# Analysis of Economic and Financial Factors of Unemployment Reinsurance

ALEŠ TRUNK
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## Establishment of a Common EU Institution

Aleš Trunk
Igor Stubelj

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*Analysis of Economic and Financial Factors of Unemployment Reinsurance: Establishment of a Common EU Institution*
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*Published by* ToKnowPress
Bangkok · Celje · Lublin

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*ToKnowPress is a Joint Imprint of*
Kasetsart University, 50 NgamWongWan Rd. Ladyao
Chatuchak Bangkok 10900, Thailand

International School for Social and Business Studies
Mariborska cesta 7, 3000 Celje, Slovenia

Maria Curie-Skłodowska University
Pl. Marii Curie-Skłodowskiej 5, 20-031 Lublin, Poland

*www.toknowpress.net*



The publication of the monograph was financially supported by the Slovenian Research Agency from the state budget funds, tender for the co-financing of scientific monographs.

ISBN 978-83-65020-34-5 (pdf)

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# Chapter One

# Introduction

In the monograph, we examine potential suitability of unemployment reinsurance in EU countries in terms of maintaining the level of consumption of the unemployed and promoting economic efficiency. 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.

The European Union is still not a federation of countries, compared to the USA (Dickson and Eleftheriadis 2012). The EU, however, is a 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 United States have been considered a successful example of federation of countries that the EU still very much differs from.

The main weaknesses of the EU are as follows (Dickson and Eleftheriadis 2012): (i) not all policies are effective – a good example being the common agricultural policy, which has led to oversupply and higher commodity prices; (ii) The 'single currency' poses a major problem – not all member states use the euro, although the EU stresses the importance of its use. In addition, Kovač (2017) believes that the EU is not an optimal monetary area, as labor mobility is insufficient, interest rates have national mark-ups, 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; (iii) difficulties in regulating immigration – citizens of the member states are free to move from one country to another, which results in overcrowding in larger countries, such as the UK, and this leads to congestion on the roads and rise in prices of both, accommodation and service spaces. Immigration problems are being further exacerbated by the refugee crisis; (iv) unclear external representation and visibility – when the rest of the world wants to know what the EU 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 to introduce a fiscal union. This may mean that the EU budget has to be higher than it is today. After all, the main feature of any fiscal union is the ability to spend and consequently influence the economic performance. Given that business cycles are not uniform in the case of the euro area, such a move would 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. The 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 need a weaker currency to be more competitive abroad. This diversity of the EU impedes the efforts for political and fiscal union.

In the monograph, we have explored the possibilities for establishing an unemployment reinsurance system in the EU (URS EU). Such a system would complement public unemployment insurance schemes and help to increase their efficiency. Public systems contribute to protecting the income and thus to maintaining the level of consumption of the unemployed, and they also act as automatic stabilizers at the aggregate level. In times of recession, 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 as well as inability to increase unemployment benefits. In the monograph, we designed and presented the basic principles of such a URS EU model and, based on a model simulation of historical data (2003–2013), tried to identify the benefits that the introduction of the URS EU would bring. We used the SWOT analysis (Strengths, Weakness, Opportunities, and Threats) to study the model.

Potential EU unemployment reinsurance system 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 to be later available to countries in difficulty. To identify a country in difficulty, triggers should be determined, namely measurable values making the country eligible for aid. It should also be determined how much assistance a country is entitled to and how it would repay the borrowed money. In the simulation, these parameters were determined to create a sustainable unemployment reinsurance system, able to 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 recession (until 2008).

The URS EU – in order to help the state unemployment insurance – would cover expenditures related to rising unemployment. This would leave more money in state budgets for stabilization of state economies in times of recession. Buti et al. (2002), Dullien (2012), 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 (see below). During the period of recession, the EU members did not use the fiscal policy to mitigate it (Coenen, Straub, and Trabandt 2012). The unemployment reinsurance system, on the other hand, would achieve just that, as it acts as an automatic stabilizer. We believe that the need for an automatic stabilizer, namely unemployment reinsurance, has become even more apparent because of recession. Existing unemployment insurances fail in bad times because they do not have enough funds accumulated for benefit payments. The reasons are mainly the following: (i) several recipients; (ii) lower percentage of covered unemployment period – the length of unemployment increases, only a small part is covered; (iii) large losses are generated.

The EU unemployment reinsurance system would act as an automatic stabilizer, helping to reduce the inflation gap in times 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 increased 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). 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 financing unemployment benefits during the period of sudden and deep

recession. In periods of weak economic activity, the benefits from the unemployment reinsurance system decrease, as the number of employed and thus the contributions paid decrease. On the other hand, expenditure increases with no need to introduce a new government measure. Contrary to that, in the case of increased economic activity expenditure decreases and benefits increase (Dullien 2012). 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 the future economic activity. 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).

The unemployment reinsurance system in the USA can therefore serve as a model for Europe. In his study, Vroman (2010) examined the automatic stabilizer role of the unemployment reinsurance system during the US recession between 2008 and 2010, and concluded that the stabilizing effect in a regular unemployment insurance program 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. As for the three separate components of the unemployment reinsurance system (regular program, 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) extended compensation period reduced the inflation gap by 8.5 percent; (iii) increased contributions led to a 0.7 percent increase in the inflation gap. On average, the unemployment reinsurance program reduced the inflation gap caused by the recession by 18.3 percent, which has certainly contributed to a more stable 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) whether and to what extent, or to no extent, redistribution should be allowed by the URS EU; (iii) should the URS EU be led by the already existing bureaucracy of national unemployment insurance schemes. Later in the research, we examined several possibilities and also addressed the mentioned dilemmas.

## Possibilities of Establishing an Unemployment Reinsurance System in the EU

Reinsurance is most simply interpreted as 'insurance of insurance, or insurance of insurance companies.' It allows the primary or direct insurer to reduce the risk in order to reduce volatility and increase the size of the risk portfolio, thus increasing profitability. Reinsurance becomes particularly important when the spread of risk (in the primary portfolio) exceeds critical dimensions and when insurance companies are no longer able to cope with the risk accepted (see http://www.icisa.org).

Reinsurance is typical for most insurance schemes and provides insurance against unforeseen and exceptional events (Brahin et al. 2013). Each group of insurers contributes to a common fund, used to support a member of the group who experiences an extremely unfavorable or catastrophic event. Due to the existence of a common fund, insurers do not have to accumulate excessively large contingency reserves.

In times of recession, the labor market is facing increased unemployment rate. Typical situations in which the unemployment reinsurance system plays an important role are wars, recessions, political interventions such as oil embargos, and collapses or closures of large industries (US National Commission 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 average unemployment rate in the United States is determined by the situation in each state. The US National Commission (1979) explains that in reinsurance, the average unemployment is determined according to the situation in each federal state, regardless of other members. If the ratio between unemployment benefits and expenditure in a given year rises above the average rate, the federal state becomes eligible for financial means 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 whole of the excess unemployment rate.

The purpose of the research is to examine the possibilities of setting up an unemployment reinsurance system in the EU and to design and

test a model of the EU unemployment reinsurance system. In the model simulation, various parameters are included. The aim of the research is to examine whether a reinsurance system in the case of unemployment would contribute to the stability and efficiency of EU members and thus the EU as a whole, and what role it would play as an automatic stabilizer. In parallel, we want to examine the costs of setting up and operating the proposed system.

Research objectives:

- to examine and present the EU unemployment insurance schemes;
- to present a theoretical overview of unemployment insurance in the EU;
- to present and analyze the operation of the US unemployment reinsurance system;
- to justify the need of setting up an EU unemployment reinsurance system as an automatic stabilizer;
- to examine the strengths, weaknesses, opportunities and threats of the EU unemployment reinsurance system;
- to design a model of the EU unemployment reinsurance system;
- to simulate and evaluate the operation of the EU unemployment reinsurance system by considering various parameters (coverage period, the amount of benefits and contributions);
- to make recommendations for developing an effective model of the EU unemployment reinsurance system.

In the following, we present the basic thesis, hypotheses and a research question. We sought answers by reviewing and examining already conducted research and by model simulation, while checking the effectiveness of unemployment reinsurance as an automatic stabilizer and determining how it contributes to maintaining consumption levels.

The unemployment reinsurance system is designed to protect against cases of above-average unemployment, which are uncommon and unpredictable. Due to the existence of an unemployment reinsurance system, insurers do not have to accumulate excessive reserves in order to cope with an occasional, unforeseen event, while at the same time acting as an automatic stabilizer. In times of recession, expenditure increases and benefits from unemployment contributions decrease, while in times of boom, the automatic stabilizer works in the opposite

direction, maintaining the level of consumption. The principle of reinsurance system operation is based on collecting contributions from all those involved in the reinsurance system in good times and drawing funds to maintain the percentage of protection (share of coverage) in bad times, without simultaneously increasing the contribution rate. As noted by Andor (2014), there are reasons to introduce a reinsurance system, as the value of one percent of contributions is higher in recession than in a boom. It is in times of recession that countries are facing a shortage of funds to pay benefits, which could lead to an increase in the contribution rate, and have the opposite effect, as increasing the contribution rate during the recession would further burden the already weakened economy. With existing unemployment reinsurance, countries would receive aid from the reinsurance system during the recession and repay the aid only during the boom period, which would be much easier and at the same time contribute to the cooling of the economy.

The basic thesis states that reinsurance system in the case of unemployment in the EU could improve the basic function of insurance – it would contribute to maintaining the level of consumption and affect the economic stability of the EU. We examined the basic thesis on the basis of two hypotheses and a research question.

*HYPOTHESIS 1 The EU unemployment reinsurance system would contribute to better income protection by directly affecting the income of the unemployed.*

An unemployment reinsurance system would have a direct effect on the protection of the income of the unemployed – recipients of unemployment benefits (they would, among other, receive benefits for a longer period of time), and indirect effect, based on stabilizing economic growth (and thus maintaining employment or better new employment opportunities).

In times of recession, unemployment increases. By providing financial assistance that the unemployed normally spend in the home environment for the most urgent needs, the EU unemployment reinsurance system would contribute to better protection of income and maintenance of consumption levels. Financial assistance would contribute to an increase in unemployment benefits and thus to an increase in aggregate demand, which would lead to a halt (slowdown) in further re-

dundancies and a reduction in GDP. Certain countries, namely France, Ireland, Portugal and the Czech Republic, due to lack of funds did not maintain the share of coverage during the recession, nor did they extend the period of receiving unemployment benefits. Extending the benefit period (the costs of the extension would be financed from the common unemployment reinsurance fund) contributes to income protection. The purpose of the unemployment reinsurance system is to maintain the level of consumption. In countries experiencing a shortage of money for payment of unemployment benefits, it is difficult to increase the contribution rate for unemployment insurance during a recession.

*HYPOTHESIS 2 The EU unemployment reinsurance system is based on the heterogeneity of EU countries and consequently on differences in the dynamics of economic growth and unemployment.*

A reinsurance system makes sense if countries are heterogeneous (the balance, i.e., the difference between the payment of unemployment benefits and the collected unemployment insurance contributions is positive in some countries and negative in others in a given year), which allows cash flows at the European level. We examined whether the overall balance (EU 20) in individual years in the period under review was negative or positive. We also checked whether the overall balance was negative or positive at the level of the whole period under review (we chose the period 2003–2013, as the global recession occurred after 2008, so that in the selected period we had five years of boom and five years of recession; also, the period was chosen due to the availability of data). Heterogeneity of countries is crucial for the functioning of the unemployment reinsurance system in the EU. We checked the absolute balance values of expenditure and benefits of unemployment insurance – the greater the differences, the greater the compatibility.

By using a model simulation, we examined how long the reinsurance system could be financially sustainable if most EU members were in serious economic difficulties at the same time, and for a longer period of time, namely five or ten consecutive years (2003–2013).

Hypotheses 1 and 2 were tested by simulating the operation of the unemployment reinsurance system in the EU with different parameters. We followed the objective of the unemployment reinsurance sys-

tem: to maintain the percentage of hedging (share of coverage) during the recession without simultaneously increasing the contribution rate. Based on historical data (past events in the period 2003–2013), we designed a model to examine the balance between the collected unemployment insurance contributions and the benefits paid by individual countries and in the EU 20 in individual years, and the cumulative difference over the period under review (2003–2013). 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.

*RESEARCH QUESTION 1 Whether and how would the EU reinsurance system in the case of unemployment act as an automatic stabilizer of the economy?*

Automatic stabilizers are economic policies and programs designed to compensate for fluctuations in economic activity without government or policy intervention. Automatic stabilizers are so called because they work towards stabilization of economic cycles and are triggered automatically, with no explicit government intervention (Chimerine, Black, and Coffey 1999).

As already mentioned, the unemployment reinsurance system would act as automatic stabilizer. In periods of weak economic activity, benefits of the unemployment reinsurance system are reduced due to a smaller number of employed and lower contributions. On the other hand, expenditure increases, and there is no need to introduce a new government measure. Contrary to that, in the case of increased economic activity expenditure decreases and benefits increase (Dullien 2012). 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 a movement helps to stabilize economic activity in the future.

Many authors in the US (e.g. Vroman 2010; O'Leary 2000; McKay and Reis 2013) have shown that promoting and increasing unemployment benefits in the US contributes to the countercyclical operation of fiscal policy, leading to a faster way out of recession, as it contributes to reducing the inflation gap.

Research question 1 was answered by a model simulation.

## Presentation of the Monograph

As described in the previous section, the study examined the possibility of setting up EU reinsurance in the case of unemployment, its contribution to maintaining the level of consumption and the impact on the EU economic stability.

In the theoretical part of the research, we summarized the theoretical and empirical literature on research and reports already conducted. We examined the already established unemployment insurance in the EU 20, but focused particularly on the US unemployment reinsurance system, which has been in operation for decades and has contributed to a more stable and competitive US. Several authors, organizations and institutions that have researched the mentioned field (e.g., Vroman 2010; Chimerine, Black, and Coffey 1999; US Department of Labor 2012; US National Commission 1979), found that the unemployment reinsurance system works well in periods of recession, as it acts as an automatic stabilizer.

The empirical part is a quantitative survey and a simulation of the EU unemployment reinsurance system operation, where we used secondary data from databases of the European Commission – Mutual Information System on Social Protection (http://www.missoc.org), Eurostat (https://ec.europa.eu/eurostat), the International Labor Organization (http://www.ilo.org)) and the Organization for Economic Co-Operation and Development (https://www.oecd.org). We had obtained data for each EU 20 country for ten years (2003–2013), namely:

- employment figures;
- the number of registered unemployed;
- the number of benefits recipients;
- average unemployment benefit rate;
- average gross salary per employee;
- the statutory contribution rate for unemployment insurance.

On the basis of the data collected, we designed a model to examine in which countries unemployment insurance was set adequately (the statutory unemployment insurance contribution rate and equilibrium unemployment insurance contribution rate were equal), 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 (2003–2013). 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.

Possible examples, used in the United States, are presented in the following (Chimerine, Black, and Coffey 1999). Reasonable values for the EU were determined during the simulation, taking into account the following starting points:

- if the ratio between government expenditure on transfers to the unemployed and total amount of salaries paid is ≤5 percent or 8 percent, the country will be eligible for funds from the reinsurance system in the amount of 40 percent or 50 percent of all government expenditure on transfers for the unemployed;
- if the ratio between government expenditure on transfers to the unemployed and total amount of salaries paid increases for 50 percent or 60 percent compared to the average of the last ten years (government expenditure on transfers to the unemployed/total amount of salaries paid), the county should be eligible for funds from the reinsurance system in the amount of 50 percent or 60 percent of all government expenditure on transfers to the unemployed.

Triggers would be set to redirect the money left to surplus countries to be spent on deficit countries.

In the research, we presented an analysis of the SWOT reinsurance system for unemployment in the EU, in which we examined the simulation of our model and presented the strengths, weaknesses, opportunities, and threats of establishing a reinsurance system in the EU.

### *Limitations and Assumptions*

The main limitation of the research is the simulation treating unemployment and GDP as exogenous variables, using their historical values. It, therefore, does not take into account the positive feedback effects (resulting from potentially high multiplier effects, especially in times of recession) that could occur due to the existence of the URS EU, in terms of higher GDP and lower unemployment. This simulation is therefore different from econometric simulations, in which the effects of unemployment reinsurance payments would be reflected in a macro model involving indirect rebound effect.

Data on past wages of the unemployed are not available directly, which forces us to estimate them more realistically on the basis of assumptions, and thus get their value as close as possible. Given that lower-skilled and lower-wage workers are more likely to be unemployed, a possible solution could be that, in order to approximately calculate the average wage that the currently unemployed were receiving before losing their job, the average wage received by the currently employed is multiplied by the constant $k$ ($0 < k < 1$).

We intended to study the EU 27. After having reviewed the available data and national unemployment insurance systems, seven countries were recognized as not suitable for participation in the model simulation due to the diversity of contribution and expenditure systems. Croatia, which has joined the EU last, was not included either, as data were not available.

### *Contribution to Science*

The main original contribution of the monograph to science in the field of studying the unemployment reinsurance system is the development of the model for simulating the operation of the unemployment reinsurance system in the EU 20 in the period 2003–2013. The study is comprehensive, as we have examined the EU 20 countries in which such a system has not yet been established. We have observed the unemployment rate, the number of benefit recipients, the costs of paid 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 (2003–2013).

Based on the results of the survey, we determined, in an original way, the levels of triggers that determine whether the state would be entitled to funds from the reinsurance system in the case of unemployment, and to what extent. With the results obtained, we want to contribute to improving the availability and financing of unemployment reinsurance in the EU (protection of income of the unemployed) and thus to maintaining the level of consumption of the unemployed, which positively contributes to reduction of the inflation gap.

### *Main Findings*

By simulating and evaluating the operation of the model for simulating the operation of the URS EU, we achieved the purpose of the monograph:

- We have confirmed that the heterogeneity of EU countries (different dynamics of economic growth and unemployment) allows for the establishment of the URS EU. Various characteristics of countries are important for the functioning of the URS EU, which is based on heterogeneity. We have analyzed the income and expenditure of the EU 20 and found out in which countries balanced unemployment insurance is provided.
- We have shown 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 act as an automatic stabilizer of the economy. By simulating the model, we determined the level of triggers and the number of financial benefits to the unemployed in such a way that the system remains sustainable, and acts as an automatic stabilizer. In addition, the model simulation shows the balance between the collected unemployment insurance contributions and paid benefits in the EU 20 by year, as well as the cumulative difference over the period studied (2003–2013).

Based on the literature reviewed and the research already conducted, which is being presented in the next chapter, as well as our own model simulations, we are able to confirm that establishing the unemployment reinsurance system in the EU would be recommended. The URS EU as an aid to the national insurance in the case of unemployment would cover expenditure related to increase in unemployment. This way, more money would remain in state budgets to stabilize national economies in recession (timely aid in the right place). The EU (especially in times of recession) needs mechanisms that act as automatic stabilizers.

According to many agreements and contracts within the EU, which 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. Boeri and Jimeno (2016) argue that the introduction of such an unemployment reinsurance system would give the EU its first common

institution, arguing that the EU without common institutions is not a federation of countries, compared to the USA.

### *Structure of the Monograph*

In the monograph, in the second chapter (Literature Review – description of the proposed reinsurance models in the EU) we describe the already existing research of unemployment reinsurance systems. We have examined the benefits of unemployment reinsurance and found out what problems the authors faced in modeling. Further on, in the third chapter (The US Unemployment Reinsurance System), we focused on operation of the US unemployment reinsurance system. In this way we have identified the advantages and disadvantages, and realized how effective such a system could be in practice. In the fourth chapter (Analysis of Unemployment Insurance Systems in European Countries) we described the rules and operation of unemployment insurance systems of individual European countries in the period under review (2003–2013). Basic elements that determine the operation of an individual system are presented. The core of the monograph is the fifth chapter (Model Simulation of the Unemployment Reinsurance system in the EU), in which we present the model of unemployment reinsurance in the EU which we designed, describe the simulation model and use simulation to evaluate its operation and efficiency, which is further presented in the research results. Economic policy recommendations conclude the fifth chapter. The monograph ends with the sixth chapter (Conclusion), in which we summarize the key findings.

# Chapter Two

# Literature Review: Description of Proposed Reinsurance Models in the EU

The EU needs mechanisms that act as automatic stabilizers. After 2008, increasing differences in the unemployment rate between EU countries, and by age groups have occurred. 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 a 'positive conditioning' approach that could even work in good times, not just in times 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 searching and receiving compensation in informal employment (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 should be mod-

eled after public unemployment schemes known to citizens in most countries (Ljungqvist and Sargent 2008). An unemployment reinsurance system could really have the reinsurance character. Contributions would be determined on the basis of current income with a certain threshold, and had an individual been paying them over a sufficient number of months, that would result in eligibility for compensation commensurate with contributions previously paid (Bover, Arellano, and Bentolila 2002). The following describes the basic principles of operation, and the advantages and disadvantages of the reinsurance system in the case of unemployment in the EU.

## Elements of Unemployment Reinsurance Models in the EU

In this part of the research-based monograph (Beblavý and Maselli 2014; Boeri and Jimeno 2016; Dolls et al. 2014; Dullien 2007; 2013) we present the 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?

