GOVERNMENT PROCUREMENT: DATA, TRENDS AND PROTECTIONIST TENDENCIES

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1. INTRODUCTION

Public procurement is becoming increasingly important in trade negotiations, at the bilateral level reflected in free trade agreements (FTAs) and at the plurilateral level under the aegis of the World Trade Organisation (WTO). These developments are driven by the economic importance of the government procurement markets and by their large potential as, so far, international commitments have been of limited scope and coverage. In terms of economic significance worldwide, the size of government procurement accounts for a double-digit share of gross domestic product (GDP) in most developed economies. In the EU alone, government procurement of goods, services and works reached nearly EUR 2 trillion or 13.4 % of EU GDP in 2016 (Eurostat 2017, see also Section 3.1).

From a trade policy perspective, the potential of further liberalising public procurement markets is becoming crucial in an environment where tariff duties are globally at a low level and efforts in reducing non-tariff barriers in goods and services trade have not been particularly successful.[2] In this respect recent research shows that since the year 2000 standalone public procurement provisions feature far more prominently in bilateral FTAs than before the year 2000 (Cernat and Kutlina-Dimitrova 2015).

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The opinions expressed in this paper are the author's own and do not necessarily reflect the views and opinions of the European Commission.

[2] An assessment of the successes and failures of regulatory cooperation efforts is provided in Pelkmans and Hamilton (2015).

Also at the multilateral level there has been a break-through: in April 2014, joint liberalisation efforts led to the signature of the revised government procurement agreement (GPA).[3] The revised GPA includes additional commitments in terms of government entities as well as new services and public procurement activities.

In parallel with the increasing importance of public procurement provisions in bilateral FTAs and the successful attempt to revise the GPA, protectionism in this field has been on the rise. During the financial crises numerous governments intervened to support the domestic economy by introducing stimulus programmes, some of which were conditioned on domestic preferences in public procurement (OECD 2015, Evenett 2009). This type of discriminatory measures, however, was not a crisis-exclusive phenomenon; in fact in the aftermath the stock of discriminatory government procurement measures continued to rise (Global Trade Alert 2017, see also Section 4).

At the same time, economic research shows that the presence of local preferences, or the so-called home bias, distorts international specialisation and resource allocation and hereby affects prices, trade flows and national income (Lowinger (1976), Miyagiwa (1991) and Trionfetti (2001)). Furthermore, theoretical literature suggests that home bias is particularly distortive if there are barriers to competition in domestic markets preventing firms from entering (Evenett and Hoekman 2005).

Lack of reliable statistics and an internationally agreed methodology for detailed government procurement data stifle policy debates.

The empirical literature on the on the impact of international procurement has also gradually evolved. The work by Kutlina-Dimitrova and Lakatos (2016), Shingal (2015), Rickard and Kono (2014), Brülhart and Trionfetti (2004) and (2001) and Trionfetti (2000), etc. provide evidence for the presence of local preferences in government procurement and/or focus on the identification of the drivers of cross-border public procurement. Economic modelling work on the impact stemming from liberalising public procurement markets has also recently emerged. First quantifications attempts by Kutlina-Dimitrova (2017) and Dixon et al. (2017) show that there are sizable benefits to be reaped from extending the scope and coverage of the GPA or from scrapping Buy America(n) provisions in the United States.

In spite of all these valuable analyses there is a lot to be done in the field of international public procurement. The first challenge is related to the lack of reliable, detailed data and internationally agreed methodology for standardising and collecting government procurement contract award data. This type of information is indispensable for in-depth assessment of any

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[3]   The GPA currently includes 47 WTO members, while another 28 participate as observers.

bilateral and/or multilateral initiative in the field of government procurement as well as for monitoring the outcome of these international agreements over time.

Secondly, protectionism in international public procurement is generally enacted by introducing *de jure* and *de facto* procurement barriers. Data on these foreign procurement restrictive practices needs to be collected and the impact assessed, preferably by combining the contract award (flows) data with barriers stock data so as to analyse the distortive effect of the measures. Hence, a global database needs to be created which combines both procurement barriers and flows.

Thirdly, there is an important mismatch between the size of public procurement recorded in national accounts and contract award data which needs to be given special attention in any discussion on the size and specificities of public procurement markets. This discussion is crucial as economic research using the one or the other type of data i.e. micro versus macro approach is likely to lead to different results.

Along these lines the goal of the paper is manifold. First, it wants to draw attention to the different data concepts and measurement of public procurement flows and to how these concepts differ from each other in terms of methodology and characteristics. Second, the paper reviews current international procurement literature by paying particular attention to novel literature dealing with quantification of impact stemming from liberalising government procurement in international trade agreements. Third, it presents insights from the most recent national-account data on the size and structure of government procurement in selected developed economies. Fourth, it analyses protectionist tendencies in international public procurement and finally it sketches a concept on the features of a potential global public procurement database.

The rest of the paper is organised as follows: Section 2 discusses data concepts and measurement of public procurement. Section 3 presents the characteristics of public procurement markets in developed economies. Section 4 analyses protectionist tendencies in government procurement whereas Section 5 reviews economic analyses in the field. Finally, Section 6 elaborates on the features of a global procurement database.

2. DATA CONCEPTS AND MEASUREMENT OF PUBLIC PROCUREMENT

In terms of public procurement data there are generally two types of data concepts which are used for analyses of government procurement markets. A discussion on these concepts is of crucial importance as, depending on the approach, analytical efforts aimed at describing and assessing these markets will generally lead to different outcomes. The two types of concepts are: (i) the macro-level approach based on the system of national accounts and (ii) the micro-level approach founded on contract award (transaction) data.

System of national accounts: a macro-level approach

The system of national accounts (SNA) is a comprehensive, consistent set of macroeconomic accounts prepared under the joint responsibility of the United Nations (UN), the International Monetary Fund (IMF), the EU, the OECD and the World Bank and unanimously approved by the Statistical Commission of the UN. The SNA is widely recognised as the international standard for compilation of national accounts statistics. In the SNA, public procurement of the general government is defined as the sum of the following.

❖ Intermediate consumption (IC) i.e. goods and services purchased by public authorities for their own use, such as information technology services or office furniture and stationery.

❖ Gross fixed capital formation (GFCF) i.e. infrastructure expenditures on building new roads or hospitals.

❖ Social transfers in kind (STK) via market producers i.e. medicines ultimately refunded by national social-security systems.

Public procurement can be broken down into central government, state government, local government and social-security funds (SSF), see also Section 3.3. However, the sum of these aggregates does not add up to the total public procurement market size as procurement spending of state-owned enterprises (SOEs), largely utility providers, are not included in the above measurement referred to as general government procurement. The reason for that lies in the fact that the SNA is an activity-based approach which does not distinguish between private and public ownership per se. For example the electricity, water, communication, and sewage industries are represented by their supply-and-use tables and subsequently symmetric input-output tables without any reference to the status of the ultimate owner of that industry. For this reason, it is not possible without further assessment (often based on further reaching assumptions) to estimate the share of the public sector in a given industry.

