STUDY

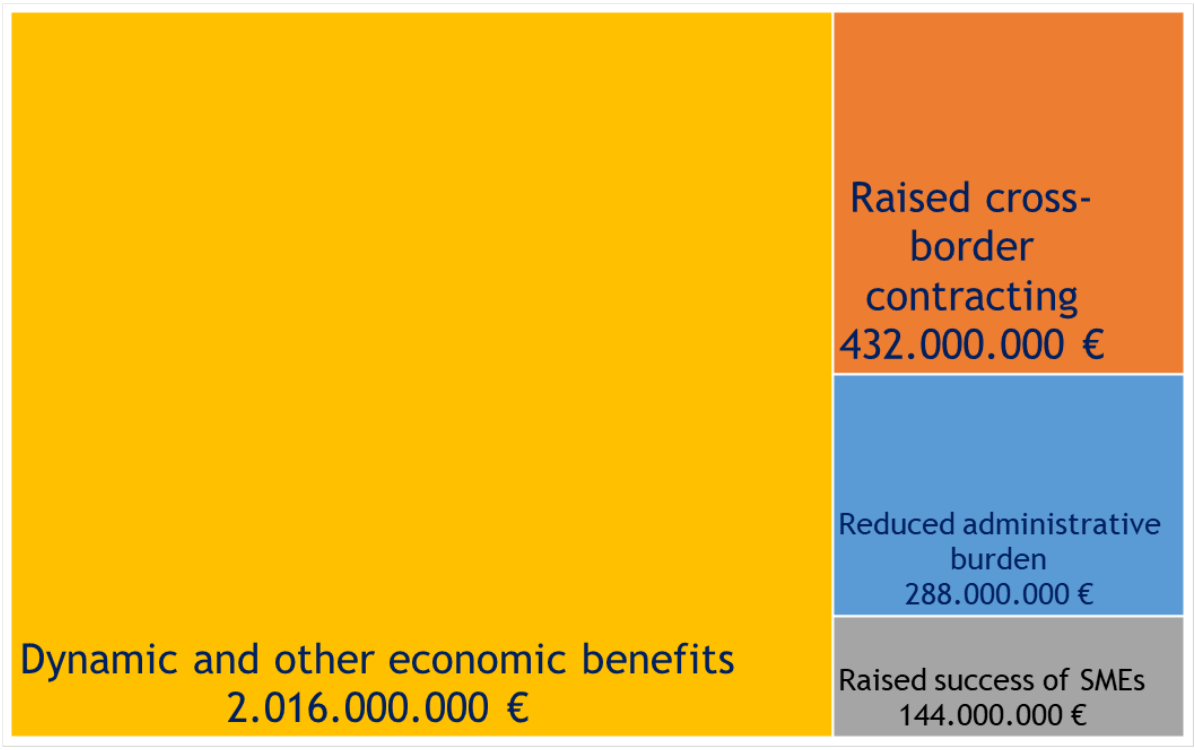
Requested by the IMCO Committee

European Parliament

## Contribution to Growth

# European Public Procurement

## Delivering Economic Benefits for Citizens and Businesses

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Contribution to Growth

# European Public Procurement

## Delivering Economic Benefits for Citizens and Businesses


**Abstract**

This study assesses the impact of recent EU public procurement legislation on strategic goals such as cross-border procurement, SME participation, and competition.

Based on the assessment of the most recent TED dataset SME participation in procurement is increasing in most countries whereas cross-border contracting and competition are still areas where further improvement is needed. Therefore, we propose digital end-to-end processes, interoperability, and a one-stop shop procurement portal as well as an improved management of data quality.

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This document was requested by the European Parliament's Committee on the Internal Market and Consumer Protection.

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| **CA** | Contracting Authority |
| **CAN** | Contract Award Notice |
| **EC** | European Commission |
| **EEA** | European Economic Area |
| **EU** | European Union |
| **EUR** | Euro |
| **GDP** | Gross Domestic Product |
| **NA** | Not available |
| **PP** | Public Procurement |
| **SME** | Small and Medium Enterprises |
| **TED** | Tenders Electronic Daily |
| **TFEU** | Treaty on the Functioning of the European Union |
| **VAT** | Value-added Tax |
| **VEAT** | Voluntary Ex-Ante Transparency Notices |

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# EXECUTIVE SUMMARY

Accounting for a trading volume of EUR 2,448 billion (approx. 16% of the 2017 EU GDP), European public procurement is a major driver for economic growth, job creation, and innovation. Hence, European public procurement legislation needs to be continuously checked and optimized to ensure effective and efficient market conditions.

Through past programmes and legislative action, the EU could already achieve a substantial reduction of existing trade barriers as reported in the famous "Cecchini Report", resulting in a decrease of economic losses of approx. EUR 5.425 billion (31% of the identified EUR 17.5 billion gap). Yet, several challenges remain unresolved to complete the Single Market and to ensure the economic vitality of the European Union and its Member States.

One of the aspects waiting to be addressed is the improved access for small and medium-sized enterprises (SMEs) to the European public procurement. Accounting for more than 99% of all registered enterprises and employing more than 137 million people across Europe (~66% of the employed workforce), SMEs represent a considerable economic power, which is still struggling to partake in public procurement actions.

Furthermore, cross-border procurement has another major aspect requiring additional attention. While in a fully integrated Single Market transnational procurement contracts should account for a substantial amount of the overall trade volume, reports from the years 2008 to 2012 indicate a share of only 1.6%. Here "natural barriers" and "discriminatory government procurement" are some of the existing issues still up for being resolved.

To address these issues and several further aspects such as competition in general, during the 7th and 8th legislature the EU introduced a set of legal instruments, with the Directives 2014/23/EU, 2014/24/EU, and 2014/25/EU being at the centre of the conducted legislative action. However, up to this date, quantifiable insights into the effectiveness of the recent EU legislation are missing, which makes it hard to give reliable statements regarding the effectiveness of legislative actions as well as it prohibits fact driven adjustments and additions.

In order to close this gap, this study makes use of the most recent TED procurement data set, which covers tenders throughout Europe and the EEA in the time period between 2009 and 2017. Being structured around the official procurement forms of the EU and being one of the largest publicly available raw data sets it appears to be the optimal data basis for the task at hand. Since the TED data set is filled with data from different authorities across Europe and has undergone several structural changes over the last years, parts of the data set had to be excluded from this analysis due to missing data points and/or inconsistencies within the data.

In the analysed timespan from 2009 till 2017 one can observe an **increase of total award values from less than EUR 200 billion to approx. EUR 525 billion**[1], especially driven by the 2014 directives. While this can partly be attributed to the more restrictive tender publishing obligations of the new directives

[1] Please note that the total award value here differs from the above-stated volume of EUR 2,448 billion as parts of the data set had to be filtered due to missing or apparently wrong information. More information on the exact filtering can be found in Section 3.1.

(increasing the number of records in the TED data set for the years following 2014), the data also indicates a positive influence of procurement legislation on the annual growth.

Concerning the core aspects addressed by the 2014 directives (e.g., SME participation, cross-border procurement, competition, and procurement efficiency) the conducted analysis reveals mixed results.

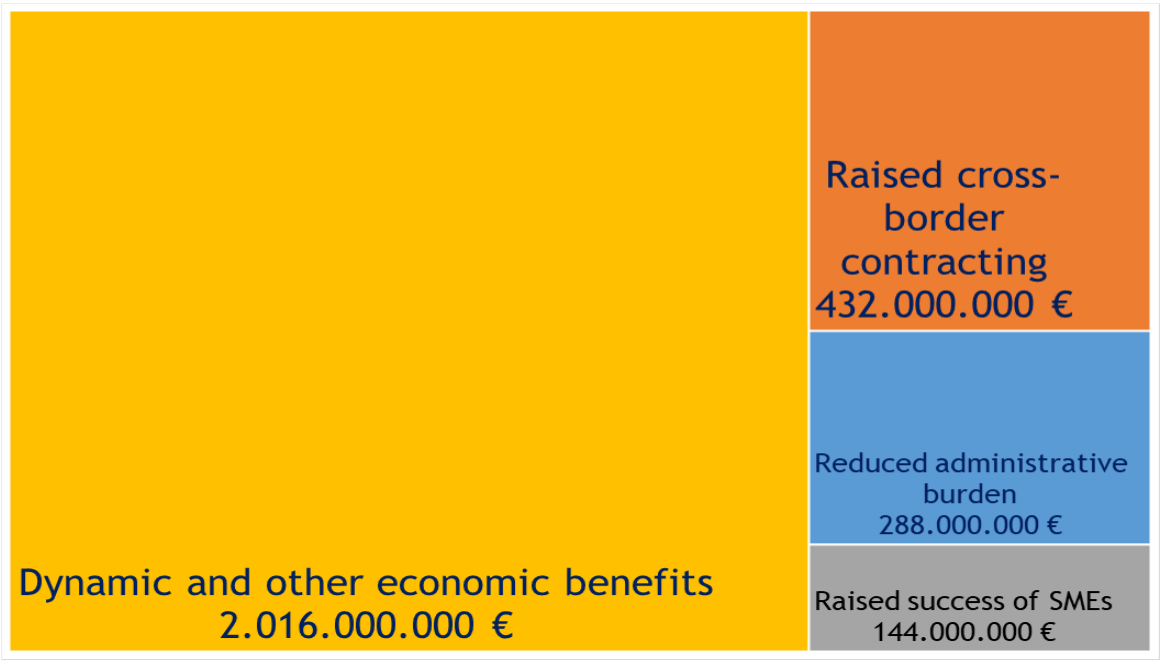
For example, the volume of cross-border contracts according to the analysed data increased from approx. EUR 11.3 billion in 2013 to EUR 17.7 billion in 2017, while its share in comparison to the total award volumes (2013: EUR 190.5 billion | 2017: EUR 526 billion) decreased from 5.95% to only 3.36%. While growing cross-border contract volumes are a positive development, the decreasing shares are alarming, as they indicate remaining issues with the Single Market ideas that will have to be addressed by future legislation.

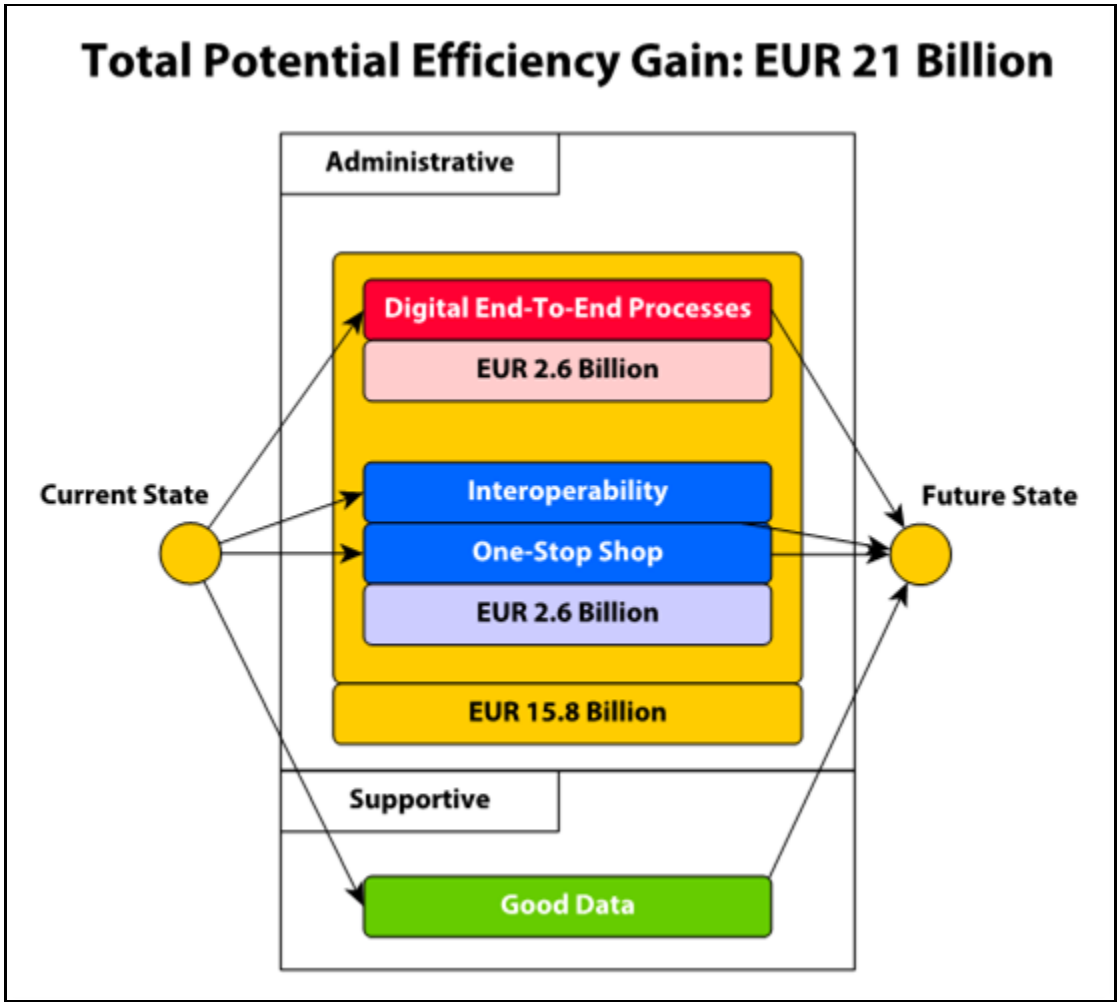
Regarding the improved access for SMEs to European public procurement, the analysis indicates a slightly more positive picture. Of the analysable 172,853 tender entries, only 57.7% (99,539) received applications of SMEs and a total of 101,183 tenders (58,5%) were finally won by an SME contractor. This, plus the fact that shares of tenders won by SMEs are rising, is a positive indicator that EU legislation is improving SME access. Also, the shares of services, supplies and works contracts won by SMEs and non-SMEs are almost equal indicating few barriers with respect to the different fields. However, the average contract values of SMEs with EUR 779,386 are still significantly lower than the ones of non-SMEs with EUR 1,523,245 – indicating future potentials to improve access to larger tenders for SMEs. Further scrutiny will be required with regard to SME participation in the single Member State, as several countries such as Belgium, Portugal and Slovenia still exhibit low participation values of less than 50% with little change over the period from 2015-2017.

