Innovation and efficiency in public procurement: from measurement of public institution's quality to private company performance

Abstract

The expenditures on public procurement within European Union (EU) is an estimated 18% of GDP. EU procurements are contracted on works, goods and services in order to achieve societal goals. Most developed countries aim to enhance the value of public money, which is strongly related with improvement and efficiency of legal institutions. Public procurement is also used to generate innovation and enhance the competitiveness of the country and its economy as a whole. This article aims to answer the following questions: Why does innovation matter? Does the quality of legal institutions have an impact on economic growth? How can one assess the performance of a legal system? How can one measure efficiency of legal regulations? How could public procurement spur innovation and efficiency? The article contains indicators were used to measured efficiency of procurement in a number of countries.

Introduction

Expenditures on public procurement within the European Union (EU) is an estimated 18% of GDP. EU procurements are contracted on works, goods, and services in order to achieve societal goals. New procurement legislation, recently approved by European Parliament, aims to ensure better value-for-money, quality, and have a positive impact on the environment, social goals, and innovation through the use of new award criteria (European Parliament News, 2014). Over the years, EU member states have raised political support to use EU policy as motivation for innovation, which is reflected in European procurement legislation. The public demand for innovation is not only limited to novelties that may be right away commercialized, but also assistance during the pre-commercial phase, where the risk of failure is greater. Innovation is also considered to be a tool to improve efficiency and bring innovative goods and solutions to serve the public sector and society at large. However, despite European legislation and policy, which offers opportunities to introduce innovative solutions, there has been a lack of stimulus and motivations from the side of the contracting authority. The risk-aversion, or even insufficient knowledge, resulted in circumspective behavior of authorities. In an attempt to deal with such problems, the Commission has published a number of working papers with needed information and explanation; therefore, in 2007, the "Guide on dealing with innovative solutions in public procurement" (European Commission, 2007) has been issued. In 2010, the
“European Commission, Risk management in the procurement of innovation - Concepts and empirical evidence in the European Union” (European Commission, 2010) was issued, and in 2011, the “Evaluation Report Impact and Effectiveness of EU Public Procurement Legislation” was published. Also in 2013, the “Final Report Developing an evaluation and progress methodology to underpin intervention logic of the Action Plan to Boost Demand for European Innovations – ENTR2008/006” (Peter V., 2013) was released. Along the way, there was a number of documents issued by European authorities. Similarly, the Member State countries, issued a number of guides to ensure the better use of innovative possibilities within the framework of public procurement system.

The Commission was aware that innovative procurement involves high risk, especially during the pre-commercial stage, when goods and services are not yet available to the customer yet. Therefore, the commission adopted a policy to stimulate innovations through procurement, even in the pre-commercial stage of research. Such policy can be seen in the ‘Europe 2020 Flagship Initiative Innovation Union’ (European Commission, 2010) issued in 2010. The Innovative Union is a concrete plan to increase the amount of money dedicated to innovation procurement for both types of procurements: firstly, for commercially available products/services; and secondly, on R&D stage (pre-commercial) procurements (European Commission, 2011). Therefore, the program, which is a part of both EU and government policy, aims to increase demand for innovation, as it is a key driver for development. The demand, which is aligned with innovation, has the power to create new products or services for societal purpose. But even though innovative public procurement nowadays is a part of a public policy, in the past it was neglected. A number of explorative studies were proceeded in the 1970s in order to investigate the output of both the innovation procurement contracts and straight R&D subsidies. The results of empirical research enlightened that in the long-term, procurement in innovation resulted in greater output than R&D subsidies. Also, conclusions from qualitative and quantitative research brought similar results. Therefore, procurement policy is a far better mechanism to trigger innovation than R&D subsidies (Edler J., 2007).

