

Is There a Trade-off Between Sustainability and Competition Goals in Public Procurement? Evidence from Slovenia

PREDRAG JOVANOVIĆ, MILAN RADOJIČIĆ, DEJAN MOLNAR & SAŠO MATAS

Abstract Over the past decade, public procurement goals have expanded from obtaining free competition and lowest prices to achieving objectives of “horizontal” policies that take into account ecological and social aspects. However, the Tinbergen Rule states that one instrument should be matched with one goal, while using one instrument for achieving multiple goals would undermine its effectiveness. In this paper, we will examine whether implementation of “horizontal” public procurement policies related to green public procurement, socially responsible public procurement and the promotion of micro, small and medium enterprises’ participation affect achievement of the “primary” public procurement goal of free competition. Our study is based on empirical data on more than 65,000 public procurements carried out in Slovenia during the period 2016-2019.

Keywords: • horizontal policies • competition • green public procurement • socially responsible public procurement • sustainable development goals

CORRESPONDENCE ADDRESS: Predrag Jovanović, Ph.D., Associate Professor, University of Belgrade, Faculty of Organizational Sciences, Jove Ilića 154, Belgrade, Serbia, e-mail: predrag.jovanovic@fon.bg.ac.rs. Milan Radojičić, Ph.D., Assistant Professor, University of Belgrade, Faculty of Organizational Sciences, Jove Ilića 154, Belgrade, Serbia, e-mail: milan.radojicic@fon.bg.ac.rs. Dejan Molnar, Ph.D., Associate Professor, University of Belgrade, Faculty of Economics and Business, Kamenička 6, Belgrade, Serbia, e-mail: dejan.molnar@ekof.bg.ac.rs. Sašo Matas, Public Procurement Directorate, Ministry of Public Administration, Tržaška cesta 21, 1000 Ljubljana, Slovenia, e-mail: saso.matas@gov.si.

[https://doi.org/10.4335/22.1.49-70\(2024\)](https://doi.org/10.4335/22.1.49-70(2024))

ISSN 1581-5374 Print/1855-363X Online © 2024 Lex localis

Available online at <http://journal.lex-localis.press>.

1 Introduction

One of the primary goals of public procurement is to purchase goods and services that the public sector needs in order to provide its services to citizens and businesses in an economic and efficient way. This requires contracting authorities to enable free competition that results in the most favourable terms of purchase, which is the “primary” goal of public procurement (Arrowsmith, 2010). At the same time, public procurement is perceived as a potentially powerful instrument that can be used to achieve wider social, ecological, and other “horizontal” policy goals that go beyond ensuring best purchasing terms or compliance with the law (Arrowsmith, 2010).

Regarding the hierarchy of goals, Olsson & Öjehag-Pettersson (2020) argued that public procurement has a crucial role in promoting sustainability and due to that this reason sustainability should be treated as a “primary” policy goal. At the same time, some researchers state that all the major goals listed as principles of public procurement, including those concerning the environmental and sustainability ones, should be treated equally (Milosavljevic et al., 2021).

In this paper, we do not consider public procurement goals as higher or lower ranked, but make the distinction between the narrower objectives that are specific and limited to public procurement (primary objectives) and wider objectives that are not bound to public procurement, thus having broader social and environmental impacts (horizontal objectives).

Competition is used as a proxy for the primary procurement objective of purchasing on best terms, or “value for money” (VfM), since competition is recognized as a key prerequisite for this. In other words, best VfM as a primary procurement objective as defined by Arrowsmith (2009) is not possible without free competition. It has been pointed out that intense competition in public procurement is a key element of efficient public spending (Tátrai et al., 2023). Other papers argue that lack of competition or its low intensity reduces value for money (National Audit Office, 2023). Thus, we assume that the intensity of competition indicates the achievement of VfM as a primary procurement objective.

Horizontal policy objectives should be achieved by introducing social and environmental criteria through green public procurement (GPP) and socially responsible public procurement (SRPP), as well as through higher participation of micro, small and medium-sized enterprises (MSMEs). However, according to the Tinbergen Rule, each goal requires a single instrument, which means that governments need to use multiple policy instruments if they want to achieve multiple policy objectives efficiently. In this case, there is one policy instrument

(public procurement) and several goals that have to be achieved (competition, environmental neutrality, social responsibility and wider participation of micro, small and medium sized enterprises)

Thus, in this paper, we examine how the realization of horizontal public procurement policies (GPP, SRPP and greater participation of MSMEs) influence the achievement of the primary public procurement policy goal (competition). Moreover, we analyse whether GPP, SRPP and increased participation of MSMEs are mutually positively correlated, thus enabling a higher level of horizontal public procurement policy coherency. More specifically, we explore how wider participation of MSMEs affects GPP and SRPP uptake as well as the extent to which GPP and SRPP are mutually correlated.

The effects of promoting horizontal policy objectives in real life public procurement are analysed using the case of the Republic of Slovenia. We have incorporated all public procurement agreements that were officially conferred during the period extending from 2016 to 2019. Our research is focused on the mentioned period due to pandemic, which started in 2020 and had a significant impact on public procurement (Hoekman et al., 2022). In order to avoid this exogenous and extraordinary influence on the results and findings, we selected the four years immediately prior to the start of the pandemic.

In this paper, we test the validity of the Tinbergen Rule, in the public procurement domain. To the best of our knowledge, this kind of research has not been conducted before. The findings of this research may be useful to policymakers endeavouring to apply public procurement as a lever to achieve multiple policy goals in the most efficient way.

The remainder of the paper is organized as follows. Section 2 reviews the literature on the relevance of competition for achieving the most favourable price-quality ratios for contracting authorities and for exploiting the potential of public procurement to be a powerful instrument to make a significant positive contribution to achieving wider public policy objectives, such as environmental neutrality, support of economic and social development, fostering innovation, promoting social inclusiveness and reducing social inequalities. Section 3 elaborates on how horizontal policy objectives of public procurement have been promoted in the EU and Slovenia over the past few years and what potential conflicts between them exist. Section 4 describes the methods and data used for the analyses. Results and discussion are presented in section 5. In the final section, we present concluding remarks.

