

The Introduction of an EU Unemployment Reinsurance System: Income Protection and Maintenance of Consumption

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The paper deals with the suitability of the introduction of unemployment reinsurance in the countries of the European Union (URS EU) in terms of maintaining the level of consumption of the unemployed and promoting economic efficiency. Based on the literature review, the analysis of the US reinsurance system and the analysis of existing unemployment insurance in the EU, a model of the reinsurance system for unemployment in the EU is developed. The model simulation, based on the data of existing EU-20 unemployment insurance systems in the period 2003–2019, is used to determine the amount of reinsurance payments to countries and the level of contributions needed, while employing various ways of defining payment triggers. We have demonstrated that the URS EU would contribute to better income protection by having a direct impact on the income of the unemployed and at the same time acting as an automatic stabilizer of the economy.

Key Words: recession, unemployment, insurance, reinsurance, European Union, model simulation, consumption, automatic stabilizer

JEL Classification: J64, E24, E63

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Introduction

In this paper, we examine the potential suitability of unemployment reinsurance in EU countries in terms of income protection and maintenance of consumption. We address the research problem in view of the needs and capabilities of establishing a reinsurance system, as well as explore possible advantages and disadvantages of introducing the unemployment reinsurance system in the EU.

We have explored the possibilities for establishing URS EU. Such a system would complement public unemployment insurance schemes and

help increase their efficiency. Public systems contribute to the protection of income and thus to the maintenance of the level of consumption of the unemployed, and they also act as automatic stabilizers at the aggregate level. In times of recession, a reinsurance system would contribute additional financial means to the state systems and consequently strengthen their effects and eliminate their shortcomings, since this is the time when they most often face deficits and thus the inability to increase unemployment benefits (Dullien 2013).

In the research, we designed and presented the basic principles of such a URS EU model and, based on a historical data model simulation (2003–2019), tried to identify the benefits that the introduction of the URS EU would bring. In the section Results and Discussion, we present the two above-mentioned aspects: (1) URS EU and protection of the income of the unemployed, and (2) URS EU as an automatic stabilizer. The final section is the conclusion, with policy implications.

The designed model is set in such a way that, at the European level, countries pay contributions during the boom period. The collected contributions are intended for countries in recession and are paid in the form of additional aid to extend the period of receiving unemployment benefits. The methodology for calculating the expenditure and benefits of the EU reinsurance system in the case of unemployment in the EU is presented in section Structure and operation of the URS EU model – methodology.

Literature Review

The EU is the culmination of a long process of economic and political integration between European countries. It started as a free trade and customs union area. Over time, it has become a supranational entity that resembles a federal state (Tupy 2016). The US represents a successful example of a federation of states, from which the EU is still very different. The main weaknesses of the latter are the following (Dickson and Eleftheriadis 2012):

1. Not all policies are effective – a good example being the common agricultural policy, which has led to oversupply and higher commodity prices.
2. The ‘single currency’ poses a major problem – not all member states use the euro, although the EU emphasizes its use. In addition, Kovač (2017) believes that the EU is not an optimal monetary

area, as labour mobility is insufficient, interest rates have national mark-ups, and structural reforms and policies are divergent. He further concludes that we have European money and national political sovereignty, monetary centralization and fiscal decentralization. Therefore, the euro brings benefits but does not address political risks.

3. Difficulties in regulating immigration – citizens of member states are free to move from one country to another, leading to overcrowding in larger countries, and this has led to congestion on the roads and rising real estate prices, both commercial and residential. Immigration problems have been further exacerbated by the refugee crisis.
4. Unclear external representation and visibility – when the rest of the world wants to know what the EU's views are, it is still not clear who to ask and whether the individual is actually representing the EU, or their own country.

One of the biggest challenges for the EU and the euro area is to further promote structural reforms for economic convergence. At the same time, the EU should seriously consider introducing a fiscal union. This should mean that the EU budget has to be larger than it is today. After all, the main feature of any fiscal union is the ability to spend and consequently influence economic performance. Given that business cycles are not uniform in the case of the euro area, such a move will be an important step in the right direction. It is important to note that the EU budget today is around one percent of gross domestic product (GDP) – in the US, the federal budget revolves around 37 percent of GDP (Schelkle 2017). The EU is a diverse region in terms of geography, political systems, national support and economic foundations. Northern Europe is richer in capital and technologically and administratively more advanced compared to the peripheral countries in the south. Countries in the north would want a stronger currency, while countries in the south would want a weaker currency to be more competitive abroad. This diversity of the EU impedes the efforts for political and fiscal union.

An EU reinsurance system in the case of unemployment would operate on insurance principles (such as accident and car insurance, and real estate insurance). Everyone involved in the reinsurance system (EU 27) would raise funds, which would, should need occur, be paid out to countries in difficulty. To determine a country in difficulty, the so-called trig-

gers should be identified, namely measurable values making the country eligible for aid. It should also be determined how much assistance a country is entitled to and how the money borrowed should be paid back. These parameters were determined in the simulation so that the unemployment reinsurance system should be sustainable and maintain the same share of coverage (share of the total number of short-term unemployed who actually receive unemployment benefits) during the recession (from 2009 onwards) as before the recession (until 2008).

The *URS EU* – as a form of assistance to the state unemployment insurance – would cover expenditure related to rising unemployment. This would leave more money in state budgets for stabilization of state economies in recession. Buti et al. (2002), Dullien (2012; 2017), Epaulard (2014), and the European Commission (Evropska komisija 2014) note that it would be appropriate to introduce an unemployment reinsurance system in the EU as well. During the period of recession, the EU members did not use fiscal policy to mitigate it (Coenen, Straub, and Trabandt 2012); the unemployment reinsurance system would achieve just that, as it acts as an automatic stabilizer. We believe that the need for an automatic stabilizer, such as unemployment reinsurance, has recently become even more apparent because of the recession. Existing unemployment insurances fail in bad times because they do not have enough stock accumulated to pay benefits. The reasons are mainly the following: (i) several recipients; (ii) lower percentage of covered unemployment period – the length of unemployment increases, but only a small part is covered; and (iii) large losses are generated.

An EU unemployment reinsurance system would act as an automatic stabilizer, as it should help to reduce the inflation gap in a time of recession. The inflation gap is the distance between the current level of real GDP and the level of GDP at full and long-term equilibrium employment. The inflation gap is so called because an increase in the consumption of the economy leads to an increase in real GDP, and this has a long-term impact on price increase (Cogley, Primiceri, and Sargent 2010; Abazi-Alili et al. 2018; Jara Tamayo and Tumino 2021). An unemployment reinsurance system would help to protect the income and thus maintain the level of consumption of the unemployed, thereby helping countries in recession, as the system would contribute to the financing of unemployment benefits during a period of sudden and deep recession. In periods of weak economic activity, the benefits of the unemployment reinsurance system decrease, as the number of employed and thus the amount of contribu-

tions paid decrease. On the other hand, expenditure increases without the need to introduce a new government measure. In contrast, in the case of increased economic activity, expenditure decreases and benefits increase (Dullien 2012; Moyen, Stähler, and Winkler 2019). As economic activity increases, the unemployment reinsurance system expenditure (e.g. the amount and number of recipients of benefits, the period of receiving the benefits) automatically decreases, while benefits increase. Such movement helps to stabilize economic activity in the future. In the US, such a system has been in place for a long time and works well in times of recession, acting as an automatic stabilizer (Chimerine, Black, and Coffey 1999; Asdrubali, Sorensen, and Yosha 1996; US Department of Labor 2012; O'Leary, Barnow, and Lenaerts 2020).