**Why does innovation matter? Why is it so important?**

In general, the concept of ‘innovation’ is associated with ‘individual enterprise level’ rather than national policy or the even legal system stage. The competitive advantage of the most successful organization is almost always driven by innovation. Of course, there are others factors that enhance competitive advantages of companies; for example, size of an organization, possession of assets, number of licenses etc.; however, innovation is the central point of growth for survival. At the heart of innovation the creative process lies the capability of how to organize knowledge, experience and possessed technological skills to initiate novel change in a product or service. (Tidd J., 2009)

In a free-market economy, the success of entrepreneurs leads to economic growth. In his book, William J. Baumol argued that “virtually all the economic growth that has occurred since eighteen century is ultimately attribute to innovation” (Baumol W.J., 2002).
Usually, people associate innovations with high-tech companies. However, innovation is a larger concept and can occur in products as well as in processes, positions, or paradigms. Product innovation is intuitive and linked to the things (products) and services; furthermore, these three concepts merit a short explanation. ‘Process innovation’ lies in the change that the particular product creates or delivers. ‘Position innovation’ - changes the context in which particular product or service is introduced. However, ‘paradigm innovation’ is associated with the change “in the underlying mental models which frame what the organization does” (Tidd J., 2009).

Nowadays, innovation has become a part of the economic policy of many countries, including the UK, Australia, Canada, and is even implemented in the policy of European Union. Generally, innovation involves high risk; however, the possibility making a profit causes entrepreneurs and governments to take that risk. Also, not being innovative carries the danger that competitors will introduce a better product/service on the market. Therefore, innovation can be understood as both the possibility of potential success, or a necessity for survival.

Most innovations are incremental and rely on continuous improvement of product, process, position, etc. However, occasionally, an innovation emerges and changes ‘the rules of the game’. Such concept was originally described by Schumpeter and is called ‘creative destruction’. One of the example of such phenomenon is the ‘ice industry’, which thrived in the 1880s. This lucrative business was simply based on cutting chunks of ice out from the north, and as soon as possible shipping them to southern states or even overseas. In its peak, the industry was able to ship around 25 million tons of ice to customers from warmer states. At that time, the ‘ice companies’ were very innovative, as the whole process of delivering ice enabled them to deliver the product to the far corners of the world by new fleet, catting machines etc. However, at that time, Carl von Linde worked on the refrigeration issue, and in 1873 he was able to patent and commercialize the first refrigerator. Within the decade, the ice shipping industry almost disappeared, but the new one, refrigerating, flourished (Tidd J., 2009). This case shows how innovation may reshape whole industries. Therefore, the process of exploration of new ideas, even if expensive, in long term seems to be unavoidable, to maintain competitiveness.

What is innovation? How do we understand innovation?

There are many definitions of the word “innovation”. The Oxford English Dictionary describes innovation in point 5 as “the action of introducing a new product into the market; a product newly brought into the market.” (Oxford English Dictionary, 2014) According to Innovation Unit (2004) UK, innovation is “the successful exploitation of new ideas” (Department of Trade and Industry, 2014). Michael Porter (1990), in his book, wrote that: “Companies achieve competitive advantage through acts of innovation. They approach innovation in its broadest sense, including both new technologies and new ways of doing things” (Porter, 1990). In the literature, there are more definitions of ‘innovation’, however, for the purpose of this
work, innovation should be understood in a broader sense and refers to creation of new products/services, their commercialization and the ways of doing it.

**How to measure efficiency of legal regulations?**

Incremental innovations are strongly related to process improvement, which has a direct impact on efficiency. In the Evaluation Report ‘Impact and Effectiveness of EU Public Procurement Legislation’, the idea of efficiency is included in a key question: “What have been the costs of compliance compared to the benefits obtained?” (European Commission, 2011) In this case, efficiency does not refer to business itself but is associated with the costs and profits that can be generated by introduction of new EU legislation related to public procurement. According to the report, the EU ‘public procurement directive’ enabled the more efficient use of public money, which can be expressed by numbers – the costs of the introduction of new legislation were four-five times lower than the savings generated from running such procedures. Hence, it seems that contracting authorities, and therefore, society as a whole, gained through new procurement legislation. But, there is also criticism that the results are overestimated and the function of the regulation should be a subject of further analysis in aspects of functioning of the system. Such investigation would give more adequate results if the analysis would have been proceeded case by case under fair circumstances, otherwise the costs of running the regulation in some cases may be far worse than in the presented results. As with all newly introduced regulations, there is also a risk that such norms may have an unintended impact on the economy as a whole, e.g., for market closure or concentration in case of framework agreements. It seems that the costs for contracting authorities as well as for suppliers are reasonable. The cost of public procurement, even during the high competition and the best regulations, simply cannot be equal to zero. However, during particular situations there is the possibility to optimize and reduce the costs, e.g., by advice contracting authorities how to apply more suitable procedures in given circumstances, especially during lower-value contracts (European Commission, 2011).