Less positive is the degree of competition in terms of bidders per tender, which has seen a considerable decrease in the period from 2009 to 2017. While especially the western and southern European Member States experienced a larger decrease, the eastern European countries are rather consistent with regard to a low degree of competition.

Based on these results the estimated benefit of the recent legislative actions for the year 2017 amount up to EUR 2.88 billion – primarily in the area of dynamic and other economic benefits (~EUR 2 billion) (for more information see left part of Figure 1).

**Figure 1: Estimated and Potential Economic Benefits**






For the future improvement of European public procurement, we identified three strategies to directly improve the procurement processes and one additional strategy to improve the future analysis of legislative action to enable more fact-based decision making (see right part of Figure 1).

Through the introduction of digital end-to-end processes, delays deterring SMEs will be reduced and data entry errors minimized leading to an additional administrative benefit of EUR 2.6 billion. The use of fully interoperable systems to reuse already collected data will reduce efforts to fill in forms as well as incorrect data entry. Together with a one-stop shop to provide a unique and unified procurement portal to enterprises and public authorities, the use of interoperable systems is expected to generate an additional administrative benefit of EUR 2.6 billion. Once digital end-to-end processes, interoperable systems, and a one-stop shop procurement portal are deployed, additional dynamic economic gains of approximately EUR 15.8 billion are possible.

Improving the management of data quality will not have a direct economic impact, however, it can be a critical asset for future policy and decision making which is becoming ever more data- and information-driven and is hence inherently dependant on high-quality data.

# 1. INTRODUCTION

Amounting to a volume of almost 14%-16% of the EU GDP, European public procurement is one major driver when it comes to economic growth, job creation and innovation – and as such crucial to the Single Market idea. However, it also needs to be dealt with in an effective and efficient manner to ensure that each euro spent generates good if not optimal value. To ensure effectiveness and efficiency public procurement in the EU is supposed to follow six strategic priorities as there is wider uptake of social, innovative and green procurement, the professionalisation of public buyers, increased access to procurement markets, improved transparency and integrity, a boost of digital transformation and buyer cooperation. One step towards this direction has been the update of the old procurement framework (Directives 2004/17/EC and 2004/18/EC) in 2014 (Directives 2014/23/EU, 2014/24/EU, and 2014/25/EU). However, so far it still remains unclear to which extent these new directives were able to initiate a change towards the right direction. To be able to further adjust policies in the future it will be crucial to thoroughly analyse the impact of the current legislation to identify remaining gaps or areas for improvement.

The presented in-depth study and the associated presentation have been prepared for the IMCO workshop on the "Contribution of Internal Market and Consumer Protection to Growth" which took place on 10th July 2018[2]. After shortly introducing the idea of a European Single Market as well as the goals of public procurement in the EU, the impact of recent legislation on public procurement is shown based on an assessment of the publicly available TED data set focusing on SME participation, cross-border procurement, and competition. The analysis is rounded off by the provision of four guidelines to further improve European public procurement as well as the associated policing process.

[2] The presentations and further information can be found at http://www.europarl.europa.eu/committees/en/imco/events-workshops.html?id=20180703WKS01801. A video record of the session can be found at (http://www.europarl.europa.eu/ep-live/en/committees/video?event=20180710-1500-COMMITTEE-IMCO) with the presentation of Prof. Dr. Dr. h.c. Dr. h.c. Becker starting at timestamp 18:31:05.

# 2. EUROPEAN PUBLIC PROCUREMENT

The importance of public procurement stems from its direct impact on GDP and the Single Market, for example, because of cross-border contracting. In the following, the basic principles about EU procurement legislation and its relation to the Single Market that are noteworthy for the later analysis are summarised. An introduction to the goals and the identified gaps of EU procurement follows subsequently to derive the key parameters for the assessment of achievements.

KEY FINDINGS

- Public procurement accounts for about 16% of European GDP (EUR 2,448 billion) leading to a high relevance for the development of the Single Market.
- Public spending in form of procurement allows governmental entities to directly influence economic goals and to foster economic integration.
- In the last decades, economic losses due to trade and other barriers decreased within the EU by roughly 31% (EUR 5.425 billion).
- There is still place for improvement regarding easy access for small and medium-sized enterprises (SME), fostering cross-border contracting, enhancing e-procurement.
- More than 66% of employees in the EU (137,444,935 persons) are under contract in an SME underlining the importance to focus on these companies in public procurement actions.
- Transnational procurement indicates the functioning of the Single Market.
- Between 2008 and 2012 the share of cross-border procurement contracts in the EU did not get higher than 1.6%.
- "Natural barriers" and "discriminatory government procurement" inhibit cross-border procurement.
- A more radical implementation of e-procurement and the guarantee of fair competition will foster procurement efficiency.

## 2.1. The Single Market and Public Procurement

Public procurement is an indivisible part of the European Single Market not only in legal but as well in economic terms. The Single Market as a wide-ranging concept guarantees free movement of goods, persons, services and capital (Art. 26 TFEU) which allows for procurement contracts across Europe. Whereas the Single Market Strategy affects the whole trade within the EU, public procurement is a non-negligible part of the European GDP and accounts for about 16% of it (Maciejewski 2017). As "Public Procurement is the purchase of goods and services by public (…) enterprises" (Smith and Lilico 2014) procurement empowers governmental entities to have a direct influence to reach economic goals underlining the linkage between procurement and the Single Market.

However, the managing opportunities of the EU are limited to the procurement thresholds. The respective Directives (2014/23/EU, 2014/24/EU, and 2014/25/EU) apply only to procurement contracts that exceed the values depicted in Table 1.

The further subdivision of public procurement into works, supplies, and services will also be used in the subsequent analysis. The underlying definitions are according to the Directives mentioned above:

- ***Works contracts:*** *Public contracts having as their objective either the execution or both the design and execution of works, for example, building or civil engineering works such as a road or sewage plant.*

- ***Service contracts:*** *Public contracts other than public works or supply contracts having as their object the provision of services such as consultancy, training or cleaning services.*
- ***Supply contracts:*** *Public contracts having as their object the purchase, lease, rental or hire-purchase with or without the option to buy, of products such as stationery, vehicles or computers.*

Table 1: EU thresholds for public contracts

| | Works | Supplies | Services | | |
|---|---|---|---|---|---|
| | | | Social and specific services | Subsidised services | All other services |
| Central government | €5 548 000 | €144 000 | €750 000 | €221 000 | €144 000 |
| Sub-central authorities | €5 548 000 | €221 000 | €750 000 | €221 000 | |

Source: European Commission (2018a)

Although EU legislation does not cover every procurement contract within the EU the remaining procurement spending that falls under EU legislative is enormous. Thus, public administrations as a whole have a huge influence on the Single Market. The importance of public spending bases logically on the assumption that efficient public procurement contributes to further enhancing economic integration.

## 2.2. Goals and Gaps of European Public Procurement

Since the seminal contribution on benefits of the establishment of a European Single Market by CECCHINI ET AL. (1988), often referred to as the "Cecchini Report", several studies further investigated the development of the Single Market, e.g., SMITH AND LILICO (2014) and ALLEWELDT ET AL. (2014). Typically, they present the Single Market's current state of play and show up "Costs of Non-Europe", meaning economic losses due to the lack of common policies or incomplete implementation of the common law. The "Cecchini Report" revealed that the EU faced high economic losses due to trade and other barriers in the EU and foreshowed the meaningful economic potential of the Single Market. In the area of public procurement, CECCHINI ET AL. (1988) specified the gap with a potential of EUR 17.5 billion[3] in prices of 1986.

A more recent study concludes that about 31% of this gap was closed up to 2012 taking EU enlargement and inflation into account (Smith and Lilico 2014). Nevertheless, this updated report estimates the absolute remaining gap to the value of EUR 49.7 billion for 2012. Although there have been substantial efforts to close this "Cecchini Gap" there is still space for improvement. Besides the well-known but no longer up-to-date "Cecchini Report" there are challenges remaining, which include easy access for *small and medium-sized enterprises* (SME), fostering *cross-border contracting*, enhancing *e-procurement* and efficiency in public procurement in general. Beyond these aims, three basic

[3] This value excludes the Cost of Non-Europe that arises from defence procurement. As this is no area of the common procurement legislative, it is no part of the study in hand as well.

principles are important: equal treatment, non-discrimination, and transparency (European Commission 2018b).

### 2.2.1. Small and Medium-sized Enterprises

In the EU, companies with less than 250 employees and an annual turnover not exceeding EUR 50 million are defined as SMEs (Commission Recommendation 2003/361/EC). Although this definition of SME is not standardized and varies across national statistical offices it is used similarly in research (Ayyagari et al. 2007) and will, therefore, be applied in the following. Typically, an SME solely has no major economic importance but their total share in terms of employment is substantial compared to other types of companies in the EU. In 2015, more than 66% of employees in the EU were under contract in an SME and nearly 56% of the EU-wide cumulative turnover was generated by SME (Papadopoulos et al. 2018).

Despite this enormous amount of annual turnover and of jobs provided by SME, they did not play a significant role in European public procurement compared to larger businesses (Kidalov and Snider 2011). Reasons for the minor relevance of SMEs in this context are: first, smaller companies cannot compete for valuable procurement projects because they simply do not have the capacity to fulfil the respective requirements; second, procurement processes may sometimes be too complicated to SME.

Therefore, the EU is willing to ease the access for SMEs to public procurement contracts. Whereas the EU will address this issue by fostering the subdivision of tenders into lots, there could be a remaining gap of SME participation because of capacity reasons.

### 2.2.2. Cross-border Contracting

A procurement contract that materialises between a contracting authority and a bidding company with headquarters in different nations is called *cross-border*.[4] Transnational procurement contracts can, therefore, be seen as a direct measure of the functioning of the European Single Market. The implication behind this is that an efficient Single Market leads to high trade flows across the Member States. Rising trade within the EU should lastly include procurement issues.

The study of KUTLINA-DIMITROVA AND LAKATOS (2016) revealed that the share of cross-border *contracts* does not fit into the aforementioned argumentation. The share did not reach more than 1.6 % in the period 2008 to 2012 but was significantly higher for *award values* with shares between 3.5 and 4.1 % in the same period (Kutlina-Dimitrova and Lakatos 2016). Compared to the large share of public procurement in European´s GDP – about 16% – this is rather few and far away from the goals of the Single Market Strategy. HOWARTH AND SADEH (2010) state a "discriminatory government procurement" as a possible reason but also add that EU legislative tries to tackle this issue with the Directives that have been coming into force. Nevertheless, recent legal acts cannot be seen as a final solution to the so-called "home-bias" which is considered meaningful in procurement research. SHINGAL (2015), for instance, shows evidence that trade agreements do not necessarily foster cross-border market access.

[4] Here, a careful differentiation is needed. Whereas the analysis has only a focus on cross-border contracting, *cross-border procurement* means that "[c]ontracting authorities from different Member States can conduct joint procurement" (European Commission 2018a).

Additionally, the gap will ever be existent due to "natural" barriers in sort of language, geography and lack of international experience of involved companies (Smith and Lilico 2014).

### 2.2.3. Procurement Efficiency

Enhancing efficiency is a more general goal, of course, but consists of two different perspectives. On the one hand, the design and legal framework of procurement procedures have to be formed straightforward. On the other hand, public procurement must be efficient in economic terms. This means the removal or at least reduction of trade barriers and the guarantee of fair competition.

Recently implemented initiatives of the EU to enforce procurement digitalisation – especially Directives 2014/23/EU, 2014/24/EU, and 2014/25/EU – have already stepwise improved the procurement procedures. Nevertheless, a more radical implementation of e-procurement can have positive effects that go beyond the current state of play. As it will be pointed out later, this includes a holistic data management, for instance. Recommendations in research are not limited to procedures and digitalisation: GELDERMAN ET AL. (2006) point out that training of public purchaser can significantly improve the compliance with procurement rules. Despite the existence of the Single Market, there are also issues remaining that counter market efficiency including hampered competition. Addressing these gaps, the objectives of EU public procurement strategies analysed in the study in hand are:

- "[i]ncreasing access to procurement markets",
- "[i]mproving transparency, integrity and data" and
- "[b]oosting the digital transformation of procurement" (European Commission 2018c).

