The 5ᵗʰ International Conference on Economics and Social Sciences
Fostering recovery through metaverse business modelling
June 16-17, 2022
Bucharest University of Economic Studies, Romania

The Paradox of Taxation: Capital or Labor Force?
Empirical Evidence for the European Union Countries

Paula LAZĂR[1]*, Mirela PĂUNESCU[2],
Mirela Elena NICHITA[3], Alexandra FRĂȚILĂ (ADAM) [4]

Abstract

The COVID-19 crisis that started as a healthcare system crisis, rapidly emerged as a financial crisis. In the European economy, classified as an open economy where production factors can freely move, the mix of fiscal, budgetary, and monetary policies faces even more challenging times in response to the new status quo. Fiscal policy is one of the first mechanisms that a state will use to intervene in the economy to correct for a possible disequilibrium. Nevertheless, the fiscal policies of the member states are not entirely harmonized: thus, different countries will use different approaches in similar situations, creating even more significant disparities between countries. Our paper investigates whether there is a shift between taxing capital and taxing labor force – both seen as production factors – in the European Union member states' fiscal policies, particularly in difficult periods. The data was collected from the Eurostat database and referred to all European member states for 2007-2021, covering the latest crises: financial (2007-2008) and pandemic (2020-2021). By employing a cluster analysis accompanied by a paradox of rationality, the investigation will accentuate that nowadays, more than ever, fiscal policies at the European level are imbalanced and uncoordinated, encouraging the development gap among economies. Our research emphasizes the need for closer coordination of direct taxation at the European level to stimulate the convergence of fiscal policies. Both academics and policymakers may use our results in their future analytical studies or decision-making processes related to the blending of taxing capital and labor force.

Keywords: European fiscal policies, capital taxation, labor taxes, COVID-19 crisis, financial crisis.

JEL Classification: E62, H21, H87.

---

[1] Bucharest University of Economic Studies, Romania, paula.lazar@fin.ase.ro.

[2] Bucharest University of Economic Studies, Romania, mirela.paunescu@cig.ase.ro.

[3] Bucharest University of Economic Studies, Romania, mirela.nichita@cig.ase.ro.

[4] Bucharest University of Economic Studies, Romania, alexandra.fratila.25@gmail.com.

* Corresponding author.

1. Introduction

In a borderless world governed by the mobility of factors of production, especially capital and labor force, and characterized by the existence of common markets, fiscal policy is emerging as a critical component of economic reform with a profound impact on future developments of the economy.

Fiscal competition is not a new concept, but the tax competition issue is a noteworthy topic because, in worldwide economies, there is a tendency to understand, as accurately as possible, the positive or negative effects of this phenomenon. For the European Union (EU-27), seen as a conglomerate of states and an exponent of economic globalization, the fiscal policy strongly influences the multiple economic processes that occur within each member state. The coordination processes in the taxation field at the European level (which is intended to be a "federal type of state") are complex actions with multiple ramifications, and it is practically difficult, if not impossible, to harmonize and coordinate 27 different fiscal policies, coming from as many countries with different degrees of development, more or less willing to give up national practices. Furthermore, the EU-27 is known as a high-tax burden economic environment compared with other advanced economies. Thus, taxes and compulsory actual social contributions in the 27 Member States of the EU-27 accounted for 40.1% of the gross domestic product (GDP) in 2019 (European Commission, 2021). Hence, the tax burden (measured as total tax revenues and social security contributions received as a percentage of GDP) was in EU-27 6.3 percentage points (pp) above the OECD average and more than 15 pp above the US tax burden.

An efficient taxation system should adapt to the different stages of the economic cycle, such as expansion, peak, contraction, and trough. That is why taxation systems are complex mechanisms, and their implementation requires an outstanding knowledge of their composing elements and network interconnections. When discussing the complexity of the fiscal policy, we need to focus on tax rates and tax bases, and thus on the tax burden. Furthermore, we must assess the tax burden distribution on different tax bases – i.e., labor, capital, and consumption.