In other words, the size of the market as reported in the literature and depicted in the next section based on the SNA captures only partially the size of the total public procurement market. Depending on the market structure of the economy for some countries (such as China and Russia) procurement of SOEs could reach up to 85 % of the total market, whereas in the OECD and the EU this share is estimated to be much lower (OECD 2011). This also means that gaining insight about the role of SOEs in the public procurement market of a country is of great importance to be able to adequately assess its importance.

Contract award data: micro level

Another way to assess the size of public procurement market is through obtaining the amount of awarded government procurement contracts. These so-called contract award notices generally provide information (among other things) on the value of the contract, the type of procedure, the name and address of the contracting authority and of the awarded company. Furthermore, tender award notices specify (in greater or lesser detail) the exact nature of the goods, services or works purchased, the name and address of the contracting body and of the company which won the tender, the contract value and other information depending on the respective procurement forms. This type of data is called micro-data (at transaction level) as the data points describe a single transaction.

For the collection of this type of data e-procurement platforms are essential as usually, depending on the country, there are several hundred thousand contract awards per year.[4] Another important point related to this type of data is the need for the dataset to be in a user-friendly electronic format and not, for example, in pdf format as this greatly limits the use of the data. Obviously, it is indispensable for the data to be publically available in the first place in order for users to get access to it, irrespective of the format. Depending on the data availability, the quality of this type of data varies a lot across countries and government levels. Generally, in developed economies, contract award data is available for the central (federal) level procurement entities and much less so at the sub-central (state/provincial and local/municipal) level.

In the EU, the Tenders Electronic Daily (TED) database contains all contract and award notices relating to above-threshold procurement covered under the EU public procurement directive. The TED database covers procurement awards at all government levels in all EU Member States. The information which is provided in the award notice is comprehensive and covers details about the awarding authority, the awardee, the procedure, the common procurement vocabulary (CPV) code, the estimated and final value as well as the coverage or not of the type of contract under the GPA[5].

Macro- versus micro-level data: a comparison

The two data concepts described above, although both measuring public procurement, are very different in several respects. Hence, it is crucial to be aware of the following when

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[4] The revised GPA encourages the use of electronic means for covered procurement and creates incentives for parties deciding to make use of those by providing for more flexibility and easier fulfilment of obligations stemming from the agreement (Anderson and Müller 2017).

[5] It should be noted, however, that the GPA coverage is declared by contracting authorities which may not be in all cases fully aware of the coverage by a given country by the GPA.

comparing and deriving information about government procurement based on macro- versus micro-level public procurement data.

❖ **Total market versus above-threshold reporting.** The SNA measurement of procurement covers total public procurement of the general government whereas the contract award data is often published if a procurement award exceeds a certain threshold. TED is a good example as it is supposed to report only above-threshold procurement covered by the EU procurement directive. Different national reporting requirements apply for below threshold procurement in EU Member States [6].

❖ **Payment versus commitment appropriations.** SNA or macro-data of public procurement aggregates mirrors payment appropriations, which indicate the value of procurement purchases that has actually been spent in the indicated time period. Micro-award data on the other hand reflects commitment appropriations, which means that a given amount has been committed but not necessarily disbursed in a given time period, let us say a calendar year. There are generally large differences between payment and commitment appropriations for large infrastructure projects where the contract award involves significant commitment appropriations which are then disbursed over a long period of time.

❖ **Total versus tendered procurement**. The SNA macro-data reflects total procurement and quite often overestimates the size of public procurement due to the inclusion of some non-procurement related expenditure in the total aggregates (OECD 2011). Furthermore, procurement related to social transfers in kind via market producers has not necessarily been subject to a public tender. The micro award data on the other hand reflects only tendered procurement.

❖ **International dimension**: The macro-data on public procurement based on SNA does not provide per se information on the geographical origin of the industries winning tenders in a given country.[7] The contract award notices on the other side generally report the address of the winning bidder which allows for an identification of the country of origin. Further matching and processing of the microdata allows for the identification of the ultimate parent company and hereby the share of commercial-presence procurement (see also Section 6).

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[6] This has important consequences as, for example, the national threshold for publishing supplies and services contracts in the Netherlands and Germany is EUR 134 000 whereas there is no such a threshold at all in Portugal (Mendes and Fazekas 2017). In the latter all public procurement contracts need to be published.

[7] In order to gain some insights about the share of foreign firms awarded a public contract based on the SNA, a multi-region input-output table has been created as part of a project commissioned by DG Trade (GTAP 2016).

In addition, the government procurement macro data is also dependent on the quality of the national accounts and their revisions. For instance, in some countries national accounts have been significantly revised and thus the public procurement assessment may vary a lot from one year to the other.

Having in mind the differences between the micro- and macro-level public procurement data pointed out above, there should be no surprise that the procurement market size will differ substantially depending on the data concept underpinning the measurement method. To give an example, the total size of the public procurement market of Portugal as measured in the SNA data amounts to EUR 16.5 billion in 2016 or to EUR 13.2 billion when social transfers in kind via market producers are subtracted. [8] Looking at the micro level data collected by the digital-whistle-blower project (Digiwhist) this size of public procurement awards stands at EUR 3.7 billion.[9] The gap between the size of the market in Portugal amounts to EUR 12.8 billion or to EUR 9.5 billion without STK. This huge difference is not due to threshold reporting since, in the framework of the Digiwhist project, all procurement data below and above threshold was collected and the reporting threshold for Portugal is zero. Possible reasons for the gap are: missing contract values, mismatches in the definition of procurement and/or large differences between expenditures and commitments. However, it is not clear what explains the magnitude of the gap.

3. CHARACTERISTICS OF PUBLIC PROCUREMENT MARKETS

3.1 SIZE OF GOVERNMENT PROCUREMENT

One of the reasons why public procurement is so prominent in the public and academic debate is the market size of government procurement expenditures. Looking at the most recent Eurostat and OECD national accounts data, public procurement expenditures in respect to GDP account for 13.4 % in the EU, 16.2 % in Japan and 9.3 % in the United States (

The EU Member State with the largest share of government purchases of goods and services is the Netherlands, where procurement accounts for one fifth of Dutch GDP.

Figure 1). The EU Member State with the largest government purchases of goods and services is the Netherlands where those account for one fifth of Dutch GDP. The next four countries spending most on public procurement in respect to GDP are Finland, Sweden,

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[8]   Eurostat, downloaded on 28 February 2018.

[9]   Opentender.eu downloaded on 31 January 2018.

Germany and France representing a share of 17.7 %, 16.3 %, 15.5 % and 14.4 % respectively. Government procurement accounts for the least proportion of GDP in Portugal, Ireland and Cyprus which spend relatively little, namely 9 %, 7.4 % and 6.1 % respectively.