Efficiency of legal procedures can be also analyzed from the perspective of time: for example, how many days are needed to finish the whole process of procurement. The time also directly impacts cost and depends on project complexity. The average time of procurement in all European Union States, of all public procurement procedures, counted from issue of invitation to tender until the award of contract, is 108 days. However, the difference noticed between the leading performer and the lowest one was nearly 180 days. Such extensive difference, without doubt, impacts the cost involved and usage of the procedure, and therefore, efficiency of the whole procurement. Some of the aspects of time are the subject of legal regime, e.g., ‘publication of contract notice’ has limited flexibility. However, the time within which the contracting authority is obliged to award the contract is regulated by national law,
and controlled by the authority. Therefore, the process needed to complete procurements differ in each country due to differences in characteristics of the national legal system, techniques and procedures. Hence, the average time required for the contract award was 58 days. However, the necessary time for simple contracts is estimated at 45, and with 245 days necessary for competitive dialogue procedure accordingly. In almost every case, the competitive dialogue procedure is adopted to deal with complex projects; therefore it requires a longer time to award the contract. The second widely used proceeding is the ‘restricted procedure’, which takes on average 160 days. The most popular is an ‘open procedure’, which needs on average 53 days to be awarded. The public procurements are also measured by the time counted in days needed by a person to award the contract. The so-called the ‘person-day cost’ relates to real time spent by employees on both sides – the authority and the winning firm. Therefore, the average person-day cost is 38 days per procurement. However, the difference between top and bottom country performers is around 71 person-days (European Commission).

**Why do legal institutions matter? Does their quality have an impact on economic growth?**

The belief that along with the development of the community, legal and judicial systems evaluate and have an impact on economic performance is firmly grounded in the literature. Many studies, including ones performed by World Bank, suggest that the quality of legal institutions is in correlation with economic growth. But even though the argument for reformation of legal institutions seems to bring positive economic consequences, it is much harder to point to which institutions shall be improved and how. Also, it is even harder to measure the exact institution that has an impact on prosperity, the value of such impact, and whether a separate institution makes a difference as compared to the whole branch, as they are usually part of the entire legal system (Stephenson, 2005).

At its early stages, the research of economic development recognized that the quality of institutions is basically composed of protection of property rights, low business transaction costs and limited coercion. However, more recent research suggests that this represents only a part of the story. As the aforementioned arguments are reasonable, nowadays researchers have started to concentrate on correlation between governance and economic conduct of a nation. Therefore, today the relation between governance and incentives that are a product of political and institutional frameworks is a subject of scientific investigation. Hence, institutions create incentives that influence politicians’ decision whether to produce a structure that promotes economic actions or supports unequal redistribution of wealth, which has opposite consequences.

Legal institutions may either facilitate or impede economic growth of a nation; however, growth requires adaptation of appropriate legal institutions. In their nature, institutions are quite complex formations, and their impact on development depends on the circumstances in certain context. For example, during the financial turmoil, legal institutions provided the government with the necessary tools to respond effectively to such crisis (Tsebelis, 1995). The confidence in the legal system, also plays a very important role and can have decisive impact on
investor behavior. For example, the independent constitutional court may be pillar that raises trust and protects investors against implementation of laws that are against constitution (Stephenson, 2005).

