NETWORK ANALYSIS APPROACH IN VAT GAP MANAGEMENT IN EU

Dr. PLEŞCO Olga
aelolya@yahoo.com

Abstract

The VAT gap in UE is a permanent issue in attention of local and European tax administrations. The situation is considered stable, but with a lot of differences among Member States and this situation creates a large disadvantage because of fraudulent transactions. Are lost billions of euros in value-added tax revenues because of tax fraud, inadequate tax collection systems, tax evasion and tax avoidance, bankruptcies, financial insolvencies or miscalculations, inform European Commission.

JEL classification: D85, F38, H26, H71

The importance of the subject

The subject of VAT gap is important because VAT is one of the most important sources of tax revenue in EU. Value Added Tax (VAT) is an imposed tax calculated on the added value of a product or service at each stage of production or distribution. Only the final consumer is taxed in reality. In European Union is a legal framework that governance the VAT system in Member States.

The VAT gap is represented by the difference between expected VAT revenues (VAT Total Tax Liability or VTTL) and VAT collected, voluntary or not. Studying VAT gap and quantifying the scale of it can be able to conduct to a more effective collection system in Member States. The ability to manage the national VAT system is the key to a better revenues collection. The example of the countries that have good results in this field can be considered a model for managerial behavior.

Why network analysis? Because VAT gap is like a layer that stores inputs, properties and results of analysis, having components like classes and objects. It is always connected to a dataset, but don't contain a dataset. The central nodes for connecting main variables are represented by the indicators calculated in analysis reports. The companies and citizens are individual actors and are linked through natural commercial interactions. Based on this, tax administrations create structures to generate more VAT revenues. The capacity of national governments of EU Member States to visualize better results of commercial structures is a real challenge.

A modern tax system is characterized by voluntary compliance. European Commission VAT gap Report issued in September 2017 showed that in 2015, the value of indicator amounted to 151,5 billion euro in the EU, being equal to 12,77%. Pierre Moscovici, the Commissioner for Economic and Financial Affairs, Taxation and Customs declared that *Member Stated should not accept such shocking losses of VAT revenues. While the Commission is supporting efforts to improve collection throughout the EU, current VAT rules date form 1993 and are outdated.* European Commission prepare a reform that will help cut cross-border VAT fraud by 80%.

The objective of this paper is to determine a group of techniques for presenting relating to time and resources as to assist in the planning, scheduling and controlling of VAT gaps in EU Members States.

Essential pieces of VAT gap

Qualitative data for VAT gap calculation are received from national tax administrations. There are also social, political, geographical, economical, historical factors and digitalization, globalization, new business models that influence national VAT collection. These factors are analyzed particularly to each national situation to explain abnormalities. The main role of VAT gap system is played by tax administrations which applies effective VAT procedures mentioned in European legislation. The ability to perceive the risks of business models, the capacity to manage a large number of taxable contributors and the power to keep up with the development of technology are the main characteristics of good management institution.

The VAT gap components, according to IMF, in nominal values, are:

- the impact of noncompliance (compliance gap) representing the difference between actual VAT (accrued collections basis) and potential VAT (estimated using the current policy framework);
- the impact of policy choices (policy gap) representing the difference between potential VAT estimated using the reference policy framework and potential VAT estimated using the current policy framework.

Breaking down the compliance gap operationally, the components of compliance gap are:

- collections gap which measures the difference between what taxpayers have declared as being due and the amount of VAT collected
- assessment gap that measures the difference between total amounts declared as assessed as being due and total potential amount of VAT which should been declared or assessed.

Breaking down the compliance gap by sector is useful in determining where to focus resources to investigate compliance risks and close the compliance gap. But is not sufficient in itself and should be used in conjunction with other business intelligence instruments about the composition and demographics of the sectors.

Breaking down the policy gap can help simplify the VAT policy framework and facilitate taxpayer compliance management. For example, the analysis of time series of revenues per sector can identify unexpected changes or anomalies.

For both measurement and risk assessment perspective, sectorial breakdown allows a better, more nuanced, understanding of the overall compliance gap. By using an accruals-based measure for actual VAT collection, also allows for more precision in the matching of the economic activity as captured by the statistical data and the taxpayer activity identified by the tax administration. It allows more dynamic measurement of how the gap changes over time and better understanding of the distinction between the collection and assessment gap.

