

An Introduction to the European Union Unemployment Reinsurance System as Automatic Economic Stabilizer: Economic Policy and Management Recommendations

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Abstract – A few months in, it is still hard to grasp the scale and scope of COVID-19's global impact. A third of the world population is under some sort of "lockdown." All the while, a second crisis, in the form of an economic recession, is underway (Schwab and Vanham, 2020). During the recession, European Union (EU) members did not use fiscal policies to ease the recession, while the reinsurance system in the case of unemployment would achieve exactly this, as it acts as an automatic stabilizer. The response to unemployment in the great recession and subsequent events related to the European debt crisis has been very heterogeneous across Europe and in population groups. This study examines stabilizing power and efficiency of presented unemployment reinsurance systems (URS EU). We find that the statutory contribution rate for unemployment insurance is sufficiently high only in a small part of the EU. Only certain insurance systems are sustainable. This paper demonstrates that the need for an automatic stabilizer, such as the reinsurance in the case of unemployment, has shown even more necessary. Through this paper and these recommendations, this study hopes to encourage institutional reforms, especially in the euro area, as the monetary union reduces macroeconomic stabilization policies at national level. We believe that the URS EU would represent a possible solution to the problems outlined in the paper.

Keywords: EU unemployment reinsurance system, automatic economic stabilizers, fiscal integration, implications for management, policy recommendations

I. UNEMPLOYMENT REINSURANCE SYSTEMS

The EU needs mechanisms that act as automatic stabilizers. After 2008, the differences in the unemployment rate have been increasing, between EU countries as well as by age groups. Boeri and Jimeno (2016) argue that the reason for these differences is related to labor market institutions, especially given their interactions with the scale and nature of the shocks of the great recession and the euro area debt crisis. They present macro- and micro-evidence that emphasize the importance of these interactions when

explaining the differences between countries in adapting the labor market to the aforementioned shocks.

After having identified the labor market institutions responsible for this increase in the unemployment gap, they discuss what can be done at the EU level to promote institutional convergence. They particularly examined the "positive conditioning" approach that could even work in good times, not just in a period of recession when conditioning is strong. At the same time, they draw attention to the side effects that these reforms may have.

The existence of unemployment reinsurance is possible through the regular exchange of labor market information among the EMU members. The general problem of unemployment insurance is moral hazard - in the form of less intensive job search and receiving compensation while being informally employed (Dolenc et al., 2012; Tatsiramos and van Ours, 2014).

In addition, the functioning of the labor market and related institutions within the EU is very diverse (heterogeneous). As a solution for regular exchange of information between the EMU members, Boeri and Jimeno (2016) propose introduction of reinsurance in the case of unemployment at the EU level and the introduction of individual accounts that would enable transferring benefits within EMU (aggregation of periods of employment in the EMU) and act as a complement to existing forms of unemployment insurance in individual countries.

The EMU version of unemployment reinsurance would be attractive mostly for its simplicity. Unemployment reinsurance would be modeled after public unemployment schemes known to citizens in most countries (Ljungqvist and Sargent, 2008). An unemployment reinsurance system would really have the character of reinsurance. Contributions would be determined on the basis of current income with a certain threshold, and once an individual had paid contributions for reinsurance for a sufficient number of

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months, he would be entitled to compensation commensurate with the amount of contributions previously paid (Bover et al., 2002).

Unemployment reinsurance was introduced in the United States in 1932 because of the 1929 financial meltdown. The first beginnings of unemployment reinsurance date back to as early as 1935, when the US Federation regularly paid administrative costs for the implementation of unemployment insurance to federal states.

From 1937 onwards, each state had its own unemployment insurance co-financed by the federation (Alvarez 2014). In the following, we present previous research on reinsurance systems in case of unemployment. In the description, we identify the benefits of unemployment reinsurance and the difficulties the authors faced in modeling.

II. ELEMENTS OF MODELS OF UNEMPLOYMENT REINSURANCE IN THE EU

Based on research (Beblavý and Maselli, 2014; Boeri and Jimeno, 2016; Dolls et al., 2014; Dullien, 2007 and 2013) we present all previous models or simulations. In the study, we focused on finding answers to the following questions:

- *Should the unemployment reinsurance system completely replace or just upgrade the existing public systems?*
- *Should the models allow redistribution between countries or not?*

A. Replacement or upgrade of state systems

The European employment policy complements but does not replace the national policy in the field of employment security and unemployment insurance. As a solution, Boeri and Jimeno (2016) propose to increase the coherence of the main guidelines of employment policy in the European institutions and the introduction of certain programs at the European level.

In this regard, they suggest that European employment policy should complement, but not replace the national policies in the field of employment security and unemployment insurance. This policy should be introduced based on positive conditionality, which provides different and more effective incentives for national governments to introduce the necessary structural reforms. Such reforms would allow EU citizens to monitor access to such systems with a European Social Security ID number on their own, rather than through government, local government or intermediaries. Such an approach would increase the transparency and social acceptability of these policies.

EU-wide unemployment reinsurance would be integrated into existing national unemployment insurance schemes and would be politically acceptable to all countries. Dullien (2007) presents how strongly fiscal policy works as an optimal stabilization tool in the European Monetary Union (EMU) and how it can be improved. It is econometrically demonstrated that,

despite numerous automatic stabilizers in the EMU, the discretionary fiscal policy neutralized those institutions in a way that represented a cyclical general stance of fiscal policy. As a solution, the author proposes an unemployment system for the entire EMU, which could easily get integrated into existing public unemployment insurance schemes and would be politically acceptable for all countries. The author considers that EU-wide unemployment reinsurance should not affect the motivation to seek employment and the decision to take up employment (the level of benefits is set so as not to reduce existing benefits in each country, otherwise the EU-wide unemployment reinsurance will not get public support; besides, unemployment reinsurance benefits should not be too high, as this would make the unemployed less motivated in their job search). He also suggests that the URS EU should make use of the existing bureaucracy and not expand it, as additional, parallel management of unemployment reinsurance in addition to the already existing unemployment insurance structures in individual countries is pointless.

Furthermore, it can be combined with existing country-specific unemployment insurance schemes and also apply the already established country-specific unemployment insurance structure (Beaudry and Pages, 2001).

The great recession and the consequent European debt crisis have revived the debate on stronger fiscal integration in the euro area. Dolls et al. (2014) discuss various options for how to design an unemployment reinsurance system, which could contribute to stronger fiscal integration in the euro area. To this end, they represent three versions of unemployment reinsurance schemes in the euro area, namely basic unemployment reinsurance, which partially replaces public unemployment reinsurance schemes, a supplementary benefit scheme that complements public unemployment reinsurance schemes, as well as a fully centralized system. All three options would establish the operation of automatic stabilizers at the euro area level, but would have very different consequences for stabilization, distributions and moral hazard options.

A basic reinsurance system in the case of unemployment in the euro area can provide a basic level of reinsurance, even if a member state loses access to private capital markets and its national automatic stabilizers do not work satisfactorily. The stabilizing effect of the basic system decreases as the share of the long-term unemployed increases.

A euro area-based supplementary benefit scheme, providing benefits only in connection with certain triggers, would not provide stabilization under normal circumstances, but could increase the efficiency of national unemployment reinsurance systems in the event of severe economic crises. A fully centralized unemployment reinsurance system would lead to full harmonization of unemployment reinsurance so that differences between national unemployment reinsurance systems would get unified (Lellouch and Sode, 2014).

Table 1. Overview of current reinsurance models

Authors	Model type	Balance (as a percentage of GDP)
Dolls et al. (2014)	Unemployment reinsurance	0
Dullien (2007)	Basic unemployment reinsurance	0
	Unemployment reinsurance with the possibility of extending the period of receiving the benefit; triggers are set for each country.	0
	Unemployment insurance with the possibility of extending the period of receiving the benefit; the trigger is uniform for all selected countries.	0
Dullien (2013)	Unemployment reinsurance - Scenario A	0.482
	Unemployment reinsurance - Scenario B	-0.536
Beblavý in Maselli (2014)	Harmonized compensation at the EU level (excluding the fiscal rule)	-0.200
	Harmonized compensation at the EU level (including the fiscal rule)	-0.050
	Unemployment reinsurance (excluding the fiscal rule)	0.350
	Unemployment reinsurance (including the fiscal rule)	0.400

The balance (as a percentage of GDP) is the difference between the payment of unemployment benefits and the collected unemployment insurance contributions expressed as a percentage of GDP.

