The expenditure side of GDP in the crisis period in the EU

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Abstract: The reduction of economic activity related to crises is natural. The double-dip recessions are emerging in economies. The article deals with two crises, namely global financial crisis (2008-2009) and the coronavirus crisis (2020-2021). The drivers of these crises are different. The EU states used measures to minimize the consequences of the crises, which manifested themselves with varying intensity in their spending. The paper focuses on the comparison of the impact of the two crises on the expenditure side of GDP in the economies of the EU states. The paper analyses the real effects of factors on changes in GDP in individual EU states. The analysis showed a different response of individual expenditures and economic policies to these two crises. In the crisis period of the coronavirus was found a higher degree of synchronization of the impact on changes in spending in EU countries. A different reaction is evident in the area of fiscal policy and its impact on both crises. It can be expected that the subsequent crisis associated with the war in Ukraine and the energy crisis will affect all components of expenditure side GDP.

Keywords: crisis period, expenditure side, GDP, EU
JEL Classification: E23, G01, F41

1 Introduction

The economic performance of the EU economies is not constant and goes through a cyclical process known as the business cycle. One phase of the business cycle is the recession phase, sometimes called the economic crisis, which is characterised by a significant decline in economic performance. An important aspect in assessing crises is to find an answer to the question of what is the main cause (driver) of the crisis. Most often, one can look for causes on the aggregate supply side, aggregate demand side or a combination of both. In addition to the causes, it is also necessary to analyse the impact of the crisis on the economies. Two crises have occurred in EU economies in the last 20 years, namely the financial crisis (2008-2009) and the coronavirus crisis (2020-2021). The aim of the paper is to identify the main differences in the impact of the two crises on the expenditure side of GDP in the EU economies.

A market economy is subject to economic fluctuations, which are distinguished as structural and cyclical. Structural fluctuations occur because of constant changes in consumer preferences as well as the scarcity of economic resources. On the other hand, cyclical fluctuations, where some sectors reduce their production and others expand, are characterised by a general decline and then a general increase in production and employment in virtually all sectors (Holman, 2002) or regions (Redlichova et al., 2019). The economic cycle consists of a more or less regular alternation of two phases, namely a period of expansion followed by a period of recession. In a recession, the productive activity of the economy declines, unemployment rises, investment and innovation activity of firms declines and firms' profits fall. Krugman (2009) also calls this period of economic downturn a macroeconomic crisis. However, periods of expansion and recession do not necessarily alternate regularly. Quite often, the opposite is the case. Recently, the world economy has experienced a double-dip recession (W); sometimes, on the other hand, boom periods last for many years (Čermakova et al. 2022). Fluctuations in the business cycle are either internal or external in nature. In recent decades, the causes are more often external and do because of the global interconnectedness of national economies.

As historical experience shows, the most common causes of downturns in economic activity have been financial crises and price shocks in global commodity markets. Financial crises can be divided into monetary, banking and debt crises. These crises can occur in different interconnections (Czesaný & Johnson, 2012).

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The first crisis analysed after the enlargement of the EU to the new accession countries was the economic crisis in 2008 and 2009. The trigger for the crisis was the housing price collapse in the United States (Blanchard, 2009). When these problems first emerged, it appeared that the impact would be limited mainly to the US financial sector, but the first significant effects on global markets began as early as August 2007. The crisis intensified sharply in September 2008, especially after the collapse of the US investment bank Lehman Brothers (Edey, 2009). The bursting of the housing bubble in the United States had a subsequent impact on financial markets worldwide. This effect subsequently affected European economies and led to recession in most countries in Europe. The countries have reacted differently to the economic crisis in terms of labour market and employment (Pavelka & Löster, 2016). The study of Šetek and Petrách (2017) points to economic and security implications.

