

The Dynamics of Taxation Applied to Multinational Enterprises in the European Union

Laurențiu-Mihai Tănase

Oana-Cristina Datcu

The Bucharest University of Economic Studies, Romania

laurentiu.tanase95@yahoo.com

datcu.oana93@gmail.com

Norina Popovici

“Ovidius” University of Constanta, Romania

norinapopovici@yahoo.com

Abstract

The taxation of multinational enterprises is often a sensitive subject due to the implications it can have on foreign direct investments on the one hand and on the budget of a country and PIB on the other.

In this paper we will focus on the dynamics of taxation of multinational enterprises in the European Union, following the evolution of corporate tax rates in the member states in order to notice the differences and to determine if the practice of lower or higher tax rates has a different impact on GDP of a country.

We hope that the results of our research will represent a basis for decisions on tax rates in the situation where the application of a lower or higher tax rate can have a significant impact on a country's GDP.

Key words: corporate tax, GDP, multinational enterprises, European Union

J.E.L. classification: E01, F23, F36

1. Introduction

In recent years, the taxation of multinational enterprises has been a topic of interest at the negotiation tables of the world's countries.

Since globalization allowed the large-scale development of big companies beyond the borders of their countries, the tax system was one of the selection criteria, and some countries aimed to become attractive from this point of view.

In the created context, multinational enterprises have chosen to enter in the promising markets even bypassing the burden of tax system through various methods of reducing or avoiding taxation. One of these being the allocation of profit to a preferential tax system.

Considering these realities, the representatives of the countries of the world initiated negotiations within OECD/G20 to establish a uniformity of tax system at the global level regarding the taxation of multinational enterprises. The negotiations took into account the allocation of a part of company's profit to the countries where it was made and to create a global minimum tax.

Under these conditions, through this paper we will analyze the dynamics of taxation of MNEs in European Union, to follow its evolution and effects during the period 2012-2021.

The purpose of the paper is to find out if the practice of lower or higher tax rates of multinational enterprises determines an influence to be considered on the GDP of a country.

This paper is a part of a larger research through which we aim to determine the impact will have the new tax reform plan proposed by the OECD/G20 in the European Union.

2. Literature review

Certainly, the motivation behind the efforts to create a uniform system of taxation at the international level has several reasons that have been considered by most of the world's states. In an attempt to define these reasons and to appreciate their importance and necessity, it would be advisable to start from the basic theory of multinational companies so that we can end up discussing about tax systems and their possible weaknesses.

Based on the pioneering work of Buckley and Casson (1976) and other contributors to multinational enterprise theory such as Rugman (1981), Hennart (1982) and Teece (1985), in the paper of Foss et al (2019) it was appreciated that the basic idea of the multinational company assumes the internalization of transactions across the borders of the countries in order to maximize the value obtained while reducing transaction costs (Foss et al, 2019).

Therefore, the choice of a foreign market by a multinational company implies taking strategic decisions aimed at increasing the company's competitiveness. In this sense, a multinational company aims to use their advantages to exploit all the targeted resources of respective location in order to increase its competitiveness over a company that operates only in the country of origin. For this to happen, the benefits of exploitation must exceed the cost of entering the foreign market (Zvirgzde et al, 2013).

Among the selection criteria targeted by multinational enterprises is the tax system of the host country. In the specialized literature, various papers have been developed regarding the taxation of multinational enterprises and its impact on the attractiveness of the location where the company proposes to place investments. Research results indicate that the level of taxation inhibits foreign investment and companies' decisions to enter that market (Lawless et al, 2017).

However, some foreign markets are quite promising for companies that choose to operate in several countries, even if they are subject to different or unfavorable tax rates and regulations, they have developed a set of tax avoidance procedures, fact which has a negative impact on the budgets of host countries (Blouin, 2012).

One of the weaknesses of taxation systems of countries with high tax rates is the allocation of profits of the companies to another jurisdiction with lower tax rates, called a tax haven.

Any country can become a tax haven if it reduces its tax rates. Such an approach can be taken when it is desired to attract foreign investments and the profits of multinational enterprises from jurisdictions with high tax rates (Blouin, 2012).