Source: Own calculation.

In designing a system with acceptable stabilization properties, the authors use the structure and experience of the unemployment reinsurance system used in the USA. They note that some elements of reinsurance in case of unemployment in the US would be worth taking up in a European approach. For the URS EU, the idea of “extended benefits” with automatic triggers extending the duration of receiving benefits in times of economic recession makes particular sense.

B. Redistribution or no redistribution between URS EU countries

Dullien (2007), and Beblavý and Maselli (2014) do not envisage redistribution, contributions are set in a way that the unemployment reinsurance balance for each country is zero in the long run. Boeri and Jimeno (2016), Dolls et al. (2014) and Dullien (2013) address the unemployment reinsurance system at the EU level, allowing for the possibility of redistribution (they assume that certain countries pay for others, as helping is beneficial for them as well).

The literature review shows that the authors set the models in a way that the balance in the period under review was equal to zero or was approximately +/- 0.5% of GDP (Table 1), as otherwise the URS EU would be politically unacceptable for certain countries (especially for non-frequent URS EU users). Above all, the advantages and disadvantages of both alternatives should be emphasized.

In the case of redistribution, the benefit is greatest for countries that are often eligible for URS EU aid. At the end of the period under review, balance may be positive for some countries and negative for the others. Consequently, this could lead to a permanent absorption of funds from countries with a negative balance, which would probably not be acceptable for countries that would have to pay more contributions to the URS EU due to the negative balance of other countries. In the case without redistribution, however, the stabilizing power of the URS EU is smaller, as the balance of each country separately is zero at the end of

the period under examination. However, this alternative is politically more acceptable, as each country (in terms of the whole period) receives only as much aid as it pays contributions.

III. THE MODEL STRUCTURE AND OPERATION

In the following, models of unemployment reinsurance are demonstrated. In terms of structure, the “bookkeeping logic” of individual models and the use of triggers that determine transfers between the EU and each country is shown. We therefore examined the following research: Dolls et al. (2014); Dullien (2007) and Dullien (2013).

A. Considerations about the model structure

All the research presented below is characterized by a common purpose namely, to examine the possibilities for the operation of 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. What all research has in common is that the authors determine the contribution rate and the amount, and the duration of unemployment benefits in an original way, and measure the stabilizing power as a reduction of the inflation gap on the basis of their own calculations.

The research uses data that allows the calculation of the stabilizing power of each model: GDP, unemployment reinsurance expenditure used for benefits, average pre-unemployment wage, average wage (per year), number of registered unemployed, coverage rate, number of benefit recipients, average monthly benefit, unemployment rate, average replacement rate, unemployment reinsurance benefits, statutory contribution rate for unemployment insurance, total wage bill, number of employees, production gap in percent, production gap in EUR. A potential product is a measure of the supply side

(maximum product) at full employment of production capacities without inflationary pressures. The actual product is determined by demand. The difference between the potential and the actual product is the production gap - an indicator of the utilization of production capacity.

A1. Dolls et al. (2014)

Dolls et al. (2014) note that the reinsurance system in the case of unemployment in the euro area could be implemented with a relatively small budget and wide coverage. The same contribution rate is set for all countries, namely 1.9% of the total wage bill. The system would provide a basic level of income reinsurance in terms of compensation (50% replacement rate), the maximum duration of benefit would be 12 months, and the system would provide broad coverage, as all new unemployed would be included. In the period 2008-2013, a budget of EUR 365 billion would be needed, so the average annual benefits and contributions would amount at EUR 61 billion. The system analyzed in the survey does not lead to permanent redistribution per se, as it only covers short-term unemployment insurance at the central level, and simulations show that (net) transfers from the euro area unemployment reinsurance system would be unevenly distributed due to significant differences in the euro area unemployment rate in recent years. The largest (net) payers would be Austria, Germany and the Netherlands (with annual contributions of up to 0.6% of GDP for the Netherlands in 2008). Cyprus, Estonia, Greece, Ireland, Portugal and, particularly in Spain, where annual (net) compensation would peak in 2009 (1.4% of GDP), would benefit the most.

In the period 2008-2013, the system would cover a total budget of EUR 365 billion at the euro area level. The average annual benefits and contributions would amount at EUR 61 billion. There would be a deficit in the system in 2009, 2012 and 2013, and a surplus in

2008, 2010 and 2011. Net transfers of funds would be unevenly distributed due to significant differences between euro area unemployment rates during the simulation period. Austria, Germany and the Netherlands would be the largest net contributors to the system, with a net contribution ranging from 0.27 to 0.4% of GDP in Austria, 0.31 to 0.40% of GDP in Germany, and 0.14 to 0.59% of GDP in the Netherlands. Spain, Cyprus, Greece and Ireland would be the largest net recipients. Net compensation would be up to 1.39% of GDP in Spain, up to 1.3% of GDP in Cyprus, up to 1.23% of GDP in Greece, and up to 0.9% of GDP in Ireland (Figure 1 and Table 2).

A2. Dullien (2007)

Dullien (2007) believes that countries should not be allowed for the long-term absorption from unemployment reinsurance, therefore he does not envisage redistribution in reinsurance. In his research, he presents simulations for the EU (ten selected countries) in the period 1999-2005 for three different models.

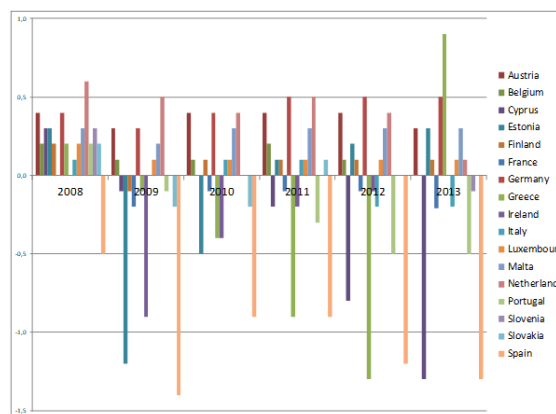


Figure 1: Net transfers of reinsurance assets in the case of unemployment (2008-2013; as a percentage of GDP per country)

Source: Dolls et al., 2014.

Table 2. Cash flow of unemployment reinsurance (2008-2013)