2. Problem Statement

According to the Maastricht Treaty (1993), the free movement of labor and capital are two of the EU single market's four fundamental freedoms (free movement of goods, persons, services, and capital). While divergences are innevitable, fiscal differences among the Member States can alter the free movement of the above mentioned (Delgado and Presno, 2011). In any given scenario, the foundation of the fiscal policy is the tax rate, and this "seemingly insignificat" element holds in its power the world wide web of taxation and has been analyzed over the years on numerous occasions and contexts. Therefore, the tax rate is employed as a variable in macroeconomic analysis using different approaches: as a statutory tax rate, whether as a flat or marginal tax rate (Popescu et al., 2019; European Commission,

2021; Ernst & Young, 2022); as an implicit tax rate (European Commission, 2021) or as effective tax rates (European Commission, 2021; Lazăr, Filip, 2011).

The statutory tax rate is the rate imposed by legislation on a taxable basis. On the contrary, the implicit tax rate measures the actual or effective average burden directly or indirectly levied on different tax bases or activities that could potentially be taxed (European Commission, 2021). While some authors suggest employing in the analysis an aggregated tax rate (Devereux et al., 2002; De Mooij, Nicodème, 2008), others argue in favor of tax rates specific to tax basis, whether incomes/profits or activities (Mendoza et al., 1994).

Labor force mobility in the EU-27 has been affected by the financial crisis due to the contraction of businesses and by the COVID-19 crisis due to mobility restrictions. After a peak in 2007, during 2009 -2010, mobility flows fell by 41% compared to 2007 and 2008 (Barslund, Busse, 2014) and came to a halt during the pandemic (European Commission, 2022). Capital mobility has been increasing since the Maastricht Treaty was signed, and the flows are running from advanced economies toward emerging economies (Camarero et al., 2021). Furthermore, the financial crisis has affected the latter, where capital mobility has decreased. The COVID-19 crisis has triggered major disruptions in capital flows with a rapid shock that spread to the global economy (OECD, 2020). As it is more mobile than labor, a question has often arisen for capital taxation: is there a race to the bottom related to tax rates applied in determining the tax burden? According to Plümper et al. (2009), tax competition tends to cause a decrease in taxes on capital and increase tax rates relative to labor. The scholars explained that there is no race to the bottom in capital taxation, since governments will not abolish taxes levied upon them. Recent research (Sokolovskyi, 2021; Razin, Sadka, 2011) shows that a country might apply higher tax rates under tax competition than tax coordination when faced with an upward flux of labor and capital. Thus, economies might find themselves in a seesaw situation rather than in a tax-competitive one.

The cluster analysis is a statistical method that organizes a set of objects so that objects in the same group are more similar to each other than those in other groups. This type of analysis is similar in concept to discriminant analysis (Sinharay, 2010). By employing a cluster analysis at the European level, Mihokova et al. (2016) have shown that, despite ongoing integration within the EU, differences between member countries persist and are visible in the statutory and effective tax rates, especially between older and newer EU members.

The difference in taxation policy, in the limit set by the European framework, was investigated over the time. As examples, Kočenda et al. (2008) found that a significant level of heterogeneity exists in fiscal convergence, while Esteve et al. (2000) reported convergence in fiscal pressure during the 1979-1994 period, while important divergence was found for the years 1967-1979.

In this context, we conducted our analysis by scrutinizing the member states' taxation systems using the following variables:
  i. statutory tax rates for labor force (%L) and capital (%K);
  ii. implicit tax rates for labor force (ITR L) and capital (ITR K);

iii. the connected tax burden (%L/GDP and %K/GDP) as tax revenues collected to GDP.

Our research looks at the shift between taxing labor and capital, seen as production factors, by employing a cluster analysis in the European Union, and focuses on the similarities and differences between member states when facing challenging times.

3. Research Questions

As mentioned above, fiscal policy is likely to be the first intervention tool used to regulate the economy. Therefore, policymakers will use taxation and its elements to boost investments, production, and employment. This leads to tax competition among counties, even if the EU has established that fiscal convergence is its long-term objective. In our analysis, we will focus on direct taxes settled for labor and capital because when it comes to indirect taxation, the European legislation is already coordinated for most of the related taxes.

We will conduct our research by employing a cluster analysis, approaches used to classify the member states into emerging and advanced economies, and our research questions support this procedure.

The research hypotheses are as follows.

H_1: Is there a shift between taxing the labor force and capital in emerging economies from the EU-27?