The unemployment reinsurance system in the USA can therefore serve as a model for Europe. In his study, Vroman (2010) examined the role of the unemployment reinsurance system as an automatic stabilizer during the US recession between 2008 and 2010 and concluded that the stabilizing effect in a regular unemployment insurance programme reduces inflation gaps caused by the recession by about one tenth. Extending the compensation period has contributed to stabilization; unemployment insurance contributions increased in 2009 and 2010. For the three separate components of the unemployment reinsurance system (regular programme, extension of the benefit period and contributions) between 2008 and 2010, Vroman (2010) came to the following conclusions: (i) increased regular benefits reduced the inflation gap by 10.5 percent; (ii) the extended compensation period reduced the inflation gap by 8.5 percent; and (iii) increased contributions led to an increase in the inflation gap by 0.7 percent. On average, the reinsurance programme in case of unemployment decreased the inflation gap caused by the recession by 18.3 percent, which certainly contributes to a more stable and competitive economy.

The main dilemmas of the URS EU model can be summarized in three points, namely: (i) what is the relation to the existing unemployment insurance schemes in each country; (ii) to what extent, or to no extent, should redistribution be allowed by the URS EU; and (iii) should the URS EU be led by the already existing bureaucracy of national unemployment insurance schemes. In the continuation of the research, we examined several possibilities and also addressed the aforementioned dilemmas.

The main original contribution to science in the study of the unemployment reinsurance system is the development of a model that simu-

lated the operation of the unemployment reinsurance system at the EU level in the period 2003–2019. The study is comprehensive: based on study of the literature, analysis of the current reinsurance system in the US, and analysis of existing unemployment insurance in the EU, we designed a model of the unemployment reinsurance system in the EU. We researched the unemployment rate, the number of recipients of benefits, the costs of unemployment benefits and the wage bill, and simulated the difference between the collected unemployment insurance contributions and the benefits paid. The simulation shows in which countries the unemployment insurance is set appropriately, what was the balance between the collected unemployment insurance contributions and the benefits paid in the EU-20 in individual years and what was the cumulative difference in the period under review (2003–2019). The importance of the subject of EU unemployment reinsurance is evident, as the European Commission has already published calls for proposals on common EU unemployment insurance in the past (European Commission 2020; n.d.; European Parliament 2020).

Based on the analysis of unemployment insurance systems, we determined, in an original way, the levels of triggers that determine when and to what extent a country would be entitled to funds from the unemployment reinsurance system. Through model simulation, we found that the URS EU would contribute to improving the availability and financing of unemployment reinsurance in the EU (protection of the income of the unemployed) and thus to maintaining the level of consumption of the unemployed, which would help reduce the inflation and output gap.

Conceptual Framework

At a time of recession, the labour market faces an increased unemployment rate. Typical situations in which the unemployment reinsurance system plays an important role are wars, recessions, political interventions such as the oil embargo, and the collapse or closure of large industries (US National Commission on Unemployment Compensation 1979). Unemployment reinsurance is generally considered to be useful in protecting against cyclical unemployment – cyclical unemployment is low in times of boom and high in times of recession. The US National Commission on Unemployment Compensation (1979) explains, taking the US as an example, that in reinsurance, the average unemployment is determined according to the situation in each state, regardless of other members. If the ratio between unemployment benefits and expenditure in a

given year rises above the average rate, the individual state becomes eligible for cash from the common system. The average unemployment rate of an individual state can be calculated in different ways (e.g. as the average of recent years or as the lowest rate in a given period). Financial resources from the common fund may be sufficient to cover a part or the entire excess unemployment rate.

By simulating and evaluating the operation of the model that we used for simulating the operation of the URS EU, we confirmed that the heterogeneity of EU countries, the different dynamics of economic growth and unemployment, make setting of the URS EU possible. By simulating the operation of the URS EU, we demonstrated and determined the extent to which the URS EU would contribute to better income protection and at the same time to the stabilization of the economy. However, based on a review of the literature, we found that in the US, the reinsurance system in the case of unemployment affects the development of risky industries.

Based on the collected data, we designed a model to examine in which countries equilibrium unemployment insurance is set (statutory unemployment insurance contribution rate and equilibrium unemployment insurance contribution rate are equal), what was the balance between the collected unemployment insurance contributions for the benefits paid in the EU-20 in individual years, and what was the cumulative difference in the period under review (2003–2019). Due to the specifics of the insurance system, seven countries were excluded from the model (Greece, Ireland, Lithuania, Luxembourg, Malta, Romania, and the United Kingdom). The model was simulated for the EU-20. We determined how much funds each country would allocate to the reinsurance system fund, and we also determined the levels of triggers and the eligible amount of aid. Schematic representation of the model (figure 1) shows the cash flow of the URS EU with basic elements such as triggers, contributions, and coverage period.

In the following sections, we present the importance of the basic elements and the justification for determining individual values and the method of calculation in greater detail.

Research Methodology: Model Simulation of Reinsurance in Case of Unemployment in the EU

In designing the URS EU model, we relied on research already conducted (Beblavý and Maselli 2014; Dolls et al. 2014; Dullien 2007; 2013) and the

