



CHALLENGE 2:
‘TRANSPARENCY IN PUBLIC PROCUREMENT’

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Introduction

Description Of Selected Use Case

Public procurement refers to the process by which public authorities, such as government departments or local authorities, purchase work, goods or services from companies.

The actual process starts with the evaluation of needs through awards with contracts and finally the payment. Those contracts bring together the public and private sector with the most transparent way which is one of the main reasons of establishing this process. The requirement must always be published to the market for everyone to see and evaluate by any means (press, internet portals etc).

For instance, in Greece most of the contracts are published in Internet Portals called ΔΙΑΥΓΕΙΑ or KIMDIS and the whole process is accessible for everyone.

Importance Of Use Case

Overall, a country's statistics for public procurements must be characterized by 12 principles in order for the country's government to be considered trustworthy. Those are:

1. **Transparency**
Everything must be available for everyone, except for confidential information (in respect with GDPR)
2. **Integrity**
It refers to reliability for interested bidders.
3. **Access**
Opportunities for all kind of competitors
4. **Balance**
National interest must be prioritized.
5. **Participation**
Democratic participation for bidders
6. **Efficiency**
Satisfy both Governments' and citizens' needs.
7. **E-procurement**
Embrace the new era of digital technology.
8. **Capacity**
Must always remember that the ultimate goal is value for money contracts
9. **Evaluation**
It enhances the effectiveness of awards.
10. **Risk Management**
Identify the risks that comes with public procurement
11. **Accountability**
The process must obtain sanctions and regulations that apply for both parts/

12. Integration

Support public work but also public-private partnerships.

For the assignment purpose we will focus only in the importance of transparency.

Transparency in the above process is particularly important, due to the fact that:

- Over 250,000 public authorities in the EU involved
- Public procurement accounts for 14% of the EU's GDP (around €2 trillion per year)

It is reasonable that with this amount of money spending, Governments must be careful enough and ensure that public's interest comes first. According to OECD's statistics, 'corruption drains between 20 per cent and 25 per cent of national public procurement budgets'.

Now let's focus on the big question. How to generally evaluate a country's effectiveness through public spending? How to access this kind of information and more specifically how to present it in a way that both gives us the right statistical numbers to compare EU's countries but also to lead us to understating the needs of each country and finally compare the outcome with the general state of the country.

Problem Target

The project goals have been split into two main fields. The first one was to perform a market analysis, spotting economic and market trends. The second goal, was to create an application (scoreboard/index) sorting European countries based on the transparency followed in the process of contract awards.

Dataset Description

The dataset should be clearly documented (description of attributes, dataset statistics) to indicate good data quality.

TED Contract Award Notices 2017 – 2021

A subset of Tenders Electronic Daily (TED) data covering public procurement for the European Economic Area, Switzerland, and the Republic of North Macedonia from 2006-01-01 to 2021-12-31 in comma separated value (CSV) format. This data includes the most important fields from the contract notice and contract award notice standard forms, such as who bought what from whom, for how much, and which procedure and award criteria were used.

Generally, the data consists of tenders above the procurement thresholds. However, publishing below threshold tenders in TED is considered good practice, and thus a non-negligible number of below threshold tenders is present as well.

The data has multiple levels which are represented on one line of data. For this reason, some of the information is repeated. There are three levels in procurement notice data: • contract award notices (CANs), which are filled in standard forms 3, 6 or 18. The column "ID_notice_can" is a unique identifier (ID) of a CAN. • contract awards (CAs), which is the fifth section of a CAN standard form. Each CAN has one or more CAs. ID_award_ca is an ID of a CA. • contract notices (CNs), which is a filled in standard forms 2, 5 or 17. ID_notice_cn is an ID of a CN. These levels serve different purposes. To give an example, a CN informs on a future purchase ("The ministry would like to buy furniture"); a CAN generally informs on the result of the procurement ("The ministry has bought furniture"); and the three individual CAs, nested within the CAN, inform about the specific detail ("The ministry has bought a chair from company A"; "The ministry has bought a table from company B"; "The ministry has bought a cupboard from company B").

Corruption Perceptions Index

The Corruption Perceptions Index (CPI) ranks 180 countries and territories around the world by their perceived levels of public sector corruption. The results are given on a scale of 0 (highly corrupt) to 100 (very clean).

Standard and Poor's (S&P) Sovereign Risk Indicators

Standard and Poor's (S&P) Sovereign Risk Indicators contain comparative statistics for rated sovereigns. The ratings take into consideration economic measures, monetary data, fiscal and debt indicators, balance-of-payments information, and external balance sheet data.