H_2: Is there a shift between taxing the labor force and capital in advanced economies from the EU-27?

We expect to find conclusive evidence to support that capital, seen as a production factor, is the "golden item" of the European taxation systems regardless of the cluster. Furthermore, we aim to highlight the switch in fiscal policies during both the financial crisis (2007-2008) and the COVID-19 crisis (2020-2021).

4. Research Methods

To test our hypothesis, we collected the data for 2007-2021 from Eurostat regarding the variables included in the analysis. We have chosen this period because, over the 15 years included in the research worldwide, economies have undergone two crucial turning points in their evolution - first, the financial crisis (2007-2008) - and then, the COVID-19 crisis (2020-2021). Thus, the statutory tax rates for labor and capital, the implicit tax rates for labor and capital, and the tax revenues collected to GDP from taxing labor and capital were used in our quantitative analysis. The cluster analysis approach is the method of choice for the empirical grouping of EU countries, as it is most widely accepted for groping counties according to various indicators (Velichkov, Stefanova, 2017). Hence, we decided to organize the EU countries into two clusters using the International Monetary fund country classification (IMF, 2022). By employing the IMF country classification, the EU-27 member states were divided into – emerging economies –

Bulgaria, Croatia, Hungary, Poland, and Romania – and advanced economies – the remaining 22 countries.

We embarked on a complex macro back-looking analysis to find empirical evidence that, in a long-term trend, there is a shift between taxing labor and capital in EU-27 economies. Our analysis compares statutory and implicit tax rates for the variables employed and then continues with the parallel between tax rates and tax burden. The research will emphasize the similarities and differences in taxing production factors throughout the financial and the COVID-19 crises. The following section presents our findings for each cluster for the analyzed period.
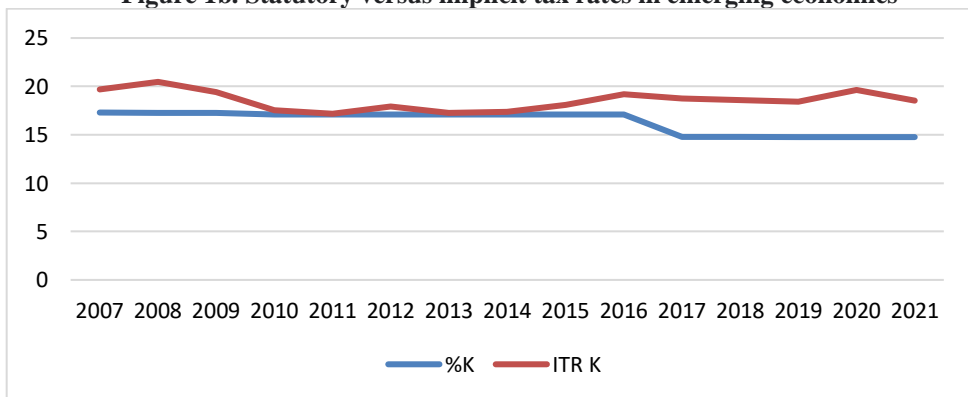
5. Findings

The emerging economies represent the first cluster in our analysis. These states are geographically situated in Eastern Europe and are similar in macro-economic development.

Figure 1a. Statutory versus implicit tax rates in emerging economies
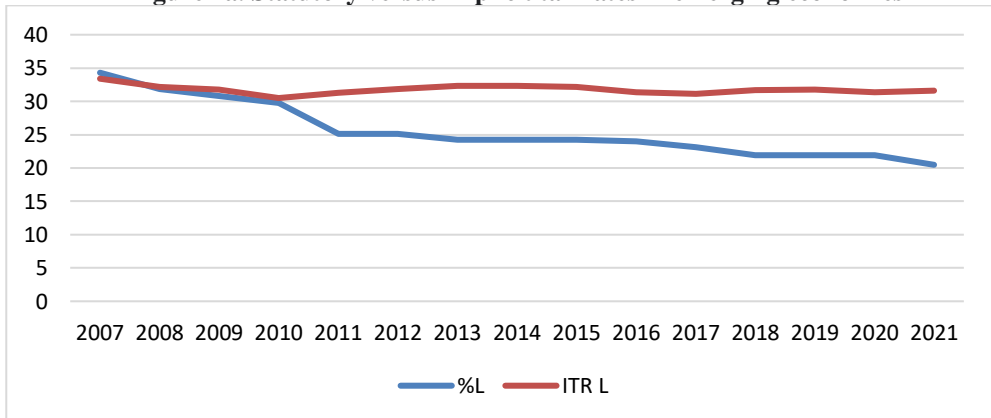
Source: Authors own computations.

