JOURNAL OF PUBLIC PROCUREMENT, VOLUME 15, ISSUE 4, 458-475 WINTER 2015

PUBLIC PROCUREMENT REFORMS IN GREECE: THE IMPACT OF IMPROVED TRANSPARENCY ON GOVERNMENT EXPENDITURES

Ioannis Giotopoulos, Grigoris Pavlou,
Svetoslav Danchev, and Aggelos Tsakanikas*

ABSTRACT. During the recent economic crisis, public procurement reforms have received a great attention as a key mechanism that enables significant cost savings and improves transparency in the public sector, particularly in countries which are under a process of extensive fiscal consolidation like Greece. This paper examines the effects of improved transparency on public procurement cost in the light of the ongoing structural reforms taking place in Greece. The basic finding indicates that ensuring transparent practices in public procurement processes reduces government expenditures by about 1.8 - 3.4 percentage points. A dataset on 2309 public supply contracts for goods was used, supplementing the pooled OLS estimates with quantile regressions.

** Ioannis Giotopoulos, Ph.D., is an Assistant Professor, Department of Economics, University of Peloponnese. His research interests include firm and industry dynamics, economics of strategy and technology, entrepreneurship and innovation. Grigoris Pavlou, M.Phil., is a Researcher, IOBE Foundation for Economic and Industrial Research. His research interests are focused on macroeconomic growth, industrial and public policy, technological change and human capital. Svetoslav Danchev, Ph.D., is the Head of the Microeconomic Analysis and Policy Unit of IOBE Foundation for Economic and Industrial Research. His research interests include applied economics, energy economics and history of economic thought. Aggelos Tsakanikas is an Assistant Professor in the field of economic evaluation of technological systems, at the Laboratory of Industrial and Energy Economics, National Technical University of Athens. His main research interests are in the area of technology strategy of the firm, business strategy, economics of innovation, entrepreneurship and relevant public policies.*

INTRODUCTION

In recent years, it has been widely recognized by many policy makers, academics and practitioners that strengthening the public procurement systems is a key strategic tool in enhancing efficiency in public organizations. Public procurement is the procedure by which public organizations and authorities (including different levels of government i.e. central government and local authorities) purchase goods and services from the private sector using public funds (Thai, 2001). The overall process of procurement includes several tasks from the identification of needs, selection of sources, preparation and award of contracts, and all the stages up to the end of a contract's execution.

The public procurement process allocates a major part of public expenditure, varying from road construction, street lighting, military meals and clothing, to public education and health care equipment. Public procurement entails considerable government expenditures in the European Union (EU), accounting for almost 16%-20% of EU GDP annually (European Commission, 2012). During the recent economic crisis public procurement has received a great attention as a key mechanism that enables significant cost savings, particularly in countries where a fiscal adjustment program is under implementation. Given budgetary constraints in the public sector, policy makers in such countries face a great challenge, namely the implementation of structural reforms, to improve efficiency and transparency in the public procurement system.

CONCEPTUAL FRAMEWORK

The structural reforms in public procurement may have significant economic and social effects. The significance of transparency in public procurement practices has been highlighted in the literature (e.g. Thai, 2001; Schapper et al., 2006; Ohashi, 2009; United Nations, 2011). Transparency principally refers to publishing information and conducting procurement processes with clear and fair rules. Evennet and Hoekman (2005) argue that the impact of improved transparency in the procurement procedure is twofold. On the demand side, improved transparency diverts government expenditure away from goods that could foster corruption. On the supply side, it increases the number of firms involved in the bidding process. Ohashi (2009) claims that "*the effect of improved*

transparency on supply is to force the ring to lower its price". This statement is supported by empirical evidence from Japan suggesting that improved transparency reduces public procurement cost by up to 8%. Overall, such reforms are expected to increase competition among firms, reduce prices and guarantee better quality of public services.