### *Replacement or Upgrade of State Systems*

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 complements, but not replaces the national policies in the field of employment security and unemployment insurance. This policy should be introduced on the basis of 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 the 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 politically accept-

able 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. Econometrically, it is 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. It 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 the 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. In addition, 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 following European debt crisis have revived the debate on stronger fiscal integration in the euro area. Dolls et al. (2014) discuss different options for how to set up 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 the 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 could 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. The 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).

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 the case of unemployment in the US would be worth including in the 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.

### *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 so that the balance in the period under review was equal to zero or was approximately ±0.5 percent of GDP (Table 2.1), as otherwise the URS EU would be politically unacceptable for certain countries (especially for non-frequent URS EU beneficiaries). Above all, the advantages and disadvantages of both alternatives should be emphasized.

With redistribution, the benefit is greatest for countries that are often eligible for assistance from the URS EU. 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. Without redistribution, however, the stabilizing power of the URS EU

TABLE 2.1 Overview of Current Reinsurance Models

| Authors | Model type | Balance* |
|---|---|---|
| Dolls et al. (2014) | Unemployment reinsurance | 0 |
| | Basic unemployment reinsurance | 0 |
| | Unemployment reinsurance with the option of extended benefits; triggers are set separately for each country | 0 |
| Dullien (2007) | Unemployment insurance with the possibility of extended benefits; the trigger is uniform for all selected countries. | 0 |
| Dullien (2013) | Unemployment reinsurance – Scenario A | 0.482 |
| | Unemployment reinsurance – Scenario B | −0.536 |
| | Harmonized compensation at the EU level (excluding the fiscal rule) | −0.200 |
| | Harmonized compensation at the EU level (including the fiscal rule) | −0.050 |
| Beblavý and Maselli (2014) | Unemployment reinsurance (excluding the fiscal rule) | 0.350 |
| | Unemployment reinsurance (including the fiscal rule) | 0.400 |

NOTES As a percentage of GDP.

is smaller, as the balance of each country separately is zero at the end of the period under review. 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.

## 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 are shown. We therefore examined the following research:

- Dolls et al. (2014),
- Dullien (2007),
- Dullien (2013).

### *Model Structure*

All the research presented below is characterized by a common purpose, namely to examine the possibilities for the operation of joint unemployment reinsurance at the EU level as an automatic stabilizer, increase efficiency and maintain the level of consumption of the unemployed. What all research has in common is that the authors deter-

mine the contribution rate and the amount and 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 euros. 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.

### *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 percent of the total wage bill. The system could provide a basic level of income reinsurance in terms of compensation (50% replacement rate), the maximum duration of compensation would be 12 months, and the system could 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 that average annual allowances and contributions could 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) contributors 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, in particular, Spain, where annual (net) compensation would peak in 2009 (1.4 percent of GDP), would benefit the most.

In the period 2008–2013, the system would cover a total budget of

TABLE 2.2 Net Transfers of Unemployment Reinsurance Funds (2008–2013)

| Country | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | Country | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EMU | 0.1 | −0.1 | 0.0 | 0.1 | 0.1 | −0.1 | Ireland | 0.0 | −0.9 | −0.4 | −0.2 | −0.1 | 0.0 |
| Austria | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.3 | Italy | 0.1 | 0.0 | 0.1 | 0.1 | −0.2 | −0.2 |
| Belgium | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.0 | Luxembourg | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Cyprus | 0.3 | −0.1 | 0.0 | −0.2 | −0.8 | −1.3 | Malta | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 |
| Estonia | 0.3 | −1.2 | −0.5 | 0.1 | 0.2 | 0.3 | Netherlands | 0.6 | 0.5 | 0.4 | 0.5 | 0.4 | 0.1 |
| Finland | 0.2 | −0.1 | 0.1 | 0.1 | 0.1 | 0.1 | Portugal | 0.2 | −0.1 | 0.0 | −0.3 | −0.5 | −0.5 |
| France | 0.0 | −0.2 | −0.1 | −0.1 | −0.1 | −0.2 | Slovenia | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | −0.1 |
| Germany | 0.4 | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | Slovakia | 0.2 | −0.2 | −0.2 | 0.1 | 0.0 | 0.0 |
| Greece | 0.2 | −0.1 | −0.4 | −0.9 | −1.3 | 0.9 | Spain | −0.5 | −1.4 | −0.9 | −0.9 | −1.2 | −1.3 |

NOTES As a percentage of GDP per country. Adapted from Dolls et al. (2014).

EUR 365 billion at the euro area level. The average annual compensation 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 distributed unevenly 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 percent of GDP in Austria, 0.31 to 0.40 percent of GDP in Germany, and 0.14 to 0.59 percent of GDP in the Netherlands. Spain, Cyprus, Greece and Ireland would be the largest net recipients. Net compensation would amount up to 1.39 percent of GDP in Spain, up to 1.3 percent of GDP in Cyprus, up to 1.23 percent of GDP in Greece and up to 0.9 percent of GDP in Ireland (Table 2.2 and Table 2.3).

### *Dullien (2007)*

Dullien (2007) believes that countries should not be allowed for the long-term draw from unemployment reinsurance; therefore he does not envisage reinsurance redistribution. In his research, he presents simulations for the EU (ten selected countries) in the period 1999–2005 for three different models. All three scenarios have the following in common: (i) the amount of unemployment reinsurance benefit is 50 percent of the average salary in each country; (ii) the unemployed who have been employed for at least 12 months within the last 24 months are entitled to unemployment reinsurance benefit. Dullien maintains the existing unemployment insurance and upgrades it with unemployment reinsurance, which would be activated in the case of a prolonged and severe recession based on triggers and could 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

TABLE 2.3 Cash Flow of Unemployment Reinsurance (2008–2013)

| Country | 2008 | | | | 2009 | | | | 2010 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| Country | 2011 | | | | 2012 | | | | 2013 | | | |
| | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
| EMU | 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 | 0.97 | 2.10 | 1.13 | 0.4 | 1.06 | 2.15 | 1.09 | 0.4 | 1.25 | 2.19 | 0.94 | 0.3 |
| Belgium | 1.47 | 2.24 | 0.77 | 0.2 | 1.82 | 2.31 | 0.49 | 0.1 | 2.30 | 2.34 | 0.04 | 0.0 |
| Cyprus | 0.15 | 0.11 | −0.04 | −0.2 | 0.25 | 0.11 | −0.04 | −0.8 | 0.25 | 0.11 | −0.14 | −1.3 |
| Estonia | 0.08 | 0.10 | 0.02 | 0.1 | 0.07 | 0.11 | 0.03 | 0.2 | 0.07 | 0.12 | 0.05 | 0.3 |
| Finland | 1.27 | 1.47 | 0.20 | 0.1 | 1.32 | 1.52 | 0.19 | 0.1 | 1.42 | 1.55 | 0.13 | 0.1 |
| France | 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 | 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 | 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 | 1.09 | 0.80 | −0.29 | −0.2 | 0.95 | 0.80 | −0.15 | −0.1 | 0.89 | 0.81 | −0.07 | 0.0 |
| Italy | 6.41 | 8.68 | 2.28 | 0.1 | 11.17 | 8.55 | −2.62 | −0.2 | 11.91 | 8.49 | −3.42 | −0.2 |
| Luxembourg | 0.10 | 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 | 0.02 | 0.04 | 0.02 | 0.3 | 0.02 | 0.05 | 0.02 | 0.3 |
| Netherlands | 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 | 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 | 0.19 | 0.19 | 0.00 | 0.0 | 0.18 | 0.19 | 0.01 | 0.0 | 0.23 | 0.19 | −0.04 | −0.1 |
| Slovakia | 0.22 | 0.26 | 0.04 | 0.1 | 0.24 | 0.26 | 0.02 | 0.0 | 0.26 | 0.27 | 0.01 | 0.0 |
| Spain | 16.05 | 6.50 | −9.55 | −0.9 | 19.05 | 6.23 | −12.81 | −1.2 | 19.24 | 6.14 | 13.10 | −1.3 |

NOTES Column headings are as follows: (1) benefits (in EUR billion), (2) contributions (in EUR billion), (3) balance (in EUR billion), (4) balance (in % BDP). Adapted from Dolls et al. (2014).

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 are no extended benefits. The financial volume is EUR 54 billion per year (a total of EUR 377 billion), or 1.75 percent of the wage bill. This represents approximately 0.75% of GDP (ten selected

TABLE 2.4 Basic Unemployment Reinsurance

| Item | 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 EUR 1000/year) | 31.50 | 32.4 | 33.3 | 34.2 | 35.1 | 36 | 36.7 |
| Assumed amount of benefit (in EUR 1000/year) | 12.6 | 12.9 | 13.3 | 13.7 | 14.1 | 14.4 | 14.7 |
| Total benefit payments (in EUR 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 EUR 1000) | 25.2 | 25.9 | 26.6 | 27.3 | 28.1 | 28.8 | 29.4 |
| Total contributions (in EUR million) | 47,442 | 50,035 | 52,218 | 54,162 | 56,077 | 57,885 | 59,546 |
| *Balance (in EUR million)* | −3,284 | 3,320 | 7,485 | 519 | −3,318 | −4,508 | −214 |

NOTES Adapted from Dullien (2007).

countries in the period 1999–2005). To establish basic unemployment reinsurance, Dullien (2007) assumes that (i) the average tax base is 80 percent 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 percent 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 do the opposite. The final balance of the period is 0 (Table 2.4).

*Unemployment Insurance with the Possibility of Extended Benefits (Country-Specific Triggers).* Characteristics of the second model 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 percentage points compared to the average of the last three years (Table 2.5). If this is the case, the benefit period doubles. Assumptions must also be specified in this case. Dullien assumes that the number of short-term unemployed eligible for additional benefits is 75 percent 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 percent of the wage bill. This represents approximately 0.85 percent 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 2.6).

TABLE 2.5 Unemployment Rate (1998–2005)

| Country | 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 |

NOTES In percent. The trigger activation period is highlighted in bold. Adapted from Dullien (2007).

TABLE 2.6 Unemployment Reinsurance with the Possibility of Extended Benefits, Various Triggers

| Item | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|
| *Benefit payments* | | | | | | | |
| Standard benefits (in EUR million)) | 47,986 | 45,247 | 42,159 | 49,399 | 54,643 | 56,997 | 55,226 |
| Supplementary benefits (in EUR million) | 0 | 0 | 0 | 10,015 | 11,304 | 18,520 | 11,305 |
| Total benefit payments (EUR 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 EUR million) | 50,890 | 53,642 | 55,845 | 57,760 | 59,730 | 61,597 | 63,338 |
| *Balance (in EUR million)* | 2,904 | 8,395 | 13,686 | −1,655 | −6,217 | −13,920 | −3,193 |

NOTES Adapted from Dullien (2007).

*Unemployment Insurance with the Possibility of Extended Benefits (Single Trigger for All Selected Countries).* The same applies as in the second scenario, 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 percent 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 percent of the wage bill. This represents approximately 0.87 percent of GDP (ten selected countries in the period 1999–2005). Compared to the first scenario, an additional EUR 61 billion would be paid (Table 2.7).

### *Dullien (2013)*

Dullien (2013) presents a possible reinsurance in the case of unemployment, in which, compared to the previous research (Dullien 2007), the

TABLE 2.7 Unemployment Reinsurance with the Possibility of Extended Benefits, Single Triggers

| Item | 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 unem. (in 1000) | 4,025 | 3,608 | 3,363 | 3,925 | 4,227 | 4,331 | 4,070 |
| Nominal wage per employed (in EUR 1000/year) | 32 | 32 | 33 | 34 | 35 | 36 | 37 |
| Assumed amount of benefit (in EUR 1000/year) | 13 | 13 | 13 | 14 | 14 | 14 | 15 |
| Standard benefits (in EUR million) | 50,727 | 46,714 | 44,733 | 53,643 | 59,394 | 62,394 | 59,760 |
| Supplementary benefits (in EUR million) | 0 | 0 | 0 | 0 | 27,322 | 28,499 | 0 |
| Total benefit payments (in EUR 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 EUR 1000) | 25 | 26 | 27 | 27 | 28 | 29 | 29 |
| Total contributions (in EUR million) | 55,500 | 58,532 | 61,086 | 63,361 | 65,601 | 67,717 | 69,659 |
| *Balance (in EUR million)* | 4,773 | 11,818 | 16,354 | 9,718 | −23,491 | −25,874 | 9,899 |

NOTES Adapted from Dullien (2007).

possibility of redistribution of funds between countries is envisaged. Net transfers and stabilization properties of unemployment reinsurance in the EMU are analyzed by taking into account the following assumptions: (i) all employees in EMU are insured; they contribute part of their income 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 three percent of all unemployed are entitled to receive unemployment reinsurance benefits. The financial volume is EUR 868 billion, namely 1.66 percent of the wage bill of the 12 selected countries. The number of benefits paid is EUR 863.7 billion, the balance of the whole period being EUR 4.2 billion (Table 2.8).

The net cash flow of unemployment reinsurance in the EMU in the period 1995–2011 (as a percentage of GDP per country) is shown in Table 2.10 (negative figures represent aid received).

TABLE 2.8 Scenario A

| Year | Benefit payments | | | Contrib.* | | Balance |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | |
| 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 |

TABLE 2.9 Scenario B

| Year | Benefit payments | | | Contrib.** | | Balance |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | |
| 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 |

NOTES Column headings are as follows: (1) Number of short-term unemployed (in million), (2) Assumed number of short-term unemployed (in EUR million), (3) Total benefit payments (EUR billion), (4) Number of employed (in million), (5) Total contributions (in EUR billion). * 1.66% of the wage bill; ** 0.65% of the wage bill. Balance in in EUR billion. Adapted from Dullien (2013).

*Model/Scenario B.* All short-term unemployed in the last 12 months and 20 percent of the remaining short-term unemployed are eligible to receive unemployment reinsurance benefits. The financial volume in this case is EUR 341.7 billion, which means 0.65 percent of the wage bill of the 12 selected countries. The amount of compensation paid is EUR 346.3 billion, which means that the balance of the whole period is negative (EUR −4.7 billion) (Table 2.9).

The net cash flow of unemployment reinsurance in the EMU in the period 1995–2011 (as a percentage of GDP per country) is shown in Table 2.11 (negative figures represent aid received).

### *Use of Triggers That Determine Transfers between the EU and Each Country*

In the event of a prolonged and severe recession, triggers could be activated to temporarily extend the period for receiving compensation. The idea of 'extended benefits' with automatic triggers, extending the compensation period in times of 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) al-

TABLE 2.10 Net Cash Flow (as a Percentage of GDP per Country), Scenario A

| Country | 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 |
| The 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 |

NOTES Adapted from Dullien (2013).

TABLE 2.11 Net Cash Flow (as a Percentage of GDP per Country), Scenario B

| Country | 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 | −1,03 | −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 |
| The 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 |

NOTES Adapted from Dullien (2013).

lows 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 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. The 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.

## 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.

### *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 apparent.

Dullien (2013) notes that in the existing literature, findings about the possible stabilizing effects of unemployment reinsurance in the US are highly controversial. Most research has been conducted for the US federal unemployment reinsurance system in the US; however, their findings seem to vary. While some authors, such as von Hagen (1992) and Asdrubali, Sorensen, and Yosha (1996) argue that the stabilization effect is very small, other simulation studies show a much greater effect, e.g. Chimerine, Black, and Coffey (1999) estimate the overall stabilization effect of unemployment reinsurance in the US at between 15 and 20 percent of the initial GDP decline, 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. Large differences in assessing the impact of stabilization may be explained as following: von Hagen (1992) and As-

drubali, Sorensen, and Yosha (1996) examined the stabilization 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 most needed. Since unemployment tends to rise sharply during periods of recession and consequently higher unemployment reinsurance payments can be detected only in such periods, it is logical that stabilization analysis during a recession will show a greater effect when compared to 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 euro 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 in the study (Ramey 2011). They show the effects of the euro area unemployment reinsurance system on GDP on the assumption that public pre-crisis unemployment reinsurance systems would be replaced by a single euro area unemployment reinsurance system (Table 2.12). In other words, they compare the stabilizing effects of the single euro area unemployment reinsurance system with national pre-crisis unemployment insurance systems (policy changes introduced during the crisis are also taken into account). The results show that the effects on growth in the euro area would be moderate and increase the GDP by up to 0.2 percent in 2009 and up to 0.08 percent in 2012. In all other years, the unemployment reinsurance system in the euro area would not have additional effects on growth at the EMU level. Results vary at country level.

Dullien (2007) calculates the stabilizing power as a change in the production gap (Table 2.13). 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 by five percent in the selected ten countries, and 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

TABLE 2.12 Potential Effects of Reinsurance System in the Euro Area on GDP (in Percentage of GDP per Country)

| Country | 2009 | | | 2010 | | | 2011 | | |
|---|---|---|---|---|---|---|---|---|---|
| | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 |
| EMU | 0.10 | 0.10 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Austria | 0.00 | 0.10 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Belgium | 0.00 | 0.10 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Estonia | 0.60 | 1.30 | 1.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Finland | 0.10 | 0.10 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| France | 0.00 | 0.10 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Germany | 0.00 | 0.10 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Greece | 0.10 | 0.30 | 0.40 | 0.08 | 0.16 | 0.24 | 0.13 | 0.26 | 0.39 |
| Ireland | 0.30 | 0.50 | 0.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Italy | 0.00 | 0.10 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Luxembourg | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| The Netherlands | 0.00 | 0.10 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Portugal | 0.10 | 0.20 | 0.30 | 0.00 | 0.00 | 0.00 | 0.05 | 0.11 | 0.16 |
| Slovenia | 0.10 | 0.20 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Spain | 0.20 | 0.40 | 0.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Country | 2009 | | | 2010 | | |
|---|---|---|---|---|---|---|
| | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 |
| EMU | 0.03 | 0.06 | 0.08 | 0.00 | 0.00 | 0.00 |
| Austria | 0.01 | 0.02 | 0.03 | 0.01 | 0.02 | 0.03 |
| Belgium | 0.03 | 0.06 | 0.09 | 0.02 | 0.04 | 0.07 |
| Estonia | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Finland | 0.01 | 0.03 | 0.04 | 0.01 | 0.02 | 0.03 |
| France | 0.02 | 0.04 | 0.06 | 0.00 | 0.00 | 0.00 |
| Germany | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 |
| Greece | 0.02 | 0.04 | 0.06 | 0.00 | 0.00 | 0.00 |
| Ireland | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Italy | 0.14 | 0.28 | 0.42 | 0.01 | 0.02 | 0.04 |
| Luxembourg | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| The Netherlands | 0.03 | 0.06 | 0.08 | 0.04 | 0.08 | 0.12 |
| Portugal | 0.04 | 0.09 | 0.13 | 0.00 | 0.00 | 0.00 |
| Slovenia | 0.00 | 0.00 | 0.00 | 0.05 | 0.11 | 0.16 |
| Spain | 0.03 | 0.06 | 0.09 | 0.00 | 0.00 | 0.00 |

NOTES Adapted from Dolls et al. (2014).

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

In his second study, Dullien (2013) determined a macroeconomic multiplier of unemployment benefits paid from the European system.

TABLE 2.13 Stabilizing Power as a Change in the Output Gap

| Country | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| 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) | | | |
| The 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) | | | |

NOTES Column headings are as follows: (1) change in the output gap in % GDP (period); (2–4) change in the unemployment insurance balance in % GDP (period): (2) basic EUI, (3) EUI with the possibility of extending the period of receiving the benefit (triggers are set for each country), (4) EUI with the possibility of extending the period of receiving the benefit (the trigger is uniform for all selected countries); (5–7) reduction of the output gap: (5) basic EUI, (6) EUI with the possibility of extending the period of receiving the benefit (triggers are set for each country), (7) EUI with the possibility of extending the period of receiving the benefit (the trigger is uniform for all selected countries). Adapted from Dullien (2007).

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). However, for the European system, the proposed multiplier would work slightly differently. Since the E(M)U unemployment reinsurance replaces (a part of) costs of individual countries, it allows governments to spend their resources differently. It is not clear from the outset how state governments will use this degree of freedom, so the actual multiplier could be less than just targeted transfers. Therefore, multiplier 1 seems to be an appropriate estimate.

Dullien (2013) demonstrates stabilizing power on the basis of net cash flows of unemployment reinsurance for EMU in the period 1992–2011 (in billions of euros) (Table 2.14).

The stabilizing power of the models is presented as a change in the EU unemployment reinsurance contributions/payouts (as a percent-

TABLE 2.14
Stabilizing Power as a Change in Net Cash Flow

NOTES Net cash flow in EUR billion, 1995–2011. Adapted from Dullien (2013).

| Country | Scenario A | Scenario B |
|---|---|---|
| Austria | −0.5 | 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 |
| Lukxmbourg | 0.0 | 0.2 |
| Germany | 11.2 | 21.1 |
| The Netherlands | 1.8 | 11.3 |
| Portugal | −0.6 | 0.2 |
| Spain | −17.4 | −45.5 |

age of GDP), as a share of change in the output gap. 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 2.15). 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 due to the fact that 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 stabilization value.

