent between 8 and 25 percent of Gross Domestic Product (GDP); this market represents about 16 percent of European Union GDP (Brammer and Walker, 2011). The present article specifically examines the literature on public procurement, defined as acquisition of goods and services by government or public sector organizations (Uyarra and Flanagan, 2010). Public sector organizations comprise a wide range of organizations of varying scale and with diverse cultures, needs and organizational structures: municipalities, states, territorial or functional subdivisions and hospitals (Loader, 2010). The literature review on public procurement points to two opposing streams of research: one focussing on the opposition between public and private procurement, and the other arguing for congruence between public and private procurement.

Opposition between public and private procurement

The first stream of research deals with the specific characteristics of public procurement, by comparing it with practices seen in the private sector. These works underscore that public sector organizations pursue different objectives and rely upon different strategies than private organizations do. Public organizations currently face many challenges, including devising a regulatory framework to guarantee competition and optimize resource allocation (Erridge, 2007). Several studies show that public procurement can also support socio-economic objectives for both local and regional authorities and for the State. For example, Walker and Brammer (2009) explain how public purchases in the UK influence the propensity to engage in sustainable procurement practices. Edquist and Zabala-Iturriagoitia (2012) present six cases that

demonstrate that public markets in innovation can also contribute to satisfying previously unmet needs, solving societal problems and stimulating research and development. McCrudden (2004) describes how public procurement can be used as a tool of social regulation by supporting the domestic market.

Boyne (2002) identifies three dimensions that distinguish the public sector from the private sector: ownership, financing and control. In the private sector, businesses are owned by entrepreneurs or shareholders, operations are financed by customers and competition exerts control. In contrast, in the public sector, organizations belong to the population; and operations are financed by taxes and controlled by the state. Applied to procurement, these distinctions between the public and private sector affect the objectives and nature of relationships between customers and suppliers. It is commonly acknowledged that if procurement in the private sector rests mainly on a managerial logic of quest for efficiency, public procurement must favor users' interests (Bozeman, 2007; Rolfstam, 2013). Erridge (2007) identifies three main objectives of public markets: provide a regulatory framework to guarantee competition, optimize the allocation of public resources, and attain socio-economic objectives to support regional or local government policy. Regulatory objectives consist in ensuring that public markets meet the imperatives of transparency, to guarantee fair competition open to all. Commercial objectives must enable public purchasers to obtain the most economically advantageous offer, by seeking the best quality/price ratio. Lastly, states that set socio-economic objectives aim to use public markets as a lever for action to improve the well-being of all or part of the population.

Murray (2001) views these objectives as inappropriate and inadequate in the private sector. The purpose of private procurement is to generate a return on investment, to maximize profit, consolidate a sustainable competitive advantage, and, more generally, to guarantee business development. This contradiction is quite apparent in the number of suppliers mobilized to participate in creating a product or service. Whereas in the public sector the objective is to increase the number of suppliers to encourage competition, private sector contractors prefer to work with a limited number of suppliers and thereby lower the risk level (Vaidya *et al.*, 2006). As Table I shows, the difference between public and private procurement is manifested at two essential levels: that of procurement objectives and that of the nature of the customer-supplier relationship.

Contrary to the private sector, public procurement is bound by important legal constraints (Johnson *et al.*, 2003; Caldwell *et al.*, 2005; Arlbjørn and Freytag, 2012). In France, the *Code des Marchés Publics* (Public Procurement Contracts Code), inspired

	Public procurement	Private procurement
Procurement objectives	Provide regulatory framework to guarantee competition Optimize allocation of public resources Attain socioeconomic objectives to support government policy	Provide a return on investment (ROI) Maximize profits Consolidate a sustainable competitive advantage
Nature of relationship between customer and supplier	Relationships based on bidding among competing suppliers in auctions (calls for tenders)	Relationships based on close collaboration or partnership with a few preferred suppliers

Table I.
Differences
between public and
private procurement

by the European Union Directive on Public Procurement and Compulsory Competitive Tendering (CCT) (Gelderman *et al.*, 2006), sets the legal framework (Public Procurement Contracts Code (PPCC), 2012). This code defines a public market as a contract concluded, in return for payment, between a public contractor and a private economic operator (e.g. SME, multinational, association or business alliance). The purpose of the contract is to satisfy needs in works (building construction or civil engineering), supplies (furniture, material, consumables) or services (building cleaning, alarm systems, garden maintenance, household garbage removal, etc.). The quest for the lowest procurement cost is a fundamental objective (Loader, 2010). The call for tenders is a means long used to lower costs when selecting suppliers.