In that context, countries that are under a process of extensive fiscal consolidation like Greece, are currently struggling to implement public sector reforms, in order to achieve cost savings, and improve business efficiency and transparency. The establishment of the Single Public Procurement Authority (SPPA) in Greece is a fundamental reform introduced in September 2011 within the context of the adjustment program currently underway. The principal goal of SPPA is to ensure transparency in public procurement processes, contributing to cost efficiency in the public sector. Its responsibilities include the conduction of spot checks to monitor if the procurement procedures follow fair and clear rules, the consideration of objections throughout the relevant procedures, and the interruption of any ongoing tendering procedures that entail law violations. Thus, the SPPA is expected to be a watchdog of transparency and a supportive mechanism for the efficiency of the public procurement system in Greece, without however serving as a centralized public procurement agency. The specifics of the SPPA procedures are provided in the Appendix section in more detail.

During the same period the wide use of a Transparency Portal, the so-called "Diavgeia", also helped towards this direction, since its main objective has been to ensure transparency of government actions. In particular, all government institutions are obliged to upload their acts and decisions on this portal. Each document is digitally signed and assigned a unique internet uploading number certifying that the governmental decision has been uploaded at the "Transparency Portal". Thus, the obligation of governmental bodies to publish online their decisions facilitates the identification of corruption, the rule of law and the adherence to good administration practices. Notably, since other relevant reforms, i.e. wide use of e-procurement;[1] centralization of processes; and simplification of the legislative framework, have not yet been implemented (European Commission, 2013), the only observable economic impact that can

be evaluated at the present concerns the SPPA reform and the wide use of the Transparency Portal.

This paper explores the effect of improved transparency on public procurement costs in Greece due to the introduction of the "SPPA" along with the wide use of the Transparency Portal in the same period. Moreover, this study examines the potential effects of competition and openness in procurement processes, while it also attempts to control for economic cycles and for the quantity and the quality of products. When public organizations adopt the general procurement principles of competition and openness and these principles are combined with operational efficiency and e-procurement, the result is a greater value for money. Improving public procurement procedure is expected to increase competition among firms, reduce prices and guarantee better quality of services for citizens.[2] Those extra issues and their importance are discussed in more detail in the next section.

To explore these linkages, the paper utilizes a dataset on 2309 public supply contracts for goods, supplementing the pooled OLS estimates with quantile regressions. The findings have considerable policy implications for countries that need to reduce government spending and undertake structural reforms in their public sector, especially in times of crises.

METHODOLOGY AND DATA

For the needs of this work we collected monthly bidding data on 2309 public supply contracts for goods derived from the General Secretariat for Commerce of the Ministry of Development in Greece over a span of 12 years (2002-2013). Our dataset includes a variety of purchased goods, ranging from military food, military and police clothes and uniforms to health equipment, office equipment, furniture and military and police means of transportation. The study period has been divided into 2 sub-periods, before and after the establishment of SPPA and the wide use of Transparency Portal, by using a time dummy which takes the value of 1 for the period after September 2011, and the value of 0 for the period before September 2011.

To estimate the impact of transparency on average cost of public procurement we use the following model:

$$P_{ij,t} = a_{ij} + \beta_1 D_t + \beta_2 Comp_{i,j,t} + \beta_3 Loc_{i,t} + \beta_4 Inter_{i,t} + \beta_5 Open_{j,t} + \beta_6 Restr_{j,t} + \beta_7 GDP_t + + \beta_8 Quant_{j,t} + \beta_9 u_{ij,t}$$

where the dependent variable, "$P_{ij,t}$" stands for the unit price (winning bid) of bidder i, in supply contract, i.e. project j, at time t. Unit prices were converted into real values using a monthly CPI deflator provided by the Hellenic Statistical Authority (EL.STAT.) and scaled by natural logarithm. "D_t" denotes the time dummy as explained above.

"*Comp*" corresponds to the number of bidders in project *j* at time *t*. This variable measures the intensity of competition in procurement processes, expressed in natural logarithms. Thus, a further potential effect of public procurement reforms, undertaken in this empirical work, stems from the increase of the intensity of competition. By transforming the acquisition process from a bilateral negotiation to an auction the likelihood to achieve cost savings for the public sector increases.

