EDUCORETAX
Volume 3 No.4, 2023

EFFECT OF IMPORTS, INDUSTRIAL SECTOR, AND SERVICE SECTOR ON VALUE-ADDED TAX WITH REGULATORY QUALITY AS A MODERATING VARIABLE

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Abstract
State revenue to organize its government is mostly collected by taxation as the main source. In its implementation, taxes are imposed directly and indirectly. The indirect tax that plays a role in the structure of state revenue is Value Added Tax (VAT). VAT is imposed on goods or services consumed in an area based on a set rate. VAT imposition of the highest rates on average is imposed in European countries. There are 11 European countries with the highest VAT rates, which are the object of research, namely Hungary, Croatia, Denmark, Norway, Sweden, Greece, Iceland, Finland, Ireland, Poland, and Portugal. This study will discuss the effect of value added on the industrial and service sectors, which are the main sectors in the 11 countries as well as the effect of international trade activities, namely imports, on VAT revenues with a moderation of the regulatory quality index. The results show that the imported variable and the added value of the industrial and service sectors, both before and after interaction with the moderating variable of the regulatory quality index, significantly influence VAT acceptance. For the partial results, before moderation with the regulatory quality index, imports don't significantly affect VAT revenue. In contrast, the industrial and service sectors have significant negative effects on VAT revenue. Furthermore, after interacting with regulatory quality variables, imports, value added in the industrial and service sectors have a significant positive influence on VAT revenue. This shows that the moderating variable of the regulatory quality index plays a role in strengthening the relationship between the independent and dependent variables.
Keywords: Import, Industrial sector, Regulatory quality, Service sector, Value added tax

INTRODUCTION

Taxation is a tool for the government in order to collect funds used to organize its government. Almost all countries impose taxes as their main source of revenue. Tax becomes one of the instruments of fiscal policy by the government in its role as a revenue collector and maintaining economic stability. In its implementation in the field, tax imposition can be imposed in two ways: direct and indirect. Direct tax in practice is like the imposition of income tax imposed on entities or individuals who have income and meet the requirements as tax subjects. As for indirect taxes such as the imposition of consumption taxes on goods and services, namely Value Added Tax. This Value Added Tax/VAT is an indirect tax, which is imposed on goods and services and plays an important role in the revenue part of taxation (Bikas, 2011). The imposition of VAT is done by charging goods or services based on predetermined rates, and then consumers pay the tax included in the price of goods and services and paid at the time of purchase. On average, European countries levy the highest rate of VAT. Based on data from PwC Worldwide Tax Summaries (2023), European countries will have an average VAT rate of 19.16 percent in 2023. This means that consumers will pay nearly 120 percent of the previous price for the consumption of goods or services.

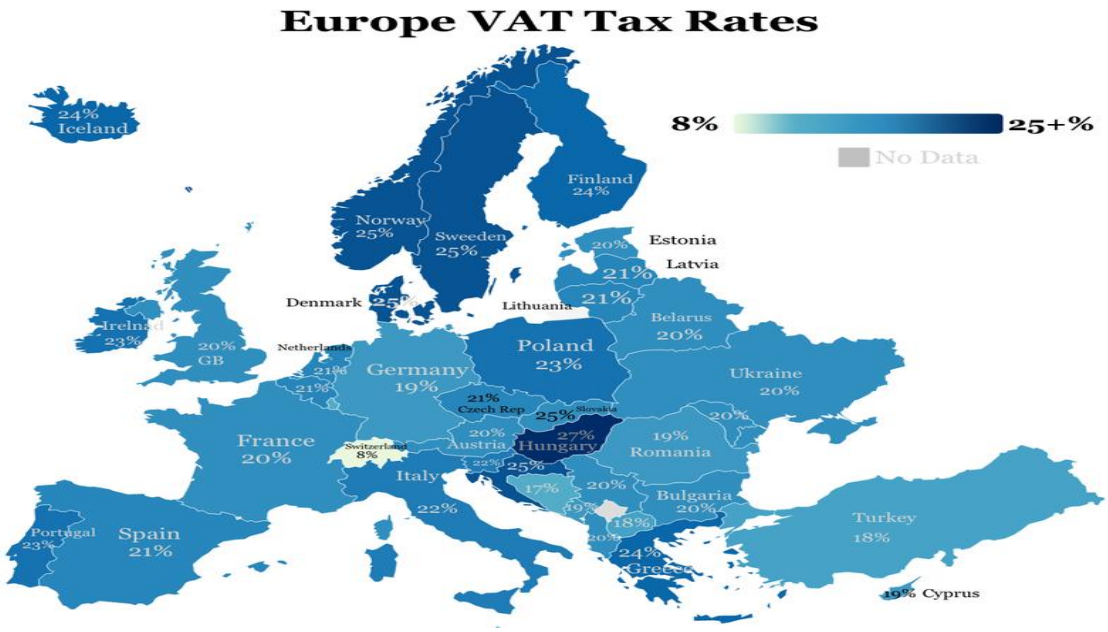
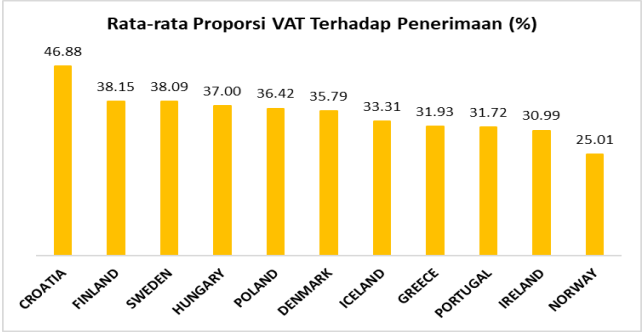
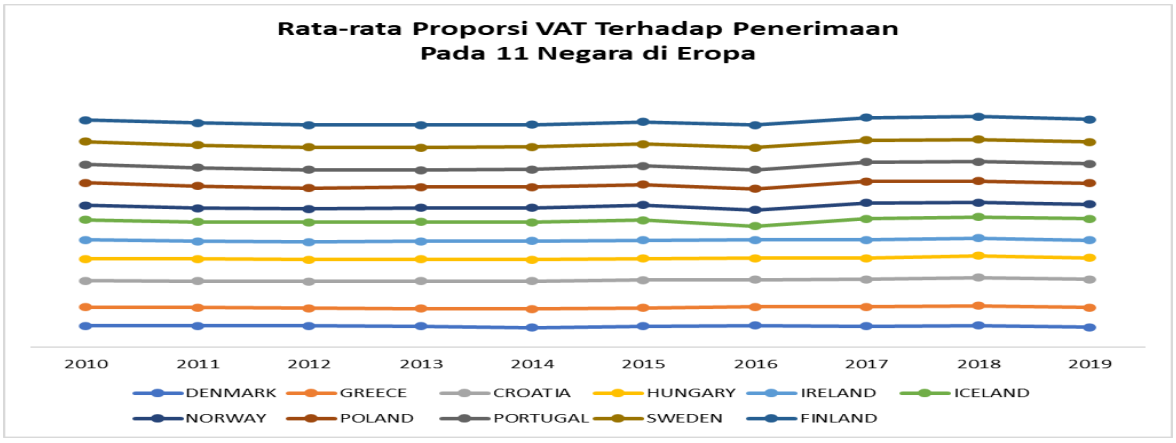


Figure 1 Distribution of VAT Rates in Continental Europe, source: European Commissions, 2023

The imposition of VAT on the consumption of goods and services is considered one of the most helpful tax revenue policies, as VAT can be imposed on almost all individuals or companies without any requirements, such as income tax. In the country with the highest VAT rate in Europe, Hungary, the average contribution of VAT to government revenue from 2010 to 2019 was 37 percent. Given the high revenue contribution of VAT, it plays an important role in government financing. In addition to its revenue role, VAT can be used as a fiscal policy tool to support the country's revenue structure. When a country experiences a crisis where income tax will decrease, the consumption of people, both individuals and entities, the consumption of goods and services can still be subject to VAT. Due to the imposition of high VAT rates in Europe, this study will discuss three factors that are thought to have an influence on VAT revenues, namely the role of the industrial sector, the service sector, and import activities, taking into account the influence of law enforcement and the quality of regulations prepared by the government. In this study, the ten European countries with the highest VAT rates are examined to determine which factors have a significant impact on their VAT revenues. Since Portugal has the same rate as Poland, which is 23 percent, the sample becomes 11 countries. The eleven countries are Hungary, Croatia, Denmark, Norway, Sweden, Greece, Iceland, Finland, Ireland, Poland and Portugal. The research objects used have the same characteristics, namely, belonging to the high-income category. In these 11 countries, from 2010 to 2019, the role of VAT had an average share of 35 percent in state revenues. The role of the average share of VAT in the revenues of 11 sample countries is as follows.