Figure 1: Size of public procurement markets in respect to GDP
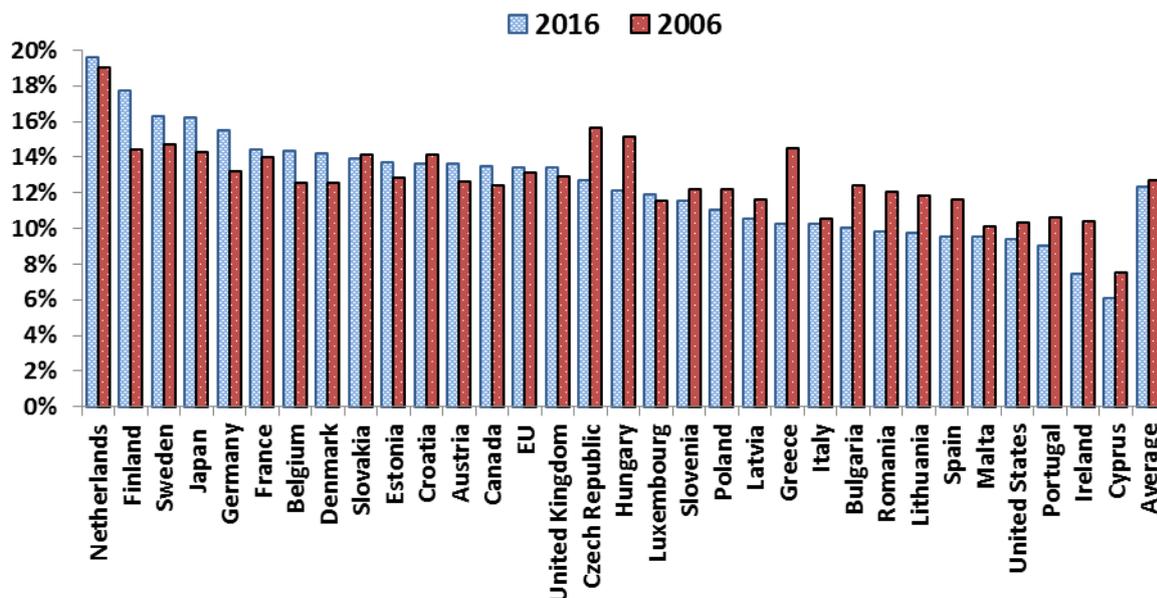
Source: Eurostat, OECD. Data for Canada, Japan and the United States refers to 2015.

In the 10-year period from 2006-2016 government procurement to GDP increased by 0.3 % percentage points from 13.1 % to 13.4 % in the EU (

Figure 1). Public-authority purchases augmented most in Finland, Germany and Sweden corresponding to a rise of 3.3, 2.3 and 1.6 percentage points, respectively. On the other side, there has been a significant decrease in public procurement expenditures in Greece, Ireland and Hungary where those declined by 4.3 and 3 percentage points in the latter two. The disproportionate decrease in Greece and Ireland is related to the drastic fiscal consolidation efforts of both countries, among other things, in the framework of financial adjustment and reform programmes.

Outside the EU, government procurement with respect to GDP increased in Japan (2 percentage points), less in Canada (1 percentage point) and declined in the United States (1 percentage point) in the period 2006-2015.

3.2 COMPOSITION OF GOVERNMENT PROCUREMENT

As discussed above, government procurement as measured in the SNA contains the three aggregates (i) intermediate consumption (IC), (ii) gross fixed-capital formation (GFCF) and (iii) social transfers in kind (STK). The distribution of these three categories is important as it

points to region-specific spending patterns of government procurement expenditures. In this respect **Figure 2** provides insights into the composition of public procurement in the EU, Canada, Japan and the United States.

The IC share of government procurement as a percentage of GDP is the highest in Malta, the United States, the United Kingdom, Denmark and Portugal where governments purchased goods and services for 67 %, 66 %, 64 % and 63 % in the latter two of the total respectively. On the other side, intermediate consumption purchases are the lowest in Japan, Belgium, the Netherlands, Luxembourg and Germany representing merely 24 %, 28 %, 30 %, 30 % and 31 % of total government procurement.

Also the role of GFCF expenditures as a percentage of GDP varies quite substantially, ranging from 41 % in Cyprus to 14 % in Germany. Infrastructure projects are also particularly important for Romania (37 %), the United States (34 %) and Estonia (34 %).

Figure 2: Composition of government procurement as a percentage of GDP
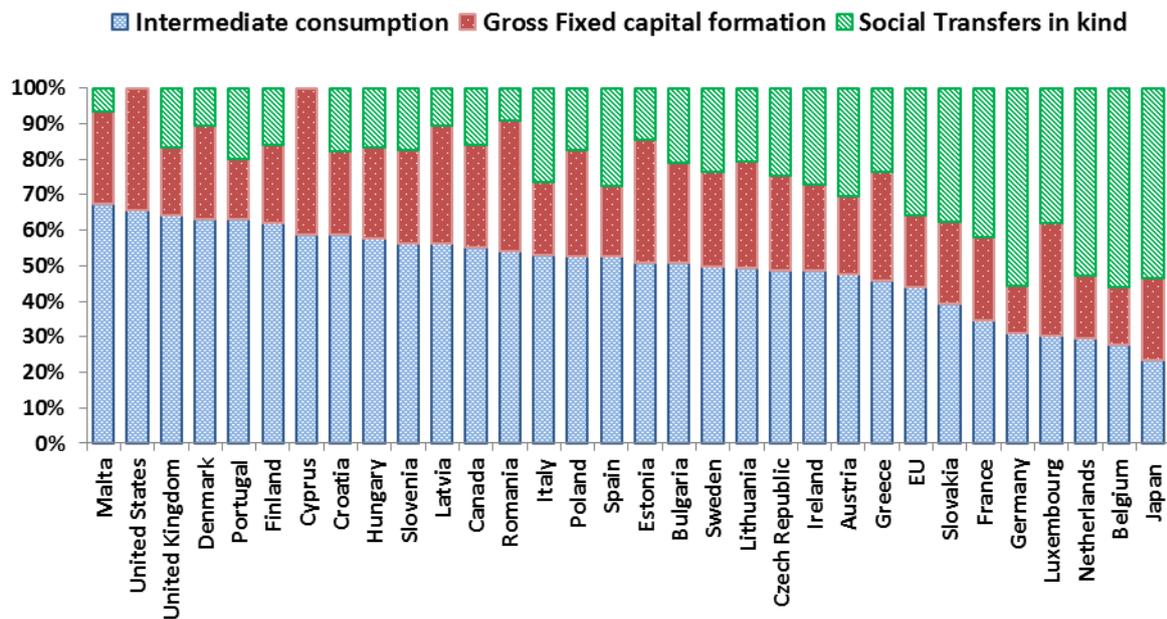
Source: Eurostat, OECD. Data for Canada, Japan and the United States refers to 2015.

This distribution of procurement purchases plays also an important role in terms of international negotiations on government procurement since goods and services reflected in the STK aggregate are not usually subject to international agreements. Hence, this will impact the relative size of the market which can be committed in bilateral and multilateral FTAs.

3.3 GOVERNMENT PROCUREMENT AT DIFFERENT LEVELS

The contribution of the central level in the total of public procurement varies from 96 % in Malta to 10 % in Belgium.

The distribution of government procurement expenditures is particularity important at the different levels of spending, which varies inter alia with respect to the political system of the country. Unitary-state expenditures are generally at two levels: central and sub-central (local). Federal states have three levels of spending namely central, state and local level. In addition, SNA statistics for the EU and the OECD provide information on public procurement related spending of social security funds (SSF). The latter largely records the expenditures of social transfers in kind via market producers. The distribution of public procurement in respect to different government levels in relation to GDP is provided in **Figure 3**. The data shows that there is a lot of diversity in respect to procurement spending of central versus state and local level as well as SSF. The contribution of the central level in the total of public procurement varies from 96 % in Malta to 10 % in Belgium.