The main channel by which a competitive procurement procedure leads to cost savings is demonstrated extensively within the context of auction theory (Krishna, 2009). The lack of simple and clear competition rules in public procurement procedures is a factor that yields significant uncertainty about the fair conditions of a public tendering process. This uncertainty along with the contracting authorities' flexibility, mainly in the stages of awarding and contracting, discourages the participation of potential candidates in the tendering processes.

The variable "*Quant*" controls for the quantity of the goods purchased per project *j*. In that way, it is possible to capture the potential impact of centralization[3] in public procurement processes which leads to the exploitation of scale economies and increased bargaining power of the contracting authority (Albano and Sparro, 2010). In addition, the centralization of public procurement procedures allows scale economies to arise when procurement contracts are to a great extent homogeneous and standardized. Moreover, one of the basic advantages of a centralized procurement system is that it removes the diffusion of accountability for procurement decisions by transferring this to the agency that holds the funds. It also helps capacity to be developed in the user agencies, where there is a greater need (Hunja, 2001). In general, a centralized

procurement process ensures standardization and accountability of government contracts. Due to the variety of goods supplied and in order to take into account of difference in the measurement units, we expressed this variable as a ratio by dividing each observation (i.e. the quantity for the particular tender) to the specific sum of quantities of the same type of goods.

"*Loc*" is a binary variable controlling for the location of bidders, taking the value of 1 for winning bidders located in the two largest metropolitan areas of Greece (that is Greater Athens and Thessaloniki), and 0 for bidders located in the rest of Greece. "*Inter*" is a further location variable capturing the international base of bidders, taking the value of 1 for bidders located abroad, and 0 for bidders located in Greece.

One limitation of this study is that it cannot capture in a direct way the quality of goods purchased due to unavailability of relevant information in the dataset used. However, the involvement of regional location and international base of bidders in our model may provide an indirect signal for the quality ladder of the bidders. The greater the international participation in a public procurement tender, the higher the expected project quality. Regarding the urbanization aspect, we expect that bidders located in large urban centers have a greater probability to provide products with a higher quality, due to the exploitation of network externalities (Krugman, 1998), the so-called agglomeration economies. These increased returns are related to the greater concentration of high-skilled employees and the higher specification of equipment and other resources that characterize metropolitan areas.

"*Open*" is a binary variable capturing the openness of awarding procedure, taking the value of 1 when the procurement process is open, and 0 when it is negotiated or restricted. "*Restr*" is also a binary variable, taking the value of 1 when the procurement process is restricted, and 0 when it is negotiated or open. Also, openness concerns the possibility and feasibility of individual stakeholders --e.g. businesses-- to participate in the public procurement procedure --e.g. to submit the bid-- (OECD, 2013). An open public procurement procedure could lead to an efficiency enhancement effect in submitted tenders (Carayannis & Popescu, 2005). To ensure that the goal to achieve cost savings does not cause a sharp drop in quality,

one way may be to allow openness in public procurement processes and get feedback from participants.

The "GDP" variable, that is the monthly real Gross Domestic Product of Greece expressed in natural logarithms, is included in our model to control for macroeconomic factors that vary over time. The constant term a_{ij} captures the unobserved project-specific effects, while $u_{ij,t}$ is the error term. Finally, parameters β denote the slope coefficients. Note that the coefficient β_1 is of primary interest in our study, since it captures the effect of improved transparency on public procurement costs per project.

Table 1 and Table 2 below describe some basic summary statistics for quantitative and qualitative variables undertaken in our examined model.

TABLE 1
Descriptive Statistics for Quantitative Variables

Variable	Mean	Standard Deviation
Unit Price (ln)	5.38	4.39
Competition (ln)	1.15	0.66
Quantity (%)	0.15	0.25
GDP (ln)	4.60	0.11