# 3. ACHIEVEMENTS OF EUROPEAN PUBLIC PROCUREMENT

In this statistical chapter, we present the most recent trends in the development of European public procurement. Thereby the focus lies on descriptive statistics and the evaluation is mainly based on metrics of the Single Market Scoreboard (European Commission 2018b).

KEY FINDINGS

- For 2017, the estimated benefit of the recent legislative actions is EUR 2.88 billion
- The analysed data set from TED contains high-value of doubtable entries obliging data cleaning.
- Total award values were relatively constant around EUR 200 billion between 2009 and 2013.
- The total award value raised in the years from 2013 to 2017 up to EUR 526 billion.
- In 2017, the award value for services reached EUR 250 billion, for supplies EUR 144 billion and for works EUR 132 billion.
- From 2013 onwards, the overall share of cross-border award values decreased from 5.95% to a share of 3.4% in 2017 (EUR 11.3 Billion out of EUR 190.5 Billion in 2013; EUR 17.7 Billion out of EUR 526 Billion).
- Data on relevant procurement aspects such as SME participation is only available for a small timeframe (2015-2017).
- In the relevant time period, only 19,3% of the data is usable (172,853 entries) while the remaining 897,962 entries containing missing values regarding SME participation.
- Out of the 172,853 published (complete) tenders 99,539 (57,7%) only had applications from SMEs whereas only 40,996 (23,7%) had no SME applications at all.
- Mixed competition (SME and non-SME applicants) is rare (<20% of all tenders).
- Between 2015 and 2017 58,5% (101,183) of all tenders were won by SMEs.
- The average contract value of tenders without SME participation with EUR 1,097,544 is 65,2% higher than the average contract value of a tender with 100% SME applicants (EUR 664,393).
- The average contract value of a tender won by a non-SME with EUR 1,523,245 is even 95,4% higher than one won by an SME applicant (EUR 779,386).
- SMEs and non-SMEs win equal shares of services (S), supplies (U) and works (W) contracts (SME: S=33%, U=60%, W=7% | non-SME: S=32%, U=62%, W=6%).
- Approximately 25% of all tenders are not assigned to a clearly specified governmental body but subsumed under the label "Other".
- Between 2015 and 2017, in 21 out of 28 EU (75%) Member States the share of tenders won by SMEs has been 50% and higher.

## 3.1. TED Data

A comprehensive set of procurement data is provided by TED, the official tender platform of the EU (TED 2018). TED collects data on all tenders made throughout Europe and within the EEA including some candidates for accession. Thereby for every tender information up to 71 variables are stored ranging from characteristics of the involved institutions up to the contracts' monetary value. Whereas the variables used for the descriptive analysis are specified in the following sections, the most important is the final award value. The dataset covers the time span from 2009 to 2017 and originally consists of 4,630,484 entries (tenders or at least lots). Of course, the possibility to analyse a number of above 4.5 million tenders suggests a good data basis.

Nonetheless, this is not the case with the TED procurement dataset because it contains a high-value of doubtable data. Even the additional data information state that "[t]he data is provided "as is". The source of the data is unverified output from contracting authorities or entities across Europe. It is not uncommon for data to be input incorrectly." (Hercher 2018). Due to misspecified, lacking and uncommon values an analysis cannot be done without applying a wide-ranging data cleaning before. As the analysis will be descriptive and primarily aims at the detection of specific trends, a more general cleaning process is chosen. The cleansing takes up the method from KUTLINA-DIMITROVA AND LAKATOS (2016) which basically consists of three steps.

Table 2: Steps of data cleaning

| Step | Action | Outcome |
|---|---|---|
| 1. | Looking into raw data and definition of questionable values | High number of entries "NA" and extreme values (very high / very low) |
| 2. | Removing data where important values are completely missing. | This gives 2,898,402 entries. |
| 3. | Cutting data where award value is below EUR 1,000 or above EUR 200 million. | This gives **2,480,780** entries. |

Source: In accordance with KUTLINA-DIMITROVA AND LAKATOS (2016).

The result of this cleaning mechanism is a set of data that consists only of about 2.5 million tenders. Although cutting the data below EUR 1,000 and above EUR 200 million is a more rough procedure it is very efficient in dropping out several misspecified entries. We applied the method because it is very likely that most of the tenders with less than EUR 1,000 are incorrect as well as large values above the threshold of EUR 200 million, in line with standard statistical approaches of removing outliers. However, a small possibility remains that the applied cleaning method, on the one hand, cuts correct data and on the other hand, does not drop out all of the incorrect data. All in all, in this case, usage of data cleaning is mandatory for analysis. The applied mechanism ensures that the biggest part of correct data will be analysed but there are also some uncertainties remaining because the cleaning cannot guarantee for the correctness of every single entry.

## 3.2. Overall Development

First, Table 4 shows the overall development of procurement spending in the EU differentiated between works, services, supplies and the sum of them ranging from 2009 to 2017. Thereby the spending sums are derived over the variable AWARD_VALUE_EURO.

Table 3: Variable description

| Variable | CAN / VEAT description |
|---|---|
| **AWARD_VALUE_EURO** | Total final CA value, in EUR, without VAT. If the value was not present, the lowest bid is induded. |

Source: HERCHER (2018)

The total award values are roughly constant during the years until 2013 followed by a moderate rise in 2014. Whereas the value in 2015 remains almost constant the total award values grow enormously in 2016 and again in 2017. Without putting this into the context of the Directives 2014/23/EU, 2014/24/EU, and 2014/25/EU the data is misleading because such a massive growth in European procurement

spending is not that likely. A possible and reasonable explanation is the national ratification of Article 48 to 52, which are governing the publication of contract award notices. As the Member States had time until 18th April 2016 to bring these rules into force, the published contract award notices in TED will probably consist of a bias. While it is clearly visible that the **new EU directives contribute to the annual growth of the Single Market and cross-border procurement**, exact and stable quantifications are still difficult at this point given a lack of sufficient data to rule out potential statistical distortions (e.g., other legal changes, "natural fluctuations in procurement activities, …). Furthermore, it is noteworthy that not only the total value of awards raised but also the respective number of contracts which are listed in Table 5.

Table 4: Total and Cross-Border Contract Award Values per Year in Billion EUR

| Year | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|
| Works | T | 81.11 | 70.96 | 73.55 | 64.57 | 70.82 | 86.37 | 65.62 | 122.83 | 131.72 |
| | CB | 2.25 | 2.74 | 3.22 | 2.48 | 3.77 | 2.49 | 3.00 | 2.29 | 2.98 |
| Services | T | 70.38 | 62.61 | 72.79 | 71.65 | 67.04 | 85.74 | 78.50 | 189.06 | 250.43 |
| | CB | 2.31 | 2.36 | 4.40 | 3.38 | 3.54 | 5.52 | 4.22 | 6.72 | 6.83 |
| Supplies | T | 44.37 | 57.76 | 49.79 | 49.53 | 52.67 | 55.66 | 78.14 | 95.13 | 144.49 |
| | CB | 3.11 | 3.44 | 3.58 | 2.99 | 4.02 | 4.80 | 4.45 | 6.45 | 7.90 |
| **Total** | **T** | **195.85** | **191.33** | **196.13** | **185.75** | **190.52** | **227.78** | **222.26** | **407.02** | **526.64** |
| | **CB** | **7.66** | **8.55** | **11.20** | **8.86** | **11.33** | **12.81** | **11.67** | **15.47** | **17.71** |

Additional Remarks: Total award values, e.g., in 2017 do not amount to EUR 2,448 billion due to the filtering described in Section 3.1.

Legend: "T" = Total | "CB" = Cross-Border

Source: Derived from TED (2018)

Comparing the total award values of works, services, and supplies, their pathways are very similar until 2015. For 2016 and 2017, the rise for services is the largest, so services are the main part of procurement which underlines the economic importance of the services sector. Other overall trends cannot be drawn from the statistics which is, of course, unsatisfactory.

Table 5: Number of contracts analysed

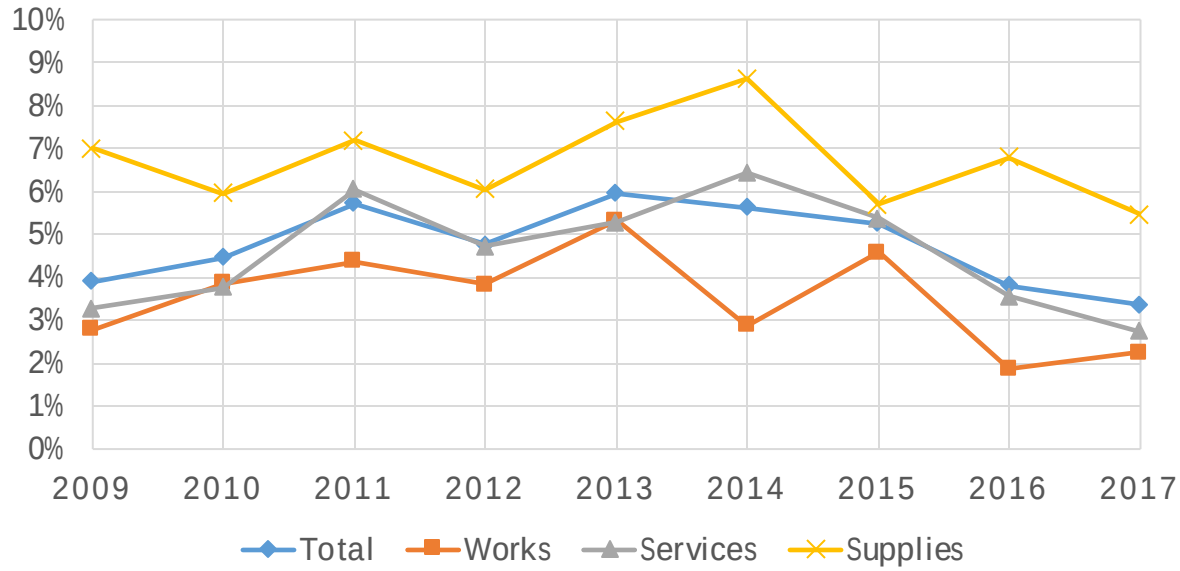
| Year | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|
| **Total** | **221,588** | **241,664** | **264,025** | **265,894** | **246,168** | **249,147** | **260,183** | **297,679** | **434,432** |
| Works | 29,314 | 32,310 | 33,790 | 32,097 | 26,944 | 24,917 | 23,861 | 31,877 | 43,016 |
| Services | 80,188 | 80,413 | 86,932 | 87,264 | 78,223 | 77,632 | 78,258 | 102,996 | 150,083 |
| Supplies | 112,086 | 128,941 | 143,303 | 146,533 | 141,001 | 146,598 | 158,064 | 162,806 | 241,333 |

Source: Derived from TED (2018)

## 3.3. Cross-border Contracting

Addressing cross-border awarding gives more insights into the evolution of European procurement especially into the functioning of the Single Market. Table 4, therefore, shows the sum of award values per year in billion Euro that have been contracted cross-border. Keeping the changed reporting rules in mind, there is a moderate trend that services and supplies are getting more important compared to the total amount spent on works.

Figure 2: Share of cross-border award values

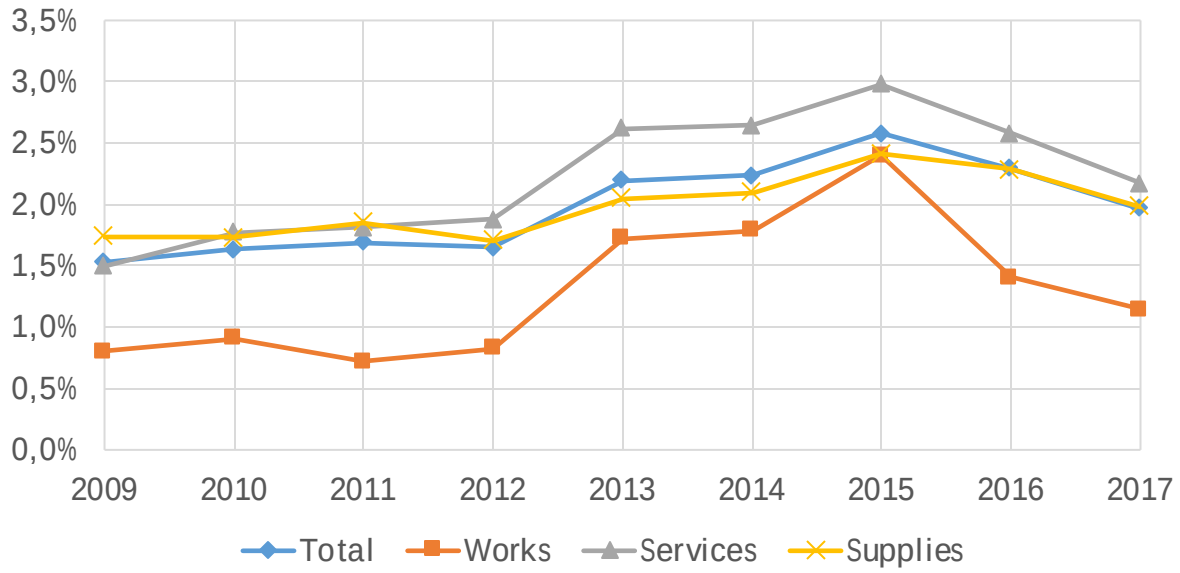



Source: Derived from TED (2018)

Whereas the absolute values are mainly important for finding general trends in the volume spent, the share of award values per year that have been contracted cross-border can serve as a better indicator for the functioning of the Single Market. Additionally, the renewed reporting rules are of minor importance for the development drawn in Figure 2 displaying the share of award values which are made cross-border for works, services, supplies and in total. There is no clear trend that covers the whole time period from 2009 to 2017, but the total share of cross-border award value is constantly decreasing since 2013 and currently ends in a share of 3.4%. Even worse is the case for services and works which count only for 2% to 3% of contracts that are made across European borders. With about 5.5% the share of supply contracts is the highest. Compared to the best total performance of 6% in 2013 or of 8.6% for supplies in 2014, the decreasing shares are alarming.