The next economic crisis came in 2020 and 2021 and was caused by an external cause, namely the coronavirus epidemic. The coronavirus crisis (Covid crisis) was unique in several respects. This recession did not have an economic origin and has been truly global so far, because, unlike the great financial crisis of 2008-2009, it has affected all countries and regions (Dušek, 2015). The individual policy response was unique in terms of speed, size, and scope and triggered a concerted effort combining monetary, fiscal, and prudential policies (Borio, 2020). On the positive side, the increased use of information technology (Vrchota et al. 2020) can be considered to have outweighed the negatives of this crisis.

2 Methods

The paper focuses on the analysis of the effects of two crises (the Great Depression and the coronavirus recession) on the expenditure side of GDP in EU countries and to compare these effects. In order to compare the real evolution of the observed indicators (physical volume of indicators), the indicators have been adjusted for the price effect. Data were taken from Eurostat, where they are presented in national accounting terms at current and previous year's prices. GDP according to the expenditure method is the sum of final consumption expenditure (households, government and non-profit institutions serving households), gross capital formation (gross fixed capital formation, change in inventories and net acquisition of valuables) and the balance of exports and imports (exports of goods and services minus imports of goods and services). A comparison of the values of the aggregate at previous prices and the value of the aggregate at current prices was used to give a realistic indication of the change in the two crises. The result of this ratio is the Laspeyres volume index.

During the global economic crisis, an index of all components of GDP was found by the expenditure method:

$$I_{q,i_{2009/2008}} = \frac{\sum p_{i,2008} q_{i,2009}}{\sum p_{i,2008} q_{i,2008}}, \quad (1)$$

in the time period of the Covid crisis then

$$I_{q,i_{2019/2018}} = \frac{\sum p_{i,2019} q_{i,2020}}{\sum p_{i,2019} q_{i,2019}}. \quad (2)$$

where $I_{q,i_{2019/2018}}$ resp. $I_{q,i_{2009/2008}}$ is the Laspeyres volume index, *i* is Gross domestic product at market prices and its individual components (Final consumption expenditure of general government - FCG, Final consumption expenditure of households - FCH, Final consumption expenditure of nonprofit institutions serving households - NPISH, Gross capital formation -GCF, External balance of goods and services- EB),

$\sum p_{i,2008} q_{i,2009}$, resp. $\sum p_{i,2019} q_{i,2020}$ are individual aggregates in year 2009 resp. 2020 in previous year prices,

$\sum p_{i,2009} q_{i,2009}$, resp. $\sum p_{i,2020} q_{i,2020}$ are individual aggregates in year 2009 resp. 2020 in current prices.

For the analysis of GDP growth, the contribution of each of the domestic demand factors (final consumption, gross capital formation and net exports) to GDP growth was expressed.

For a given interval, the contribution of each of these elements is equal to the product of its growth rate t/t-1 and the after-share of that element in the GDP of interval t-1.

The GDP growth rate is the sum of the growth rates of each end-use component weighted by the share of each of these components in the GDP of the preceding interval. (Imports are treated as negative uses - the larger the imports, the less they contribute to GDP growth).

$$\left(\frac{FCH_{2009\ in\ previous\ year\ prices}}{FCH_{2008\ in\ current\ prices}} - 1\right).\frac{FCH_{2008\ in\ current\ prices}}{GDP_{2008\ in\ current\ prices}} \text{ resp.}$$

$$\left(\frac{FCH_{2020\ in\ previous\ year\ prices}}{FCH_{2019\ in\ current\ prices}} - 1\right).\frac{FCH_{2019\ in\ current\ prices}}{GDP_{2019\ in\ current\ prices}} \quad (3)$$

The contribution to final consumption of government and non-profit institutions, the contribution of gross capital formation, the contribution of exports and the (negative) contribution of imports to GDP growth are determined in a similar way. National accounts data in millions of euro are available.