TABLE 2
Descriptive Statistics for Qualitative (Binary) Variables

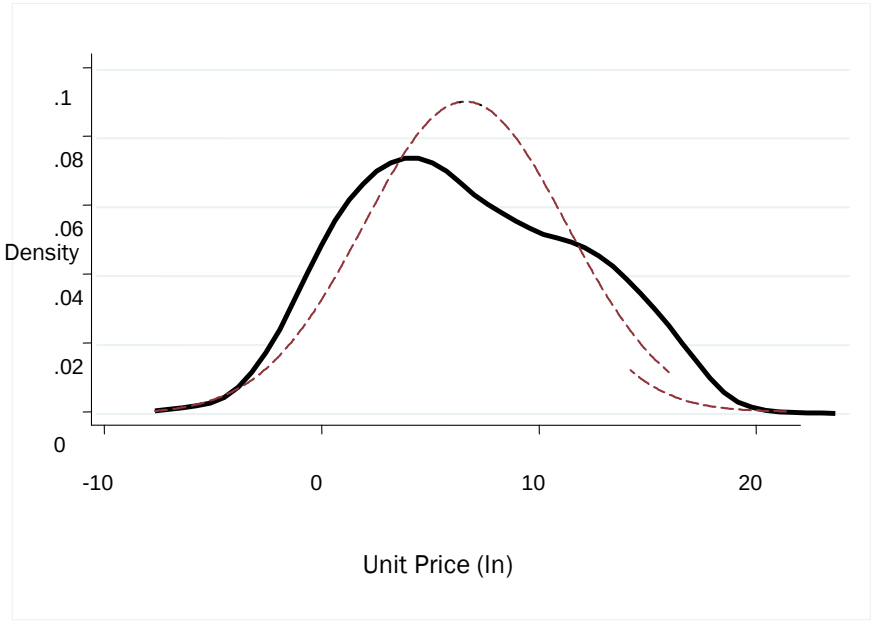
Variables	Frequency (%)	
	Value of 0	Value of 1
Location	24.73%	75.27%
International Base	98.77%	1.23%
Openness	44.38%	55.62%
Restricted	55.88%	44.12%

Figure 1 shows the distribution of the projects' unit prices using a kernel smoothing density.[4] This figure illustrates that the dependent variable of our model does not follow the lognormal distribution. Based on the results of skewness/kyrtosis tests, the hypothesis that

the residuals follow normal distribution was also rejected. Therefore, we additionally ran quantile regressions introduced by Koenker and Bassett (1978), commonly applied in order to deal with skewed distributions in linear regression models (Buchinsky, 1998; Dimelis and Louri, 2002). Hence, the use of a quantile approach may significantly contribute to the robustness of our estimates.

A further powerful characteristic of this method is that it can be used to estimate the slope effects (e.g. the improved transparency effect on unit prices of projects in our case) at various percentage points (quantiles). Hence, this technique enables the exploration of potential differences in the transparency effects among supply contracts with low, medium and high unit costs. As a result, the analysis undoubtedly benefits greatly from quantile regressions since in that way it can consider the heterogeneity of goods purchased (i.e. hospital equipment is more expensive than military meals and

FIGURE 1
Unit Price Distribution of Public Procurement Projects



Notes: kernel = epanechnikov; bandwidth = 2.5; solid line: kernel density; dashed line: normal density.

clothing). In other words, quantile regressions for several percentage points of the entire distribution, that is the low cost procurement projects (i.e. estimates in the 10% and 25% percentiles), the medium cost projects (i.e. for the median, 50%) and the high cost projects (i.e. estimates in the upper percentiles of 75% and 90%), allow to overcome the limitation of different products in our dataset.

RESULTS

The results of the empirical analysis are presented in Table 3. The second column reports the estimates for our basic equation using a pooled OLS regression (model 1). The third column presents the OLS estimates including also dummies to control for the different type of contracting authority (model 2). Respectively, the last two columns show the results when we control for the quantity of the goods purchased, with and without dummies for contracting authorities.

The pooled OLS estimates reveal that improved transparency due to the establishment of the SPPA in Greece reduces significantly the public procurement unit costs, with the coefficient ranging from -1.80 percentage points to -3.37 percentage points.[5] We also find that competition in the bidding processes affects negatively the unit price of projects. This means that the higher the intensity of competition in public procurement processes the lower the unit cost of the projects. Quantity seems to have a significant and negative impact on the unit price of goods purchased, implying thus that some economies of scale are exploited mainly due to the centralization of public procurement processes (applied up to now mainly in the health sector).