Noncompliance is costly and lead to distortion in economic decisions, according to the *Study to quantify and analyze the VAT gap in the EU-27 member states 2013*. The evasion chain is formed from informal businesses which have informal suppliers and customers. The same study presents that VAT noncompliance is higher in countries with higher standard rates and multiple VAT rates. Agha and Haughton (1996) evidenced that 1% in VAT rate is associated in their sample with 2,7% reduction in compliance rate. Noncompliance reduces the efficiency of the tax system and the overall productivity of the economy.

These measures are accurate. But they are highly dependent on national accounts statistics and modelling assumptions that have to be made; it is not appropriate to publish margins of errors for tax gap estimates; there is a regular tendency to either over-estimate or under-estimate. But the main rule is that looking at year-over-year changes in gap measures, the changes are significant once they exceed a half percentage point of GDP.

VAT gap is determined by starting with the estimate reference potential revenue that is a key component because establishes a reference policy framework – the current standard rate applied to all final consumption. After is determined actual revenue based on real qualitative data. At the final level, is calculated the tax gap like difference between these two indicators.

The VAT gap causes are tax fraud, tax evasion, tax avoidance, bankruptcies, financial insolvencies, miscalculations and tax administrations ability to collect VAT. Carousel fraud is the dominant type of loss of VAT. VAT fraud, refunds, tax rate and fiscal measures affect VAT revenues. Intrastat and VIES database was created like a tool against VAT fraud which can cause sever distortion of GPD at market prices – the final result of the production activity of resident producer unit.

European Commission published at 21 December 2016 a document *Commission Staff Working Document Impact Assessment*, reviled that the carousel fraud portion of the VAT gap ranges from 12% in Bulgaria to 39% in France. On weighted average, it is estimated that 24% of the overall VAT gap proportion is considered to be due to carrousel fraud.

The best results of VAT gap analyses in EU Member States

In 2011-2015 in many countries the VAT gap decreased or maintained at low values due to improved data, economic growth and better tax administration. There was taken some important measures like in Bulgaria, Estonia and Slovak Republic regarding domestic control statements and appliance of transaction network analysis (TNA) for detection of VAT fraud in Belgium. The role of TNA is to rebuild fraudulent networks applying data mining techniques to VAT related data.

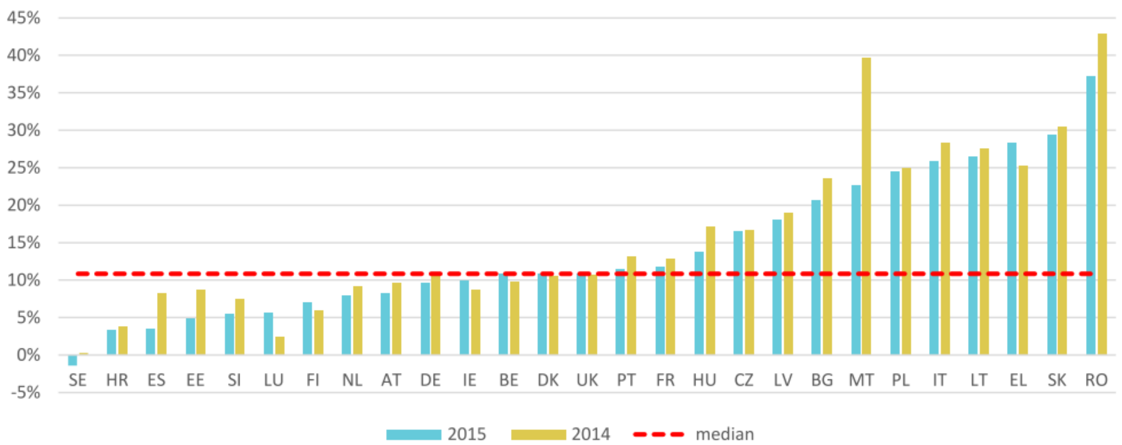

Figure nr.1 VAT gap rate in 2014 and 2015, retrieved from European Commission VAT gap Report September 2017

As we can see, in 2015 the VAT gap decreased in more than a half of Member States. The VAT loss was about 151,5 billion EUR, more than 12% of total expected VAT revenue. The best results was registered in Sweden (-1,4%), Spain (+3,5%) and Croatia (3,9%).