Figure 1b. Statutory versus implicit tax rates in emerging economies
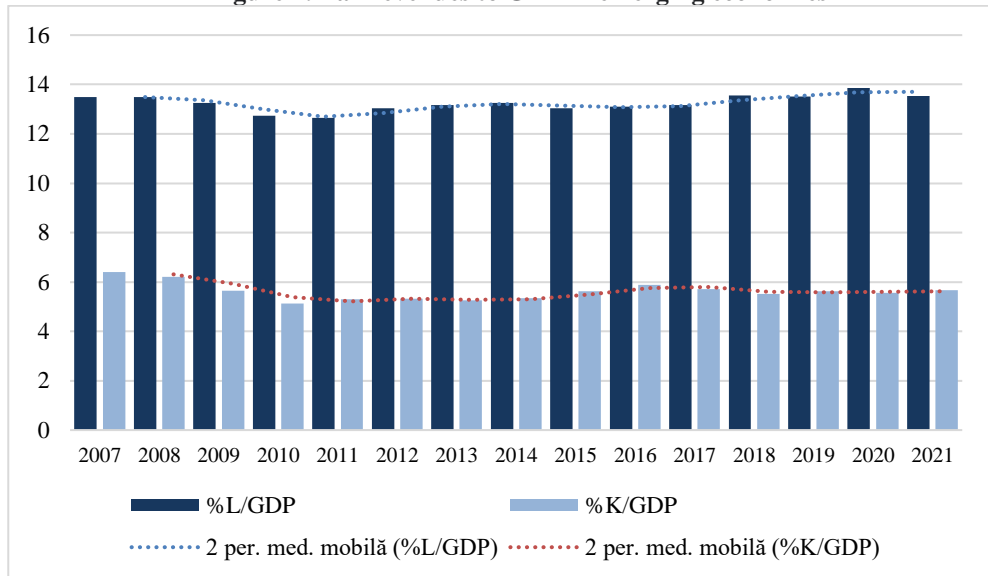

Source: Authors own computations.

The average statutory tax rates for the labor force and capital are lower than the average implicit tax rates over the analyzed period. For the labor force, the implicit tax rates are, on average, 6.2 percentage points (pp) higher than the statutory tax rates. For capital, the average difference between implicit and statutory tax rates is 2.2 pp. Furthermore, we can acknowledge that the labor force is overtaxed face to capital because both statutory and implicit tax rates are higher for labor than for capital.

We noticed that, during the financial crisis (2007-2008), the emerging economies in the EU-27 have put pressure on capital because while the statutory tax is unchanged, the implicit tax rates, as a measure of the effective tax burden, have increased. However, during the COVID-19 crisis, the situation is in reverse – the tax burden is levied upon labor force with a slight increase in the implicit tax rates. It is to be noted that the gap between tax rates related to labor force is steeper than the one for tax rates related to capital due to tax "privileges" given to the latter, such as tax exemption, incentives, annulments, and others.

Figure 2. Tax revenues to GDP in emerging economies
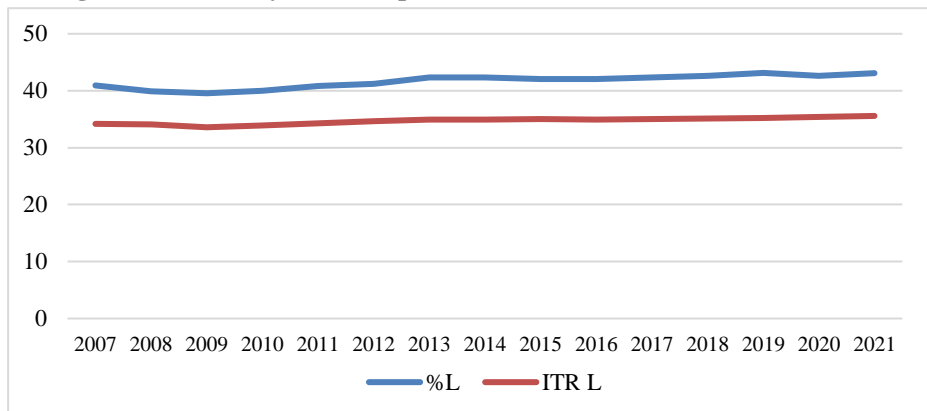

Source: Authors own computations.