Almost every empirical study that investigates the relations between quality of legal institutions and economic development shows the existence of correlation between those two factors. Some researchers claim that such connections work the other way round; therefore, high economic perforce of a country also would favor development of quality institutions. The concept of mutual correlation is known in literature as a "multiple institutional equilibrium". (Chong, 2000) There are a number of ways to measure institutional quality. Some studies measure observable characteristics of laws, such as legal protection of both creditor and stakeholders etc. Methods to measure such institutions can be found and called "law in books" (La Porta R., 1999). Another approach to measurement is based on the question: Is it hard for government to change the policy when specific circumstances occur within the laws of one's country (Henisz, 2000)? The next approach to measurement would not refer to characteristics of any particular institution, but rather analyze the whole functionality of the system. A good example of this technique is a number of revolutions of one country throughout history according to measurement of stability (Barro, 1991). Another way to assess the quality of legal institutions is an expert's evaluation, which provides e.g., investors with the data about business environment in particular country (Knack, 1995). Such assessment is carried out by specialized organizations or private firms (Stephenson, 2005).

How to assess the performance of legal system?

Many scientists interested in legal development have searched the best ways to assess the performance of legal institutions. The most common way used in research is the assessment through indicators. However, designing indicators that would reflect the legal institutions' impact on development, one encounter a number of technical and practical problems. Through the experience, many countries have tried to design and develop their own system of measurements that would assess the performance of the legal system and public institutions. For example, in the United States, the studies of 'Trial Court Performance Standard' analyzed a few important aspects of the legal system such as timeliness, independence, and accountability. The research was not only limited to countable data, but it also tried to assess aspects that are subjective, such as justice, fairness, and public confidence. From the other side, analysis produced in the United Kingdom concentrated on indicators that assessed the "quality" of service delivered by lawyers. Also Spain attempts to measure performance of legal system. The Spanish equivalent of a Judicial Council grouped the judicial tasks and assessed the required time (in hours) needed to accomplish them. However, the most detailed studies were produced in Australia. The Australian Annual Report on Government Service includes very comprehensive information of the court’s administration. It encompasses the structure of administration, the number of cases heard by the courts, the time required to finish a case, and the cost of each case. Also, the accessibility to courts was measured. All these data are classified in groups, which illuminate the types of courts, cases, and the region in which the court is based. There are also some disadvantages related with such comprehensive data collection. The main two are
time and money needed to collect such data. Therefore, its applicability may be limited only to developed countries. In the literature, scholars distinguish two broad groups of indicators: internal and external. The first one is related to management of the resources that are in the system and their usage. The second group focuses on comparison of the status quo before introduction of institutional reform and after the reform. It means that the investigation focuses on how the previous institution worked and how the new one performs in contrast (The World Bank, 2012).

**How to develop a culture of learning and improvement?**

Most of the developed countries search to enhance the value of public money, which is strongly related with improvement and efficiency. One of the studies conducted in the United Kingdom, based on analyzing construction procurements, sought to evaluate methods of performance measurements and so-called benchmarking protocols. The main idea of the research relied on the analysis of a variety of management practices and identification of which management behavior would bring the best outcome. The comparison of practices was carried out by using benchmarking protocols that would later on suggest which practice was the most effective. The best method would create a template of good management practice. Such templates could be applicable in other procurement projects in order to enhance the process of procurement and therefore effectiveness. The range of research included 122 constructions projects, which were completed within a period of 2 years. From the collected data, a number of indicators were created. The indicators embedded almost every field of the project starting with cost of the project, time-span, quality, safety, sustainability, and finishing on diversification. The main core of the research was to identify practices that allow the highest score of performance and subsequently spread them on other procurements (Hall M., 2003).

**What are the objectives of public procurement? How may public procurement spur innovation and efficiency? What are the pitfalls related with procurement and innovation?**

Assuming that one of the objectives of public procurement is to spread innovation and efficiency within the European economy, the following question should be asked - How effective are the procurement regulations and their execution? By effectiveness one should understand the objectives of the procurement compared against its outcome.