### *Efficiency*

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 exit from 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

TABLE 2.15 Comparison of Stabilizing Power (Scenarios A and B)

| Country | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Austria | 2001–2002 | −0.30 | −0.28 | −0.5 | 55.8 | 51.7 |
| Austria | 2008–2009 | −0.23 | −0.21 | −4.8 | 4.7 | 4.4 |
| Belgium | 2001–2003 | −0.16 | −0.19 | −1.6 | 10.1 | 12.1 |
| Belgium | 2008–2009 | −0.19 | −0.18 | −3.9 | 4.9 | 4.8 |
| Finland | 2001–2002 | −0.15 | −0.11 | −1.5 | 9.8 | 7.8 |
| Finland | 2008–2009 | −0.37 | −0.36 | −9.4 | 3.9 | 3.8 |
| France | 1995–1996 | −0.19 | −0.15 | −0.7 | 26.3 | 20.1 |
| France | 2008–2009 | −0.32 | −0.32 | −4.2 | 7.7 | 7.6 |
| Greece | 2001–2002 | −0.01 | 0.00 | −1.3 | 0.8 | 0.2 |
| Greece | 2008–2011 | −0.44 | −0.57 | −11.6 | 3.8 | 4.9 |
| Ireland | 2007–2009 | −1.08 | −1.14 | −7.7 | 14.0 | 14.8 |
| Italy | 2001–2002 | −0.07 | −0.04 | −0.9 | 7.7 | 3.9 |
| Italy | 2008–2009 | −0.10 | −0.10 | −5.3 | 1.8 | 1.8 |
| Germany | 2001–2003 | −0.11 | −0.14 | −3.0 | 3.7 | 4.7 |
| Germany | 2008–2009 | −0.13 | −0.12 | −5.9 | 2.2 | 2.1 |
| The Netherlands | 2002–2004 | −0.19 | −0.23 | −1.1 | 18.0 | 21.7 |
| Portugal | 2001–2003 | −0.28 | −0.31 | −3.8 | 7.5 | 8.2 |
| Portugal | 2008–2009 | −0.31 | −0.30 | −2.9 | 10.5 | 10.2 |
| Spain | 2007–2009 | −1.33 | −1.51 | −6.3 | 21.3 | 24.0 |

NOTES Column headings are as follows: (1) active absorption from fund, (2) scenario A: change of inpayments/out-payments of the EU unemployment insurance (in % GDP), (3) scenario B: change of inpayments/out-payments of the EU unemployment insurance (in % GDP), (4) change in the production gap (in percentage points), (5) scenario A: stabilization power, (6) scenario B: stabilization power. Adapted from Dullien (2013).

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 particularly mentioned (Dullien 2013): (i) closer monitoring of member states budgets; (ii) stricter rules/measures in the event of a deficit in the treasury; (iv) long-term sustainability of public finances; (iv) management of state-owned enterprises and privatization; (v) greater labor market flexibility and a reduction in undeclared work and employment. These measures, in his view, 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 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 unemployment reinsurance system in the euro area could be implemented with a relatively small budget and, on the other hand, a relatively large stabilizing power ( from two to sixteen percent reduction of the output gap).

# Chapter Three

# Unemployment Reinsurance System in the USA

A review of the US unemployment insurance system helps to determine under what conditions and to what extent a country is entitled to assistance from the URS EU Fund. It has also been helpful in setting the rate of additional contributing to the URS EU and identifying cases where the contribution rate is increased.

The US unemployment reinsurance system was introduced in 1935 in order to help people who have lost their jobs by temporarily replacing part of their income while they have been looking for jobs. It is a form of social insurance in which contributions collected by an employer on behalf of employees are paid into an unemployment reinsurance system to provide income support to employees if they lose their job (Altman 2004). The system also helps to maintain the level of consumer demand during the period of economic recession, as it provides the unemployed with a constant inflow of money to spend for survival during the period of unemployment (Budnevich 2002).

The regular unemployment reinsurance program is run by the federal states and overseen by the US Department of Labor. The regular program in most states provides unemployment benefits for up to 26 weeks, on average replacing half of the previous income of now-unemployed individuals. The federal states provide most of the funds and pay unemployment benefits to the unemployed, administrative costs only are paid by the federation. Normally, the federal states can set their own eligibility criteria and level of compensation, but have to follow certain rules of the federation (US Department of Labor 2015b).

As a general rule, the extended benefits (EB) program provides for an additional 13 or 20 weeks of benefits for the unemployed who have exhausted their regular benefits in states where the unemployment situation has deteriorated sharply (regardless of whether the national economy is in recession). The total number of weeks available depends on the state unemployment rate and its unemployment insurance laws (Andersen and Svarer 2011). The federation and the federal states usually share the costs of extended benefits. The exception took place be-

tween 2009 and 2013, when the Recovery Act 2009 temporarily provided full funding on the federation part (US Department of Labor 2015b).

During the recession and the recovery period, with the unemployment rate remaining high, the federation had created temporary self-funded programs, providing additional weeks of compensation. The most recent program of this type is the Emergency Unemployment Compensation. It lasted from June 2008 to December 2013. Efforts by federal states to legislate an additional temporary extension have so far been unsuccessful. Some states may also offer additional benefits under separate state-funded programs (Brown and Ferrall 2003). Federation temporary crisis programs implemented during the recession are fully funded by the federation. Nevertheless, the length and depth of the long-term economic crisis following the great recession between 2007 and 2009 exacerbated solvency problems in regular unemployment insurance schemes in most states (Beenstock and Brasse 2013).

Unemployment reinsurance is a common federal and federal system that allows for broader flexibility for each federal state. As early as in 1934, the Franklin D. Roosevelt Committee on Economic Security, which provided the basic plan for what became the Social Security Act, declared and emphasized that the states had absolute freedom in establishing a most appropriate type of unemployment benefit for themselves. The federal requirements for individual federal unemployment insurance schemes are minimal and are designed to provide a basic level of protection for eligible unemployed persons and for the program to be a macroeconomic stabilizer in times of economic weakness. Federal law defines unemployment benefits as cash benefits paid to unemployed persons on the basis of their unemployment and sets out some basic requirements, the following two in particular (Stone and Chen 2014): (i) all the money obtained for the unemployment reinsurance system in the federal state is used exclusively to pay unemployment benefits and (ii) the federal states cannot determine excessively burdensome ways of use that would make paying benefits to otherwise eligible unemployed persons impossible.

These requirements ensure that states implement programs providing basic level of protection to those unemployed persons who were previously employed and had lost their jobs through no fault of their own. Within this basic protection, the federal states themselves determine and adjust employers' tax rates, benefits and durations, and set

eligibility criteria, such as the extent and duration of previous employment, to qualify for unemployment benefits.

In the following, we describe the unemployment reinsurance system in the United States and present the conditions for entitlement to benefits and the source of funding. We also examined the types of unemployment reinsurance benefits, paying particular attention to additional unemployment benefits during the economic recession. The chapter concludes with a presentation of the effects of unemployment reinsurance on the economy.

## Description of the US Unemployment Reinsurance System

The US unemployment reinsurance system is a joint federal and federal-state system. The federal states determine employers' contributions to finance regular unemployment insurance, while the federation determines employers' unemployment reinsurance contributions under the Federal Unemployment Tax Act (FUTA) to finance the management of unemployment reinsurance programs in federal states (Stone and Chen 2014). FUTA contributions also cover the account used to pay for the extra weeks of receiving unemployment benefits in most recessions and the fund from which states can, where necessary, borrow money to pay regular unemployment benefits in the federal states (Dolls, Fuest, and Peichl 2012).

The Federation fund of the unemployment reinsurance system is funded in stock and the funds are made available to states when certain conditions are met. The Federation collects FUTA contributions from employers in all states to raise enough unemployment reinsurance funds during the period of healthy economic growth. In periods of local or national economic recessions, the funds raised are used to pay the administrative costs of unemployment reinsurance and to pay unemployment benefits (Farber and Valletta 2011). Funds in stock ensure that unemployment benefits in times of recession shall help to maintain laid-off employees and their families, and their consumption shall support the economy even in times when consumer demand is weak (Landais, Michaillat, and Saez 2010).

Many states have adopted a real-time payment approach instead of funding their program funds in stock. This led to inadequate preparedness for recession. This approach kept contributions artificially low during the period of healthy economic growth, but the states were not preparing for a recession by providing adequate reserves in the funds

TABLE 3.1
Ratio between FUTA Contributions and Funds Paid to Federal States

NOTES Table columns are as follows: (1) FUTA contributions (in USD million), (2) funds paid to the federal states (in USD million), (3) share (%). Adapted from US Department of Labor (2015b).

| Year | (1) | (2) | (3) |
|---|---|---|---|
| 2005 | 6,899 | 3,609 | 52 |
| 2006 | 7,207 | 3,955 | 55 |
| 2007 | 7,327 | 3,420 | 47 |
| 2008 | 7,311 | 7,063 | 97 |
| 2009 | 6,773 | 29,754 | 439 |
| 2010 | 6,507 | 12,423 | 191 |
| 2011 | 6,781 | 17,289 | 255 |
| 2012 | 5,251 | 8,937 | 170 |
| 2013 | 5,367 | 4,006 | 75 |
| 2014 | 5,546 | 3,759 | 68 |
| Total | 64,971 | 94,214 | 145 |

(Stone and Chen 2014). In the great recession, members' borrowing for their regular unemployment insurance programs greatly exceeded the available funds of the Federation Fund, so that the fund had to borrow from the US Treasury to be able to lend money to federal states (Nicholson 2008).

In times of boom, approximately half of the collected contributions remain in the federation fund (Table 3.1). The Federation Fund is funded by FUTA contributions and is collected in two separate accounts. FUTA contributions to federal states cover the share of the costs of managing unemployment reinsurance programs (Henchman 2011). In addition, FUTA contributions cover half of the cost of extended benefits (during periods of high unemployment) and provide a fund from which countries can draw money to pay unemployment benefits when needed.

The collected FUTA contributions are kept in two accounts:

- Extended Unemployment Compensation Account (EUCA), which covers the federal part (in principle, 50 percent) of the expenses of the extended benefits. EUCA is also used to fund crisis compensation programs, such as the Emergency Unemployment Compensation program.
- The Employment Security Administration Account (ESAA) is used to pay for the management of the federal and state unemployment reinsurance system. In some cases, the funds from this account are divided into (i) the Federal Unemployment Account, (ii) the extended benefits account, and (iii) the federal unemployment insurance account.

The Federation Fund asses are intended for the federal states for:

- administrative grants – all administrative costs are covered by the federation;
- federal account distribution – distribution of funds from the federal fund to federal state funds; includes distributions under the Reed Act, updates to the unemployment insurance system and transfers following the Hurricane Katrina;
- extended benefits (EB) – the federal part of the extension of the compensation period;
- emergency unemployment compensation – compensation financed by FUTA contributions (applies only to 2008 and 2009).

In the period 2005–2014, the only federation received USD 65 billion in FUTA contributions, while it paid more than USD 94 billion to the states. The balance between FUTA contributions and the funds paid to the federal states by the federation are therefore minus USD 29 billion (Table 3.1). Only in 12 states, there have been more contributions than payouts, totaling USD 2.5 billion in ten years; Texas (USD 1 billion) and Virginia (USD 670 million) stand out. Most federal states (41) received more funds than they paid contributions (negative balance), totaling USD 32 billion. Among these countries, California stands out, with a balance of minus seven billion dollars, followed by New York and New Jersey (minus three billion dollars), Pennsylvania, Michigan and Illinois (minus two billion dollars), Connecticut, Massachusetts, North Carolina and Washington (minus a billion dollars). In the absence of a common unemployment reinsurance system in the United States, those amounts would be charged to each individual state.

In times of recession, the federation also pays (assists the federal states) four times the amount it receives from FUTA contributions. As stated in the previous paragraphs, it is important that the Federation Fund is being funded on stock (during the period of healthy economic growth). The fund accumulates reserves for the times of recession and the early stages of recovery after it (Congressional Budget Office 2012). We have mentioned that approximately half of the FUTA contributions remain in the federation fund during the boom period. Thus, the federation allocates the funds raised to finance additional weeks of unemployment benefits during the recession and in the early stages of recovery. In the period under study, 2005–2014, the federation received USD 65 billion in contributions and paid USD 94 billion to the states, which represents 145 percent of the contributions collected (Table 3.1).

The FUTA contribution ranges from USD 5.3 billion to USD 7.3 billion over the period 2005–2014. We can conclude that it is constant. On the other hand, there are funds paid to federal states ranging from USD 3.4 billion to USD 29.7 billion. During the boom period (2005–2007), the ratio between FUTA contributions and the funds paid to the federal states was 2: 1. In 2008, with the onset of the great recession, the ratio was 1: 1. The federal states received the most aid in 2009, when the ratio was 1: 4. Between 2010 and 2012, the ratio was 1: 2 and it was only in 2013 and 2014 that it slowly started to return to 2: 1, as it was during the boom period. In summary, in 2009, the Federation Fund helped the federal states with more than four times the amount it received from FUTA contributions. That is why it is important to raise reserves in the fund during the boom period.

In the period of recession and in the early stages of recovery, the federation funds additional weeks of unemployment benefits. Federal law provides for extended benefits during a period of high and rising unemployment. As a rule, the extended benefits program provides for an additional 13 or 20 weeks of unemployment benefits in states where the unemployment rate has risen sharply and in which have exhausted their regular compensations (regardless of whether the state economy is in recession). The state has to pay an extension of the benefit period (lasting 13 weeks) when the unemployment rate in the last 13 weeks is at least five percent and amounts at 120 percent of the rate in the same 13-week period in the last two years. The total number of weeks available to extend the benefit period depends on the state unemployment rate and its unemployment insurance laws (Mitmana and Rabinovich 2015). Typically, the federation and the federal states share the cost of extending the benefit period, with the exception of 2009 and 2013, when the Recovery Act 2009 allowed temporary full funding to be implemented by the federation (US Department of Labor 2015a). In times of recession and the recovery period, with the unemployment rate remaining high, the federation had created temporary self-funded programs, providing additional weeks of compensation. The most recent program of this type is the Emergency Unemployment Compensation. The latter lasted from June 2008 to December 2013. Efforts to legislate an additional extension have so far been unsuccessful. Some states may also offer additional benefits under separate state-funded programs (Brown and Ferrall 2003). Temporary crisis federation programs implemented during the recession are fully funded by the federation. Nevertheless,

TABLE 3.2 Ratio between Benefits Paid by the Federation and Benefits Paid by the US Federal States

| Year | Federation | | | Federal states | | (6) |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | |
| 2005 | 0 | 2 | 0 | 29,260 | 4 | 0.01 |
| 2006 | 500 | 11 | 0 | 27,960 | 11 | 1.79 |
| 2007 | 0 | 0 | 0 | 30,525 | 0 | 0.00 |
| 2008 | 0 | 2 | 3,458 | 40,675 | 8 | 7.84 |
| 2009 | 3,138 | 4,242 | 17,576 | 75,824 | 163 | 24.72 |
| 2010 | 586 | 7,389 | 0 | 53,843 | 283 | 12.84 |
| 2011 | 1,192 | 11,951 | 0 | 43,241 | 226 | 23.22 |
| 2012 | 0 | 4,825 | 0 | 39,757 | 61 | 10.81 |
| 2013 | 0 | 137 | 0 | 36,454 | 2 | 0.37 |
| 2014 | 0 | 1 | 0 | 32,388 | 3 | 0.00 |
| Total | 5,416 | 28,560 | 21,034 | 409,928 | 760 | 11.81 |

NOTES Column headings are as follows: (1) federation distributions (in USD million), (2) extended benefits (in USD million), (3) temporary crisis compensation program for unemployed (in USD million), (4) benefits (in USD million), (5) extended benefits (in USD million), (6) compensation paid by federation/compensation paid by federal states (%). Adapted from US Department of Labor (2015b).

the length and depth of the long-term economic crisis following the great recession between 2007 and 2009 exacerbated solvency problems in regular unemployment insurance schemes in most federal states (Stone and Chen 2014).

At the height of the crisis, the federation contributes about a quarter of the money spent on benefits. The Federation divides the collected FUTA contributions into two accounts, showing only the account for the extension of the period for receiving unemployment benefits (EUCA). The latter represents the funds allocated to the unemployed by the federation (Table 3.2). On the other hand, the funds allocated by the federal states to the unemployed are shown, while the last column shows the ratio between the benefits paid by the federation and the benefits paid by the federal states. It is evident that in the period under review, namely 2005–2014, the federation averagely contributed 11.8 percent of the funds intended for the unemployed. It did not contribute anything during the boom period, while it contributed almost 25 percent of the funds during the recession (24.7 percent in 2009 and 23.3 percent in 2011).

The federal contribution amounts at 0.6 percent of the first USD 7,000 annual salary of each employee. FUTA gross tax rate is six percent, but states with unemployment reinsurance programs approved by the Department of Labor that do not have outstanding loans from the Federal unemployment reinsurance fund receive 5.4 percent of the credit, making the effective tax rate 0.6 percent. An additional FUTA

contribution of 0.2 percent was set in 1982, raising the federal unemployment reinsurance contribution to 6.2 percent, but the Congress canceled it in July 2011. The FUTA contribution is regressive, as most employees earn more than USD 7,000 per year, effectively paying the same contribution of USD 42 per year regardless of income. FUTA contributions thus represent a much smaller share of the income of high-income employees, compared to low-income employees (US Department of Labor 2015a).

The federal government must repay the loans in full, including interest, within two years of borrowing from the federation. If the state does not repay the full amount, the federal government will achieve repayment of its funds by raising the federal contribution to employers in the state until the loan is repaid. Technically, the FUTA credit is reduced, raising the FUTA contribution by 0.3 percent each year (USD 21 per employee in the first year of the loan maturity, USD 42 per employee in the following year, and so on). Employers in indebted federal states are responsible for repaying the loan with a higher FUTA contribution, but the federal states are responsible for repaying loan interest to the federal treasury themselves. Federal states typically finance the repayment of interest by increasing contributions for employers. Consequently, employers in 11 federal states, and the Virgin Islands, had higher FUTA contribution rates in 2014 as they failed to repay their loans (Schmieder, Von Wachter, and Bender 2012).

## System Structure and Operation

In the following, we present the structure and operation of the unemployment reinsurance system in the United States in terms of benefits, eligibility for receiving, and sources of financing.

### *Unemployment Reinsurance Benefits*

Unemployed persons receive unemployment benefits from the federal state in which they were employed, even if they reside in another state. When an unemployed person applies for unemployment benefits – usually by telephone or online – the federal state determines whether the person is entitled to unemployment benefits and determines the amount to which they are entitled. Unemployment benefits provided for an individual differ in two respects: (a) by the number of weeks of duration and (b) by the amount of unemployment benefits (Murphy 2007).

### *Duration of Unemployment Benefits*

While some countries simply provide the same number of weeks for receiving unemployment benefits to all unemployed individuals, most countries differentiate the period for receiving benefits according to the level of past income of each unemployed person. They are interested in whether the unemployed person received income in each of the four calendar quarters that represent the base period, and how evenly this income was distributed in the base period. In most states, unemployed people are entitled to a maximum of 26 weeks of unemployment benefits. Many recipients of unemployment benefits are, due to unequal income or short work history, not eligible for the maximum number of weeks (The Council of Economic Advisers and the Department of Labor USA 2013). Eight federal states offer less than 26 weeks of benefits (Stone and Chen 2014): Michigan 20 weeks, Missouri 20, South Carolina 20, Arkansas 25, Florida 12 to 23 weeks, depending on unemployment rate, Georgia 12 to 20 weeks, depending on the unemployment rate, North Carolina from 12 to 20 weeks, depending on the unemployment rate, and Kansas 16, 20, or 26 weeks, depending on the unemployment rate. Two federal states offer more than 26 weeks of benefits: Montana 28 and Massachusetts 30 (when it is not possible to extend the federation-funded benefit period). Under normal economic conditions, most unemployed people find a new job before using the maximum number of weeks available. Prior to the recession that began in December 2007, the average duration of receiving unemployment benefits was 15 weeks.

### *Amount of Unemployment Benefits*

The average unemployment benefit amounts at just over USD 300 per week. However, benefit levels vary considerably from state to state and depend on the previous income of the unemployed person. In addition, unemployed people in several countries receive higher benefits if they have dependent family members. Federal laws typically set the amount of unemployment benefit at approximately half the previous income of an individual unemployed person. The highest state benefits in 2014 ranged from USD 133 in Puerto Rico and USD 235 in Mississippi (the lowest for the federal state) to USD 679 (USD 1,019 with dependent family members) in Massachusetts. As the amount is limited, the benefit replaces a smaller share of previous income for higher-income unemployed people. In 2013, the average federation-level beneficiary received

compensation of 46.6 percent of their income, but shares ranged from 33.9 percent in Alaska to 54.3 percent in Hawaii (Stone and Chen 2014).

### *Eligibility for Benefits*

To receive unemployment benefits, an unemployed person has to meet the basic conditions:

- the job was lost through no fault of their own or against their will;
- has to be able to work;
- has to be available for work and actively look for work;
- had to be employed for at least a certain period before becoming unemployed.