	2008				2009				2010				2011				2012				2013			
	B	C	B€	B%	B	C	B€	B%	B	C	B€	B%	B	C	B€	B%	B	C	B€	B%	B	C	B€	B%
EMU	45.70	59.45	13.75	0.1	67.88	59.33	-8.55	-0.1	58.50	60.21	1.72	0.0	55.38	61.58	6.20	0.1	66.80	62.08	-4.72	0.1	70.67	62.28	-8.39	-0.1
Austria	0.84	1.98	1.14	0.4	1.28	2.01	0.73	0.3	1.00	2.04	1.05	0.4	0.97	2.10	1.13	0.4	1.06	2.15	1.09	0.4	1.25	2.19	0.94	0.3
Belgium	1.39	2.12	0.72	0.2	1.80	2.13	0.32	0.1	1.70	2.15	0.44	0.1	1.47	2.24	0.77	0.2	1.82	2.31	0.49	0.1	2.30	2.34	0.04	0.0
Cyprus	0.06	0.11	0.05	0.3	0.12	0.11	-0.01	-0.1	0.11	0.11	0.00	0.0	0.15	0.11	-0.04	-0.2	0.25	0.11	-0.04	-0.8	0.25	0.11	-0.14	-1.3
Estonia	0.06	0.11	0.04	0.3	0.26	0.09	-0.16	-1.2	0.17	0.09	-0.08	-0.5	0.08	0.10	0.02	0.1	0.07	0.11	0.03	0.2	0.07	0.12	0.05	0.3
Finland	1.02	1.39	0.37	0.2	1.52	1.39	-0.13	-0.1	1.30	1.41	0.11	0.1	1.27	1.47	0.20	0.1	1.32	1.52	0.19	0.1	1.42	1.55	0.13	0.1
France	8.49	8.78	0.30	0.0	12.59	8.79	-3.80	-0.2	10.79	8.99	-1.80	-0.1	10.53	9.23	-1.30	-0.1	12.26	9.37	-2.89	-0.1	13.29	9.42	-3.86	-0.2
Germany	11.33	20.87	9.54	0.4	13.48	20.87	7.39	0.3	11.97	21.53	9.56	0.4	10.25	22.45	12.19	0.5	10.13	23.16	13.03	0.5	10.77	23.58	12.81	0.5
Greece	0.92	1.40	0.48	0.2	1.65	1.42	-0.22	-0.1	2.19	1.34	-0.85	-0.4	3.05	1.22	-1.83	-0.9	3.53	1.07	-2.45	-1.3	2.65	0.96	-1.68	0.9
Ireland	1.01	0.92	-0.09	0.0	2.30	0.86	-1.45	-0.9	1.40	0.81	-0.59	-0.4	1.09	0.80	-0.29	-0.2	0.95	0.80	-0.15	-0.1	0.89	0.81	-0.07	0.0
Italy	6.18	8.35	2.16	0.1	7.72	8.40	0.68	0.0	7.44	8.57	1.13	0.1	6.41	8.68	2.28	0.1	11.17	8.55	-2.62	-0.2	11.91	8.49	-3.42	-0.2
Luxembourg	0.06	0.13	0.07	0.2	0.11	0.13	0.02	0.1	0.10	0.14	0.04	0.1	0.10	0.14	0.04	0.1	0.11	0.14	0.03	0.1	0.12	0.14	0.02	0.1
Malta	0.02	0.04	0.02	0.3	0.03	0.04	0.01	0.2	0.02	0.04	0.02	0.3	0.02	0.04	0.02	0.3	0.02	0.04	0.02	0.3	0.02	0.05	0.02	0.3
Netherlands	1.31	4.81	3.50	0.6	2.07	4.90	2.83	0.5	2.42	4.93	2.51	0.4	2.05	5.01	2.96	0.5	2.76	5.06	2.30	0.4	4.10	4.96	0.86	0.1
Portugal	0.68	1.06	0.37	0.2	1.22	1.07	-0.15	-0.1	1.13	1.07	-0.06	0.0	1.48	1.04	-0.44	-0.3	1.86	1.99	-0.88	-0.5	1.86	0.99	-0.87	-0.5
Slovenia	0.08	0.19	0.10	0.3	0.18	0.19	0.01	0.0	0.19	0.19	0.00	0.0	0.19	0.19	0.00	0.0	0.18	0.19	0.01	0.0	0.23	0.19	-0.04	-0.1
Slovakia	0.13	0.25	0.11	0.2	0.35	0.25	-0.11	-0.2	0.35	0.25	-0.10	-0.2	0.22	0.26	0.04	0.1	0.24	0.26	0.02	0.0	0.26	0.27	0.01	0.0
Spain	12.09	6.94	-5.15	-0.5	21.19	6.68	-14.51	-1.4	16.20	6.54	-9.66	-0.9	16.05	6.50	-9.55	-0.9	19.05	6.23	-12.81	-1.2	19.24	6.14	13.10	-1.3

B - Benefits (in EUR billion); C - Contributions (in EUR billion); B EUR - Balance (in EUR billion); B% - Balance (in % GDP)

Source: Dolls et al., 2014.

Table 3. Basic unemployment reinsurance

	1999	2000	2001	2002	2003	2004	2005
Benefit payments							
No. short-term unemployed (in 1000)	8,049	7,216	6,727	7,849	8,454	8,661	8,140
Assumed No. short-term unemployed (in 1000)	4,025	3,608	3,363	3,925	4,227	4,331	4,070
Nominal wage per employee (in € 1000 /year)	31.50	32.4	33.3	34.2	35.1	36	36.7
Assumed amount of benefit (in € 1000 /year)	12.6	12.9	13.3	13.7	14.1	14.4	14.7
Total benefit payments (€ million)	50,727	46,714	44,733	53,643	59,394	62,394	59,760
Contributions (1.75 % of the wage bill)							
Number of employed (in 1000)	107,817	110,687	112,459	113,506	114,307	115,079	116,155
Assumed average tax base (in € 1000)	25.2	25.9	26.6	27.3	28.1	28.8	29.4
Total contributions (in € million)	47,442	50,035	52,218	54,162	56,077	57,885	59,546
Balance (in € million)	-3,284	3,320	7,485	519	-3,318	-4,508	-214

Source: Dullien, 2007.

Table 4. Unemployment rate (1998-2005; in percent)

	1998	1999	2000	2001	2002	2003	2004	2005
Euro zone	7.7	6.9	6.1	5.6	6.5	6.9	7.0	6.5
Austria	5.1	4.5	4.5	3.9	5.2	4.7	4.5	4.7
Belgium	5.1	4.8	4.1	4.0	4.9	5.9	5.6	5.8
Finland	11.3	10.7	10.2	9.3	9.9	10.2	9.7	7.1
France	8.4	8.1	6.9	6.4	6.6	6.6	7.3	6.5
Ireland	5.6	4.5	3.7	3.2	4.2	4.2	4.1	3.9
Italy	8.7	7.7	7.3	5.9	6.3	5.9	5.6	5.3
Germany	6.1	5.4	4.8	4.8	5.6	6.6	6.7	7.0
Portugal	4.3	4.6	3.5	3.8	4.6	7.0	6.2	6.6
Spain	14.2	12.2	11.4	8.9	10.3	10.7	10.2	8.1

The trigger activation period is highlighted in gray.

Source: Dullien, 2007.

All three scenarios have the following in common: (i) the amount of unemployment reinsurance benefit is 50% of the average salary in each country, and (ii) unemployed persons who have been employed for at least 12 months in the last 24 months are entitled to unemployment reinsurance benefit.

Dullien's research maintains the existing unemployment insurance and upgrades it with unemployment reinsurance, which would be activated in the event of a prolonged and severe recession based on triggers and would temporarily extend the period of receiving the benefit. Establishment is at EU level, and two things stand out:

- (i) A large increase in unemployment across the EU or
- (ii) A large increase in country-specific unemployment relative to the EU unemployment rate.

Basic unemployment reinsurance

In the case of basic unemployment reinsurance, there is no extended benefits (EB). The financial volume is EUR 54 billion per year (a total of EUR 377 billion), which means 1.75% of the wage bill. This represents approximately 0.75% of GDP (ten selected countries in the period 1999-2005). To establish basic unemployment reinsurance, Dullien (2007) assumes that

- (i) The average tax base is 80% of the maximum tax base (the maximum tax base is equal to the average nominal wage) and
- (ii) The number of short-term unemployed eligible for benefits is 50% of all short-term unemployed.

The Unemployment reinsurance fund would receive more contributions than pay benefits during the period 2000-2002, while in the remaining years it would be the opposite. The final balance of the period is 0 (Table 3).

Unemployment insurance with the possibility of extended benefits (country-specific triggers)

Characteristics of the second model (B 2) are the same as for basic unemployment reinsurance with the addition of an extended benefits period. The trigger is activated when the unemployment rate in each country increases by 0.5% points compared to the average of the last three years (Table 4; is activated where it is highlighted in gray). In this case, the benefit period doubles. Assumptions also must be specified in this case. Dullien assumes that the number of short-term unemployed eligible for additional benefits is 75% of all short-term unemployed.

The financial volume in this case is EUR 60 billion per year (a total of EUR 402 billion), which equals 2.02% of the wage bill. This represents approximately 0.85% of GDP (ten selected countries in the period 1999-2005). A small change in the simulation greatly increases the power of unemployment reinsurance as an automatic stabilizer. The most affected countries benefit the most, as the period for receiving compensation would be extended between 2002 and 2005. Compared to the previous scenario, an additional EUR 35 billion in compensation would be paid (Table 5).

Table 5. Unemployment reinsurance with the possibility of extended benefits, various triggers

	1999	2000	2001	2002	2003	2004	2005
Benefit payments							
Standard benefits (in € million)	47,986	45,247	42,159	49,399	54,643	56,997	55,226
Supplementary benefits (in € million)	0	0	0	10,015	11,304	18,520	11,305
Total benefit payments (€ million)	47,986	45,247	42,159	59,415	65,947	75,517	66,531
Contributions (1.9 % of the wage bill)							
Total contributions (in € million)	50,890	53,642	55,845	57,760	59,730	61,597	63,338
Balance (in € million)	2,904	8,395	13,686	-1,655	-6,217	-13,920	-3,193

Source: Dullien, 2007.