Country / Territory	Corruption Perceptions Index	S&P Sovereign Risk Indicator
Albania	35	B+
Armenia	49	B+
Austria	74	AA+
Azerbaijan	30	BB+
Belarus	41	SD
Belgium	73	AA
Bosnia and Herzegovina	35	B
Bulgaria	42	BBB
Croatia	47	BBB+
Cyprus	53	BBB
Denmark	88	AAA
Estonia	74	AA-
Finland	88	AA+
France	71	AA
Georgia	55	BB
Germany	80	AAA
Greece	49	BB+
Hungary	43	BBB
Iceland	74	A
Ireland	74	AA-
Italy	56	BBB
Kazakhstan	37	BBB-
Latvia	59	A+
Lithuania	61	A+
Luxembourg	81	AAA
Malta	54	A-
Montenegro	46	B
Netherlands	82	AAA
North Macedonia	39	BB-
Norway	85	AAA
Poland	56	A-
Portugal	62	BBB+
Romania	45	BBB-
Serbia	38	BB+
Slovakia	52	A+
Slovenia	57	AA-
Spain	61	A

Sweden	85	AAA
Switzerland	84	AAA
Tajikistan	25	B-
Turkey	38	B
Ukraine	32	CCC+
United Kingdom	78	AA
Uzbekistan	28	BB-

Workflow Description

We begin with importing the raw dataset “TED Contract Award Notices 2017 – 2021”. The first thing we wanted to do, was to clean our data by removing N/A values and change the data type from ‘number’ to ‘string’. In the main dataset, we noticed that the ‘Industry’ column was being presented by certain codes. Our next step was to import an external dataset which was actually explaining what the code of the main dataset was referring to. The values ‘91’ and ‘93’ were missing, so we manually added them to the latter table and then merged it with the data-cleaned TED dataset.

Market Analysis Field

For the first part of the project, which has been to prepare a market analysis for the European area, we used techniques including filtering and various designs including tables and charts to visualize the data.

Transparency Application Field

The entire idea about the Transparency Application was to use 3 pivots, which would help us numericize the transparency per country.

The first pivot is about Single Bidders. Here, we are trying to browse our data in order to find how many awards were given to 1 single enterprise by country. Focusing in the biggest amount of awards given to an enterprise, we extract the actual percentage of the total awards given to this specific country. Then we reverse this percentage so that we can have an idea about the ‘amount’ of transparency of each country, according to the first pivot.

The second pivot is about percentage of no calls for bids, which filtered the data and extracted only the award without prior publication of a contract notice (AWP) and negotiated without a call for competition (NOC/NOP).

The third pivot is about awards given to SME Contractors. We are interested in seeing how many awards were given to actual small-medium sized enterprises. Once again, we take this number and comparing it to the total amount of awards given, we extract another percentage. A big amount of Percent of SME Contractors is a good indication for the country’s transparency.

After finishing with these 3 pivots, we merge them together in our table. The next step is to find an average score per country, using all the information that we manage to extract in the last 3 steps. We use our 3 pivot results to find the average ‘Score’ for the transparency of each country.

Then we import 2 external excel files. First one is the Corruption Perceptions Index and then the Standard and Poor’s (S&P) Sovereign Risk Indicators. The main idea was to compare our results for transparency, to the official ratings.