Moreover, the results suggest that location affects positively the unit price of projects. In other words, the winners of bids located in the large urban centers appear to offer higher average prices compared to those located in the rest of Greece. This finding may be explained on the grounds that firms operating in the metropolitan areas of Greece supply products of higher quality and hence can secure higher unit prices. Also, we found a strong and positive effect of openness on the dependent variable, implying unexpectedly that higher average prices are observed mainly in open tenders. However, by controlling the type of contracting authorities[6] in models 2 and 4, this effect becomes insignificant.

TABLE 2
Unit Cost of Public Procurement Projects in Greece (2002-2013): Pooled OLS Regressions

Variables	Model 1	Model 2	Model 3	Model 4
Transparency	-3.36***	-2.53***	-2.53***	-1.80***
	(0.53)	(0.51)	(0.58)	(0.56)
Competition	-0.97***	-0.87***	-1.13***	-1.03***
	(0.11)	(0.11)	(0.14)	(0.13)
Quantity	-	-	-1.83***	-1.37***
			(0.36)	(0.35)
Location	0.93***	0.74***	1.16***	0.96***
	(0.18)	(0.17)	(0.22)	(0.21)
International Base	2.97***	3.09***	3.86***	3.64***
	(0.71)	(0.68)	(1.35)	(1.29)
Openness	4.17**	2.53	3.14*	1.95
	(1.75)	(1.61)	(1.76)	(1.69)
Restricted	-0.37	-0.99	-1.32	-1.46
	(1.75)	(1.67)	(1.76)	(1.69)
GDP	-0.44	-0.37	1.61*	1.56*
	(0.63)	(0.60)	(0.84)	(0.81)
Constant term	5.75*	9.21***	-2.68	0.83
	(3.37)	(3.59)	(4.30)	(4.64)
R^2	0.38	0.44	0.37	0.44
Adjusted R^2	0.37	0.44	0.36	0.43

Notes: Standard errors are reported in parentheses. *The null hypothesis that each coefficient is equal to zero is rejected at the 10% level of significance. **The null hypothesis that each coefficient is equal to zero is rejected at the 5% level of significance. ***The null hypothesis that each coefficient is equal to zero is rejected at the 1% level of significance. Models 3 and 4 include dummies for the type of contracting authorities.

Table 4 presents the results derived from quantile regressions for several percentage points of the entire distribution. Afterwards, Table 5 provides also quantile estimates controlling for the quantity of the goods purchased.

TABLE 3
Unit Cost of Public Procurement Projects in Greece (2002-2013): Quantile Regressions

Variables	10% quantile	25% quantile	50% quantile	75% quantile	90% quantile
Transparency	-0.83	-2.59***	-3.50***	-2.48***	-1.99**
	(1.19)	(0.67)	(0.97)	(0.59)	(0.95)
Competition	-0.12	-0.51***	-0.77***	-0.68***	-0.87***
	(0.13)	(0.11)	(0.09)	(0.11)	(0.16)
Location	0.18	0.59***	0.64***	0.66***	0.83***
	(0.16)	(0.16)	(0.14)	(0.15)	(0.33)
International Base	1.41	1.59	4.17***	3.29***	2.76***
	(0.88)	(1.89)	(1.29)	(0.45)	(0.49)
Openness	-2.66**	-0.26	3.23***	6.46***	8.09***
	(1.34)	(0.67)	(0.89)	(0.61)	(0.50)
Restricted	-3.48**	-2.87***	-1.36	0.82	2.95***
	(1.37)	(0.76)	(0.91)	(0.54)	(0.47)
GDP	-0.72	0.17	-0.06	-0.14	-1.58*
	(0.88)	(0.62)	(0.42)	(0.38)	(0.90)
Constant term	15.52***	9.09***	7.35***	4.67**	9.90**
	(4.26)	(3.12)	(2.28)	(1.95)	(4.29)
Pseudo R^2	0.08	0.15	0.35	0.41	0.31

Notes: Standard errors are reported in parentheses. *The null hypothesis that each coefficient is equal to zero is rejected at the 10% level of significance. **The null hypothesis that each coefficient is equal to zero is rejected at the 5% level of significance. ***The null hypothesis that each coefficient is equal to zero is rejected at the 1% level of significance. Dummies for the type of contracting authorities are included.