Table 6. Unemployment reinsurance with the possibility of extended benefits, single triggers

	1999	2000	2001	2002	2003	2004	2005	
Benefit payments								
Number of short-term unemployed (in 1000)		8,049	7,216	6,727	7,849	8,454	8,661	8,140
Assumed number of short-term unemployed (in 1000)		4,025	3,608	3,363	3,925	4,227	4,331	4,070
Nominal wage per employed (in € 1000/year)		32	32	33	34	35	36	37
Assumed amount of benefit (in € 1000/year)		13	13	13	14	14	14	15
Standard benefits (in € million)		50,727	46,714	44,733	53,643	59,394	62,394	59,760
Supplementary benefits (in € million)		0	0	0	0	27,322	28,499	0
Total benefit payments (in € million)		50,727	46,714	44,733	53,643	89,091	93,591	59,760
Contributions (2.04 % of the wage bill)								
Number of employed (in 1000)		107,817	110,687	112,459	113,506	114,307	115,079	116,155
Assumed average tax base (in € 1000)		25	26	27	27	28	29	29
Total contributions (in € million)		55,500	58,532	61,086	63,361	65,601	67,717	69,659
Balance (in € million)		4,773	11,818	16,354	9,718	-23,491	-25,874	9,899

Source: Dullien, 2007.

Table 7. Scenario A

	Benefit payments			Contributions (1.66 % of the wage bill)		Balance (in € billion)
	Number of short-term unemployed (in million)	Assumed number of short-term unemployed (in million)	Total benefit payments (€ billion)	Number of employed (in million)	Total contributions (in € billion)	
1995	5.94	3.41	38.0	102.7	37.50	-0.6
1996	6.36	3.60	41.1	103.4	38.60	-2.4
1997	6.28	3.27	38.0	104.7	39.80	1.8
1998	6.17	3.30	38.5	106.9	41.10	2.7
1999	5.84	3.41	40.8	109.5	43.50	2.7
2000	5.21	3.37	41.4	112.4	45.80	4.4
2001	4.72	3.45	43.4	114.2	47.80	4.4
2002	5.56	4.17	53.4	115.5	49.60	-3.8
2003	5.90	3.91	51.5	116.3	51.30	-0.3
2004	6.07	3.77	51.4	117.1	52.70	1.3
2005	5.79	3.65	50.4	118.4	54.40	4.0
2006	5.29	3.61	51.2	120.4	56.60	5.5
2007	4.90	3.72	53.8	122.7	59.20	5.4
2008	5.48	4.43	65.2	123.9	61.70	-3.6
2009	7.60	5.85	88.0	121.8	61.80	-26.3
2010	7.17	3.75	58.1	121.3	62.50	4.4
2011	6.76	3.82	59.5	121.6	64.10	4.6

Source: Dullien, 2013.

Unemployment insurance with the possibility of extended benefits (single trigger for all selected countries)

The same applies as in the second scenario (B 2), except that the trigger is defined and uniform at the EU level (ten selected countries). The trigger is activated when the average unemployment rate in the EU increases by 0.5 percentage points compared to the average of the last three years. It would be activated in 2003 and 2004. Again, assumptions need to be defined. In this case, too, Dullien assumes that the number of short-term unemployed eligible for additional benefits is 75% of all short-term unemployed. The financial volume in this case is very similar to the previous

scenario and amounts to EUR 62.6 billion per year (a total of EUR 438 billion), which means 2.04% of the wage bill. This represents approximately 0.87% of GDP (ten selected countries in the period 1999-2005). Compared to the first scenario, an additional EUR 61 billion would be paid (Table 6).

A3. Dullien (2013)

Dullien (2013) presents a possible reinsurance in the case of unemployment, in which, compared to the previous research (Dullien 2007), the possibility of redistribution of funds between countries is envisaged. Net transfers and stabilization properties of reinsurance in the case of unemployment in EMU are analyzed by

taking into account the following assumptions: (i) all employees in EMU are insured; they contribute part of their income, up to a certain threshold, which is related to the average income in each country; (ii) the average insured income is 80 per cent of the average income in each country; (iii) the compensation is 50 per cent of the insured income; (iv) throughout the cycle, contributions to the scheme are sufficient for all payments; (v) unemployment reinsurance can build up reserves and borrows capital in the capital market; and (vi) unemployment benefits are paid for 12 months.

In his research, Dullien (2013) presents simulations for the EU (12 selected countries) in the period 1995–2011 for two different scenarios. The main difference

between scenarios A and B is the number of aid recipients (beneficiaries).

Model / scenario A

All short-term unemployed in the last 12 months and 3% of all unemployed are entitled to receive unemployment reinsurance benefits. The financial volume is EUR 868 billion, namely 1.66% of the wage bill of 12 selected countries. The amount of benefits paid is EUR 863.7 billion, the balance of the whole period being EUR 4.2 billion (Table 7).

The net cash flow of unemployment reinsurance in the EMU in the period 1995–2011 (as a percentage of GDP per country) is shown below; negative figures represent the aid received (Table 8).

Table 8. Net cash flow (as a percentage of GDP per country), scenario A

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	-0.75	-0.10	0.08	-0.07	0.08	0.06	0.08	-0.23	0.08	0.07	0.05	0.07	0.07	0.07	-0.15	0.08	0.07
Belgium	0.07	-0.01	0.07	0.06	0.05	0.07	0.03	-0.05	-0.13	0.07	-0.03	0.06	0.07	0.07	-0.12	0.06	0.07
Finland	-1.86	-0.13	-0.10	0.06	0.06	0.06	0.06	-0.08	0.00	0.06	0.06	0.06	0.06	0.06	-0.31	0.07	0.06
France	0.07	-0.12	0.07	0.07	-0.02	0.07	0.07	0.01	0.07	-0.01	0.07	0.07	0.07	0.07	-0.25	0.07	0.07
Greece					-0.06	0.04	0.04	0.03	0.05	-0.08	0.05	0.04	0.05	0.05	-0.29	-0.23	-0.39
Ireland	0.06	0.02	0.05	0.05	0.05	0.05	0.05	-0.06	0.05	0.04	0.02	0.05	0.02	-0.15	-1.06	0.06	0.06
Italy	0.04	0.05	0.05	0.05	0.05	0.05	0.05	-0.02	0.05	0.05	0.05	0.06	0.06	-0.04	-0.10	0.06	0.06
Luxembourg	0.05	0.00	0.05	0.04	0.04	0.03	0.04	-0.07	-0.04	-0.12	0.04	-0.01	0.03	0.01	-0.09	0.04	-0.05
Germany	0.07	-0.03	0.00	0.07	0.07	0.07	0.06	-0.07	-0.05	0.02	0.03	0.06	0.06	0.06	-0.07	0.07	0.07
Netherlands	-0.06	0.08	0.08	0.08	0.08	0.08	0.08	0.08	-0.10	-0.11	0.08	0.08	0.08	0.08	-0.14	-0.09	0.08
Portugal	0.06	0.06	0.06	0.06	0.02	0.06	0.04	-0.07	-0.25	0.06	-0.01	0.06	-0.03	0.06	-0.25	0.07	-0.29
Spain	0.07	-0.14	0.07	0.01	0.07	0.07	0.07	-0.23	-0.03	0.05	0.07	0.07	0.05	-0.63	-1.28	0.07	0.06

Source: Dullien, 2013.

Table 9. Scenario B

	Benefit payments		contributions (0.65 % of the wage bi				Balance (in € billion)
	Number of short-term unemployed (in million)	Assumed number of short-term unemployed (in million)	Total benefit payments (in € billion)	Number of employed (in million)	Total contributions (in € billion)		
1995		5.94	1.61	17.2	102.7	14.8	-2.5
1996		6.36	1.72	19.0	103.4	15.2	-3.8
1997		6.28	1.44	16.0	104.7	15.7	-0.4
1998		6.17	1.38	15.1	106.9	16.2	1.1
1999		5.84	1.40	16.3	109.5	17.1	0.9
2000		5.21	1.21	14.5	112.4	18.0	3.5
2001		4.72	1.13	13.7	114.2	18.8	5.1
2002		5.56	1.71	21.3	115.5	19.5	-1.8
2003		5.90	1.57	20.1	116.3	20.2	0.1
2004		6.07	1.48	19.8	117.1	20.8	1.0
2005		5.79	1.35	18.2	118.4	21.4	3.2
2006		5.29	1.20	16.6	120.4	22.3	5.7
2007		4.90	1.13	15.9	122.7	23.3	7.4
2008		5.48	1.73	24.4	123.9	24.3	-0.1
2009		7.60	3.33	48.9	121.8	24.3	-24.6
2010		7.17	1.68	25.1	121.3	24.6	-0.5
2011		6.76	1.66	24.2	121.6	25.2	1.0

Source: Dullien, 2013.