Other relatively small countries such Cyprus, Ireland, Portugal and Latvia also spend a large percentage of their procurement at the central level with 90 %, 81 %, 70 % and 65 % respectively. The only large EU Member State with disproportionately high spending at the central level is the United Kingdom with a share of 63 %.

Figure 3: Public procurement at different government levels as a percentage of GDP
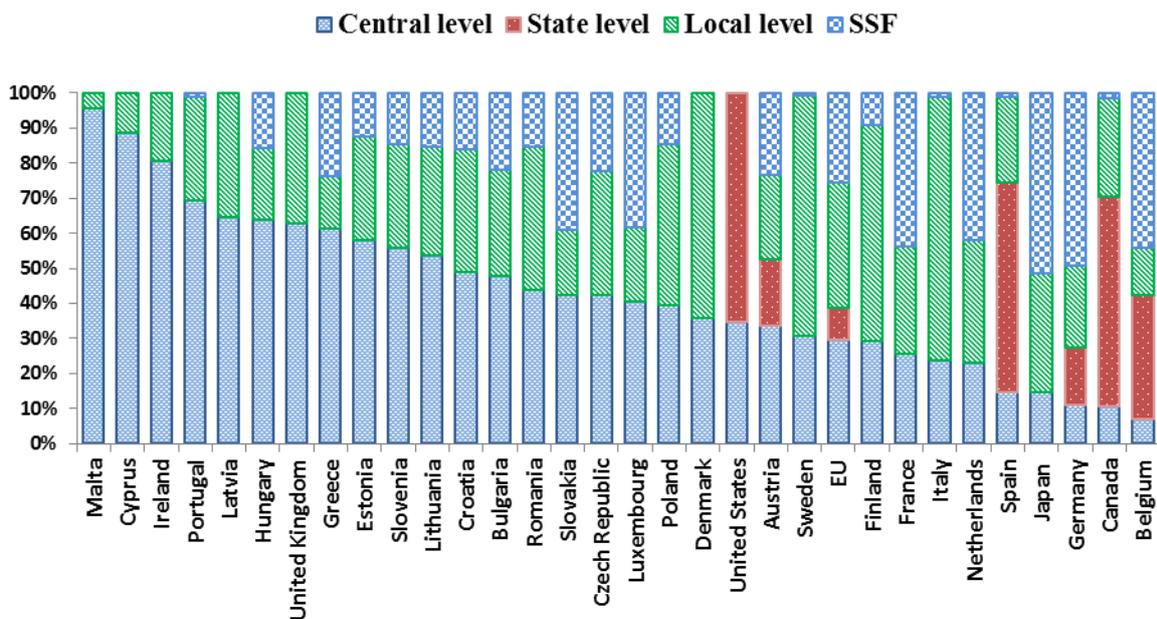
Source: Eurostat, OECD. Data for Canada, Japan and the United States refers to 2015. OECD national accounts of the United States merge local with state procurement in one aggregate.

On the other side of the scale, Belgium, Spain, Canada and Germany spend the least at the central level with merely 10 %, 11%, 11% and 14% of total expenditures respectively. **Figure 3** shows also clearly that federal states spend significantly more at the sub-central level compared to unitary states. In that respect the sub-central level spending in Canada stands at 88 %, in the United States at 65 % and in Belgium at 50 %. Unitary states with higher spending at the local levels on the other hand also exist and these are Denmark, Sweden and Italy.

4. PROTECTIONIST TENDENCIES IN INTERNATIONAL PUBLIC PROCUREMENT

4.1 TRENDS IN DISCRIMINATORY PROCUREMENT MEASURES

Information on trade measures in the field of international public procurement can be obtained from the GTA database which tracks newly introduced *de jure* interventions around the world, including in the field of public procurement [10]. Data collection in the framework of the GTA project comprises a legal assessment and assembly of various barriers put in place since the outbreak of the financial crisis (November 2008) until today. In addition to policy instruments affecting international public procurement, the database records various types of interventions such as import tariffs, anti-dumping, trade finances and grants, export taxes and subsidies. In total it lists around 60 different types of trade-related measures.

There has been a steady increase in the number of discriminatory procurement measures over the years.

The database distinguishes three types of instruments according to their trade (distortive) impact: (i) almost certainly discriminatory measures (red), (ii) measures likely to discriminate (amber) and (iii) non-discriminatory measures (green). With respect to the total number of measures, public procurement makes it to the top 5 most frequently used trade instruments with 533 newly introduced harmful interventions accounting for 6.4 % of all measures.

Another important point relates to the development of these newly introduced measures over time. In this respect **Figure 4** depicts the stock of discriminatory interventions in the 2009-2017 period. There has been a steady increase in the total number of newly introduced discriminatory instruments over the years. The average number of implemented measures per year amounts to 56. Most of these instruments were introduced in 2014 and 2012 amounting to 69 and 64 respectively.

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[10]   While the definition of 'harmful' trade measures in particular in respect to anti-dumping instruments by the GTA is subject to discussion this paper uses exclusively data on public procurement which is considered representative by the author.

Figure 4 also shows the spread of discriminatory government procurement instruments in respect to their level of implementation. The majority of the measures have been implemented at national level and there has been a constant increase in the stock of these interventions. Their number was the highest in 2009, amounting to 70 newly introduced instruments. However, in 2014 the amount of red measures was also higher than the average of 50, amounting to 63.

The stock of newly introduced measures favouring local suppliers at subnational level has also been growing steadily in the 2009-2017 period, however less strongly. The average number of newly introduced measures amounts to seven however in 2011 and 2012, 16 and 10 measures were adopted at subnational level respectively.

Figure 4: Discriminatory public procurement measures by level of implementation
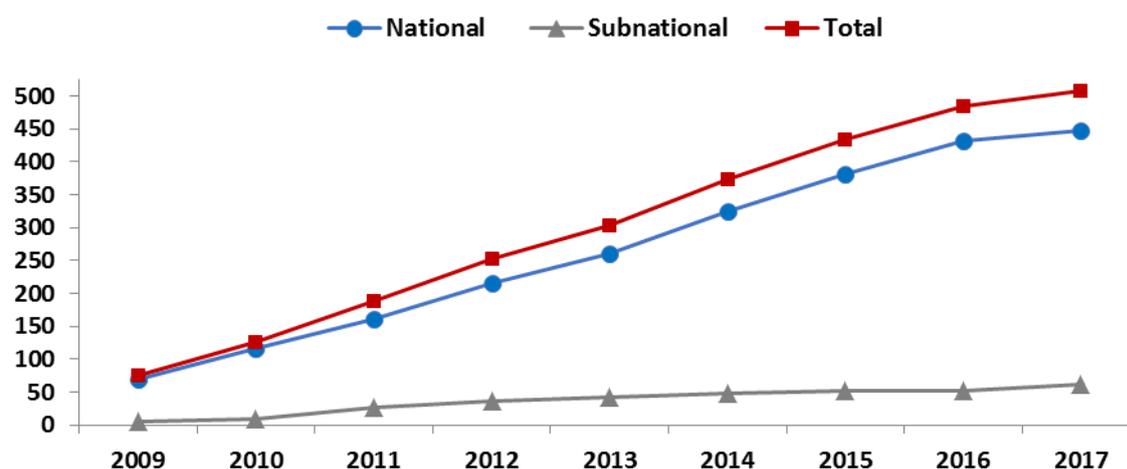
Source: GTA database (2017). Total reflects the sum of measures at national and subnational level.