3 Research results

The first part of the analysis focused on the two main components of GDP in terms of expenditure, namely gross fixed capital formation (investment) and household consumption. First, the volume indices of the individual domestic demand factors in the EU countries during the Great Depression (2009/2008) and the coronavirus crisis (2020/2019) were established. The indices always compare the crisis period with the pre-crisis period. Tables 1, 2 and 3 show the different developments of the factors on the expenditure side of GDP across EU countries.

Table 1 Gross capital formation in time periods of crises (year-on-year volume indices)

	2009/2008	**2020/2019**
>1		Estonia, Greece, Denmark, Romania
1 - 0,9	Belgium, Malta	Finland, Latvia, Sweden, Croatia, Luxembourg, Austria, Malta, Bulgaria, Netherlands, Germany, Portugal, Hungary, Belgium, Slovenia, EU (27 countries), France
0,9 - 0,8	Austria, Netherlands, Portugal, Poland, France, Italy, EU (27 countries), Germany, Czechia, Spain, Sweden, Ireland, Finland	Poland, Czechia, Italy, Cyprus, Spain, Lithuania Slovakia
0,8 - 0,7	Cyprus, Denmark, Croatia, Romania, Hungary, Luxembourg, Bulgaria, Greece	Ireland
0,7 - 0,6	Slovakia, Slovenia	
0,6 - 0,5	Latvia, Estonia	
0,5 - 0,4	Lithuania	

Source: own processing, Eurostat

Table 1 shows the different response of the gross capital formation indicator during the crisis period. While in the period of economic crisis investments decreased, in some countries such as Latvia, Estonia, Lithuania even very significantly by about 50%, in the period of Covid crisis in some EU countries (Estonia, Greece, Denmark, Romania) investments increased or slightly decreased. The average decline in all EU-27 countries was in the range of 0.9-0.8 in the economic crisis, while the average decline in the Covid crisis was lower (in the range of 1-0.9). In the Czech Republic, the decline was about the same in both crises. Rolinek et al. (2015) and Mura et. al. (2021) points out that firms are increasingly focusing on more technology-intensive investments. This effect may somewhat limit the negative impact of the overall decline in investment. Table 2 shows the volume indices of final consumption expenditure of households during the crisis period in the EU countries. Final consumption expenditure did not decrease as significantly as gross capital formation.

Table 2 Final consumption expenditure of households (year-on-year volume indices)

	2009/2008	**2020/2019**
>1	Poland, Slovenia, Luxembourg, Sweden, Malta, Austria, Belgium, France	
1 - 0,9	Germany, Slovakia, Czechia, EU (27 countries), Italy, Netherlands, Greece, Portugal, Finland, Denmark, Spain, Bulgaria, Ireland, Cyprus, Romania, Hungary, Croatia	Bulgaria, Slovakia, Hungary, Denmark, Lithuania, Estonia, Poland, Sweden, Finland, Cyprus, Romania, Croatia, Germany, Slovenia, Latvia, Netherlands, France, Czechia, Portugal, Luxembourg, EU (27 countries), Greece, Belgium, Austria
0,9 - 0,8	Estonia, Latvia, Lithuania	Italy, Malta, Ireland, Spain

Source: own processing, Eurostat

Table 2 shows that Final consumption expenditure of households increased for some countries during the economic crisis in 2009 (Poland, Slovenia, Luxembourg, Malta, Austria, Belgium, France), but decreased for all EU countries during the Covid crisis.

Table 3 Final consumption expenditure of general government (year-on-year volume indices)