The quantile regressions broadly confirm the robustness of the above findings, providing further insight into the impact of the public procurement reform. In particular, the estimates suggest that improved transparency in procurement exercises a negative and significant effect on the unit price of procurement projects in the 25%, 50%, 75% and 90% percentiles respectively, ranging from -2 p.p. to -3.5 p.p. On the other hand, for the lower unit price projects (i.e. the 10% percentile), the reduction in public expenditure is found to be insignificant. Competition appears to have a significant and negative impact in most percentiles.

Finally, in Table 5 controlling for the quantity of the goods purchased we found significant effects (above 2 percentage points) of improved transparency on government expenditures in all quantiles.

TABLE 5
Unit Cost of Public Procurement Projects in Greece (2002-2013): Quantile Regressions with Control for Quantity of Goods Purchased

Variables	10% quantile	25% quantile	50% quantile	75% quantile	90% quantile
Transparency	-2.34*	-2.06*	-2.98*	-2.58***	-2.21***
	(1.37)	(1.23)	(1.57)	(0.55)	(0.86)
Competition	-0.10	-0.66**	-0.95***	-0.93***	-1.18***
	(0.14)	(0.28)	(0.14)	(0.11)	(0.173)
Quantity	-2.29***	-2.19**	-2.00***	-0.83**	-0.01
	(0.80)	(0.94)	(0.45)	(0.42)	(0.45)
Location	0.38***	1.04***	1.15***	0.80***	1.30***
	(0.13)	(0.22)	(0.19)	(0.15)	(0.37)
International Base	3.60	1.71	4.48	2.89***	2.93***
	(3.39)	(4.10)	(2.98)	(1.11)	(0.70)
Openness	-1.05	0.68	4.96***	6.70***	6.87***
	(0.91)	(0.79)	(0.61)	(0.39)	(0.70)
Restricted	-1.52*	-2.39***	-1.22**	-0.02	0.98*
	(0.83)	(0.68)	(0.54)	(0.44)	(0.54)
GDP	0.50	0.92	0.95	1.19**	0.84
	(1.04)	(1.24)	(1.01)	(0.54)	(0.83)

TABLE 5 (Continued)

Variables	10% quantile	25% quantile	50% quantile	75% quantile	90% quantile
Constant term	-0.41 (4.92)	-0.37 (5.68)	0.01 (4.71)	-1.12 (2.67)	0.95 (3.93)
Pseudo R^2	0.02	0.09	0.31	0.41	0.32

Notes: Standard errors are reported in parentheses. *The null hypothesis that each coefficient is equal to zero is rejected at the 10% level of significance. **The null hypothesis that each coefficient is equal to zero is rejected at the 5% level of significance. ***The null hypothesis that each coefficient is equal to zero is rejected at the 1% level of significance. Dummies for the type of contracting authorities are included.

CONCLUSIONS

This paper examines the effect of a major public procurement reform on costs using data for 2309 public supply contracts for goods in Greece over the 2002-2013 period. Our results clearly indicate a significant impact of establishing transparent practices in public procurement procedures. In particular, our estimates show that improved transparency reduces the public procurement cost by about 1.8% - 3.4%. These results indicate that the public procurement reforms are indeed effective and important for Greece since they contribute significantly to cost savings.

ACKNOWLEDGEMENTS

We would like to thank Georges Siotis and Niall Bohan from European Commission, DG ECFIN economists, Spyros Panagopoulos from SPPA, and Alexandra Kontolaimou from NTUA and three anonymous referees for their useful comments and constructive suggestions. The views expressed in this paper are those of the authors and do not necessarily reflect the views of the Foundation for Economic and Industrial Research (IOBE).