2 Literature review

Many studies have confirmed the positive impact of competition on prices in public procurement. Gineitiene & Serpytis (2011) found that an increase in competition from one to two bidders results in significant savings of between 10% and 20%. De Oliveira and coauthors (2019) argue that if competition intensifies, savings will rise by 1.1%. However, such positive effects of increased competition reach their maximum with eight bidders, after which savings in purchasing price start to decrease (Imi, 2006). Gupta (2002), showed that the greatest reduction in prices could be achieved with six to eight tenderers. Several studies provided empirical confirmation of the positive influence of competition in public procurement on purchasing prices (Elberfeld & Wolfstetter, 1999; Szymanski, 1996). Empirical studies by Grega & Nemeč (2015) as well as Fazekas & Kocsis (2020) confirmed that the number of offers influence prices significantly, assuming there is no collusion among bidders. The relation between the number of bids and purchasing prices was confirmed by research on public procurement practice in Sweden, which indicates that a higher number of offers submitted was associated with reductions in prices (Hyytinen et al., 2018).

Bulow & Klemperer (1994) confirmed that attracting enough competition is of crucial importance in obtaining the needed goods and services at affordable prices. Strong effective competition induces tenderers to compete more intensively, resulting in the best combination of purchasing prices and quality, i.e., in most favourable price-quality ratio for the contracting authority (Tukiainen & Halonen, 2020).

However, research has shown that when the number of bidders exceeds a certain threshold, the positive effects of competition on prices start to decrease. In such a case, an increase in the number of tenderers has a diminishing effect on purchasing prices (Gupta, 2002). This could be explained by the “entry effect”, which means that as the number of tenderers rises above a certain level, marginal profit starts to decrease as a result of increasing competition being insufficient to cover entry costs. In other words, when the number of offers exceeds a certain level, additional tenderers will not lead to decreasing prices (Li & Zheng, 2009). At the same time, a lower number of bids makes it easier for a deal to be struck, which increases the risk of bidders’ collusion and results in raised entry barriers (Nazzini, 2018). The conclusion is that the optimal number of competitors varies between six and eight.

Several papers have analysed entry barriers that prevent companies from participation. The most common barriers to free competition are complicated bureaucratic procedures (which bring an excessive administrative burden), corruption, low transparency and bidders’ collusion (Čudanov et al., 2018;

Jovanović et al., 2022). According to surveys conducted by the Swedish Competition Authority, many companies restrain themselves from bidding even though they could have done so for several reasons, such as: 1) the contracting authority set requirements in the technical specifications that are discriminatory, unclear or too restrictive, 2) the transaction costs of participating in the public procurement procedure in terms of effort and money are too high, and 3) the value of the contract is unsuitable, being either too low or too high (Tukiainen & Halonen, 2020).

Soon after the Sustainable Development Goals (SDGs) were defined in the UN Agenda 2030 for Sustainable Development in 2015 (United Nations, 2015), public procurement was perceived as a potentially powerful instrument that can make a significant positive contribution to achieving these goals. In documents of such international organizations as the EU and the OECD and in research studies, it has been argued that public procurement could be used as a strategic instrument for achieving wider public policy objectives, such as environmental neutrality, supporting economic and social development, fostering innovation, promoting social inclusiveness, reducing social inequalities and providing access to vulnerable groups (persons with disabilities, the elderly, women, youth), due to the huge economic power of these organizations (European Commission, 2017a, 2017b, 2021a, 2021b, 2022; OECD, 2020; Tepper et al., 2020; Bali ., Howlett., Lewis, & Ramesh, M. 2021). Empirical evidence that public procurement activities are positively related to innovation was presented. This indicated that procurement could be used as a policy tool to increase innovation within the public sector (Demircioglu & Vivona, 2021).

Furthermore, public procurement is perceived as a powerful instrument that has the potential to facilitate changes in the behaviour of citizens and companies towards environmental neutrality and social responsibility (OECD, 2020). Expectations that GPP and SRPP can contribute to the achievement of these social and environmental goals, among others, are based on the significant buying power of the public sector with a share of 14% of the EU's GDP (European Commission, 2017a).

Achieving SDGs has gained even higher priority for EU countries after the recent negative effects of climate change, the pandemic, and the war crisis (Sönnichsen & Clement, 2020). It could be expected that policymakers in EU and OECD countries would rely more on public procurement as an instrument to achieve the proclaimed targets and objectives relating to SDGs. Overdevest & Zeitlin (2014) pointed out the risk that promoting specific sector goals such as labour rights, the environment and others could undermine the effectiveness of governance by raising compliance costs for firms and by confusing consumers and other public

stakeholders. Against this background, it is important to determine how these horizontal policy objectives relate to core public procurement goals.

3 Research

At the beginning of this section, we will discuss why and how horizontal public procurement policy objectives have been promoted in the EU and Slovenia over the past several years. This is followed by a consideration of whether synergies exist between them. We conclude this section with a discussion of the potential conflict between the primary and horizontal objectives of public procurement policy.

3.1 Promotion of micro, small and medium-sized enterprises

According to Clark & Moutray (2004), MSMEs dominate the total number of national companies worldwide with a share of approximately 90% and produce ten times more patents per employee than larger companies in the same industries. Thus, a higher rate of awarding public contracts to MSMEs is a stimulus to employment, innovation and local economic growth.

In the EU, MSMEs account for 99.8% of the total number of enterprises (European Commission, 2021a). Of the total number of MSMEs, 90% are micro firms with fewer than ten employees, half of which employ only the owner (European Commission, 2022). These numbers indicate the high significance of MSMEs for both the European economy and employment. Furthermore, the development of MSMEs contributes to reducing inequalities and poverty as well as to increasing employment, particularly of vulnerable categories, such as the working poor, women, the elderly and youth lacking work experience (United Nations, 2020). However, there is a huge gap between MSMEs' relevance in macroeconomic aggregates and their share as suppliers to the public sector. Specifically, the share of contracts won by SMEs is 45% on average, despite this category of enterprises accounting for more than 65% of private sector turnover (European Commission, 2022).

The primary causes of the underrepresentation of MSMEs in public procurement are the highly complex procedures frequently involving burdensome administration and documentation. High levels of bureaucracy increase the time and costs needed for preparing offers, where a slight deviation from the tender requirements leads to the rejection of the bid. Bearing in mind the huge potential benefits from wider participation of MSMEs in public procurement, the EU has set improving access of MSMEs to the public procurement market as a strategic goal with the aim of increasing their share as much as possible in line with their significance for the EU economies (European Commission, 2017b).