The number and type of discriminatory measures covered by the GTA database are presented

Although localisation requirements are the most frequently used harmful instrument, 74 % of these measures are implemented by one OECD member alone.

in **Figure 5** which shows that there are generally three types of government procurement intervention contained in the GTA database: (i) localisation requirements, (ii) price preference margins and (iii) market access related measures. There are only three additional measures recorded in the GTA database as not elsewhere specified (nes).

Public procurement localisation instruments account for the vast majority of discriminatory interventions and represent 422 measures, 81 % of the total number. Price-preference margins are the most frequently used instrument for direct discrimination counting 73 measures and accounting for a share of 14 %. Government procurement market access restrictions are the second most frequently used instrument for direct discrimination against foreign bidders with 20 measures and a share of 4 % in the total.

A detailed region-specific analysis of the data reveals that although localisation requirements are the most frequently used harmful instrument, 74 % of these measures are implemented by one country namely the United States. Localisation interventions such as local-content requirements (LCR) lead to discrimination against foreign bidders and distort equilibrium prices and quantities in an indirect way through the value-added channel.

Nonetheless, it should be mentioned that generally LCR apply to domestic and foreign bidders likewise so that it is not always clear to what extent foreign companies are worse off compared to national companies. However, first quantifications by Dixon et al. (2017) of the impact of scrapping LCR legislation in the United States show that the impact of their elimination would be substantial (see also Section 5.3) Price preference policies and market access restrictions on the other hand are directly discriminating against foreign companies and their impact on the economy can be determined by the size of the price (dis)advantage for foreign/local firms.
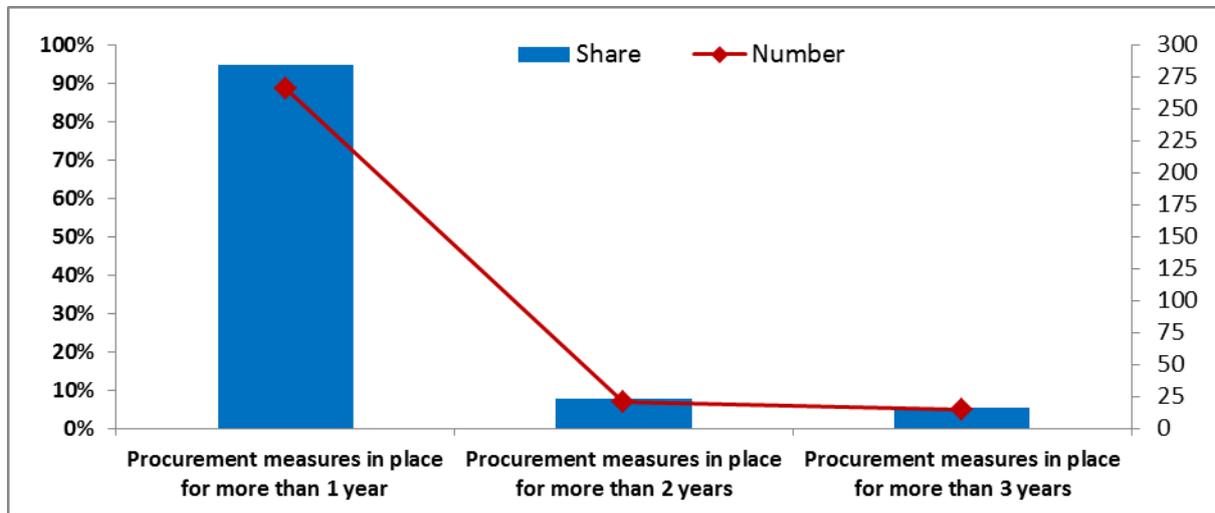
Figure 5: Discriminatory public procurement measures by type, 2008-2017
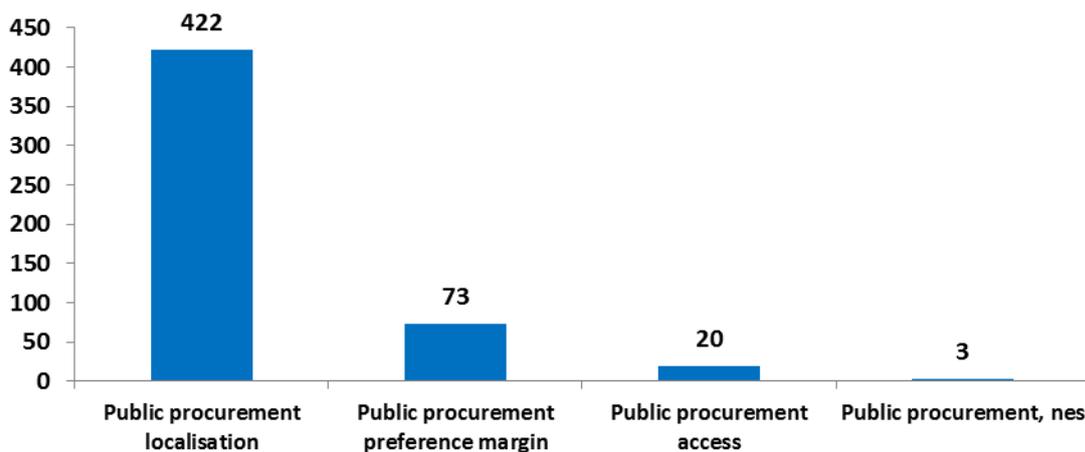
Source: GTA database (2017).

Another interesting question with respect to discriminatory barriers in international public procurement markets it the average duration of the measures. In terms of the magnitude of the distortive impact of trade instruments the essential matter is whether government-procurement measures are imposed for a shorter or longer period. The longer the period during which a distortive measure is put in place, the more severe and negative its impact on the economy and the longer the adjustment period for the economy to return to its optimal-efficiency path.

Figure 6: Average duration of government procurement measures

Source: GTA database (2017).

The GTA database allows for an analysis of this question as it includes in its records the implementation and removal dates of the discriminatory public procurement measure for newly introduced measures since the creation of the database in November 2008. Analysing this data reveals that 95 % of the measures corresponding to 266 measures were put in place for more than 1 year but less than 2 years which of course means that only 5 % of the measures were implemented for a period of 1 year or less than 1 year (**Figure 6**).

In relative terms public procurement measures are of longer duration compared to tariff interventions.

Furthermore, the share of procurement measures in place for more than 2 years stands at 8 % or 21 measures which means that the vast majority of the intervention were put in place for more than 1 year but less than 2 years. Finally, only 5 % of the discriminatory interventions lasted more than 3 years.

This analysis shows that there are large differences in the duration of trade-distortive measures. A recent analysis by Kutlina-Dimitrova and Lakatos (2017) shows that the majority of tariff increases (almost 60 %) were put in place for a period of 1 year or less than 1 year. This indicates that in relative terms public procurement measures are of longer duration compared to tariff interventions.