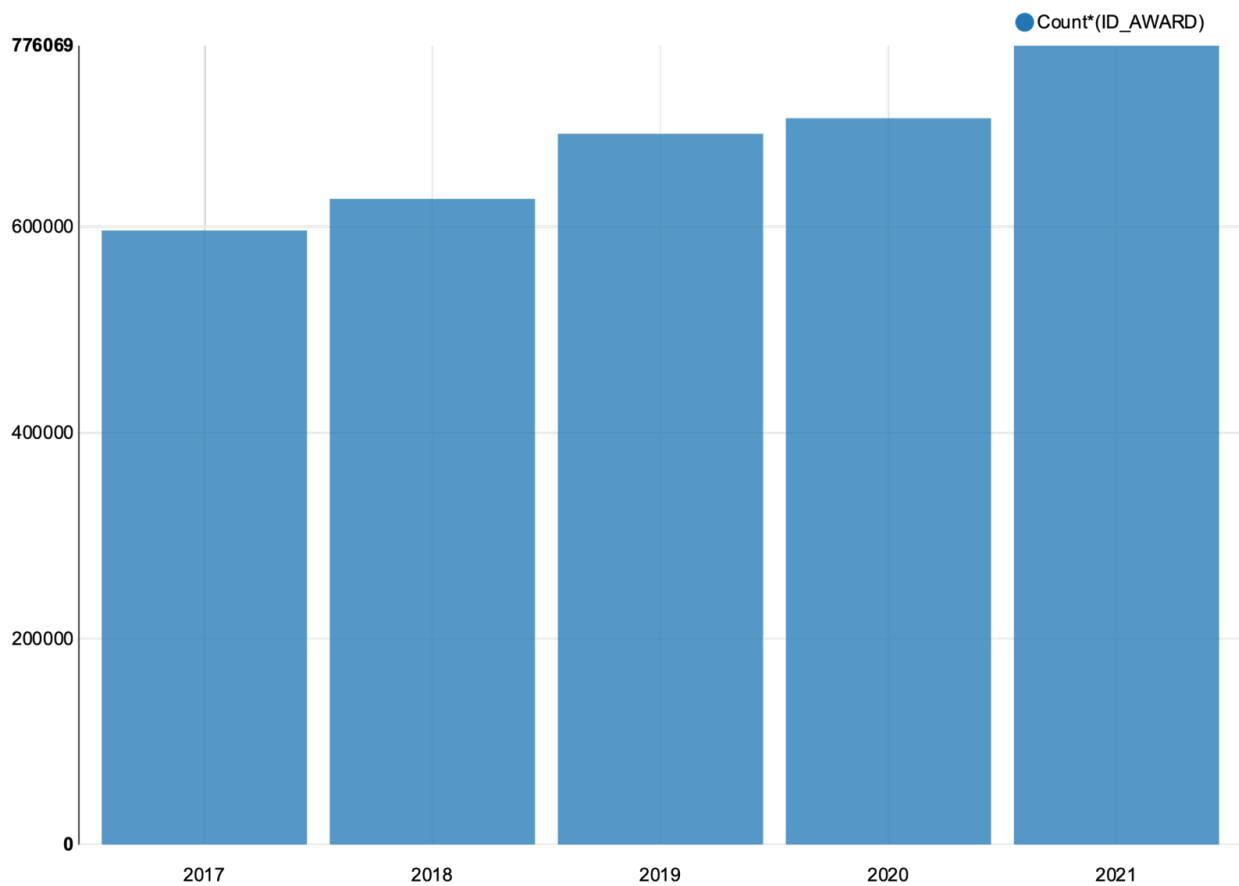
Results

Market Analysis

Awards Over Time:

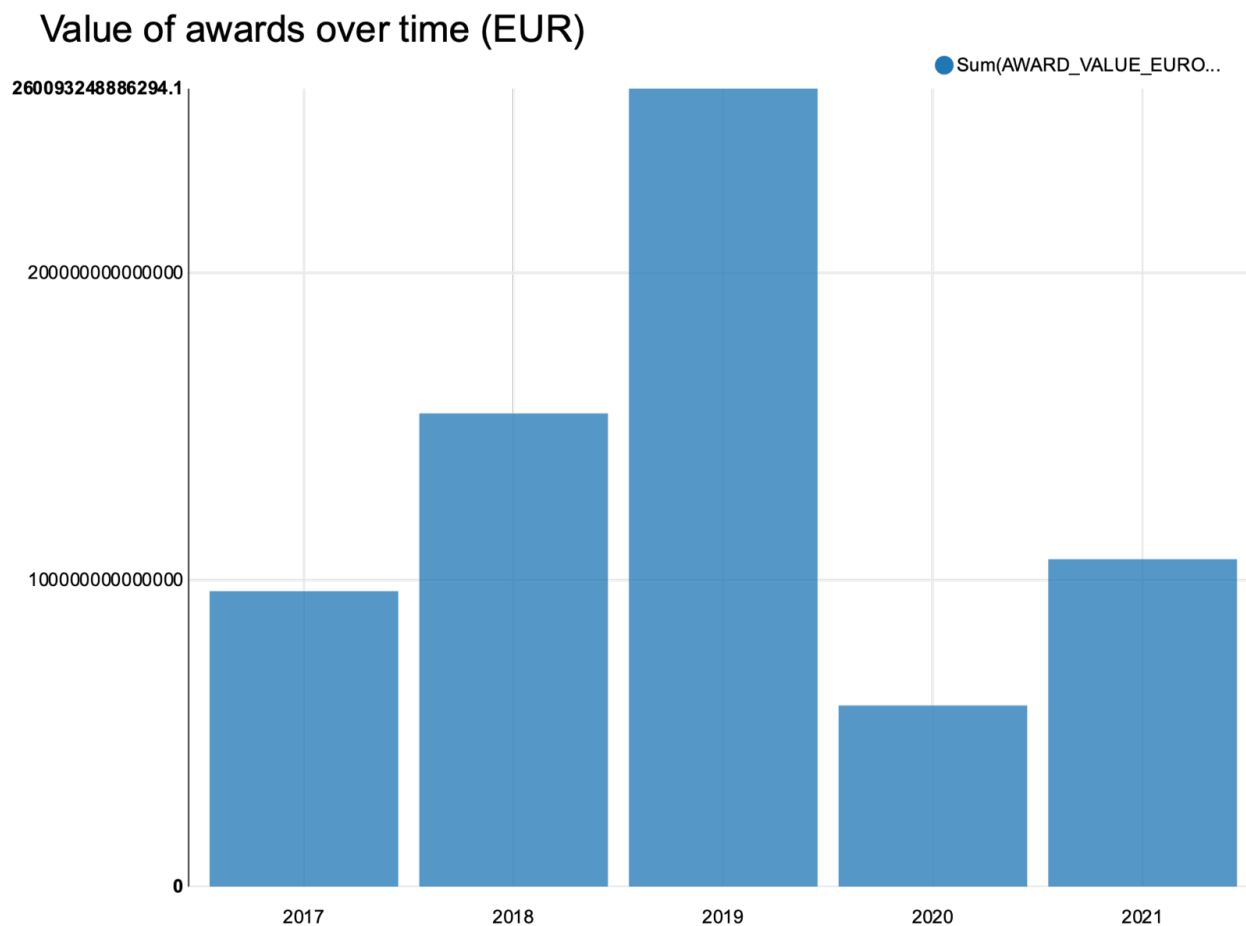
In the below bar plot is depicted the volume of awards over the period from 2017 to 2021. It is noticed that the award volume increased overtime.