As expected, tax revenues to GDP collected from taxing labor force exceed the tax revenues collected from the capital. On average, the gap between the variables is 7.6 pp, showing a clear preference, in emerging economies, toward taxing labor force. However, during the financial crisis (2007-2008), emerging countries have registered a slight constriction of the tax revenues collected due to the decrease of the tax rates for both production factors. However, for the COVID-19 crisis, paradoxically, tax revenues' collection has increased for capital even if the average statutory tax rate has remained unchanged (see Appendix, Table 1).

One might argue that the statutory tax rate is not the correct variable to describe taxation trends, and therefore we move forward and compare implicit tax rates with the tax revenues collected to GDP. As stated above, implicit tax rates quantify the real tax burden perceived by the production factor. We can notice that the analyzed variables follow the same trend, but the paradox mentioned above is even more apparent. Thus, during the financial crisis, the collected tax revenues to GDP decreased for both labor and capital as an immediate effect of tax rate contraction. Nevertheless, during COVID-19, even if the average implicit tax rate for labor has increased, the tax revenues collected have slightly subsided, while for capital, the situation is reversed. So, for capital, the average implicit tax rate was cut back by 1.1 pp, but the tax revenues to GDP have moderately increased. This goes to show that the EU-27 emerging economies are encouraged to have a "race to the bottom".
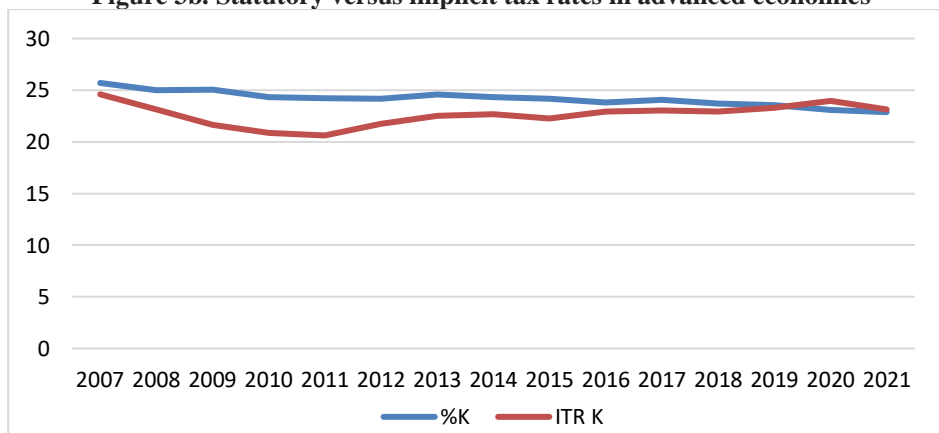
The advanced economies of the EU-27 represent the second cluster in our analysis.

Figure 3a. Statutory versus implicit tax rates in advanced economies
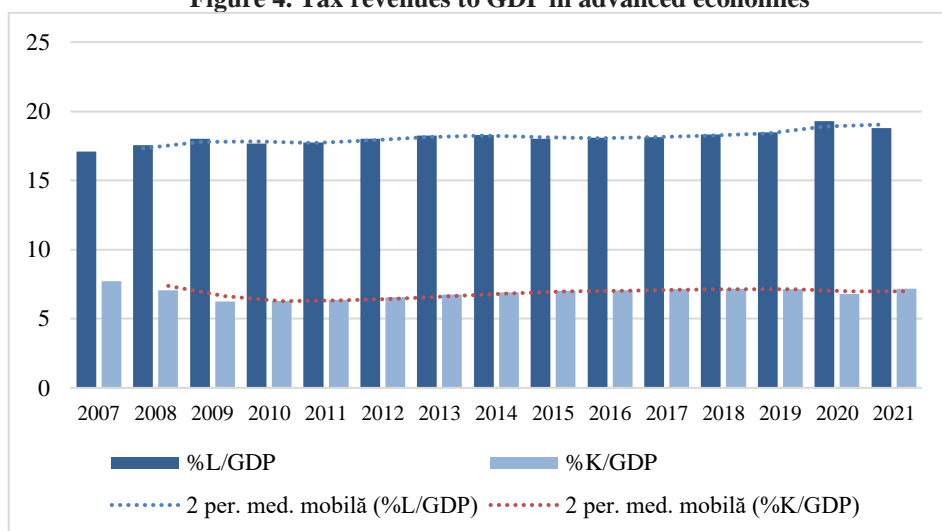