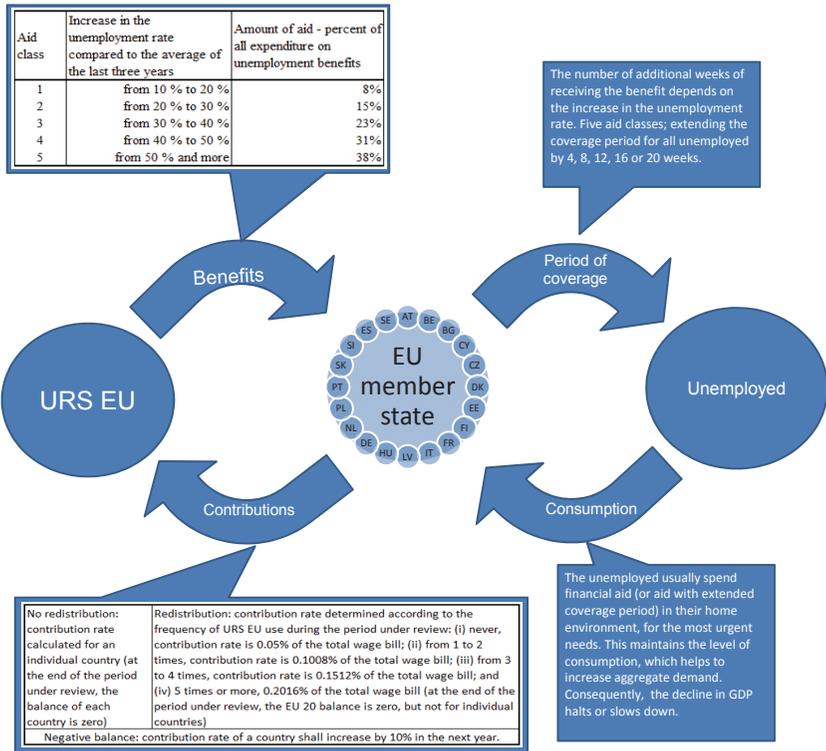


FIGURE 1 URS EU Cash Flow

us Unemployment reinsurance system. All research has a common purpose, namely, to examine the possibility of operating joint reinsurance in the case of unemployment at the EU level as an automatic stabilizer, and to increase efficiency and maintain the level of consumption of the unemployed. The idea of extending the period of receiving benefits in a period of economic recession with automatic triggers makes special sense, just as the US unemployment reinsurance system is set. Based on the research results, we determined the levels of triggers in an original way – when an individual country should be eligible for funds from the reinsurance system in the case of unemployment and to what extent. The results obtained also showed that the URS EU would contribute to improving the availability and financing of unemployment reinsurance in the EU (protection of the income of the unemployed) and thus to maintaining the level of consumption of the unemployed, which would help reduce the inflation and output gap.

The URS EU model exploits the financial and economic heterogeneity of countries and its implementation, especially in times of crisis, could contribute to maintaining consumption levels and thus to economic stabilization both in individual EU countries and in the EU as a whole. At the level of individual countries, it is very difficult to ensure balance between the payment of unemployment benefits and the collected unemployment insurance contributions during the economic crisis. The URS EU could use the heterogeneity of EU countries, reflected in different dynamics of economic growth and the unemployment rate, which would allow money to flow at the European level and thus provide help at the right time and in the right place. Namely, the state can get the right to aid at a time of recession and repay the debt at a time of boom.

The basic elements of the URS EU model are the expenditure (amount of aid to individual countries and period of receipt) and receipts (contributions of individual countries). Expenditures were determined based on the US Unemployment reinsurance system, which has been used in the US since 1935 and is proving to be an effective mechanism for maintaining stability in the US federal states. The amount of aid for each country in our URS EU model was determined to cover the total additional expenditure of an individual country in the period under review, which is a prerequisite for the sustainability of the system. The individual country begins to receive aid from the URS EU according to the level of the unemployment rate (trigger). As the unemployment rate of EU countries varies considerably, we determined five grades of the amount of aid to ensure fairness and political acceptability.

The amount and time/period of URS EU aid to an individual EU country is modelled based on the US unemployment reinsurance system, which means that the maximum aid covers the costs of an individual federal state for up to 20 additional weeks of receiving unemployment benefits for all unemployed. Based on historical data for the EU-20 in the period 2003–2019, we have calculated a potential total URS EU expenditure. We determined, in terms of the URS EU, how much money would be additionally earmarked for the unemployed (in each of the EU-20 countries and in every year during the period under review) in the event of an above-average unemployment rate increase.

Countries in which the unemployment rate has risen above average, compared to the average of the last three years, are eligible to drawing funds from the URS EU. The model we designed comprises five aid grades. The amount of aid depends on the increase in the unemployment

TABLE 1 Aid Grades

Aid grade	Increase in the unemp. rate compared to the average of the last three years	Amount of aid – percent of all expenditure on unemployment benefits
1	from 10 to 20%	8
2	from 20 to 30%	15
3	from 30 to 40%	23
4	from 40 to 50%	31
5	from 50% and more	38

rate. The calculation of the aid amount is based on the expenditure for extending the aid for up to 20 additional weeks, and consequently the amount of the aid affects the number of additional weeks of receiving the benefit. The equilibrium contribution rate for unemployment reinsurance varies from country to country. We calculated it so that in the period under review, the difference between the payment of unemployment benefits and the collected unemployment insurance contributions equals zero.

The expected long-term net receipts in the unemployment reinsurance system equal zero. By using the simulation, we determined the optimal or equilibrium contribution rate of the *URS EU*. With the *URS EU*, countries would be, under certain conditions, eligible for additional aid (table 1). We examined and determined how to cover these additional expenses. For countries that borrow money from the *URS EU*, we have set new (increased) contribution rates for unemployment insurance. In order to avoid permanent transfers from the system, we calculated the amount of contributions (cumulative contributions) and the amount of aid received (cumulative aid received). If the balance of these sums is negative, the contribution rate of a country shall increase by ten percent in the next year. The contribution rate shall annually increase by ten percent until the country balance is zero or positive. The current reinsurance system in the *US* works in a similar way (*US Department of Labor 2015*).

MEASUREMENT OF IMPACTS OF THE MODEL

If redistribution between countries were allowed, the effect of stabilization could be greater. In the simulations, we focused on the alternative with no redistribution, as it ensures greater political acceptability of the *URS EU* model. The calculated equilibrium contribution rates assume that the balance of an individual country is zero during the period un-

der review. In one of the models, we also simulated the operation of the URS EU, in which countries have three different contribution rates depending on the frequency of use of the system, according to the principle that in countries that use the system more often, the contribution rate is higher. If during the period under review they were eligible for aid up to (i) twice, the contribution rate is 0.1008 percent of the total wage bill; (ii) three to four times, the contribution rate is 0.1512 percent of the total wage bill; and (iii) five times or more, 0.2016 percent of the total wage bill. In order to avoid a permanently negative monetary position in the post-recession system, a single contribution rate has been set in order to balance the fund at the level of the EU-20 (e.g. for the last five years or for the entire period under review, the balance is zero). In setting up such a system, we would probably encounter resistance from more prosperous and stable countries, which would use the URS EU less frequently, so in simulations we focused on the URS EU model where we do not allow redistribution. Redistribution would be interesting and acceptable if we could prove its positive effects for net contributor countries, but we did not include this issue in the research.

We calculated the stabilizing power for each country separately, namely how aid received from the unemployment reinsurance system affects the GDP. The method of calculating the stabilizing power of the model was summarized according to the Dullien (2013) method, which defines stabilizing power as the ratio between the change in reinsurance contributions or payments in the EU in case of unemployment (as a percentage of GDP) and the change in the output gap. In addition, the stabilizing power was calculated according to the method of Beblavý and Maselli (2014) – see also Mitmana and Rabinovich (2015), according to which stabilization is calculated as the change in the balance as a percentage of GDP multiplied by a multiplier. The URS EU assumes that the additional aid received by the unemployed is used mainly for the most urgent needs and thus immediately returns to the economy, thereby increasing consumption, which has the effect of increasing GDP and reducing the output gap.