Federal states differ considerably in how they apply the basic conditions. For example, unemployed people in certain federal states are not entitled to unemployment benefits if they have been employed part-time, unless they are willing to take up full-time employment, while other states also allow unemployed people looking for part-time employment to receive unemployment benefits (Farber and Valletta 2013). Besides, in order to determine entitlement to unemployment benefits, federal states have some options in determining the required period of employment before unemployment. In principle, this period is defined as the first four of the last five completed calendar quarters in the period when an unemployed person becomes entitled to receive unemployment benefit. However, federal states may also accept an alternative option consisting of the last four complete calendar quarters (US Department of Labor 2015a).

Since the start of the operation of the unemployment reinsurance system, less than half of all unemployed persons have been entitled to receive unemployment benefits. Exceptions occur during periods of recession. Prior to the onset of the great recession (2007–2009), the unemployment benefit rate was less than 40 percent; during the recession, the rate rose sharply, and by the end of 2013, it stabilized at about 40 percent. The rate of unemployment benefit recipients increases during the recession, as those who have lost their jobs represent a higher proportion of the unemployed, and the unemployed who have been receiving unemployment benefits for 27 weeks or more may continue to receive unemployment benefits from temporary programs funded by the federation. At the end of 2013, after the expiration of temporary ben-

efits financed by the federation, the unemployment rate of recipients fell below 30 percent as early as in the first half of 2014 (Social Security USA 2014).

As already pointed out, unemployment reinsurance is not intended for all unemployed persons. It does not cover individuals who:

- remain unemployed voluntarily;
- seek their first employment;
- re-enter the labor market, having previously lost their jobs voluntarily.

The growing share of unemployed people who meet the basic conditions but do not meet the conditions of the individual federal state in which they were employed, hinders the unemployment reinsurance system in fulfilling its mission (macroeconomic stabilizer and ensuring a basic level of protection for the eligible unemployed in times of economic weakness). The conditions of individual federal states were set decades ago in the context of a very different labor market. Because of these problems (the growing share of the unemployed), in 1994, then-President Clinton and congressional leaders appointed the Advisory Council on Unemployment Compensation. The latter carried out a comprehensive review and made recommendations for improving the unemployment reinsurance system in a number of areas, including a study on the eligibility and solvency of the Unemployment Reinsurance Fund. The Commission has identified a number of serious problems with eligibility for unemployment benefits and other rules and recommendations for a series of reforms. Some federal states have followed the recommendations and initiated some reforms, but these have not been implemented comprehensively. It was not until 2009 that most states reformed their unemployment insurance systems with the Recovery Act. In this context, the Federation offered USD 7 billion by 2011 to federal states that wanted to modernize their unemployment insurance systems and therefore increase their entitlement to unemployment benefits. Under this provision, 38 states, Puerto Rico, and the US Virgin Islands had received federal funding (Stone and Chen 2014).

### *Unemployment Reinsurance Financing*

The regular unemployment reinsurance scheme is financed from contributions paid by employers for their employees (Unemployment rein-

surance contributions are explicitly deducted from employee salary in Alaska, New Jersey, and Pennsylvania). Although, from a technical point of view, employers pay federal and state taxes, economists generally believe that the burden of taxes is on employees. They base their opinion on the theory that the money that employers spend on taxes would otherwise be spent on employee income (Stone and Chen 2014).

If, in better economic conditions, a sufficiently large stock of funds is accumulated in the Federation Fund, the law stipulates additional transfers of funds to federal states (transfers were made between 1956 and 1958 and from 1998 to 2002). These transfers under the Reed Act go directly to the federal state unemployment insurance fund. Federal states can only spend this money on unemployment benefits, but it is not required to use it to improve or extend the period receiving states unemployment benefits (US Department of Labor 2015a).

The unemployment reinsurance contribution is not calculated on the basis of the total salaries paid in the company, but on the basis of the employee's tax base. The minimum payroll tax base that a state can use is USD 7,000 per employee. This minimum tax base is, by law, the same as the payroll tax base for the federal unemployment reinsurance contribution and has not been increased since 1983. Federal states can set their payroll tax bases below USD 7,000, but the law requires the federal government to significantly increase federal unemployment reinsurance contributions to employers in states that do not meet this minimum. As a result, no state sets a payroll tax base below USD 7,000. The median payroll tax base in federal states in 2012 was USD 12,000. The lowest payroll tax base in a federal state in 2012 was USD 7,000 (in Arizona, California, and Puerto Rico), and the highest was USD 41,300 in Washington. Washington is one of 18 federal states in which the payroll tax base automatically adjusts to wage growth, usually on an annual basis (US Department of Labor 2015a).

The contribution paid by the employer per employee depends on the tax base of the salary and the tax rate. The employer's contribution rate is determined by the credit rating, which is based on the employer's history of dismissing employees who then receive unemployment benefits. Companies with higher redundancy rates have higher tax rates for the unemployment reinsurance contribution. In doing so, they contribute more to a program that supports the unemployed than companies with lower redundancy rates. On average, employers in the state contributed USD 489 per employee to unemployment insurance programs in 2012 (less than one percent of all wages paid), but this amount

varies greatly between federal states and between employers within states. Due to the limitation of taxable income, the unemployment insurance contribution in the federal states is regressive, as is the federal contribution (US Department of Labor 2015a).

The US unemployment reinsurance system was designed to be stock-based. This means that federal states collect contributions from employers to provide funds in their unemployment insurance funds during a period of healthy economic growth and then draw those funds to ensure the payment of unemployment benefits during local or state economic recessions. The funds provided in stock enable unemployment benefits to help maintain redundant employees and their families in the event of a recession. Many federal states have adopted a real-time payment approach instead of funding their program funds in stock, which has kept contributions artificially low during a period of healthy economic growth. In this way, the states did not prepare for the recession by providing adequate reserves in the funds (Zhang and Faig 2012).

Although more than a decade has passed since 1994, when the two-party advisory council called on federal states to return to stock funding, many federal states have kept unemployment insurance contributions artificially low, and by 2008 had reduced their unemployment insurance contributions to a historic low. In inflation-adjusted dollars, the average unemployment insurance contribution per employee in 2008 was less than 80 percent of the 1994 average and just over half of the 1984 average. As a result, unemployment insurance funds in most states were inadequately prepared for major recessions, and most federal states had to borrow additional funds from the federal government to pay unemployment benefits. As unemployment is expected to remain high for some time to come, this borrowing is likely to continue for the next few years. Thirty-five federal states and the US Virgin Islands borrowed funds from 2008 to 2011. The total amount of outstanding loans in mid-2010 was more than USD 47 billion. In June 2014, 11 federal states and the Virgin Islands had USD 14 billion in outstanding loans (Stone and Chen 2014).

## Additional Unemployment Benefits during the Economic Recession

Three types of programs could possibly provide additional weeks for receiving unemployment benefits in federal states where the unemployment rate has risen sharply:

- temporary crisis federation programs established by the Congress during a period of national economic recession;
- permanent federal program to extend the compensation period available in severely affected states, even when the federal economy is not in recession;
- additional temporary or permanent programs that are sometimes activated by federal states.

The amount of additional unemployment benefit that an unemployed person receives usually equals regular benefits, but the duration depends on the duration of benefits. The 2009 Recovery Act temporarily increased weekly benefit amounts by USD 25 per week for all unemployment benefit recipients. An additional benefit funded by the federation was available to unemployed persons who received the benefit from February 2009 to December 2010 (Stone and Chen 2014).

### *Temporary Crisis Federation Programs*

When the unemployment rate is high, e.g., during the recession and in the early stages of recovery, the federation had in the past funded additional weeks of unemployment benefits for unemployed individuals that have exhausted their regular unemployment benefits available to them in federal states. In response to the recent major recession, legislators have adopted a new program: a temporary crisis unemployment benefit program. At the height of the recession, a temporary crisis unemployment benefits program provided 34 weeks of federation-funded benefits, or up to 53 weeks in countries with unemployment rates of 8.5 percent or more (Valletta and Kuang 2010).

Due to unexpectedly long-term unemployment during the great recession, the Congress has repeatedly extended the temporary crisis federation program. In February 2012, they started reducing the maximum number of weeks of receiving unemployment benefits, reducing the number of weeks of receiving benefits to 14 additional weeks in federal states with an unemployment rate of less than six percent, in federal states with at least 6% unemployment to 28 additional weeks, in federal states with at least 7% unemployment to 37 weeks and in federal states with at least 9% unemployment to 47 weeks. The interim crisis federation program finally expired at the end of 2013. Later, in 2014, there were still many efforts to restore the program, but the decision to restore it was not made (Stone and Chen 2014).

### *Permanent Federal Program for Extension of the Period of Receiving Benefits*

In order to provide additional weeks of unemployment benefits, the Congress adopted a permanent federal program for extended benefits in 1970. It is available to unemployed people in high-unemployment federal states who have exhausted their regular state-funded benefits (Vroman 2005). Normally, the federation and the federal states share the cost of the program of extended benefits. However, with the Recovery Act 2009, the federation began to fully fund the extended benefits program. This lasted until 2014, when the federal states regained responsibility for their half of the funds.

The majority of employees in the USA (81.9 percent of the workforce in 2010) are employed in jobs where they are entitled to receive unemployment benefits (i.e., their employers contribute to the Federal Unemployment Reinsurance Fund). However, employees of certain nonprofit organizations, state and local governments, and farm and household employees, as well as self-employed individuals, are not eligible for federation-funded unemployment benefits (Stone and Chen 2014).

The federal state has to provide up to 13 weeks of extended benefits. In federal states where the duration of regular benefits is reduced to less than 26 weeks (26 weeks being recommended by the federation), the duration of extended benefits period is less than 13 weeks ( for example, 11 weeks is available in states with a maximum of 22 weeks of regular benefits). The federal state provides up to 13 weeks of extension of the benefit period when the unemployment insurance rate (the number of beneficiaries of unemployment insurance as a percentage of the total number of people working in jobs where they could be eligible for unemployment insurance) reaches at least five percent, and if the unemployment insurance rate is at least 20 percent higher compared to the same period in each of the previous two years (Vroman 2009).

Federal states can also accept alternative triggers depending on their overall unemployment rate, e.g., the number of unemployed persons as a percentage of the total labor force. Based on these additional triggers, federal states can offer up to 13 weeks (if the total unemployment rate is at least 6.5 percent) or 20 weeks (if the total unemployment rate is at least 8 percent) of extended benefits; in addition, the condition has to be met that the overall unemployment rate is at least ten percent higher than during the same period in one of the previous two years (Stone and Chen 2014). Since alternative triggers are likely to

activate more quickly than the trigger for the unemployment insured rate, most states opted for alternative triggers to use the additional resources available under the Recovery Act. The condition for activating the program to extend the period of receiving the benefits stipulated that, in the federal state, the unemployment rate not only exceeds a certain threshold, but is also significantly higher, compared to previous years. This condition did not foresee a recession in which a large number of states would experience a long period of very high unemployment, similarly to what happened in the great recession (2007–2009). Due to a prolonged period of economic crisis, the Congress in 2010 allowed federal states to temporarily take the last three years as the previous period. Many federal states have done that. This provision was in force until the end of 2013 (Whittaker and Isaacs 2014).

Prior to 2012, a maximum of 99 weeks of unemployment benefits could be used in states with high unemployment rates that have adopted alternative triggers to activate the extension of the benefit period. (26 weeks of benefits from a regular program funded by federal states, 53 weeks of benefits from a temporary crisis program funded by the federation, and 20 weeks of extended benefits, also funded by the federation). For practical reasons, this figure fell to 73 weeks in 2013 (26 weeks of benefits from the regular program and 47 weeks of benefits from the temporary crisis program, and only in federal states with at least a 9% unemployment rate).

### *Additional Temporary or Permanent Federal Programs*

In times of recession, some federal states, which have exhausted all other forms of unemployment benefits, used their own resources to provide additional weeks of unemployment benefits. Some countries have also introduced permanent programs allowing for additional weeks of compensation, but very few are currently in place, mainly due to the wrong triggers or inadequate resources.

Unemployment reinsurance is designed to provide financial assistance to unemployed people who have lost their job, but through no fault of their own. An alternative approach, known as a division of working time or part-time compensation, prevents redundancies and the possibility of short-term unemployment turning into a long-term one. It allows employers to create appropriate conditions in which they reduce working hours for a larger number of employees, who are then entitled to receive part-time compensation to compensate for their lost

income. In Germany, the division of working time during the great recession proved to be a good solution, as the unemployment rate did not rise sharply. In 2012, the US also enacted a work time-sharing program. Despite the attractiveness of the aforementioned redundancy reduction program and long-term unemployment, the work time-sharing program is still not widely accepted in the US (Stone and Chen 2014).

### *Unemployment Reinsurance as an Economic Incentive*

Unemployment benefits are intended primarily for the income security of unemployed persons and their families (Dolenc et al. 2012). In times of recession and in the early stages of economic recovery, compensation provides an additional advantage: they stimulate economic activity and job creation. Among the main reasons why the US Congress created a regular unemployment reinsurance program during a period of great recession were the stimulus to the economy and the creation of new jobs (Chimerine, Black, and Coffey 1999).

The problem for most companies in times of economic crisis is not a lack of capacity to meet existing demand, but a lack of demand that prevents them from making full use of existing capacity. Stimulating demand is key to stopping unemployment and starting to re-employ people. One of the best ways to do this is to target financial assistance to the unemployed who need compensation for lost income (Auerbach and Feenberg 2000; Baunsgaard and Symansky 2009). People whose income is cut short in a recession and who have no savings are the ones who are most likely to quickly spend any extra income they receive. A policy that enables customers to consume effectively reduces the output gap and creates new jobs (Chimerine, Black, and Coffey 1999).

More than 70 years after its inception, unemployment insurance continues to provide unemployed people with a significant alleviation for loss of income due to temporary unemployment. It is also an effective automatic stabilizer for the whole economy, as it increases the purchasing power of the unemployed during a period of economic recession (Zhang and Faig 2012). The idea of unemployment insurance has, since its inception under President Roosevelt in 1935, been based on the fact that people who have accumulated sufficient length of service and on whose behalf unemployment insurance contributions have been paid, would have to receive temporary unemployment benefits if they have been laid-off and are looking for a new job. While the economy is emerging from recession, policymakers will face the challenge

of how to continue to meet this concept, as the system will need to be put back on a sound financial footing (US Department of Labor 2015a).

Unemployment insurance is an effective automatic stabilizer for the whole economy. The Congressional Budget Office consistently ranks unemployment benefits as one of the most effective policies for achieving economic growth and job creation (based on quantitative impact assessments, especially on GDP) – even ranked first among the 11 spending measures and taxes in the 2011 Annual Report (Congressional Budget Office 2012). As the jobs maintained or created by higher consumption of benefits are so dispersed throughout the economy, statistical analysis should be used to estimate their number, not direct counting. Nevertheless, most economists believe that unemployment insurance policy is extremely effective, as every dollar of unemployment benefit in a new economic activity generates USD 1.55 in the first year (Zandi 2008). The Congressional Budget Office explained that unemployment insurance increases general demand and creates jobs in times of economic weakness. Unemployment benefits are targeted at the involuntarily unemployed whose income has fallen. It is these unemployed people who form larger groups, concentrated in the areas and activities most affected by the weak economy. Supporting the consumption of unemployed people in severely affected communities helps to prevent the spread of redundancies and job losses in these communities. The US Department of Labor report, commissioned during the George W. Bush administration and released in 2010, further reinforced the Congressional Budget Office decision. It was found that during the great recession, additional unemployment benefits funded by the federation increased employment by approximately 750,000 jobs. Regular state unemployment benefits, however, have increased employment by an additional million jobs (US Department of Labor 2015a; Vroman 2010).

# Chapter Four

# Analysis of Unemployment Insurance Systems in European Countries

The starting points for the analysis, and the analysis of receipts and expenditure of unemployment insurance systems in the EU 20 countries (2003–2013) are presented below. The basic elements that determine the operation of an individual system are described and the data later used in the model simulation are presented. We examined and described the rules and operation of unemployment insurance systems of individual EU 20 countries in the period under study (2003–2013). We originally wanted to include the EU 27 countries in the model simulation. 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 the characteristics of unemployment insurance, as well as in fluctuations in the unemployment rate, the unemployment insurance balance and the dynamics of economic growth.

## Starting Points for 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 mainly in industrialized countries. They are mandatory and broad-based. Some EU countries restrict aid 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 have to 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 provides insurance for 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 found that unemployment benefits reduce the efficiency of the labor market because (i) unemployed people reduce their willingness to work due to moral hazard, 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, Von Wachter, and Bender 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 widely across the EU, in particular under the following items: (i) entitlement 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, Buti, and Veld 2003). In certain countries, special regulations governing the situation of temporary and seasonal workers apply. Sev-

eral 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 and some less so. 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 financing are determined by legally prescribed contribution rate set as to not cover all expenditure in most countries. 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 a recession. If the economy is experiencing a period of recession, this is reflected in the high (increased) unemployment rate and decline of (Carlberg 2012) (i) company sales and revenues, (ii) securities prices 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. On the other hand, even individuals who were already unemployed before the recession find it difficult to get a new job, as companies in principle do not hire during the recession, mostly due to reduced sales and reduced 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.

## Analysis of Benefits and Expenditures per EU 20 Countries (2003–2013)

The following is a description of unemployment insurance schemes in European countries (EU 20), which are included in the simulation of the European reinsurance system. We describe the aid rules (entitlement to benefits, the method for calculating benefits, the required minimum period of employment, the duration of the period of receipt of benefits (coverage) and the amount of benefits), present who and in what share pays the unemployment insurance (employees or employers). The descriptions are obtained from the databases MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat) and summarize the situation on 1 July 2016. The descriptions show the heterogeneity of the countries as well as the data that we use later in the simulation. We conclude with the expenditure and benefits of unemployment insurance and the self-sustainability of the system. For each country, we also graphically show the state (balance) of unemployment insurance. All displays (tables and figures) are self-calculated.

### *Austria*

*Eligibility for compensation:* Unemployment benefit is received by an unemployed person who is able to work and willing to work, is available to the employment service and has not yet exceeded the duration of the period of receiving the benefit (coverage). Unemployment aid is received by an unemployed person who has exhausted the right to unemployment benefits and urgently needs assistance.

*Required minimum period of employment:* 52 weeks of insurance period in the last 24 months and 26 weeks in the last 12 months for persons under 25 years of age.

*Method of calculating the benefit:* Unemployment benefit is determined on the basis of the average income in the last full calendar year.

Special payments, e.g., 13th and 14th salary should be considered proportionately. The maximum limit is set at EUR 4,440 per month.

*Amount of benefit:* The basic amount is 55 percent of the daily net income. If the basic amount is less than one-thirtieth of the indicative level of compensatory allowances under the Social Security Act, i.e., EUR 29.43 for 2016, the allowance must be increased, but not more than 60 per cent of the net base in the absence of family allowance, or 80 per cent of the net base if there is at least one family allowance. The minimum daily amount is 8 or 10.67 euros. The maximum daily amount is 52.52 euros. Unemployment benefit is 92 percent (in some cases 95 percent) of the basic amount of unemployment benefit plus 95 percent of the corresponding additional amount and all family allowances.

*Duration of the period of receipt of benefit (coverage):* The duration of the benefit depends on the duration of the insurance and in certain cases also the age of the unemployed person (insurance period: duration of the benefit):

- 52 weeks in two years: 20 weeks;
- 156 weeks in five years: 30 weeks;
- 312 weeks in ten years and age 40 years: 39 weeks;
- 468 weeks in fifteen years and age 50 years: 52 weeks.

After completing vocational rehabilitation with compulsory social insurance, the duration of the benefit is 78 weeks. The duration shall be extended for the period during which the beneficiary participates in further training or retraining or reintegration measures, and for 156 or 209 weeks if the beneficiary participates in specific on-the-job training. The duration of unemployment benefit is not limited, it is granted for 52 weeks.

*Contribution rate:* The statutory contribution rate for unemployment insurance is six percent.

*State aid:* In the event of a negative balance between income and expenditure on unemployment insurance, the deficit is covered by the government.