Source: Authors own computations.

Figure 3b. Statutory versus implicit tax rates in advanced economies

Source: Authors own computations.

When it comes to taxing labor force and capital in advanced economies, we notice that average statutory tax rates are higher than the average implicit tax rates, meaning that the actual tax burden is lower than what the legislation is establishing as a tax rate. This is a positive effect of tax incentives, tax deductions, or tax exemptions and should stimulate tax revenue collection. If for the labor force, the average statutory tax rates are 6.9 pp over the average implicit tax rates for the analyzed period, for capital, the gap is just 1.6 pp. We can also notice that for capital, during both the financial crisis and the COVID-19 crisis, the average statutory tax rates and the average implicit tax rates have decreased, but for labor force, the COVID-19 crisis was a period in which both types of tax rates have increased (see Appendix, Table 2).

Figure 4. Tax revenues to GDP in advanced economies

Source: Authors own computations.

As in emerging economies, advanced economies collect more tax revenues from GDP from taxing the labor force. Natural, we can say, if, on average, the implicit tax rates for the labor force are 12.1 pp higher than the ones for the capital. During the financial crisis, we can notice, again, a paradox, this time when it comes to taxing the labor force – a tiny decrease in tax burden has the opposite effect on tax revenues collection. Furthermore, for capital, even if the tax burden decreased in the same period, the response in the economy is the expected one – a decrease in tax revenues collection. For the period related to the COVID-19 crisis, advanced economies reacted differently. For the labor force, the tax burden slowly increases, which leads to a lower level of tax revenues collection, whereas for capital, the tax burden decreases, and ,as an effect, the tax revenues' collection registers the same value as in the pre-pandemic period. (see Appendix, Table 2).

Advanced economies in the EU-27 have a different approach to the tax burden related to production factors than emerging economies. Thus, taxation systems in

advanced economies rely substantially on tax incentives, even if they incline toward taxing the labor force. Moreover, although, on average, the tax burden in advanced economies is higher for both production factors (see Appendix Table 1 in corroboration with Table 2) than in emerging economies, the capital is more likely to be the protégée of the fiscal system.

However, our research is subject to some limitations related to the relatively short period under analysis and the fact that the present analysis focuses on tax structure by type of tax base. Nevertheless, we succeeded in covering two major macroeconomic events that took place in the last 20 years – the financial crisis and the COVID-19 pandemic and by working with the available data on Eurostat, which is curated, the study has certifiable outcomes.

6. Conclusions

The study pivots around taxation policies in the European Union, focusing mainly on taxing production factors, i.e., labor force and capital. By employing a cluster analysis, the research showed that at the European Union level, seen as a unified space, where production factors can move freely, the labor force and capital are among the most wanted tax basis, and tax policies will engage in a "fight" over who is taxing what and how.

In all five European emerging economies, capital – seen as a production factor – is less taxed than the labor force. We expected this, since the capital is more likely to"run" from tax burden more easily than labor. During the financial crisis, emerging economies have decreased the statutory tax rates for labor and maintained the ones for capital. Nevertheless, looking at the implicit tax rates, we will notice that for labor, they decreased, and for capital, they increased – the aftermath was a steady tax revenues collection from labor but a slight decrease from capital tax collection. During the Pandemic, the statutory taxes for labor have decreased, but the implicit tax rates have actually increased – the result was a moderate decrease in tax collection. The paradox is met when it comes to taxing capital because, during the Pandemic, the statutory tax rates have remained the same, but the implicit tax rates have decreased, yet the tax revenues collected have increased.