Volume of awards over time



Value of Awards Over Time:

In the below bar plot is depicted the value of awards over the period from 2017 to 2021. It is noticed that the award volume reached its peak in 2019.



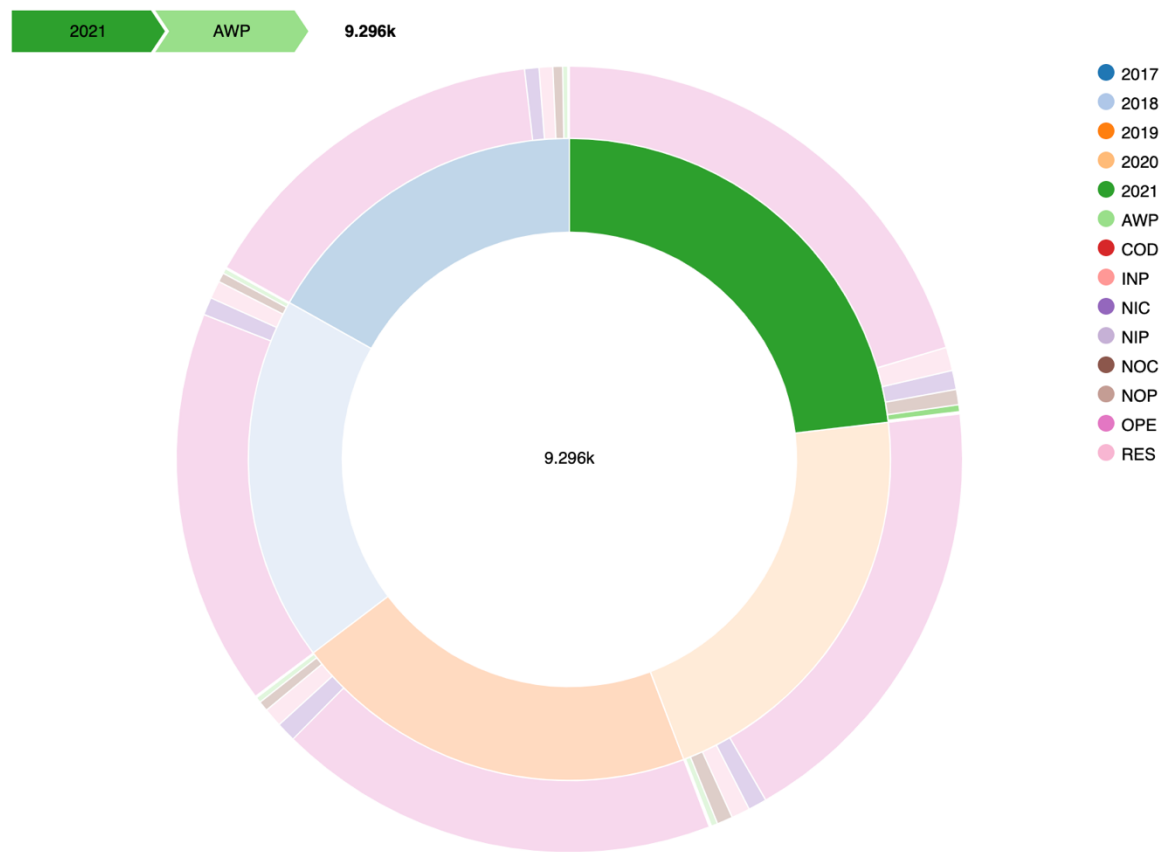
Main Suppliers (By Volume):