Graphic 1 Average VAT Proportion of Revenue (%)

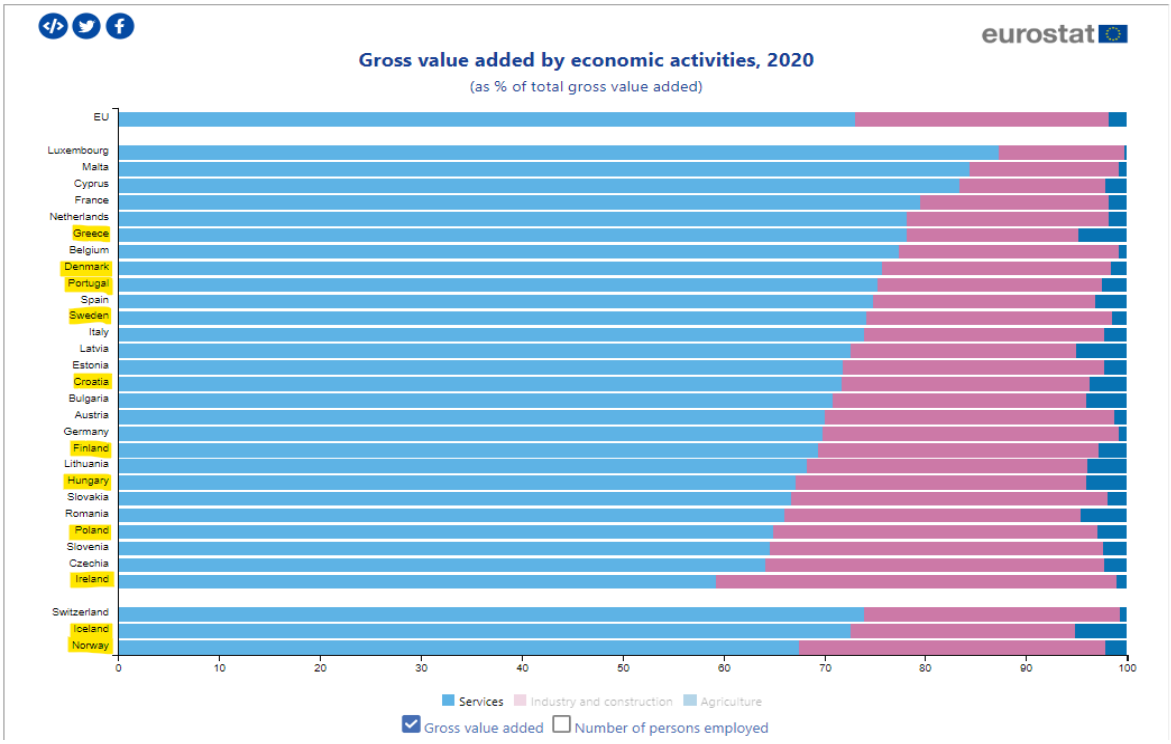




Source: Worldbank, edited by the author

The role of VAT in the revenue of the 11 countries is quite stable, ranging from about 25 to 46 percent. Figure 2 shows that the services sector mainly supports VAT in European countries. The proportion of the increase in gross domestic product (GDP) in the majority of European countries is more than 50 percent. This is in line with the research of Piancastelli (2001), which states that the relationship between the increase of the service sector in GDP has a positive relationship with the increase of tax revenue. The growth of VAT revenue in line with the increase in the share of the service sector in GDP is also found in Sarmento (2016) and Permadi & Wijaya (2022). These previous studies show that the service sector in the economy has a very important role in its support. The role of the lowest service sector is 59 percent, namely in Ireland, which is more than 50 percent. Thus, the value added in the service sector can have an impact on the increase in the VAT (Amoh & Adom, 2017). Unfortunately, previous studies have mostly raised the relationship between tax revenue and the share of value in the service sector in GDP. Therefore, the author is interested in testing the relationship between value added in the service sector and the share of VAT in revenue.

Graphic 2 Gross Value Added by Economic Activities, 2020



Sumber: European Union

In addition to the service sector, the economic structure of European countries is supported by the industrial sector - processed from various sources - the majority of European countries' industries are engaged in the manufacture of machinery for factories, automotive, food, chemicals, and pharmaceuticals. The role of the industrial sector has a second major contribution to the economy in European countries based on Graphic 2. The important role of value added in the industrial sector in line with the growth of tax revenue is also stated by Minh Ha et al. (2022). In addition to impacting the growth of GDP tax revenue, an increase in the industrial sector's share in regional GDP also causes an increase in national tax revenue (Saptono & Mahmud, 2021). Differently, Tamburian et al. (2017) found that the industrial sector does not have a significant impact on regional tax revenue. On the other hand, previous studies on the direct relationship between VAT revenue and value-added in the industrial sector are rarely studied, and the inconsistency of research results on the relationship between the industrial sector and tax revenue is the reason for the authors to conduct this study.

In addition to the services sector and the industrial sector, the European economy is supported by imports of raw materials from other countries as inputs for its industrial activities. The import activities carried out can have an impact on the GDP of a region because imports play a role in reducing net exports. The increase in imports, which can reduce GDP, has a negative relationship with a country's tax revenue, in line with Sarment's (2016) research. Specifically, the increase in imports also has an impact on the decrease in VAT revenue (Permadi & Wijaya, 2022). This is contrary to the research conducted by Subiyanto et al., (2022), which states that when imports increase, VAT revenue also increases. The corresponding increase between imports and VAT revenue can occur because when imports increase, it indicates that a community's purchasing power is increasing. In addition, the increase in imports is also supported by the increasingly digitized trade economy, so several countries, including the European Union, impose taxation on trade through electronic systems to support their tax revenues.

The condition of economic activity is also supported by the role of the government in developing quality rules and law enforcement. Quality rules are expected to increase taxpayers' compliance with tax obligations, so they impact increasing government revenues, including VAT. In addition, according to previous research, law enforcement in the government positively impacts state revenues (Sarmento, 2016). Law enforcement in the taxation of VAT can be carried out through administrative or criminal sanctions, depending on the errors made by taxpayers. The imposition of administrative sanctions can be in the form of fines, interest, or increases. Meanwhile, criminal sanctions can be imposed as imprisonment or confinement. On the other hand, criminal sanctions are considered to have no effect on VAT revenue (Permadi & Wijaya, 2022). Thus, based on the results of previous studies with inconsistencies in the results of each variable that has been mentioned, it encourages the author to conduct research again using a locus of 11 countries with the highest VAT rates in continental Europe, including Hungary, Croatia, Denmark, Norway, Sweden, Greece, Iceland, Finland, Ireland, Poland, and Portugal, with a research period of ten years starting from 2010 to 2019.