The evolution drawn in Figure 3 differs from the one before. Viewing the contracts, in comparison, a trend of an increasing number of cross-border contracts until 2015 can be determined. Again, in the two following years, the share of international procurement contracts decreases clearly. Furthermore, the comparison of Figure 2 and Figure 3 reveals that cross-border contracts have on average higher contract values. In fact, the average spending for a cross-border contract is throughout all observations higher compared to a contract within a particular country. This difference could arise because of higher costs for fulfilling works, services or supplies in different countries, often meaning in higher distance.

Figure 3: Share of cross-border contracts




Source: Derived from TED (2018)

Table 6: Average contract value

| Year | All contracts | | | | Cross-border contracts | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Works | Services | Supplies | Total | Works | Services | Supplies |
| 2009 | 883.864 | 2.766.864 | 877.636 | 395.856 | 2.262.122 | 9.574.494 | 1.922.042 | 1.591.201 |
| 2010 | 791.726 | 2.196.262 | 778.629 | 447.946 | 2.162.162 | 9.325.332 | 1.659.621 | 1.540.133 |
| 2011 | 742.863 | 2.176.809 | 837.322 | 347.445 | 2.502.847 | 13.184.630 | 2.789.166 | 1.349.257 |
| 2012 | 698.572 | 2.011.695 | 821.091 | 337.979 | 2.014.442 | 9.319.872 | 2.068.652 | 1.200.063 |
| 2013 | 773.957 | 2.628.248 | 857.073 | 373.509 | 2.098.856 | 8.133.001 | 1.727.743 | 1.392.191 |
| 2014 | 914.247 | 3.466.487 | 1.104.498 | 379.699 | 2.297.407 | 5.593.480 | 2.690.042 | 1.559.491 |
| 2015 | 854.256 | 2.750.223 | 1.003.137 | 494.334 | 1.736.958 | 5.240.237 | 1.810.394 | 1.165.926 |
| 2016 | 1.367.297 | 3.853.210 | 1.835.575 | 584.316 | 2.266.511 | 5.133.044 | 2.535.595 | 1.731.097 |
| 2017 | 1.212.244 | 3.062.021 | 1.668.594 | 598.733 | 2.074.271 | 6.048.194 | 2.092.683 | 1.652.668 |

Source: Derived from TED (2018)

Although common procurement policy aims at fostering the internationalisation of procurement, the current path counters the goals of European public procurement and the Single Market. In fact, there is no reference or precise target value defined by the European Commission but the current share must be evaluated in the light of the economic importance of public procurement. Since it is rather unlikely to reach an equalising share of cross-border contracts due to "natural borders" the aim should definitely set above the current share of only 2%.

Of course, economic theory states that borders reduce trade in general. However, besides these "natural borders" cross-border contracting faces several other hampering factors which include according to CHEN (2004) technical barriers[5], product-specific information costs and the spatial clustering of firms. Information costs are a typical problem in international contracting and spatial clustering explains border effects indirectly because of trade costs. Firms that are locally bounded because of natural resources, access to employees, or specific supply chains are faced by higher international trade costs because they do not have the chance to move towards localities which are strategically better for international trade activities (Chen 2004). Especially issues regarding information costs and locality problems can be addressed by fostering e-procurement in EU. Therefore, we provide some recommendations in Chapter 4.

Lastly, slight trends of raising preferences towards protectionism are evolving (Oesch 2008). Similar to the home-bias, European procurement policies could be counteracted by national initiatives which claim for a higher consideration of national firms in public projects. This facet displays the link to other current political challenges in the EU.

## 3.4. Competition

Besides the share of cross-border contracts, the prevalent competition can also indicate for the functioning of the Single Market. Therefore, we adopt the indicator "single bidder" from the Single Market Scoreboard which is one possible option to determine the extent of competition (European Commission 2018b). A single bid means that only one enterprise participated in the respective tender. Of course, this is not the sense of tenders because the loss of efficiency due to the lack of other bidders is two-fold: First, the general market efficiency e.g. in terms of price competition cannot work. Second, and this is directly linked to the procurement goals, contracting authorities do not have a chance to compare the cost-effectiveness of offers. The higher the share of tenders with one bidder the lower are the opportunities for public administrations to get "the best value for money" (European Commission 2018b).

For this investigation, we calculate for each country in 2017 the share of tenders where only one bid was handed in and split them into four equal groups (quartiles). This revealed meaningful differences in the distribution across Europe, as it is shown in the middle of Figure 4. In general, newer Member States are having more problems with ensuring proper competition in public procurement whereas elder and especially northern countries perform better. The situation in 2017 is worst for Poland and Slovenia in which over half of the tenders received only one bid. In contrast, the respective shares are even below eight percent in Ireland and Switzerland followed by the Scandinavian countries, the UK and Iceland which also perform well.

For comparison, we applied in Figure 4 on the left side the same thresholds for the situation in 2009. Surprisingly, from 2009 to 2017 the number of countries having a low share of tenders with only one bidder (< 13.5%) decreased from 16 to 8 nations. The elder Member States generally have fewer tenders where only one single bid is handed in.

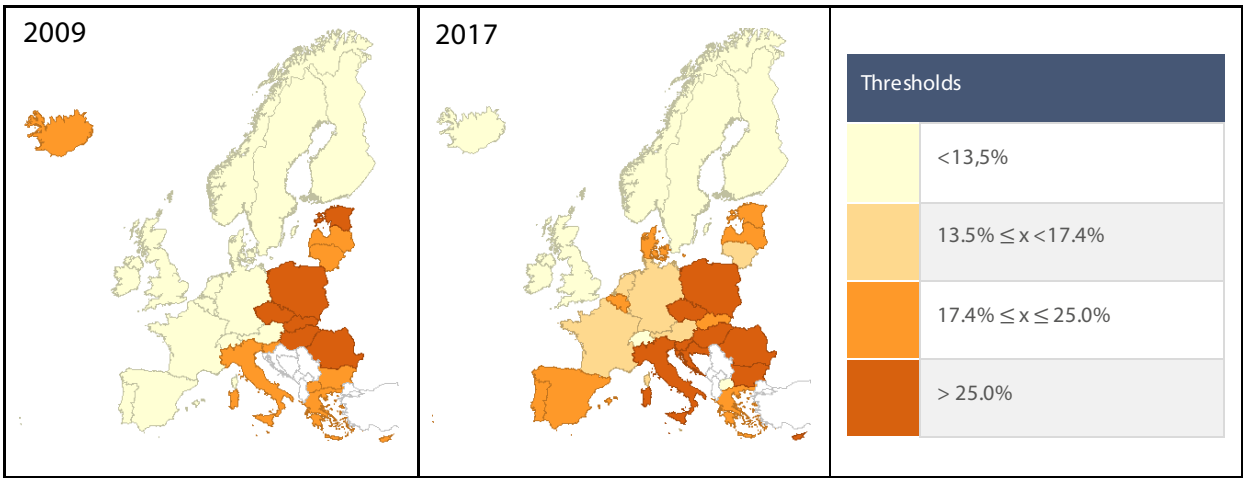
[5] These kind of barriers are permitted within the EU mainly due to security issues but they are not directly part of procurement legislative.

Another point to mention is that for these considered two years the amount of notices analysed varies a lot.

The analysis contains about 221,000 tenders for 2009 and about 434,000 - nearly double as much - for 2017.[6]

Of course, the use of only one single indicator does not allow to derive general insights of the competition within these countries. Nevertheless, the spatial concentration in the northern and in the eastern countries is remarkable and reveals in which regions more effort is necessary to force competition in public procurement tenders.[7]

Figure 4: Share of tenders with one bidder




Source: Derived from TED (2018)

## 3.5. SME

As about 99.8% of all non-financial business economy are SMEs, which generate roughly 67% of all jobs, 58.6% of all value (Eurostat 2011) and are known for their capacity for growth and innovation (Commission of the European Communities 2008a), the EU puts special emphasis on increasing SME participation in public procurement.

### 3.5.1. Data Selection and Explanation

Given the abundance of data fields and data available in the TED dataset (TED 2018), one of the very first steps for the SME analysis is again selecting a subset of the data fields which are supposedly relevant. The selected items and the justifications for choosing them are depicted in Table 7. At this point, it should be clear that these fields are one possible selection, which however should not be understood as a constraint for future analytical work to go beyond these fields.

[6] See also Table 5.

[7] Besides the graphical analysis, a Moran's I of 0,33 for the situation in the middle of Figure 4 (2017) indicates spatial autocorrelation and gives evidence for the presumed spatial concentration of similar performances.

Table 7: Selected Data Fields for SME Analysis

| Field | Justification of Use |
|---|---|
| NUMBER_OFFERS | Total number of offers received – used as the baseline to compute the share of SME participation. |
| NUMBER_TENDERS_SME | Number of offers received from SMEs which is compared against the baseline of the total number of offers. |
| *PERC* | This field is not available in the original data set and is computed as follows: $PERC = \frac{NUMBER\_TENDERS\_SME}{NUMBER\_OFFERS}$ |
| AWARD_VALUE_EURO | The AWARD_VALUE_EURO has been kept to check whether the financial volume of a contract influences the participation of SMEs. |
| CAE_TYPE | The CAE_TYPE field is retained to allow an analysis of SME participation depending on the contracting authority. |
| TYPE_OF_CONTRACT | The TYPE_OF_CONTRACT remains in the analysis set since to assess whether SME participation differs depending on the type of delivery (works, supplies, services). |
| ISO_COUNTRY_CODE | The ISO_COUNTRY_CODE is used to identify differences in SME participation depending on the procuring country. |
| WIN_COUNTRY_CODE | The WIN_COUNTRY_CODE is retained to enable an assessment of how SMEs winning contracts cross-border. |
| B_CONTRACTOR_SME | The B_CONTRACTOR_SME has been kept to assess whether an SME won a contract or not. |

Source: Derived from TED (2018)

After selecting the relevant data, another field was added to represent the actual share of SME participation. As outlined in Table 7, "*PERC*" has been computed as the share of tenders handed in by SMEs divided by the overall number of offers received. While the computation of such a share should be rather straightforward, the explorative analysis of the newly generated field indicated several share values greater than 100%. As this only happens in roughly 200 out of ~175,000 cases it appears to be a glitch in the data (see Chapter 3.1). Given the marginality of the numbers and the missing interpretability, we decided to remove all data items with a share of SMEs larger than 100%.

### 3.5.2. Further Data-Inherent Restrictions

One of the first things analysed has been the amount of usable data available under the specification made above. An excerpt of the assessment is depicted in Table 8, which only contains data from the years 2015, 2016 and 2017. The reason for cutting the years 2009 and 2014 is the unavailability of SME-related information in the TED dataset (TED 2018) (the relevant fields like NUMBER_TENDERS_SME do not contain information).

Table 8: Analysis of SME-related data

| | 2015 | 2016 | 2017 |
|---|---|---|---|
| Non-NA | 48 | 29,043 | 143,762 |
| Non-NA (Perc > 100%) | 0 | 39 | 135 |
| NA | 301,840 | 295,174 | 300,948 |
| **Total** | **301,888** | **324,256** | **444,845** |

Legend: "NA" = not available (unknown/missing data)
Source: Derived from TED (2018)

Cause for this lack of data is the fact that the old forms (European Union 2004a, 2004b) used to register contract award notices only provide fields to declare the overall numbers of offers as well as those received via electronic means. New forms (European Union 2014a, 2014b, 2014c) which also poll the number of SMEs partaking in a procurement procedure were only released after the adoption of the new public procurement package (European Parliament and Council of the European Union 2014a, 2014b, 2014c) in 2014. The official release of the new forms took place in November 2015 with the Commission Implementing Regulation 2015/1986 (European Commission 2015a) explaining the fact that only in 2015 data has been recorded – and that only 48 procedures are connected to information about SME participation. However, even though the regulation has been released 2015 it has only become mandatory by 18 April 2016 – explaining the still comparatively low number of SME-related data points in Table 8.

Hence for the remainder of this section, the focus of analysis will be on the years 2015 and 2017. Beyond this rather limited scope of assessment, the data sparsity has some further repercussions, like an increased difficulty to assess any recent trends introduced either by "natural" changes or policy changes as the timeframe is too limited to derive valid insights.