STRUCTURE AND OPERATION OF THE URS EU MODEL: METHODOLOGY

In the model designed, we simulated the operation of URS EU (with redistribution and with no redistribution), by taking into account the version of the equilibrium contribution rates of individual countries. We also calculated a uniform equilibrium contribution rate at the URS EU level

and an equilibrium contribution rate at the level of an individual country, but only for comparison with the actual (statutory) contribution rate in individual countries. Thus, we determined which countries should increase the legally determined rate in the case of a uniform equilibrium rate, and which could lower it.

With the designed model, we simulated several possible variants with different variables. In all cases, we studied the period between 2003 and 2019 in 20 European countries (Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Italy, Latvia, Hungary, Germany, The Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, and Sweden).

Prior to the implementation of the simulation, we determined the amount of assistance from the *URS EU* to each country, so that the maximum aid should cover the average state costs of 20 weeks of receiving unemployment benefits for the period 2003–2019. In the following, a comprehensive simulation of the most efficient version of the *URS EU*, which does not allow for redistribution, is presented, and consequently the *URS EU* contributions are set in a way that the balance of each country at the end of the period under review should be zero. Also in the simulation which does not allow redistribution, due to the solidarity of countries (in our case it is Germany) which do not benefit from the *URS EU* in the period under review (2003–2019), a contribution rate amounts to 0.002 percent, which is approximately half of the lowest calculated contribution rate; we can say that ‘minimal’ redistribution is enabled. Based on the country data, we calculated the average unemployment rate of the last three years (thus avoiding a sudden increase or decrease):

$$AUR_t = \frac{UR_{t-1} + UR_{t-2} + UR_{t-3}}{3}, \quad (1)$$

where *AUR* is the average unemployment rate of the last three years, *UR* the unemployment rate, and *t* the year.

The average unemployment rate thus obtained was compared to the unemployment rate in the current year, as a difference in percentages (trigger). Given the amount of difference between the average unemployment rate and the unemployment rate in the current year, we determined the amount of benefit that the state receives for the payment of unemployment benefits (*URS EU* expenditure). Thus, we calculated in which year a specific country should receive aid. On the other hand, there are contributions (*URS EU* funds) where the equilibrium contribution rate is

set so that the balance is zero during the period under review. When the difference between the sum of contributions (cumulative contributions) and the sum of aid received (cumulative aid received) in a given year is negative, the state contribution rate is increased by ten percent in the following year. The contribution rate is increased by ten percent annually until the country balance is zero or positive. Therefore, the contribution rate of each country is determined as follows:

$$\sum_{2003}^{2019} (\text{URS EU funds}_i - \text{URS EU expenditure}_i) = 0. \quad (2)$$

Country balance i in year t is greater than or equal to zero:

$$\text{Contribution rate}_{i,t} = \frac{\text{URS EU expenditure}_{i,t}}{\text{total wage bill}_{i,t}}. \quad (3)$$

Country balance i in year t is negative:

$$\text{Contribution rate}_{i,t} = \frac{\text{URS EU expenditure}_{i,t}}{\text{total wage bill}_{i,t}} \times 1,1. \quad (4)$$

The calculated contribution rate varies greatly from country to country, as certain countries would be less likely to use URS EU aid during the period under review and have a lower contribution rate as well (table 2). The lowest calculated contribution rate is in Poland and the highest in Spain.

Results and Discussion

According to the model presented, we have performed a simulation of the operation of the reinsurance system in the case of unemployment in the EU-20. We used MS Excel and secondary data from the databases of the European Commission, i.e. Mutual Information System on Social Protection (MISSOC n.d.), and Eurostat (n.d.), the International Labour Organization (n.d.) and OECD (2015a; 2015b).

The model simulation is based on the described URS EU model with no redistribution (the balance of each country is zero at the end of the period under review, and the contribution rates vary from country to country). The simulation was performed for various extensions of the benefit period: for 4, 8, 12, 16 or 20 weeks (the maximum duration of additional aid is 20 weeks). In the following, we present the results of the research and model simulation. The results of the research are presented from two aspects: protection of the income of the unemployed and automatic stabilizer.

TABLE 2 Equilibrium Contribution Rates Used in the URS EU Model (in Percent)

County	Contribution rate	County	Contribution rate
Austria	0.031	Latvia	0.054
Belgium	0.011	Hungary	0.038
Bulgaria	0.040	Germany	0.002
Cyprus	0.156	Netherlands	0.075
Czech Republic	0.010	Poland	0.004
Denmark	0.070	Portugal	0.099
Estonia	0.073	Slovakia	0.006
Finland	0.042	Slovenia	0.041
France	0.029	Spain	0.303
Italy	0.102	Sweden	0.017

NOTES In percent. Germany did not receive any URS EU aid during the period under review, so the calculated contribution rate is zero; for the sake of solidarity, we have determined that countries that do not use the URS EU have a contribution rate of 0.002 percent, which is approximately half of the lowest calculated contribution rate. In addition to solidarity and strengthening of the EU as a federation, the potential effects for net contributor countries (Germany) may be, for example: maintaining exports in times of crisis and maintaining investors.

URS EU AND PROTECTION OF THE INCOME OF THE UNEMPLOYED

An EU unemployment reinsurance system would contribute to better income protection by directly affecting the income of the unemployed. The aid granted as a possible extension of the benefit was calculated on the basis of the difference between the aid received and the contributions paid by each country (table 3; bold indicates the years and countries when the assistance of the URS EU is higher than the contributions). Most countries received the most assistance from the URS EU between 2009 and 2010, with the exception of Germany, which never received URS EU assistance during the period under review, which can be attributed to the persistently low unemployment rate.

The URS EU model is set up in such a way that countries use the aid received to extend the period of receiving unemployment benefits. Prolonging the receipt of benefits has an impact on better income protection, as it directly affects the income of the unemployed. The amount of the aid may extend the period for receiving the benefit by 4, 8, 12, 16 or 20 weeks, depending on the increase in the unemployment rate. According to the URS EU model, the maximum aid is set to cover the extension of the un-

TABLE 3 Difference between Transfers and Contributions Paid to the URS EU (in EUR million)