Each procurement has a different aim, however, every one of them is related to usage of public money for social purposes. The Government Office of Sweden argues that “the objective for public procurement is that it is to be efficient, legally compliant and aimed at making use of competition in the market so that tax revenues are used to the optimal benefit of citizens, the public sector and industry (Regeringskansliet Government Office of Sweden, 2012).” Therefore, the abidance of the main legal principles of public procurement such as transparency, non-discrimination, and objective way of awarding the contracts have a positive impact on effectiveness (European Commission, 2011). To increase the effect of such impact, governments
may apply a policy to use public procurement to spur innovations. However, the application of innovation policy may be not very easy task to do, as there are practical problems and pitfalls related with its usage. One of such pitfall, which is widely used by firms which operate in high-tech sector, is the strategy of creation ‘innovative impression’. This term refers to the situation when a firm creates an image around itself of an innovative company, but its products do not include any novelty.

Such companies, are followers rather than innovators, or at best, they imply improving existing products/services by incremental changes. As Levitt said, being the follower and imitating the innovative product or service, can be even more profitable than being the most innovative on the market (Levit, 1966).

This happens because the cost related with creation of innovation is covered by another company or organization while the imitator may concentrate full resources on manufacturing and implementing incremental improvements. Therefore, the difference between innovator and follower is not very clear for the end customer as the products they produce, may have similar features. Therefore firms, especially those which perform in the high-tech market, often embed a strategy of ‘innovative impression’. Such strategy create an image which causes that the company is considered as innovative, regardless of lack of novelty in its products or services. The high-tech sector firms are under a great degree of technological and market uncertainty as the replacement of existing technology into a new one is usually sudden and could mean troubles for competitors. Therefore, the companies create an ‘innovative image’ in order to be perceived by customers as innovative, even if they are not on the edge of technological lead. The image can influence the customer’s perception by creating confidence in company’s products (Natarajan R., 1993).

However, when the contracting authority becomes a potential customer that tends to buy innovative products or solutions, the ‘innovative impression’ may play a decisive role.

In procurement contracts, there are more factors that would be taken as criteria of awarding public procurement. For example, beside the lowest price, or level of technological advancement, the social outcomes may be of the same importance. Good example of such criteria may be a job creation, which would be the result of awarding the public procurement contract. For example, in 1989, scientists estimated that the Defense Department created around 300,000 jobs, by contracting defense procurement on $6 billion in 1988. Therefore, it is easy to calculate that $1 million created 49 jobs (Natarajan R., 1993).

How competition may influence innovation and efficiency?

One of the legal principles that has had a direct impact on innovation and efficiency is the principle of fair competition. Fair competition is one of the pillars of a free market economy that encourages companies to compete with each other in order to win customers. However, the
contracting authorities do not always use the full principles of fair competition. Public procurement is a form of contract between public and private entity, and sometimes there is a particular public interest that must be realized before the rule of fair competition would be applicable. In such situations, the behavior of the contracting authority may be irrational from an economic perspective; however, it may realize an important social function. It may seem that competition would increase effectiveness, however, from the public perspective, it is not always the optimal way to realize public objectives. In general, on the EU level, the rule of fair competition should be applicable, but sometimes it does not mean that national legal institutions restrain the competition in order to protect the particular public interest (Panasiuk, 2013). One of the sectors where the rules of competition would be limited according to procurement contracts is in the defense industry. The behavior of the contracting authority could be perceived as irrational from economic perspective; however, it may achieve strategic objectives from the point of national security.

The study conducted by Anton and Yao (1990), tried to reveal the effects that competition has on defense procurement. During the study, empirical literature was analyzed in order to reveal the essential insights of case studies in defense procurement. The attention was mostly concentrated on empirical models rather than focusing on technical features of legal procedures of procurement. As most of the defense procurements are complex and unique projects, the circumstances in each case differed from one another, therefore analysis of empirical models did not reveal a pattern able to predict the future behavior of entities that act on the market. In the 1980s, the Department of Defense, conducted research aimed at finding a way to reduce costs in procurement defense by increasing competition. The main idea was based on the argument that introduction of competition would reduce the price of procurement. Such reduction would be the result of competition that would bring back the incentive for companies to improve the efficiency by e.g., automation, introduction of more efficient management techniques, or cost-saving design etc. (Anton J., 1990).