NOTES

1. The adoption of ICT solutions in public procurement ("e-procurement") is usually justified on account of speeding up processes and enlarging the set of potential participants. Thus, the adoption of electronic solutions to award public contracts, such as e-auctions, may further increase cost savings (Carayannis & Popescu, 2005; Moon, 2005; Vaidya et al., 2006).

2. Public procurement is also a potential key driver for demand-driven innovation (Edler & Georghiou, 2007), and a stimulus for job generation, since public sector constitutes a huge buyer for the products and services of private businesses, and hence it plays a crucial role on the way in which businesses evolve in a national innovation and production system.

3. Significant results have been already observed in terms of cost savings derived from the centralization of health procurement system in Greece (see Kastanioti et al., 2013). However, more effort is required for the implementation of the reform related to the centralization of the public procurement procedures of the other contracting authorities on the basis of the relevant commitment of Greek Government under the 2nd adjustment program.

4. The density presented in Figure 1 is estimated using the bandwidth of 2.5. The bandwidth parameter (i.e. the width of the neighborhood at each point) determines the degree of smoothing in the density under estimation (Silverman, 1986). Estimation with different bandwidths does not yield qualitatively different results.

5. To ensure that this impact comes from the SPPA reform and from the crisis impact, we estimated several regressions for different time points after the beginning of crisis in Greece (e.g. 2008, 2009, 2010) without finding significant effects. Also, we have controlled for the economic recession by including in the equation monthly GDP of Greece.

6. More particularly, controlling was done through 8 dummy variables (n-1 dummies) since contracting authorities were classified in 9 general groups, that is health units, ministries of economic affairs and development and supervised public bodies, ministry of agriculture and supervised public bodies and

organizations, military forces, ministry of transport and supervised public bodies, ministry of public works and supervised public bodies, regional administrative units, security forces.

REFERENCES

Albano, G. L., & Sparro, M. (2010). "Flexible Strategies for Centralized Public Procurement." *Review of Economics and Institutions, 1* (2): 1-32.

Buchinski, M. (1998). "Recent Advances in Quantile Regression Models: A Practical Guide for Empirical Research." *Journal of Human Resources, 33* (1): 88-126.

Carayannis, E., & Popescu, D. (2005). "Profiling a Methodology for Economic Growth and Convergence: Learning from the EU E-procurement Experience for Central and Eastern European Countries." *Technovation*, *25* (1): 1-14.

Dimelis, S., & Louri, H. (2002). "Foreign Ownership and Production Efficiency: A Quantile Regression Analysis." *Oxford Economic Papers, 54* (3): 449-469.

Edler, J., & Georghiou, L. (2007). "Public Procurement and Innovation—Resurrecting the Demand Side." *Research Policy, 36* (7): 949-963.

European Commission (2013). *The Second Economic Adjustment Programme for Greece,* 3rd Review, (Occasional Paper, No.159). [Online]. Available at http://ec.europa.eu/economy_finance/publications/occasional_paper/2013/pdf/ocp159_en.pdf.

European Commission (2012). *Annual Public Procurement Implementation Review* (SWD342 Final). [Online]. Available at http://ec.europa.eu/internal_market/publicprocurement/docs/implementation/20121011-staff-working-document_en.pdf.

Evenett, S., & Hoekman, B. (2005). "Government Procurement: Market Access, Transparency, and Multilateral Trade Rules." *European Journal of Political Economy, 21* (1): 163-183.

Hunja, R. (2001). *Obstacles to Public Procurement Reform in Developing Countries*. [Online]. Available at http://scholar.google.gr/scholar_url?url=http://www.wto.int/english/tratop_e/gproc_e/wkshop_tanz_jan03/hunja2a2_e.doc&hl=el&sa=X&scisig=AAGBf

m3fcynfsLiRzO1EVEXOAJabM9DeyA&nossl=1&oi=scholarr&ei=B4PDVK6NCKXjywOIkoI4&ved=0CB8QgAMoADAA

Kastanioti, C., Kontodimopoulos, N., Stasinopoulos, D., Kapetaneas, N., & Polyzos, N. (2013). "Public Procurement of Health Technologies in Greece in an Era of Economic Crisis." *Health Policy, 109* (1): 7-13.