Country	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Austria	-65.8	-65.7	-70.1	-74.0	-77.9	-82.3	192.9	-85.4	-88.0	-91.3	214.8	236.7	-108.6	-123.0	-137.0	-110.0	-113.7
Belgium	-29.8	-31.1	-32.3	-33.6	-35.4	-37.2	-37.2	380.2	-43.8	-49.2	-54.4	-59.6	-64.2	-69.7	-75.8	-83.5	-49.2
Bulgaria	-5.2	-5.8	-6.4	-7.5	-9.3	-12.2	-13.2	24.2	24.0	13.8	-2.5	-18.3	-18.0	-18.9	-20.7	-24.8	-25.3
Cyprus	-15.6	-16.3	-17.5	-19.0	-20.8	-22.3	-5.3	3.7	14.1	38.1	53.5	0.1	-26.0	-28.2	-31.6	-36.2	-41.0
Czech Rep.	-8.8	-9.5	-10.0	-10.7	-11.6	-12.3	34.1	71.8	-14.0	-15.6	-17.1	-18.8	-20.9	-23.4	-26.6	-17.6	-18.7
Denmark	-149.2	-156.7	-162.1	-171.9	-176.7	-183.8	697.5	583.3	284.5	-229.5	-251.4	-278.0	-308.5	-340.6	-369.5	-400.7	-436.2
Estonia	-5.7	-6.5	-7.3	-8.8	-11.2	-12.2	62.8	36.3	-13.6	-15.8	-18.1	-20.6	-23.3	-26.2	-17.2	-19.2	-21.1
Finland	-42.4	-43.6	-45.3	-47.6	-50.1	-53.0	142.9	150.0	-61.7	-58.0	-58.2	-58.5	252.9	-65.6	-72.5	-81.2	-90.5
France	-304.1	-315.2	-330.1	-343.5	-357.8	-371.7	2419.1	2540.9	-470.1	-518.9	-567.4	-622.8	-676.6	-730.4	-791.7	-857.3	-921.4
Italy	-1090.9	-1156.3	-1196.0	-1254.2	-1289.1	-1339.6	175.5	272.1	-1362.8	2344.5	2390.7	543.1	-1381.6	-1410.5	-1430.3	-1458.3	-1483.9
Latvia	-5.4	-6.3	-8.1	-10.4	-14.6	-17.0	60.4	26.9	-13.0	-15.3	-17.6	-14.8	-16.1	-17.2	-18.4	-20.0	-21.8
Hungary	-15.4	-17.2	-18.7	4.4	-20.8	-22.0	75.9	85.4	25.6	-28.7	-31.9	-35.8	-40.0	-44.6	-51.8	-60.4	-38.5
Germany	-53.1	-52.9	-55.0	-56.9	-59.0	-61.3	-61.2	-63.2	-65.6	-67.9	-70.1	-72.4	-75.0	-78.6	-81.3	-84.0	-87.1
Netherlands	-839.7	-860.0	-877.0	-914.7	-969.2	-1009.9	-1034.3	-322.0	-357.7	-248.8	883.7	-53.6	-1086.7	-1111.2	-1138.7	-1175.7	-1221.3
Poland	-7.8	-8.0	-8.4	-8.9	-9.8	-11.1	-11.5	50.8	44.3	-14.0	-15.5	-17.3	-19.1	-21.3	-15.5	-17.0	-18.4
Portugal	-138.7	-141.6	-145.3	-144.4	-154.2	-159.0	-2.1	183.3	170.8	256.6	67.8	-158.2	-175.4	-193.3	-157.4	-164.7	-168.7
Slovakia	-2.2	-2.3	-2.6	-3.0	-3.3	-3.6	-3.6	20.7	9.2	-4.3	-4.8	-5.4	-6.1	-4.7	-5.0	-5.3	-5.7
Slovenia	-10.8	-12.3	-13.1	-14.0	-15.2	-16.6	1.2	40.9	34.7	7.3	5.2	-19.7	-21.9	-24.3	-27.7	-31.4	-35.2
Spain	-2231.1	-2358.2	-2606.6	-2787.9	-3008.1	-158.0	6321.4	4397.4	1610.4	2009.6	-823.0	-3478.5	-3902.3	-4310.7	-4735.2	-5199.3	-3423.8
Sweden	-38.2	-39.3	-41.0	-43.2	-46.4	-49.1	362.2	159.3	-63.2	-70.6	-78.1	-86.2	-95.1	-105.0	-115.8	-127.5	-139.6

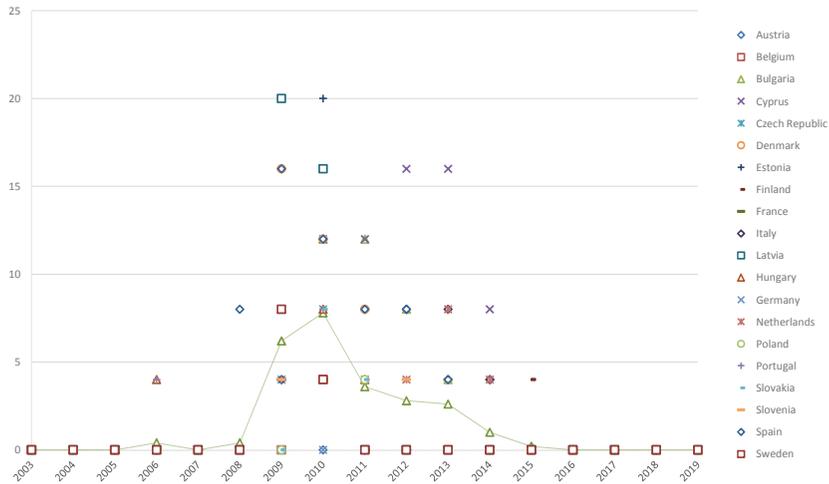


FIGURE 2 Aid Granted as a Possible Extension of Benefits (in weeks)

employment benefit of all unemployed persons in the current year for a maximum of 20 weeks (table 4 and figure 2). Due to the economic boom in all EU-20 countries, the URS EU was not activated in 2003–2005 and 2007, so the values in the table are zero in those years.

In times of recession, unemployment rises and GDP falls. Unemployment benefits (or extending coverage/benefit period), which the unemployed usually spend in the home environment, for basic needs, maintains the level of consumption, which contributes to an increase in unemployment benefits and thus to an increase in aggregate demand, which leads to a halt or a slow-down of further redundancies and GDP reduction. Using the URS EU model, we had calculated how extending the compensation period would affect GDP, which is presented below.

URS EU AS AN AUTOMATIC STABILIZER

The role of macroeconomic and structural policies is important in the recovery of the labour market. The unemployment rate in the OECD has approached pre-crisis levels (2008–2009), but the unemployment costs of the great recession have nevertheless been very high and long-lasting in many countries. In addition, as the recovery in production has been weak relative to the recovery in employment, labour productivity and wage growth remain low. Labour market resilience depends on macroeconomic policy and labour market settings. Macroeconomic policy is effective in limiting employment decline in times of slower economic

TABLE 4 Aid Granted, Expressed as an Extension of the Benefit (in weeks)

Country	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Austria							4				4	4					
Belgium								4									
Bulgaria								12	12	8	4						
Cyprus							8	12	12	16	16	8					
Czech Rep.							4	8									
Denmark							16	12	8								
Estonia							20	20									
Finland							4	4				4					
France							4	4									
Italy							4	4		8	8	4					
Latvia							20	16									
Hungary					4		8	8	4								
Germany																	
Netherlands							4	4	4	4	8	4					
Poland							4	4	4								
Portugal				4			4	8	8	8	4						
Slovakia								8	4								
Slovenia							4	12	8	4	4						
Spain						8	16	12	8	8	4						
Sweden							8	4									
Average	0	0	0	0.4	0	0.4	6.2	7.8	3.6	2.8	2.6	1	0.2	0	0	0	0

growth and preventing the cyclical rise in unemployment from becoming structural (Senekovič, Kavkler, and Bekó 2019). Spending on active labour market policies needs to respond strongly to the cyclical rise in unemployment to encourage a rapid return to work in the recovery. Excessively strict employment protection for regular workers reduces flexibility and encourages the use of temporary contracts and slows down job creation in recovery (OECD 2017).