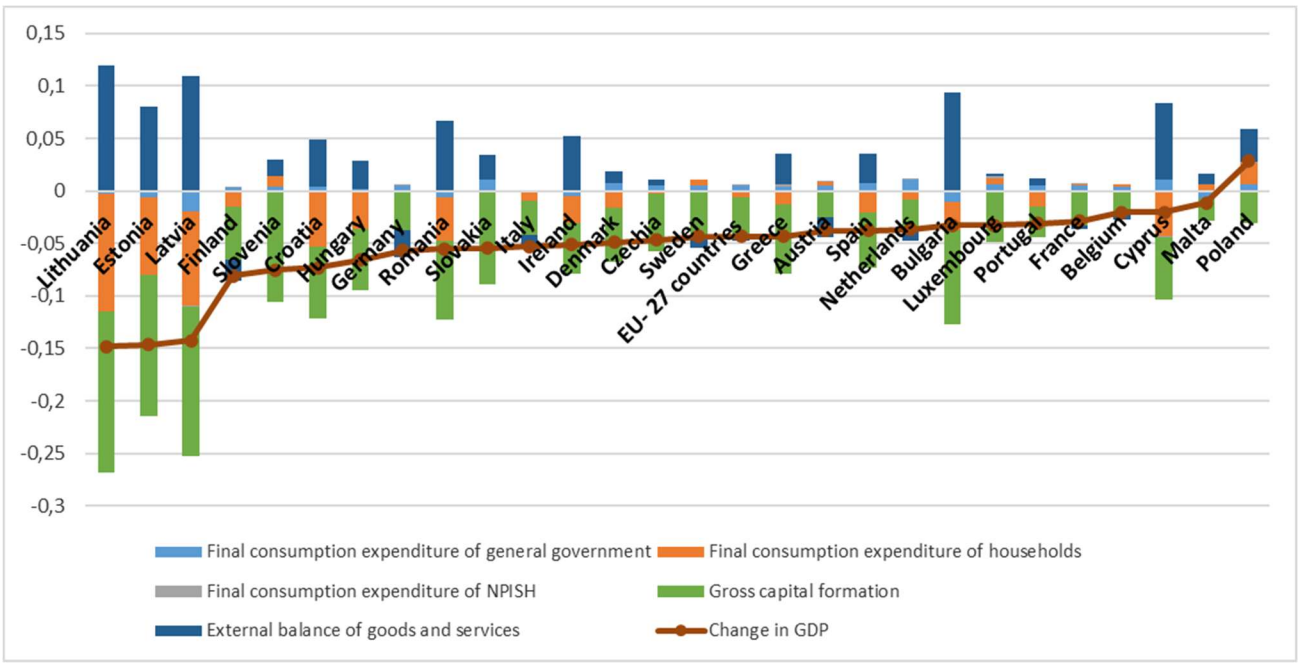
	2009/2008	**2020/2019**
>1,1		Malta, Cyprus
1,1 -1,0	Cyprus, Slovakia, Netherlands, Luxembourg, Spain, Poland, Germany, Denmark, Czechia, Portugal, Austria, France, EU (27 countries), Sweden, Croatia, Slovenia, Greece, Belgium, Finland, Hungary	Ireland, Bulgaria, Luxembourg, Poland, Slovenia, Croatia, Germany, Czechia, Spain, Estonia, Greece, Latvia, Romania, EU (27 countries), Netherlands, Italy, Finland, Portugal
1 - 0,9	Italy, Lithuania, Ireland, Estonia, Malta, Romania, Bulgaria	Belgium, Lithuania, Austria, Hungary, Denmark, Sweden, France
0,9 - 0,8	Latvia	

Source: own processing, Eurostat

The following part analyses the contribution of the change in the GDP component according to the expenditure method to the change in aggregate GDP in the countries in both crises (Figures 1 and 2).

Figure 1 analyses the above factors during the 2009/2008 economic crisis (comparing the 2009 item in previous period prices and the 2008 item in current period prices). Figure 1 shows that GDP declined in 2009 compared to 2008 in all EU countries except Poland, which recorded a slight increase. The largest falls in GDP can be observed in Lithuania, Estonia and Latvia. In these three countries, the decline was mainly influenced by a fall in investment and consumption expenditure of households, while the positive effect was caused by the External balance of goods and services. In the other EU countries, the decline in GDP was also caused by a fall in investment. Government spending was mostly slightly positive.