LITERATURE REVIEW

International Trade Theory

International trade is not only related to the movement of goods and services produced but also to the mobility of other factors of production, such as financial systems, labour, production machinery, and even culture and ideology. This factor of goods and services movement is due to the difference in advantages between countries. This difference in advantages causes each country to specialize in producing goods. In other words, each product a country produces will be different from other countries. Since each country will have different

product advantages, each country will engage in international trade to satisfy a need beyond its production capacity. This theory of excellence among countries is Adam Smith's (1776) theory of absolute advantage.

The existence of international trade will have an impact by creating market openness so that money flows, technology transfer, dependence on other countries and increasingly fierce competition for multinational companies. Competition in international trade will increase productivity, efficiency and effectiveness optimally. In the future, this transaction process will also be increasingly advanced with the help of Internet technology or e-commerce. The existence of e-commerce will increase the trade network because there is no need to meet physically, so domestic entrepreneurs must be able to compete with imported goods and services of foreign products.

International trade activities are divided into 2, namely export and import activities. In the Hecksher-Ohlin theory of international trade, export and import activities can affect the economic growth of a country with two important arguments, namely:

1. Different products require different proportions of production factors;
2. Different factors of production support each country.

Therefore, the Hecksher-Ohlin theory encourages developing countries to focus on exporting labour- and land-intensive primary products.

In contrast to the Hecksher-Ohlin theory, the Leontief Paradox theory by Wassily Leontief, using the United States input-output data in 1947 and 1951, the ratio of United States imports was more capital intensive than its exports, thus showing the contradiction of the Hecksher-Ohlin theory, which supports exports to boost the economy. The phenomenon of U.S. imports being more capital-intensive than exports (greater capital-intensive imports) can stimulate the economy, as the case of the United States shows that its labour force is more efficient than other countries.

Simon Kuznets' Theory of Economic Growth

Economic growth is defined as the development of economic activities that lead to an increase in the production of goods and services in society, which in turn leads to an increase in national income. The ability to produce goods and services is due to an increase in the ability of production factors in quantity and quality. Factors of production, such as capital goods, can be increased through investment. At the same time, factors of production in the form of labour can increase along with improving their education and skills. Economic growth is generally defined as the increase in real GDP per capita. GDP is the total value of a country's market, which consists of the market value of all finished goods and final services produced in a region in a given period (Panorama, 2016).

According to Kuznet, economic growth is an increase in the country's ability to provide more and more types of economic goods to its population, and this ability grows in accordance with technological advances and necessary institutional and ideological adjustments (Jinghan, 2012). From Kuznets' definition, there are three components in the concept of economic growth. First, economic growth is an increase in the availability of various goods. Second, technology is the main factor in producing goods and services. Third, the use of technology requires institutional and ideological adjustments so that the resulting innovations can be properly exploited.

Based on Kuznets' research on the contribution of economic sectors to national production in 13 countries, namely, the United States, Australia, the Netherlands, Denmark, the United Kingdom, Italy, Japan, Germany, Canada, Norway, Sweden, France and Russia, the research results show that agricultural production has a slower development than national production. Compared to the agricultural sector, the industrial sector in the thirteen countries has faster growth than the growth of national production. Meanwhile, the service sector did not

experience any changes in national production, indicating that the development level of the service sector has the same development level as national production. Kuznets' research is in line with the economic structure in the European Union, where the service and industrial sectors have a greater contribution of up to 95% to the gross value added of the economy compared to the agricultural sector, which contributes 5%.

Tax Function and Theory in Tax Collection

The tax is a contribution from the people based on a law or regulation of a coercive nature that does not cause a direct reciprocity that is useful for the public good (Mardiasmo, 2019). The function of the tax itself, according to Mardiasmo (2019), consists of:

1. Regulatory or regulatory function is that taxes have a role in regulating or implementing social and economic policies in society.
2. Budgetair function or revenue, taxes act as a source of funds for the government in financing its expenses.

The theory of tax collection consists of four types: insurance theory, interest theory, bearing capacity theory or bearing force theory, absolute obligation theory or devotion theory, and purchasing power theory. VAT is a type of tax with a collection mechanism or indirect tax. The imposition of VAT in European society is related to the absolute obligation and purchasing power theories. The absolute obligation theory is a tax collection based on legal regulations, so the government is considered to have the right to collect taxes from the community. Meanwhile, based on the purchasing power theory, in this theory, the administration of the government for the benefit of society is the basis for the justice of tax collection. The collection of VAT at high rates in Europe is intended to help the government pay for things like health care, education, and infrastructure, in this case, to meet the needs and prosperity of the community.

Value-Added Tax in Europe

Value-added tax (VAT) in this study is a tax on goods and services, including general sales and turnover or value-added tax, selective excise taxes on goods, selective taxes on services, taxes on the use of goods or property, taxes on mineral extraction and production, and fiscal monopoly profits. VAT is a consumption tax levied on almost all goods and services sold. Almost all European countries levy VAT, with the highest rate in Hungary at 27% and the lowest rate in Liechtenstein at 7.7%. There are two countries in Europe that do not charge VAT, namely Gibraltar and Greenland.

European countries are divided into two groups: members of the European Union and those that are not. For EU countries, there are standardized rules for VAT. VAT in the EU is levied on all goods and services at all stages of the supply chain, including sales to final consumers, i.e. from the beginning to the end of the production process. EU VAT is not levied on the export of goods to countries outside the EU, provided that documentation shows that the goods have been transported outside the EU. The VAT rate applied in EU countries has a standard of not less than 15%. This shows that VAT in the European Union is given a minimum limit to avoid competition in consumption tax rates between countries. In addition to the standard rate, the deduction rate for providing certain goods and services is not less than 5%. As for non-EU countries, they are not bound by the minimum standard rate or the limit on the reduction rate. The VAT rate provisions for non-EU countries are regulated under the authority of their respective governments.

Based on the object of this research, which takes the locus of 11 countries with the highest VAT rates, the following is the number of VAT rates applied:

Table 1 List of VAT rates in 11 European countries

No	Country's Name	Update on Rules	Standard VAT rate (%)
1	Hungary	Last reviewed 11 July 2023	27
2	Croatia	Last reviewed 30 June 2023	25
3	Denmark	Last reviewed 03 March 2023	25
4	Norway	Last reviewed 17 July 2023	25
5	Sweden	Last reviewed 13 June 2023	25
6	Greece	Last reviewed 19 January 2023	24
7	Iceland	Last reviewed 30 June 2023	24
8	Finland	Last reviewed 03 February 2023	24
9	Ireland	Last reviewed 18 July 2023	23
10	Poland	Last reviewed 12 March 2023	23
11	Portugal	Last reviewed 06 July 2023	23

Source: PwC World Tax Summaries, 2023

Tax Enforcement in the Rule of Law Index

Law enforcement is an activity to harmonize the relationships that are contained in the rules, and views of the final stage of value to create, maintain and preserve peace of life (Soekanto, 1983). There are two forms of law enforcement in the field of taxation, namely administrative law enforcement and criminal law enforcement. Administrative law enforcement sanctions are determined as fines, interest, or increases for delays or deficiencies in tax payments that should be owed. Administrative sanctions in taxation are primum remedium, which is the first sanction imposed on taxpayers when they violate the provisions of tax legislation. Meanwhile, criminal prosecution is the last resort commonly called ultimum remedium. Criminal law enforcement is the ultimum remedium because the tax function emphasizes its primary function as a budgetary function in helping collect government revenue.

In this study, law enforcement is represented by the Rule of Law Index variable, which is one of the indicators of the Worldwide Governance Indicators (WGI). The WGI is an aggregate and individual governance indicator measured in 200 countries from 1996 to 2021. The Rule of Law Index, according to the World Justice Project team, is seen as an assessment of a country's ability to reduce corruption, fight poverty and disease, and protect people from injustice. There are 8 factors in the rule of law assessment, namely limits on government power, absence of corruption, fulfilment of basic rights, security and order, rule enforcement, and civil and criminal justice. The Rule of Law Index in the WGI is scored on a scale from -2.5 to 2.5. The more positive the index value, the better the rule of law conditions in the country.