The research focuses on the URS EU model simulation with no redistribution. The contribution rate of each country is set so that the balance by country at the end of the study period is zero; we performed:

1. Calculations according to the Dullien (2013) method for the case of the URS EU with no redistribution and for the case of the URS EU with redistribution, which otherwise means greater stabilizing power and greater solidarity, but at the same time lesser political acceptability. Stabilizing power is calculated as the ratio between the change in EU unemployment reinsurance contributions/payouts (as a percentage of GDP) and the change in the output gap. In addition, we have shown an increase in consumption as aid received as a percentage of GDP.
2. Calculations according to the method of Beblavý and Maselli (2014) only for the case of the URS EU without redistribution. Stabilizing power is calculated as the change in the balance as a percentage of GDP multiplied by the multiplier.

The calculated stabilizing power in most EU-20 countries shows a slowdown in economic overheating by 2008 and an impact/assistance to get out of the crisis faster from 2009 onwards.

An unemployment reinsurance system would contribute to the stability and efficiency of the EU member states and thus of the EU as a whole, as it would emphasize the role of automatic stabilizer inherent in unemployment insurance. URS EU would complement public unemployment insurance schemes and help increase their efficiency. Public systems contribute to the protection of income and thus to the maintenance of the consumption level of the unemployed, and they also act as automatic stabilizers at the aggregate level. In times of recession, a reinsurance system would contribute additional financial means to state systems and consequently strengthen their effects and eliminate their shortcomings, since this is the time when they most often face deficits and thus the inability to increase unemployment benefits.

Authors of various studies (Beblavý and Maselli 2014; Chimerine, Black, and Coffey 1999; Dolls et al. 2014; Dullien 2007; 2013; Vroman 2010) found that unemployment insurance can be introduced without causing large permanent transfers between countries and in such a way that possible stabilization would be beneficial for all countries. Beblavý and Maselli (2014), Dolls et al. (2014), and Dullien (2007; 2013) note that the unemployment insurance system in the euro area could be implemented with a relatively small budget and, on the other hand, with a relatively high stabilizing power (2 to 16 percent reduction in the output gap).

In the research, despite the lower stabilizing power, we assume that the URS EU model, in which we do not allow redistribution, is more politically acceptable. The contribution rate of each country is set so that the balance by country at the end of the study period is zero. However, in the version where redistribution is not allowed, the stabilizing power of the URS EU is slightly less than in the version that allows redistribution. Germany is not eligible for aid due to low unemployment. In the version where redistribution is enabled, Poland is also included in the system. This is a country that receives aid but pays more in contributions than it receives in aid each year (table 5). The URS EU would not provide greater stabilization for Germany in the great recession of 2008 and 2009, but it has to do with the fact that the German labour market did not deteriorate too much in this recession and the initial reduction in the output gap quickly returned to previous levels.

In the presented model, we measure the stabilizing power by changing the balance as a percentage change in the production gap, and the increase in consumption as the received aid as a percentage of GDP.

With certain assumptions, the URS EU influences reducing the output gap and increasing consumption. In the simulation, we assumed that the additional assistance obtained by the unemployed is used for the most urgent needs and thus immediately returns to the economy, as consumption increases, which in turn has an impact on GDP growth (table 5 and figure 3). We calculated the stabilizing power for each country separately. How the aid received affects GDP, is determined as follows:

- We determine the period under review: the initial year is when the balance is highest, and the period under review lasts as long as the balance decreases (falls); the last year is when the balance is lowest.
- We calculate the change in the balance over the period under review.

TABLE 5 Stabilizing Power of URS EU

Country	With no redistribution			With redistribution		
	(1)	(2)	(3)	(1)	(2)	(3)
Austria	2008–2014	0.638	0.029	2012–2014	1.948	0.041
Belgium	2008–2009	-3.520	0.056	2009–2010	-2.908	0.046
Bulgaria	2009–2013	1.169	0.047	2009–2013	0.945	0.038
Cyprus	2008–2014	0.825	0.124	2008–2014	0.963	0.145
Czech Rep.	2008–2010	0.319	0.026	2008–2010	0.207	0.017
Denmark	2008–2011	5.305	0.192	2008–2011	5.246	0.190
Estonia	2008–2010	2.013	0.247	2008–2010	2.064	0.254
Finland	2008–2015	0.285	0.025	2008–2010	0.815	0.048
France	2008–2010	3.473	0.088	2008–2010	4.452	0.061
Italy	2008–2014	1.273	0.075	2008–2014	1.284	0.076
Latvia	2008–2010	1.091	0.169	2008–2010	1.097	0.170
Hungary	2008–2011	1.088	0.055	2008–2011	0.936	0.047
Germany						
Netherlands	2009–2014	7.405	0.097	2009–2014	6.494	0.085
Poland	2009–2011	-0.446	0.010			
Portugal	2008–2013	1.308	0.098	2008–2013	1.302	0.097
Slovakia	2009–2011	-1.387	0.017	2009–2011	-0.488	0.006
Slovenia	2008–2013	0.422	0.059	2009–2013	0.924	0.042
Spain	2008–2013	2.540	0.317	2007–2013	2.746	0.379
Sweden	2008–2010	1.998	0.056	2008–2011	2.518	0.027

NOTES Column headings are as follows: (1) period, (2) balance change as a percentage of output gap change, (3) increase in consumption as a percentage of GDP.

- We calculate the change in the balance as a percentage of GDP over the period under review.
- We calculate the change in the output gap as a percentage of GDP over the period under review.
- We calculate the change in the balance as a percentage change in the output gap; the result obtained indicates by how much the output gap would be reduced in the event of the operation of the URS EU.