In the below table are depicted the main suppliers (by volume) over the period from 2017 to 2021. The main supplier in terms of awards volume was Farmexpert D.C.I. S.R.L., a pharmaceutical distributor, winning a total of 10909 awards.

Supplier Name	Volume of Awards
FARMEPERT D.C.I. S.R.L.	10909
Salus International Sp. z o.o.	9732
FARMEXIM S.A.	9319
MEDIPLUS EXIM	8351
Bialmed Sp. z o.o.	7423
Asclepios S.A.	5942
Medtronic Poland Sp. z o.o.	5899
Aesculap Chifa Sp. z o.o.	5883
FARMACEUTICA REMEDIA DISTRIBUTION & LOGISTICS S.R.L.	5808

Sunburst Chart Of Procedure Type Per Year:

In the below sunburst chart are depicted the procedure types per year over the period from 2017 to 2021. For instance, we have chosen to display the for the year 2021, that the number of AWP “award without prior publication of a contract notice” was 9.296k in total.



Main Buyers (By Volume):

In the below table are depicted the main buyers (by volume) over the period from 2017 to 2021. The main buyer in terms of awards volume was Fakultní nemocnice Brno , a university hospital in Czechia, assigning a total of 11059 awards.

Buyer Name	Volume of Awards
Fakultní nemocnice Brno	11059

Uniwersyteckie Centrum Kliniczne	8880
Institutul Oncologic „Prof. Dr. I. Chiricuță” Cluj-Napoca	8372
Midlands and Lancashire Commissioning Support Unit	7952
Lesy České republiky; s.p.	7584
Institutul de Boli Infecțioase „Prof. Dr. Matei Balș”	7571
VšĮ Vilniaus universiteto ligoninė Santaros klinikos	7266
Klinički bolnički centar Rijeka	6735
Lietuvos sveikatos mokslų universiteto ligoninė Kauno klinikos	6422
AS “Latvijas valsts meži”	6282

Total Contract Awards Value (EUR) Chart Per Year:

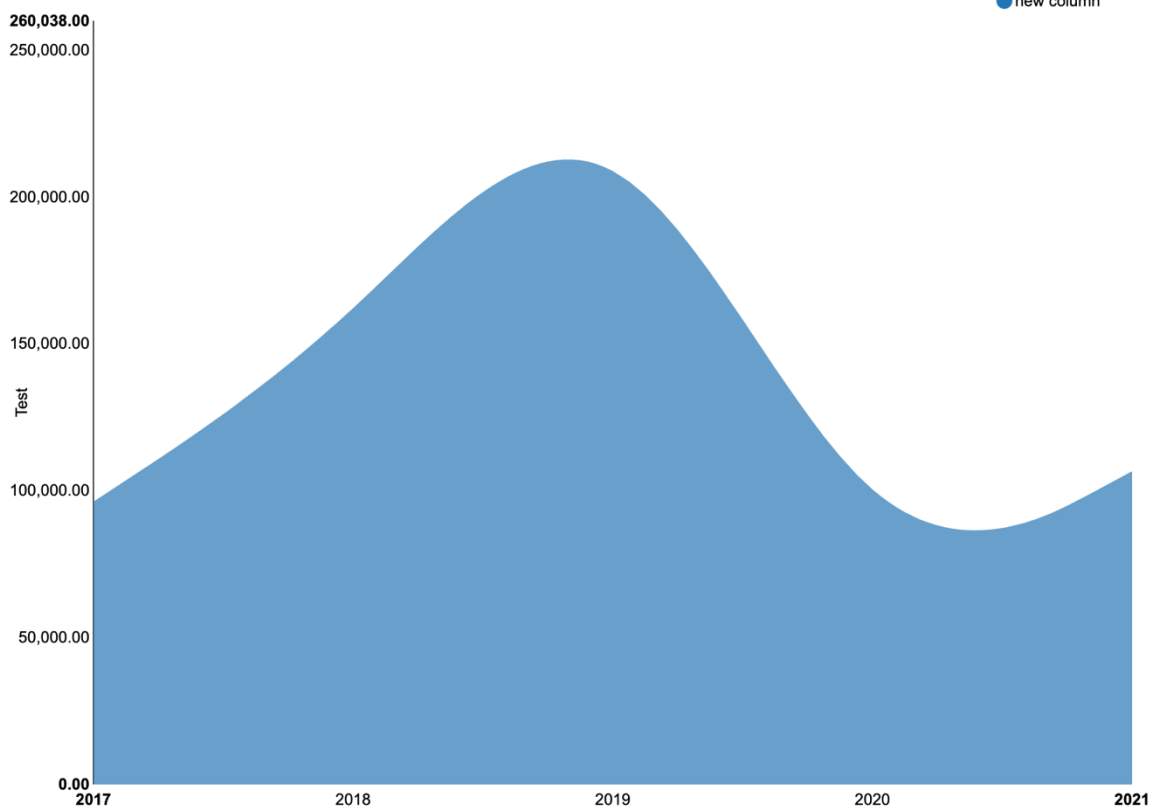
In the below chart are depicted the variations and changes in the total contract awards value over the period from 2017 to 2021. The peak was in 2019 with a value of 220.000 bn in total (EUR).