In Slovenia, activities to promote MSMEs in recent years have mostly been legislative driven. Slovenia is one of the EU member states with a higher MSME penetration (usually over 70%) than the EU average (European Commission, 2019). To facilitate MSMEs' participation in public procurement, there are several provisions in Slovenian public procurement law, including special provisions on the division of procurement contracts, where the law requires contracting authorities to divide contracts into lots when this is economically appropriate. In addition, in setting requirements to bidders regarding their minimal annual turnover, the contracting authority must not set an amount that is more than twice the value of the contract. Moreover, in procurements involving subcontractors, the main contractor is obliged to notify any change concerning the subcontractors in due time as well as to prove that he has made payment to the subcontractors on time. If the main contractor fails to comply with these requirements, he is subject to an infringement procedure with a fine of up to 100,000 euros.

3.2 Stimulation of green public procurement

In its strategic documents, Europe 2020 and the Renewed EU Sustainable Development Strategy, the EU points to GPP as one of the key levers that it will use to achieve its economic, social and environmental objectives in the coming period (Pouikli, 2021). Furthermore, in its key legislative document on public procurement, EC Directive 2014/24/EU, the EU foresees the use of a "demand-side policy of public procurement" in order to attain its strategic environmental, social and economic aims (European Commission, 2014). In other words, it was expected that the public sector could serve as a leading example to the private sector in changing consumption patterns towards "green" products and services. Producers would start to adjust their production and supply to the growing demand for ecologically friendly products, with this being expected to bring down greenhouse gas (GHG) emissions to at least 55% of the level of 1990 by 2030 as well as to enable the achievement of climate neutrality by 2050 (European Commission, 2021b).

To encourage the use of GPP, criteria for more than 20 groups of products have been set by the EU. Moreover, specific mandatory legal provisions have been added in regulations of different sectors such as: a) the Energy Star Regulation, which requires contracting authorities to purchase energy-efficient information technology equipment to be used in public sector offices, b) the Clean Vehicles Directive, which mandates the purchase of vehicles with a minimum impact on the environment, and 3) the Energy Efficiency Directive, requiring public authorities to acquire energy-efficient buildings and equipment that meet the highest energy standards (Pouikli, 2021).

In recent years, there have been many changes in Slovenia in promoting green public procurement. In 2018, a new and updated bylaw, the Decree on Green Public Procurement, was adopted. In addition to changes in legislation, authorities have taken several measures with the aim of fostering and promoting green public procurement. Among the most important were capacity building activities with guidelines for each sector and the establishment of a helpdesk service with a contact point for each sector between different ministries for written and telephone consultations.

3.3 Fostering of socially responsible public procurement

Socially responsible public procurement is considered a powerful lever that can positively contribute to the promotion of employment opportunities and accessibility for all, leading to reduced social inequalities and greater social inclusion (Tepper et al., 2020). The urgency of achieving social goals was particularly heightened during the pandemic. The COVID-19 crisis hit labour markets severely worldwide and increased unemployment rates, especially of vulnerable categories such as low-skilled workers, women, disabled persons, the elderly and the younger population with no working experience (Siddiqui, 2020). To prevent a further deterioration in achieving social goals, the EU has prepared new practical guidelines to make it easier for contracting entities to include incorporate social considerations in public procurement.

Contracting authorities are encouraged to design purchasing requests in a way that promotes social inclusion, gender equality and non-discrimination, and decent work in order to achieve wider compliance with social standards (European Commission, 2021a). In addition to the EU itself, governments of its member states promote SRPP at national levels to create employment opportunities for those faced with employment difficulties, such as disabilities, lack of specific education or skills, insufficient experience, or some other barriers that put them at a disadvantage. There are many practical examples of awarding reserved public contracts to social enterprises in sectors such as healthcare, social services etc., with this helping disabled and disadvantaged workers to overcome employment barriers and supporting their social inclusion (Tepper et al., 2020). The EU estimates that the potential for further use of SRPP are significant (European Commission, 2021a). However, training and other forms of support to disadvantaged persons in their workplaces require additional resources and create extra costs, which are reflected in the prices offered. Moreover, some companies do not have the capacity to provide the necessary facilities to support disabled persons, and are thus prevented from competing for government contracts. For this reason, it is important to analyse how SRPP relates to competition and other aspects of sustainability, such as GPP.

In Slovenia, the promotion of socially responsible procurement started with adaptation of the public procurement law in 2016, when specific socially relevant provisions were included. In 2018, the public procurement law was amended to foster and promote SRPP. Socially responsible award criteria became obligatory for the procurement of all labour-intensive services and are checked every 6 months. The implication is that a contract might be cancelled if an economic operator does not fulfil any of the SRPP-related legal requirements. In addition to the already existing and recently updated Buying Social guidelines of the European Commission (2021a), the Slovenian public procurement regulatory body has prepared templates for socially responsible award criteria with socially responsible contractual clauses.

3.4 Is there synergy among the horizontal PP goals?

Keeping in mind Slovenia's efforts to implement GPP, MSME and SRPP to a greater extent in the public procurement process, we tested the following hypotheses:

- H1: The importance of horizontally policy objectives in the public procurement process is increasing;
- H2: Wider participation of MSMEs stimulate the uptake of GPP;
- H3: Greater participation of MSMEs has a positive effect on SRPP uptake;
- H4: GPP and SRPP are positively correlated;
- H5: The inclusion of horizontal objectives (MSME, GPP and SRPP) reduces the intensity of competition in public procurement procedures.

MSMEs are expected to be better able to adopt the new environmental requirements in GPP than large companies, where changes in production require significant investments and large organizational changes. The reason is that MSMEs have shorter decision-making and management lines and more efficient approval procedures that enable them to respond more quickly to change than larger enterprises (Sen et al., 2022). MSMEs could be focused on a particular market niche, such as specializing in specific organic food production, making them highly sensitive and responsive to changes in that niche market. Moreover, MSMEs are more motivated to specialize in providing particular, high quality products or services than larger companies since larger suppliers need higher volumes of sales to be profitable (Bayarçelik et al., 2014). In this way, MSMEs can respond more quickly to newly created demand from public buyers for environmentally friendly products and services (OECD, 2018). Thus, a wider use of GPP could be expected to be accompanied by a greater participation of MSMEs.