In the European Union, the emphasis has always been on integration and harmonization, even from the perspective of taxation systems, whose discussions have always been considered sensitive, due to the impact they can have on foreign investments. However, over time the attempted harmonization strategies did not have the desired effect and thus the member states face the erosion of the tax base and the profit transfers of multinational enterprises (Nerudova et al, 2019).

Therefore, it is most likely that the motivation behind the efforts to create a uniform system of taxation at the international level is relevant due to the existing weaknesses in the current systems.

3. Research methodology

In this paper, we aim to find out if there are significant differences in terms of the dynamics of taxation applied to multinational enterprises in the European Union states and to determine the contribution of corporate taxes collected to the GDP of four member countries of the European Union, which present different tax rates, smaller and bigger. For this we will use the following data:

- the evolution of corporate tax rates
- the evolution of corporate taxes collected at the state budget
- the evolution of GDP.

With the help of these data, we propose a quantitative analysis to observe whether there are major differences in the contribution of corporate taxes collected to a country's GDP, taking into account the corporate tax rates applied by the member states of the European Union.

We will elaborate this analysis using the unifactorial linear regression model to determine the contribution of the collected corporate taxes to GDP growth.

Therefore, we will consider the equation of the linear regression model:

$$Y = a + bx + u$$

Y represents the real values of the dependent variable, in our case the GDP; x represents the real values of the independent variable, respectively the corporate tax collected; a and b are parameters of the model; and u is the residual variable that shows us the influence of other factors on Y .

For our research, we need to know that the econometric model is linear, so we will determine the linearity of the model with the help of the correlogram that shows the relationship between variables y and x and also estimate the parameter b , which shows the influence of corporate taxes collected on GDP, if the estimators calculated by the least squares method are of maximum veracity.

To estimate the parameter b , we will use the following formula:

$$\hat{b} = \frac{n \cdot \sum y_t x_t - \sum x_t \cdot \sum y_t}{n \cdot \sum x_t^2 - \sum x_t \cdot \sum x_t}$$

In the formula for estimating the parameter b , n represents the number of observations. In our case, there will be 10 observations because the research will be developed over a period of 10 years, respectively 2012-2021.

4. Findings

In the following table, we will present the data we collected regarding the evolution of the corporate tax rate in the European Union.

Table no.1. The Dynamics of Taxation Applied to Multinational Enterprises in the European Union in the period 2012-2021, in percentage rates (%).

Country	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Austria	25	25	25	25	25	25	25	25	25	25
Belgium	33	33	33	33	33	33	29	29	25	25
Bulgaria	10	10	10	10	10	10	10	10	10	10
Croatia	-	20	20	20	20	18	18	18	18	18
Cyprus	10	10	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Czechia	19	19	19	19	19	19	19	19	19	19
Denmark	25	25	24.5	23.5	22	22	22	22	22	22
Estonia	21	21	21	20	20	20	20	20	20	20
Finland	24.5	24.5	20	20	20	20	20	20	20	20
France	33.33	33.33	33.33	33.33	33.33	33.33	33.33	31	31	27.5
Germany	15	15	15	15	15	15	15	15	15	15
Greece	20	26	26	26	29	29	29	28	24	24
Hungary	19	19	19	19	10	9	9	9	9	9
Ireland	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Italy	27.5	27.5	27.5	27.5	27.5	24	24	24	24	24
Latvia	15	15	15	15	15	20	20	20	20	20
Lithuania	15	15	15	15	15	15	15	15	15	15
Luxembourg	22.05	21	21	21	21	19	18	18	17	17
Malta	35	35	35	35	35	35	35	35	35	35
Netherlands	25	25	25	25	25	25	25	25	25	25
Poland	19	19	19	19	19	19	19	19	19	19
Portugal	25	25	23	21	21	21	21	21	21	21
Romania	16	16	16	16	16	16	16	16	16	16
Slovakia	19	23	22	22	22	21	21	21	21	21
Slovenia	18	17	17	17	17	19	19	19	19	19
Spain	30	30	30	28	25	25	25	25	25	25
Sweden	26.3	22	22	22	22	22	22	21.4	21.4	20.6

Source: European Commission, TEDB - "Taxes in Europe" database, [Accessed 25 November 2022].