Total Contract Awards Values (EUR) Chart

Amounts in billions (bn)

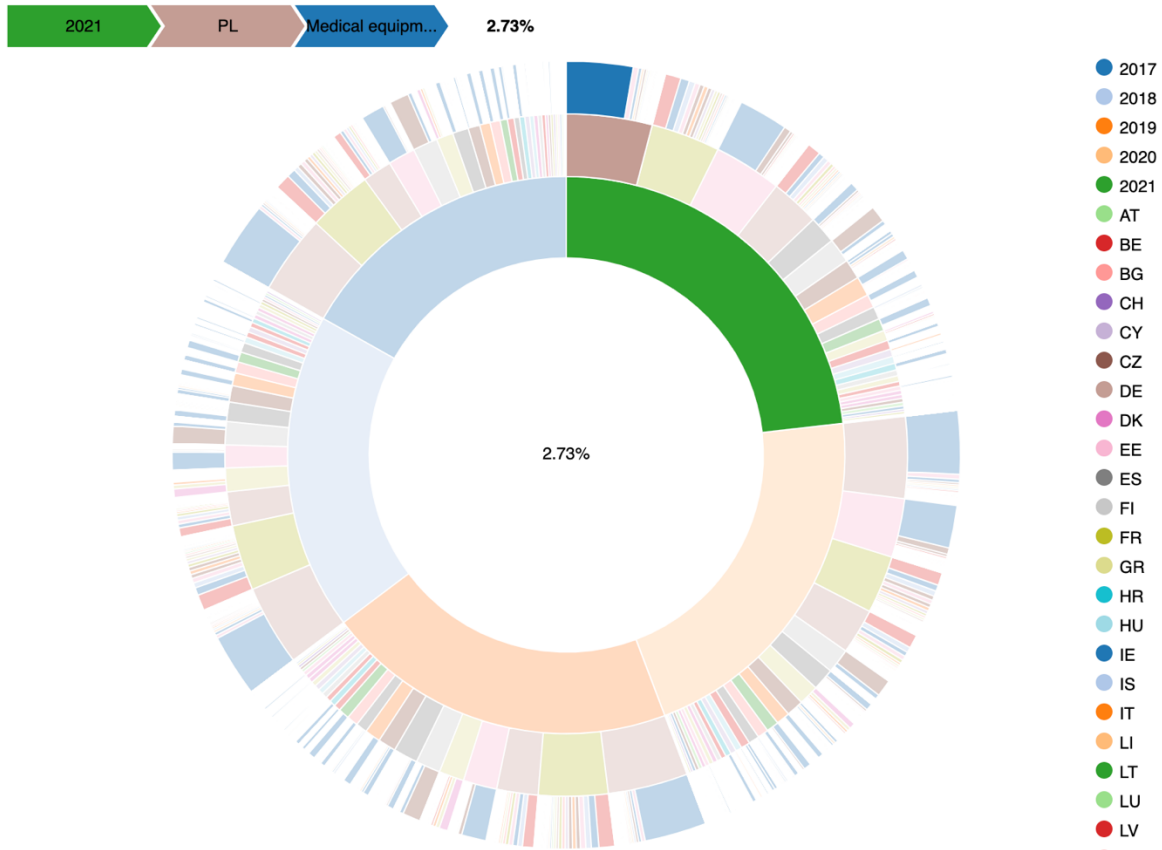


● new column



Sunburst Chart Of Sector Volume Per Year And Per Market:

In the below sunburst chart are depicted the percentages of sector volume per year and per market. For instance, we have chosen to display the year 2021, for Poland, 2.73% of the awards were related to medical equipment and the pharmaceutical sector.