Based on previous research by Sarmento (2016), good law enforcement has a positive relationship with a country's VAT revenue. This is because a good legal and institutional environment and reduced corruption rates can provide capacity support to the state to increase VAT revenue. The alignment of the rule of law index with tax revenue is also mentioned by Wibowo et al. (2021), better law enforcement can increase tax revenue in ASEAN. Through quick, reliable, and fair conflict resolution between tax authorities and taxpayers, accompanied by strong legal rules, law enforcement increases taxpayer compliance, thereby increasing VAT revenue. The rule of law index variable is a control variable in this study.

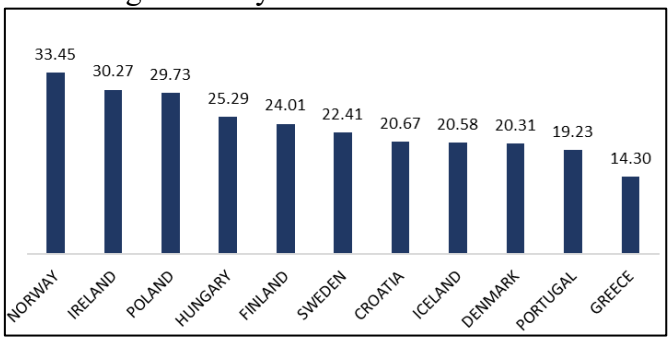
Industry Sector Linkage with Value-Added Tax Revenue

The industrial sector figures used in this study are the value-added figures of the industrial sector as a percentage of GDP. The industrial sector, in this case, includes construction and manufacturing. It includes mining, manufacturing, construction, electricity, water and gas value added. Value added is the net output of a sector after summing up all outputs and

subtracting intermediate inputs, calculated without making deductions for depreciation of man-made assets or depletion and degradation of natural resources.

The industrial sector is a process of adding value to a good, with a production chain that must pass through several stages. The production of goods in each production chain is one of the objects of VAT tax. The industrial sector is the sector that acts as the largest contributor to the tax revenue structure (Purnamasari, 2011). In the country that is the subject of this research, the industrial sector is the second sector after services with the highest average value added. Based on Graphic 3, the value added ranges from 14 to 33 percent. The industrial sector plays a role in contributing to domestic VAT revenues and VAT on imports in the production chain. Thus, one of the VAT revenues is supported by the economic conditions of industrial enterprises (Masyitah, 2019).

Graphic 3 Average Industry Value Added as %GDP in 2010-2019



Source: World Bank, edited by the author

Tax revenue with determinant factors in manufacturing has a significant positive contribution to tax revenue. The industrial sector has a greater influence because the economic activities carried out are greater when compared only to individual economic activities (Piancastelli, 2001). This is in line with the findings of Gobachew (2017), who found that the contribution of the industrial sector to GDP has a significant impact on tax revenue in Ethiopia. The increase in the activities of the industrial sector, as indicated by the value-added figure, indicates the presence of a processing process in the productive economic activity that requires raw materials, intermediate materials, or even an increase in labor. These activities can increase consumption either in production activities or in the household consumption of the workers. This consumption activity can be subject to VAT to increase the VAT revenue of the country concerned. Thus, an increase in consumption will increase the GDP, which has a significant positive effect on its tax contribution (Saptono & Mahmud, 2021).

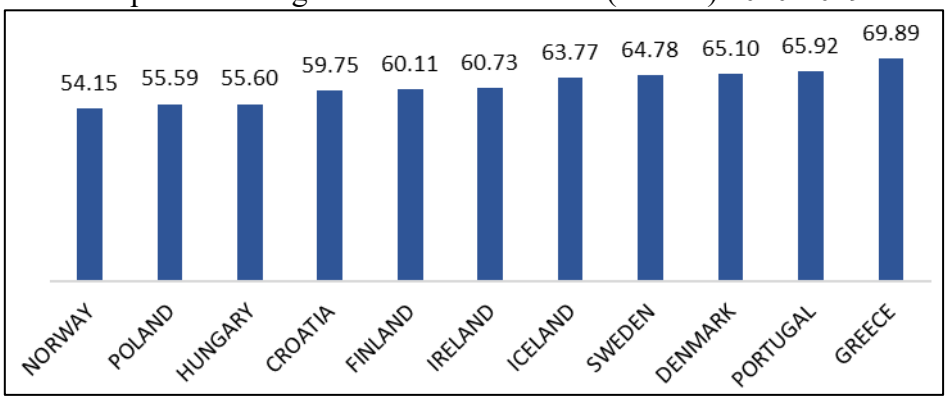
Relationship between Service Sector and Value Added Tax Revenue

The services sector used in this study includes value added in wholesale and retail trade (including hotels and restaurants), transport and government, financial, professional, and personal services such as education, health, and real estate services. It also includes imputed bank charges, import duties, any statistical differences recorded by national compilers, and differences due to rescaling. Value added is the net output of a sector after summing up all outputs and subtracting intermediate consumption. The value added to the services sector is expressed as a percentage of GDP.

Services are actions provided to other parties that are basically intangible and do not result in ownership of anything, and their production is not tied to physical products (Kotler et al., 2016). Thus, the economic goal in the service sector is to provide services to consumers to achieve consumer satisfaction, where the service is set at a certain price. The income derived from the provision of this service is then subject to VAT. The 11 European countries that were the subject of the study had a growth in gross value added that reached an average rate of more

than 50% from 2010 to 2019. This indicates the very strong role of the services sector in a country's GDP.

Graphic 4 Average Service Value Added (%GDP) 2010-2019



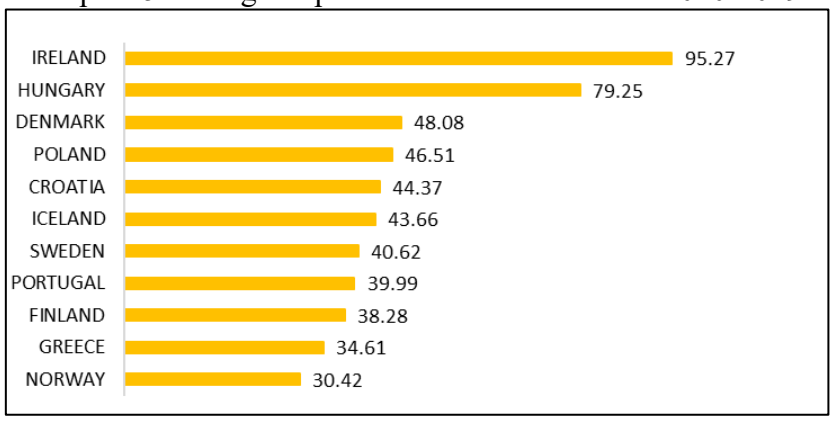
Source: World Bank, edited by the author

Previous research, cited by Sarmento (2016), shows that countries in Europe with a higher share of services in their GDP have a higher share of VAT revenue. This is due to the higher value-added of services in the service sector compared to industry or agriculture. The result of the increase in gross value added in the service sector in line with the increase in VAT revenue is also mentioned in the research of Bogetic & Hassan (1993), which states that the tax base (increased production in the goods and services sector) has a positive relationship with VAT revenue. When the service sector experiences an increase in income, which can occur due to the opening of new branches or an increase in the number of customers compared to before, this can increase the potential taxation of the service sector. Therefore, the service sector has a significant impact on the level of taxation (Tamburian et al., 2017). Research by Piancastelli (2001) also states that in addition to the capacity of the manufacturing sector, the revenue from the service sector can have a positive and significant impact on tax revenue.