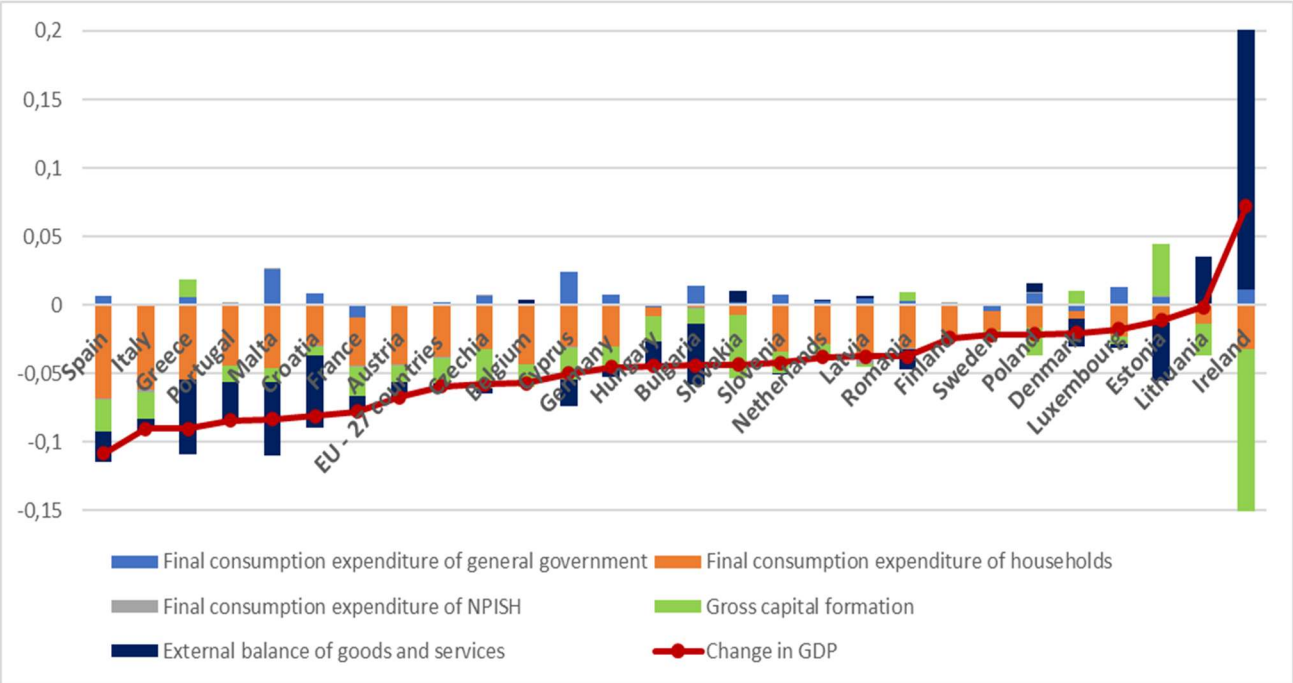
Figure 1 Contribution of individual components from the expenditure side to the change in GDP in 2009/2008



Source: own processing, Eurostat

Figure 2 analyses the same factors in the 2020/2019 Covid crisis period (comparing the 2020 entry in prior period prices and the 2019 entry in current period prices).

Figure 2 Contribution of individual components from the expenditure side to the change in GDP in 2020/2019



Source: own processing, Eurostat

The comparison shows that there is also a decline in GDP that does not exceed 10%. In this period, the decline was mainly driven by household consumption, while the external balance of goods and services was also negatively affected (especially in Croatia, France, Portugal, Bulgaria and Malta). Consumption expenditure of government had a slightly positive effect.