The unemployment rate in the period 2003–2013 ranged from 4.1 to 5.6 percent (Table 4.1). The coverage ratio is high, even above 1, on the basis of which we can conclude that the vast majority of individuals receive unemployment benefits during the period of unemployment. In the period under review, the average annual salary increased and

TABLE 4.1 Unemployment Insurance Expenditure in Austria (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 4,501,912,000 | 2,525,739,000 | 4.8 | 188,000 | 220,403 | 1.17 | 29.777 | 23,822 | 954.97 | 0.4811 |
| 2004 | 4,764,969,000 | 2,596,785,000 | 5.8 | 223,400 | 223,193 | 1.00 | 30.870 | 24,696 | 969.56 | 0.4711 |
| 2005 | 5,235,467,000 | 3,018,833,000 | 5.6 | 223,500 | 228,753 | 1.02 | 31.787 | 25,430 | 1,099.74 | 0.5190 |
| 2006 | 5,438,771,000 | 2,941,492,000 | 5.3 | 211,700 | 214,966 | 1.02 | 32.924 | 26,339 | 1,140.29 | 0.5195 |
| 2007 | 5,226,452,000 | 2,772,499,000 | 4.9 | 200,300 | 202,289 | 1.01 | 33.916 | 27,133 | 1,142.14 | 0.5051 |
| 2008 | 5,185,041,000 | 2,717,127,000 | 4.1 | 172,000 | 195,170 | 1.13 | 35.240 | 28,192 | 1,160.15 | 0.4938 |
| 2009 | 6,442,718,000 | 3,593,937,000 | 5.3 | 222,900 | 272,292 | 1.22 | 35.951 | 28,761 | 1,099.90 | 0.4589 |
| 2010 | 6,440,133,000 | 3,518,452,000 | 4.8 | 203,400 | 243,983 | 1.20 | 36.435 | 29,148 | 1,201.74 | 0.4947 |
| 2011 | 6,113,913,000 | 3,382,730,000 | 4.6 | 193,800 | 226,088 | 1.17 | 37.171 | 29,737 | 1,246.83 | 0.5031 |
| 2012 | 6,272,586,000 | 3,556,922,000 | 4.9 | 208,900 | 240,065 | 1.15 | 38.273 | 30,618 | 1,234.71 | 0.4839 |
| 2013 | 6,977,153,000 | 4,010,346,000 | 5.4 | 231,300 | 264,952 | 1.15 | 39.054 | 31,243 | 1,261.34 | 0.4845 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

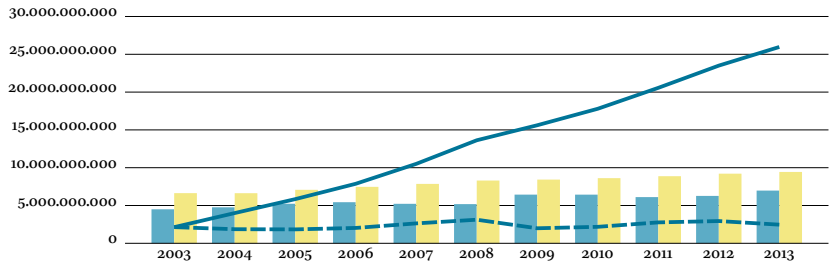
TABLE 4.2 Unemployment Insurance Benefits in Austria (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 6,638,365,272 | 3,715,600 | 110,639,421,200 | 0.0600 | 2,136,453,272 | 2,136,453,272 | 0.0407 |
| 2004 | 6,630,320,340 | 3,579,700 | 110,505,339,000 | 0.0600 | 1,865,351,340 | 4,001,804,612 | 0.0431 |
| 2005 | 7,078,265,586 | 3,711,300 | 117,971,093,100 | 0.0600 | 1,842,798,586 | 5,844,603,198 | 0.0444 |
| 2006 | 7,472,101,800 | 3,782,500 | 124,535,030,000 | 0.0600 | 2,033,330,800 | 7,877,933,998 | 0.0437 |
| 2007 | 7,862,271,456 | 3,863,600 | 131,037,857,600 | 0.0600 | 2,635,819,456 | 10,513,753,454 | 0.0399 |
| 2008 | 8,306,843,280 | 3,928,700 | 138,447,388,000 | 0.0600 | 3,121,802,280 | 13,635,555,734 | 0.0375 |
| 2009 | 8,432,594,658 | 3,909,300 | 140,543,244,300 | 0.0600 | 1,989,876,658 | 15,625,432,392 | 0.0458 |
| 2010 | 8,621,759,790 | 3,943,900 | 143,695,996,500 | 0.0600 | 2,181,626,790 | 17,807,059,182 | 0.0448 |
| 2011 | 8,881,564,398 | 3,982,300 | 148,026,073,300 | 0.0600 | 2,767,651,398 | 20,574,710,580 | 0.0413 |
| 2012 | 9,216,291,492 | 4,013,400 | 153,604,858,200 | 0.0600 | 2,943,705,492 | 23,518,416,072 | 0.0408 |
| 2013 | 9,443,257,200 | 4,030,000 | 157,387,620,000 | 0.0600 | 2,466,104,200 | 25,984,520,272 | 0.0443 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

increased from EUR 29,777 to EUR 39,054. Accordingly, the average monthly allowances also increased from EUR 954 to EUR 1261. The average replacement rate was 49 percent of the average wage before unemployment. In the period 2003–2013, the number of employees increased, and the total wage bill and unemployment insurance benefits increased accordingly (Table 4.2). During the period under review, the statutory contribution rate did not change and remained at six percent. Such a contribution rate was more than sufficient to cover all unemployment insurance expenditure. The hypothetically calculated equilibrium contribution rate, with zero balance, was approximately 4% in the boom period and up to 4.5% in the recession period in 2003–2013.

In the period 2003–2013, benefits are higher than unemployment in-




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.1 Unemployment Insurance Balance in Austria (2003–2013)

surance expenditure. On average, the annual balance was EUR 2.3 billion, which means that the cumulative balance at the end of the period under review was almost EUR 26 billion (Figure 4.1).

### *Belgium*

*Eligibility for compensation:* The person must be involuntarily unemployed, unemployed, registered as a jobseeker, able to work, available on the labor market, between 18 and 65 years of age. Must also be actively looking for work, reside in Belgium and be without any other allowance of the same purpose.

*Required minimum period of employment:* The period varies according to the age of the insured, between 312 working days in the last 21 months and 624 working days in the previous 42 months.

*Method of calculating the benefit:* The last earned salary is taken into account. Three ceilings for monthly wages are taken into account, namely the higher wage ceiling for the first six months of unemployment is EUR 2547.39, the average wage ceiling for the next six months of unemployment is EUR 2374.21 and the basic wage ceiling for the period after 12 months of unemployment is EUR 2,218.65. The salary taken as a basis must be earned within at least four weeks, otherwise the reference salary of EUR 1531.93 applies.

*Duration of the period of receipt of benefit (coverage):* There is no limit if the beneficiary is actively looking for work and fulfils the job search plan.

*Amount of compensation:* As a compensation for unemployment in the first three months, all unemployed people receive 65 percent, and in the next nine months 60 percent of their last salary. The first one-

TABLE 4.3 Unemployment Insurance Expenditure in Belgium (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 8,162,484,000 | 4,162,484,000 | 7.7 | 337,300 | 603,106 | 1.79 | 33,538 | 26,830 | 575.15 | 0.2572 |
| 2004 | 8,883,864,000 | 4,399,807,000 | 7.4 | 329,400 | 621,968 | 1.89 | 34,203 | 27,362 | 589.50 | 0.2585 |
| 2005 | 9,163,176,000 | 4,587,918,000 | 8.5 | 390,400 | 645,792 | 1.65 | 34,907 | 27,926 | 592.03 | 0.2544 |
| 2006 | 9,086,174,000 | 4,491,873,000 | 8.3 | 383,200 | 625,713 | 1.63 | 36,180 | 28,944 | 598.23 | 0.2480 |
| 2007 | 9,003,007,000 | 4,248,083,000 | 7.5 | 353,000 | 594,378 | 1.68 | 37,075 | 29,660 | 595.59 | 0.2410 |
| 2008 | 9,344,303,000 | 4,356,388,000 | 7.0 | 333,400 | 589,225 | 1.77 | 38,336 | 30,669 | 616.12 | 0.2411 |
| 2009 | 10,664,798,000 | 5,501,412,000 | 7.9 | 379,600 | 694,274 | 1.83 | 38,553 | 30,842 | 660.33 | 0.2569 |
| 2010 | 10,846,485,000 | 5,434,055,000 | 8.3 | 405,900 | 661,316 | 1.63 | 38,986 | 31,189 | 684.75 | 0.2635 |
| 2011 | 10,921,560,000 | 5,111,342,000 | 7.2 | 346,700 | 607,789 | 1.75 | 40,342 | 32,274 | 700.81 | 0.2606 |
| 2012 | 10,887,745,000 | 5,272,940,000 | 7.6 | 369,000 | 627,019 | 1.70 | 41,536 | 33,229 | 700.79 | 0.2531 |
| 2013 | 10,905,757,000 | 5,572,589,000 | 8.4 | 416,800 | 742,371 | 1.78 | 42,390 | 33,912 | 625.54 | 0.2214 |

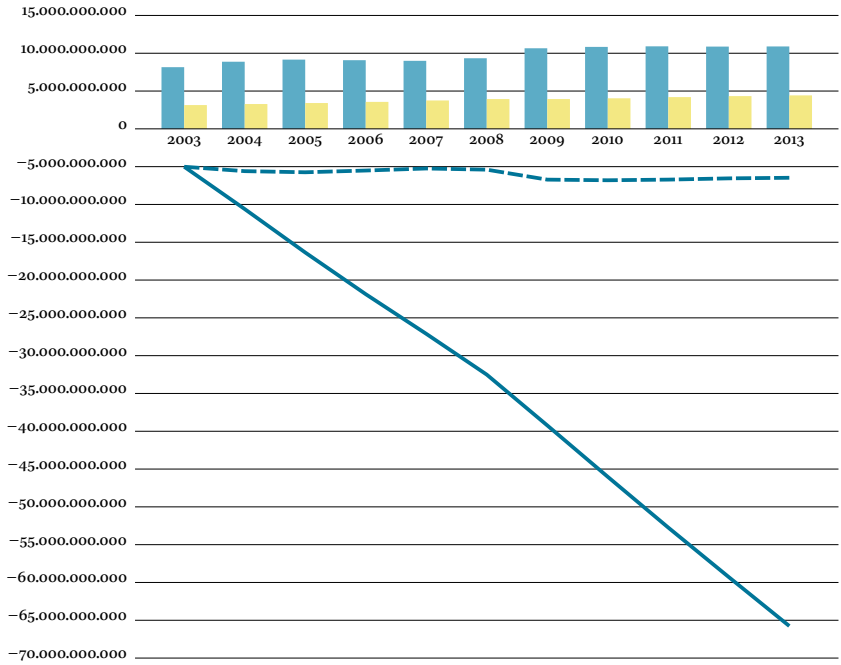
NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

TABLE 4.4 Unemployment Insurance Benefits in Belgium (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 3,146,527,782 | 4,026,600 | 135,044,110,800 | 0.0233 | −5,015,956,218 | −5,015,956,218 | 0.0604 |
| 2004 | 3,284,546,583 | 4,121,500 | 140,967,664,500 | 0.0233 | −5,599,317,417 | −10,615,273,636 | 0.0630 |
| 2005 | 3,415,348,354 | 4,199,200 | 146,581,474,400 | 0.0233 | −5,747,827,646 | −16,363,101,282 | 0.0625 |
| 2006 | 3,568,309,303 | 4,232,900 | 153,146,322,000 | 0.0233 | −5,517,864,697 | −21,880,965,979 | 0.0593 |
| 2007 | 3,756,095,315 | 4,348,100 | 161,205,807,500 | 0.0233 | −5,246,911,685 | −27,127,877,665 | 0.0558 |
| 2008 | 3,942,443,955 | 4,413,700 | 169,203,603,200 | 0.0233 | −5,401,859,045 | −32,529,736,710 | 0.0552 |
| 2009 | 3,942,931,740 | 4,389,400 | 169,224,538,200 | 0.0233 | −6,721,866,260 | −39,251,602,970 | 0.0630 |
| 2010 | 4,042,808,434 | 4,450,600 | 173,511,091,600 | 0.0233 | −6,803,676,566 | −46,055,279,536 | 0.0625 |
| 2011 | 4,202,129,626 | 4,470,500 | 180,348,911,000 | 0.0233 | −6,719,430,374 | −52,774,709,909 | 0.0606 |
| 2012 | 4,334,726,035 | 4,479,000 | 186,039,744,000 | 0.0233 | −6,553,018,965 | −59,327,728,874 | 0.0585 |
| 2013 | 4,429,282,352 | 4,484,500 | 190,097,955,000 | 0.0233 | −6,476,474,649 | −65,804,203,523 | 0.0574 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

year period is followed by a second period, which is extended by two months for each year of past employment with a regular salary. The second period lasts up to 36 months and is divided into five phases. In the first phase, which lasts a maximum of 12 months, unemployed persons with dependent family members receive 60 percent, single persons 55 percent, and unemployed persons without dependent family members 40 percent of the last salary. In the next four phases, lasting a total of up to 24 months, the benefits are reduced by phases. In the third period, which begins to run after 48 months of unemployment, the person receives benefits in the form of flat or daily amounts. An unemployed person with dependent family members receives a maximum of EUR 63.68




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.2 Unemployment Insurance Balance in Belgium (2003–2013)

for the first three months, and a reduced amount of EUR 46.57 for the next 43 to 48 months. The minimum compensation is EUR 45.41. Single people receive a maximum of EUR 63.68 for the first three months and a reduced amount of EUR 39.69 for the next 43 to 48 months. The minimum compensation is EUR 38.14. An unemployed person without dependent family members receives a maximum of EUR 63.68 for the first three months, and a reduced amount of EUR 22.95 for the next 43 to 48 months. The minimum compensation for the first three months is EUR 28.60, and the minimum compensation after the first three months is EUR 21.84.

*Contribution rate:* the statutory contribution rate for unemployment insurance is 0,0233 percent.

*State aid:* State aid is provided in the form of grant payments.

The unemployment rate ranged from 7 to 8.5 percent in the period 2003–2013 (Table 4.3). The coverage ratio is high, even above 1, on the basis of which we can conclude that the vast majority of individuals

receive unemployment benefits during the period of unemployment. In the period under review, the average annual salary increased from EUR 33,538 to EUR 42,390, and the average monthly benefits increased accordingly ( from EUR 575 to 700, but decreased to EUR 625 only in the last year). The average replacement rate was 25 percent of the average wage before unemployment. In the period 2003–2013, the number of employees increased, and the total wage bill and unemployment insurance benefits increased accordingly (Table 4.4). During the period under review, the statutory contribution rate did not change and remained at 2.3 percent. Such a low contribution rate was not sufficient to cover all unemployment insurance expenditure. The hypothetically calculated equilibrium contribution rate, with zero balance, was approximately 5.5% in the boom period and up to 6.3% in the recession period in 2003–2013.

In the period 2003–2013, benefits were lower than unemployment insurance expenditure. On average, the annual balance was EUR –6 billion, which means that the cumulative balance at the end of the period under review was almost EUR –70 billion (Figure 4.2).

### *Bulgaria*

*Eligibility for Compensation:* The person must be unemployed either voluntarily or involuntarily, i.e., does not perform any work activity that requires mandatory insurance, including activities in another country. The person is registered as an unemployed person at her regional branch of the Employment Service, has to be at its disposal and actively look for work. The person must therefore behave in a way that will not lead to the termination of registration with the employment service. The person is not entitled to an old-age pension or an early old-age pension, including pensions from other countries. There are no conditions regarding age, inclusion in education, ability to work and, for EU/EEA citizens, neither regarding residence, nor citizenship.

*Required minimum period of employment:* At least nine months of insurance in the last 15 months before unemployment (insurance against any risk).

*Method of calculating the benefit:* Average monthly income for the last 24 months for which the person was compulsorily insured against unemployment. The maximum monthly income is BGN 2,600 (EUR 1,329) per month.

*Duration of the period of receipt of benefit (coverage):* benefit is paid

monthly for a certain duration (insurance period: duration of the benefit):

- from 0 to 3 years: 4 months;
- from 3 to 5 years: 6 months;
- 5 to 10 years: 8 months;
- from 10 to 15 years: 9 months;
- from 15 to 20 years: 10 months;
- from 20 to 25 years: 11 months;
- over 25 years: 12 months.

Those who have terminated their employment voluntarily or have been justifiably dismissed may receive unemployment benefits for a maximum of four months. Unemployed persons who return to work and regain the right to unemployment benefit within three years of the previous exercise of the right receive the benefit for a maximum of four months.

*Amount of compensation:* The amount of unemployment benefit is 60 per cent of the average daily income for the last 24 months before the month of termination of employment, but not less than the fixed minimum amount. The fixed minimum amount of unemployment benefit is currently BGN 7.20 (EUR 3.68). However, in practice, the amount of compensation can never exceed 60 percent of the daily maximum amount of the maximum contribution income for the country, which is BGN 2,600 (EUR 1,329) for 2016. Compensation for unemployed part-time workers is determined in proportion to the length of working time. In such cases, the amount of the benefit may be lower than the minimum amount of the unemployment benefit. Those who have terminated their employment voluntarily or have been justifiably dismissed receive a minimum unemployment benefit. Unemployment benefit is paid monthly. The monthly amount of unemployment benefit is the product of the number of working days in the month in question and the daily amount of unemployment benefit.

*Contribution rate:* 0.4 percent from employees and 0.6 percent from employers.

*State aid:* The state budget pays contributions equal to the percentage of gross salary for civil servants, soldiers and other military personnel, the judiciary, including judges, prosecutors, investigators, bailiffs, candidates for young judges and young prosecutors, enrolment judges

TABLE 4.5 Unemployment Insurance Expenditure in Bulgaria (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 178,298,681 | 58,367,247 | 13.8 | 457,800 | 98,544 | 0.22 | 1,678 | 1,342 | 49.36 | 0.4413 |
| 2004 | 158,280,000 | 51,814,000 | 12.1 | 406,400 | 87,480 | 0.22 | 1,795 | 1,436 | 49.36 | 0.4125 |
| 2005 | 156,974,000 | 46,663,000 | 10.1 | 334,400 | 78,519 | 0.23 | 1,987 | 1,590 | 49.52 | 0.3739 |
| 2006 | 159,006,000 | 45,964,000 | 9.0 | 305,700 | 69,628 | 0.23 | 2,212 | 1,769 | 55.01 | 0.3731 |
| 2007 | 147,989,000 | 44,300,000 | 6.9 | 240,200 | 62,570 | 0.26 | 2,643 | 2,114 | 59.00 | 0.3349 |
| 2008 | 160,921,000 | 53,179,000 | 5.6 | 199,700 | 66,711 | 0.33 | 3,344 | 2,675 | 66.43 | 0.2980 |
| 2009 | 227,571,000 | 133,966,000 | 6.8 | 238,000 | 123,596 | 0.52 | 3,738 | 2,991 | 90.33 | 0.3624 |
| 2010 | 210,268,000 | 162,421,000 | 10.3 | 352,300 | 135,647 | 0.39 | 3,978 | 3,182 | 99.78 | 0.3763 |
| 2011 | 227,964,000 | 162,612,000 | 11.3 | 376,200 | 103,309 | 0.27 | 4,209 | 3,368 | 131.17 | 0.4674 |
| 2012 | 275,145,000 | 182,746,000 | 12.3 | 410,300 | 120,972 | 0.29 | 4,487 | 3,590 | 125.89 | 0.4208 |
| 2013 | 336,434,000 | 183,048,000 | 13.0 | 436,300 | 113,218 | 0.26 | 4,757 | 3,806 | 134.73 | 0.4248 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

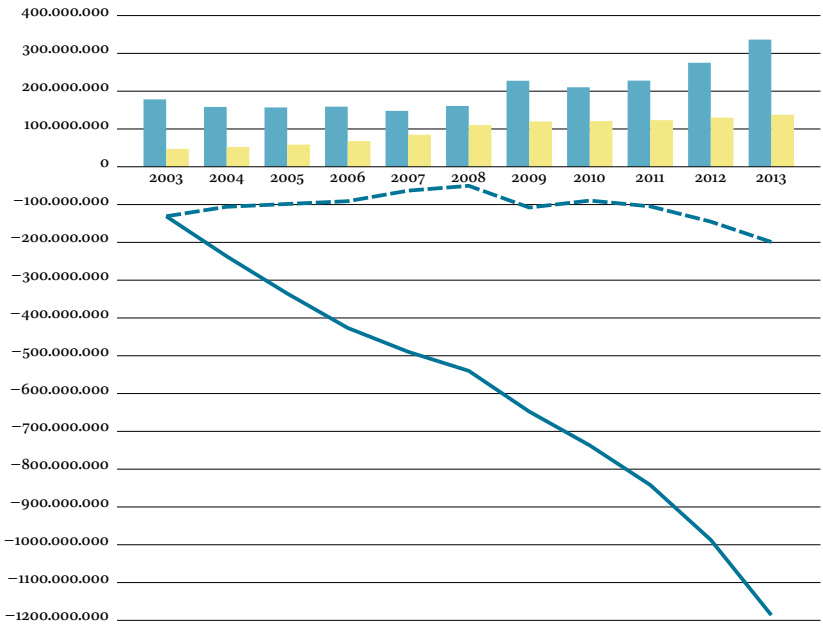
TABLE 4.6 Unemployment Insurance Benefits in Bulgaria (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 47,286,953 | 2,818,700 | 4,728,695,316 | 0.0100 | −131,011,728 | −131,011,728 | 0.0377 |
| 2004 | 52,442,358 | 2,922,000 | 5,244,235,821 | 0.0100 | −105,837,642 | −236,849,370 | 0.0302 |
| 2005 | 58,558,480 | 2,947,000 | 5,855,847,954 | 0.0100 | −98,415,520 | −335,264,890 | 0.0268 |
| 2006 | 67,933,363 | 3,071,700 | 6,793,336,319 | 0.0100 | −91,072,637 | −426,337,527 | 0.0234 |
| 2007 | 84,800,760 | 3,208,800 | 8,480,075,978 | 0.0100 | −63,188,240 | −489,525,767 | 0.0175 |
| 2008 | 110,558,636 | 3,306,200 | 11,055,863,565 | 0.0100 | −50,362,364 | −539,888,132 | 0.0146 |
| 2009 | 119,805,713 | 3,204,800 | 11,980,571,260 | 0.0100 | −107,765,287 | −647,653,419 | 0.0190 |
| 2010 | 120,802,389 | 3,037,000 | 12,080,238,919 | 0.0100 | −89,465,611 | −737,119,030 | 0.0174 |
| 2011 | 123,229,694 | 2,927,500 | 12,322,969,449 | 0.0100 | −104,734,306 | −841,853,335 | 0.0185 |
| 2012 | 129,897,361 | 2,894,900 | 12,989,736,113 | 0.0100 | −145,247,639 | −987,100,974 | 0.0212 |
| 2013 | 137,453,545 | 2,889,400 | 13,745,354,521 | 0.0100 | −198,980,455 | −1,186,081,429 | 0.0245 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

and court employees, which is covered by 'Judicial budget.' The state covers 30 percent of employers' contributions for people with special needs, who work for employers on the basis of contracts concluded by the agency for people with special needs, from the budget. In addition, the state budget covers 50 percent of the contributions paid for people with special needs who work for certain employers (specialized companies, associations of the disabled and occupational therapy units for the disabled set up in specialized social care institutions).