### 3.5.3. Share of SMEs

Since one of the aims of the 2014 directives is to increase the participation of SMEs in public procurement procedures, one of the first assessments was to analyse the actual share of SMEs partaking in past procurement procedures. In Figure 5 four histograms depict the frequency with which certain shares of SME participation occur over the whole time period of the data set[8] respectively in the years 2015, 2016 and 2017.

Considering the aim to increase SME participation the first positive insight gained is that – at least for those procedures with complete data – the majority of all tenders only receive offers from SMEs (hence SMEs having a share of 100%). For the whole time period (top left element of Figure 5) this breaks down to 100,000 tenders with pure SME participation in comparison to roughly only 41,000 with no SME

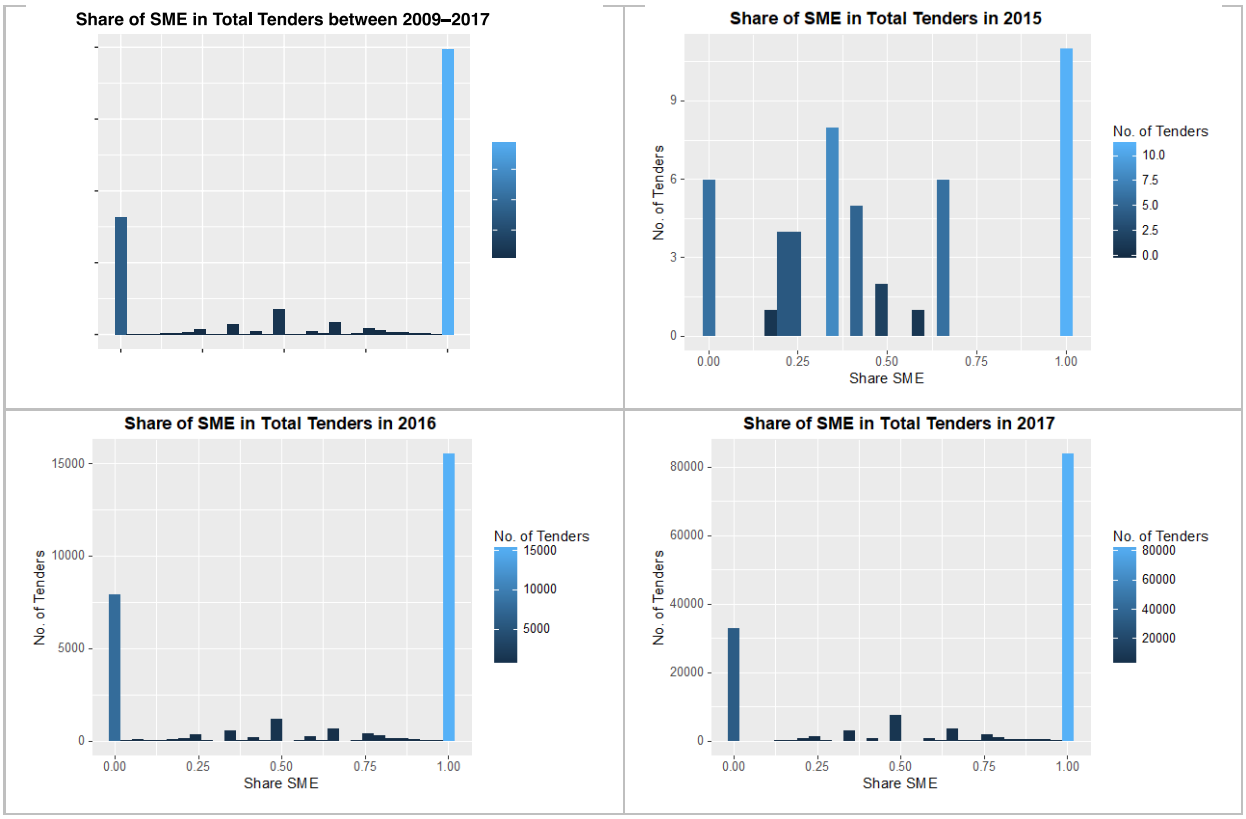
[8] Even in case of the full data set (top left part of Figure 5) only data from the period 2015 to 2017 has been considered since without available data about SME participation in the years 2009 to 2014 it was not possible to compute participation shares for that period.

participation at all. As a second positive finding the frequency of SME-only tenders is rising from 2015 to 2017 – however, given the data situation explained above it remains unclear if this is the effect of more careful reporting or an actual policy-induced rise of SME participation. A third positive finding is that – in line with the high participation – more than 50% of all tenders are also won by SMEs (cf. Table 9, esp. 2016 and 2017) which is in line with findings from an earlier PwC report (Thomassen et al. 2014) as well as another report by GHK AND TECHNOPOLIS (2010).

Furthermore, it is interesting to observe that SME participation usually occurs in extremes, since in the absolute majority of all cases either all or none of the contestants are SMEs. Cases in which there is mixed competition are rare, as in 2016 this was only the case in 19% of all cases and even slightly going down to 18% in 2017. Hence, it appears to be the case that tenders typically are either relevant only to SMEs or only to other types of enterprises but rarely appeal participation of differently sized enterprises.

Interestingly, according to Table 10, the average value of awards of tenders with 100% SME participation is only 60% of those with 0% SME participation, while those tenders where an SME was victorious are on average only 51% of the volume of those where a non-SME won. This again maps with prior observations made by PwC also indicating that SMEs usually get awarded smaller contracts (Thomassen et al. 2014). Looking at the other statistics like median and the 1st and 3rd quartiles showing smaller differences between SME and non-SME. This indicates that smaller contracts make up the majority of awards for both SME and non-SME, with SMEs being slightly more dominant in the lower value area while non-SMEs on average get much bigger contracts through only a few but high-value awards.

Figure 5: Shares of SME without reinterpreting NAs




Source: Derived from TED (2018)

Table 9: Analysis of SME success

| | 2015 | 2016 | 2017 |
|---|---|---|---|
| SME Won | 10 | 15,923 | 85,250 |
| Non-SME Won | 10 | 9,579 | 37,226 |
| Other[9] | 28 | 3,541 | 21,286 |
| **Total** | **48** | **29,043** | **143,762** |

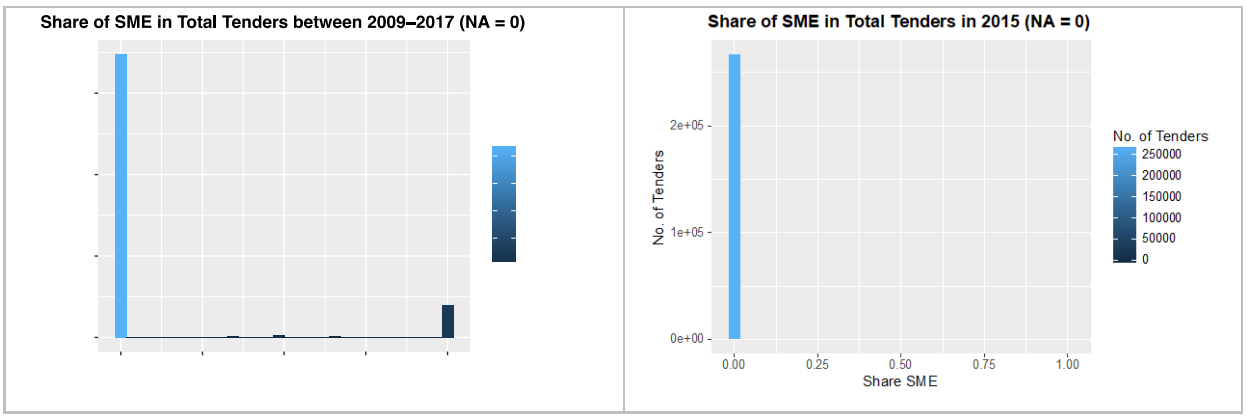
Source: Derived from TED (2018)

### 3.5.4. Different Interpretations of the Data

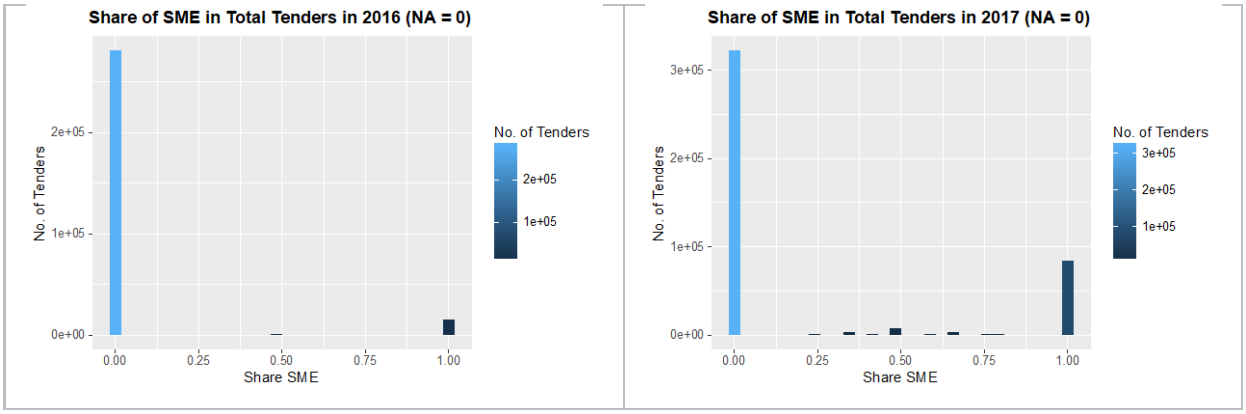
However, even after the new forms became mandatory in April 2016, not all procurement procedures comprise data regarding SME participation. As one can derive from Table 8, in both 2016 and 2017 still about 300,000 entries each year are lacking information about the number of participating SMEs. Also considering the data from 2015 so far the whole analysis based on 15% of the available entries in the TED dataset (TED 2018) for the specified period.

The issue with NA values (missing values) is that their interpretation is not unambiguous. One possible interpretation – that has been used in this document so far – is to understand NA as an actual error for the specific data item and henceforth removing it from further consideration. However, another interpretation – especially from May 2016 onward – would be to assume that NA values are the result of a faulty data entry. In this case, the case handler entering the data to the electronic procurement system may have left the field for SME offers empty whenever there have been no SME offers for a given procedure. Taking up the above interpretation, all available data entries could be made interpretable by replacing missing (NA) values by 0.

Figure 6: Shares of SME with reinterpreting NAs




[9] The dataset also contains several entries such as "Y---Y---Y---N---Y---N---Y---N---Y". These occur whenever an award has been given to a group of enterprises.




Source: Derived from TED (2018)

Going for this alternative data interpretation has an immense impact on the outcome of the analysis already conducted in the previous subsection. As one can see comparing Figure 5 with Figure 6, the frequency of 0% SME participation is way higher, tripling the frequency of 100% SME participation tenders. Considering Table 10 as well, it can be derived that many of the reinterpreted entries must have been rather high-value awards since all relevant statistics (except the minimum) have grown by several thousand euros. This is in line with the prior findings that SMEs more likely apply for and get contracts with smaller contract values.

Table 10: Comparing award values depending on SME participation/victory

| | Awards (0% SME Tenders) | Awards (100% SME Tenders) | Awards (Non-SME Won) | Awards (SME Won) | Awards (NA=0) (0% SME Tenders) | Awards (NA=0) (100% SME Tenders) |
|---|---|---|---|---|---|---|
| Min.: | 1,001 EUR | 1,000 EUR | 1,001 EUR | 1,000 EUR | 1,000 EUR | 1,000 EUR |
| 1st Quart.: | 7,326 EUR | 7,082 EUR | 9,211 EUR | 7,353 EUR | 11,910 EUR | 7,082 EUR |
| Median: | 38,602 EUR | 36,004 EUR | 56,000 EUR | 38,463 EUR | 68,755 EUR | 36,004 EUR |
| Mean: | 1,097,544 EUR | 664,393 EUR | 1,523,245 EUR | 779,386 EUR | 1,149,032 EUR | 664,393 EUR |
| 3rd Quart.: | 252,676 EUR | 200,141 EUR | 336,136 EUR | 211,852 EUR | 325,099 EUR | 200,141 EUR |
| Max.: | 197,444,061 EUR | 192,653,481 EUR | 197,444,061 EUR | 183,042,905 EUR | 199,912,768 EUR | 192,653,481 EUR |

Source: Derived from TED (2018)

However, each analysis and statement made at this point has to be handled with care. While interpreting missing values as 0 may be a correct in many cases, the likelihood is high that in many other cases the missing value was never meant to indicate a 0 but was indeed the consequence of wrong or forgotten data entry. Hence, for the time being – and without more data at hand – the truth is most likely to lie somewhere in between the values and figures shown in Figure 5, Figure 6, Table 8, Table 9 and Table 10.

