

The Impact of Fiscal Policy on Economic Growth in EU Member States – Perspective of State Aid Granted in the Pre-Pandemic Period

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Abstract: The article presents the conditions of admissibility of state aid in the European Union from the perspective of the principle of sustainable development, including in particular the fiscal policy as the basic mechanism for implementing the above principle. A literature study was conducted based on the achievements of the theory of state intervention and the theory of market failure. A feature of the research method used is the analysis of the instruments used by the state in relation to enterprises from the point of view of the definition of state aid in European Union documents. Another feature of the method used in the work is the analysis of the relationship between the expenditure of the Member States on state aid and their economic growth. This analysis was performed based on a linear regression model. The analysis made it possible to verify the influence of State aid on economic growth in EU Member States which provided State aid in the years 2000-2019. State expenditure policy, which includes the policy of state aid to enterprises, can give an impulse to GDP growth and increase the indicator GDP per capita (growth of competitiveness of the national economy) even if the State spends more money than the accumulated revenue in the budget.

Keywords: economic growth, the European Union, fiscal policy, state aid, regression analysis

JEL Classification codes: E62; K20; K33

INTRODUCTION

Development strategies of the European Union, such as the Lisbon Strategy and Europe 2020, indicated as a strategic goal the transformation of the European Union into the most competitive economy in the world, based on knowledge and capable of sustainable economic development, creating more jobs and ensuring social cohesion (Horlings & Padt, 2013; Bock, 2016, Dordzhieva et al., 2018; Haider et al., 2018). These activities were to focus on innovation, liberalization, entrepreneurship, and social cohesion (Callois & Aubert, 2007; Straka & Tuzová, 2016). The assumptions of development strategies resulted from numerous weaknesses of a socio-economic nature that characterized the European Union even in the last decade of the 20th century (Leigh & Blakely, 2016). These weaknesses resulted in a slower pace of economic development and difficulties in the transition to a knowledge-based economy, which was manifested mainly in a lower ability to create and absorb new technologies. Adoption of the above goal required all Member States to take measures to develop the information society, support research and innovation, develop appropriate qualifications and skills, and develop entrepreneurship, which was to be achieved through

easier access to capital and technology, the elimination of administrative and legal barriers and the creation of equal field of competition (Onofrei et al., 2020). In addition, it was also necessary to liberalize and integrate those markets and sectors that were not covered by the single market, i.e. telecommunications, energy, postal, transport, and the services market, as well as an increase in employment and a change in the social model, which was to take place in terms of increasing professional activity, making the labor market flexible, improving education, modernizing the social security system and reducing poverty and social exclusion.

The state is the basic entity involved in the process of ensuring and implementing the goals of sustainable development (Podsiadlo & Jachowicz, 2020). When analyzing the role of the state, the functions it performs are emphasized: organizational, repressive, economic, social, and also distributive. The state's activity to support the goals of sustainable development is multidimensional and concerns not only the creation of institutional and formal and legal frameworks to stimulate sustainable development but also shaping the attitudes of market participants by influencing their decisions using the cost-benefit mechanism or rewards and penalties (Onofrei et al., 2020). Fiscal policy instruments are an example of encouraging and discouraging market entities from taking specific actions and activities. In this respect, legal norms, orders, prohibitions, penalties, fines, fees are important, as well as a system of tax reliefs and exemptions, or grants and subsidies (Giaoutzi, 1988).

From the economic point of view relating to state interventionism, it ought to be noted that State aid can be a justified action mainly because of the social prosperity if free competition market mechanism does not bring satisfactory results (Biondi, 2013; Crafts, 2017). In this case, a well-planned State intervention may improve the allocation of production factors, reduce the irregularity in the market functioning and enable the achievement of common interest (Ferčič & Samec, 2014; Stöllinger & Holzner, 2017). The major criterion for providing State aid should be rationality, which is the highest determinant of the admissibility of using the aid measures (Bumane & Vodolagins, 2017). It results from the fact that in a market economy the competition is essential for the proper functioning of the market and protecting the interests of its participants (Pisapia, 2015; Popović & Caka, 2017). State aid should not violate it unless its violation will be compensated by positive market phenomena that were caused by providing the aid. With the use of the aid instrument the State realizes the objectives that are considered a priority for socioeconomic development (Tunali & Fidrmuc, 2015).

Article 107 par. 1 of the Treaty on the Functioning of the European Union (TFEU) stipulates that: "(...) save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market" (Treaty, 2016). However, despite that general prohibition state aid may be necessary to address market failures to ensure a well-functioning and equitable economy. Therefore, the Treaty leaves room for the granting of State aid in respect of several policy objectives. With particular relevance to the agricultural sector, firstly in accordance with Article 107 par. 2(b) of the TFEU, aid to make good the damage caused by natural disasters or exceptional occurrences shall be compatible with the internal market. Secondly, on the basis of Article 107 par. 3(c) of the TFEU, the Commission may consider compatible with the internal market State aid to promote the economic development of the agricultural and forestry sectors and of rural areas, provided that it does not adversely affect trading conditions.