The unemployment rate ranged from 5.6 to 13.8 percent in the period 2003–2013 (Table 4.5). The share of coverage is small, as 22 percent of the registered unemployed receive benefits during the boom




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.3 Unemployment Insurance Balance in Bulgaria (2003–2013)

period and up to 52 percent during the recession. In the period under review, the average annual salary was increasing and increased from EUR 1,678 to EUR 4,757. Accordingly, the average monthly allowances also increased ( from EUR 49 to EUR 134). The average replacement rate was 39 percent of the average salary before unemployment. Between 2003 and 2013, the number of employees increased during the boom period and until 2008, but later began to decline (Table 4.6). Despite the fluctuation in the number of employees, the total wage bill and unemployment insurance benefits increased, which can be attributed to the increase in the average wage. During the period under review, the statutory contribution rate did not change and amounted to a percentage of the total wage bill. Such a low contribution rate was not sufficient to cover all unemployment insurance expenditure. The hypothetically calculated equilibrium contribution rate, with zero balance, was approximately 2% in the boom period and up to 3.5% in the recession period in 2003–2013.

In the period 2003–2013, benefits were lower than unemployment

insurance expenditure. On average, the annual balance was EUR –107 million, which means that the cumulative balance at the end of the period under review was almost EUR –1.2 billion (Figure 4.3).

### *Cyprus*

*Eligibility for compensation:* The person has to be voluntary or involuntary unemployed, without a job, is not performing the work that pays more than a twelfth of the amount of basic guaranteed earnings, which amounts to EUR 14.53 per day in 2016, as well as registered as a job seeker and available at the employment office. The person has also been registered as an unemployed person with the regional social insurance office and report regularly, be able to work and available for it, and be aged between 16 and 63 (65 if the person is not entitled to an old-age pension).

*Required minimum period of employment:* The conditions relating to the contributions paid require that the person is insured for at least 26 weeks before the date of unemployment, has paid basic insurance up to the date of unemployment in the amount of at least 26 weeks of basic insured income of EUR 174.38 per week (0.50 insurance points) and paid insurance in the relevant contribution year in the amount of at least 20 weeks of basic insured income (0.39 insurance points). After the payment has been exhausted, the right to compensation can be regained after 26 weeks of employment from the day of exhaustion and provided that the insurance in the amount of at least 26 weeks of basic insured income has been paid.

*Method of calculating the benefit:* Insured income from the previous year. The maximum limit is three times the basic insured income. The income for which the beneficiary was insured is taken into account.

*Duration of the period of receipt of benefit (coverage):* 156 days.

*Amount of compensation:* The basic allowance is 60 percent of the weekly value of the insurance point in basic insurance in the relevant contribution year, increased by 20 percent for the first dependent family member and ten percent for each subsequent dependent family member, but not more than three dependent family members. Where the spouse is not dependent on the beneficiary, the increase for the dependent child shall be equal to ten per cent of the basic allowance for each child, the maximum number of dependent children being two. A spouse is a dependent family member if he or she does not work or receive any benefits from the social security fund.

TABLE 4.7 Unemployment Insurance Expenditure in Cyprus (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 90,580,888 | 79,947,000 | 4.2 | 14,100 | 8,412 | 0.60 | 18,072 | 14,457 | 792.00 | 0.6574 |
| 2004 | 97,647,482 | 86,184,000 | 4.4 | 15,200 | 9,068 | 0.60 | 18,231 | 14,585 | 792.00 | 0.6516 |
| 2005 | 125,271,441 | 110,565,000 | 5.3 | 19,500 | 11,633 | 0.60 | 19,020 | 15,216 | 792.00 | 0.6246 |
| 2006 | 109,211,000 | 96,390,000 | 4.6 | 17,000 | 10,142 | 0.60 | 19,973 | 15,978 | 792.00 | 0.5948 |
| 2007 | 94,028,000 | 74,489,000 | 3.9 | 15,400 | 9,406 | 0.61 | 20,738 | 16,590 | 659.94 | 0.4773 |
| 2008 | 95,434,000 | 69,700,000 | 3.7 | 14,500 | 8,910 | 0.61 | 22,058 | 17,646 | 651.89 | 0.4433 |
| 2009 | 148,988,000 | 114,000,000 | 5.4 | 21,700 | 12,968 | 0.60 | 22,545 | 18,036 | 732.57 | 0.4874 |
| 2010 | 175,325,000 | 120,100,000 | 6.3 | 26,400 | 14,086 | 0.53 | 23,064 | 18,451 | 710.52 | 0.4621 |
| 2011 | 232,773,000 | 168,700,000 | 7.9 | 34,000 | 16,110 | 0.47 | 23,796 | 19,037 | 872.65 | 0.5501 |
| 2012 | 259,226,000 | 203,200,000 | 11.9 | 51,500 | 19,493 | 0.38 | 23,865 | 19,092 | 868.69 | 0.5460 |
| 2013 | 346,809,153 | 271,853,981 | 15.9 | 68,900 | 26,079 | 0.38 | 23,055 | 18,444 | 868.69 | 0.5652 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

TABLE 4.8 Unemployment Insurance Benefits in Cyprus (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 343,721,056 | 317,000 | 5,728,684,273 | 0.0600 | 253,140,168 | 253,140,168 | 0.0158 |
| 2004 | 357,696,261 | 327,000 | 5,961,604,353 | 0.0600 | 260,048,779 | 513,188,947 | 0.0164 |
| 2005 | 385,729,690 | 338,000 | 6,428,828,166 | 0.0600 | 260,458,249 | 773,647,196 | 0.0195 |
| 2006 | 417,386,528 | 348,300 | 6,956,442,133 | 0.0600 | 308,175,528 | 1,081,822,724 | 0.0157 |
| 2007 | 457,765,968 | 367,900 | 7,629,432,801 | 0.0600 | 363,737,968 | 1,445,560,692 | 0.0123 |
| 2008 | 491,140,310 | 371,100 | 8,185,671,831 | 0.0600 | 395,706,310 | 1,841,267,002 | 0.0117 |
| 2009 | 501,852,483 | 371,000 | 8,364,208,050 | 0.0600 | 352,864,483 | 2,194,131,485 | 0.0178 |
| 2010 | 101,400,424 | 382,300 | 8,817,428,159 | 0.0115 | −73,924,576 | 2,120,206,908 | 0.0199 |
| 2011 | 105,712,765 | 386,300 | 9,192,414,306 | 0.0115 | −127,060,235 | 1,993,146,673 | 0.0253 |
| 2012 | 102,917,653 | 375,000 | 8,949,361,120 | 0.0115 | −156,308,347 | 1,836,838,326 | 0.0290 |
| 2013 | 94,574,540 | 356,700 | 8,223,873,032 | 0.0115 | −252,234,614 | 1,584,603,712 | 0.0422 |

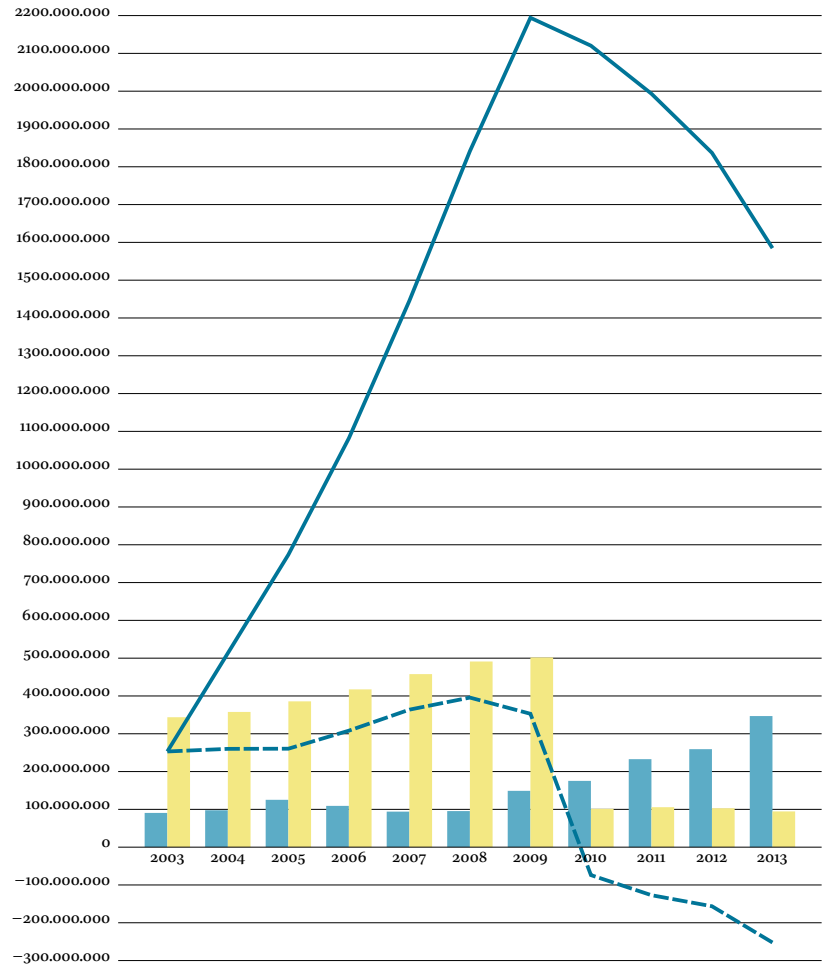
NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

The supplementary benefit amounts to 50 percent of the weekly value of the insurance point in the case of additional insurance in the relevant contribution year. The maximum weekly amount of the supplementary benefit may not exceed the basic insured income.

*Contribution rate:* Of the total amount of contributions, 1.15 percent of the insured income of employed persons is allocated to the account for unemployment benefits.

*State aid:* No participation from the state.

The unemployment rate ranged from 3.7 to 15.9 percent in the period 2003–2013 (Table 4.7). The share of coverage in the boom period is 60 percent, and in the recession period only 38 percent of the registered




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.4 Unemployment Insurance Balance in Cyprus (2003–2013)

unemployed receive benefits. In the period under review, the average annual salary increased and increased from EUR 18,072 to EUR 23,865 (in 2013 alone it fell to EUR 23,055). Accordingly, the average monthly allowances also increased (from EUR 792 to EUR 868). The average replacement rate was 55 percent of the average salary before unemployment. In the period 2003–2013, the number of employees increased until 2011, and the total wage bill and unemployment insurance benefits also increased/decreased accordingly (Table 4.8). During the period

under review, the statutory contribution rate varied from six percent between 2003 and 2009 to 1.15 percent between 2010 and 2013. Such a sharply reduced contribution rate in 2010 was no longer sufficient to cover all unemployment insurance expenditure. The hypothetically calculated equilibrium contribution rate, at which the balance was zero, did reach 1.15% in the period 2003–2010, but the equilibrium contribution rate increased to 3.5% due to a sharp increase in the unemployed in 2012 and 2013.

In the period 2003–2009, until the reduction of the statutory contribution rate, benefits were higher than unemployment insurance expenditure. On average, the annual balance was EUR 313 million in 2003–2009 and EUR 152 million in 2010–2013, which means that the cumulative balance at the end of the period under review was almost EUR 1.5 billion (Figure 4.4).

### *Czech Republic*

*Eligibility for compensation:* A person with no work activity does not study, is registered as a jobseeker at the regional branch of the Employment Service, does not receive an old-age pension, the payment of unemployment benefits is postponed for the period for which there is a legal basis for severance pay. If the employer has not paid the severance pay, the Czech Labor Office provides financial compensation for the unpaid severance pay, which is then recovered from the employer. The jobseeker is not entitled to unemployment benefit if, as a jobseeker, is entitled to assistance in accordance with special legal regulations and the assistance would be higher than the unemployment benefit. The person is also not entitled to unemployment benefits if employment has been terminated by employer due to a gross breach of obligations under the law. The same applies to other employment relationships terminated for similar reasons.

*Required minimum period of employment:* 12 months of basic pension insurance in the last two years at the expense of employment or other work activity. The 12-month condition can also be met with an alternative period of employment ( for example, personal care of a child).

*Method of calculating the benefit:* Average net monthly earnings in the last quarter. In certain cases (where it is not possible to estimate the average net monthly salary), the average national salary in the period from the first to the third quarter of the calendar year preceding the calendar year in which the benefit is paid is taken into account.

TABLE 4.9 Unemployment Insurance Expenditure in the Czech Republic (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 404,627,000 | 222,390,000 | 7.6 | 383,800 | 182,705 | 0.48 | 7,856 | 6,284 | 101.43 | 0.1937 |
| 2004 | 444,252,000 | 221,551,000 | 8.2 | 418,800 | 169,109 | 0.40 | 8,497 | 6,798 | 109.18 | 0.1927 |
| 2005 | 492,899,000 | 241,567,000 | 7.9 | 410,200 | 138,714 | 0.34 | 8,847 | 7,078 | 145.12 | 0.2460 |
| 2006 | 559,576,000 | 264,311,000 | 7.2 | 371,700 | 133,491 | 0.36 | 9,365 | 7,492 | 165.00 | 0.2643 |
| 2007 | 588,916,000 | 259,734,000 | 5.3 | 276,600 | 116,478 | 0.42 | 9,927 | 7,942 | 185.82 | 0.2808 |
| 2008 | 645,496,000 | 291,238,000 | 4.4 | 229,800 | 109,376 | 0.48 | 10,402 | 8,322 | 221.89 | 0.3200 |
| 2009 | 1,007,662,000 | 602,298,000 | 6.7 | 352,200 | 188,069 | 0.53 | 10,469 | 8,375 | 266.88 | 0.3824 |
| 2010 | 1,045,022,000 | 547,798,000 | 7.3 | 383,500 | 163,481 | 0.43 | 10,767 | 8,614 | 279.24 | 0.3890 |
| 2011 | 863,874,000 | 436,693,000 | 6.7 | 350,500 | 132,421 | 0.38 | 11,043 | 8,834 | 274.81 | 0.3733 |
| 2012 | 764,602,000 | 366,279,000 | 7.0 | 366,800 | 104,472 | 0.28 | 11,222 | 8,978 | 292.17 | 0.3905 |
| 2013 | 851,785,000 | 385,218,000 | 7.0 | 368,900 | 117,946 | 0.32 | 11,139 | 8,911 | 272.17 | 0.3665 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

TABLE 4.10 Unemployment Insurance Benefits in the Czech Republic (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 584,365,139 | 4,649,300 | 36,522,821,190 | 0.0160 | 179,738,139 | 179,738,139 | 0.0111 |
| 2004 | 629,408,006 | 4,629,400 | 39,338,000,387 | 0.0160 | 185,156,006 | 364,894,145 | 0.0113 |
| 2005 | 666,744,339 | 4,710,000 | 41,671,521,187 | 0.0160 | 173,845,339 | 538,739,484 | 0.0118 |
| 2006 | 714,620,314 | 4,769,400 | 44,663,769,652 | 0.0160 | 155,044,314 | 693,783,799 | 0.0125 |
| 2007 | 771,274,957 | 4,855,900 | 48,204,684,798 | 0.0160 | 182,358,957 | 876,142,755 | 0.0122 |
| 2008 | 615,817,145 | 4,933,500 | 51,318,095,405 | 0.0120 | −29,678,855 | 846,463,900 | 0.0126 |
| 2009 | 610,197,451 | 4,857,200 | 50,849,787,595 | 0.0120 | −397,464,549 | 448,999,351 | 0.0198 |
| 2010 | 621,422,726 | 4,809,600 | 51,785,227,165 | 0.0120 | −423,599,274 | 25,400,077 | 0.0202 |
| 2011 | 635,592,827 | 4,796,400 | 52,966,068,897 | 0.0120 | −228,281,173 | −202,881,096 | 0.0163 |
| 2012 | 647,778,592 | 4,810,300 | 53,981,549,307 | 0.0120 | −116,823,408 | −319,704,504 | 0.0142 |
| 2013 | 647,739,094 | 4,845,900 | 53,978,257,801 | 0.0120 | −204,045,906 | −523,750,411 | 0.0158 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

*Duration of the period of receipt of compensation (coverage):* Until the age of 50, the period of receiving the benefit lasts five months, for unemployed persons aged 50 to 55 the period of receiving the benefit is eight months and for those over the age of 55 it is eleven months. In the case of retraining, the period of receiving compensation lasts for the entire period of retraining.

*Amount of compensation:* The first two months the benefit is 65 percent of the income, the next two months 50 percent of the income and 45 percent of the income for the remainder of the benefit. During retraining, the compensation is 60 percent of income. The upper limit of benefit is 58 percent, during retraining 65 percent of the state average


NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.5 Unemployment Insurance Balance in the Czech Republic (2003–2013)

salary in the period from the first to the third quarter of the calendar year before the calendar year in which the benefit is paid. If the employee terminates the last employment relationship voluntarily with a notice of termination, without a valid reason, the percentage of unemployment benefit is set at 45 percent of income for the entire duration of the benefit.

*Contribution rate:* The self-employed pay 1.2 percent of the reported profit. For employees, the employer pays 1.2 percent of their gross salary.

*State aid:* No participation from the state.

The unemployment rate in the period 2003–2013 ranged from 4.4 to 8.2 percent (Table 4.9). The share of coverage in the boom period is 45 percent, and in the recession period only 30 percent of the registered unemployed receive benefits. In the period under review, the average annual salary increased from EUR 7,856 to EUR 11,139, and the average monthly benefits increased accordingly ( from EUR 101 to EUR 272). The

average replacement rate was 31 percent of the average salary before unemployment. In the period 2003–2013, the number of employees increased until 2008, in the period 2009–2011 it decreased and by the end of 2013 it returned to the situation from 2008 (Table 4.10). Despite the fluctuations in the number of employees, the total wage bill increased, and this increase can be attributed to the increase in the average wage. Unemployment insurance benefits decreased after 2007 due to a reduction in the statutory contribution rate ( from 1.6 percent between 2003 and 2007 to 1.2 percent between 2008 and 2013). After the reduction of the contribution rate in 2008, the benefits of unemployment insurance were no longer sufficient to cover all expenses of unemployment insurance. The hypothetically calculated equilibrium contribution rate at which the balance was zero was approximately 1.1 percent in the boom period and up to 1.7 percent in the recession period in 2003–2013.

In the period 2003–2007, until the reduction of the statutory contribution rate, benefits were higher than unemployment insurance expenditure. On average, the annual balance was EUR 175 million in the period 2003–2007 and EUR −233 million in the period 2007–2013, which means that the cumulative balance at the end of the period under review was almost EUR −525 million (Figure 4.5).

### *Denmark*

*Eligibility for compensation:* A person with no work activity, without formal education activity, registered as a jobseeker and available to the employment service, able to work, available on the labor market, aged 18 to 65, actively seeking employment and cooperating with the employment service to prepare an individual action plan, resides in Denmark.

*Required minimum period of employment:* Basic benefit: a minimum period of 1924 hours is required (equivalent to full-time employment over a period of one year) over the past three years. Only employment during the insurance period is taken into account. Income-related fund: the employee is insured for at least one year.

*Method of calculating the benefit:* The calculation for employees is usually based on the average salary of the last 12 weeks or three months. There is no upper limit for the reference income.