MSMEs have strong potential to participate in SRPP since they are closely connected with local communities and more deeply involved with them than larger companies operating at the national level (Ryu & Sueyoshi, 2021). Being more familiar with local social challenges, such as disabled persons who are disadvantaged, youth unemployment, and female unemployment, they will be more willing to respond to SRPP to support sustainable development in the local community.

Socially responsible public procurement is likely to be more prevalent in countries with greater awareness of externalities in production and consumption where non-economic considerations are taken into account, thus being referred as “secondary” considerations (Treumer, 2010). Higher awareness of costs that are not visible in the present but are incurred beyond the company throughout the community and in the future increases the chances of GPP and SRPP uptake. Therefore, GPP and SRPP should be expected to move in the same direction, although not necessarily to the same extent (Treumer, 2010). Awareness of external costs generated by business and/or individuals at the expense of the community will encourage the use of both GPP and SRPP as instruments to reduce external costs in the future. Thus, it is expected that wider acceptance of GPP and SRPP are positively correlated.

In order to examine the aforementioned assumptions, we will explore the effects of promoting legislation relating to GPP and SRPP and the wider participation of MSMEs in public procurement in Slovenia in the period 2016–2019. Since all three instruments are aimed at achieving the SDGs, it is important to determine how these three levers are interrelated, i.e., whether they reinforce each other. Finally, we will investigate how each of them is linked to the objective of increasing competition as a fundamental principle of public procurement.

The effects of substitution policy are determined by the price elasticity of supply and demand (Lundberg & Marklund, 2018). An increase in the price of green products could create a stimulus for private consumers to turn to relatively cheaper conventional products if there is price elasticity on the market. In this case, the effect would be more expensive ecological products consumed by the public sector and increased consumption of conventional goods by private consumers as a reaction to the price increase of green products. The same effect could be expected from SRPP.

On the supply side, higher prices of ecological products would attract some producers to transform their production from conventional to green. The effect of the transformation policy will depend on the price elasticity on the production side. Moreover, the effect of GPP on achieving ecological goals will depend on how many producers with brown technology are willing to transform to green. If

the environmental criteria were too rigorous for potential suppliers, then the costs of their adapting would be higher than the price premium, and suppliers would decide not to participate in GPP. The number of producers of ecological goods would not increase, and the intensity of competition on the green product market would start to decrease since some producers would turn to the conventional segment. In this case, the final effect of applying highly demanding ecological criteria would be a price increase of green products (Lundberg et al., 2015).

SRPP would be expected to have similar effects on competition. More demanding working conditions, which should be adapted to the specific needs of disadvantaged persons, may create costs above the expected premium in prices (Burgi, 2010). Lower profitability would induce some producers to withdraw from participation in SRPP. The result would be lower supply of socially responsible products and services as well as less intensive competition. The objectives of social responsibility may well be better achieved through targeted government programmes (Arrowsmith, 2010).

Public authorities have fixed budgets to run their operations, and, in this context, stringent green or social criteria could be considered as opportunity costs. Therefore, if a government wants to make significant changes towards protecting the environment or reducing social inequalities, public authorities must “sacrifice” progress in some other areas. Higher prices paid for green and socially responsible products affect how much funding is available for public services such as education, health services and others. The stricter and more restrictive the green and social requirements set by a contracting entity are, the higher the premium in price that will have to be paid (Lundberg & Marklund, 2018). In addition, more requirements for potential bidders to meet green or social criteria means higher transaction costs for them, which would be reflected in the bid price. Thus, a multiple set of horizontal policy goals, such as environmental and social goals, would lead to higher prices, which would be detrimental to primary procurement objectives such as economically advantageous public procurement (Lundberg et al., 2015).

In line with a transformation policy, the procurement process can be considered to have a positive environmental or social impact when potential tenderers align themselves with the specific criteria outlined in the call for tender that direct them to make investments in environmentally or socially sustainable production processes and products. However, if the only potential bidders participating in the procurement process are those that already comply with these criteria, there will be no discernible environmental or social impact since they will not be replacing producers of conventional products on the market.

Arrowsmith (2010) claims that policy goals outside primary public procurement objectives may impose an additional burden on both the contracting authority and the tenderer. The final outcome may be higher contract prices. In this case, procurement costs rise due to at least two factors: one is related to more demanding terms of compliance and the other is a result of additional policies reducing the pool of eligible tenderers.

Thus, we consider it important to explore whether widening public procurement policy objectives affects the achievement of the primary goal of public procurement policy. Moreover, we will examine how broader horizontal policy goals contribute to each other's achievement in practice.

3.5 Methodology

To conduct our analysis, we compiled data related to public procurement from the Public Procurement Portal, courtesy of the Ministry of Public Administration, Republic of Slovenia. We include all the public procurement contracts (65,354) awarded in the period 2016–2019. The reason for limiting our research to this period lies in the fact that the pandemic, which started in 2020, had a significant impact on public procurement (Hoekman et al., 2022). To mitigate the impact of this external and exceptional factor on our results and discoveries, we opted for the four-year period immediately preceding the onset of the pandemic. Further research should be based on an analysis of procurements undertaken in the four-year period commencing in 2022, when the influence of the pandemic largely ceased, and compare its results and findings with those presented in this paper.

Our analysis relies on data retrieved from an SQL database and encompasses parameters such as the number of bids and the participation of GPP, MSMEs and SRPP in public procurement procedures. To perform this analysis, we utilized the IBM SPSS statistical software package.

To verify hypothesis H1, and partly H5 we employed Chi-square test. A chi-square test is a nonparametric statistical method utilized to assess the congruence between observed empirical data and the anticipated outcomes based on theoretical expectations. The fundamental aim of this test is to elucidate whether deviations observed in the data, in comparison to the expected values, are the result of stochastic variability or if they signify a statistically meaningful association or correlation between the variables subject to investigation (Rao, 2002).

The measurement of correlation between binary variables is typically done using a phi coefficient (Austin, 2009). Thus, hypotheses H2, H3 and H4 are examined by employing phi coefficients as a measure of strength and direction of association between horizontally policy objectives.