Koenker, R., & Bassette, G. (1978). "Regression Quantiles." *Econometrica, 46* (1): 33-50.

Krishna, V. (2009). *Auction Theory.* San Diego, USA: Elsevier Academic Press Publications.

Krugman, P. (1998). "What's New about the New Economic Geography?" *Oxford Review of Economic Policy, 14* (2): 7-17.

Moon, M. J. (2005). "E-procurement Management in State Governments: Diffusion of E-procurement Practices and its Determinants." *Journal of Public Procurement, 5* (1): 54-72.

Ohashi, H. (2009). "Effects of Transparency in Procurement Practices on Government Expenditure: A Case Study of Municipal Public Works." *Review of Industrial Organization, 34* (3): 267-285.

Schapper, P., Malta, J., & Gilbert, D. (2006). "An Analytical Framework for the Management and Reform of Public Procurement." *Journal of Public Procurement, 6* (1/2): 1-26.

Silverman, B. (1986). *Density Estimation for Statistic and Data Analysis*. London: Chapman and Hall.

Thai, K.V. (2001). "Public Procurement Re-examined." *Journal of Public Procurement, 1* (1): 9-50.

United Nations, (2011). *Transparency and Public Procurement*, (Annual Statistical Report on United Nations Procurement). [Online]. Available at https://www.ungm.org/Areas/Public/Downloads/ASR_2011_supplement.pdf.

Vaidya, K., Sajeev, A. S. M., & Callender, G. (2006). "Critical Factors that Influence E-Procurement Implementation Success in the Public Sector." *Journal of Public Procurement, 6* (1/2): 70–99.

APPENDIX

The specifics of the SPPA procedures are the following:

- The SPPA supervises and coordinates the public procurement actions of the central government agencies and participates in collective government institutions as the authority responsible for issues related to public procurement.
- The SPPA promotes the national strategy in the field of public procurement and ensures compliance with the rules and principles of EU and national public procurement legislation.
- The SPPA provides opinions on the legality of any provisions of draft laws or regulatory acts related to public contracts and participates in the relevant legislative committees. The competent authorities are obliged to take into account the opinion of the SPPA.
- The SPPA publishes and uploads in its website regulations for particular technical issues regarding public procurement, mainly concerning the interpretation of the relevant national and EU legislation, taking into account the national and EU legislative frameworks. It also provides guidelines to relevant public bodies and contracting authorities and recommends to the Ministries the issuance of relevant decisions and acts.
- The SPPA publishes tendering standards and procurement plans after consultation where appropriate with relevant public bodies. It also creates rules for the standardization of technical specifications in cooperation with the competent bodies and monitors their harmonization with the general principles of the national and EU regulatory framework.
- The SPPA monitors and evaluates the efficiency and effectiveness of the actions of public bodies in the field of public procurement, including Ministries, administrative bodies with monitoring and supervising duties, and contracting authorities, within the framework of the national and EU legislative and regulatory framework for public procurement.
- The SPPA performs random checks, taking the initiative to seek information and data on ongoing tendering, awarding and

contracting procedures from the involved public and private bodies.

- The SPPA supervises and evaluates monitoring administrative bodies in the field of public procurement with respect to the exercise of their duties in accordance with applicable national and European legislative and regulatory framework and guidelines of the Authority.
- The SPPA provides comments on public procurement issues, and especially for the interpretation of the public procurement law, either in writing or orally on its own initiative or at the request of the courts.
- The SPPA keeps National Data Base on Public Procurement.
- The SPPA has a consulting role to contracting authorities, on its own initiative or at the request of the latter, especially in the litigation stage or during the examination of preliminary rulings, concerning the lawful award and execution of public procurement contracts.
- The SPPA participates in the relevant European institutions, as the main national authority, in the exchange of views, information and data on the national strategy, the legal framework and the procedures of tendering, awarding and execution of public contracts. It also represents the country in international organizations and meetings in the field of public procurement.
- The SPPA prepares and submits its annual activity report to the President of the Greek Parliament, in the first quarter of each calendar year.