The calculation for the self-employed is based on daily income (1/260 of the annual income) if the self-employed person has been engaged in the activity of a self-employed person for at least one year in a three-

TABLE 4.11 Unemployment Insurance Expenditure in Denmark (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 8,231,348,000 | 3,568,587,000 | 5.4 | 154,300 | 195,860 | 1.27 | 40.467 | 32.374 | 1,518.34 | 0.5628 |
| 2004 | 8,507,426,000 | 3,823,479,000 | 5.2 | 150,500 | 201,210 | 1.34 | 41.886 | 33.509 | 1,583.54 | 0.5671 |
| 2005 | 7,779,892,000 | 3,469,511,000 | 4.8 | 139,700 | 170,287 | 1.22 | 43.336 | 34.669 | 1,697.87 | 0.5877 |
| 2006 | 7,038,637,000 | 2,833,371,000 | 3.9 | 113,800 | 136,983 | 1.20 | 45.072 | 36.057 | 1,723.68 | 0.5736 |
| 2007 | 6,029,447,000 | 2,220,090,000 | 3.8 | 110,800 | 104,018 | 0.94 | 46.400 | 37.120 | 1,778.61 | 0.5750 |
| 2008 | 5,644,568,000 | 1,704,560,000 | 3.4 | 101,400 | 72,634 | 0.72 | 48.405 | 38.724 | 1,955.65 | 0.6060 |
| 2009 | 7,134,471,000 | 2,865,435,000 | 6.0 | 177,100 | 126,157 | 0.71 | 50.204 | 40.163 | 1,892.77 | 0.5655 |
| 2010 | 8,612,569,000 | 3,336,202,000 | 7.5 | 218,300 | 150,765 | 0.69 | 51.995 | 41.596 | 1,844.04 | 0.5320 |
| 2011 | 8,402,552,000 | 3,199,944,000 | 7.6 | 221,400 | 144,469 | 0.65 | 52.961 | 42.369 | 1,845.81 | 0.5228 |
| 2012 | 8,505,743,000 | 3,502,774,000 | 7.5 | 218,800 | 152,852 | 0.70 | 53.993 | 43.195 | 1,909.68 | 0.5305 |
| 2013 | 8,510,123,000 | 3,575,940,000 | 7.0 | 202,200 | 150,273 | 0.74 | 54.412 | 43.530 | 1,983.02 | 0.5467 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

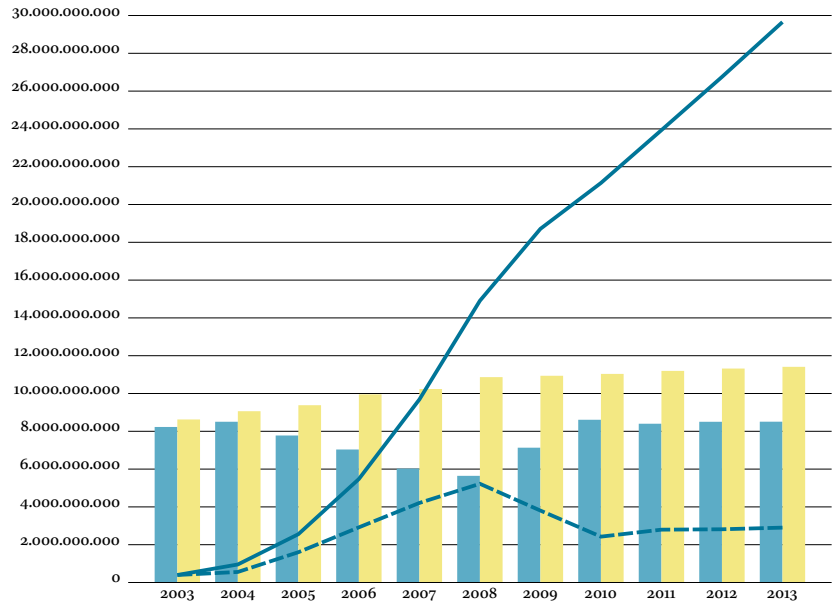
TABLE 4.12 Unemployment Insurance Benefits in Denmark (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 8,628,230,815 | 2,665,200 | 107,852,885,190 | 0.0800 | 396,882,815 | 396,882,815 | 0.0763 |
| 2004 | 9,065,105,481 | 2,705,300 | 113,313,818,516 | 0.0800 | 557,679,481 | 954,562,296 | 0.0751 |
| 2005 | 9,382,502,382 | 2,706,300 | 117,281,279,775 | 0.0800 | 1,602,610,382 | 2,557,172,678 | 0.0663 |
| 2006 | 9,957,990,241 | 2,761,700 | 124,474,878,014 | 0.0800 | 2,919,353,241 | 5,476,525,920 | 0.0565 |
| 2007 | 10,240,326,686 | 2,758,700 | 128,004,083,578 | 0.0800 | 4,210,879,686 | 9,687,405,606 | 0.0471 |
| 2008 | 10,868,743,439 | 2,806,700 | 135,859,292,984 | 0.0800 | 5,224,175,439 | 14,911,581,045 | 0.0415 |
| 2009 | 10,940,778,659 | 2,724,100 | 136,759,733,237 | 0.0800 | 3,806,307,659 | 18,717,888,703 | 0.0522 |
| 2010 | 11,039,598,494 | 2,654,000 | 137,994,981,191 | 0.0800 | 2,427,029,494 | 21,144,918,198 | 0.0624 |
| 2011 | 11,198,563,514 | 2,643,100 | 139,982,043,944 | 0.0800 | 2,796,011,514 | 23,940,929,712 | 0.0600 |
| 2012 | 11,322,645,119 | 2,621,300 | 141,533,064,001 | 0.0800 | 2,816,902,119 | 26,757,831,831 | 0.0601 |
| 2013 | 11,413,891,868 | 2,622,100 | 142,673,648,363 | 0.0800 | 2,903,768,868 | 29,661,600,699 | 0.0596 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

year period. It is a condition that the self-employed person has run the company for at least three years in a row. After this period, the annual income is calculated on the basis of the best two years in a five-year period.

*Duration of the period of receipt of benefit (coverage):* Unemployment benefit: two years over a period of three years. Labor market compensation: up to 15 months after the expiry of the right to unemployment benefit. Labor market cash benefits last from three to six months after the expiry of the right to unemployment benefits and labor market benefits, depending on the end of the two-year period of unemployment benefits, as labor market benefits will be waived.




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.6 Unemployment Insurance Balance in Denmark (2003–2013)

*Amount of compensation:* Unemployment benefit is 90 percent of previous income, but not more than DKK 836 (EUR 112 per day on 1 June 2017) per day. Unemployment benefit is paid monthly. The compensation ceiling shall be adjusted once a year according to the adjustment rate. The amount of compensation is determined individually, but cannot be higher than the upper limit of compensation. In some cases, the unemployed are granted 82 percent of the maximum benefit. Labor market benefit: It is paid when the right to unemployment benefit has expired. This benefit is 80 per cent or 60 per cent of the maximum unemployment benefit, depending on whether the beneficiary has dependent children. Labor market cash benefit: It is paid when the right to unemployment benefit and labor market benefit has expired and the person has been denied full cash benefit. The monthly amount is DKK 10,968 (EUR 1,475) for individuals over 30 years of age and DKK 14,575 (EUR 1,960) for parents over 30 years of age. The monthly amount for individuals under 30 years of age is calculated in accordance with the principles of social assistance.

*Contribution rate:* Compulsory contributions paid for unemploy-

ment insurance cover part of government spending on unemployment benefits. The amount paid by a person depends on the membership category (individuals under 25, voluntary early retirees, early retirees and full-time employees). All amounts are fixed at a flat rate (for example, a monthly amount of DKK 320 (EUR 43) for full-time work, unemployment insurance). Employers do not contribute.

*State aid:* The share of public funds depends on the total number of unemployed persons. In periods of high unemployment, the share of public funds increases, while in periods of economic recovery it decreases.

The unemployment rate ranged from 3.4 to 7.6 percent in the period 2003–2013 (Table 4.11). The coverage share is even above 1 during the boom period, on the basis of which we can conclude that the vast majority also receive compensation during the period of unemployment, while only 70 percent of the registered unemployed receive it during the recession. In the period under review, the average annual salary increased from EUR 40,467 to EUR 54,412, and the average monthly allowances increased accordingly (from EUR 1,518 to EUR 1,983). The average replacement rate was 56 percent of the average salary before unemployment. In the period 2003–2013, the number of employees increased until 2008, and has been declining slightly since then (Table 4.12). Despite the fluctuation in the number of employees, the total wage bill and unemployment insurance benefits increased, which can be attributed to the increase in the average wage. During the period under review, the statutory contribution rate did not change (8 percent); such a high contribution rate was more than enough to cover all unemployment insurance expenditure. The hypothetically calculated equilibrium contribution rate, at which the balance was zero, was approximately six percent in the period 2003–2013.

In the period 2003–2013, benefits were higher than unemployment insurance expenditure. On average, the annual balance was EUR 2.7 billion, which means that the cumulative balance at the end of the period under review was almost EUR 30 billion (Figure 4.6).

### *Estonia*

*Eligibility for compensation:* Unemployment benefit is received by individuals who are involuntarily unemployed, with no work or other similar activity, registered as unemployed with the Estonian Unemployment Insurance Fund, able to work and able to accept suitable

work, available for work, between 16 years of age and retirement age, with the exception of individuals with an early old-age pension, actively seeking employment, residing in Estonia; meet the conditions and activities set out in the individual job search plan. The same applies to the unemployment supplement and to the unemployment insurance, but unemployment can be either voluntary or involuntary.

*Required minimum period of employment:* Insurance period (entered in the employment register) 12 months in the last 36 months before the registration of a person as unemployed. Unemployment supplement: 180 calendar days of work or equivalent activity in the last 12 months before the person is registered as unemployed.

*Method of calculating the benefit:* Average daily income for which unemployment insurance contributions were paid in the first nine months of the 12 months prior to the registration of the person as unemployed. Maximum compensation limit: three times the national average daily income for the previous calendar year. Based on a reference nine months, the average daily income used to calculate the benefit is calculated. Unemployment supplement: The reference period does not apply and the benefit is not based on income.

*Duration of the period of receipt of compensation (coverage):* Unemployment benefit is received by an unemployed person for 180 calendar days, if the insured person's insurance period is shorter than five years, if the insured person's insurance period is five to ten years, 270 calendar days, and in the case of an insured person's insurance period over ten years, 360 calendar days.

*Unemployment benefit:* Generally, up to 270 calendar days, up to 210 calendar days for unemployed persons whose employment has been terminated due to breaches of employment obligations. An extension is possible for unemployed people who are close to retirement age.

*Amount of compensation:* Unemployment benefit is 50 percent of the reference income up to one hundred calendar days of unemployment, and 40 percent of the reference salary after the first hundred days of unemployment.

*Unemployment supplement:* The benefit is a lump sum of EUR 4.41 per day (at least 35 percent of the minimum wage last year).

*Contribution rate:* Unemployment insurance: 2.4 percent of the gross salary in total, of which 1.6 percent of the gross salary by the employee and 0.8 percent by the employer. There are no contributions to the unemployment supplement, as it is financed from the budget.

TABLE 4.13 Unemployment Insurance Expenditure in Estonia (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 22,993,000 | 16,436,000 | 11.3 | 75,900 | 23,010 | 0.30 | 5,655 | 4,524 | 59.52 | 0.1579 |
| 2004 | 22,626,000 | 16,555,000 | 10.2 | 69,000 | 19,773 | 0.29 | 6,315 | 5,052 | 69.77 | 0.1657 |
| 2005 | 20,951,000 | 13,263,000 | 8.0 | 53,800 | 17,568 | 0.33 | 7,015 | 5,612 | 62.91 | 0.1345 |
| 2006 | 20,331,000 | 10,699,000 | 5.9 | 41,000 | 9,197 | 0.22 | 7,989 | 6,391 | 96.94 | 0.1820 |
| 2007 | 23,945,000 | 15,708,000 | 4.6 | 31,600 | 8,645 | 0.27 | 9,958 | 7,966 | 151.42 | 0.2281 |
| 2008 | 45,400,000 | 34,486,000 | 5.5 | 37,800 | 11,858 | 0.31 | 10,840 | 8,672 | 242.35 | 0.3354 |
| 2009 | 223,904,000 | 191,118,000 | 13.5 | 93,100 | 39,583 | 0.43 | 10,478 | 8,382 | 402.36 | 0.5760 |
| 2010 | 157,621,000 | 124,510,000 | 16.7 | 113,900 | 31,165 | 0.27 | 10,743 | 8,594 | 332.93 | 0.4649 |
| 2011 | 116,711,000 | 79,785,000 | 12.3 | 84,800 | 18,049 | 0.21 | 10,826 | 8,661 | 368.37 | 0.5104 |
| 2012 | 126,721,000 | 76,516,000 | 10.0 | 68,500 | 16,248 | 0.24 | 11,477 | 9,182 | 392.44 | 0.5129 |
| 2013 | 126,513,000 | 82,681,000 | 8.6 | 58,700 | 16,711 | 0.28 | 12,199 | 9,759 | 412.31 | 0.5070 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

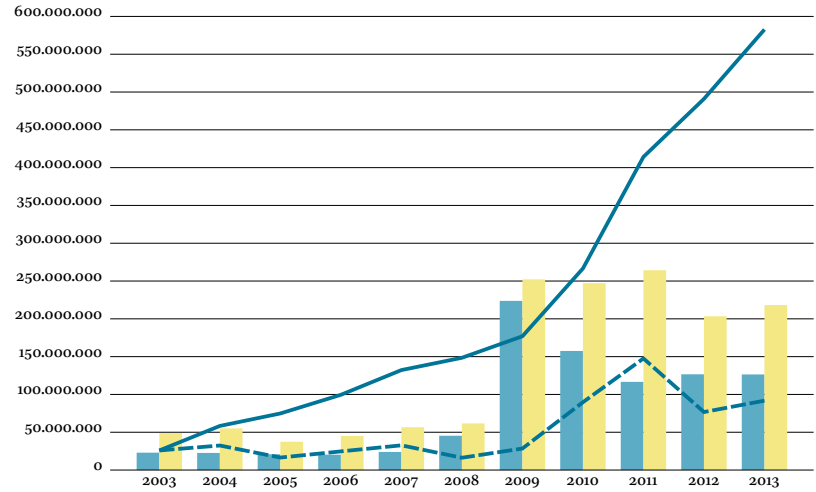
TABLE 4.14 Unemployment Insurance Benefits in Estonia (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 48,901,613 | 576,500 | 3,260,107,500 | 0.0150 | 25,908,613 | 25,908,613 | 0.0071 |
| 2004 | 55,082,588 | 581,500 | 3,672,172,500 | 0.0150 | 32,456,588 | 58,365,200 | 0.0062 |
| 2005 | 37,483,250 | 593,700 | 4,164,805,500 | 0.0090 | 16,532,250 | 74,897,450 | 0.0050 |
| 2006 | 45,017,216 | 626,100 | 5,001,912,900 | 0.0090 | 24,686,216 | 99,583,666 | 0.0041 |
| 2007 | 56,667,991 | 632,300 | 6,296,443,400 | 0.0090 | 32,722,991 | 132,306,656 | 0.0038 |
| 2008 | 61,677,432 | 632,200 | 6,853,048,000 | 0.0090 | 16,277,432 | 148,584,088 | 0.0066 |
| 2009 | 252,383,586 | 573,500 | 6,009,133,000 | 0.0420 | 28,479,586 | 177,063,674 | 0.0373 |
| 2010 | 247,351,129 | 548,200 | 5,889,312,600 | 0.0420 | 89,730,129 | 266,793,803 | 0.0268 |
| 2011 | 264,403,398 | 581,500 | 6,295,319,000 | 0.0420 | 147,692,398 | 414,486,201 | 0.0185 |
| 2012 | 203,487,210 | 591,000 | 6,782,907,000 | 0.0300 | 76,766,210 | 491,252,411 | 0.0187 |
| 2013 | 218,337,702 | 596,600 | 7,277,923,400 | 0.0300 | 91,824,702 | 583,077,113 | 0.0174 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

*State aid:* Unemployment benefit comes without the participation of the state. Unemployment supplement is financed by the state.

The unemployment rate ranged from 4.6 to 16.7 percent in the period 2003–2013 (Table 4.13). The share of coverage was 30 percent during the boom period, and only 20 percent of the registered unemployed received benefits during the recession. During the period under review, the average annual salary increased from EUR 5,655 to EUR 12,199, and the average monthly allowances increased accordingly ( from EUR 60 to EUR 412), especially after 2008. The average replacement rate until 2008 was 20 percent, and after 2008 the average replacement rate rose to 51 percent of the average salary before unemployment. In the period 2003–2013, the number of employees increased until 2008, from 2008




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.7 Unemployment Insurance Balance in Estonia (2003–2013)

to 2010 the number of employees decreased and returned to the situation from 2005 by the end of 2013, and the total wage bill increased or decreased accordingly (Table 4.14). Unemployment insurance benefits increased sharply after 2008 due to a change in the statutory contribution rate (1.5 percent in 2003 and 2004, 0.9 percent in 2005–2008, 4.2 percent in 2009–2011, 3 percent in 2012 and 2013). The hypothetically calculated equilibrium contribution rate, with zero balance, was approximately 0.5% in the boom period and up to 2.5% in the recession period in 2003–2013.

In the period 2003–2013, benefits were higher than unemployment insurance expenditure. On average, the annual balance was EUR 53 million, which means that the cumulative balance at the end of the period under review was almost EUR 585 million (Figure 4.7).

### *Finland*

*Eligibility for compensation:* Applies to unemployed persons who are involuntarily unemployed, do not work, are registered as jobseekers and available to the employment service, are able to work, available for full-time employment, aged 17 to 64, active jobseekers, reside in Finland. The same applies to the unemployment aid (labor market support) and to the unemployment benefit.

*Required minimum period of employment:* Basic unemployment benefit: employees of at least 26 weeks of employment in the last 28 months with working hours of at least 18 hours per week. Self-employed for at least 15 months of entrepreneurship in the last 48 months. Income-based unemployment benefit applies in the same way as basic unemployment benefit, provided that the insured person is employed and has been insured for unemployment. No minimum period of employment is required to receive unemployment benefits (labor market support).

*Method of calculating the benefit:* The basic unemployment benefit does not apply. Compensation is not based on income. In the case of income-based unemployment benefit, the calculation is usually based on the average earnings for a period of 26 weeks, without a ceiling. For self-employed persons, the income for which premiums have been paid for the last 15 months is taken into account. This is usually a net profit, with no ceiling. Unemployment benefits (labor market support) do not apply. Compensation is not based on income.

*Duration of the period of receipt of benefit (coverage):* An unemployed person receives a basic unemployment benefit for a maximum of 500 calendar days.

A jobseeker born between 1950 and 1954 may receive unemployment benefit until the end of the calendar month in which he reaches the age of 65, regardless of the longest period, provided he has reached the age of 59 before the expiry of the maximum period of benefit and has been employed for at least five years in the last 20 years. A jobseeker born between 1955 and 1956 may receive unemployment benefit until the end of the calendar month in which he reaches the age of 65, regardless of the longest period, provided he has reached the age of 60 before the expiry of the maximum period of benefit and has been employed for at least five years in the last 20 years. A jobseeker born in 1957 or later, may receive unemployment benefit until the end of the calendar month in which he reaches the age of 65, regardless of the longest period, provided he has reached the age of 61 before the expiry of the maximum period of benefit and has been employed for at least five years in the last 20 years.

*Unemployment benefit (labor market support):* No duration limit.

*Amount of compensation:* The basic unemployment benefit and the income-based unemployment benefit are paid for five days a week. The basic unemployment benefit is EUR 32.68 per day. The supplement to

the basic unemployment benefit amounts to EUR 37.46 per day and lasts for a maximum of 90 days if the person has been employed for at least 20 years and employment has been terminated.

*Income-based unemployment benefit:* The amount of the basic benefit is 45% of the difference between the daily income and the basic benefit. If the monthly income is more than 95 times the basic amount (EUR 3104.60), the amount is 20 percent of the surplus. The unemployment benefit supplement is based on income; the amount of the basic benefit is 58 percent of the difference between the daily income and the basic benefit. If the monthly income is more than 95 times the basic amount (EUR 3104.60), the amount is 35 percent of the surplus. The benefit lasts for a maximum of 90 days if the person has been employed for at least 20 years, employment was terminated and the person has been insured for unemployment for at least five years; 200 days during participation in employment promotion services.

*Unemployment aid (labor market support):* Full aid amounts at EUR 32.68 per day and is paid for five days per week. Full benefit is paid if the monthly income is below EUR 311 per month for one person and below EUR 1,044 for a family. The threshold is increased by EUR 130 for each child under the age of 18. Income above these limits reduces benefits by 75 percent for singles and by 50 percent for families. The amount of aid for young people living with their parents partly depends on their parents' income (the full amount of aid is paid during labor market measures.)

*Contribution rate:* State aid: The state is responsible for financing the basic benefit. Part of the contributions collected from employees who are not members of the Unemployment Fund is also used to finance basic insurance, which reduced the actual share of the state to 65 percent in 2015. The scheme for financing unemployment benefits is as follows: the state finances the first 300 days, for the next 700 days the financing is evenly distributed between the state and the person's home municipality, after 1000 days the financing is divided between the state (30 percent) and the person's home municipality (70 percent). With regard to income-based unemployment insurance, it is considered that the state pays basic benefits for the first 500 days, together with a subsidy for management costs.