In the French context, suppliers are selected following a competition designed to identify the most economically advantageous offer (PPCC, 2012). Call for tenders procedures are part of a logic intended to maximally reduce collusion between the public sector and private businesses, and to deter preferential treatment of certain candidates. The PPCC (2012) rests on three main organizing principles for the awarding of public contracts. First, freedom of access to public procurement is guaranteed by the public contractor, to allow all candidates to participate. Second, all candidates must be treated equally, to avoid impeding competition among firms replying to a call for tenders. This equality of treatment is reinforced by procedures related to consultation of the contents of tenders and the makeup of the selection committee. Third, the transparency of procedures should favor fair treatment and healthy competition among participants.

Congruence between public and private procurement

The second stream of research postulates that differences between public and private procurement are often blurred and are less significant than some imagine (Arnbjörn and Freytag, 2012). These authors maintain that the public vs private debate is a spectrum rather than a dichotomy (Hawkins *et al.*, 2011). Many researchers have argued that business practices used in the private sector could be transferred to the public sector (Boyne, 2002; Burnes and Anastasiadis, 2003; Hawkins *et al.*, 2011). Three decades ago, with the advent of new public management (Mathiasen, 1999; Hood, 2000; Gruening, 2001), the public sector began to adopt management methods traditionally reserved for the private sector (Box, 1999). The goal was to make public management more effective and efficient at the lowest cost, notably by increasing managers' accountability, mobilization and autonomy. The public sector thus embarked on a quest for rationality, decentralization of authority and adaptation to change.

Several works maintain that some strategies for managing supplier relationships can be borrowed from the private sector to enhance the performance of public sector procurement. For example, Loader (2010) has examined the implementation of collaborative approaches – increasing length of contracts, reducing supply base and closer relationships with suppliers – to public procurement in English local authorities. Erridge and McIlroy (2002) have analyzed a sample of contracts from the government purchasing agency of Northern Ireland to test the application of a range of supply management strategies (information sharing, features of relationships and sharing risks and rewards). As Burnes and Anastasiadis (2003) underline, less significant differences between the private and public sectors may exist in the future. In this context, we have targeted geographical proximity because it is an important dimension of supplier relationship management. Like other works that call for bridging of the public and private sectors, the present study defends the idea that public procurement

could benefit from the private sector's ability to effectively build and manage relationships with suppliers.

However, as Erridge (2007) notes, the public contractor faces a dilemma: either adopt a procurement logic intended to favor the most economically advantageous offers, or prioritize the public interest, which may run counter to commercial objectives. Invariably, the taxpayers' interest leads to favoring sources of procurement that offer the best quality/price ratio independently of geographic location: "adoption of closer supply relationships may reduce transparency, compromise propriety and lead to a greater incidence of fraud" (Erridge, 2007, p. 1027). In other words, public procurement cannot have a mission of supporting the dynamism of a territory by deliberately relying on local suppliers. Nonetheless, is spatial proximity absent from the supplier selection process, despite its important role in private procurement today?

Rehabilitating spatial proximity

Long after Perroux (1950) introduced his theory of economic space, spatial proximity had been the preferred lens to examine the evolution of industrial systems, with reference to a spatial distance between two points. However, beginning in the 1970s, the academic literature in management made a massive shift away from spatial proximity to focus almost uniquely on interactions between companies based on organizational and logistic proximity. The objective then became to examine how firms coordinate effectively by jointly constructing a value creation process, notably within supply chains:

- *Organizational proximity* pertains to development of inter-organizational relationships underpinned by collective governance of the design, production and commercialization of products. One example is the formation of joint teams at the supplier and customer to develop a new model of automobile or computer.
- *Logistical proximity* pertains to development of inter-organizational relationships in a geographically broad space, but one in which transport infrastructures favor accessibility and increase delivery speed (Giraud, 1992). One example is an equipment maker that operates near an airport hub, to increase its delivery frequency.