Table 10. Net cash flow (as a percentage of GDP per country), scenario B

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	-0.51	-0.02	0.11	-0.02	0.10	0.11	0.13	-0.15	0.09	0.12	0.10	0.13	0.13	0.15	-0.06	0.12	0.14
Belgium	0.10	0.06	0.12	0.12	0.11	0.13	0.12	0.03	-0.07	0.09	0.00	0.09	0.09	0.11	-0.08	0.07	0.07
Finland	-1.66	-0.31	-0.30	-0.16	-0.14	-0.11	-0.09	-0.20	-0.15	-0.1	-0.08	0.02	0.04	0.06	-0.30	0.00	0.02
France	-0.03	-0.17	-0.02	0.00	-0.08	0.01	0.06	0.02	0.07	-0.01	0.06	0.09	0.09	0.11	-0.21	0.05	0.07
Greece					-0.13	-0.05	-0.03	-0.03	-0.02	-0.11	0.00	0.00	0.02	0.03	-0.30	-0.32	-0.55
Ireland	0.01	0.01	0.05	0.07	0.08	0.10	0.12	0.01	0.10	0.10	0.09	0.12	0.10	-0.07	-1.08	-0.14	-0.08
Italy	-0.03	-0.01	0.00	0.00	0.01	0.03	0.04	0.01	0.07	0.07	0.08	0.08	0.10	0.01	-0.07	0.06	0.06
Luxembourg	0.19	0.08	0.12	0.18	0.12	0.11	0.13	0.03	0.04	-0.06	0.06	0.04	0.07	0.05	-0.05	0.05	-0.01
Germany	0.09	0.01	0.01	0.07	0.09	0.11	0.12	-0.02	-0.02	0.02	0.02	0.05	0.08	0.11	-0.01	0.10	0.12
Netherlands	0.03	0.14	0.17	0.18	0.22	0.23	0.23	0.23	0.05	0.01	0.15	0.17	0.20	0.22	0.02	0.02	0.16
Portugal	0.10	0.11	0.12	0.14	0.11	0.14	0.13	0.03	-0.18	0.07	0.02	0.09	0.00	0.08	-0.23	0.02	-0.33
Spain	-0.33	-0.44	-0.25	-0.26	-0.18	-0.12	-0.10	-0.32	-0.16	-0.09	-0.06	-0.01	0.00	-0.68	-1.51	-0.43	-0.39

Source: Dullien, 2013.

Model / scenario B

All short-term unemployed in the last 12 months and 20% of the remaining short-term unemployed are entitled to receive unemployment reinsurance benefits. The financial volume in this case is EUR 341.7 billion, which means 0.65% of the wage bill of the 12 selected countries. The amount of benefits paid is EUR 346.3 billion, which means that the balance of the whole period is negative (EUR -4.7 billion) (Table 9).

The net cash flow of unemployment reinsurance in the EMU in the period 1995–2011 (as a percentage of GDP per country) is shown below; negative figures represent the aid received (Table 10).

In the event of a prolonged and severe recession, triggers would be activated to temporarily extend the period for receiving compensation. The idea of "extended benefits" with automatic triggers, which extend the period of receiving compensation during an economic recession, makes special sense. From a European perspective aimed at a high degree of stabilization, these triggers need to be set more generously than they are currently set in the US. In addition, the tradition of "extraordinary benefits" (temporarily extending the period for receiving compensation by order) allows for discretionary fiscal policy, which is very effective as it is aimed at those with a high propensity to spend and can be introduced virtually overnight. Dullien (2007) presents two trigger identification options identified at the EU level: (i) a large increase in unemployment across the EU or (ii) a large increase in country-specific unemployment relative to the EU unemployment rate. A euro area-based supplementary benefit scheme, providing benefits only in connection with certain triggers, would not provide stabilization under normal circumstances, but could increase the efficiency of national unemployment reinsurance systems in the event of severe economic crises.

B. Stabilizing power and efficiency of models

In the previous sections, we present the basic principles of operation, structure and effects of models as well as triggers, and below the stabilizing power and efficiency of reinsurance systems in the case of unemployment.

B1. Stabilizing power

The positive impact of the system varies greatly between countries, and the impact of stabilization is considerable in many of them. Due to a number of serious recessions in a relatively large number of countries, stabilization is all the more obvious.

Dullien (2013) notes that in the existing literature, findings about the possible stabilizing effects of reinsurance in the case of unemployment in the US are highly controversial. Most research has been conducted for the U.S. Federal-state unemployment reinsurance system however, their findings seem to vary. While some authors, such as von Hagen (1992) and Asdrubali, Sorensen and Yosha (1996), argue that the stabilizing effect is very low, other simulation

studies show a much greater effect, e.g. Chimerine, Black, and Coffey (1999) estimate the overall stabilizing effect of reinsurance for unemployment in the U.S. at between 15% and 20% of the initial GDP reduction, and Vroman (2010) notes that the stabilizing effect is nearly 30 percent, of which - depending on measurement methods - up to half can be attributed to the federal system for extended benefits and emergency unemployment benefits, and the rest to federal unemployment insurance.

Different methodologies are used in the research, so they are not completely comparable. Three main differences may explain the large differences in evaluation of the impact of stabilization: von Hagen (1992) and Asdrubali, Sorensen and Yosha (1996) examined the stabilizing effect throughout the business cycle and thus analyzed the average stabilization, while Chimerine, Black and Coffey (1999), and Vroman (2010) focused on the impact over the period of recession, which can be understood as a stabilization analysis at the time when it is needed the most. Since unemployment tends to rise sharply during periods of recession and consequently higher unemployment reinsurance payments can be detected in such periods only, it is logical that stabilization analysis during a recession will show a greater effect than an average stabilization analysis (Dullien, 2013).

Dolls et al. (2014) quantify the potential effects of the euro area unemployment reinsurance system on GDP. They follow the Congressional Budget Office (2012) and undertake a series of assessments of how the additional EUR spent on unemployment benefits would impact the 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 research (Ramey, 2011). They show the effects of the euro area unemployment reinsurance system on GDP on the assumption that pre-crisis public unemployment reinsurance systems would be replaced by a single euro area unemployment reinsurance system (Table 11). In other words, they compare the stabilizing effects of the single euro area unemployment reinsurance system with pre-crisis national unemployment insurance systems (policy changes introduced during the crisis are also considered). The results show that the effects on growth in the euro area would be moderate and increase the GDP by up to 0.2% in 2009 and up to 0.08% in 2012. In all other years, the reinsurance system in the case of unemployment in the euro area would not cause additional growth effects at the EMU level. Results vary at country level.

Dullien (2007) calculates the stabilizing power as a change in the production gap (Table 12). Column (1) shows the change in the output gap in that period as a percentage of GDP, columns (2), (3) and (4) the change in the unemployment reinsurance balance as a percentage of GDP for individual scenarios, and columns (5), (6) and (7) the reduction of the output gap in the presence of unemployment reinsurance for an individual scenario.

The operation of unemployment reinsurance as an automatic stabilizer in the case of the baseline scenario would reduce the output gap in the selected ten countries by 5% in the selected period. In the second scenario, it is not possible to calculate the overall reduction of the output gap in the selected period for the selected ten countries, as data for the Netherlands are not available. Nevertheless, we can conclude that e.g., Germany would narrow its inflation gap by 20%

and Belgium and France by more than 15%. In the third scenario, the output gap in the selected period would be reduced by an average of 16% for the selected ten countries (this is approximately 70% more than reinsurance in the case of unemployment in the USA over the same period). Spain would reduce the output gap by 40%, and Germany, Belgium and France by more than 15%.