Relationship of Imports to VAT Revenue

Using import variables based on World Bank data means that imports consist of goods and services that represent the value of all other market goods and services received from around the world. Value includes the value of goods, freight, insurance, transportation, travel, royalties, license fees, and other services such as communications, construction, financial, information, business, personal, and government services. Import figures exclude compensation of employees and investment income (formerly called factor services) and transfer payments.

Graphic 5 Average Import Share as % of GDP in 2010-2019



Source: World Bank, edited by the author

In today's international trade, export and import activities are one of the activities that increase economic growth. It can be seen in Graphic 5 that the average share of imports in the

GDP of the 11 countries reached 49.19 percent in 10 years. Even the country of Ireland is highly dependent on its economy through imports. Through import activities, the state can meet the community's needs regarding goods or services that cannot be produced domestically (Hodijah & Angelina, 2021). Apart from the inability to produce a good or service, a country imports because it cannot produce enough to meet the demand. So with import activities, a country can buy the necessary goods or services efficiently and cheaply from exporting countries. International trade agreements that reduce tariff and non-tariff barriers also help create an import climate in a country. The digitalization of the economy also facilitates import activities in exchanging goods and services.

Import activities, which provide goods or services to a country due to limited production or unavailability of raw material sources, can help domestic industries produce the desired goods or services. In addition, import activities can increase competition in the domestic market. Domestic entrepreneurs will maintain their market, so imports will stimulate market competition and encourage producers to innovate. The increase in economic activity can promote economic growth, which can increase GDP, which can increase the sales tax (VAT) base of a country. This is in line with previous research, which states that the existence of imports will be positive in line with the tax revenue on goods and services levied because imported goods are subject to VAT when entering the country (Bikas & Raškauskas, 2011). The existence of import activities can encourage the collection of taxes on imported goods, and the acquisition of taxes on VAT and STLG will be high in line with the entry of BKP /JKP into the customs area (Masyitah, 2019).

Relationship between Index of Regulatory Quality and Value-Added Tax Revenue

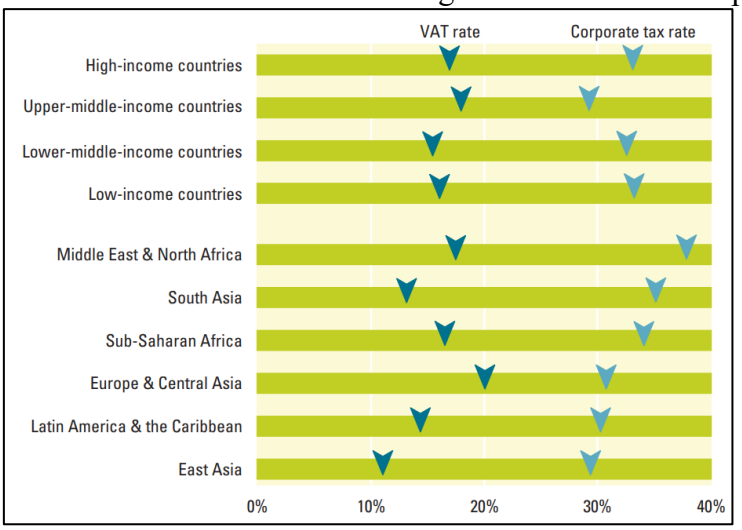
The regulatory quality index used in this study reflects the perceived ability of the government to formulate and implement sound policies and regulations that enable it to foster private sector development. The Regulatory Quality Index is one of the indicators in the Worldwide Governance Indicators (WGI). The WGI is a research dataset that aggregates views on governance quality from a wide range of businesses, citizens, and experts in developed and developing countries. Survey institutes, non-governmental organizations, international organizations, and private companies collect the WGI data. The Regulatory Quality Index is scored on a scale of -2.5 to 2.5. According to this scale, a country with an index value close to or around -2.5 is considered to have weak capabilities. Conversely, the more positive the score and closer to 2.5, the stronger the government's ability to issue quality regulations.

The government's ability to create quality rules includes the area of taxation. This is evident in the steps taken by the Georgia government to simplify tax regulations (Akitoby, 2018). Simplified tax regulations have increased the ratio of tax revenue to GDP to 25%. In addition to the impact on tax revenue, simple tax regulations can increase taxpayer compliance. One type of tax that has proven to be an efficient and effective revenue raiser is the value-added tax (Keen & Lockwood, 2010). Tax reforms that improve regulations, such as the establishment of more modern business process systems by taking advantage of technological developments, as has been done by Cambodia, Georgia, Guyana, Liberia, and Ukraine, can encourage taxpayer compliance so that there is an increase in tax revenue by 1% of GDP in one year after the reform.

In addition to increasing taxpayer compliance, simple tax rules create an economic climate that can attract investment (The World Bank, 2005). Good regulation overcomes market failures that impede productive investment. After all, taxes are a cost that reduces profits for businesses. Therefore, good tax regulations are needed where exemptions or incentives offered to attract investors should not have the effect of reducing national taxes. Quality tax regulations that maintain and improve the investment climate will increase commercial transactions. As illustrated in Graphic 3, since the target countries in the study are high-income countries with high VAT and corporate tax rates, the increase in commercial transactions can also stimulate

increased corporate tax and VAT revenues. Improving administrative rules can improve taxpayer compliance (Forum on Tax Administration Compliance Sub-group, 2004). With high taxpayer compliance, the increase in tax revenue can be optimized (Kurniawan et al., 2022).

Graphic 6 Corporate Taxes and Similar VAT Rates in High-Income and Developing Countries



Sumber: World Bank (2004k), and Ebrill and others (2001)

Research Hypothesis

Based on the literature study conducted, several hypotheses for the study were obtained as follows.

1. H_{1A}: There is a significant positive effect of the contribution of imports to GDP on the receipt of VAT revenue without moderating the regulatory quality index.
2. H_{1B}: There is a significant positive effect of the value added of the industrial sector in GDP on VAT revenue without moderating the regulatory quality index.
3. H_{1C}: There is a significant positive effect of the value added of the service sector to GDP on VAT revenue without moderating the regulatory quality index.
4. H_{1D}: The regulatory quality index has a significant positive effect on VAT revenue.
5. H_{1E}: There is a significant positive effect of the contribution of imports to GDP with the moderation of the regulatory quality index on the receipt of VAT revenues.
6. H_{1F}: There is a significant positive effect on the value added of the industrial sector to GDP with the moderation of the regulatory quality index on the receipt of VAT revenue.
7. H_{1G}: There is a significant positive effect on the value added of the service sector to GDP with the moderation of the regulatory quality index on the receipt of VAT revenue.

METHODS

The research method in this study uses quantitative research methods with numerical data types that are secondary data from the organization's website, namely data from the World Bank. The process of collecting data is through the literature study stage from literature, both in the form of news articles, press releases, or related journals. Data related to the contribution of imports to GDP, value added in the industrial sector, value added in the service sector, data on the regulatory quality index, and the share of VAT revenue in the revenue of each country are taken from the website https://data.worldbank.org/. The research was conducted in the form of panel data with a locus of 11 countries with the highest VAT rates in continental Europe, including Hungary, Croatia, Denmark, Norway, Sweden, Greece, Iceland, Finland, Ireland, Poland, and Portugal, within a period of ten years, starting from 2010 to 2019. The use of the five countries is due to the availability of complete data in the field from 2010 to 2019 and the use of the 11 European countries because they have the same economic conditions, so they have

data that tend to be homogeneous and to find out what factors affect VAT revenue in countries that apply the highest VAT rates in Europe.