According to Table no.1., the states of the European Union do not show a uniformity of corporate tax rates in recent years, the states practicing different rates in the range of 9% and 35% and some countries such as Belgium, Denmark, France, Sweden did not practice constant levels of rates in the period 2012 – 2021.

Also, the lowest rates are found in countries such as Hungary (9%, 10%), Bulgaria (10%), Cyprus (10%, 12.5%) and Ireland (12.5%) and the highest rates are found in countries such as Malta (35%), France (33.3%), Belgium (33%), Spain (30%), Greece (29%, 28%) and Italy (27.5%).

In order to analyze the contribution of corporate taxes collected to a country's GDP, taking into account the corporate tax rates applied by the member states of the European Union, we chose the first four countries according to GDP, respectively: Germany, France, Italy and Spain, countries that, according to Table no.1., practice different tax rates.

Table no.2. The evolution of corporate tax rates, corporate taxes collected at the state budget and GDP in Germany, France, Italy and Spain in the period 2012-2021.

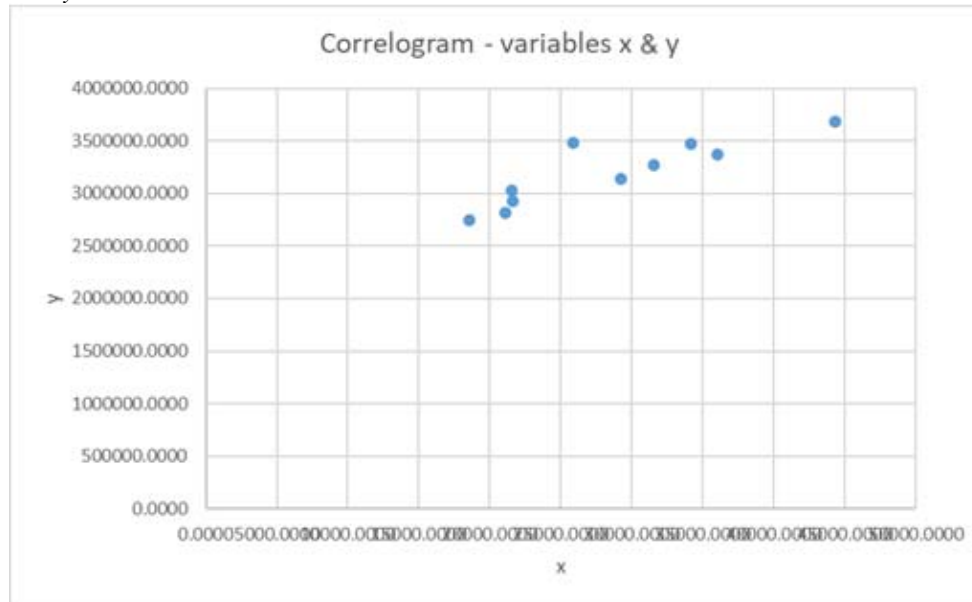
Country	Ind	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Germany	CTR (%)	15	15	15	15	15	15	15	15	15	15
	CTC (mil. euro)	18,532	21,107	21,622	21,551	29,223	31,563	36,035	34,117	25,841	44,301
	GDP (mil. euro)	2,745,310	2,811,350	2,927,430	3,026,180	3,134,748	3,267,160	3,365,450	3,473,268	3,485,430	3,681,750
France	CTR (%)	33.33	33.33	33.33	33.33	33.33	33.33	33.33	31	31	27.5
	CTC (mil. euro)	47,559	49,536	49,529	49,674	49,725	57,920	55,125	59,277	55,205	61,158
	GDP (mil. euro)	2,088,804	2,117,189	2,149,765	2,198,432	2,234,129	2,297,242	2,363,306	2,437,635	2,310,469	2,500,870
Italy	CTR (%)	27.5	27.5	27.5	27.5	27.5	24	24	24	24	24
	CTC (mil. euro)	35,657	38,325	31,063	31,819	34,457	34,506	31,054	32,741	31,903	28,334
	GDP (mil. euro)	1,624,358	1,612,751	1,627,485	1,655,355	1,695,786	1,736,592	1,771,391	1,796,648	1,660,621	1,782,050
Spain	CTR (%)	30	30	30	28	25	25	25	25	25	25
	CTC (mil. euro)	20,766	19,516	19,423	22,483	23,105	24,147	27,524	23,760	20,799	30,732
	GDP (mil. euro)	1,031,104	1,020,677	1,032,688	1,078,892	1,114,420	1,162,492	1,203,859	1,245,513	1,116,989	1,206,842