4 Conclusions

This analysis has shown the differences in the impact of the two crises and identified the different responses to these crises from the perspective of the expenditure side of GDP in individual EU countries or the EU as a whole (EU27). The first financial crisis analysed (2009/2008) had an impact on the expenditure side mainly in terms of investment restraint. A study by Kahle and Stulz (2013) adds, in addition to investments, corporate loans and capital expenditures fall sharply at this time. On the other hand, the subsequent economic crisis associated with the Covid epidemic (2020/2019) has had an impact on household consumption. An important aspect here is the different use of different economic policies. In the first crisis, the use of monetary policy was more prevalent and, conversely, during the Covid crisis, the use of fiscal policies by governments to reduce the impact of the crisis was significantly more prevalent. The differences in national responses across EU countries are not significant. A study by Villana and Fana (2021) in their Covid-19 crisis analysis found that a significant risk in the EU is the high degree of integration of European economies. The analysis has shown that each crisis must be assessed individually, both in terms of its causes and its impact.

References

Borio, C. (2020). The Covid-19 economic crisis: Dangerously unique. *Business Economics*, 55(4), 181-190.

Blanchard, M. O. J. (2009). *The crisis: basic mechanisms and appropriate policies*. International Monetary Fund.

Czesaný, S., & Johnson, Z. (2012). *Ekonomický cyklus, hospodářská politika a bohatství zemí*. Oeconomica.

Čermáková, K., Hromada, E., Henrique Filho, E. A., & Krulický, T. (2022). The Effects of Homeownership on Wealth Distribution. *European Journal of Interdisciplinary Studies*, 14(1), 68-86.

Dusek, J. (2015). Public Service of Public Transport Connectivity in South Bohemian Regions from the Point of View of Municipalities between the Years 2004-2014. In M. Pech (Ed.), *Proceedings of The 9th International Scientific Conference Inproforum: Common Challenges - Different Solutions - Mutual Dialogue* . 40–46.

Edey, M. (2009). The global financial crisis and its effects. *Economic Papers: A journal of applied economics and policy*, 28(3), 186-195.

Holman, R. (2002). *Ekonomie.* Praha: C.H. Beck

Kahle, K. M., & Stulz, R. M. (2013). Access to capital, investment, and the financial crisis. *Journal of Financial economics*, 110(2), 280-299.

Krugman, P. (2009). *How did economists get it so wrong?* New York Times, 2(9).

Mura, L., Zsigmond, T., & Machová, R. (2021). The effects of emotional intelligence and ethics of SME employees on knowledge sharing in Central-European countries*. Oeconomia Copernicana*, 12(4), 907-934.

Pavelka, T., & Löster, T. (2016). The Development of Unemployment in the European Union's Labour Market Due to the Recent Economic Crisis, Using Cluster Analysis. In Business Challenges in the Changing Economic Landscape-1, (323-337). Springer, Cham.

Redlichova, R., Chmelikova, G., Blazkova, I., & Tamas, V. (2019). Role of Companies' Size in Socio-Economic Development of Regions in The Czech Republic. *Ekonomski Pregled*, 70(6), 833–848. DOI: 10.32910/ep.70.6.2

Rolinek, L., Plevny, M., Kubecova, J., Kopta, D., Rost, M., Vrchota, J., & Marikova, M. (2015). Level of process management implementation in SMEs and some related implications. *Transactions on Business and Economics*, 14(2A), 360-377.

Setek, J., & Petrach, F. (2017). National Security in the Context of the Global Economy. In T. Kliestik (Ed.), *Globalization And Its Socio-Economic Consequences,* PTS I - VI (s. 2315–2323). Univ Zilina, Fac Operat & Econ & Transport & Commun, Dept Econ.

Villani, D., & Fana, M. (2021). Productive integration, economic recession and employment in Europe: an assessment based on vertically integrated sectors. *Journal of Industrial and Business Economics*, 48(2), 137-157.

Vrchota, J., Maříková, M., & Řehoř, P. (2020). Teleworking in SMEs before the onset of coronavirus infection in the Czech Republic. *Management: Journal of Contemporary Management Issues*, 25(2), 151-164.