Table 11. Potential effects of reinsurance system in the euro area on GDP (as a percentage of GDP per country)

Year	2009			2010			2011			2012			2013		
	Multiplier	0.5	1.0	1.5	0.5	1.0	1.5	0.5	1.0	1.5	0.5	1.0	1.5	0.5	1.0
EMU	0.07	0.13	0.20	0	0	0	0	0	0	0.03	0.06	0.08	0	0	0
Austria	0.03	0.06	0.09	0	0	0	0	0	0	0.01	0.02	0.03	0.01	0.02	0.03
Belgium	0.03	0.06	0.09	0	0	0	0	0	0	0.03	0.06	0.09	0.02	0.04	0.07
Estonia	0.63	1.25	1.88	0	0	0	0	0	0	0	0	0	0	0	0
Finland	0.05	0.09	0.14	0	0	0	0	0	0	0.01	0.03	0.04	0.01	0.02	0.03
France	0.04	0.08	0.12	0	0	0	0	0	0	0.02	0.04	0.06	0	0	0
Germany	0.04	0.07	0.11	0	0	0	0	0	0	0	0	0	0	0.01	0.01
Greece	0.13	0.27	0.40	0.08	0.16	0.24	0.13	0.26	0.39	0.02	0.04	0.06	0	0	0
Ireland	0.25	0.50	0.75	0	0	0	0	0	0	0	0	0	0	0	0
Italy	0.04	0.09	0.13	0	0	0	0	0	0	0.14	0.28	0.42	0.01	0.02	0.04
Luxembourg	0.02	0.04	0.06	0	0	0	0	0	0	0	0	0	0	0	0
Netherlands	0.04	0.08	0.12	0	0	0	0	0	0	0.03	0.06	0.08	0.04	0.08	0.12
Portugal	0.11	0.22	0.33	0	0	0	0.05	0.11	0.16	0.04	0.09	0.13	0	0	0
Slovenia	0.12	0.24	0.36	0	0	0	0	0	0	0	0	0	0.05	0.11	0.16
Spain	0.21	0.41	0.62	0	0	0	0	0	0	0.03	0.06	0.09	0	0	0

Source: Dolls et al. 2014.

Table 12. Stabilizing power as a change in the production gap

Country	(1)	(2)	(3)	(4)	(2) as % of (1)	(3) as % of (1)	(4) as % of (1)
	Change in the production gap in % GDP (period)	Change in the unemployment insurance balance in % GDP (period)		Reduction of the output gap			
		Basic EUI	EUI with the possibility of extending the period of receiving the benefit; triggers are set for each country	EUI with the possibility of extending the period of receiving the benefit; the trigger is uniform for all selected countries	Basic EUI	EUI with the possibility of extending the period of receiving the benefit; triggers are set for each country	EUI with the possibility of extending the period of receiving the benefit; the trigger is uniform for all selected countries
Euro zone	-3.5	-0.17		-0.56	4.9%		16.0%
	(2000-2005)	(2001-2004)		(2001-2004)			
Austria	-3.5	-0.16	-0.47	-0.37	4.6%	13.4%	10.6%
	(2000-2005)	(2001-2002)	(2001-2002)	(2001-2003)			
Belgium	-3.3	-0.23	-0.56	-0.56	7.0%	17.0%	17.0%
	(2000-2005)	(2001-2003)	(2001-2003)	(2001-2003)			
Finland	-4.3	-0.1	-0.11	-0.56	2.3%	2.6%	13.0%
	(2000-2004)	(2000-2001)	(2000-2001)	(2000-2003)			
France	-3.2	-0.11	-0.53	-0.53	3.4%	16.6%	16.6%
	(2000-2005)	(2001-2004)	(2001-2004)	(2001-2004)			
Italy	-3.5	-0.04	-0.04	-0.25	1.1%	1.1%	7.1%
	(2001-2005)	(2001-2002)	(2001-2002)	(2001-2003)			
Germany	-4	-0.32	-0.8	-0.73	8.0%	20.0%	18.3%
	(2000-2005)	(2001-2005)	(2001-2005)	(2001-2004)			
Netherlands	-5.6						
	(2000-2005)						
Portugal	-5.7	-0.37	-0.66	-0.73	6.5%	11.6%	12.8%
	(2000-2006)	(2000-2003)	(2000-2005)	(2000-2003)			
Spain	-2	-0.21	-0.22	-0.83	10.5%	11.0%	41.5%
	(2000-2005)	(2001-2003)	(2001-2003)	(2001-2003)			

Source: Dullien 2007.

In his second study, Dullien (2013) determined a macroeconomic multiplier of unemployment benefits paid from the European system. Its value was set at 1. Generally, a higher multiplier can be expected from

unemployment reinsurance payments, as documented by the Congressional Budget Office (2012) and Zandi (2008), and it can also be reflected in the International Monetary Fund, in a multi-country macroeconomic model (Freedman et al., 2009).

Table 13. Stabilizing power as a change in net cash flows

Country	Scenario A; Net cash flow in € billion, 1995-	Scenario B; Net cash flow in € billion, 1995-
	2011	2011
Austria	-5.0	2.1
Belgium	1.1	3.1
Finland	-1.6	-3.9
France	7.7	3.2
Greece	-1.6	-3.1
Ireland	-1.3	-0.9
Italy	7.2	7.4
Luxembourg	0.0	0.2
Germany	11.2	21.1
Netherlands	1.8	11.3
Portugal	-0.6	0.2
Spain	-17.4	-45.5

The stabilizing power of the models is presented as a change in the EU unemployment reinsurance contributions / payouts (as a percentage of GDP), as a share of change in the output gap.

Source: Dullien, 2013.

Table 14. Comparison of stabilizing power (scenarios A and B)

Country	Period of active absorption from Fund	Scenario A;	Scenario B;	Change in the production gap (in percentage points)	Scenario A; Stabilization power	Scenario B; Stabilization power
		Change of in-payments/out-payments of the EU unemployment insurance (in % GDP)	Change of in-payments/out-payments of the EU unemployment insurance (in % GDP)			
Austria	2001-2	-0.30	-0.28	-0.5	55.8	51.7
Austria	2008-9	-0.23	-0.21	-4.8	4.7	4.4
Belgium	2001-3	-0.16	-0.19	-1.6	10.1	12.1
Belgium	2008-9	-0.19	-0.18	-3.9	4.9	4.8
Finland	2001-2	-0.15	-0.11	-1.5	9.8	7.8
Finland	2008-9	-0.37	-0.36	-9.4	3.9	3.8
France	1995-6	-0.19	-0.15	-0.7	26.3	20.1
France	2008-9	-0.32	-0.32	-4.2	7.7	7.6
Greece	2001-2	-0.01	0.00	-1.3	0.8	0.2
Greece	2008-11	-0.44	-0.57	-11.6	3.8	4.9
Ireland	2007-9	-1.08	-1.14	-7.7	14.0	14.8
Italy	2001-2	-0.07	-0.04	-0.9	7.7	3.9
Italy	2008-9	-0.10	-0.10	-5.3	1.8	1.8
Germany	2001-3	-0.11	-0.14	-3.0	3.7	4.7
Germany	2008-9	-0.13	-0.12	-5.9	2.2	2.1
Netherlands	2002-4	-0.19	-0.23	-1.1	18.0	21.7
Portugal	2001-3	-0.28	-0.31	-3.8	7.5	8.2
Portugal	2008-9	-0.31	-0.30	-2.9	10.5	10.2
Spain	2007-9	-1.33	-1.51	-6.3	21.3	24.0

Source: Dullien, 2013.

However, for the European system, the proposed multiplier would work in a slightly different way. Since E (M) U unemployment reinsurance replaces (a part of) costs of individual countries, it allows governments to spend their resources differently. Since it is not clear from the outset how state governments will use this degree of freedom, the actual multiplier could be less than just targeted transfers. Therefore, multiplier 1 seems to be an appropriate estimate. Dullien (2013) demonstrates the stabilizing power based on net cash flows of unemployment reinsurance for EMU in the period 1992-2011 (in EUR billion) (Table 13).

The period under study is 1995–2011, and only periods of recession are presented for the calculation of stabilizing power (the year before the recession until the end of the recession).