4.2 MOST PROTECTIONIST AND AFFECTED COUNTRIES IN INTERNATIONAL PUBLIC PROCUREMENT BASED ON GTA DATA

The GTA database provides information on the implementing jurisdiction which enables identification of the countries which have introduced the most harmful measures (count) in international public procurement. [11] For this analysis only discriminatory (red) measures were taken into account and those implemented at subnational level were excluded. Analysing the data at country level reveals that the United States is the country which has introduced the largest amount of measures in international public procurement based on the data from the GTA (**Figure 7**).

Figure 7: Top 10 countries with most discriminatory measures (count) put in place
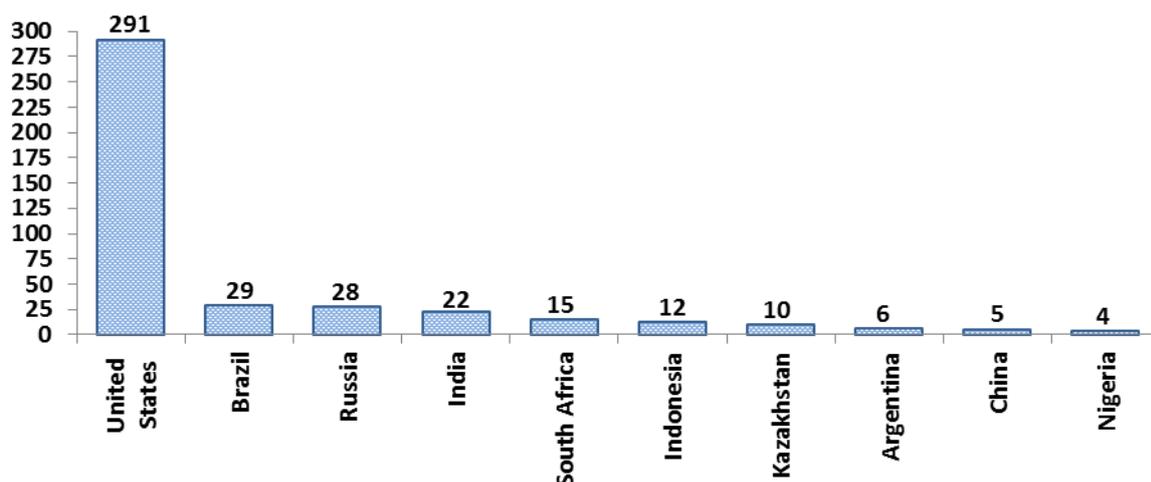
Source: GTA database (2017).

The EU was subject to 3 371 discriminatory measures, Germany, France, Italy and the UK are the most affected EU countries.

Out of the 422 discriminatory measures listed in the GTA, the United States has implemented 291 discriminatory instruments accounting for 69 % of all measures. The gap between the United States and Brazil which is the second most protectionist country is very large as Brazil has put in place 29 red measures corresponding to a share of 7 % in the total. Russia ranks third with 28 discriminatory instruments and a similar share of all measures.

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[11]   It should be noted that this indicator is only one of many possible proxies for measuring protection in the field of public procurement, as it records only the number of harmful *de jure* measures and as such it does not allow for an in-depth assessment of the openness of a country in government procurement. For example, China's procurement market is large (amounting to USD 300 billion in 2016) but it has not been committed in international trade agreements or the GPA. This market is to a large extent inaccessible for foreign companies (European Parliament 2017).

It is important to also gain insight into the countries affected by these discriminatory measures in international public procurement. In this respect **Figure 8** lists the top 20 most impacted regions by interventions in government procurement markets. The most frequently affected country is Germany which was subject of discriminatory measures in 402 cases. The second most impacted is China which was affected 397 times. The third, fourth and fifth most affected countries are France, Italy and the United Kingdom which were subject to harmful measures in 387, 387 and 385 cases respectively. In general, if the count of interventions impacting EU Member States in the top 20 regions are summed up, the EU would be subject to 3 371 discriminatory measures: nearly half of the 20 most frequently affected in the field of international procurement are EU Member States.

Figure 8: **Top 20 most affected by discriminatory measures in public procurement, count of measures**
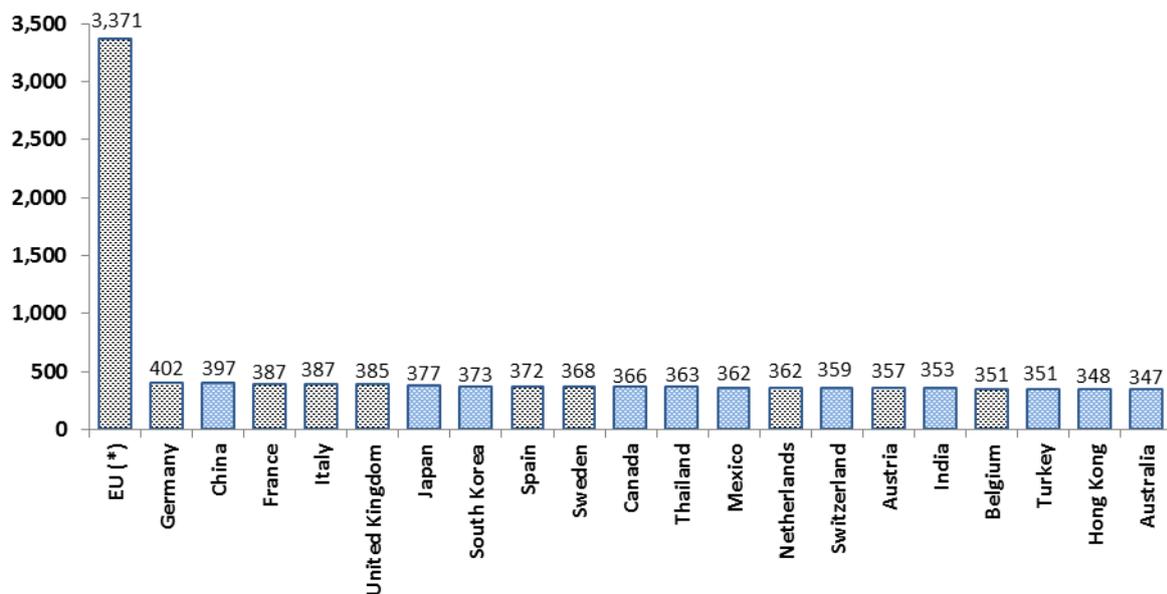
Source: GTA database (2017). (*) The aggregate EU is built up by summing up the measures affecting EU Member States in the top 20 most affected countries.

5. REVIEW OF ECONOMIC ANALYSIS OF INTERNATIONAL GOVERNMENT PROCUREMENT MARKETS

The theoretical literature on the impact of discrimination against foreign bidders in public procurement markets has gradually evolved after the seminal work of Baldwin (1970) and its extension by Baldwin and Richardson (1972) which showed that discriminatory procurement will only impact on output and prices if government demand is larger than domestic supply. This result was driven by the assumption of perfectly competitive markets. Subsequent contributions to this literature by Lowinger (1976), Miyagiwa (1991) and Trionfetti (2001), moving away from the assumption of perfect competition, provided evidence that local-

preference policies lead to changes in equilibrium prices and quantities and distort trade and international specialisation under various cases of imperfectly competitive markets.