Source: European Commission, TEDB - "Taxes in Europe" database, [Accessed 25 November 2022]; Eurostat, GDP and main components, [Accessed 25 November 2022]; Eurostat, Tax revenue statistics [Accessed 25 November 2022].

In Table no. 2., the Ind column presents the analyzed indicator: CTR means the Corporate Tax Rate and is expressed in percentage rates (%), CTC means Corporate Tax Collected and is expressed in millions of euro and GDP is Gross Domestic Product expressed in millions of euro.

Therefore, with the help of the data from the table, we obtained the following results:

Graph no.1. Correlogram regarding the relationship between GDP and corporate tax collected in Germany



Source: Own processing based on the data from table no. 2.

The correlogram shows us that the links between the variables in the case of Germany can be approximated by a straight line, which denotes the linearity of the model.

Figure no.2. The influence of corporate taxes collected on GDP in Germany

Dependent Variable: GDP

Method: Least Squares

Sample: 2012 2021

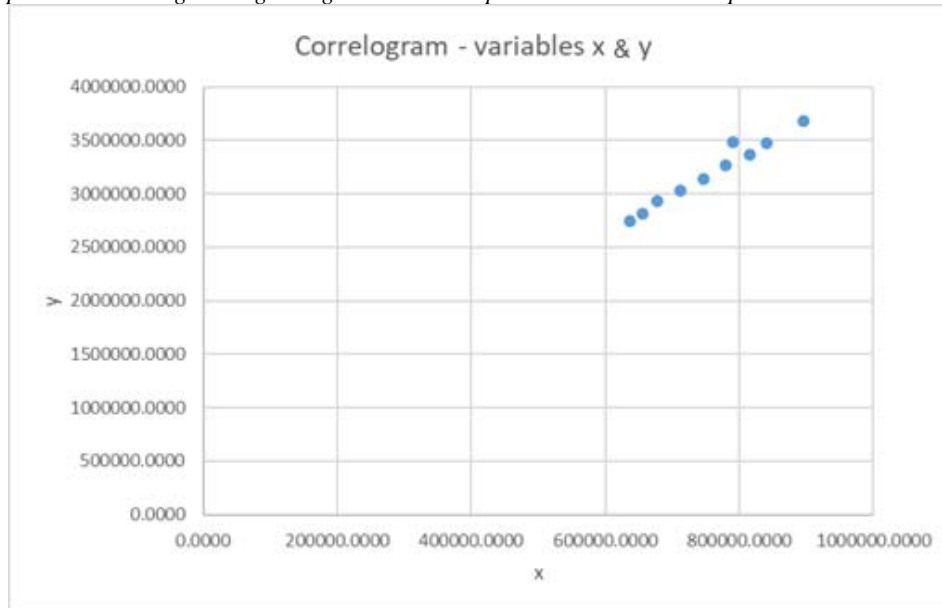
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2239691.	192161.8	11.65524	0.0000
CTC	33.53798	6.528443	5.137211	0.0009
R-squared	0.767381	Mean dependent var		3191808.
Adjusted R-squared	0.738303	S.D. dependent var		313758.4
S.E. of regression	160507.3	Akaike info criterion		26.98692
Sum squared resid	2.06E+11	Schwarz criterion		27.04744
Log likelihood	-132.9346	Hannan-Quinn criter.		26.92054
F-statistic	26.39093	Durbin-Watson stat		1.651773
Prob(F-statistic)	0.000888			

Source: Own processing in Eviews, based on the data from table no. 2.