Market Analysis PowerBI Visualization:

In the below PowerBI report are presented the results from our research, including volume by sector, volume by market, main suppliers (markets), main buyers (markets) and type of contracts.

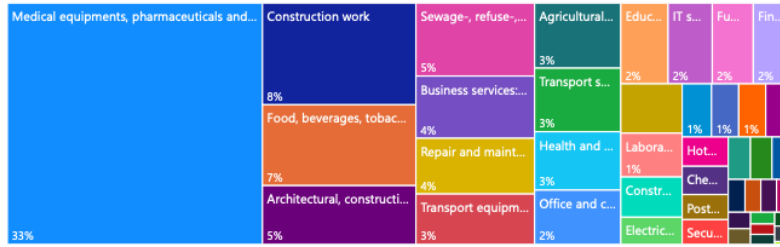
MARKET ANALYSIS

AWARDS VALUE (EUR)

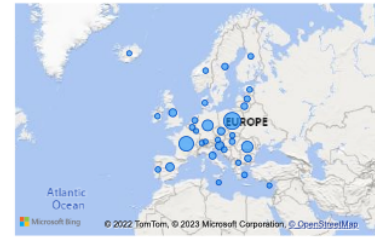
AWARDS VOLUME

676.42T 3.28M

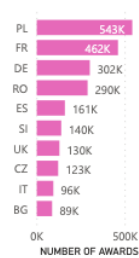
VOLUME BY SECTOR



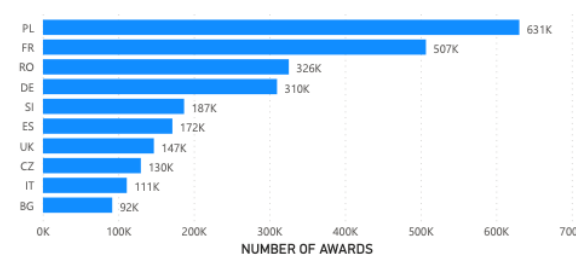
VOLUME BY MARKET



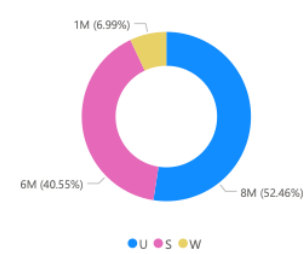
MAIN SUPPLIERS



MAIN BUYERS



TYPE OF CONTRACT



Transparency Application

TRANSPARENCY APPLICATION

Country	Country Code	Total No of Awards	Percent of No Calls For Bids	Percent of Single Bider	Percent of SME Contractors	CPI score 2021	S&P Rating	Score	Risk
Ireland	IE	20401	2	8	67	74	AA-	86	Low Risk
Latvia	LV	59975	3	23	83	59	A+	86	Low Risk
Sweden	SE	84556	1	8	61	85	AAA	84	Low Risk
Slovakia	SK	18619	3	24	72	52	A+	82	Low Risk
Estonia	EE	27186	4	21	69	74	AA-	81	Low Risk
Lithuania	LT	82559	2	21	66	61	A+	81	Low Risk
Netherlands	NL	44445	6	16	57	82	AAA	78	Average Risk
Finland	FI	37407	2	12	46	88	AA+	77	Average Risk
Norway	NO	23927	1	11	41	85	AAA	76	Average Risk
Denmark	DK	35209	3	17	45	88	AAA	75	Average Risk
Luxembourg	LU	5927	7	19	51	81	AAA	75	Average Risk
Germany	DE	339603	5	21	48	80	AAA	74	Average Risk
Bulgaria	BG	92361	12	33	63	42	BBB	73	Average Risk
Austria	AT	25606	7	21	45	74	AA+	72	Average Risk
Hungary	HU	45469	3	40	58	43	BBB	72	Average Risk
France	FR	533362	6	17	37	71	AA	71	Average Risk
Croatia	HR	44371	2	27	37	47	BBB+	69	Average Risk
Belgium	BE	40655	3	20	23	73	AA	67	Average Risk
Poland	PL	635459	2	50	52	56	A-	67	Average Risk
Spain	ES	178149	7	25	34	61	A	67	Average Risk
Greece	GR	34794	0	35	33	49	BB+	66	Average Risk
Portugal	PT	31098	6	25	30	62	BBB+	66	Average Risk
Slovenia	SI	187023	2	59	57	57	AA-	65	High Risk
Italy	IT	114518	5	30	27	56	BBB	64	High Risk
Romania	RO	325622	2	28	18	45	BBB-	63	High Risk