In defense projects that involve state-of-the-art technology e.g., building a next-generation aircraft fighter, the production is represented by steep learning curves. It means that the cumulative production has impact on cost reduction. Therefore, the production process is more efficient when one company rather than two or more carries it on. Therefore, growth of competition usually has positive impact on price-reduction, however in complex defense procurements, it should be a subject of further analysis, as the outcome may be a better when one company would be awarded a contract or its part. According to several authors, the project cycle in defense procurement - “can be divided into four stages: initial design, development, initial production, and reprocurement”. According to literature, common practice is to concentrate competition in the first two stages. However, according to the state-of-the-art technology projects, it is usually better to limit the competition to the moment when the second phase (development) begins (Anton J., 1990).

From the other side, private sector companies, especially large international organization, implement some strategy of procuring that is commonly used by public
institutions. A good example of such practice is e-procurement. As the private companies are in general, more sensitive to incentives coming from the market, they quickly adapt to the constantly changing environment by improving their processes. One such improvement can be observed in e-procurement proceeded by GlaxoSmithKline (GSK). GSK is an international pharmaceutical company that uses e-sourcing tools in order to increase its savings. However, the company estimated that they lose between $80 and $120 million dollars due to noncompliance. In this case, noncompliance could be understood as the situation when suppliers and inner employees of GSK do not fully fulfill their obligations that require them to complete the contract. There are many situations in which non-compliance can occur on both sides: internal supplier or purchaser. Therefore, the company decided to introduce a saving strategy to restrain waste of money. Hence, the three-point plan was introduced. First, information and necessary data were collected. Secondly, the identification and the main causes of noncompliance was found. At the end, the strategy and mechanism of resolution of the problem was introduced (Kulp S. L., 2006). After the analysis, the cause of the problem was found. The noncompliance mostly was resulted from "lack of alignment between the new procurement structure and the organization's control mechanism."

Conclusion

Many studies, including ones performed by World Bank, suggest that the quality of legal institutions is in correlation with economic growth. Previously, the scientist who studied economic development had recognized that the quality of institutions depends on protection of property rights, low business transaction costs, and limited coercion etc. However, nowadays there are more ways which are used by scholars to measure the quality. For example, during the financial turmoil, legal institutions can provide the government with the necessary tool to respond effectively to such crisis. Also, the confidence in legal system, plays a very important role and can have decisive impact on investor behavior. However, when the well working institutions have positive impact on economic growth, the relation between them, works the other way round. For example, the legal institutions can create the incentives that influence politicians' decision whether to produce a structure which promote economic actions or support unequal redistribution of wealth which has opposite consequences. Quality of institutions is very important in the context of public procurement. The expenditures on public procurement within the European Union (EU) are estimated on 18% of GDP. Therefore, wise usage of such funds may have great impact on the economy. Therefore, it is crucial to use them effectively through efficient institution. Nowadays, there is also a trend to use public procurement to spur innovation. Therefore, since the innovations usually involves high risk, especially during the pre-commercial stage, adaptation of policy to stimulate innovations through procurement, would motivate companies to be more innovative. The results of empirical research enlightened that in the long-term time, procurement in innovation resulted in greater output than R&D subsidies. Therefore procurement policy is a far better mechanism to trigger innovation than R&D subsidies.

However, even if the policy plays important role to leverage economic growth and innovation, the institutions themselves are even more crucial. For example, the EU ‘public
procurement directive’ enabled to use more efficiently public money. It can be expressed by numbers – the costs of the introduction of new legislation were four/five times lower than the savings generated from running such procedures. Efficiency of legal procedures is usually analyzed from the perspective of time. It means, how many days are needed to finish the whole process of procurement. The time, has also direct impact on cost and depends on the project complexity.

References