In advanced European economies, the tax burden related to capital – seen as a production factor – is lower than that of the labor force. During the financial crisis, advanced economies decreased both statutory and implicit tax rates, but, paradoxically, the tax revenues collected from labor increased in 2008 compared to 2007. During the Pandemic, the statutory and implicit tax rates for labor increased, and the immediate result was a moderate decrease in tax collection. Again, a paradox is met when it comes to taxing capital. During the Pandemic, the statutory and implicit tax rates have slightly subsided, yet the tax revenue collection has increased. One can infer that advanced economies are inclined to have a "race to the bottom" when taxing capital.

The significant difference between clusters is that implicit tax rates for both labor force and capital are lower than the statutory tax rates in advanced economies. The multitude of tax reliefs explains these exemptions and other tax deductions applied.

On the opposite side, in emerging economies, this situation is reversed. Implicit tax rates are much higher than the statutory tax rates for both production factors. This shows that the tax legislation in emerging economies is "hiding" around the tax basis and the procedure to increase the tax burden.

Without a doubt, we can state that capital – seen as a production factor - is the taxation system protégée at the European level. Capital is the "freest" type of tax base because it can "vote with its feet" and so has the potential to move unhinged from one taxation system to the next. Therefore, as a trend, at the European level, during both crises, the tax rates (statutory and implicit) related to capital have decreased, and paradoxically tax-related revenues have increased. Thus, the member states will have no interest in harmonizing capital.

References

[1] Barslund, M., Busse, M. (2014). Too Much or Too Little Labour Mobility? State of Play and Policy Issues, *Intereconomics Labour Mobility in the EU: Dynamics, Patterns and Policies*, 49(3), pp. 116-158.

[2] Camarero, M., Munoz, A., Tamarit, C. (2021). 50 Years of Capital Mobility in the Eurozone: Breaking the Feldstein-Horioka Puzzle, *Open Economy Review*, 32, pp. 867-905.

[3] Delgado, F.J., Presno, M.J. (2011). Convergence of fiscal pressure in the EU: a time series approach. *Applied economics*, 43(28), pp. 4257-4267.

[4] Devereux, M., Griffith, R., Klemm, A. (2002). Can international tax competition explain corporate income tax reforms? *Economic Policy*, 17(35), pp. 449-495.

[5] De Mooij, R.A., Nicodème, G. (2008). Corporate Tax policy and incorporation in the EU, *International Tax and Public Finance*, 15, pp. 478-498.

[6] European Commission (2021). *Taxation trends in the European Union Data for the EU member states, Iceland, Norway, and United Kingdom*, https://op.europa.eu/en/publication-detail/-/publication/d5b94e4e-d4f1-11eb-895a-01aa75ed71a1/language-en.

[7] European Commission (2022). Intra-EU *Labour Mobility at a glance – main findings of the Annual Report on Intra-EU Labour Mobility 2021,* https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8459&furtherPubs=yes.

[8] Ernst & Young (2022). *The outlook for global tax policy and controversy in 2022: Jurisdiction reports*, https://www.ey.com/en_gl/tax-controversy-policy/ey-s-2022-tax-policy-and-controversy-outlook.

[9] Esteve, V., Sosvilla-Rivero IV, S., Tamarit, C. (2000). Convergence in fiscal pressure across EU countries. *Applied Economics Letters*, 7(2), pp. 117-123.

[10] International Monetary Fund (2022). Fiscal monitor – *Fiscal policy form Pandemic to war* https://www.imf.org/en/Publications/FM/Issues/2022/04/12/fiscal-monitor-april-2022.

[11] Kočenda, E., Kutan, A.M., Yigit, T.M. (2008). Fiscal convergence in the European Union. *The North American journal of Economics and finance*, 19(3), pp. 319-330.

[12] Lazăr, S., Filip, Gh. (2011). Measuring corporate effective tax burden in Romania: a comprehensive approach, *Analele Ştiinţifice ale Universităţii "Alexandru Ioan Cuza"*

din Iaşi. Ştiinţe economice [Scientific Annals of the "Alexandru Ioan Cuza" University of Iasi. Economics], (1), pp. 133-144.

[13] Mendoza, E.G., Razin, A., Tesar, L.L. (1994). Effective tax rates in macroeconomics: Cross-country estimates of tax rates on factor incomes and consumption, *Journal of Monetary Economics*, 34(3), pp. 297-323.