Opposite, the worst results was registered by Greece (+28,3%), Slovakia (+29,4%) and Romania (+37,18%). In absolute terms, Italy VAT gap is the biggest from all EU Member Stated (35.093 million EUR), being followed by Germany (22.366 million EUR), United Kingdom (22.210 million EUR) and France (20.113 million EUR), all them representing 51,86% of EU Member States VAT gap.

In 2015 Sweden is the only country with negative VAT gap and the reason for this situation can be possibly the use of cash vs accrual revenues or underestimation of GFCF liabilities or incompleteness of national accounts.

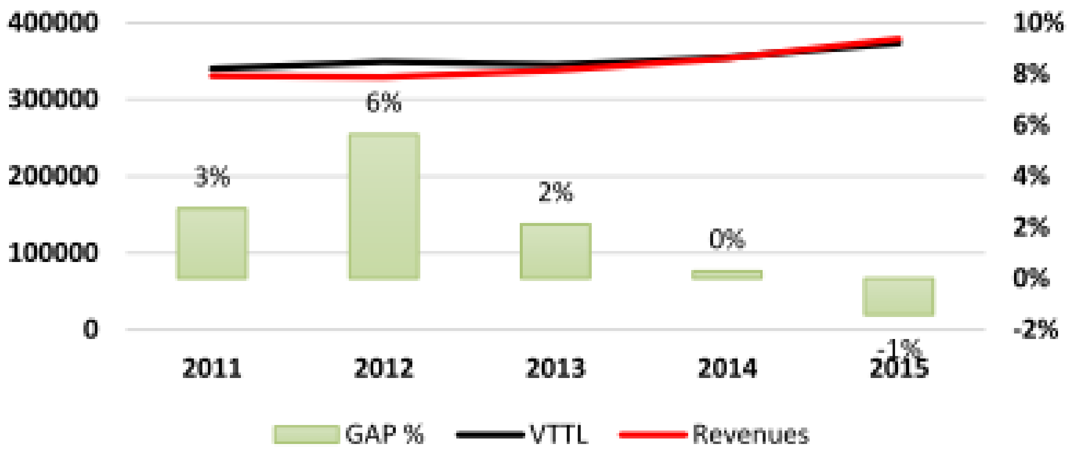

Figure nr.2 Sweden: VAT revenue, VTTL and VAT gap, 2011-2015 (SEK million) and %, retrieved from Study and Report on the VAT gap

How can the Swedish government obtain these results? They create risk-profile for contributors, quantify the tax gap and they consequently actualize the gap map. In this country the changes in legislation have a significant role, for example the reduced VAT for restaurant and catering services. This measure is applied also in Romania from June 2015 and we can observe that the VAT revenues increased more than increased VTTL and VAT gap decreased. The assessment does show that a more uniform VAT structure reduces misreporting, the more homogeneous tax structures produce a substantial reduction in the tax gap.

Swedish government use methods like:

- tax information map:
    - the extend to which the STA has access to information;
    - shows the degree to which the tax revenues were settled and controlled using information from sources other than the taxpayers themselves;
    - gives a picture of how the risk of a tax gap has developed over time;

- based on national accounts data – using top-down methods; the advantages of this method are shown by International Monetary Fund:
  - provides details on the:
    - nature of the tax gap;
    - size;
    - by breaking VAT gap down by sectors of activity and basic administrative functions (collection versus assessment);
  - estimating potential revenue more closely follows the manner in which a typical credit-invoice VAT works in practice;
  - permit a better matching to the statistical measures for economic activity with revenue collections and allows for tracking tax administrations' efforts to close the gap over time;
- STA's questionnaires; perceptions of occurrence of tax evasion and unreported labor.

They are sharing internationally their experience and this is better example that other states must take into account. Tax administrations must realize that they can't longer act individually, in isolation. For example, Benelux, Nordic countries and Baltic States are working on common issues. But there are a lot of situations when the lack of resources or different political engagements of Member States don't permit to follow-up good example measures. Even so, the FISCALIS 2020 and the Structural Reform Support Programme can rebuild national tax administrations capacities in the field of tax collection.

In Spain was introduced a VAT deferral regime for large importers, but the decrease by 4% of VAT gap was due to the very good revenue performance.