The purpose of this article is to analyse the state aid provided by EU Member States, specifically the aid's impact on economic growth of these countries, in terms of the principle of sustainable development, including in particular the fiscal policy as the basic mechanism for implementing the above principle. Economic growth is measured by the size of gross domestic product in real terms (GDP), a synthetic measure of the state's economic well-being (Walasik, 2015). For

this article, the years 2000-2019 were adopted as the test period, i.e. the period during which the two most important development strategies - the Lisbon Strategy and the "Europe 2020" Strategy - of the European Union were implemented. It was posited that the amount of state aid provided by the EU Member States should be positively correlated with the size of the economic growth of these countries. If GDP is positively correlated with the size of state aid granted by EU countries, then positive economic growth among Member States occurs as state aid is increased.

1 LITERATURE REVIEW

1.1 Fiscal policy and sustainable economic growth

To ensure the functioning of an effective and efficient state aid system as the basic goal and element of the sustainable economic development system, a stable fiscal policy implemented by the state is necessary (Hansen, 2020). The Member States are obliged to keep "healthy public finances" by the Treaty on European Union - article 119, point 3 (Treaty, 2012). The increase in budget imbalances and public debt in the European Union countries observed during the financial crisis and in the following years was perceived as a threat to the economic growth and competitiveness of the entire Union. This is an important problem because, within the framework of sustainable public finances, a wide range of financial instruments is available to combat exclusion, poverty, and inequalities (Tremblay et al., 2020). Counteracting such phenomena as exclusion, inequality or poverty is one of the major challenges faced by modern states and international organizations. These phenomena have harmful socio-economic effects and are at the same time the main obstacle in the pursuit of sustainable growth and development (Nakatani, 2021). As a consequence, ensuring sustainable development requires focusing social goals on these negative phenomena, and their implementation requires the provision of financing sources (Heras-Saizarbitoria et al., 2022).

In contemporary democratic social systems and under market conditions, the state is the entity responsible for all public, social, and economic affairs (Tosun & Leininger, 2017). The activity of the state is therefore carried out in the environment of other entities, which means that the state must take into account their preferences, more so as the economic basis of the state's activity depends on the economic situation of other entities of the economic system. Despite the complex situation in which the state finds itself in the economic and social system, it bears political responsibility for everything that happens in a given country (Amir & Gokmenoglu, 2020). However, it cannot be ignored that the state's abilities are often overestimated, as in fact they are significantly limited. This is due to the fact that in relation to the economy, the main "organizer" of economic processes is the market (market mechanism). Therefore, the task of the state is to create the most favorable conditions for the functioning of the market (Pham-Truffert et al., 2020). The market mechanism should enable the effective use of human resources, fixed capital resources, financial capital, and land for the best satisfaction of human needs. These general and indisputable goals encounter not only implementation difficulties, but above all difficulties of an interpretative nature when it comes to the scope of the state's obligations, ways of fulfilling them, or the types of its responsibility for given areas of socio-economic life.

In the context of the considered fiscal policy, an important issue of responsibility for individual areas of economic and social life appears. The point, however, is not only whether the state can and should be responsible for socio-economic matters, but also what organs of the state should be made responsible (Bergman et al., 2016). It is equally important that there are no contradictions between the elements of the state structure in terms of the objectives and the

applied fiscal policy measures. At this point, it is necessary to mention the significant difficulty in assigning clear responsibility to the state for fiscal policy. This difficulty is due to the complexity of state institutions. In the broadest sense, the state, or more precisely its constitutive and executive organs (administration), are responsible for all matters significant to society and the country.

Fiscal policy is based on the use of various instruments that serve the implementation of universal goals of financial policy (Onofrei et al., 2020). The universal goals of financial policy include economic growth (GDP growth), preserving the value of money (fighting inflation), creating jobs (fighting unemployment), stabilizing the economy, supporting the competitiveness of the economy, internal and external financial security of the country (Nakatani, 2021). The hierarchy of universal financial policy goals is not accidental. It should be recognized that the goals of financial policy are of a utility and socially useful nature. Financial policy should contribute to raising the standard of living of the society in all its basic areas, and this is possible only when economic growth is achieved, expressed as an increase in GDP (in real terms). The expected pace of economic growth cannot be determined within the framework of universal goals, as it is the domain of specific goals of the financial policy of a given country and in a given period. It can only be assumed that the goal of financial policy cannot be negative economic growth, i.e. a decline in GDP, or in the long run, the so-called zero growth, as it would mean the deterioration of the living conditions of the society.