Evenett and Hoekman (2005) based their work on the theoretical foundations of Baldwin (1970) so as to assess implications for firm entry. The authors demonstrate that if protectionism in public procurement restricts firm entry, the long-term impact of domestic preference policy on national welfare will depend on the presence of local barriers to entry (natural and policy induced), in both cases analysed: price preferences and exclusion of foreign companies. If there are no such barriers, local preferences cause an increase in domestic output. Overall, the impact of 'home bias' on domestic welfare and prices will depend on national competition policy.

The data-driven research in respect to impact stemming from domestic preferences has also been developed gradually. In general, research questions deal with the following three topics: presence of home bias, (ii) determinants of international public procurement and (iii) attempts to use economic modelling to assess the impact of liberalising public procurement markets.

5.1 PRESENCE OF HOME BIAS

In the last decades there has been a variety of empirical work examining whether there is evidence for home biased procurement. The empirical work by Trionfetti (2000), Brülhart and Trionfetti (2001) and (2004), the European Commission (1997), Shingal (2011) and more recently by Herz and Varela-Irimia (2017) and Rickard and Kono (2014), provide evidence for the presence of local preferences in government procurement markets. Some of these papers compare the import penetration of governments to that of the private sector. If a persistent difference between these two shares is identified, it is assumed that there is a home bias (Trionfetti (2000), Brülhart and Trionfetti (2001) and (2004), European Commission (1997)). For example, Trionfetti (2000) compares the share of imports of the government sector with the one of the private economy in selected tradable sectors in some OECD countries. The author's main finding is that the import penetration of the public sector is systematically lower than the private one and that this is a clear evidence of local preferences being put in place.

The econometric analysis by Rickard and Kono (2014) examines the presence of home bias in public procurement in a gravity model of trade. The regression results reveal that the coefficient of government procurement expenditures is significantly and negatively related to the value of bilateral import flows. In the same vein, Crozet and Trionfetti (2002) show that local preferences have a negative impact on trade flows in a sample of countries. Looking at the specificities of government procurement of services, Shingal (2011) analyses public purchases sourced from abroad by Japanese- and Swiss- government authorities and finds significant evidence for prevalence of local preferences in respect to the procurement of services.

5.2 DETERMINANTS OF INTERNATIONAL PUBLIC PROCUREMENT

Another branch of econometric research by Kutlina-Dimitrova and Lakatos (2016), Shingal (2015), Ramboll/HTW Huhr (2011) and PwC/London Economics and Ecorys (2011) analyses the determinants of cross-border public procurement. This type of literature examines econometrically the drivers of the governments' decision-making process on procuring from domestic versus foreign suppliers. The recent analysis from Kutlina-Dimitrova and Lakatos (2016) provides evidence that competition-restraining practices such as the scope of public enterprises, barriers to FDIs and regulatory protection of incumbents have a negative impact on the propensity of governments to source goods and services from abroad. Moreover, the value of the contracts awarded, economic development (GDP per capita), trade openness, centralisation of procurement, procurement procedure, and the number of bids, are significant predictors of the likelihood of a cross-border win.

The analysis by Shingal (2015) shows that public authorities would tend to award contracts to foreign companies if domestic firms are less productive. Previous work by Ramboll/HTW Huhr (2011) demonstrates that euro-area membership and sharing a common language are factors found to significantly impact on the probability of a cross-border award. Finally, PwC, London Economics and Ecorys (2011) assess the probability of a foreign award at sectoral level and report the highest incidence for foreign companies winning a bid for the 'machinery and equipment' and 'manufacturing goods' sectors.

5.3 ECONOMIC MODELLING ON THE IMPACT STEMMING FROM LIBERALISING INTERNATIONAL PROCUREMENT MARKETS

The above-mentioned analyses are indispensable for answering the question about the presence or absence of home bias or the drivers of international public procurement however they cannot provide insights into the impact stemming from the elimination of domestic preferences. This type of analysis is of crucial importance in bilateral and multilateral contexts as policymakers and stakeholders would like to know how trade negotiations in the field of international public procurement impact economic welfare.

However, the economic reality shows that a quantitative (economic modelling) assessment on the effects of liberalisation in international procurement markets consists of only a few attempts which are reviewed in the following. The CEPR (2013) report on the economic impact of the Transatlantic Trade and Investment Partnership (TTIP) tries to assess the impact of public procurement liberalisation in a general equilibrium modelling set-up. In this assessment, due to the limitations of the data and modelling tools available at the time, public procurement liberalisation was modelled as a cut in goods and services non-tariff barriers (NTBs) across industries. This methodological solution involved simplifying assumptions as the database underlying the modelling simulations was not a multi-region input-output

(MRIO) table which is a shortcoming as public procurement liberalisation was not modelled per agent, i.e. at the government level.

A recent paper by Kutlina-Dimitrova (2017) uses the newly created public procurement database and modelling extension of the Global Trade Analysis Project (GTAP) model to assess the impact of extending the scope and coverage of the GPA agreement. The database underlying the economic modelling is an MRIO and the modelling reflects the price-preferences mechanism of direct discrimination in international public procurement which, as depicted in Section 4.1, plays a prominent role in various countries. The size of the shock in this modelling exercise is based on insights from the empirical literature, which suggest that the difference between private- and public-sector import shares matters. The modelling results show that depending on the scenario, the GDP of GPA parties is estimated to increase by USD 4-5 billion and the economic welfare by USD 8-10 billion. This suggests that further expansion of the scope and coverage of the GPA can bring sizeable economic benefits.

A third approach deals with modelling the indirect value-added chains impact of local preferences. As shown in Section 4.1, localisation requirements such as local content requirements are the most frequently used measure for discrimination in international public procurement markets, although this ranking is largely driven by one country (the United States accounts for 75 % of these measures). In a first attempt Dixon et al. (2017) quantify the impact

Depending on assumptions, the GDP of GPA parties is estimated to increase by USD 4-5 billion and the economic welfare by USD 8-10 billion.

of scrapping these Buy America(n) Provisions on the United States economy. The authors use a model tailor-made for the United States economy — the USAGE model — and assess the impact of local content requirements (LCR) which operate through the indirect channel i.e. by affecting the input choice decisions of suppliers to the United States government. The overall economic effect induced by these local-content measures is calculated by taking two effects into account.

- Substitution of domestic production with imports. Scrapping buy-America(n) provisions would change the domestic versus imported input mix of industries supplying the United States government so that the import propensity of these industries gets as close as possible to that of the industries supplying the private sector.

- Efficiency gains. Eliminating Buy America(n) would lead to productivity gains because these provisions prevent companies from selecting the most efficient mix between imported and domestic inputs.

Implementing the abovementioned scenario would lead to a boost in production and in the US GDP by 0.12 %. On the demand side, private consumption is simulated to increase by 0.19 %, as the efficiency savings in the model are passed through to the consumers via tax

cuts. The US real exports increase by 1.14 % and real imports by 0.95 %. The number of jobs created through the simulated elimination of indirect buy-America(n) provisions amounts to over 300,000. In terms of state- and congressional- district level results, 50 out of 51 states and 430 out of 436 congressional districts would gain jobs.