According to Figure no. 1, if the corporate taxes collected in Germany increase by one unit, then Germany's GDP will increase by 33.53798 units (estimation of the parameter b).

Graph no.2. Correlogram regarding the relationship between GDP and corporate tax collected in France



Source: Own processing based on the data from table no. 2.

The correlogram shows us that the links between the variables in the case of France can be approximated by a straight line, which denotes the linearity of the model.

Figure no.2, The influence of corporate taxes collected on GDP in France

Dependent Variable: GDP
Method: Least Squares

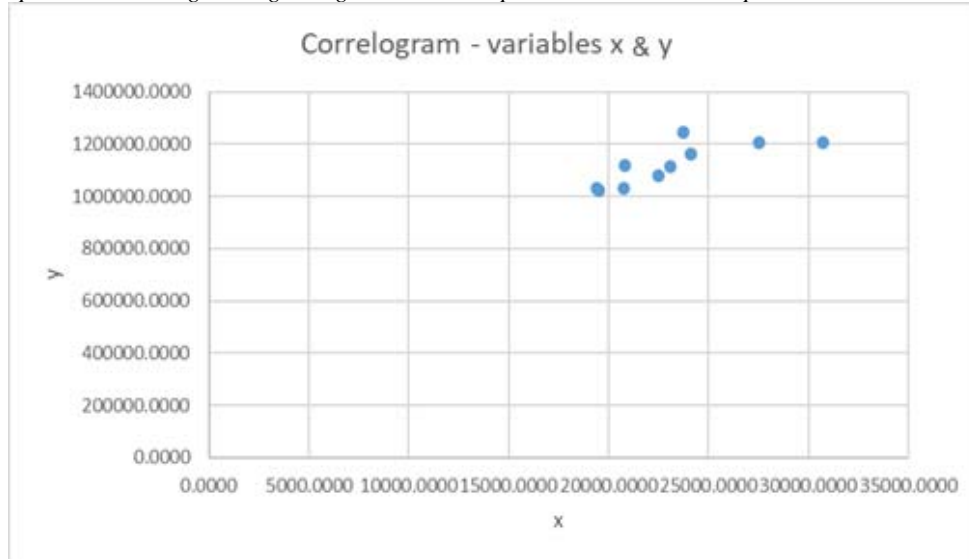
Sample: 2012 2021
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	850759.0	182552.3	4.660358	0.0016
CTC	26.53832	3.401424	7.802120	0.0001
R-squared	0.883844	Mean dependent var		2269784.
Adjusted R-squared	0.869325	S.D. dependent var		137249.3
S.E. of regression	49614.26	Akaike info criterion		24.63880
Sum squared resid	1.97E+10	Schwarz criterion		24.69932
Log likelihood	-121.1940	Hannan-Quinn criter.		24.57241
F-statistic	60.87308	Durbin-Watson stat		2.591817
Prob(F-statistic)	0.000052			

Source: Own processing in Eviews, based on the data from table no. 2.

According to Figure no. 2, if the corporate taxes collected in France increase by one unit, then France's GDP will increase by 26.53832 units (estimation of the parameter b).

Graph no.3. Correlogram regarding the relationship between GDP and corporate tax collected in Spain



Source: Own processing based on the data from table no. 2.

The correlogram shows us that the links between the variables in the case of Spain can be approximated by a straight line, which denotes the linearity of the model.