### 3.5.5. SMEs and Contract Types

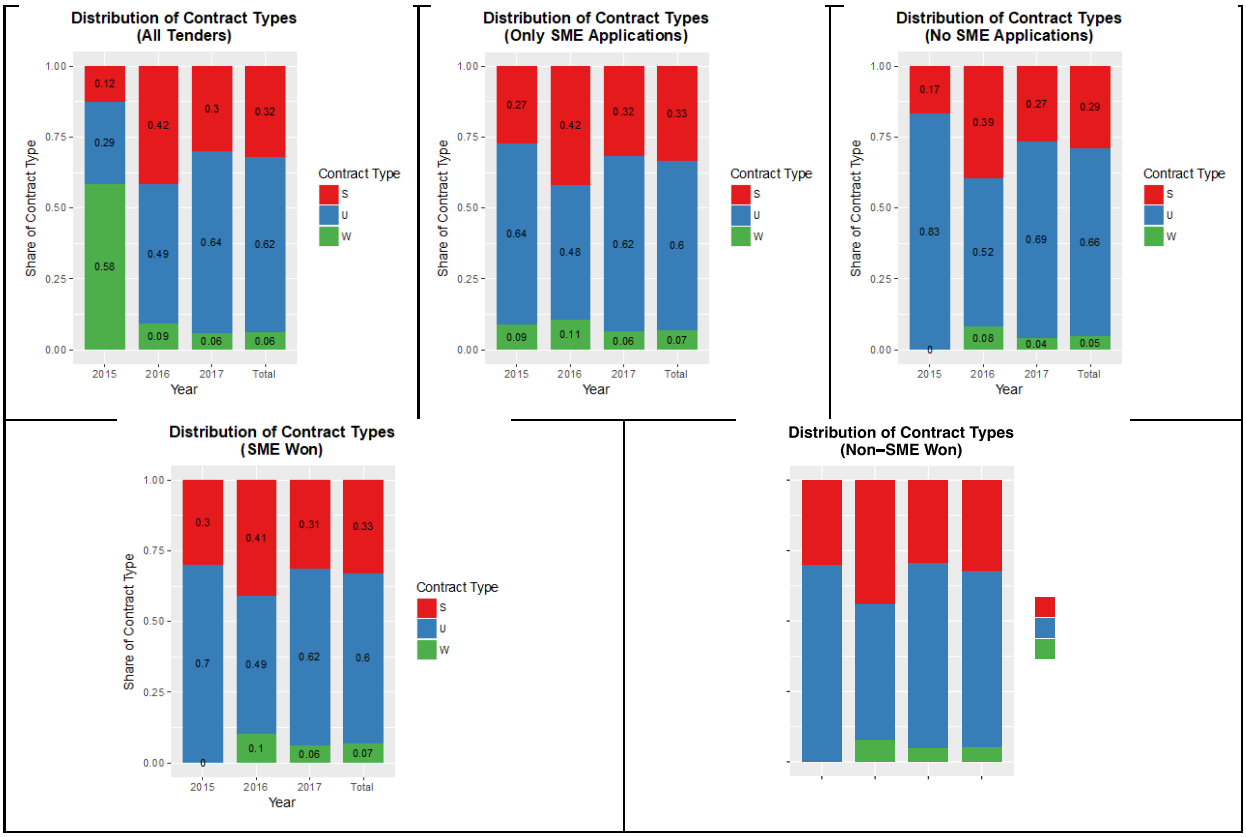
After working through the participation and award values in general, assessing the contract types together with SME and non-SME applications and contract awards is promising to understand whether certain types of contracts are potentially more appealing to enterprises of a specific size respectively

whether procurement offices are biased in their awarding patterns. One reason might be the thresholds that vary among contracts of the types "Works (W)", "Supplies (U)" and "Services (S)" (see Table 1). Here especially "Works (W)" as the contract type with the highest threshold value are of interest. Based on the knowledge gained from the prior analysis, SMEs are more likely to apply for and win tenders with smaller award values – hence, this step should help to ensure that SMEs are not performing well on supply and service contracts while not doing so well on the larger work contracts (which without distinguishing analysis would not be visible from a simple analysis of the total performance).

Looking at the charts in Figure 7 one first notices that – especially for the years 2016 and 2017 as well as for the total period – all charts look remarkably similar. Interpreted against the underlying data, this means that the share of applications and awards to SMEs and non-SMEs per contract type is very similar – and hence SMEs and non-SMEs appear to perform similarly well for all three types. As a consequence, there appears to be no imminent need to adjust the current policies to increase participation of SMEs for a specific contract type.

Furthermore, one can see that work contracts only make up a small share of all published tenders and are hence unlikely to cause any bias in the assessments conducted above. Interestingly work contracts make up a larger percentage of the total contracts awarded to SMEs than in the case of non-SMEs, which supports the idea of no apparent bias.

Figure 7: SME participation and success per contract type




Legend: "S" = Services | "U" = Supplies | "W" = Works
Source: Derived from TED (2018)

### 3.5.6. SMEs and Contracting Authorities

Another aspect that is worth checking is the distribution of applications and awarded contracts across the different Contracting Authority or Entity (CAE) types. This should help to understand whether policy changes are needed to improve SME access to specific authorities. Furthermore, following the work of FLYNN (2018) and FLYNN AND DAVIS (2016), this form of assessment might help to identify authorities lagging behind in implementing already passed policies.

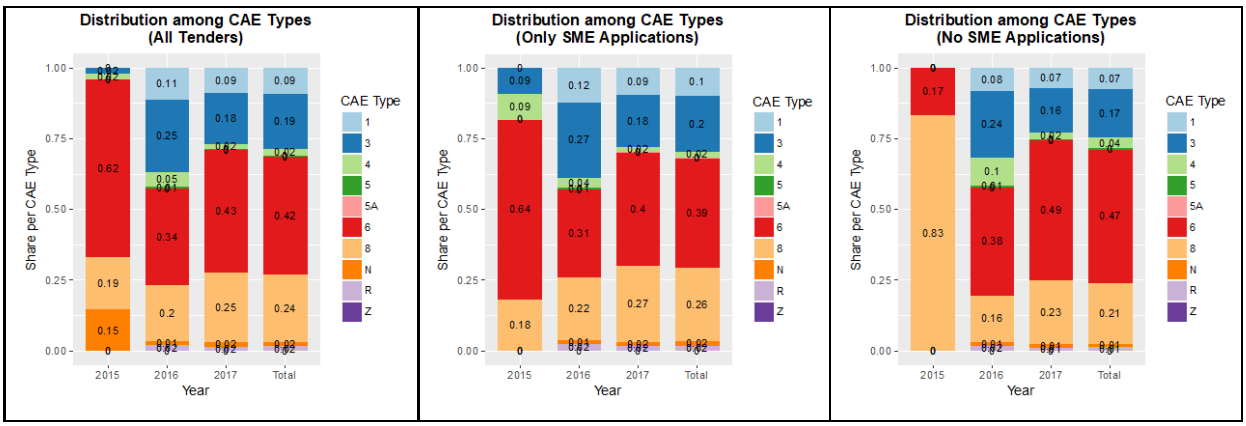
Here the GHK AND TECHNOPOLIS (2010) suggest that among all CAEs the central government is usually the one cooperating best with SMEs. Aside of that the literature outlines that SMEs usually work better with other private enterprises – which may implicitly also mean better public procurement performance with more privately oriented authorities such as bodies governed by public law (Garson and Khosrow-Pour 2008).

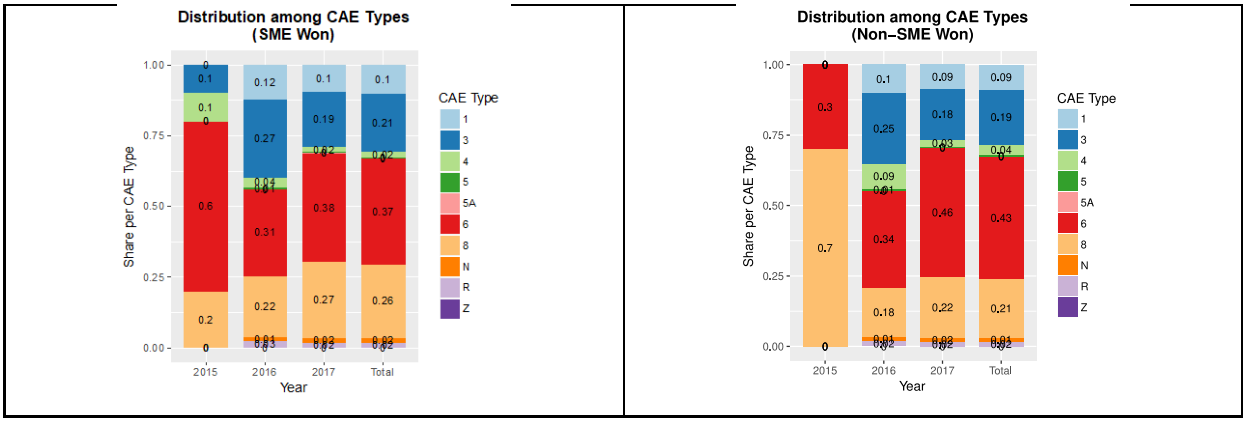
Similar to the case of contract types most of the charts in Figure 8 look almost identical. However, comparing the application and award structures of SMEs and non-SMEs to the overall distribution of tenders across CAEs reveals some points of interest: First, it can be seen that among the contracts won by SMEs the share of awards issued by bodies governed by public law is considerably smaller than for non-SMEs as well as smaller as the market share. Given that these bodies governed by public law are rather atypical public institutions and at least share some similarities with private companies it is interesting to see that both SME interest and the willingness to award contracts to SMEs is rather low. Accordingly, the reasons for this imbalance should be examined critically in the future and, if necessary, incorporated into future legislative procedures (or compliance with existing policies should be checked more rigorously during implementation).

Second, the SME-related charts in Figure 8 partially confirm the theses of the GHK AND TECHNOPOLIS (2010) as central governmental bodies indeed make up a slightly larger share of SME contracts than of non-SME contracts. However, considering the fact that tenders from a CAE of type "1" only make up roughly 9% of all available tenders, it has to be ensured that SMEs also perform well with other public institutions – like the bodies governed by public law discussed above.

A third issue is rather related to the structure and composition of the records with regard to the contracting authorities. It is possible that some tenders cannot be connected to a clearly classifiable CAE type, however, is problematic once that assortment of "Other" tenders starts accumulating to up to 25-30%. While it has no impact on the procurement procedures as such, it impedes an ex-post assessment of past tenders that might help to adjust existing policies or their enforcement in a way to increase SME participation.

Figure 8: SME participation and success per contracting authority/entity






Legend: "1" = Ministry/National or Federal Authority incl. regional/local subdivisions" | "3" = Regional/Local Authority | "4" = Water/Energy/Transport/Telecom sectors | "5" = EU institution/agency | "5a" = Other internat. organisation | "6" = Body governed by public law" | "8" = Other" | "N" = "National/Federal Agency/Office" | "R" = Regional/Local Agency/Office" | "Z" = "Not specified"

Source: Derived from TED (2018)

### 3.5.7. SMEs and Countries

So far, the assessments have been focussed on the EU as one entity. However, as one can see in Figure 8, most tenders are published by national, regional or local authorities. Furthermore, the current procurement framework of the EU is specified by the Directives 2014/23/EU, 2014/24/EU, and 2014/25/EU – whose exact format and speed of transposition are supposedly different in each of the 28 Member States given the directive format. This in confluence with the fact that each of the Member States has (had) a slightly different economic and procurement structure (beforehand), is sufficient reason to check the policy impact individually.

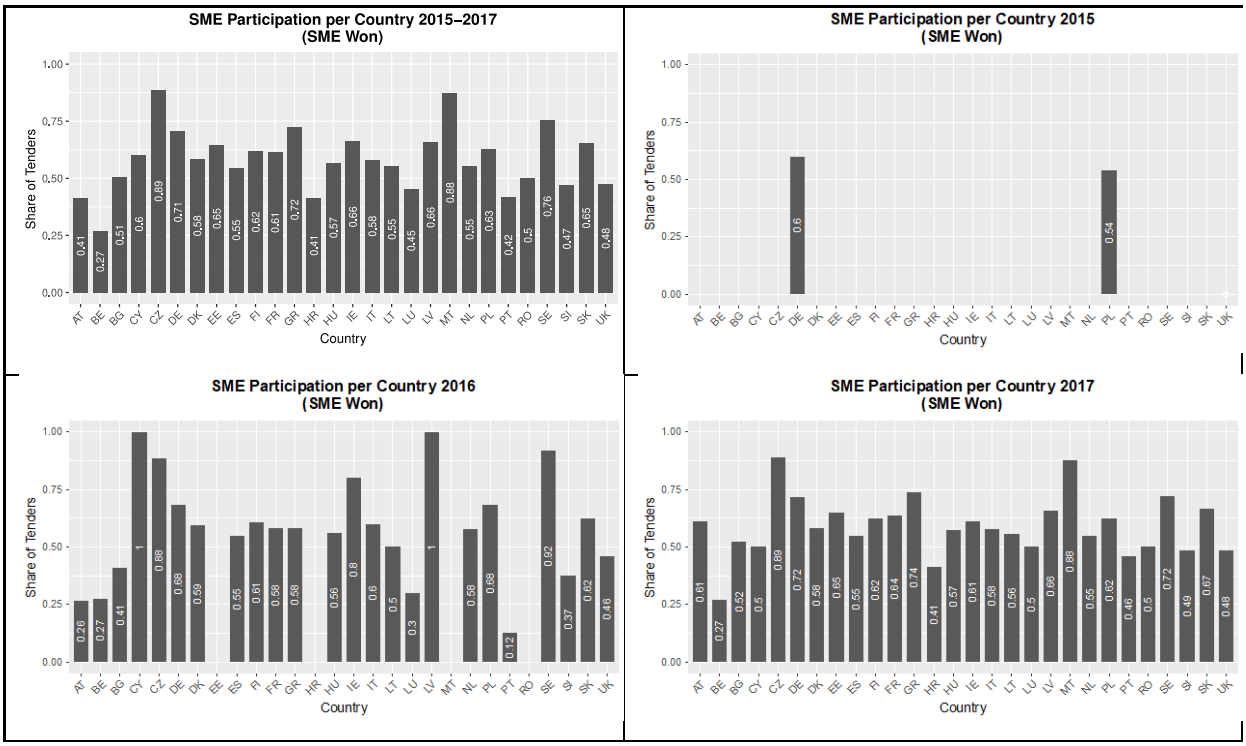
That the share of contracts awarded to SMEs indeed varies substantially across the different Member States can be seen in all charts in Figure 9. While in some states such as Belgium (BE) SMEs only win a very small share of all tenders (27%), other countries such as the Czech Republic (CZ) have success rates of 80%[10] and more.