We employed independent sample t-tests to ascertain hypothesis H5. The Student's t-test is one of the most commonly used statistical hypothesis test to determine if a significant difference exists between the means of two groups (Kim, 2015).

4 Discussion

At the beginning of this section, we will present data on results of the government of Slovenia's policy to promote GPP, SRPP and MSMEs in the period 2016–2019.

In the analyses, we used the total number of public procurement procedures as well as the total number of GPPs, SRPPs and MSMEs and their percentage participation in the total number of procedures each year from 2016 to 2019 (Table 1). There was noticeable growth in all three horizontal policy objectives. The share of GPP increased by 3.45% in the total number of procedures, while the participation of MSMEs increased from 67.53% to 80.54%. The most noticeable growth is in the participation of SRPP, which jumped by as much as 157%.

Table 1: Overview of public procurement procedures in Slovenia 2016–2019: total of micro, small and medium sized enterprises (MSME), green public procurements (GPP) and socially responsible public procurements (SRPP)

	Total No.	#GPP	% GPP	#MSMEs	%MSMEs	#SRPP	%SRPP
2016	15,212	4,608	30.29%	10,273	67.53%	1,168	7.68%
2017	17,525	5,837	33.31%	13,941	79.55%	2,561	14.61%
2018	16,796	5,619	33.45%	13,613	81.05%	2,510	14.94%
2019	15,861	5,352	33.74%	12,774	80.54%	3,129	19.73%
Total	65,394	21,416	32.75%	50,601	77.38%	9,368	14.33%

Chi-square tests were conducted to examine whether there was a statistically significant increase in the participation of GPP, MSMEs and SRPP in public procurement procedures in Slovenia during the period 2016–2019. We compared data for 2016 with those for 2019. Statistical significance was established for the percentage change in the participation of all three horizontal policy objectives. Table 2 shows our results. There is a statistically significant increase in the number of participations of all horizontal policy objectives in 2019 compared to 2016. Following Cohen (2013), the effect size for all three indicators is small (<0.3).

Table 2: Results of Chi-square tests for increase of participation of horizontally policy objectives in PP procedures: micro, small and medium sized enterprises (MSME), green public procurement (GPP) and socially responsible public procurement (SRPP), in Slovenia, during the period 2016-2019

	True count in 2019	Expected count in 2019	Yates' correction for continuity	Significance	Phi coefficient
GPP	5,352	5,084	42.308	0.000	0.037
MSMEs	12,774	11,764	684.816	0.000	0.149
SRPP	3,129	2,193	945.065	0.000	0.174

Our analysis confirms the first hypothesis, H1, that Slovenia had success in promoting MSME, GPP and SRPP in the public procurement process.

The next analysis carried out refers to the relationship between horizontally policy objectives – GPP and the promotion of MSMEs, then between SRPP and GPP, and finally between SRPP and MSMEs. Table 3 shows the phi coefficient for the relationship between these three horizontal policy objectives. A statistically significant negative correlation was found between MSMEs and GPP, and between MSMEs and SRPP. A statistically significant positive correlation exists between GPP and SRPP. It should be noted that the strength of these relationships is small ($\phi < 0.3$), following Cohen (2013).

Table 3: Relationship between three horizontally policy objectives: micro, small and medium sized enterprises (MSME), green public procurement (GPP) and socially responsible public procurement (SRPP)

	GPP	MSMEs	SRPP
GPP	1	-0.048**	0.282**
MSMEs		1	-0.021**
SRPP			1

** - significant at the 1% level

As we postulated in our second hypothesis, H2, MSME's are expected to be better able to adapt to the new requirements of GPP than large companies, where changes in production require significant investment and major organizational changes. Therefore, the use of GPP should be accompanied by greater participation of MSMEs in strategically oriented procurement. Our research, supported by data on over 65,000 public procurement contracts over the four years

preceding the COVID-19 pandemic, found that introducing or using green public procurement criteria does not incentivize MSMEs. On the contrary, it in fact results in their lower participation. This can be observed because GPP in Slovenia, which is mainly enforced through the legal framework of bylaws on green procurement dictating mandatory use in certain categories such as food, IT equipment, public works, vehicles and some services, are more targeted at larger companies. On the other hand, using strategic functions of procurement might curb competition and impact the participation of firms, but we have not observed this. There is a negative but very small correlation between green public procurement criteria and MSME participation in these procurements. Nevertheless, we cannot confirm hypothesis H2 that wider use of green public procurement is accompanied by greater MSME participation.

We also observed the impact of SRPP on the participation of MSMEs, who have a strong potential to participate in SRPP since they are closely connected with local communities. Being more familiar with local social challenges, they will be more willing to respond to SRPP and thus support sustainable development of the local community. Increased use of SRPP should be accompanied by wider participation of MSMEs. In our research, we were not able to confirm this. Despite there being a very small negative correlation between the use of SRPP and MSME's participation, we cannot confirm that the use of SRPP is accompanied by wider participation of MSMEs. This might be due to the fact that SRPP has only recently been introduced in Slovenian public procurement and that SRPP criteria are used by contracting authorities more mechanically than strategically or that Slovenian MSMEs are meeting the demands of socially responsible procurement more slowly than expected. Nevertheless, we cannot confirm hypothesis H3 that the use of socially responsible public procurement is accompanied by greater participation of MSMEs.

On the other hand, we observed positive correlation between the use of GPP and SRPP. Despite being small (0.28), we can see that some contracting authorities are using GPP and SRPP as strategic tools – when they use one or the other, they are more likely to use both. Thus, we confirm our fourth hypothesis, H4.

The results of this study confirm that there is a close to medium size effect between SRPP and GPP (Table 3). This can be explained by the fact that a higher awareness of externalities in production and consumption stimulates both SRPP and GPP. This greater awareness of costs that are not visible in the present but occur outside the company, in the community as a whole, and in the future, constitutes a common underlying factor that increases the likelihood of the uptake of GPP and SRPP.

As mentioned above, SRPP has only recently been introduced in Slovenian public procurement markets, so future observations of this relationship should be one of the points of interest for further research.