This research was conducted using panel data regression analysis. Panel data regression analysis is a modelling method to determine the effect of independent variables on the dependent variable in several sectors observed in the research object within a certain period. The independent variables in question are the contribution of imports to GDP, the value added of the industrial sector, the value added of the service sector, the data of the regulatory quality index as a moderating variable, and the variable of the rule of law index as a control variable. At the same time, the dependent variable is the contribution of VAT revenue to government revenue. The use of regulatory quality moderating variables to determine the role of the formation of quality tax regulations interacts with other independent variables. When the independent variable interacts with the moderating variable, it can be seen that the prediction of results is not only in terms of economic activity but also the results obtained after being influenced by the government's participation in regulatory quality.

Before regression analysis is performed, descriptive statistics tests are performed. In the descriptive statistics stage, all data's average (mean) value, standard deviation value, and minimum and maximum values are calculated.

Table 2 Description of Dependent and Independent Variables

Dependent Variable	Unit	Scale	Symbol
Percentage of tax on goods and services to revenue (Value Added Tax)	Percentage	Ratio	Y
Independent Variable	**Unit**	**Scale**	**Symbol**
Percentage contribution of imports to GDP (before moderation)	Percentage	Ratio	X_1
Percentage of industrial sector value added to GDP (before moderation)	Percentage	Ratio	X_2
Percentage of service sector value added to GDP (before moderation)	Percentage	Ratio	X_3
Regulatory Quality Index (moderating variable)	Point	Ratio	Z
Percentage contribution of imports to GDP (after moderation) (X_1.Z)	Percentage	Ratio	X_1.Z
Percentage of industrial sector value added to GDP (after moderation) (X_2.Z)	Percentage	Ratio	X_2.Z
Percentage of service sector value added to GDP (after moderation) (X_3.Z)	Percentage	Ratio	X_3.Z
Rule of law index (variabel kontrol)	Point	Ratio	X_4

Source: Author, data processed using STATA/MP 17.0

The following is the framework for this study:

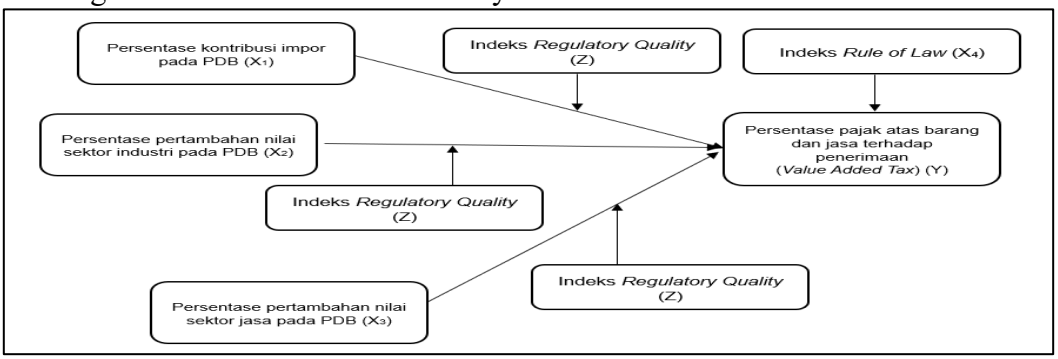


Figure 2 Research Framework with Regulatory Quality as a Moderating Variable

After conducting descriptive statistical tests, classical assumption testing is continued, which consists of testing normality, multicollinearity, heteroscedasticity and autocorrelation. The normality test is a test of whether the residual value is normal or not. A good regression model is a model with normally distributed residuals. Data is considered normally distributed if the test value of prob>chi2> alpha (0.05). The multicollinearity test is a test of high correlation between independent variables. If there is a high correlation between independent variables, the impact can interfere with the relationship between the independent and dependent variables. The data is said to be free of multicollinearity if the test value < 10 is obtained. Then, the heteroscedasticity test is an indicator test of whether it fulfils the condition of a similarity in the variance between the residues of one observation and another, also called homoscedasticity. It is said that the data is homogeneous or non-heteroscedastic if the sign.prob value> alpha (0.05). Then, the last classic assumption test is the autocorrelation test. The autocorrelation test is a test to determine whether there is a correlation between a period and previous periods. Data is considered autocorrelation-free if the test results sign.prob value> alpha (0.05).
The formulation of the panel data regression used in the study is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 Z + \beta_5 X_1 Z + \beta_6 X_2 Z + \beta_7 X_3 Z + \beta_8 X_4 + \varepsilon$$

Description:

Y	=	Percentage of tax on goods and services to revenue (Value Added Tax)
β_0	=	Equation constant
β_1	=	Coefficient Percentage contribution of imports to GDP (before moderation)
X_1	=	Percentage contribution of imports to GDP (before moderation)
β_2	=	Coefficient Percentage of industrial sector value added to GDP (before moderation)
X_2	=	Percentage of industrial sector value added to GDP (before moderation)
β_3	=	Coefficient Percentage of value added of the service sector in GDP (before moderation)
X_3	=	Percentage of service sector value added to GDP (before moderation)
β_4	=	Regulatory Quality Index Coefficient (moderating variable)
Z	=	Regulatory Quality Index (moderating variable)
β_5	=	Coefficient Percentage contribution of imports to GDP (after moderation) (X_1.Z)
X_1Z	=	Percentage contribution of imports to GDP (after moderation) (X_1.Z)
β_6	=	Regression Coefficient Percentage of industrial sector value added to GDP (after moderation) (X_2.Z)
X_2Z	=	Percentage of industrial sector value added to GDP (after moderation) (X_2.Z)
β_7	=	Coefficient Percentage of value added of the service sector in GDP (after moderation) (X_3.Z)
X_3Z	=	Percentage of service sector value added to GDP (after moderation) (X_3.Z)
β_8	=	Coefficient of rule of law index (control variable)
X_4	=	Rule of law index (control variable)
ε	=	Residual Value

Panel data testing is performed by testing three models, namely the Chow test, the Lagrange Multiplier (LM) test, and the Hausman test, with an α level of 0.05. In the test to determine the model between the common effect model (CEM) and the fixed effect model (FEM), if the sign.prob value F = 0.000 < alpha (0.05), then the FEM model is better than the CEM model. The LM test determines whether the REM model is better than the CEM model if the sign.prob value chi2 =0.000 < alpha (0.05) means that the REM model is better than the CEM model. The Hausman test tests whether the FEM or REM model is more appropriate if the sign.prob value chi2 =0.000 < alpha (0.05), then the FEM model is better than the REM model.

When testing using moderation variables, the X1, X2, X3, and the moderating variable values are first calculated for their respective Z score values. Then, the two independent variables are each multiplied by the Z score value of the moderating variable. This Z score value is used to maintain a normal data distribution and overcome the multicollinearity test in the classic assumption test.

RESULTS AND DISCUSSIONS

Data tests were performed using the StataMP17 application. The first is a statistical test to obtain the distribution of research data from each variable in the average, standard deviation, minimum, and maximum values. If the results of the standard deviation test are smaller than the mean, with the mean between the minimum and maximum, it can be said that the results of the data distribution are normal, so the next step test can be performed. The following is a table of statistical test results portrayed.

Table 3 Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
VAT	110	35.02529	5.481984	22.84845	48.54004
IMP	110	49.187	19.47534	27.21149	124.3699
IND	110	23.65828	5.844721	13.35335	38.15221
SERV	110	61.39934	5.144971	50.57726	70.59232
REG	110	1.208545	0.5448758	0.14	1.9
Z_IMPORXREG	110	0.0471899	0.889173	-1.824369	2.847442
Z_INDXREG	110	0.4046172	0.9181638	-0.8211172	3.062139
Z_SERVXREG	110	-0.1046056	0.9928717	-2.963514	1.291883
LAW	110	1.270636	0.6903998	0.07	2.12

Source: Author, data processed using STATA/MP 17.0

From the descriptive statistical test results in Table 3, it can be seen that the numerical data of Z_IMPORXREG, Z_INDXREG, and Z_SERVXREG variables have quite a different distribution, as can be seen from the standard deviation number, which is higher than the mean.