The question of spatial organization of supply chains has become increasingly popular in the last few years, sparking debates on the importance of location in the success or failure of inter-organizational exchanges. Researchers who have observed the strategies of firms involved in the operation of supply chains have underlined the great physical distance of numerous suppliers – sometimes situated at several hundred miles from an assembly plant of a client – that apply just-in-time (JIT) practices (Wafa *et al.*, 1996). The combination of distance and JIT practices in modern supply chains leads to the formalization of a logistical space based on a "radialization" strategy, the hub-and-spokes pattern representing one of its best-known archetypes (Lumsden *et al.*, 1999; Hesse and Rodrigue, 2004; Liu *et al.*, 2012). For a supplier, this means being situated along a structuring axis connected to a gathering then dispersal point to another structuring axis on which the recipient assembly plant is located. Here, the notion of spatial proximity disappears in favor of time proximity, in which high delivery frequencies supersede close geographical links between suppliers and clients. In other words, as Cairncross (2001) asserts, we are facing the death of distance and the birth of relational proximity in a globalized space of exchanges.

Academics are thus rediscovering the virtues of spatial proximity in effective governance of inter-organizational relationships. Improving ongoing coordination between customers and suppliers necessitates a strong capacity to foster mutual adjustments should problems arise during the conception or production phases. Spatial proximity facilitates face-to-face serendipitous interactions, tacit knowledge transfer and co-innovation (Torre and Gilly, 2000). Concurrent engineering notably underlines how the marketing of a new product is more effective and faster when suppliers and customers work at contiguous sites (Midler, 1993/2012). Logistically, spatial proximity also has the advantage of reducing the costs of acquiring components by lowering the storage and transport costs assumed by the customer. Positive external savings in automobile assembly may thus result from the presence of suppliers on a site near the customer. This undoubtedly explains practitioners' and researchers' current fervor for industrial parks (Holl *et al.*, 2010; Demeter, 2013).

Suppliers that agree to set up a production unit in an industrial park bear non-recoverable costs linked to site specificity (Williamson, 1983), in that they become prisoners of their investment. The only sufficient guarantee for the supplier is a sustainable commitment by the customer, which may include significant financial participation. More generally, suppliers benefit from being situated in an industrial park if and only if their investment is totally embedded in their customers' production system; customers in turn become dependent on their suppliers to improve their own performance. Dyer (1997) argues that site specificity plays an important role in the creation of value between customers and suppliers. Small geographical distance can thus reduce transaction costs and encourage the parties to get involved in the relationship. It may also be in the customer's interest to engage with the supplier because spatial proximity facilitates the resolution of cognitive problems caused by a technical or organizational failure at the supplier. Further, when a customer and supplier have a strong personal relationship, facilitated by their close presence, they seek to maintain their relationship by jointly finding solutions to problems, which is not the case in relationships between distant partners (Frigant and Lung, 2002; Sorenson, 2005).

Based on exploratory research that examined industrial parks in France, Adam-Ledunois (2010) contends that personal face-to-face contacts resulting from spatial proximity generate social exchange that facilitates the emergence of relational capital between suppliers and customers. Physical meetings help create communities of practice in which the actors speak the same language and jointly build innovative solutions. Similarly, a US study conducted by Narasimhan and Nair (2005) demonstrates that spatial proximity between a business and its suppliers has a positive impact on the company's performance in terms of product quality, customer satisfaction, competitive position and return on investment. These findings clearly point to the rehabilitation of spatial proximity in the supplier selection process. Recently, Nilsson and Mattes (2013) have introduced the "spatiality of trust" concept to explain the presence of face-to-face contact that promotes the development of trust among decision makers. Below we look at the role of spatial proximity in public procurement, whose nascent convergence with private procurement was described above.