With the financial aid for the unemployed, the level of consumption is maintained. With the increase in unemployment benefits or the extension of the coverage period, the aggregate demand increases. Using the URS

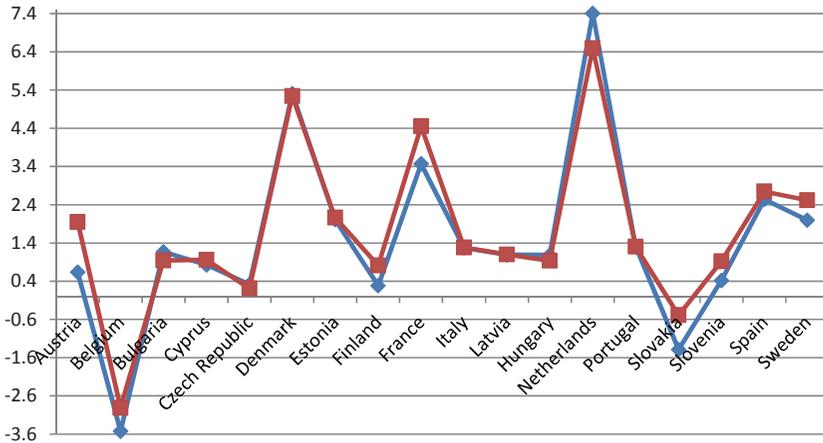


FIGURE 3 Change in Balance as a Percentage Change in the Output Gap (blue – no redistribution, red – distribution)

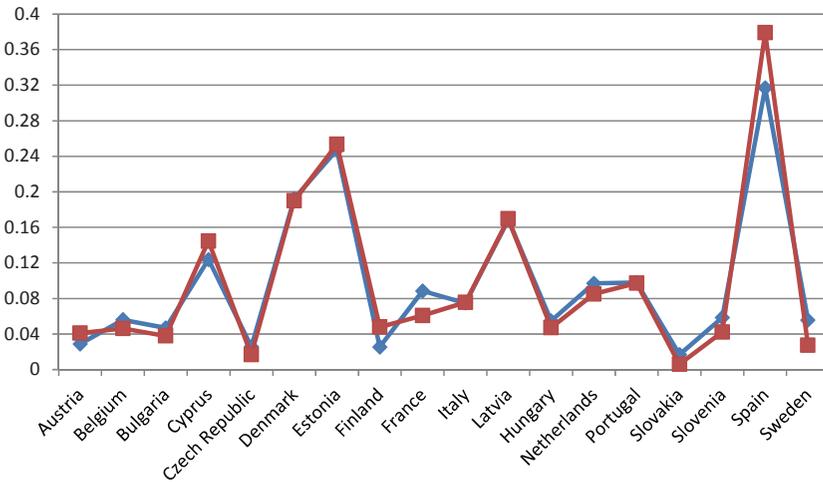


FIGURE 4 Increase in Consumption as a Percentage of GDP (blue – no redistribution, red – distribution)

EU model, we calculated how extending the compensation period would affect GDP (figure 4), namely:

$$\text{increase in consumption}_{t,i} = 100 \times \frac{\text{change in balance}_{t,i}}{\text{GDP}_{t,i}}. \quad (5)$$

The additional euros spent on unemployment benefits has an impact on GDP. The potential effects of the unemployment insurance system

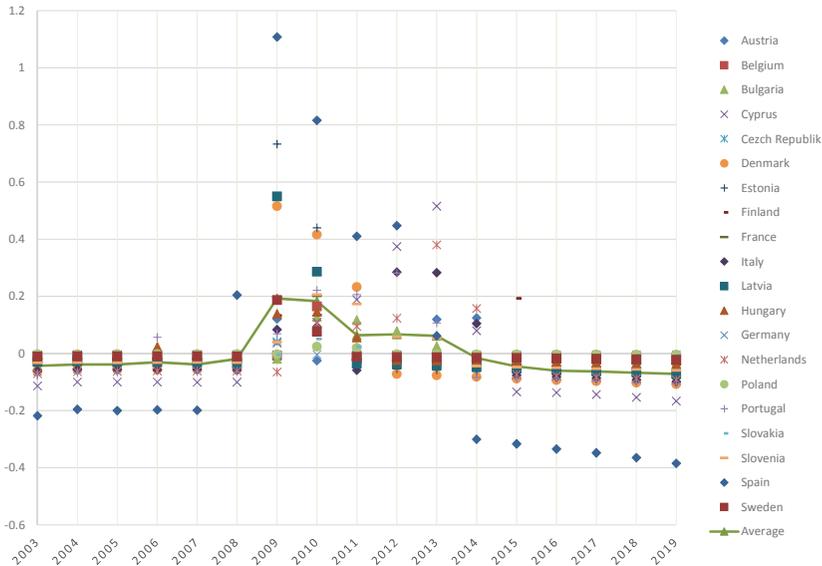


FIGURE 5 Stabilization as a Percentage of GDP

were also calculated according to the method of Beblavý and Maselli (2014) and the Congressional Budget Office (2012), thus taking on a series of estimates of how the additional euros spent on unemployment benefits affects GDP. This fiscal multiplier is assumed to be in the range between 0.5 and 1.5, which is also consistent with the evidence from the Ramey (2011) research.

The stabilizing power was also calculated according to the Beblavý and Maselli (2014) method, according to which stabilization is calculated as a change in the balance as a percentage of GDP multiplied by a multiplier (table 6, the years and countries when the URS EU aid promotes economic growth are indicated in bold):

$$\text{stabilization}_t = 1,5 \times \sum_i^j \text{URS EU balance (in GDP \%)}, \quad (6)$$

where t is the country, i the initial year when the balance is highest, and j the last year when the balance is lowest.

The calculated stabilization as a percentage of GDP, according to the Beblavý and Maselli (2014) method, shows a slowdown in economic overheating by 2008 and an impact/aid for a faster exit from the crisis from 2009 onwards (figure 5).

TABLE 6 Stabilization As a Percentage of GDP

Country	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Country	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Austria	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.12	-0.03	-0.02	-0.02	0.12	0.12	-0.03	-0.03	-0.03	-0.03	-0.04
Belgium	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.16	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Bulgaria	-0.02	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02	0.13	0.12	0.08	0.03	-0.03	-0.03	-0.03	-0.04	-0.04	-0.04
Cyprus	-0.11	-0.10	-0.10	-0.10	-0.10	-0.10	0.04	0.11	0.19	0.37	0.52	0.08	-0.13	-0.14	-0.14	-0.15	-0.17
Czech Rep.	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.04	0.08	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Denmark	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	0.52	0.42	0.23	-0.07	-0.08	-0.08	-0.09	-0.09	-0.10	-0.10	-0.11
Estonia	-0.04	-0.04	-0.04	-0.04	-0.04	-0.05	0.73	0.44	-0.05	-0.05	-0.06	-0.06	-0.07	-0.07	-0.08	-0.08	-0.09
Finland	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	0.13	0.13	-0.03	-0.04	-0.04	-0.04	0.19	-0.03	-0.03	-0.04	-0.04
France	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.20	0.20	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.04
Italy	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	0.08	0.09	-0.06	0.28	0.28	0.10	-0.08	-0.08	-0.09	-0.09	-0.10
Latvia	-0.03	-0.03	-0.03	-0.03	-0.03	-0.04	0.55	0.29	-0.04	-0.04	-0.04	-0.05	-0.05	-0.06	-0.06	-0.07	-0.07
Hungary	-0.02	-0.02	-0.02	0.02	-0.01	-0.01	0.14	0.15	0.06	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.04
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Netherlands	-0.07	-0.06	-0.06	-0.06	-0.06	-0.06	-0.07	0.10	0.09	0.12	0.38	0.16	-0.07	-0.08	-0.08	-0.09	-0.09
Poland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	-0.08	-0.07	-0.07	0.06	-0.06	-0.06	0.07	0.22	0.21	0.28	0.11	-0.08	-0.09	-0.09	-0.10	-0.10	-0.11
Slovakia	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.02	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01
Slovenia	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	0.04	0.21	0.17	0.06	0.05	-0.04	-0.05	-0.05	-0.05	-0.06	-0.06
Spain	-0.22	-0.20	-0.20	-0.20	-0.20	0.20	1.11	0.82	0.41	0.45	0.06	-0.30	-0.32	-0.33	-0.35	-0.36	-0.38
Sweden	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.19	0.08	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02