Figure no.3. The influence of corporate taxes collected on GDP in Spain

Dependent Variable: GDP
Method: Least Squares

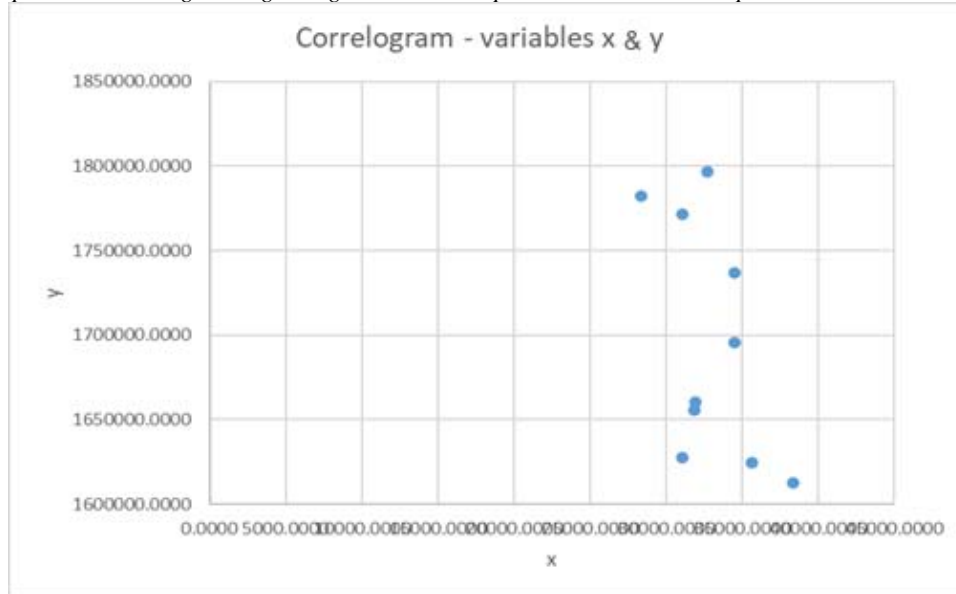
Sample: 2012 2021
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	708085.3	114724.0	6.172077	0.0003
CTC	17.79347	4.886998	3.640983	0.0066
R-squared	0.623649	Mean dependent var		1121348.
Adjusted R-squared	0.576605	S.D. dependent var		81128.02
S.E. of regression	52789.03	Akaike info criterion		24.76285
Sum squared resid	2.23E+10	Schwarz criterion		24.82337
Log likelihood	-121.8143	Hannan-Quinn criter.		24.69646
F-statistic	13.25675	Durbin-Watson stat		1.225316
Prob(F-statistic)	0.006580			

Source: Own processing in Eviews, based on the data from table no. 2.

According to Figure no. 3, if the corporate taxes collected in Spain increase by one unit, then Spain's GDP will increase by 17.79347 units (estimation of the parameter b). In the case of Spain, it is important to consider that the results are less significant compared to Germany and France due to the assumptions underlying the least squares method.

Graph no.4. Correlogram regarding the relationship between GDP and corporate tax collected in Italy



Source: Own processing based on the data from table no. 2.

Also, in the case of Italy, the links between the variables do not form a straight line, so the model does not denote linearity and the estimation of the parameter b of the model generates a negative value, a fact which implies that there is a negative relationship between GDP and the corporate taxes collected in Italy.

5. Conclusions

Regarding the dynamics of taxation of multinational enterprises, we found that in the European Union, the member states do not present a uniformity of tax rates, different rates are practiced between countries, some having low percentages of 9% and others high percentages of 35%.

Also, 17 of the 27 analyzed states ($\approx 63\%$) of the European Union did not present a constant level of tax rates in the period 2012-2021, there were changes in rates and a tendency for rates to decrease in 14 of the 17 countries ($\approx 83\%$).

Regarding the impact of corporate taxes collected from the budget of the member states on the GDP. From the four analyzed countries, we found that a constant tax rate of 15% in Germany generated more GDP (it generated 33,53798 units of GDP) compared to a higher and fluctuating rate in the range of 33.33% - 27.5% in France (it generated 26.53832 units of GDP).

In Spain, which practices high and fluctuating rates of corporate taxes in the range of 30% - 25%, it was found that the impact on GDP was 17.79347 units generated, being as small as in the case of France, which still practice high rates. But the results cannot be significant in the case of Spain, as they are in the case of France and Germany, due to the assumptions underlying the method used.

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