After the descriptive statistical test, the panel data regression test was conducted using the Chow test, Lagrange Multiplier (LM) test, and Hausman test with α level equal to 0.05. The results of the panel data test are as follows.

Table 4 Model Selection in Panel Data Processing

Model Comparisons	Testing Methods	Prob Value	Model Selection
CEM and FEM	Chow Test	0.0000	FEM
CEM and REM	Lagrange Test	0.0000	REM
FEM and REM	Hausman Test	0.6988	REM

Source: Author, data processed using STATA/MP 17.0

In the test to determine the model between the Common Effect Model (CEM) or Fixed Effect Model (FEM), the results of prob> F = 0.0088 < alpha (0.05), the FEM model is better than the CEM model. For the LM test, it is used to determine whether the REM model is better than the CEM model. The value of prob> chibar2 = 0.0000 < alpha (0.05) means that the REM model is better than the CEM model. Then, the Hausman test is performed to determine which model is better between FEM and REM. Based on the results of the Hausman test, the value of prob> chi2 = 0.6988> 0.05, so the REM model is better than the FEM model.

Then, classical assumption tests are performed in the form of tests for normality, multicollinearity, heteroscedasticity, and autocorrelation. The results of the classical assumption tests are as follows.

Table 5 Classical Assumption Test

Classical Assumption Test	Testing	Prob
Normality	Skewness and Kurtosis Tests	0.0000
Multicollinearity	Variance Inflation Factor	9.40
Heteroscedasticity	Breusch–Pagan/Cook–Weisberg Test	0.4435
Autocorrelation	Wooldridge Test	0.9401

Source: Author, data processed using STATA/MP 17.0

From the results of the classical assumption test performed on the normality test, it was found that the prob>chi2 value was less than 0.05, so it was determined that the data did not pass the normality assumption test. However, based on the central limit theory (CLT), it is stated that due to the large amount of data with more than thirty sample data, it will follow a normal distribution so that it can ignore the test results of skewness and kurtosis (Triola, 2019). Then, for the multicollinearity test, the value is 9.40, less than 10, so it passes the multicollinearity test. For the heteroscedasticity test, the value is 0.4435, which is more than 0.05, so it passes the heteroscedasticity test. Finally, the autocorrelation test found that the prob> F value = 0.9401, which is more than 0.05, so it is said that the data test passes the autocorrelation test.

Table 6 displays the effect and significance of the independent variables on the dependent variable utilizing the Random Effect Model in panel data regression.

Table 6 STATA Processing Results: Random Effect Model

Variable	Coefficient	Standard Error	Z Value	P>|z| Value	Effects
Cons	124.6839	18.76751	6.64	0.000	Significant
IMP	-0.0059003	0.0325974	-0.18	0.856	Not Significant
IND	-1.055635	0.2044552	-5.16	0.000	Significant
SERV	-1.096371	0.2337831	-4.69	0.000	Significant
REG	2.655333	1.339721	1.98	0.047	Significant
Z_IMPORXREG	1.147292	0.5978762	1.92	0.055	Significant
Z_INDXREG	2.19304	1.031378	2.13	0.033	Significant
Z_SERVXREG	2.768505	1.059422	2.61	0.009	Significant
LAW	-0.7385107	1.19961	-0.62	0.538	Not Significant
Adjusted R-square		0.6990			
Prob > chi2		0.0000			Signifikan secara simultan

Source: Author, data processed using STATA/MP 17.0

The regression equation is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 Z + \beta_5 X_1 Z + \beta_6 X_2 Z + \beta_7 X_3 Z + \beta_8 X_4 + \varepsilon$$

$$Y = 124.6839 + -0.0059003 X_1 + -1.055635 X_2 + -1.096371 X_3 + 2.655333 Z + 1.147292\ X_1 Z + 2.19304\ X_2 Z + 2.768505\ X_3 Z + -0.7385107\ X_4 + \varepsilon$$

Description:

Y = Percentage of tax on goods and services to revenue (Value Added Tax)
X_1 = Percentage contribution of imports to GDP (before moderation)
X_2 = Percentage of industrial sector value added to GDP (before moderation)

X_3		Percentage of service sector value added to GDP (before moderation)
Z	=	Regulatory Quality Index (moderating variable)
X_1Z	=	Percentage contribution of imports to GDP (after moderation) (X_1.Z)
X_2Z	=	Percentage of industrial sector value added to GDP (after moderation) (X_2.Z)
X_3Z		Percentage of service sector value added to GDP (after moderation) (X_3.Z)
X_4	=	Rule of law index (control variable)
ε	=	Residual value

Based on the results of the panel data regression conducted, the results show that for the independent variables, namely the contribution of imports to GDP, value added to the industrial sector, value added to the service sector, and regulatory quality index data as a moderating variable and the rule of law variable (control variable), have a significant effect simultaneously on the percentage of tax on goods and services on revenue (value added tax) with a prob>chi2 value of 0.0000 below 0.05 with its influence shown by the adjusted R-squared on the total value 69.90 percent. Meanwhile, the partial effect on each variable is shown as follows.

The effect of the import share of GDP on VAT revenue without the regulatory quality index as a moderator

Based on the panel data regression test carried out before moderation with the regulatory quality index, the effect of import contribution to GDP on VAT revenue has an insignificant effect with a P |z| value of 0.856> 0.05, so hypothesis H_{1A} is rejected. The results of this study illustrate that there are other factors that affect VAT more than import activities. The insignificant effect of imports is different from previous studies such as Permadi & Wijaya (2022) and Sarmento (2016), which state that the existence of import activities will reduce domestic economic activities so that the relationship between imports and Value Added Tax will be inversely proportional. The higher the imports, the lower the value-added tax revenue generated from domestic economic activities. The results of other studies state that the presence of imports will be positive in line with the tax revenue on goods and services levied because imported goods are subject to VAT when entering the country (Bikas & Raškauskas, 2011). The current study, which found that imports do not have a significant effect on tax revenue on goods and services, also contradicts Masyitah's (2019) research because, according to him, when import activities increase, the tax revenue on VAT and STLG will be high in line with the entry of BKP /JKP into the customs area.

The presence of international trade activities and free trade agreements implemented between 11 countries and other nations globally results in special perks for imported goods, specifically exemption from VAT (Fiscal Policy Agency, 2015). Despite the potential loss of VAT revenue from imported goods, it does not affect domestic VAT revenue since the high VAT rate applied to goods or services consumption can still offset this potential loss.

The effect of the percentage of value added to GDP in the industrial sector and VAT revenue without the regulatory quality index as a moderator

The panel data regression test was conducted to determine the impact of the industrial sector's percentage value on VAT revenue on GDP before moderation with the regulatory quality index. The results showed a significant negative effect, with a P |z| value of 0.000 <0.05 and a coefficient of -1.055635. Consequently, the H_{1B} hypothesis is rejected, meaning that a 1 percent rise in the value added to the industrial sector leads to a 1.056 percent decline in VAT revenue. There should be economic growth, where expansion in a sector that results in growth in Gross Regional Revenue (GRDP) positively impacts VAT revenue (Marlina, 2021).

It is important to note that although Europe's consumption VAT rates are high, their corporate income tax rates are not. The research object is a comparison of corporate tax rates to VAT rates in 11 countries, listed below.