Due to the ongoing process of free trade and the globalization of the economy, supporting the processes of the national economy's competitiveness on world markets is an increasing challenge for the financial policy (Barrientos-Marín et al., 2020). Achieving this goal is not easy, as the processes of globalization are also accompanied by the efforts of many countries and organizations to maintain the conditions of fair competition (Hutchison, 2020). The financial policy of the state with regard to supporting the competitiveness of the national economy should focus on indirect tools (Shkolnyk et al., 2020). This includes, for example, granting credit guarantees for exporters, state support for financial insurance institutions related to foreign trade, supporting technical and technological progress of domestic enterprises, and assistance in professional promotion of domestic goods and services abroad (e.g. by diplomatic missions). The state has many possibilities to indirectly support producers by financing basic and development research, which cannot be financed by the enterprise. An important challenge for the state in terms of supporting the competitiveness of the economy is its financing of education, which enables raising qualifications and adjusting the labor supply to the demand for labor (De Simone et al., 2019). Promoting the competitiveness of the economy - in the conditions of an open economy - also means promoting competitiveness in the internal market. Otherwise, the buyer will prefer foreign goods, which inevitably leads to tensions in the trade balance and the country's balance of payments. Therefore, let us note that when we talk about the competitiveness of the economy, in the context of globalization processes it is irrelevant whether it is about competition on the internal or external market (Gootjes & de Haan, 2020).

The main effect of the fiscal policy pursued by the state is the redistribution of income, which reduces the amount of income of the entity at its disposal (Meier et al., 2021). This is the basis for the state's negation. The main argument that is brought against the state is that it distorts the market mechanism. In this approach, the market is idealized in the sense that only the market efficiently allocates resources to the economy. Observation of the functioning of the market mechanism, however, leads to a thesis that there are disturbances in it, which are an expression of market failure. An example of this may be price collusion, which results in excessive profits, not resulting from effort and entrepreneurship, greater competitiveness, but from non-market behavior (Caselli & Reynaud, 2020). Such a state fully entitles to fiscal intervention in the dishonestly earned and excessively high income. Another example is the

cyclical course of processes in a market economy. This results in crises, high unemployment, a drop in production, a drop in income, etc. This is another argument for fiscal intervention in order to reduce the amplitude of fluctuations in the business cycle through appropriately constructed tax scales and expenditure on unemployment benefits (automatic economic stabilizers) and other fiscal activities of the state of a discretionary nature (discretionary) (Dovis & Kirpalani, 2020).

Fiscal policy has been criticized, especially since the mid-1970s, for being ineffective in stabilizing the economy (Rant et al., 2021). In particular, attention was paid to the effect of time delays, which consists in the fact that there is too much difference in time (according to various researchers, this period varies between 6 and 12 months) between the diagnosis of the economy (if it is adequate) and the moment of implementation of fiscal policy, which leads to the "vanishing point phenomenon" (Hansen, 2020; Martínez-Gomariz et al., 2020). The prepared fiscal policy measures turn out to be inadequate to the new state of the economy, the fiscal cycle repeats itself, etc. These arguments cannot be disregarded, because indeed fiscal policy is strongly determined by politics in general, or more precisely, by the political process that the government must go through (parliamentary procedures) to obtain the right to apply fiscal measures (Tofan et al., 2020). However, one cannot ignore the fact that the application of fiscal measures may bring about positive effects for the economy, e.g. slowing down a decline in demand in the economy. For a reliable assessment of the strengths and weaknesses of the fiscal measures taken, one should also answer the question: would resignation from fiscal policy measures worsen the condition of the economy (Christofzik, 2020). The answer to this question is not easy, even on an *ex post* basis, because the economy was influenced by various non-fiscal factors, and moreover, these phenomena cannot be easily categorized in the system of cause-and-effect phenomena.

A different nature of criticism towards fiscal policy concerns the accusations relating to its negative impact on economic growth (Bergman & Hutchison, 2020). This criticism refers to the phenomenon known as the "fiscal brake". The fiscal brake consists in the fact that fiscal policy in the period of economic recovery, manifested in the growth of national income, is too restrictive on the expenditure side. During the economic recovery, the state income from taxes automatically increase, and if this increase is not accompanied by an increase in expenditure and stimulating demand or lowering taxes, such a situation will stop positive trends in the economy (Borge & Hopland, 2020). It is hard to argue with this reasoning, however, the effectiveness of a negative fiscal brake depends on the condition of the economy, external factors affecting it and the degree of coordination of fiscal decisions with monetary decisions.

1.2. Admissibility of state aid in the EU countries

Legal regulation of the issue of state aid is an element of protection of the mechanism of competition, which has been recognized in the Treaty on the Functioning of the European Union (TFEU) as one of the basic tools for the realization of the tasks assigned in it (Treaty, 2016). The general prohibition of providing state aid has been formulated in Article 107 par. 1 of the TFEU, whereas this provision does not specify the definition of state aid, but indicates the criteria taken into account when assessing the specific actual circumstances (Podsiadlo, 2016). These criteria were formulated in the catalogues of terms defining state aid, i.e. government funds, economic advantage, selectivity, impact on competition and trade.

Firstly, state aid needs to be a transfer of government funds. It is irrelevant whether this is a direct monetary transfer or an indirect allocation of government funds. This means that the transfer of government funds may also take place in the sense that the government forgoes revenues, as would be the case in a tax cut or a waiver of certain fees for example. This could be interpreted as an indirect transfer, which includes opportunity costs for the state.