In addition, we investigate H5 – the impact of including horizontal PP objectives (MSME, GPP and SRPP) on the level of competition in the public procurement processes in Slovenia in the period 2016–2019. We examined the influence of these three parameters individually on the competition, using independent samples t-tests for this purpose. The idea is to check whether there is a difference between the average number of bids when there are MSMEs, GPP or SRPP and when there are not. Table 4 shows the results of the t-tests on all three horizontal policy objectives. The average number of bids is statistically significantly higher when the procurement is based on GPP. However, this difference has a small effect size. On the other hand, the average number of bids is statistically significantly lower in the presence of SRPP than in the absence of SRPP. This difference also has a small effect size. As far as MSMEs are concerned, the number of offers does not change, regardless of their participation.

Table 4: Impact of horizontally PP objectives (MSME, GPP, SRPP) on primary PP objective (competition), Slovenia, 2016–2019

	Type	Cases	Mean ± SD	t-test	Significance	Effect size
GPP	No	43,978	2.768±4.482	-7.475	0.000	0.001
	Yes	21,416	2.967±2.342			
MSMEs	No	14,793	2.816±4.398	-0.573	0.567	Non-significant
	Yes	50,601	2.838±3.760			
SRPP	No	56,026	2.872±4.162	10.655	0.00	0.002
	Yes	9,368	2.600±1.792			

The conclusion is that GPP increased, SRPP decreased while MSMEs did not affect the intensity of competition in public procurement procedures in Slovenia in the period 2016–2019 measured by average number of bids. The results we obtained partially confirm the fifth hypothesis, H5.

In order to check the robustness of the previous findings, we took public procurements in which only one bid (offer) was submitted for all the categories (MSME, GPP and SRPP) (Table 5 and Table 6). In that way we used two indicators for intensity of competition - the share of single-bid procurements in the total procurement and an average number of bids per tender.

Table 5: Number of public procurements with only one bid, Slovenia

	Total	#GPPs	#MSMEs	#SRPPs
2016	4,817	960	3,045	291
2017	5,864	1,415	4,614	704
2018	6,632	1,363	5,367	843
2019	6,258	1,352	5,042	1,045
Total	23,571	5,090	18,068	2,883

Table 6: Public procurement with only one bid, Slovenia (in %)

	%Total	%GPP	%MSMEs	%SRPP
2016	31.67%	19.93%	63.21%	6.04%
2017	33.46%	24.13%	78.68%	12.01%
2018	39.49%	20.55%	80.93%	12.71%
2019	39.46%	21.60%	80.57%	16.70%
Average period	36.04%	21.59%	76.65%	12.23%

Of the total number of public procurements in Slovenia in the period 2016–2019, 36.04% received only one offer (Table 5 and Table 6).

We investigated whether there is a dependence between the procurements when one offer is received and the three horizontal policy objectives (Chi-square tests) (Table 7). The significance of small effect size was determined for all three horizontal policy objectives.

Table 7: Probability of receiving single bid

	%Total	%GPP	%MSMEs	%SRPP
2016	31.67%	19.93%	63.21%	6.04%
2017	33.46%	24.13%	78.68%	12.01%
2018	39.49%	20.55%	80.93%	12.71%
2019	39.46%	21.60%	80.57%	16.70%
Average period	36.04%	21.59%	76.65%	12.23%

From the results, it can be concluded that GPP, SRPP and MSMEs contribute to the lower probability of receiving only one offer. This means that although in the above analysis it was determined that SRPP has a statistically significant effect on the reduction in the average number of bids, it could still contribute to more intense competition by reducing number of procurements when only one bid is received. In this way, we confirmed fifth hypothesis, H5.

5 Conclusions

In this paper, we explored how introducing horizontal public procurement objectives, i.e., increased participation of MSMEs as well as wider implementation of GPP and SRPP, affect the primary goals of public procurement, i.e., increased competition, lower prices, etc., in Slovenia in the period 2016–2019. Our first finding was that government measures to promote MSMEs, GPP and SRPP were successful since their share increased in the total number of public procurements during the observed period.

Besides, we analysed the degree to which the three horizontal public procurement objectives are mutually reinforcing. Our research did not confirm that wider use of GPP and greater participation of MSMEs were positively correlated. Moreover, our analyses did not confirm that use of SRPP was accompanied by wider participation of MSMEs. One of the explanations for this may be that SRPP has only recently been introduced into the Slovenian public procurement system, with social criteria being used by contracting authorities more mechanically than strategically. Thus, further research on this issue is required.

Furthermore, the analyses confirmed that there is a positive correlation between GPP and SRPP. Contracting authorities with a higher awareness of sustainable development goals tend to use both strategic tools (GPP and SRPP).

Our paper investigated how incorporating horizontal policies into procurement affects the achievement of the primary objectives of public procurement. Since additional criteria requirements introduced by GPP, SRPP and MSMEs may discourage some potential bidders, thus reducing the intensity of competition, we analysed how an average number of bids changed in relation to the three horizontal objectives. In procurement processes where “green” criteria were applied, the average number of bids was statistically significantly higher than the number of non-ecological procurements. This could be explained by the fact that Slovenia is a frontrunner in “green transformation” among EU countries. Thus, many Slovenian companies are well prepared to offer environmentally neutral products and services at higher prices. At the same time, applying public procurement criteria that encourage MSMEs’ participation does not affect the average number of bids.

In public procurement procedures where criteria of social responsibility were applied, the average number of bids was statistically significantly lower than the number of non-socially responsible procedures. This may be explained by the much less developed practice of SRPP use compared to GPP.

Finally, the effects of GPP, MSMEs and SRPP on the level of competition in public procurement were examined in cases when the intensity of competition was expressed in terms of the share of single bid procurements. Our analyses showed that all the horizontal objectives contributed to a decrease in the share of single bids, i.e. the share of public procurement processes in which competition prevailed increased with MSMEs, GPP and SRPP.

Although the research sample was large, with more than 65,000 public procurement contracts, its limitation stems from the fact that only one country was analysed. In addition to analysing several countries and comparing their results, other indicators of primary public procurement goals should be considered, such as prices, entry of foreign bidders or size of procurement, as well as their relationship with horizontal objectives. Furthermore, the hypothesis should be tested in different time periods, for example in the four-year period commencing in 2022, when the influence of the pandemic largely ceased, and compare their results and findings with those presented in this paper.

Acknowledgement:

The paper is written as a part of the Reserach program of Institute of Social Sciences, Belgrade for 2023, supported by the Ministry of Sciences, Technological Development and Innovation of Republic Serbia.