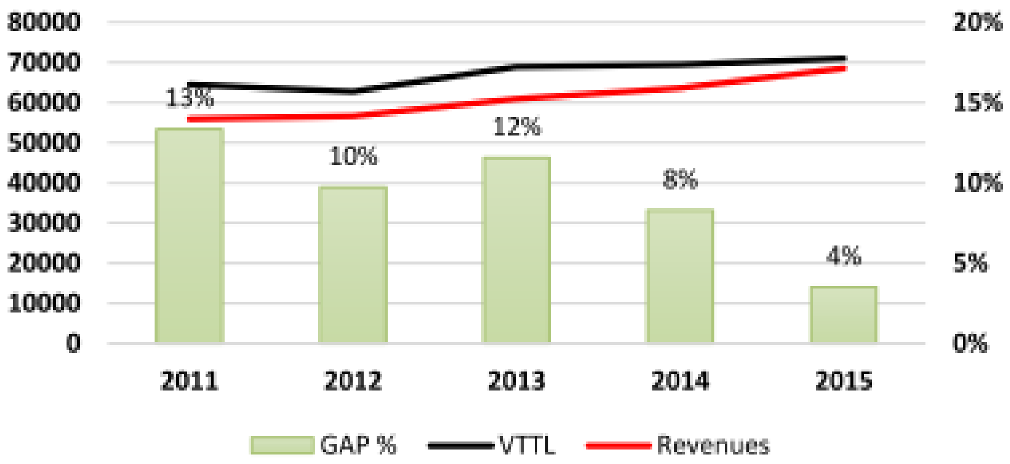

Figure nr.3 Spain: VAT revenue, VTTL and VAT gap, 2011-2015 (EUR million) and %, retrieved from Study and Report on the VAT gap in the EU-28 Member Stated: 2017 Final Report

Spanish government introduced new measures to combat VAT noncompliance, responding to the challenges of the European Commission action plan. Eliminating management procedures old more than 30 years represents a big step to a new VAT management approach. The results showed a more effective e-audit, a better supply of information in Immediate Supply of Information System. The goal of government is to have an effective control of the information system and to focus on generating the real amount of revenues. In this conditions, is considered that Spain is entering a new era of VAT administration.

In Croatia the VAT gap decreased by 0,4% in 2015 since 2014, but the rate is very low in comparison with the median at EU Member States.

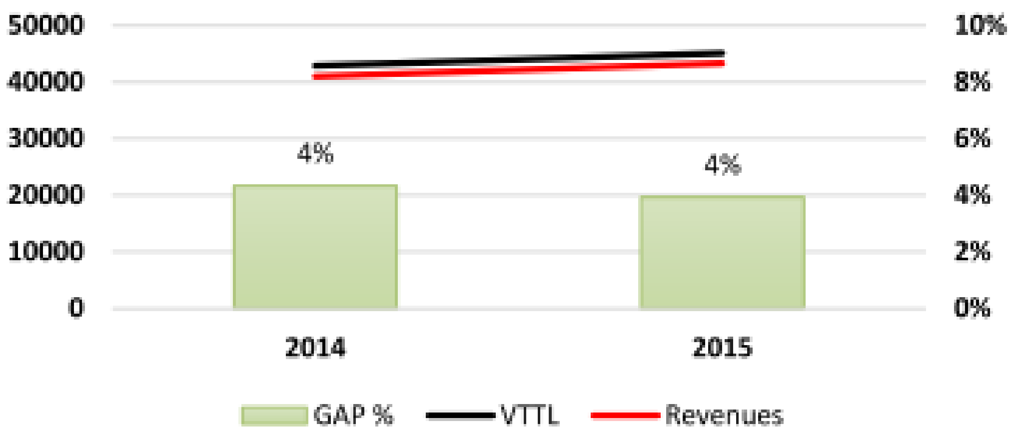

Figure nr.4 Croatia: VAT revenue, VTTL and VAT gap, 2014-2015 (EUR million) and %, retrieved from Study and Report on the VAT gap in the EU-28 Member Stated: 2017 Final Report

IMF Country Reports regarding presents that Croatian high level of public revenues is both the result of historically high tax rates and continuous efforts to improve tax administration. Was undertaken several tax administrations reforms during the last years and tax administration was restructured. There are fiscal registers of cash-based services and a public listing of tax delinquents. According to the same source, a strengthened tax administration code gave new powers to collect-relate information from taxpayers and third-parties, and to enforce the payment of tax arrears. These tax administration changes implemented in the middle of a strong recession had a significant impact on tax collection going forward.