Secondly, this state measure must confer an economic advantage upon the recipient, which he would not gain in the course of a "normal" business. This therefore excludes the cases in which the state, for example, awards a contract to a supplier after a tender, as long as the services of the supplier are compensated reasonably and not excessively by the state.

Thirdly, the state transfer must be conducted selectively, thus benefiting some enterprises more than others. This criterion excludes fundamental or general measures of the state, which generally benefit all enterprises within the measure. For example, a selective measure would be to change the depreciation procedures for only one enterprise, and a general measure, however, might be the expansion of infrastructure of a certain region arranged by the government that increases the attractiveness of a location for investments and thus is supposed to create jobs after the establishment of enterprises.

Fourthly, the competition and trade between two or more Member States must be affected by the award of government funds. This criterion is sufficiently met if it can be demonstrated that the beneficiary is situated on a market where enterprises from other Member States are also active.

According to Article 107 par. 1 of the TFEU, all state aid, which meets the four criteria mentioned above, is regarded as incompatible with the internal market. However, this does not result in a complete ban on state aid, since Article 107 par. 3 of the TFEU lists exceptions that are not part of the general ban on state aid. In addition, Article 108 par. 2 of the TFEU empowers the European Council upon request of a Member State to determine the types of state aid that are compatible with the TFEU. In practice, the European Commission developed three different exception categories that nullify the general ban on state aid and thereby partially subsume the exceptions of Article 107 of the TFEU. These categories of exception exist in so-called regional, horizontal, and sectoral aid.

2 METHODOLOGY

Complex research issues require the use of an appropriate complex research method. A literature study was conducted based on the achievements of the theory of state intervention and the theory of market failure. A feature of the research method used is the analysis of the instruments used by the state in relation to enterprises from the point of view of the definition of state aid in European Union documents. It is especially about the analysis of state aid for enterprises from the perspective of the competition law of the European Union, in the sense of Art. 107 par. 1 of the Treaty on the Functioning of the European Union (TFEU). The adoption of such a method created an opportunity for: firstly, determining the meaning of admissibility and rules for granting aid in accordance with the interpretation of the Court and the Court of Justice of the European Union, and secondly - capturing the specific features of state aid for enterprises. Another feature of the method used in the work is the analysis of the relationship between the expenditure of the Member States on state aid and their economic growth. This analysis was performed based on a linear regression model.

Statistical analysis will be carried out based on two source tables.

The first shows the calculations for the linear regression model concerning the slope parameter (directional factor β). t Stat is a test of the occurrence of a linear relationship between expenditures on state aid and the size of the GDP. This statistical test makes it possible to verify the authenticity of the null hypothesis that the parameter of regression function I type β is equal to zero, and the alternative hypothesis that it is not equal to zero ($H_0: \beta = 0; H_A: \beta \neq 0$). Given the perspective taken in this paper, it will be essential to reject the null hypothesis in favor of the alternative - that is, there is a significant statistical relationship between expenditure on state aid and the size of the GDP. From the tables of critical values of t-Student

it is seen that $\pm t_{\frac{\alpha}{2}} = \pm 2.101$ for $\alpha = 0.05$ and $n - 2 = 18$ degrees of freedom. The null hypothesis can be rejected in favour of the alternative hypothesis only when: $t_b < \frac{t_{\alpha}}{2}$ or $t_b > \frac{t_{\alpha}}{2}$, that is when $-t_b < -2.101$ or $+t_b > +2.101$.

The second table contains regression statistics, including the correlation coefficient, determination coefficient, standard error and the parameters of the F test - that is, the value of F-test and the probability of making a type I error, when it is verified that expenditure on state aid does not impact the size of the GDP (the irrelevance of state aid expenditure in the regression model). Similar to the t-test described above, the F-test is used to test the significance of linear regression coefficient β evaluation. Statistic F with F-Snedecor distribution of k_1 and k_2 degrees of freedom is used to check this test. When rejecting the null hypothesis $F > F_{\alpha}$ of no relation between expenditure on state aid and the size of the GDP and accepting the alternative hypothesis of the existence of a statistically significant relationship between the variables. From the table of critical values of the F-Snedecor for $k_1 = 1$ (1 independent variable) and $k_2 = n - 2 = 18$ degrees of freedom and $\alpha = 0.05$ we read $F_{0,05} = 4.41$. Thus, the alternative hypothesis can be adopted only when: $F > 4.41$.

3 RESULTS AND DISCUSSION

3.1 Model calibration

The most important statistical test in the simple regression analysis is a test of whether the regression coefficient equals zero. If it can be concluded that the directional coefficient of the real regression line in the population equals zero, it will mean that there is no linear relation between expenditure on state aid and the size of GDP, or expenditure on state aid and the size of GDP are not linearly dependent. Therefore, there should be a test to determine the occurrence of the linear relation between expenditure on state aid in the Member States and the size of their GDP. Table 1 shows the statistics on this test.