References:

- Arrowsmith, S. (2009) Application of the EC Treaty and directives to horizontal policies: a critical review, In: Arrowsmith, S. & Kunzlik, P. (eds.) *Social and Environmental Policies in EC procurement Law: New Directives and New Directions* (Cambridge: University Press), pp. 147-248.
- Arrowsmith, S. (2010) Horizontal policies in public procurement: a taxonomy, *Journal of Public Procurement*, 10(2), pp. 149–186, <https://doi.org/10.1108/JOPP-10-02-2010-B001>.
- Austin, P. C. (2009) Using the standardized difference to compare the prevalence of a binary variable between two groups in observational research, *Communications in statistics-simulation and computation*, 38(6), pp. 1228-1234, <https://doi.org/10.1080/03610910902859574>.
- Bali, A. S., Howlett, M., Lewis, J. M. & Ramesh, M. (2021) Procedural policy tools in theory and practice, *Policy and Society*, 40(3), pp. 295-311, <https://doi.org/10.1080/14494035.2021.1965379>.
- Bayarçelik, E. B., Taşel, F. & Apak, S (2014) A research on determining innovation factors for SMEs, *Procedia-Social and Behavioral Sciences*, 150, pp. 202–211, <https://doi.org/10.1016/j.sbspro.2014.09.032>.
- Bulow, J. I. & Klemperer, P. D. (1994) Auctions vs. negotiations, *American Economic Review*, pp. 180–194, <https://doi.org/10.3386/w4608>.

- Burgi, M. (2010) Secondary Considerations in Public Procurement in Germany, *The Law of Green and Social Procurement in Europe*, pp. 105–142.
- Clark, M. & Moutray, C. (2004) The future of small businesses in the US federal government marketplace, *Journal of Public Procurement*, 4(3), pp. 450–470, <https://doi.org/10.1108/JOPP-04-03-2004-B006>.
- Cohen, J. (2013) *Statistical power analysis for the behavioral sciences* (Routledge).
- Čudanov, M., Jovanović, P. & Jaško, O. (2018) Influence of the Public Procurement Procedure Type on the Duration of Public Procurement, *Lex Localis-Journal of Local Self-Government*, 16(2), pp. 361–378, [https://doi.org/10.4335/16.2.361-378\(2018\)](https://doi.org/10.4335/16.2.361-378(2018)).
- De Oliveira, A., Fabregas, A. & Fazekas, M. (2019) Strategic Sourcing 2.0: Improving Fiscal Efficiency Using Big Data *Conference Paper: "Public Procurement: Global Revolution IX" at the University of Nottingham*, available at: https://www.researchgate.net/publication/348408753_Strategic_Sourcing_20_Improving_Fiscal_Efficiency_Using_Big_Data (June, 2021).
- Demircioglu, M. A. & Vivona, R. (2021) Positioning public procurement as a procedural tool for innovation: an empirical study, *Policy and Society*, 40(3), pp. 379–396, <https://doi.org/10.1080/14494035.2021.1955465>.
- Elberfeld, W. & Wolfstetter, E. (1999) A dynamic model of Bertrand competition with entry *International Journal of Industrial Organization*, 17(4), pp. 513–525, [https://doi.org/10.1016/S0167-7187\(97\)00054-4](https://doi.org/10.1016/S0167-7187(97)00054-4).
- European Commission (2014) *Directive 2014/24/EU*, available at: <https://www.legislation.gov.uk/eudr/2014/24/contents> (June 16, 2023).
- European Commission (2017a) *European semester thematic factsheet: public procurement*, available at: <https://policycommons.net/artifacts/2035650/european-semester-thematic-factsheet/2788093> (June 16, 2023).
- European Commission (2017b) *Making Public Procurement Work in and for Europe*, available at: <https://ec.europa.eu/docsroom/documents/25612> (June 16, 2023).
- European Commission (2019) *Small Business Act Fact sheet, Slovenia*, available at: https://ec.europa.eu/docsroom/documents/38662/attachments/26/translations/en/rendition_s/native (June 16, 2023).
- European Commission (2021a) *Buying Social: A Guide to Taking Account of Social Considerations in Public Procurement*, available at: <https://op.europa.eu/en/publication-detail/-/publication/47c69b3a-cfcf-11eb-ac72-01aa75ed71a1/language-en> (June 16, 2023).
- European Commission (2021b) *European Green Deal*, available at: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en (June 16, 2023).
- European Commission (2022) *Internal Market, Industry, Entrepreneurship and SMEs*, available at: https://ec.europa.eu/growth/single-market/public-procurement_en (June 16, 2023).
- Fazekas, M. & Kocsis, G. (2020) Uncovering high-level corruption: cross-national objective corruption risk indicators using public procurement data, *British Journal of Political Science*, 50(1), pp. 155–164, <https://doi.org/10.1017/S0007123417000461>.
- Gineitiene, Z. & Serpytis, K. (2011) The Impact of Competition and Purchase Volume on the Price in Public Procurement Tenders, *Socialiniu Mokslu Studijos*, 3(2), pp. 473–485.
- Grega, M. & Nemeč, J. (2015) Factors influencing final price of public procurement: evidence from Slovakia. *Procedia Economics and Finance*, 25, pp. 543–551, [https://doi.org/10.1016/S2212-5671\(15\)00768-6](https://doi.org/10.1016/S2212-5671(15)00768-6).