6. FEATURES OF A GLOBAL PUBLIC PROCUREMENT DATABASE

The above mentioned attempts to quantify the impact stemming from liberalising international procurement markets, although valuable, could be further improved if more data became available. Just for the sake of giving an example, in both analyses from Dixon et al. (2017) and Kutlina-Dimitrova (2017) the authors relied on assumptions with respect to the magnitude of the shocks input to the model as there is no empirical data on the impact of home bias in terms of trade cost equivalents at MFN let alone at bilateral level.

More specifically, in order to assess the removal of barriers one needs to know what the distortive impact of these barriers is (i.e. by how much a barrier is increasing the prices of affected goods and services purchased by public authorities). This applies to direct discriminatory measures such as price preferences and market-access restrictions as well as to indirect ones such as LCRs. Moreover, there are important barriers which are not of explicit but of implicit nature. In practice, these measures can, nonetheless, significantly limit and even prohibit the access to the bidding process of foreign suppliers. The recently developed OECD taxonomy of public procurement measures takes account of this and features explicit and implicit categories of government procurement measures (OECD 2017). Examples of the latter type are measures related to the conduct of procurement or qualification and evaluation criteria as well as the functioning of the review system and transparency requirements[12].

Furthermore, there is no complete database which takes account of 'actual' tendered procurement and covers all three modalities of international procurement. These are, as pointed out by Cernat and Kutlina-Dimitrova (2016), the following:

❖ **Direct cross-border international procurement**. Foreign companies participate in public procurement tenders directly from abroad (mode 1).

❖ **Commercial presence procurement.** Domestic subsidiaries of foreign companies may be awarded locally public contracts (mode 2).

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[12] The making use of implicit measures in government procurement varies widely across countries. In Columbia, for example, foreign companies have to establish Columbian subsidiaries to fulfil qualification criteria in the bidding process. In India the prior-experience requirement obliges bidders to have performed work for listed national entities (OECD 2017).

❖ 'Value-added' indirect international procurement. Foreign companies participate indirectly along the value chain as subcontractors in a tender which can be won by a foreign or a domestic company (mode 3).

In general the contract award data mentioned in Section 2 provides information only on direct cross-border procurement (mode 1) as the electronic forms often include information on the address of the company winning the bid and the address of the contracting authority. Information on commercial presence procurement (mode 2) and on value-added indirect procurement (mode 3) is usually not available, neither in contract awards data, nor in national-accounts data. Insights about value-added procurement can be partially gained from value-added MRIO tables which offer a breakdown of the sourcing of imports per economic agent. Finally, information on the ultimate owner of a company which has been awarded a procurement contract is greatly limited and usually needs to be obtained by matching the name of the company with firmographic data.

Given the importance of international public procurement there is a need for building up a global public procurement database. Such a database should potentially cover all procurement modalities since some of the public procurement barriers against foreign suppliers distort the way companies choose the optimal domestic/imported product and services mix (local-content requirement) or the freedom of establishment and hence impact the value of foreign commercial presence procurement. Furthermore, a global public procurement database should include (to the extent possible) purchases of SOEs as these account for a large or even the largest share of procurement in several countries.

An important element in the process of creating a global database is data comparability and harmonisation. Obviously the way procurement data is collected differs widely from country to country. In some regions even basic information on the value of the contract award is missing let alone information on the type of procedure or number of bidders. Hence, there is a call for using to the extent possible harmonised data standards. In the EU for example, the e-procurement standard forms harmonise public procurement above-threshold data in all EU Member States for procurement covered by the revised EU directive.

Given the importance of international public procurement there is a need for building up a global public procurement database.

However, it should be mentioned that there is a long way to go before a complete public procurement database is created at a regional let alone at a global level. A possible step along the way is the implementation of open contracting data standards (OCDS) developed originally by the World Bank and already utilised in several countries which ensure structured procurement data submission and collection while covering the whole budgetary cycle of the government purchases starting from the budget planning up to the payment after a procurement contract has been completed.

In terms of implementing this global public procurement database, there have been some important attempts in that direction. The digital whistleblower project (DIGIWHIST), funded under the EU Horizon 2020, collects and assesses micro-level public procurement transaction data and matches this information with awarded firms' finance and ownership structure. [13] The project has led to the successful collection of total (below- and above-threshold) procurement data for all EU Member States and an additional seven countries. This is so far the largest attempt with respect to country and micro procurement-data coverage to the knowledge of the author. The fact that there is information on companies' ownership means that the data collected also covers commercial-presence procurement.

Another important attempt in terms of global government-procurement data collection is the recently launched Public Procurement Initiative by DG TRADE under the Partnership Instrument. This EU-funded project develops a methodology for data collection and assessment of public procurement barriers and collects comprehensive information covering micro- and macro-level procurement flows data on seven beneficiary countries including all three procurement modalities. [14]

7. CONCLUSIONS AND POLICY IMPLICATIONS

International government procurement is an increasingly important area of bilateral and multilateral negotiations. The size of this market and the fact that so far international commitments have been of limited scope are important drivers of this development. However, public procurement has traditionally been used as a means to protect domestic industries and hence discriminate against foreign suppliers. The ample economic literature reviewed in the paper points to the negative impact of buy-local preferences and the prevalence of home bias in various countries. Moreover, the protectionist trend observed in recent years is not on a declining path. On the contrary, as analysed in this paper, there has been a constant rise in the stock of harmful public procurement measures over the years 2009-2017 peaking at about 500 interventions by end 2017.

Furthermore, the country-level discussion in the paper showed that there are countries such as the United States, Brazil and Russia which have more often made use of harmful interventions in public procurement and others such as China that may keep a closed regime. On the other side, the EU is by far the jurisdiction most frequently affected by such measures. The review of the size and patterns of government procurement in selected developed economies showed that public procurement remains of crucial economic importance for the domestic economy: in the vast majority of the countries analysed government procurement

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[13]   For more information see the dedicated homepage of Digiwhist available at http://digiwhist.eu/
[14]   See also the service-contract notice of the public procurement initiative available at http://ec.europa.eu/dgs/fpi/announcements/tenders/20150123_1_en.htm

accounts for a double-digit share of domestic GDP. The paper drew attention to two data concepts i.e. the macro and micro level underlying the measurement of the size and patterns of public procurement and their importance for the ultimate conclusions drawn on the basis of these different methodologies. Currently, there is in many countries a large gap between the sizes of the public procurement market depending on the methodological approach used.

Finally, the paper discusses the importance of creating a global public procurement database and sketches some essential features such a database should exhibit. It draws attention to the fact that direct cross-border procurement is only one of the modalities of international procurement. More important ways for foreign companies to participate in the bidding process in terms of value is through commercial presence as well as subcontracting and wholesaling. Data on the size and patterns of these modalities should form part of a global procurement database along with a detailed assessment of the barriers applying to these types of foreign procurement. However, the paper also makes it clear that there is a long way to go before a comprehensive public procurement database is created. The success of these efforts depends inter alia on the willingness of countries to adopt and implement the data collection efforts currently underway.

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