Tab. 1 State aid and GDP in the EU Member States in the 2000-2019 period – regression analysis

EU Member States	Regression coefficient <i>b</i>	Standard error <i>Sb</i>	<i>t</i> Stat <i>tb</i>	<i>p</i> -value	Lower 95%	Upper 95%
Austria	90.76583	17.26986	5.255735	5.36E-05	54.4832	127.0485
Belgium	59.09431	8.542916	6.917346	1.82E-06	41.14631	77.04231
Bulgaria	32.08374	8.415796	3.812323	0.001276	14.40281	49.76467
Croatia	20.99466	6.111933	3.435028	0.002953	8.153965	33.83535
Cyprus	-32.526	5.316695	-6.11771	8.86E-06	-43.696	-21.3561
Czechia	19.66736	10.54127	1.865748	0.07846	-2.47903	41.81375
Denmark	30.18098	3.446061	8.758111	6.59E-08	22.94108	37.42089
Estonia	52.87712	6.826861	7.745452	3.87E-07	38.53442	67.21982
Finland	55.81001	4.219074	13.22803	1.04E-10	46.94607	64.67396
France	30.78057	7.616863	4.041109	0.000766	14.77814	46.78301

Germany	26.00028	4.292351	6.057352	1E-05	16.98239	35.01817
Greece	10.27691	8.499787	1.209078	0.242276	-7.58048	28.13429
Hungary	25.62754	3.984282	6.432161	4.71E-06	17.25688	33.99821
Ireland	53.64607	71.38148	0.75154	0.462042	-96.3209	203.613
Italy	-24.2226	15.95058	-1.5186	0.146231	-57.7335	9.288313
Latvia	14.77397	4.556524	3.242377	0.004521	5.201066	24.34687
Lithuania	37.27633	6.758263	5.515668	3.08E-05	23.07775	51.47492
Luxembourg	226.2304	26.19816	8.635354	8.12E-08	171.1901	281.2707
Malta	20.8859	7.656511	2.727861	0.013809	4.800167	36.97163
Netherlands	187.6163	13.84315	13.553	6.95E-11	158.5329	216.6997
Poland	36.85488	10.84812	3.397353	0.00321	14.06383	59.64593
Portugal	-18.8605	5.132675	-3.67459	0.001734	-29.6438	-8.0771
Romania	39.04295	25.11016	1.554866	0.137384	-13.7116	91.79744
Slovakia	136.7711	33.99534	4.023232	0.000797	65.34957	208.1927
Slovenia	44.65327	10.24002	4.360663	0.000377	23.13979	66.16676
Spain	-90.11	21.83688	-4.12651	0.000634	-135.988	-44.2324
Sweden	59.43016	7.707423	7.71077	4.12E-07	43.23747	75.62286
UK	77.23233	10.18661	7.581752	5.22E-07	55.83106	98.63359
EU 28	62.16508	9.247678	6.722237	2.66E-06	42.73643	81.59373

Source: The author's own calculations.

Table 1 shows that for twenty Member States (Austria, Belgium, Bulgaria, Croatia, Denmark, Estonia, Finland, France, Germany, Hungary, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Slovakia, Slovenia, Sweden and United Kingdom), the regression coefficient takes a positive value. Consequently, the increase in expenditure on state aid in these countries by EUR 1 million is accompanied by an increase in GDP by average: EUR 90.77 million, EUR 59.09 million, EUR 32.08 million, EUR 20.99 million, EUR 30.18 million, EUR 52.88 million, EUR 55.81 million, EUR 30.78 million, EUR 26.00 million, EUR 25.63 million, EUR 14.77 million, EUR 37.28 million, EUR 226.23 million, EUR 20.89 million, EUR 187.62 million, EUR 36.85 million, EUR 136.77 million, EUR 44.65 million, EUR 59.43 million and EUR 77.23 million.

Bearing in mind, however, the confidence interval for the regression coefficient, it is nearly certain (95% probability) that an increase in state aid of EUR 1 million will cause GDP to rise in the following countries: Austria from EUR 54.48 million to EUR 127.05 million, Belgium from EUR 41.15 million to EUR 77.04 million, Bulgaria from EUR 14.40 million to EUR 49.76 million, Croatia from EUR 8.15 million to EUR 33.84 million, Denmark from EUR 22.94 million to EUR 37.42 million, Estonia from EUR 38.53 million to EUR 67.22 million, Finland from EUR 46.95 million to EUR 64.67 million, France from EUR 14.78 million to EUR 46.78 million, Germany from EUR 16.98 million to EUR 35.02 million, Hungary from EUR 17.26 million to EUR 33.99 million, Latvia from EUR 5.20 million to EUR 24.35 million, Lithuania from EUR 23.08 million to EUR 51.47 million, Luxembourg from EUR 171.19 million to EUR 281.27 million, Malta from EUR 4.80 million to EUR 36.97 million, Netherlands from EUR 158.53 million to EUR 216.70 million, Poland from EUR 14.06 million to EUR 59.65 million, Slovakia from EUR 65.35 million to EUR 208.19 million, Slovenia from EUR 23.14 million to EUR 66.17 million, Sweden from

EUR 43.24 million to EUR 75.62 million and United Kingdom from EUR 55.83 million to EUR 98.63 million.