An investigation in the French context

To evaluate whether the criterion of spatial proximity is considered in supplier selection, French public procurement practices were investigated. The case of France is

particularly interesting because the public sector has been a central player in the organization of inter-company exchanges for decades. This is evidently the historical result of the Colbert doctrine, which asserted that state intervention was needed to secure the largest part of limited resources (Zysman, 1986). Representing 10 percent of the gross national product, French public procurement markets are central to economic development and growth. French legislation imposes standardized criteria for supplier selection, all of which are related only to the current offer. The aim of this legislation is to distribute the economic impetus evenly by giving all suppliers an equal opportunity to win public procurement contracts, independently of their physical location.

The data were taken from the contract award records of the BOAMP. From 2006 to 2011, 565,557 transactions completed between 6,182 contractors (procurers) and 26,570 suppliers were analyzed. The BOAMP compiles calls for tenders and contract award results at the state, local community and public establishment levels. According to Article 85 of the Public Procurement Contracts Code, publication of contract award results is mandatory for markets subject to a formalized procedure, that is when the estimated price of services is at least €150,000 before taxes for the state and €206,000 before taxes for communities. The contract award notice states the public procurer's decision, along with the following information: identification of the principal and the tenderers, the type of market, type of procedure, awarding criteria and publication date. The distribution of transactions by sector is based on the Common Procurement Vocabulary (for CPV) classification. The CPV is the reference nomenclature for public markets adopted by the European Parliament. The CPV assigns a nine-digit code to about 6,000 terms generally used in awarding contracts on public markets. To simplify the analysis, we have retained three main sectors:

- *the works market*: covers building construction or civil engineering projects (e.g. construction of a hospital or road repairs);
- *the services market*: covers building cleaning and maintenance, and household waste collection services; and
- *the goods market*: covers provision of capital equipment and consumer goods (e.g. furniture or office supplies).

For each transaction, we have built and retained one dependent variable and two independent variables. The dependent variable is the total number of contract notices on public markets in the period analyzed, by supplier. The first independent variable is the type of market, namely works, services or goods. The second independent variable is spatial proximity between the head office of the public contractor and that of the supplier, coded into four categories: for suppliers whose head office is in the same city as that of the public contractor, for suppliers in the same department (*département* in French), for suppliers in the same region and for suppliers outside the region of the public contractor's head office. The department is one of the three levels of government below the national level ("territorial collectivities"), between the region and the commune; the median land area of the French department is 5,965 square kilometers. The region is a larger entity that has considerable discretionary power over infrastructural spending (education, public transport, assistance to business owners, etc.); the median land area of a French region is 25,809 square kilometers.

The influence of spatial proximity of contractors and suppliers likely depends on the type of market (works, goods, services). Indeed, logistics alone make contracting with distant suppliers much more complex in the works market than in the goods

market. Consequently, we performed our statistical analysis of the influence of proximity on the number of contract awards in all three markets in three steps: first we assessed whether the number of contract awards could be compared between markets; there are likely to be more contract awards in the services or goods market than in the works market. We consequently performed an ANOVA to compare the number of contract awards across markets (see Table II).

The ANOVA showed that the number of contract awards between markets indeed differed significantly (see Table II). To control for the effect of this difference in absolute numbers on the statistical analysis of the influence of proximity on the number of contract awards, we normalized the values of the amount of awards (A_i) by dividing the number of contract awards of each supplier (CA_i) by the largest number of contract awards for a single supplier (CA_{max}) on each market, respectively (1):

$$A_i^{norm} = \frac{CA_i}{CA_{max}} \quad (1)$$

In the second step, we analyzed the influence of spatial proximity on the number of contract awards. To be able to statically account for the differences between markets, we used a hierarchical linear regression analysis: We calculated a two-level model that quantifies the influence of spatial proximity ($P_{i,j}$) on the normalized number of contract awards ($A_{i,j}^{norm}$) in the first level, and integrates the markets ($M_{i,j}$) in the second level, with i identifying individual observations and j identifying the markets (2):

$$A_{ij} = \gamma_{00} + \gamma_{10}P_{ij} + (u_{0j} + u_{1j}P_{ij}c_{ij}) \quad (2)$$

where γ_{00} being the mean intersection point, γ_{10} is the mean of the slope and $u_{0j} + u_{1j}P_{ij}\epsilon_{ij}$ the total residual.