Table 7 VAT and CIT Rate Comparison

No	Country's Name	Standard VAT rate (%)	Corporate Income Tax (%)
1	Hungary	27	9
2	Croatia	25	18
3	Denmark	25	22
4	Norway	25	22
5	Sweden	25	20.6
6	Greece	24	22
7	Iceland	24	20
8	Finland	24	20
9	Ireland	23	12.5
10	Poland	23	19
11	Portugal	23	31.5

Source: OECD, 2023

Based on the comparison of Value Added Tax (VAT) and Corporate Income Tax (CIT) rates, it is evident that countries with high VAT rates offer lower CIT rates. The average CIT rate of European countries stands at 21.5 percent, below the global average of 23.4 percent. The significant contrast between VAT and CIT and the substantial variance in CIT rates across 11 countries may incentivize industrial sector entrepreneurs to engage in tax avoidance or evasion to minimize their tax liability. Profit shifting is a distinct possibility, particularly in countries such as Hungary and Ireland, where the CIT rate is only 9% and 12.5%, respectively. Implementing high tax rates may heighten tax avoidance attempts (Matthews, 2003). Furthermore, having numerous countries with high CIT can promote tax evasion, constituting a clear breach of tax regulations. This, in turn, can decrease the government's tax revenue and impair its potential to enhance financial system stability (Ozili, 2020).

The effect of the percentage of service sector value added to GDP on VAT revenue without regulatory quality index as moderation

Based on the panel data regression analysis, it is evident that the percentage of value added in the service sector on GDP has a significant negative impact on VAT revenue, with a coefficient of -1.096371. This implies that a 1% rise in the value added in the service sector on GDP leads to a decline of 1.096% in the percentage of goods and services tax revenue. Thus, it can be inferred that hypothesis H_{1C} has been nullified.

Kuznets' theory posits that economic growth can be achieved by increasing a country's ability to provide a wider range of economic goods to its population through technological advancements and institutional adjustments that boost the value added of the service sector. This, in turn, will expand the VAT tax base. However, the study findings do not support this hypothesis. This negative relationship, which contradicts earlier research by Bogetic & Hassan (1993) and Tamburian et al. (2017), lacks objectivity due to the absence of clear, causal connections between statements. It is possible that differences in research results arise from continuing exemption policies and VAT reduction incentives aimed at encouraging certain service sectors to reduce their taxation costs. The text adheres to conventional structure and formal register but requires an explanation of technical term abbreviations. In Hungary, up to 18% VAT reductions apply to certain food items and open-air music event admissions. This also applies to 10 other countries. Some service sectors exempt from VAT imposition include public transportation, music concerts, healthcare, education, home improvement, and magazine and newspaper printing.

The effect of the regulatory quality index on VAT revenue as moderation

The results of the regression test indicate that the regulatory quality index has a significant positive effect with a value of P>|z| = 0.047 <0.05 and a coefficient of 2.655333. This suggests that a one percent increase in the regulatory quality index can increase VAT by 2.65 percent. Therefore, it can be concluded that hypothesis H_{1D} is supported. Seeing the impact of regulatory quality on VAT, it is highly recommended that the government improve the quality of regulations for applications that are not overly complex. This will help create and encourage a favourable investment climate for taxpayer compliance (The World Bank, 2005).

The issuance of high-quality VAT legislation regarding taxation is anticipated to limit tax avoidance and tax evasion among taxpayers. Additionally, the enacted laws and regulations are adaptable in accordance with technological advancements, such as the inclusion of e-invoicing and digital invoicing within the VAT reporting process. Changes to business processes and tax regulations in service delivery and taxpayer compliance testing are expected to integrate into a single system, with the goal of reducing the high, complex costs of tax compliance for taxpayers. Implementing an integrated tax information system supported by a legal framework is anticipated to establish a collaborative and inclusive regulatory atmosphere that can promote taxpayers' voluntary adherence, ultimately boosting state revenue from VAT (Ali, 2018).

The effect of import contribution to GDP on VAT revenue with regulatory quality index as moderation

The P>|z| value is one tail (one tail) of 0.0275 <0.05, and the coefficient value is 1.147292, showing a significant positive effect of the interaction between the contribution of imports to GDP and the regulatory quality index. This suggests that the role of the moderating variable regulatory quality index strengthens the effect of imports on VAT revenue. From the regression results obtained, it can be concluded that hypothesis H_{1E} is accepted.

The presence of import regulations that do not impede international trade particularly imports satisfying domestic demand, can potentially stimulate the tax revenue ratio (Akitoby, 2018). Additionally, such regulations may improve tax compliance by simplifying the process for importers. This aligns with earlier research indicating that improving administrative regulations to increase taxpayer compliance (Forum on Tax Administration Compliance Sub-group, 2004) can lead to higher tax revenue and greater optimization (Kurniawan et al., 2022).

The effect of the percentage of industrial sector value added to GDP on VAT revenue with regulatory quality index as moderation.

The study highlights the impact of the moderating variable, the regulatory quality index, on the relationship between the increased value added in the industrial sector and VAT revenues. Specifically, the interaction of the regulatory quality index and the increased value added in the industrial sector has a significant positive effect. It is worth noting that this effect was originally significantly negative without accounting for moderation. The data indicate a statistically significant outcome with a P-value of 0.033<0.05 and a favourable coefficient of 2.19304, leading to the acceptance of hypothesis H_{1F}.

The negative effect of industrial sector value added can be significant without moderation. Taxpayer efforts to utilize tax avoidance and tax evasion schemes can be minimized by implementing domestic laws and regulations that promote information exchange between European countries. This information sharing is conducted to acquire data on assets and income left unreported in domestic tax filings (Ispriyarso, 2020). Tax evasion and avoidance are practices that implicate European nations, including those designated as tax havens, so executing the task on an individual country level would prove challenging. Thus, cooperation among countries in the taxation field is required to combat tax avoidance and evasion practices through the OECD initiative for transparency and automatic disclosure of information, known as Automatic Exchange of Information (AEoI) (Febyani & Widodo, 2020).

The effect of the percentage of value added in the service sector on GDP on VAT revenue with the regulatory quality index as moderation

Finally, the reinforcing role of the regulatory quality index variable is also shown in its interaction with the percentage of service sector value added to GDP on VAT revenue. The interaction between the regulatory quality index and the percentage of value added in the service sector significantly affects VAT revenue. The significant positive effect is shown in the P>|z| value of 0.009 <0.05 with a positive coefficient value of 2.768505. So it can be concluded that hypothesis H_{1G} is accepted.

Issues can arise when expanding the service sector's value reduces VAT revenues. This situation arises because service sector growth falls under VAT exemptions and facilities. To broaden a country's VAT foundation, the International Monetary Fund, World Bank, and OECD suggest the elimination of some VAT exemptions (DDTCNews Editorial, 2021). It is necessary for a country to examine the implementation of VAT exemptions on specific service business activities. In cases where certain service business activities, such as transportation services, education services, or health services limited to certain individuals and unavailable to the general public, are given VAT-exempt status, it is necessary to consider imposing VAT. This is because the exemption may not be appropriately targeted and could lead to injustice (Saragih et al., 2022).

CONCLUSION

Based on the findings of research conducted on eleven European nations with high VAT rates, utilizing panel data spanning a decade from 2010 to 2019, the results indicate that the independent variables - the contribution of imports to GDP, increase in value added in the industrial and services sectors, pre and post moderation with the regulatory quality index, with the rule of law index as a controlling variable - have a substantial impact on VAT revenue.

Furthermore, for partial results on each variable, it is found that the effect of import contribution on GDP is not significant on VAT revenue before the interaction with moderation variables. Then the partial effect on the variable of increasing value added in the industrial and service sectors before being moderated has a significant negative relationship to VAT revenue. The moderating variable of the regulatory quality index itself has a significant positive relationship to VAT revenue. When the moderating variable of regulatory quality interacts with import contribution and increase in value added of the industrial sector and service sector, the effect of the three independent variables on the VAT revenue variable becomes significantly positive so that the moderating variable of regulatory quality in this study has a role that strengthens the influence of the independent variables on the dependent variable.

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