It should also be noted that the probability of type I error (p-value), involving the rejection of a true null hypothesis that, in the case of these twenty countries providing state aid do not significantly affect the size of the GDP of the countries, is below the accepted level of significance, i.e. 0.05. The consequence is that the result of the study in relation to these countries, may be considered important, and thus the null hypothesis can be rejected in favour of the alternative hypothesis.

Also for 3 Member States, i.e. for Cyprus, Portugal and Spain, the regression coefficients take negative values, which means that the expenditure on state aid have a negative impact on GDP of these countries. The increase in expenditure on state aid by EUR 1 million is accompanied by a fall in GDP - respectively – with an average of EUR 32.53 million, EUR 18.86 million, and EUR 90.11 million. Estimation errors are respectively EUR 5.32 million, EUR 5.13 million, and EUR 21.84 million.

On the other hand taking into account the confidence interval for the regression coefficient it can be with a probability of 95% said that the increase in expenditure for state aid of EUR 1 million will cause fall in GDP by the value of the interval (EUR 21.36 million; EUR 43.69 million) for Cyprus, (EUR 8.08 million; EUR 29.64 million) for Portugal, and (EUR 44.23 million; EUR 135.99 million) for Spain. For these countries the probability of making a type I error, connecting with the rejection of a real null hypothesis concerning lack of relation between the size of the state aid and the value of GDP, is very small and does not exceed the accepted level of significance of 0.05.

Identical request as to the proposed hypothesis can be obtained by analysing the value of F test and F significance. Table 2 shows the F-test parameters and regression statistics for the relationship between the amount of state aid and the value of GDP in the EU countries.

In the case of Finland and Netherlands, one can speak of a very strong correlation of state aid with the amount of GDP in a positive sense, i.e. 0.9522 and 0.9543 respectively. These two models have a very good fit to the empirical data, as their calculated coefficient of determination are close to 0.91. For Finland determination coefficient is 0.906726. Therefore, variations in GDP in Finland were explained in 90.67% with variations in expenditure on state aid, while the remaining 9.33% result from the impact of other factors. For Netherlands determination coefficient is 0.910751. Therefore, variations in GDP in this country were explained in 91.08% with variations in expenditure on state aid, while the remaining 8.92% result from the impact of other factors. If the coefficient of determination takes the values less than 0.5, the regression explains only less than 50% of the variation in GDP and predictions based on such a regression model may be unsuccessful because the regression model explains then very little. This means that the predictions can be created basing on the Dutch and Finnish models, because the regression model is characterised by a very good fit and is little burdened with the estimation error, which provides grounds for precise forecasting.

Predictions can also be made based on models that have been specified for Denmark, Luxembourg, Estonia, Sweden, United Kingdom, Belgium, Hungary, and Germany. At 0.899964, 0.897525, 0.877045, 0.876134, 0.87266, 0.852438, 0.834764 and 0.819073, respectively, these countries all show a strong positive correlation between the amount of state aid provided and the level of GDP.

Tab. 2 State aid and GDP in the EU Member States in the 2000-2019 period – correlation analysis

	Regression statistics	Test F
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EU Member States	Correlation indicator	Determination coefficient	Standard error	F	Significance F
Austria	0.778113	0.60546	36157.68	27.62275	5.36E-05
Belgium	0.852438	0.72665	35939.42	47.84968	1.82E-06
Bulgaria	0.668378	0.446729	10692.18	14.53381	0.001276
Croatia	0.629255	0.395961	7047.255	11.79942	0.002953
Cyprus	0.821733	0.675245	2002.494	37.42642	8.86E-06
Czechia	0.402555	0.162051	41971.01	3.481016	0.07846
Denmark	0.899964	0.809935	17863.45	76.70451	6.59E-08
Estonia	0.877045	0.769207	3097.199	59.99202	3.87E-07
Finland	0.952222	0.906726	9564.105	174.9807	1.04E-10
France	0.6897	0.475686	208869.5	16.33056	0.000766
Germany	0.819073	0.670881	249854.7	36.69152	1E-05
Greece	0.27407	0.075115	27259.38	1.46187	0.242276
Hungary	0.834764	0.69683	13299.17	41.3727	4.71E-06
Ireland	0.174424	0.030424	68515.65	0.564813	0.462042
Italy	0.337001	0.113569	147574.4	2.306157	0.146231
Latvia	0.607214	0.368709	5598.004	10.51301	0.004521
Lithuania	0.792637	0.628273	6745.654	30.42259	3.08E-05
Luxembourg	0.897525	0.805551	5874.655	74.56933	8.12E-08
Malta	0.540821	0.292487	2555.736	7.441227	0.013809
Netherlands	0.954333	0.910751	30018.77	183.6839	6.95E-11
Poland	0.625058	0.390698	85768.42	11.54201	0.00321
Portugal	0.654689	0.428618	17101.71	13.50258	0.001734
Romania	0.344105	0.118408	52585.89	2.417609	0.137384
Slovakia	0.688095	0.473475	17426.88	16.18639	0.000797
Slovenia	0.71674	0.513716	5247.947	19.01538	0.000377
Spain	0.697228	0.486126	121925.8	17.02806	0.000634
Sweden	0.876134	0.76761	36829.03	59.45598	4.12E-07
UK	0.87266	0.761536	135228.7	57.48297	5.22E-07
EU 28	0.845658	0.715138	1089858	45.18847	2.66E-06