The results of the hierarchical linear regression analysis show that the influence of spatial proximity differs across the three markets: works, services and goods (see Table III). However, spatial proximity does not have an overall positive or negative effect on the number of contract awards. Consequently, to assess if there was no effect in any of the markets or if the effects were opposed and canceled each other out, we

Table II.
Results of ANOVA

	df	Sum of squared	Mean squares	F-value	p-value
Market	2	6,858,000,000	349,000,000	49,507	<0.001***
Residual	565,554	39,170,000,000	69,260		

Note: *** $p < 0.001$

Table III.
Results of hierarchical regression analysis

	Value	SD	df	t-value	p-value
Market	0.078	0.007	565,553.000	11.739	<0.001***
Proximity	0.011	0.009	565,553.000	1.196	0.232

Note: *** $p < 0.001$

performed linear regression analysis of the influence of proximity (P_i) on the normalized number of contract awards (A_i^{norm}) for each market separately, with Equation (3) for works, Equation (4) for services and Equation (5) for goods:

$$A_i^{W,norm} = \alpha + \beta P_i^W + \varepsilon_i \quad (3)$$

$$A_i^{S,norm} = \alpha + \beta P_i^S + \varepsilon_i \quad (4)$$

$$A_i^{G,norm} = \alpha + \beta P_i^G + \varepsilon_i \quad (5)$$

where α being the intersection point, β the slope and ε the residual.

The results of the linear regression analysis show that the spatial proximity of suppliers indeed influences public contractors' decision and hence the number of contract awards during the period examined. However, the effect varies across the markets studied (see Table IV). In the works market, spatial proximity and the number of contract awards are negatively correlated, which means that the number of contract awards increases the closer the suppliers are located to the public contractors. This result supports the notion that public contractors favor spatially close suppliers on this market. In contrast, in the services and goods markets, contract awards increase with spatial distance. These findings suggest that public contractors are not indifferent to spatial proximity of their suppliers in these markets, but favor spatially distant suppliers.

Discussion and conclusion

Spatial proximity has often been identified as a facilitating factor for business collaborations. In the case of French public procurement, our analysis illustrates a positive correlation between the number of contract awards and spatial proximity, which supports the idea that collaboration that requires regular interaction is facilitated by personal face-to-face contact (Cabras, 2011). Further, depending on the complexity and duration of the relationship, collaboration efficiency is essential to maximize profits (Murray, 2009; Loader, 2010), which consequently favors collaboration between spatially close contractors and suppliers. For complex markets, our findings thus support the recommendations of Adam-Ledunois (2010), namely to design industrial parks in which the stakeholders (suppliers, equipment manufacturers, assemblers, logistics providers, etc.) regularly interact, cooperate and use strategic knowledge to solve problems related to task coordination. As Desrochers (2001, p. 36) underlines in his theoretical analysis of strategic knowledge

	Value	SD	<i>t</i> -value	<i>p</i> -value
Works	0.0925752	0.0006459	143.33	<0.001***
Proximity	-0.00053662	0.0002345	-22.89	<0.001***
Services	0.0771251	0.0006889	112	<0.001***
Proximity	0.0058121	0.0002442	23.8	<0.001***
Goods	0.0644325	0.0014992	42.98	<0.001***
Proximity	0.0317752	0.0004947	64.24	<0.001***

Note: *** $p < 0.001$

Table IV.
Influence of spatial
proximity on the number
of contract awards

transmission: “long-distance communication is still inadequate for the continuous and detailed engineering or technical adjustments that are needed in the course of technological creation.”