- Gupta, S. (2002) Competition and collusion in a government procurement auction market, *Atlantic Economic Journal*, 30, pp. 13–25, <https://doi.org/10.1007/BF02299143>.
- Hoekman, B., Shingal, A., Eknath, V. & Ereshchenko, V. (2022) COVID-19, public procurement regimes and trade policy, *The World Economy*, 45(2), pp. 409–429, <https://doi.org/10.1111/twec.13118>.
- Hyttinen, A., Lundberg, S. & Toivanen, O. (2018) Design of public procurement auctions: Evidence from cleaning contracts, *The RAND Journal of Economics*, 49(2), pp. 398–426, <https://doi.org/10.1111/1756-2171.12232>.
- Iimi, A. (2006) Auction reforms for effective official development assistance, *Review of Industrial Organization*, 28, pp. 109–128, https://doi.org/10.1007/sl_11_51-006-00_12-x.
- Jovanović, P., Delibašić, B. & Čudanov, M. (2022) Organisational Archetypes in Public Procurement, *Lex Localis-Journal of Local Self-Government*, 20(1), pp. 101–127, [https://doi.org/10.4335/20.1.101-127\(2022\)](https://doi.org/10.4335/20.1.101-127(2022)).
- Kim, T. K. (2015) T test as a parametric statistic, *Korean journal of anesthesiology*, 68(6), pp. 540–546, <https://doi.org/10.4097/kjae.2015.68.6.540>.
- Li, T. & Zheng, X. (2009) Entry and competition effects in first-price auctions: Theory and evidence from procurement auctions, *The Review of Economic Studies*, 76(4), pp. 1397–1429, <https://doi.org/10.1111/j.1467-937X.2009.00558.x>.
- Lundberg, S. & Marklund, P.-O. (2018) Green public procurement and multiple environmental objectives, *Economia e Politica Industriale*, 45(1), pp. 37–53, <https://doi.org/10.1007/s40812-017-0085-6>.
- Lundberg, S., Marklund, P.-O., Strömbäck, E.₂ & Sundström, D. (2015) Using public procurement to implement environmental policy: an empirical analysis, *Environmental Economics and Policy Studies*, 17, pp. 487–520, <https://doi.org/10.1007/s10018-015-0102-9>.
- Milosavljević, M., Radonovanović, S. & Delibašić, B. (2021) Evaluation of public procurement efficiency of the EU countries using preference learning TOPSIS method, *Economic Computation and Economic Cybernetics Studies and Research*, 55(3), pp. 187–202, <https://doi.org/10.24818/18423264/55.3.21.12>.
- National Audit Office (2023) *Lessons learned: competition in public procurement*, available at: <https://www.nao.org.uk/wp-content/uploads/2023/07/lessons-learned-competition-in-public-procurement.pdf> (September 15, 2023).
- Nazzini, R. (2018) *Extempore observations on bid-rigging in public procurement: towards a virtuous circle of detection, punishment and compliance*, available at: <https://ssrn.com/abstract=3112577> (June 16, 2023).
- OECD (2018) *SMEs in Public Procurement*, available at: <https://doi.org/10.1787/9789264307476-en> (June 16, 2023)
- OECD (2020) *Integrating responsible business conduct in public procurement*, available at: <https://www.oecd.org/publications/integrating-responsible-business-conduct-in-public-procurement-supply-chains-c5350587-en.htm> (June 16, 2023).
- Olsson, D. & Öjehag-Pettersson, A. (2020) Buying a sustainable society: the case of public procurement in Sweden *Local environment*, 25(9), pp. 681–696, <https://doi.org/10.1080/13549839.2020.1820471>.
- Overdevest, C. & Zeitlin, J. (2014) Assembling an experimentalist regime: Transnational governance interactions in the forest sector, *Regulation & Governance*, 8(1), pp. 22–48, <https://doi.org/10.1111/j.1748-5991.2012.01133.x>.
- Pouikli, K. (2021) Towards mandatory Green Public Procurement (GPP) requirements under the EU Green Deal: reconsidering the role of public procurement as an

- environmental policy tool, *ERA Forum*, 21(4), pp. 699–721, <https://doi.org/10.1007/s12027-020-00635-5>.
- Rao, C. R. (2002) Karl Pearson chi-square test the dawn of statistical inference *Goodness-of-fit tests and model validity*, pp. 9-24 https://doi.org/10.1007/978-1-4612-0103-8_2.
- Ryu, Y. & Sueyoshi, T. (2021) Examining the relationship between the economic performance of technology-based small suppliers and socially sustainable procurement. *Sustainability*, 13(13), p. 7220, <https://doi.org/10.3390/su13137220>.
- Sen, S., Savitskie, K., Mahto, R. V, Kumar, S. & Khanin, D. (2022) Strategic flexibility in small firms, *Journal of Strategic Marketing*, 31(5), pp. 1053-1070, <https://doi.org/10.1080/0965254X.2022.2036223>.
- Siddiqui, K. (2020) *The Impact of COVID-19 on the Global economy*, available at: <https://worldfinancialreview.com/the-impact-of-covid-19-on-the-global-economy> (June 16, 2023).
- Sönnichsen, S. D. & Clement, J. (2020) Review of green and sustainable public procurement: Towards circular public procurement, *Journal of Cleaner Production*, 245, p. 118901, <https://doi.org/10.1016/j.jclepro.2019.118901>.
- Szymanski, S. (1996) The impact of compulsory competitive tendering on refuse collection services, *Fiscal Studies*, 17(3), pp. 1–19.
- Tátrai, T., Vörösmarty, G. & Juhász, P. (2023) Intensifying Competition in Public Procurement, *Public Organization Review*, <https://doi.org/10.1007/s11115-023-00742-0>.
- Tepper, P., McLennan, A., Hirt, R., Defranceschi, P., Caimi, V. & Elu, A. (2020) *Making Socially Responsible Public Procurement Work: 71 Good Practice Case*, available at: https://www.socioeco.org/bdf_fiche-document-7229_en.html (June 16, 2023).
- Treumer, S. (2010) Green Public Procurement and Socially Responsible Public Procurement: An Analysis of Danish Regulation and Practice, In *Caranta R. & Trybus M. (eds) The Law of Green and Social Procurement in Europe*, pp. 53-73, DJØF, available at: https://eplgroup.eu/wp-content/uploads/2016/06/EPLS.Vol2_.GreenSocialProcurement.pdf.
- Tukiainen, J. & Halonen, K.-M. (2020) *Competition and litigation in Swedish public procurement*, available at: https://www.konkurrensverket.se/globalassets/dokument/informationsmaterial/rapporter-och-broschyrer/uppdraagsforskning/forsk-rapport_2020-1_competition-and-litigation-in-swedish-public-procurement.pdf (June 16, 2023).
- United Nations (2015) *2030 Agenda for Sustainable Development*, available at: <https://www.coe.int/en/web/programmes/un-2030-agenda> (June 16, 2023).
- United Nations (2020) *World social report 2020: Inequality in a rapidly changing world*, available at: <https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/02/World-Social-Report2020-FullReport.pdf> (June 16, 2023).