Source: The author's own calculations.

In the case of Bulgaria, Croatia, France, Latvia, Malta, Poland, Slovakia and Slovenia, the values of the correlation coefficient are included in the interval (0.540821; 0.71674). These countries demonstrated a weak and medium positive relationship between the amount of state aid they provided and GDP. Moreover, the regression line cannot be adjusted to the empirical data to a satisfactory degree. The determination coefficients for these countries are: 0.446729, 0.395961, 0.475686, 0.368709, 0.292487, 0.390698, 0.473475 and 0.513716.

For all countries of the European Union (EU-28) between the amount of state aid and GDP in the real terms, there is a positive correlation ($r = 0.845658$). However, the determination coefficient assumes lower values and amounts to 0.715138. This means that 71.51% of the variations in GDP in European economy were attributed to variations in expenditures on state aid, while the remaining 28.49% resulted from the impact of other factors. At the level of the EU-28, the increase in the value of GDP is EUR 62.17 million. Bearing in mind, however, the confidence interval for the regression coefficient, it is certain (95% probability) that an increase in state aid of €1 million will cause GDP to rise at the overall EU-28 level from EUR 42.74 million to EUR 81.59 million.

Cyprus, Portugal and Spain are characterized by occurring between the amount of provided state aid and the level of GDP, strong and medium negative correlation - respectively 0.821733, 0.654689 and 0.697228.

In the case of Cyprus, for which the determination coefficient has the highest value, the variability of GDP in the real terms was explained in 67.52% by variability of expenditure on state aid in this country. The remaining 32.48% is the effect of random and non-random factors (other non-aid variables, imprecise fit of a straight line to the empirical data etc.). For Portugal and Spain, the determination coefficient assumes lower values and amounts to 0.428618 and 0.486126. This means that there can be no satisfactory adjustment of the regression line to the empirical data.

3.2 Discussion

The state has at its disposal a complex set of instruments that enables it to build a broadly understood infrastructure to support sustainable development. The state also creates the organizational and legal framework for the functioning of entities and ecosystems that stimulate activities toward sustainable development. The state's actions for sustainable development and its financing are particularly important in developing countries but are not without significance at the level of developed countries. The state introduces legal regulations supporting the concept of sustainable development and - in the case of European Union member states - implements EU regulations into national legislation. The state develops strategies and public policies that ensure the achievement of the goals of sustainable development (Carayannis et al., 2020). It is the state that decides on the allocation of public funds and their allocation to individual sectors and activities, including those of strategic importance for sustainable development (Casseli, 2012). In this context, policies such as financial policy, energy policy, or policy in the field of innovation and competitiveness are of particular importance. These policies are closely related and interdependent. The state stimulates cooperation between the public and private sectors, determining the degree of private sector involvement in the implementation of public goals and tasks (Amir & Gokmenoglu, 2020).

Following the principle of sustainable development, the condition of which, from the perspective of economic theory, is a stable fiscal policy, the following regularities should be indicated.

Firstly, centuries of experience in the use of fiscal instruments lead to a thesis that universal standards of fiscal policy cannot be clearly defined. It is necessary to follow pragmatism, i.e. the selection of fiscal tools adequate to the prevailing economic, social, political, historical, religious conditions, etc. It is therefore impossible to set a universal taxation limit, optimal public burdens, an ideal tax system, etc.

Secondly, despite numerous recommendations and the rich experience of many countries, fiscal policy is still largely conducted by the method of "trial and error". This is because the

nature of phenomena and processes taking place in the economic and social spheres, their intensity, complexity, etc., and the interactions between the real and money spheres, including public finances, do not allow to reduce the dependencies between them to deterministic relationships. In the analysed area, it is difficult to unequivocally determine which factor causes a specific effect. There is also the so-called delay effect, i.e. the difference in time between the diagnosis (with the optimistic assumption that it is accurate) and the application of fiscal policy measures. In the case of fiscal policy, delays arise e.g. due to lengthy legislative procedures.

Thirdly, the development of state institutions and civilization development force the use of such fiscal tools as taxes and public expenditure. Their use has an impact on strictly economic processes.