The fact that public contractors (procurers) tend to prefer close suppliers reflects a profound shift in the public procurement approach. Although the legal framework has not changed during the period retained, the envisioning of governance of relationships between customer and supplier has evolved, borrowing some best practices from the private sector. In his paper on relocation of procurement for mass catering, Le Velly (2012) emphasizes that if requiring or valuing spatial proximity is prohibited in France by the *Code des Marchés Publics* (PPCC, 2012), the need for good mutual knowledge between suppliers and customers is nonetheless encouraging an upsurge in this type of proximity. This trend should undoubtedly trigger a profound change in the optimal profile of the public contractor. Rather than simply assessing offers on purely economic bases, and relying on a solid legal background, public contractors (procurers) must be skilled at managing relationships with a set of stakeholders outside the political sphere (McKevitt *et al.*, 2012) and with individual suppliers, by taking advantage of spatial proximity to interact with them more effectively.

The results of the econometric study conducted in the French context also raise the question of modes of control of inter-organizational relationships that are best adapted to public markets. We thus compared controls used by private companies to select supplier selection. Das and Teng (1998), Dekker (2004) and Fenneteau and Naro (2005) underscore that one can distinguish between formal control, based on results and behavior and informal control, based on interaction, socialization and the sharing of values. In his study of inter-organizational relationships between Eurocopter (today Airbus Helicopters) and its suppliers, Fernandes (2007) shows that informal (social) control significantly affects exchanges managed by the customer, even if the contractor retains majority control over behavior and results. Pertinent conclusions can be drawn for management of public procurement, particularly regarding the interface between the supplier and public contractor.

If we start from the principle that spatial proximity is a facilitating factor in mutual adjustment and in collective creation of shared social capital (Adam-Ledunois, 2010), then it seems clear that public contractors can exercise informal control more easily by choosing suppliers that are close to them. This is particularly true when the complexity of the interaction, in the works market, can lead to a series of mutual adjustments in case of short-term dysfunction. For instance, civil engineering activities are potentially subject to conditions that require dialogue between customers and suppliers to resolve; Love *et al.* (2008) thus emphasize the importance of methods adapted to public procurement for construction projects. They include the traditional approaches of control by socialization, covered extensively in the academic literature (Mahama, 2006; Cousins *et al.*, 2008; van de Vijver *et al.*, 2011).

By executing control by socialization, public contractors can dispense with implementing formal mechanisms to evaluate results, which are typically cumbersome and costly to put in place. There is also no guarantee that they will eliminate opportunism by remote and anonymous suppliers, which won the contract simply by tendering the lowest bid. The control by socialization approach would explain the negative effect of spatial proximity on the number of contract awards in the works market. In contrast, for the service and goods markets, given the choice of suppliers that regularly submit tenders, and for which direct supervision is not necessary,

distant and formal control would suffice, especially if reinforced by monitoring indicators (results) and the direct sanction of deviations by non-renewal of contracts. This context is worth exploring because, as Schapper *et al.* (2009, p. 89) note, “public procurement demands high-quality public governance in terms of transparency and accountability.” To attain this objective, in-depth reflection on tools to control the customer-client relationships is indispensable.

Of course, an econometric study of 565,557 transactions conducted over six years in France has a number of limitations. First, one can question the pertinence of the classification of transactions into three different types (works, goods and services). In addition, the analysis is complicated by the fact that there are undoubtedly inter-group transactions, and some suppliers may be operating in more than one market. Second, it is difficult to evaluate the real weight of a supplier’s “spatial advantage” compared with other elements like price, quality, aesthetic and functional features, performance in environmental protection, global usage costs and after-sales service and technical assistance. Third, it is evident that market structure strongly impacts public contractors’ decision-making process. How does the picture differ in markets where suppliers have a monopolistic situation vs markets with intense competition?

This investigation should be continued, notably by extending the analysis to other European countries. Our contribution is based on an econometric analysis conducted in the French context, which raises the question of the external validity of the results obtained. One of the most fertile avenues of future research would be to exploit data from the *Official Journal of the European Union* (S Series) dedicated to European public markets, and to examine how, if at all, relationships of spatial proximity are considered in contract award in countries economically comparable to France. It is also worth investigating, as did Nijaki and Worrel (2012), the rise of economic development programs spurred by buy-local efforts. This approach would also illustrate whether we are facing a French paradox or the gradual emergence of a more universalistic perspective on public procurement, driven largely by new public management.

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