Ireland

First Country

86

Max of Score

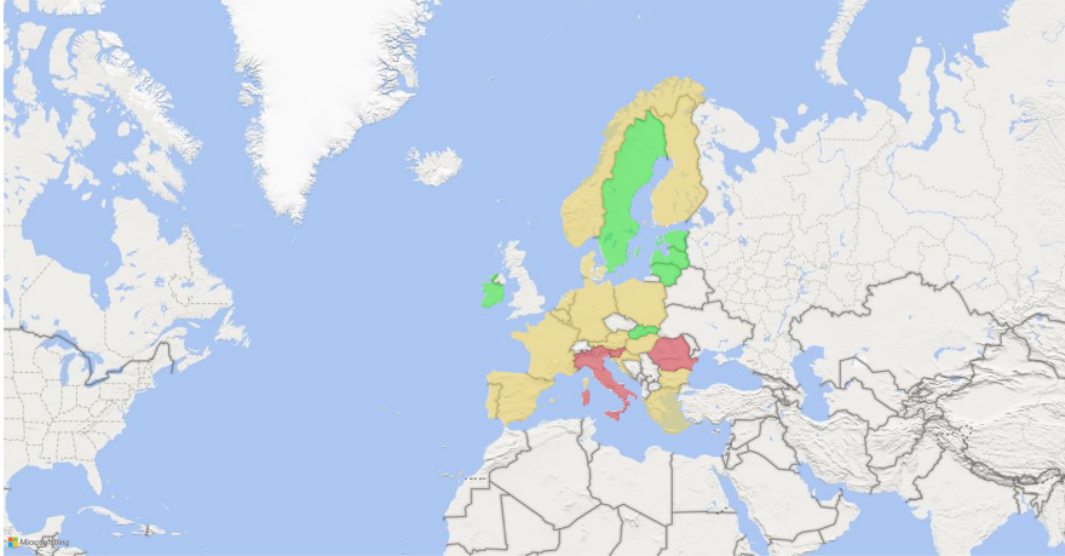
Score is a sum of scores for 4 individual indicators. The indicators are: Percentage of Single Bider, percentage of No Calls For Bids, Total no of Awards Awarded to SME Contractors and Corruption perception index 2021.

The indicators were chosen on the basis of being linked with competition, transparency and market access – the core principles of good public procurement.

TRANSPARENCY APPLICATION

Country and Risk

Risk ● Average Risk ● High Risk ● Low Risk



When we notice the final result table we can say with certainty that the application has done a pretty good job. Our total transparency score by country is generally pretty close to the actual CPI score. As we can see, Ireland is ranked first in the table, having a score of 86. Ireland has a very good score in every one of our 3 criteria. Latvia is actually tied with Ireland with the same score of 86. Even though Latvia has a higher percent of Single Bidders, they actually have the highest percentage of SME Contractors which can be really helpful for actual small and middle sized enterprises. Bulgaria looks to be awarding in secrecy, having an astonishing Percent of No Calls For Bids of 12, and 33 for Single Bidders. We notice that Slovenia has the highest score for Single Bidder of 59 and Romania has the lowest score for SME Contractors, that's why they are listed very low in our ranking system. On the other hand, we notice that Greece, despite being ranked very low, has the absolute transparency when it comes to No Calls for Bids. With a score of 0, Greece seem to always award with prior publication!

Discussion

The main purpose of this assignment is briefly identify each country's statistics regarding public procurement but also categorize them by sectors. Of course this report could be further analyzed. For instance one could analyze the statistics per country and discuss the changes that drove the country into changing the way of spending. For example it is expected that all countries after 2019 have increased their spending in healthcare and pharmaceutical sectors. Another idea is to identify each country's primary domain and find the links between public spending and the imported products. And finally one could calculate the amount of money each country has borrowed from EU and trace back the ways of management and how it reflected in its economy.

Conclusion

In conclusion, despite the numerous outcomes of this assignment, one should mention the biggest drawback throughout the process. The amount of unfiltered information and the chaotic access to it could be misleading and interrupting. The findings of this assignment surely are outstanding, and it's a new perspective of connecting knowledge.

Public Procurements and especially these kind statistics, is what people trust the most, and this information should be taken into consideration when evaluating each Government.

The index created for the framework of this project may be a good indicator, but can for sure undergo a careful examination before being used. It is advised that more research and effort is put into this topic as it could provide a good measure of the transparency in the markets. The basis for the idea has been created, but can definitely be improved.

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Select data by: (no date) *Sovereign Risk Indicators - S&P Global Ratings*. Available at: <https://disclosure.spglobal.com/sri/> (Accessed: January 29, 2023).