Fourthly, in the conditions of the monetary economy, it is obvious that monetary policy instruments (money supply, interest rates, exchange rates, etc.) affect the real economy, i.e. production, employment, investments, exports, imports through the so-called transmission channels. Monetary policy also affects the fiscal situation (public finances) of the country, because it is production, income generated in the economy that determines the revenue (income) to the state budget, income of local government budgets, special purpose funds and other institutions of the public finance sector. The use of monetary instruments is also not neutral for the government's financial position when, for various reasons, it is not able to balance the state budget, but is forced to meet some of the financial needs on the loan market. Hence, the level of interest rates set by the monetary authorities is important for the government, as the decisions of these authorities have an impact on the market interest rates at which the government lends money. For the government, the financial liquidity of the market is also important, and again it is directly (open market operations) or indirectly influenced by the central bank. The point is that the loan market should not be "dried up" by the current monetary policy, which would make it impossible to finance the current financial needs of the government.

Fifthly, the fiscal activity of the state may hinder the achievement of the statutory goals of the monetary authorities, or the protection of the value of money, or controlling low stable inflation. This is possible when the government pursues an excessively loose spending policy, creating additional demand in the economy that is not covered by goods and services, which inevitably leads to inflation. Another reason for the rise in inflation on the part of the government are increases in indirect taxes, which are price-generating. There is much more dependence between the activities of monetary and fiscal authorities that affect society and the economy. In the conditions of a money economy, it is necessary to coordinate the actions of monetary and fiscal authorities.

The scope and instruments of state influence on sustainable development and a balanced financial system are broad. Starting from the legislative process, which includes the development of bills, their processing and implementation into the law, then adapting the law to EU requirements, building a public management system focused on sustainable development, influencing the decisions and behavior of market participants, through the impact on the flow of financial resources, shaping public-private cooperation, stimulating investments in pro-social and pro-environmental innovations, ending with educational and training activities. However, this catalog of activities is not closed, as the changes in the socio-economic environment change the forms and instruments of state influence. New, unconventional activities should be expected, which will allow modern states to effectively participate in achieving the goals of sustainable development in the long term.

CONCLUSION

In the process of creation and distribution of GDP a significant function is performed by the state, which by taking in the form of taxes and other public levies some part of the revenue generated by households and enterprises, changes the structure of aggregate demand in the economy. The taxes imposed on enterprises limit their investment opportunities, but revenues from taxes and other levies are directed by the state to both households (social assistance, unemployment benefits, scholarships etc.) and to enterprises (state aid in the form of grants), forming the basis of demand for consumer goods and investment goods. State expenditure policy, which includes the policy of state aid to enterprises, can thus give an impulse to GDP growth and increase the indicator GDP *per capita* (growth of competitiveness of the national economy) even if the State spends more money than the accumulated revenue in the budget. This situation means the appearance of budget deficits, which accumulation in the coming years leads to the formation of public finance sector debt.

The subject of competition policy usually involves private restrictions of competition (concerning possible restrictions of competition by enterprises) such as through the abuse of market power, through cartels and collusive behavior, and through horizontal and vertical mergers. A specific characteristic feature of European competition policy is the state aid control based on Article 107 of the TFEU. It relates to distortions of competition through state subsidies to private or public enterprises that are in active or potential competition with other enterprises. Article 1 par. 1 of the TFEU issues a general ban on state aid. There are, however, exceptions to the rule defined in Article 107 par. 3 TFEU, which allow aid under certain conditions.

The proposed research thesis in the paper, according to which, both in relation to the European Union and its individual Member States, the amount of expenditure on state aid is positively correlated with the rate of GDP should be rejected. It cannot be considered as a true thesis that with increasing the amount of state aid the competitiveness of the EU economy increases. It was incorrect to assume that this correlation occurs for all Member States, because of the amount spent on state aid are very different at the level of individual Member States. Different is also the proportion of aid actually granted in the aid approved by the European Commission.

Bearing in mind the results of the regression model, it can be concluded that state aid is not an effective tool for supporting economic growth or investment in European Union Member States. However, this does not mean that state aid is completely pointless. Firstly, state aid does not lead to lower growth; although some of the estimated regression coefficients turn out to be significantly negative. This is the case for three Member States: Cyprus, Portugal and Spain. Thus, despite the redistributive nature of state aid, it does not reduce productivity. Secondly, neither economic growth nor investment is synonymous with social welfare.

According to the European Commission's state aid reports for each Member State, most state aid goes to environmental protection and regional development, which is unlikely to have a direct impact on increasing efficiency. However, state aid can increase welfare in ways that go beyond the scope of the presented regression analysis. State aid can be beneficial to the extent that it helps to alleviate market failures and externalities (which may be the case for state aid for environmental protection) or improves the economic links of remote and underdeveloped areas (regional aid). Future studies should take this possibility into account. Nevertheless, given that the stated objective of state aid in the EU context is to increase efficiency, both national governments and the European Commission should consider rationalising state aid policy to avoid wasting government resources.

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