While the positive impact of the system varies greatly between countries, we can conclude that the impact of stabilization in many countries would also be significant due to a number of serious recessions in a

relatively large number of countries (Table 14). In many cases, where stabilization has been weak, macroeconomic data need to be analyzed in more detail. The EMU unemployment system would not provide greater stabilization during the Great Recession of 2008 and 2009 in Germany. However, this is because the German labor market did not deteriorate much in this recession and the initial reduction in the output gap quickly returned to previous levels. In this case, the disproportionate fall in GDP in the face of rising unemployment explains the low stabilizing value.

B2. Efficiency

The EU countries have not applied fiscal policy effectively to stabilize the economic cycle, while unemployment reinsurance would act as an automatic stabilizer, thus contributing to a faster way out of the recession. Moreover, the fiscal policy of the EU countries operated cyclically (instead of counter

cyclically) at best. As an elegant solution to achieve greater economic stability in the EU, Dullien (2013) proposes a more centralized management of fiscal policy and the introduction of unemployment reinsurance.

With the onset of the recession in 2008, the EU has taken important steps to prevent and manage macroeconomic imbalances, but did nothing to strengthen the European unemployment insurance system. During the recession, it took certain measures to stabilize the economic cycle (prevention and management of macroeconomic imbalances). Among the measures, the following is mentioned in particular (ibid.): (i) closer monitoring of member states' budgets; (ii) stricter rules / measures in the event of government deficits; (iii) the long-term sustainability of public finances; (iv) management of state-owned enterprises and privatization; (v) greater labor market flexibility and reduction of undeclared work and employment. These measures, in his opinion, are going in the right direction, but the URS EU would contribute to a faster exit from the recession much more effectively.

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. The authors note that the reinsurance system for unemployment in the euro area could be implemented with a relatively small budget and, on the other hand, with a relatively large stabilizing power (from 2 to 16% reduction of the output gap).

IV ANALYSIS OF UNEMPLOYMENT INSURANCE SYSTEMS IN EUROPEAN COUNTRIES

The starting points for the analysis and the analysis of contributions and payouts of unemployment insurance systems in the EU 20 countries (2003-2019) are presented below. The basic elements that determine the operation of an individual system are described. We have examined and described the rules and operation of unemployment insurance systems of individual EU 20 countries in the period under study (2003-2019). We originally wanted to include the EU - 27 countries in the analysis. After reviewing the available data and national unemployment insurance systems, seven countries were excluded (Greece, Ireland, Lithuania, Luxembourg, Malta, Romania and the United Kingdom) since they were not suitable for consideration in the model simulation due to the diversity of contribution and expenditure systems (e.g., in the United Kingdom, Ireland and Malta, unemployment insurance contributions are not based on the previous salaries of the unemployed). The descriptions of individual countries show their heterogeneity. We found that countries differ in characteristics of unemployment insurance, as well as in fluctuations in the unemployment rate, the unemployment insurance balance and the dynamics of

economic growth, which is presented in the section - Heterogeneity of unemployment insurance systems in the EU.

A. *Starting points for the analysis and basic findings*

Unemployment insurance provides compensation for loss of income due to involuntary unemployment. In some EU countries, unemployment insurance schemes are independent of other social security measures and may be closely linked to employment services (Claeys and Wolff, 2014). In other countries, unemployment insurance schemes are included in social security measures, which also cover other short-term risks, although even in such cases employment services can check whether a person is unemployed and provide job search assistance (Euzéby, 2010).

Unemployment insurance schemes exist in industrialized countries mostly. They are mandatory and broad-based. Some EU countries restrict assistance to unemployed people who do not meet the conditions. In many countries, in addition to unemployment insurance, which provides unemployment benefits, government organizations or employers provide grants to the unemployed. Other countries provide unemployed people with individual accounts on which funds paid in the form of severance pay are collected. The value of the latter is the value of the accumulated capital in an individual's account. In addition, in many cases, employers must provide severance pay to redundant workers (Blanchard, 2006).

Unemployment insurance is a key instrument for managing labor market risk. During the period of temporary unemployment, it enables the insurance of an individual's income and offers' assistance during longer periods of unemployment. From a macroeconomic point of view, unemployment benefits play the role of an automatic stabilizer for the whole economy, as they increase the purchasing power of unemployed people in times of economic recession (Dolls et al., 2014). On the other hand, several authors have found that unemployment benefits reduce the efficiency of the labor market since (i) due to the moral hazard, reduce the willingness of the unemployed to work, which leads to suboptimal intensity of job search (Rothstein, 2011), (ii) possible unemployment and inactivity traps are linked to the tax and social system (Schmieder et al., 2012), and there is also (iii) a decrease in the employability of unemployed people receiving long-term unemployment benefits (Van Ours and Vodopivec, 2006).

Unemployment insurance schemes vary significantly across the EU, particularly for the following items: (i) eligibility to unemployment benefits, (ii) the amount of unemployment benefits, (iii) the duration of unemployment benefits, (iv) the sources of funding for unemployment insurance and (v) the administration of the unemployment insurance scheme (Davies and Hallet, 2001).

Approximately half of the compulsory unemployment insurance schemes include the majority of employees, regardless of the type of industry.

Coverage under the remaining programs is limited to workers in industry and commerce. Certain countries exclude unemployed persons who earned more than a certain amount before unemployment (Brunila et al., 2003). There are also special regulations in certain countries governing the situation of temporary and seasonal workers. Several countries have introduced special programs for the unemployed, aimed at specific occupations. The most typical are construction workers, railway and port workers and seafarers. Voluntary unemployment insurance schemes are limited to economic activities in which trade unions open accounts to collect funds for the unemployed. Membership in these funds is usually mandatory for union members and may be available to other non-union employees. Uninsured workers, such as fresh graduates and the self-employed who become unemployed may be eligible for state-subsidized assistance (Fath and Fuest, 2005). The statutory contribution rate for unemployment insurance is reasonably high only in a small part of the EU. In EU countries, unemployment insurance is regulated in each member state. Insurances differ according to (i) eligibility to benefits, (ii) reference period, (iii) required minimum period of employment, (iv) duration of benefit period (coverage), (v) amount of benefits and (vi) contribution rate. On the one hand, it concerns the expenditure of unemployment insurance intended for the payment of benefits, and on the other hand, the sources of financing of unemployment insurance. Some EU member states are more generous with unemployment insurance, compared to the others.

In the long run, it is important that the expenditure and sources of financing unemployment insurance are equal. If the expenditures are greater than the sources of financing, the countries cover the difference from the state budget. Sources of funding are determined by the statutory contribution rate, which in most countries is set so as not to cover all expenditure. This means that countries cover the difference from the state budget.

In principle, EU countries experienced a financial and economic crisis in the same period (2009-2011),

but the crisis in some countries was more pronounced and prolonged, as shown by the unemployment rate. The recession is having a knock-off effect, as increased unemployment leads to lower growth and falling consumption, which is affecting companies to lay off workers due to losses. A recession occurs when GDP growth is negative for two or more consecutive quarters. In other words, economic growth slows during recession. If the economy is experiencing a period of recession, this is reflected in the high (increased) unemployment rate and decline in (Carlberg, 2012) (i) company sales and revenues, (ii) price of securities and (iii) incomes.

With a high unemployment rate, unemployment insurance expenditure increases - expenditure is synchronized with the unemployment rate. During a period of recession, the unemployment rate increases, which also increases the number of benefit recipients. Individuals who were already unemployed before the recession find it difficult to get a new job as well, as companies in principle do not hire during the recession, but rather lay off employees due to reduced sales and lower revenues. This extends the coverage period of the unemployed, as they are unable to find new employment. An increase in the number of unemployed and an extension of the period of unemployment coverage leads to an increase in unemployment insurance expenditure.

B. Analysis of benefits and costs by EU 20 countries (2003-2019)

Below - Table 15, we show the difference between the statutory and equilibrium contribution rates (as a percentage) of unemployment insurance schemes in European countries (EU 20) - a hypothetically calculated equilibrium contribution rate at which the balance was zero in 2003-2019. The descriptions are obtained from the databases of Eurostat (2017) and the Mutual Information System on Social Protection (MISSOC, 2020) and summarize the situation on 1 July 2020. The analysis shows the heterogeneity of countries.