On the positive side, the charts in Figure 9 (especially the one for the whole period 2015-2017) indicate that in the majority of Member States SMEs win more than 50% of the published tenders. Only very few countries such as Austria, Belgium, Croatia or Luxembourg have lower success rates – however, in many of these cases, the win rates with 47% (Slovenia) or 48% (United Kingdom) are only slightly lower than 50%. Unfortunately, no central comparative statistics for the years prior to 2015 exist to assess the exact impact of the novel procurement policies (cf. e.g., European Commission 2015b, 2017). Even though the retrospective view is limited at this point, at least those States lagging behind in terms of SME participation may require further analysis to derive whether policies need to be changed to induce the necessary changes there or whether the enforcement policies have to be checked and changed.

[10] Some countries such as Cyprus (CY) have 100% SME-shares in 2016 which, however, has only limited informative value, since it is due to only a single contract being listed for that year and country. Similarly, the dramatic reduction of winning SMEs from 100% to 50% comes to pass as out of four contracts in 2017 only two have been awarded to SMEs.

Another positive aspect can be found comparing the share of SME wins over the years 2015 to 2017 (respectively 2016 to 2017 since for 2015 the data is basically non-existent). For 18 out of 28 Member States (~64%) the share of SME wins has risen from 2016 to 2017, while two countries are stagnant and only eight countries actually have a lesser SME share in the later year (~28.5%). Considering that one aim of Directive 2014/24/EU is to increase SME participation (European Parliament and Council of the European Union 2014b) these values are already an indicator that things on average are changing for the positive. However, the eight countries reporting a decreasing SME share will have to be subject of closer scrutiny in the near future. While in some cases such as the one of the Czech Republic the fluctuation (89% -> 88%) appears to simply be natural variation, other cases such as Ireland with a reduction from 80% to 61% are not within the range of normal fluctuation anymore. Here it will be key to assess why some States struggle to implement the 2014 directives and whether there are still issues within the policies or if the reason rather is the policy-practice divide as described by FLYNN AND DAVIS (2016).

Figure 9: SME participation across the EU Member States




Source: Derived from TED (2018)

## 3.6. Total Benefits

Based on the most recent study investigating the *Cost of Non-Europe*, we calculate current benefits with respect to our investigations (Table 11). The enhancement of public procurement could potentially reach benefits of EUR 36 billion (Hiller 2017) within Europe. Our investigation showcases that the recent legislative initiatives – especially e-procurement – have a positive influence on this gap. Analogously to the potential of e-procurement in the Digital Single Market, which accounts for 24.1% (Hiller 2017), we assume an equivalent potential for the EU legislative actions with the additional assumption that this gain will spread over three different years. For 2017, the total benefit consequently sums up to about EUR 2.88 billion (8% of EUR 36 billion). In line with common standards, 10% of this gain is assumed to be the reduced administrative burden. The share of cross-border contract award value increased in 2017 by about 15%, which is also part of the overall enhancement.

Lastly, the share of tenders won by SMEs raised by 5% indicating the better participation opportunities due to e-procurement. The remaining 70% of benefits are mainly dynamic economic advantages and advantages not considered in the study in hand.

Table 11: Estimated economic benefit of recent legislative actions in 2017

| Area of benefit | | Estimated benefit |
|---|---|---|
| Reduction of administrative burden | S | EUR 72 million |
| | U | EUR 137 million |
| | W | EUR 79 million |
| | T | EUR 288 million |
| Enhanced cross-border contracting | S | EUR 108 million |
| | U | EUR 205 million |
| | W | EUR 119 million |
| | T | EUR 432 million |
| Raise of SME participation | S | EUR 36 million |
| | U | EUR 68 million |
| | W | EUR 40 million |
| | T | EUR 144 million |
| Dynamic and other economic benefits | S | EUR 504 million |
| | U | EUR 959 million |
| | W | EUR 553 million |
| | T | EUR 2,016 million |
| **Total** | S | **EUR 0.72 billion** |
| | U | **EUR 1.37 billion** |
| | W | **EUR 0.79 billion** |
| | T | **EUR 2.88 billion** |

# 4. FUTURE OF PUBLIC PROCUREMENT IN THE EU

After analysing current trends in European public procurement as well as the impact of recent legislation on procurement practice, this chapter is supposed to conclude this study with several suggestions. These are aimed at both, improving the impact of recent policy decisions as well as improving the data recorded in the process.

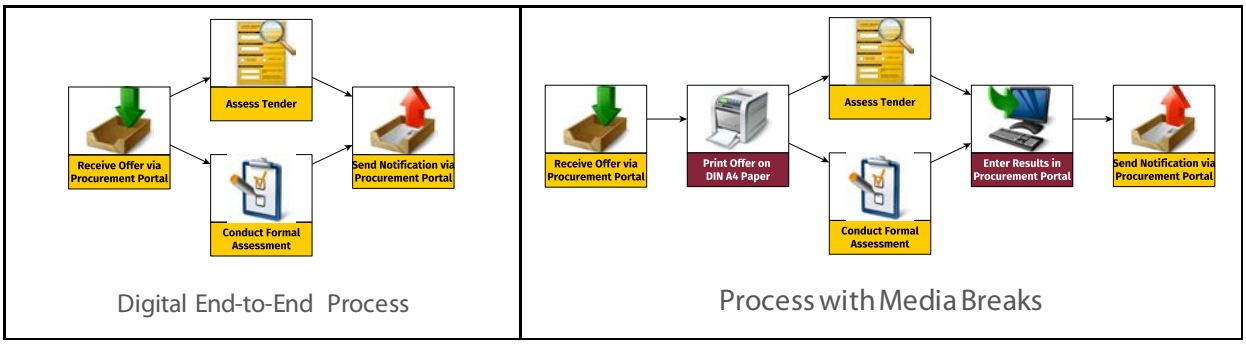
KEY FINDINGS

- The proposed strategies offer a possible efficiency gain up to **EUR 21 billion**.
- Ensuring digital end-to-end processes will help to reduce delays that are deterring SMEs and avoid data entry mistakes inhibiting an ex-post assessment and future data-driven policy making.
- Using interoperable systems can help to reuse data already collected through public services which helps to reduce cycle times, efforts in filling in forms as well as it increases the consistency of data stored.
- Having established digital end-to-end processes and interoperable systems a one-stop shop procurement portal (e.g., TED) can be created to reduce the complexity of finding tender information and applying for tenders from all EU countries (e.g., to support cross-border procurement).
- Managing data and information quality will be crucial considering the constantly rising importance of data-driven decision and policy making.

## 4.1. Digital End-To-End

The need for digital end-to-end processes can be derived from both, the assessment of the data provided within this analysis as well as reports on barriers to SMEs published earlier. Going through the accompanying document (Hercher 2018) to the TED dataset (TED 2018) one encounters the reoccurring statement that data may be missing or wrong due to incorrect input from the procuring authorities across Europe. While it is beyond the scope of this analysis to assess the document handling in each procuring authority across Europe, e.g., communications of the European Commission like the one on "End-to-end e-procurement to modernise public administrations" (European Commission 2013) are a good indicator that procurement processes with media breaks are still an issue.

Figure 10: Contrasting digital end-to-end to process with media breaks




Source: Own Visualisation

Furthermore, processes with media breaks tend to introduce unnecessary delays. Given the fact that slow decision making on behalf of the public procurement authorities is one reason for SMEs to rather not compete in a tendering process (Flynn and Davis 2016; MacManus 1991) reducing or removing

these avoidable delays should be rather high on the priority list. Especially as it may reduce the amount of actual paperwork as well that many offering enterprises complain about (MacManus 1991).

To illustrate the issue an exemplary simplified procurement process has been depicted in Figure 10. On the right-hand side is a rather "classical" version of the process still including two media breaks: The printing of the offer as well as its re-entrance to the procurement system. Both are not only time consuming (especially re-entering data) but also bear the risk that data added to the digital document after printing cannot be considered anymore as well as information added to paper documents not being properly digitised afterwards. Furthermore, comparable hindrances are likely to occur as long as standard procurement forms (European Union 2014a, 2014b, 2014c) are filled in paper-based and only later entered in the procurement system to be officially reported.

Hence, it will be one crucial step to carefully redesign the procurement processes to be fully digitalised (see, e.g., Becker 2018). Procedurally this comes down to discarding all unnecessary elements (e.g., printing and re-entering in Figure 10), simplifying the process wherever possible and finally automating everything with a suitable IT-system (at least those elements which are not yet digitalised).

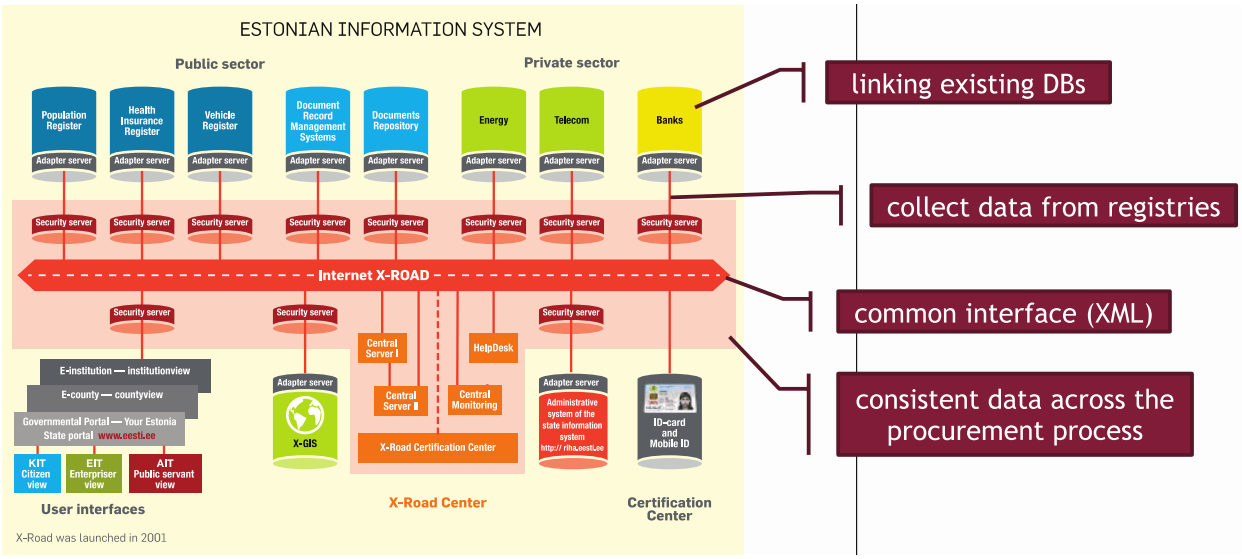
## 4.2. Interoperability

While it is closely linked to digital end-to-end processes, interoperability is yet another distinct major pathway to keep in mind for future legislation (see also European Commission 2010; Vaidya et al. 2006). Already the early publications in the area of public procurement point out that an excess of paperwork, slow cycle times and overly complicated procedures are one of the major hindrances for businesses in general and SMEs, in particular, to partake in public procurement procedures (MacManus 1991).

All of this has been absolutely normal and without an alternative for many years. However, today a lot of the data that is used in public administration procedures – such as procurement – is stored across a diverse set of government databases. For example, most company related data will be stored in a commercial register, whereas taxation information will be stored via the tax office and information regarding previous procurement contracts will at least be stored with the respective contracting authority. If all these information sources would be interconnected and interoperable, it would be an easy task to, e.g., prefill forms of tenders reducing the workload for the interested parties (see also the Once Only Principle, Wimmer et al. 2017). Beyond assisting enterprises in the application stage, interoperability will continue to be of great value for the contracting authorities, since in an idealistic case, interoperable systems will speed up access to procurement information as well as additional information necessary to evaluate and score the incoming tender applications (PwC 2018a). Furthermore, interoperability will also require a high level of system integration necessitating the introduction of standardised data and document formats and hence further reduce the complexity and barriers of exchanging data.