Conclusion and Policy Implications

Unemployment reinsurance contributes to protection of income and thus to maintenance of the level of consumption of the unemployed. In periods of weak economic activity, the benefits of the unemployment reinsurance system decrease, as the number of employed and thus the contributions paid decrease. On the other hand, expenditure increases without the need to introduce new government measures. The system, in contrast, also works in the case of increased economic activity, when expenditure decreases, and benefits increase (Dullien 2012; see also Boeri and Jimeno 2016). As economic activity increases, the reinsurance system expenditure in the case of unemployment (e.g. the amount and number of recipients of benefits, the period of receiving the benefits) automatically decreases, and benefits increase. Financial assistance to the unemployed (by extending the coverage of the period of receiving the benefit) maintains the level of consumption, as the unemployed spend financial assistance in the domestic environment, for the most urgent needs. Aid to the unemployed in the long run contributes to an increase in aggregate demand, which leads to a halt (slowdown) in further redundancies and a reduction in GDP.

By simulating and evaluating the URS EU model, we achieved the purpose of the research: we were able to confirm the basic thesis that the reinsurance system in the case of unemployment in the EU would improve the basic function of insurance – it would contribute to maintaining the level of consumption and affect the economic stability of the EU. We confirmed that the heterogeneity of EU countries (different dynamics of economic growth and unemployment) allows for the establishment of the URS EU. With a model simulation, we proved that the URS EU would contribute to better income protection by directly influencing the income of the unemployed.

The URS EU model exploits the financial and economic heterogeneity of countries. Its implementation, especially in times of crisis, would contribute to maintaining consumption levels and thus to economic stabilization in both individual EU countries and in the EU as a whole. At the level of individual countries, it is very difficult to ensure a balance between the payment of unemployment benefits and the collected unemployment insurance contributions during (their) economic crisis. Unemployment insurance at the EU level can be introduced without causing large and permanent transfers between countries and in such a way that

possible stabilization would benefit all countries. In three cases studied in more detail, the authors Dolls et al. (2014) and Dullien (2007; 2013) note that the reinsurance system in the case of unemployment in the euro area could be implemented with a relatively small budget but a relatively large stabilizing power (from 2 to 16 percent reduction of the output gap).

The basic elements of the URS EU model are expenditure and receipts. Expenditure was determined on the basis of the US unemployment reinsurance system, as it is proving to be an effective mechanism for maintaining stability in the US federal states. Receipts in the presented URS EU model were determined so as to cover the total additional expenditure of an individual country in the period under review, which is a condition for the sustainability of the system. An individual country begins to receive assistance from the URS EU according to the level of the unemployment rate (trigger).

The amount of URS EU aid to an individual EU country is determined on the model of the US unemployment reinsurance system, which means that the maximum aid covers the costs of an individual federal state for up to 20 additional weeks of receiving unemployment benefits for all unemployed. On the basis of historical data for the EU-20 in the period 2003–2019, we have calculated total URS EU expenditure. With the calculated URS EU expenditure, we determined how much money would be additionally allocated to the unemployed (in each of the EU-20 countries and in every year during the period under review).

EU-wide unemployment reinsurance would be integrated into existing national unemployment insurance schemes and would be politically acceptable to all countries. Labour market reforms have generally been implemented without learning from the heterogeneity of labour market responses to euro area shocks and without taking into account the findings that fiscal measures and labour market reforms that are effective in normal economic conditions can be very ineffective in times of major recessions. The realization from the recession period is that fiscal constraints can be used as a tool to induce institutional reforms. The release of fiscal constraints during the recession was considered to pose moral hazard problems in monetary union (Schmid 2020). A typical (and current) concern that arises when discussing the implementation of labour market reforms is that countries are less prepared for labour market reforms without strong fiscal constraints. Assuming that, given the need for institutional reforms in the euro area, as monetary union reduces the level of macroeconomic stabilization policies in the EU, policy-makers

should be in favour of establishing a reinsurance system in the case of unemployment.

Based on the research and models studied, we find that the EU countries have not applied fiscal policy effectively in order to stabilize the economic cycle; therefore, unemployment reinsurance would act as an automatic stabilizer and thus contribute to a faster exit from the recession. The fiscal policy of most EU countries was mainly cyclical rather than counter-cyclical, which further accelerated the fall in GDP. Leiner-Killinger and Nerlich (2019) note that the recent shift towards balanced budget rules in the euro area is an important achievement in this direction and has contributed to better average underlying budgetary positions. Still, the fiscal rule framework needs to be rendered more effective in reducing high levels of government debt and their dispersion across the euro area. Reducing the heterogeneity of government debt positions is also an important prerequisite for setting up a well-governed common macroeconomic stabilization function at the centre of EMU in case of deep economic crises.

It would be useful to introduce an unemployment reinsurance system in the EU. The URS EU as an aid to the national insurance in the case of unemployment would cover expenditure related to increase in unemployment, while on the other hand, there would be more money left in state budgets to stabilize state economies in recession. Authors of already conducted research (Buti et al. 2002; Dullien 2012; Epaulard 2014; Evropska komisija 2014; Davoine and Molnar 2020) find that the unemployment reinsurance system has a direct impact on the level of consumption, as it increases the income of the unemployed and also mitigates the fall in production during the crisis. Institutional reforms are needed in the euro area, as the monetary union reduces macroeconomic stabilization policies at the national level. EU members have not used fiscal policy to alleviate the recession, and the unemployment reinsurance system, acting as an automatic stabilizer, would achieve just that. We believe that the recession is increasing the need for an automatic stabilizer.

The EU (especially in times of recession) needs mechanisms that act as automatic stabilizers. Given the many agreements and treaties within the EU that emphasize solidarity and social and economic cohesion, the URS EU could be a good solution for both reducing asymmetric financial and economic shocks, and for economic integration between members. After 2008, differences in the unemployment rate have been increasing, between EU countries and also by age groups. Boeri and Jimeno (2016)

argue that the reason for these differences is related to labour market institutions, especially given their interactions with the scale and nature of the shocks of the great recession and the euro area debt crisis. The authors also argue that the introduction of such a reinsurance system in the case of unemployment would give the EU its first common institution. They argue that the EU cannot be a federation of states without common institutions, setting the USA as an example.

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