Main actions to reduce VAT gap in EU Member States

European regulations request to tax administrations to improve their efficiency and accountability while reducing budgets and staff recruitments. In 2018 the European Commission will organize a meeting to discuss the challenges in VAT gap field and will debate adapted to reality measures to address them.

Action Plan on VAT was adopted in April 2016 and sets urgent actions to tackle the VAT gap. Also, presents strategic long term solutions to overcoming VAT fraud and to improve VAT collection. This plan describes the steps for single EU VAT area and how to adopt the VAT system to realities, to internal market, to digital economy and to need of SMES.

The study *How to close the VAT gap: An analysis of the approaches by EU Member States* issued by TMF Group presented that one of the most common ideas is to improve the transparency of VAT by building a database of invoices issued by taxpayers and make it accessible from tax authority-level. European Commission introduced e-invoicing and reserved funding to support e-invoicing activities, launching calls for grants to select project which can use EU money to set-up, upgrade and deploy e-invoicing solutions. e-Invoicing system is a common B2B practice able to reduce costs and time significantly. Real benefits of this system come with the level of integration between commercial partners, optimized working capital and improved commercial relationships. This level of transparency leads to a difficult implementation of fraudulent schemes and duplicate transactions.

At 18 December 2017 European Commission published a report on VAT collection and control procedures which present the developments in the period 2013 to 2016, referring to the numerical data generated between 2013 and 2015. The findings of this document reveal some trends in VAT administration and lead to recommendations so as to complement the ongoing modernization of the EU VAT system:

- for assessing the impact of changes in managing the VAT system (i.e. reforms in organization, processes and procedures), Member States should have a monitoring and evaluation system in place to report on the efficiency and effectiveness of the measures taken;
- as digitalization and IT turned into critical elements of tax administration, Member States should carry on digitalizing and automating data and tasks. Subsequently, together with other Member States, they should explore ways how their domestic data could be best used in also helping other Member States. To this end, the ongoing Transaction Network Analysis (TNA) project could serve as useful point of reference;

- Member States should invest or continue investing in calculating their own VAT gap and analyzing this gap in more detail;
- some Member States should invest more in assisting foreign taxpayers in fulfilling their VAT registration obligations;
- with a view of reducing the administrative burden, Member States and the Commission should reflect on the allocation of VAT identification numbers and VIES registration numbers;
- Member States should check the validity of the VAT and VIES registration data in a more systematic way;
- Member States which conduct only preliminary checks before registration, should implement post-registration controls to ensure the reliability of VIES data;
- Member States should enhance the use of all available recovery instruments, including the mutual assistance mechanism;
- The European Commission launched a study on domestic and cross border VAT refunds. In the context of this study, and together with Member States, it will explore how to improve and speed up this process;
- Member States should ensure that their audit strategy is part of an overall VAT compliance strategy and not a stand-alone approach.

The main differences between Member States of VAT gap are caused by variations in estimations, economic developments and inadequate tax collection systems. Approximate or old used estimators can generate artificial values of VAT Total Tax Liability. Effective collection of taxes is essential in this field. In this trend, we synthetized some significant techniques that must be used in the planning, scheduling and controlling of VAT gaps in EU Members States in order to reduce it:

- update IT systems to handle enormous amount of data as a weapon against fraud and risk management appliance;
- unanimous agreement between Member States;
- modernizing the VAT system;
- compilations of information from international exchange of information;
- producing a EU VAT gap map which is constantly updated;
- uniform VAT structure;
- better usage of human resources capacities conducting to improved tax compliance;

- working with a database of invoices issued by taxpayers and make it accessible from tax authority-level;
- implementation of recommendations made by European Commission structures;
- implementing VAT cash accounting scheme in Member States with very high rate of VAT gap;
- implement e-audit techniques like an ultimate enforcement measure when other measure are no longer effective for enhancing voluntary compliance.

Adapting tax administrations perspectives and acting in accordance with the privileged technology development is the best way to a secure future. Some studies suggested that VAT fraud is about 36% of VAT gap and observing the case of each Member States and analyzing it in relation with other statistical indicators, we understand that this value is real. The digital modernization of tax administrations and appliance of Transactions Network Analysis can reduce the efforts to joint analysis of information in order to visualize all levels of business models that can generate VAT fraud.

The most important measure that must be considered vital by each Member States is the participation in the sharing of experience and discussions. A well informed manager is always capable to find real solutions to evaluate, anticipate, and influence in the right direction underdone results of classical measures.

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