Table 15. Difference between statutory and equilibrium contribution rate (in percent)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Austria	0.017	0.016	0.017	0.020	0.019	0.017	0.016	0.018	0.018	0.017	0.015	0.014	0.014	0.015	0.017
Belgium	-0.038	-0.038	-0.035	-0.033	-0.034	-0.036	-0.037	-0.035	-0.034	-0.033	-0.031	-0.028	-0.026	-0.024	-0.022
Bulgaria	-0.021	-0.017	-0.012	-0.008	-0.007	-0.007	-0.008	-0.009	-0.012	-0.012	-0.010	-0.007	-0.006	-0.005	-0.004
Cyprus	0.043	0.043	0.044	0.047	0.046	0.043	0.039	-0.013	-0.017	-0.017	-0.014	-0.009	-0.006	-0.003	0.000
Czech Rep.	0.005	0.004	0.004	0.004	0.001	-0.005	-0.006	-0.004	-0.003	-0.003	-0.004	-0.004	-0.003	-0.002	-0.001
Denmark	0.004	0.011	0.021	0.029	0.029	0.023	0.016	0.013	0.014	0.015	0.017	0.020	0.022	0.024	0.026
Estonia	0.009	0.010	0.005	0.004	-0.006	-0.014	0.015	0.021	0.024	0.013	0.014	0.014	0.006	0.004	0.004
Finland	-0.041	-0.033	-0.026	-0.022	-0.031	-0.036	-0.034	-0.029	-0.028	-0.032	-0.037	-0.050	-0.047	-0.034	-0.027
France	-0.009	-0.005	-0.001	0.004	0.003	0.000	-0.002	-0.002	-0.002	-0.003	-0.004	-0.005	-0.004	-0.001	0.003
Italy	-0.017	-0.015	-0.013	-0.012	-0.017	-0.022	-0.026	-0.028	-0.030	-0.032	-0.031	-0.029	-0.027	-0.026	-0.024
Latvia	0.005	0.005	0.007	0.007	0.002	-0.005	0.012	0.005	0.000	0.001	0.001	0.003	0.007	0.007	0.006
Hungary	0.016	0.014	0.014	0.034	0.014	0.007	-0.017	-0.016	0.014	-0.023	-0.023	-0.022	-0.020	-0.016	-0.010
Germany	-0.003	0.002	0.012	-0.003	-0.011	-0.016	-0.015	-0.008	-0.004	-0.003	-0.002	-0.001	0.001	0.002	0.002
Netherlands	0.020	0.022	0.041	0.042	0.043	0.000	-0.002	-0.002	-0.004	-0.031	-0.032	-0.030	-0.027	-0.023	-0.020
Poland	-0.011	-0.008	-0.006	-0.003	-0.001	-0.001	0.002	0.003	0.004	0.004	0.004	0.005	0.007	0.009	0.012
Portugal	0.012	0.011	0.012	0.014	0.011	0.007	0.004	0.002	0.000	-0.002	0.000	0.004	0.009	0.014	0.018
Slovenia	0.008	0.007	0.006	0.004	0.001	-0.002	-0.003	-0.001	0.001	0.003	0.005	0.005	0.005	0.005	0.006
Slovakia	-0.011	-0.011	-0.009	-0.008	-0.010	-0.014	-0.019	-0.020	-0.020	-0.019	-0.017	-0.014	-0.012	-0.011	-0.010
Spain	0.028	0.027	0.027	0.022	0.011	-0.003	-0.012	-0.014	-0.012	-0.008	0.001	0.010	0.016	0.019	0.020
Sweden	-0.023	-0.014	-0.008	0.001	0.007	0.006	-0.018	0.000	-0.020	-0.021	-0.019	-0.016	-0.013	-0.010	-0.009

Source: Own calculation.

We find that the statutory contribution rate for unemployment insurance is sufficiently high only in a small part of the EU. Only certain insurance systems are sustainable, which means that the statutory contribution rate is equal to or higher than the calculated equilibrium contribution rate. The collected unemployment insurance contributions do not cover all expenditures, which means that countries cover the difference from the state budget.

After examining and describing unemployment insurance in the EU 20, we can conclude that unemployment insurance systems in the EU 20 vary widely, particularly for the following items: (i) eligibility to unemployment benefit, (ii) amount of unemployment benefit, (iii) duration of unemployment benefit, (iv) source and amount of unemployment insurance financing, and (v) administration of the insurance scheme in case of unemployment. In addition to the examined characteristics of unemployment insurance, countries also differ in terms of fluctuations in the unemployment rate, balance of unemployment insurance and the dynamics of economic growth.

V DISCUSSION AND IMPLICATIONS FOR MANAGEMENT AND ECONOMIC POLICY RECOMMENDATIONS FOR THE INTRODUCTION OF THE URS EU

The response to unemployment in the great recession and subsequent events related to the European debt crisis has been very heterogeneous across Europe and in population groups. The dispersion of unemployment rates in individual EU countries reached a historic high in 2014. The unemployment rate across countries varied according to three patterns (Boeri and Bruecker, 2011). One sample represents a group of countries where unemployment in the rate and distribution among socio-demographic groups remained relatively stable throughout the period, e.g., Austria, Belgium, Germany and Sweden. The second sample is a group of countries with a slight increase in unemployment. The latter was fairly unevenly distributed across socio-demographic groups. The third sample is represented by countries where unemployment has risen sharply and affected young workers the most, e.g., Cyprus, Portugal and Spain). Asymmetric shocks, in terms of size and nature (financial or real), and often combined with institutional differences between countries have been the reasons for the very heterogeneous responses of national labor markets to the great recession. It is difficult to predict a united Europe and the proper functioning of economic and monetary union with such divergences in labor markets between countries and with very limited instruments to insure the risk of unemployment between countries. Knowing the causes of these heterogeneous unemployment responses is very important for a better understanding of labor market dynamics. Experience is also important for assessing a coherent EU policy approach to

macroeconomic stabilization and microeconomic conditionality (Boeri and Jimeno, 2016).

Institutional reforms are needed especially in the euro area, as the monetary union reduces macroeconomic stabilization policies at national level. At the same time, the optimal design of institutions is not independent of the basic cyclical conditions (Gnocchi et al., 2015). Policies aimed at reducing unemployment should address the institutional shortcomings that emerged during the crisis and learn from the best (and worst) performers. Boeri and Jimeno (2016) find that some very urgent institutional reforms aimed at restoring competitiveness can cause side effects in severe recessions. If a stabilization policy to reduce the risk of side effects of these reforms is not feasible in the context of monetary union, they believe that there are only two other solutions. On the one hand, institutional reforms need to be implemented as much as possible in better macroeconomic environments. This requires that EU conditionality be strengthened in cyclical periods of growth. On the other hand, labor market institutions should be based on counter-cyclical characteristics, which means that countries affected by asymmetric shocks would have considerable fiscal maneuvering space in the monetary union.

In anticipation of the strengthened role of European transnational institutions in improving the functioning of labor markets, Boeri and Jimeno (2016) offered some proposals for changing the functioning of labor markets. To strengthen the role of the European transnational institutions, they propose greater coherence between the main guidelines for employment policy in the European institutions and the introduction of certain programs at European level. In this regard, they suggest that European employment policy should complement, but not replace the national policies in the field of employment security and unemployment insurance. The proposals should be introduced in the context of positive conditionality, which provides different and probably more effective incentives for national governments to introduce the necessary structural reforms. Finally, they would focus on EU citizens and, if possible, monitor their access to these systems by using the EU Social Security Number, which means that the system would be more transparent and socially acceptable.

We believe that the URS EU would represent a possible solution to the problems outlined in the previous paragraphs. Other authors have come to similar conclusions, e.g., Dullien (2007) presents how strongly fiscal policy works as an optimal stabilization tool in the European Monetary Union (EMU) and how it can be improved. In his research, he showed econometrically that although there are many automatic stabilizers in the EMU, discretionary fiscal policy has neutralized these institutions by making the general stance of fiscal policy cyclical. As a solution, the author proposes an unemployment case system for the whole of EMU.

It would be appropriate to introduce the URS EU in the EU - based on the data examined, it can be argued that the EU needs mechanisms that act as automatic stabilizers, as monetary union at national level reduces the scope of macroeconomic stabilization policies. In the crisis, the EU URS would mitigate the fall in production and increase the level of consumption by increasing the income of the unemployed.

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