[14] Mihokova, L., Andrejovska, A., Martinkova, S. (2016). Categorization of corporate taxation in the European Union countries using cluster analysis: a comparative study. *Економічний часопис* XXI, (160), pp. 4-9.

[15] OECD (2020). *Tackling Coronavirus (COVID-19), OECD Policy Responses to Coronavirus, COVID-19 and global capital flows* https://www.oecd.org/coronavirus/policy-responses/covid-19-and-global-capital-flows-2dc69002/.

[16] Popescu, M.E., Militaru, E., Stanila, L., Vasilescu, M,D., Cristescu, A. (2019). Flat-rate versus progressive taxation? An impact evaluation study for the case of Romania, *Sustainability*, 11(22), p. 6405, https://doi.org/10.3390/su11226405.

[17] Plümper, T., Troeger, V.E., Winner, H. (2009). Why Is There No Race to the Bottom in Capital Taxation? *International Studies Quarterly*, 53(3), pp. 761-786.

[18] Razin, A., Sadka, E. (2011). Tax Competition and Migration: the Race-to-the-Bottom Hypothesis Revisited, *CESinfo Economic Studies*, 58(1), pp. 164-180.

[19] Sinharay, S. (2010). An Overview of Statistics in Education, *International Encyclopedia of Education (Third Edition)*, pp. 1-11.

[20] Sokolovskyi, D. (2021). Is tax competition a race to the bottom? Optimal tax rate trajectories in the model tax competition for different objective functions, *MPRA* Paper no. 109284 https://mpra.ub.uni-muenchen.de/109284/.

[21] Velichkov, N., Stefanova, K. (2017). Tax Models in the EU: a Cluster Analysis, *Economic Alternative*, 4, pp. 573-583.

Appendix

Table 1. Descriptive statistics for emerging countries

	%L	ITR L	%L/GDP	%K	ITR K	%K/GDP
2007	34,3	33,4	13,5	17,3	19,7	6,4
2008	31,8	32,1	13,5	17,3	20,5	6,2
2009	30,8	31,7	13,2	17,3	19,4	5,6
2010	29,8	30,5	12,7	17,1	17,5	5,1
2011	25,1	31,3	12,6	17,1	17,2	5,3
2012	25,1	31,9	13,0	17,1	17,9	5,3
2013	24,2	32,3	13,2	17,1	17,3	5,3
2014	24,2	32,3	13,3	17,1	17,4	5,3
2015	24,2	32,2	13,0	17,1	18,1	5,6
2016	24,0	31,3	13,1	17,1	19,2	5,9
2017	23,1	31,1	13,2	14,8	18,7	5,7
2018	21,9	31,7	13,6	14,8	18,6	5,5
2019	21,9	31,7	13,5	14,8	18,4	5,6
2020	21,9	31,3	13,9	14,8	19,6	5,6
2021	20,5	31,6	13,5	14,8	18,5	5,7

Source: Data: Taxation trends in the European Union series; authors own computations.

Table 2. Descriptive statistics in advanced economies

	%L	ITR L	%LGDP	%K	ITR K	%K/GDP
2007	40,9	34,2	17,1	25,7	24,6	7,7
2008	39,9	34,1	17,5	25,0	23,1	7,1
2009	39,6	33,6	18,0	25,0	21,6	6,3
2010	40,0	33,9	17,7	24,3	20,9	6,3
2011	40,8	34,2	17,7	24,2	20,6	6,4
2012	41,2	34,7	18,0	24,2	21,8	6,5
2013	42,3	34,9	18,2	24,6	22,5	6,7
2014	42,3	35,0	18,3	24,3	22,7	6,9
2015	42,1	35,0	18,0	24,2	22,2	7,0
2016	42,1	35,0	18,1	23,8	23,0	7,0
2017	42,3	35,1	18,1	24,1	23,0	7,1
2018	42,6	35,2	18,3	23,7	22,9	7,2
2019	43,1	35,3	18,5	23,6	23,3	7,1
2020	42,6	35,4	19,3	23,1	24,0	6,8
2021	43,1	35,6	18,8	22,9	23,1	7,2

Source: Data: Taxation trends in the European Union series; authors own computations.