A pleasant side effect of integrating interoperable systems alongside the procurement process is an optimisation of the foundation for the ex-post assessment. So far, the data used for assessments of the current state of public procurement is often brought together from various sources exhibiting quite different structures and formats. This can, e.g., be seen looking at the current TED dataset (TED 2018) and its corresponding description (Hercher 2018), where there are explicit warnings about the risk of inconsistencies and errors. Being able to use consistent data from interoperable and integrated systems will help to reduce time-consuming data pre-processing (e.g., unifying the misspelt names of enterprises) and ensure that assessments can be made on complete and error-free data and can hence serve as a more reliable foundation for future policy-making.

Figure 11: Estonian X-Road as an example of an interoperable system




Source: Adjusted version of ANTHES (2015) schematics of X-Road

One of the lighthouse examples that could serve as a blueprint for further legislation is the case of Estonia. Even though being one of the smallest nations in the EU, it is in the leading circle when it comes to system integration and interoperability. Here especially the X-Road system as presented and depicted in ANTHES (2015) is worth mentioning. Launched in 2001 it nowadays connects over 940 public and private organisations and hosts about 2,000 different services (covering 99% of all State services) (PwC 2018a). Since 2007, X-Road also hosts Estonia's e-Procurement environment and according to reports, e.g., by PWC (2018a) the reception and impact so far have been positive.

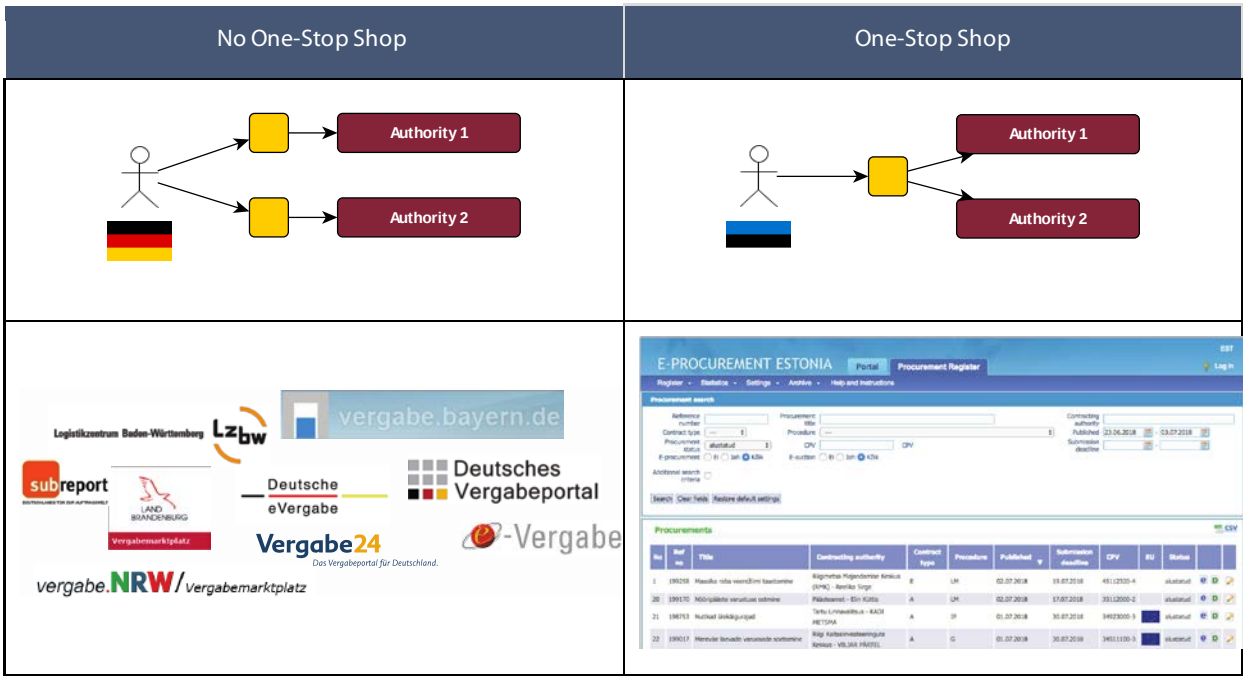
## 4.3. One-Stop Shop Procurement Portal

Being a topic of research for almost two decades now (Wimmer 2002; Wimmer and Tambouris 2002) one-stop shop (procurement) portals are another potential lever to improve SME participation, cross-border procurement as well as competition. During prior studies of existing barriers for enterprises to partake in public procurement, one recurrent and rather consistent pattern is that companies often experience the tendering process as resource and time consuming (Flynn 2018; MacManus 1991). So far in many countries throughout the EU calls for tenders are distributed across multiple web portals (e.g., in the case of Germany where more than a dozen e-Procurement portals exist and compete with each other, see bottom left of Figure 12) or till the last year even across a diverse set of print media, which made it very complicated for enterprises to find relevant information (see, e.g., PwC 2018b). Especially for smaller enterprises lacking sufficient personnel to track multiple portals or international enterprises not fully familiar with the portal landscape in a foreign country that represents a severe hindrance.

Here one-stop shop portals have been found to be one potential remedy (Commission of the European Communities 2008b; PwC 2018b), since they reduce the complexity by reducing the number of gateways to access procurement information from $n$ to 1 (see the top row of Figure 12). This reduces the search cost for interested enterprises, increases transparency and accessibility – also for cross-border bidders (European Commission 2012; PwC 2018b; Vincze et al. 2010). However, the one-stop shop typically has several prerequisites which include a high degree of integration and interoperability of digital (procurement) services as well as processes that are realigned in a way to accommodate the handling of tenders across one single platform (Wimmer and Tambouris 2002).

Hence, this strategy is not really viable as a standalone option but can be combined with the prior two to enhance the overall internal performance as well as further reducing existing barriers for enterprises.

Figure 12: "Multi-stop" shop vs. one-stop shop procurement




Source: Own Visualisation with the upper half being based on WIMMER AND TAMBOURIS (2002)

Similar to interoperability, Estonia is again one of the most prominent examples when it comes to one-stop shop procurement portals. All their public tenders are registered, published and administered through the central Riigihangete register (see bottom-right part of Figure 12). Hence, all interested enterprises can just visit that central platform and go through the currently open calls for tenders. As the procurement platform is available in English, it is even accessible for international enterprises enabling improved cross-border procurement.

## 4.4. Good Data

The prior recommendations were almost exclusively targeted at improving the internals of procurement procedures respectively at enhancing the interactions with enterprises – especially SMEs and cross-border bidders. However, many of these guidelines have been justified with the prior assessment of the current state of European procurement in Chapter 3. Using data in this way to assess current policies and improving based upon the generated insights is becoming more and more common, giving the increasing abundance of available date as well as the increasing capacities of computing and using such data. One remarkable statement in this direction comes from Peter Sondergaard – formerly Gartner's head of research – who pointed out that "Information is the oil of the 21st century and analytics is the combustion engine." (Pettey 2012). While data is an opportunity to make policy decisions based on quantifiable insights, naïve usage is associated with huge risks (see, e.g., Clarke 2016). As pointed out, e.g., in CLARKE (2016) or OTTO ET AL. (2011) it is important that data (as well as derived information) adheres to certain quality standards respectively dimensions such as syntactical validity, accuracy, completeness, currency, and relevance. Otherwise, the risk is high that policy decisions might be made based on poor analyses. Within the analysis phase in Chapter 3 multiple issues have been identified in the employed TED data set, while others are already outlined in HERCHER'S (2018) description.

Hence, it will be crucial for the future to invest in an improved management of data quality. While this will not improve procurement procedures directly, it is meant to improve the decisions influencing the framing of the future of public procurement. One way to tackle the problem of obtaining good data is the implementation of a method for data quality management such as Total Data Quality Management (TDQM) (Wang 1998). It specifies several quality categories and dimensions as well as a methodology to improve and ensure data quality. The major idea is to specify so-called information products (insights generated from data) including underlying characteristics and requirements, to measure the obtained quality (based on measures such as accuracy, completeness, …), analyse root causes for identified issues and to improve upon these identified gaps.

The above recommendations are rather long-term changes that have to be implemented throughout the relevant offices and authorities. However, there are some rather fast to implement options to improve data quality: One quick solution would be to release not only the flattened CSV-extract available now but to also publish a dump of the real database. This would give the data additional semantics through the underlying data schema, reduce the risks of duplicates introduced through flattening the database (DB), reduce risks of misinterpreting data types and makes it easier to process all the data to keep the full context (since DB systems are usually better at handling/storing large data quantities than Excel, R or Python). Another rather short-term improvement could be a rework of data input fields in the existing procurement portals. If, e.g., the fields with SME-related information (e.g., number of tenders received from SMEs) would be mandatory (incl. restrictions upon the type of data, like a field being either numerical or textual) "NA" values could be avoided ensuring that each data entry consists of fully interpretable data.

## 4.5. Potential Efficiency Gain

The suggested strategies will further affect administration costs, the participation of SME, and cross-border procurement. Therefore, we analogously apply the share of savings that have been made in similar digitization projects over the last decade. In our experience, efforts to foster digital end-to-end processes and jointly the strategies interoperability and one-stop shop procurement portal lead to savings of 5% of the respective administration costs. Assuming the common share of 10% as administration costs of the corresponding procurement contracts, our proposed strategies will lead to a huge amount of savings within the public administration body and the overhead in the contracting enterprises. On basis of 2017, the introduction of each strategy could save at least EUR 2.6 billion Euro of administration costs over all contracting authorities and enterprises. On top of that, we can derive the economic benefits that arise from dynamic economic advantages by applying these strategies to enhance the development of the digital single market. Focussing only on European public procurement, and analogously applying the restrictive share of 3% (Dunne 2015), an additional economic gain of up to EUR 15.8 billion is possible.

Table 12: Potential efficiency gains of the proposed strategies

| Economic impact of the respective strategies | Estimated benefit |
|---|---|
| Administrative savings due to the application of digital end to end processes | EUR 2.6 billion |
| Administrative savings due to the joint application of interoperability and a one-stop shop procurement portal | EUR 2.6 billion |
| Dynamic economic gain by applying the three strategies | EUR 15.8 billion |
| **Total** | **EUR 21 billion** |

All in all, the analysis verifies that the EU legal actions of the last decade further enhanced the integration of the EEA. Without this general opening strategy, the absolute raise of transnational procurement actions would not have been possible. In comparison to similar economic areas all over the world (e.g. Mercosur in South America), the EU is in a leading position of economic integration. However, the United States with its federal structure and unique regime could be seen as a reference for highest possible trade opportunities since there are no borders between its states. Whereas such a situation with absolutely no trade barriers cannot be seen as achievable within the next years, the removal of administrative, legal, and tariff barriers contributed to the positive development of the Single Market.

Nevertheless, regarding the development of cross-border procurement, there is additional potential for improvement. Comparing it to the current trade between the Member States of the EU, the potential for public procurement can be approximated up to a share of 10% (current share: 3.4%). Of course, the internationalisation of public procurement will not be as high as the general trade integration because of the specificities of procurement mentioned in the previous chapters. As the relevant directives have not been into force for such a long time, it is very likely that the share of cross-border procurement will rise in the next years.

# 5. CONCLUSION

Due to the adoption of the new public procurement package, European public procurement is currently in a transforming situation which can be characterised by two aspects: First, the newly introduced reporting rules have a massive impact on data availability and second, the enhancement of e-procurement leads to a stepwise improvement of traditional procedures. However, this does not necessarily lead to a better performance of public contracting in terms of the goals of European Commission (European Commission 2018c) which are among others "[i]ncreasing access to procurement markets", "[i]mproving transparency, integrity and data" and "[b]oosting the digital transformation of procurement".

While the conducted analysis revealed that the SME participation already reached approx. 60% and is rising in the majority of Member States, still several issues remain to be addressed: One is the decreasing share of cross-border procurement since 2015 (the year after the release of the new public procurement framework) as well as the increasing number of tenders just attracting a single bidder. However, one constraining factor is that the available data covering aspects such as SME participation is only available in full from mid-2016 due to the later release of updated procurement forms. Furthermore, the overall data is often incomplete making reliable assessments highly difficult.

To advance and improve public procurement in the future three major strategies are proposed to address existing issues ranging from delays in procurement processes, hard to identify touchpoints (too many procurement portals), and cumbersome tendering processes (e.g., long forms with often repeating fields):

- Digital End-to-End
  (*ensuring 100% digital processes to avoid delays and input/data transfer errors*)
- Interoperability
  (*ensure flawless data exchange between systems to reduce delays and for example profile forms*)
- One-Stop Shop Procurement Portal
  (*reduce procurement touchpoints to one to reduce search cost for enterprises*)

Beyond these strategies that primarily address the future of procurement, another strategy is suggested that aims at improving the potential for data-driven policy making:

- Good Data
  (*ensure data quality during collection and management to ensure interpretability and validity*)

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This study assesses the impact of recent EU public procurement legislation on strategic goals such as cross-border procurement, SME participation, and competition.
Based on the assessment of the most recent TED dataset SME participation in procurement is increasing in most countries whereas cross-border contracting and competition are still areas where further improvement is needed. Therefore, we propose digital end-to-end processes, interoperability, and a one-stop shop procurement portal as well as an improved management of data quality.
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