The unemployment rate in the period 2003–2013 ranged from 6.4 to 10.5 percent (Table 4.15). The coverage ratio is high, even above 1, on the basis of which we can conclude that the vast majority receive unem-

TABLE 4.15 Unemployment Insurance Expenditure in Finland (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 4,268,331,000 | 2,265,814,000 | 10.5 | 280,700 | 292,448 | 1.04 | 28,925 | 23,140 | 645.65 | 0.3348 |
| 2004 | 4,513,857,000 | 2,372,583,000 | 10.4 | 275,500 | 296,784 | 1.08 | 29,977 | 23,982 | 666.19 | 0.3334 |
| 2005 | 4,357,186,000 | 2,303,976,000 | 8.4 | 219,700 | 254,463 | 1.16 | 30,994 | 24,795 | 754.52 | 0.3652 |
| 2006 | 4,256,698,000 | 2,148,036,000 | 7.7 | 204,400 | 230,224 | 1.13 | 32,131 | 25,705 | 777.52 | 0.3630 |
| 2007 | 4,055,521,000 | 1,884,158,000 | 6.9 | 183,300 | 194,117 | 1.06 | 33,241 | 26,593 | 808.86 | 0.3650 |
| 2008 | 3,946,929,000 | 1,771,651,000 | 6.4 | 172,100 | 179,305 | 1.04 | 34,689 | 27,751 | 823.39 | 0.3560 |
| 2009 | 4,744,241,000 | 2,545,684,000 | 8.2 | 220,900 | 234,752 | 1.06 | 35,610 | 28,488 | 903.68 | 0.3807 |
| 2010 | 4,989,712,000 | 2,652,798,000 | 8.4 | 224,300 | 230,006 | 1.03 | 36,693 | 29,354 | 961.13 | 0.3929 |
| 2011 | 4,634,519,000 | 2,471,909,000 | 7.8 | 208,700 | 209,353 | 1.00 | 38,005 | 30,404 | 983.95 | 0.3883 |
| 2012 | 4,697,483,000 | 2,663,561,000 | 7.7 | 206,800 | 221,031 | 1.07 | 39,100 | 31,280 | 1,004.22 | 0.3853 |
| 2013 | 5,237,944,000 | 3,252,008,000 | 8.2 | 219,300 | 260,974 | 1.19 | 39,877 | 31,902 | 1,038.42 | 0.3906 |

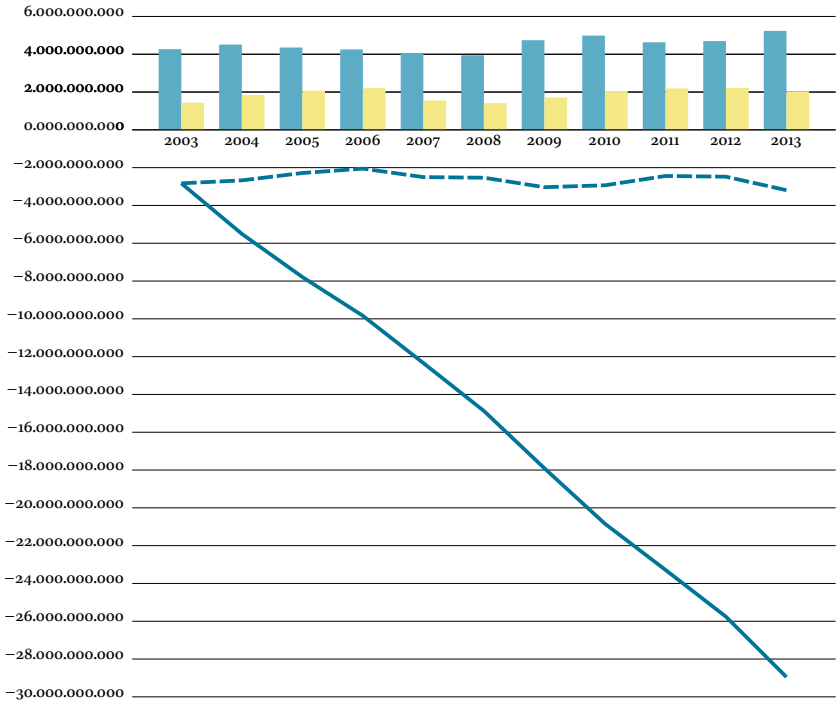
NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

TABLE 4.16 Unemployment Insurance Benefits in Finland (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 1,437,203,593 | 2,380,700 | 68,861,747,500 | 0.0209 | −2,831,127,407 | −2,831,127,407 | 0.0620 |
| 2004 | 1,840,123,596 | 2,367,300 | 70,964,552,100 | 0.0259 | −2,673,733,404 | −5,504,860,812 | 0.0636 |
| 2005 | 2,073,419,842 | 2,377,600 | 73,691,334,400 | 0.0281 | −2,283,766,158 | −7,788,626,970 | 0.0591 |
| 2006 | 2,203,967,145 | 2,416,100 | 77,631,709,100 | 0.0284 | −2,052,730,855 | −9,841,357,825 | 0.0548 |
| 2007 | 1,553,536,967 | 2,458,500 | 81,722,998,500 | 0.0190 | −2,501,984,033 | −12,343,341,858 | 0.0496 |
| 2008 | 1,413,747,328 | 2,497,200 | 86,625,370,800 | 0.0163 | −2,533,181,672 | −14,876,523,530 | 0.0456 |
| 2009 | 1,709,218,919 | 2,423,300 | 86,293,713,000 | 0.0198 | −3,035,022,081 | −17,911,545,611 | 0.0550 |
| 2010 | 2,055,559,829 | 2,410,100 | 88,433,799,300 | 0.0232 | −2,934,152,171 | −20,845,697,781 | 0.0564 |
| 2011 | 2,192,328,375 | 2,428,500 | 92,295,142,500 | 0.0238 | −2,442,190,625 | −23,287,888,406 | 0.0502 |
| 2012 | 2,218,024,952 | 2,431,000 | 95,052,100,000 | 0.0233 | −2,479,458,048 | −25,767,346,454 | 0.0494 |
| 2013 | 2,043,672,869 | 2,403,200 | 95,832,406,400 | 0.0213 | −3,194,271,131 | −28,961,617,586 | 0.0547 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

ployment benefits during the period of unemployment. In the period under review, the average annual salary increased from EUR 28,925 to EUR 39,877, and the average monthly allowances increased accordingly ( from EUR 646 to EUR 1,038). The average replacement rate was 37 percent of the average salary before unemployment. In the period 2003–2013, the number of employees remained almost unchanged, and the increase in the total wage bill and unemployment insurance benefits can be attributed to the increase in the average wage (Table 4.16). During the period under review, the statutory contribution rate changed slightly (2.3 percent); such a low contribution rate was not sufficient to cover all unemployment insurance expenditure. The hypothetically calculated equilibrium contribution rate, at which the balance is equal




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.8 Unemployment Insurance Balance in Finland (2003–2013)

to zero, was 5.5 percent in the period 2003–2013 (twice the statutory contribution rate).

In the period 2003–2013, benefits were lower than unemployment insurance expenditure. On average, the annual balance was EUR −2.6 billion, which means that the cumulative balance at the end of the period under review was almost EUR −29 billion (Figure 4.8).

### *France*

*Eligibility for compensation:* Unemployment benefit is received by individuals who have not lose their job voluntarily, without a good reason, seek employment effectively and permanently, are registered as jobseekers and are implementing their personal re-employment action plan, are physically fit for work and have not reached retirement age ( from 60 and 62 years). Unemployment benefit lasts (within its maximum duration) until the person reaches the age to be entitled to a full

TABLE 4.17 Unemployment Insurance Expenditure in France (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 44,272,759,000 | 26,027,172,000 | 8.3 | 2,229,600 | 2,602,161 | 1.17 | 27,828 | 22,262 | 833.51 | 0.4493 |
| 2004 | 44,289,803,000 | 27,019,586,000 | 8.9 | 2,404,700 | 2,676,919 | 1.11 | 28,891 | 23,113 | 841.13 | 0.4367 |
| 2005 | 42,802,855,000 | 26,364,158,000 | 8.5 | 2,319,000 | 2,574,452 | 1.11 | 29,770 | 23,816 | 853.39 | 0.4300 |
| 2006 | 41,715,686,000 | 24,167,798,000 | 8.5 | 2,320,700 | 2,479,263 | 1.07 | 30,754 | 24,603 | 812.33 | 0.3962 |
| 2007 | 41,248,604,000 | 22,665,719,000 | 7.7 | 2,121,500 | 2,199,603 | 1.04 | 31,537 | 25,230 | 858.70 | 0.4084 |
| 2008 | 39,216,456,000 | 22,338,127,000 | 7.1 | 1,970,500 | 2,242,001 | 1.14 | 32,325 | 25,860 | 830.29 | 0.3853 |
| 2009 | 45,740,430,000 | 26,746,507,000 | 8.7 | 2,457,700 | 2,494,065 | 1.01 | 32,848 | 26,278 | 893.67 | 0.4081 |
| 2010 | 50,129,702,000 | 27,941,953,000 | 8.9 | 2,504,900 | 2,647,476 | 1.06 | 33,877 | 27,102 | 879.52 | 0.3894 |
| 2011 | 46,629,370,000 | 27,924,263,000 | 8.8 | 2,489,000 | 2,637,486 | 1.06 | 34,431 | 27,545 | 882.29 | 0.3844 |
| 2012 | 47,911,534,000 | 29,433,143,000 | 9.4 | 2,674,000 | 2,748,716 | 1.03 | 35,151 | 28,121 | 892.33 | 0.3808 |
| 2013 | 50,382,145,000 | 30,922,424,000 | 9.9 | 2,826,600 | 2,873,118 | 1.02 | 35,630 | 28,504 | 896.89 | 0.3776 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

TABLE 4.18 Unemployment Insurance Benefits in France (2003–2013)

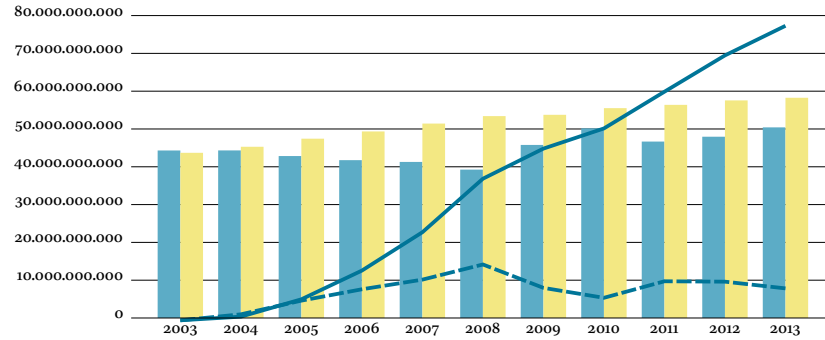
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 43,658,169,293 | 24,513,400 | 682,158,895,200 | 0.0640 | −614,589,707 | −614,589,707 | 0.0649 |
| 2004 | 45,255,786,912 | 24,475,500 | 707,121,670,500 | 0.0640 | 965,983,912 | 351,394,205 | 0.0626 |
| 2005 | 47,390,791,552 | 24,873,400 | 740,481,118,000 | 0.0640 | 4,587,936,552 | 4,939,330,757 | 0.0578 |
| 2006 | 49,304,419,149 | 25,049,800 | 770,381,549,200 | 0.0640 | 7,588,733,149 | 12,528,063,906 | 0.0541 |
| 2007 | 51,386,438,259 | 25,459,400 | 802,913,097,800 | 0.0640 | 10,137,834,259 | 22,665,898,165 | 0.0514 |
| 2008 | 53,359,524,000 | 25,792,500 | 833,742,562,500 | 0.0640 | 14,143,068,000 | 36,808,966,165 | 0.0470 |
| 2009 | 53,701,487,104 | 25,544,500 | 839,085,736,000 | 0.0640 | 7,961,057,104 | 44,770,023,269 | 0.0545 |
| 2010 | 55,462,231,930 | 25,580,700 | 866,597,373,900 | 0.0640 | 5,332,529,930 | 50,102,553,198 | 0.0578 |
| 2011 | 56,332,421,376 | 25,564,000 | 880,194,084,000 | 0.0640 | 9,703,051,376 | 59,805,604,574 | 0.0530 |
| 2012 | 57,509,735,597 | 25,563,700 | 898,589,618,700 | 0.0640 | 9,598,201,597 | 69,403,806,171 | 0.0533 |
| 2013 | 58,206,764,224 | 25,525,700 | 909,480,691,000 | 0.0640 | 7,824,619,224 | 77,228,425,395 | 0.0554 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

pension (65 to 67 years), regardless of the duration of the insurance; individuals should reside in France. Unemployment aid is intended for persons who have exhausted their right to unemployment benefit and who meet the conditions relating to previous activities.

*Required minimum period of employment:* Unemployment benefit: at least four months (122 days) of insurance in the last 28 months (36 months for people over 50) before unemployment. Unemployment aid: five years of activity as an employed person in the last ten years before the end of the employment relationship.

*Method of calculating the benefit:* Unemployment benefit: net income for the last 12 months with a ceiling of four times the social security




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.9 Unemployment Insurance Balance in France (2003–2013)

(EUR 12,872 per month). Unemployment aid does not apply. Compensation is not based on income.

*Duration of the period of receipt of compensation (coverage):* The duration of compensation payments is the same as the reference period taken into account for the acquisition of entitlement: four months to two years ( four months to three years if the beneficiary is over 50 years old). Unemployment benefit: the duration of payments is six months with the possibility of extension.

*Amount of compensation:* Unemployment benefit: 40.4 percent of the reference daily wage, increased by EUR 11.76 per day, or 57 percent of the reference daily wage, with a maximum of 75 percent of the reference daily wage. A better version is considered. Minimum EUR 28.67 per day. Solidarity allowance: maximum EUR 16.27 per day. Temporary waiting allowance: a maximum of EUR 11.46 per day.

*Contribution rate:* Employees 2.4 percent and employer 4 percent.

*State aid:* Unemployment aid: state participation.

The unemployment rate ranged from 7.1 to 9.9 percent in the period 2003–2013 (Table 4.17). The coverage ratio is high, even above 1, on the basis of which we can conclude that the vast majority of individuals receive unemployment benefits during the period of unemployment. In the period under review, the average annual salary increased from EUR 27,828 to EUR 35,630, and the average monthly allowance increased accordingly ( from EUR 834 to EUR 897). The average replacement rate was 40 percent of the average salary before unemployment. In the period 2003–2013, the number of employees increased until 2008, but has

not changed since then, and the total wage bill and unemployment insurance benefits have increased accordingly (Table 4.18). During the period under review, the statutory contribution rate did not change (6.4 percent). Such a low contribution rate was sufficient to cover all unemployment insurance expenditure. The hypothetically calculated equilibrium contribution rate, at which the balance was zero, was approximately 5.6 percent in the period 2003–2013.

In the period 2003–2013, benefits were higher than unemployment insurance expenditure. On average, the annual balance was EUR 7 billion, which means that the cumulative balance at the end of the period under review was almost EUR 78 billion (Figure 4.9).

### *Italy*

*Eligibility for compensation:* The person must be involuntarily unemployed, without a job for more than six months, able to work, available to the employment service, without any other pension, without income from work higher than the personal annual tax limit of EUR 8000 (in 2015). The request must be submitted within 68 days (98 days in the case of legal dismissal due to indiscipline).

*Required minimum period of employment:* At least 13 weeks of insurance in the last four years before unemployment and at least thirty days of insurance in the last 12 months before unemployment.

*Method of calculating the benefit:* The benefit is calculated as a percentage of the average monthly gross income earned by the worker in the last four years before unemployment, by limiting the maximum gross monthly amount to EUR 1,300 for 2015.

*Duration of the period of receipt of benefit (coverage):* The duration is equal to half the number of weekly contributions paid in the last four years before unemployment. Possibility of extension for up to 48 months for regions in southern Italy. This benefit will end by 2017.

*Amount of compensation:* It amounts to 75 percent of the monthly reference income with a monthly ceiling of EUR 1,195 plus 25 percent of the employee's actual monthly salary in excess of that ceiling. The maximum amount of compensation is EUR 1,300 (gross) per month. From the first day of the fourth month (day 91) of receipt of the benefit, the amount shall be reduced by three per cent in each subsequent month.

*Contribution rate:* 1.61 percent by employer. An additional contribution of 1.40 percent (i.e., a total contribution rate of 3.01 percent) in the case of a fixed-term contract.

TABLE 4.19 Unemployment Insurance Expenditure in Italy (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 18,125,915,000 | 7,222,418,000 | 8.9 | 2,145,800 | 575,813 | 0.27 | 23,069 | 18,455 | 1,045.25 | 0.6796 |
| 2004 | 17,965,802,000 | 8,475,445,000 | 7.9 | 1,913,300 | 602,314 | 0.31 | 24,097 | 19,278 | 1,172.62 | 0.7299 |
| 2005 | 18,497,544,000 | 9,744,213,000 | 7.7 | 1,877,300 | 668,540 | 0.36 | 24,898 | 19,918 | 1,214.61 | 0.7318 |
| 2006 | 18,111,984,000 | 9,780,749,000 | 6.8 | 1,654,300 | 646,655 | 0.39 | 25,727 | 20,582 | 1,260.43 | 0.7349 |
| 2007 | 17,116,771,000 | 9,362,187,000 | 6.1 | 1,480,900 | 639,924 | 0.43 | 26,276 | 21,021 | 1,219.18 | 0.6960 |
| 2008 | 19,348,260,000 | 11,259,454,000 | 6.7 | 1,664,300 | 742,798 | 0.45 | 27,125 | 21,700 | 1,263.18 | 0.6985 |
| 2009 | 27,065,642,000 | 19,441,120,000 | 7.8 | 1,906,600 | 1,192,144 | 0.63 | 27,153 | 21,722 | 1,358.97 | 0.7507 |
| 2010 | 28,103,877,000 | 20,956,696,000 | 8.4 | 2,055,700 | 1,181,226 | 0.57 | 27,800 | 22,240 | 1,478.46 | 0.7977 |
| 2011 | 26,995,630,000 | 20,177,333,000 | 8.4 | 2,061,300 | 1,177,577 | 0.57 | 28,170 | 22,536 | 1,427.88 | 0.7603 |
| 2012 | 31,172,422,000 | 24,018,733,000 | 10.7 | 2,691,000 | 1,344,647 | 0.50 | 28,064 | 22,451 | 1,488.54 | 0.7956 |
| 2013 | 31,025,670,000 | 24,294,884,000 | 12.2 | 3,068,700 | 1,476,199 | 0.48 | 28,393 | 22,714 | 1,371.48 | 0.7246 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

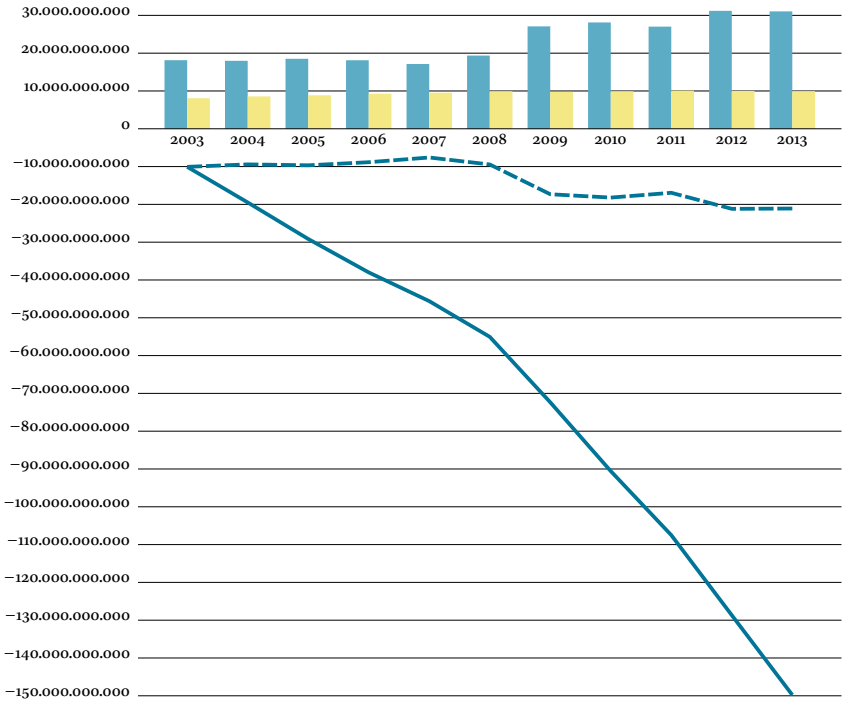
TABLE 4.20 Unemployment Insurance Benefits in Italy (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 8,065,670,528 | 21,716,300 | 500,973,324,700 | 0.0161 | −10,060,244,472 | −10,060,244,472 | 0.0362 |
| 2004 | 8,552,499,288 | 22,044,700 | 531,211,135,900 | 0.0161 | −9,413,302,712 | −19,473,547,184 | 0.0338 |
| 2005 | 8,843,083,411 | 22,060,400 | 549,259,839,200 | 0.0161 | −9,654,460,589 | −29,128,007,773 | 0.0337 |
| 2006 | 9,273,339,085 | 22,388,300 | 575,983,794,100 | 0.0161 | −8,838,644,915 | −37,966,652,688 | 0.0314 |
| 2007 | 9,525,841,959 | 22,517,400 | 591,667,202,400 | 0.0161 | −7,590,929,041 | −45,557,581,730 | 0.0289 |
| 2008 | 9,912,762,353 | 22,698,600 | 615,699,525,000 | 0.0161 | −9,435,497,648 | −54,993,079,377 | 0.0314 |
| 2009 | 9,759,320,942 | 22,324,200 | 606,169,002,600 | 0.0161 | −17,306,321,058 | −72,299,400,435 | 0.0447 |
| 2010 | 9,914,613,128 | 22,151,600 | 615,814,480,000 | 0.0161 | −18,189,263,872 | −90,488,664,307 | 0.0456 |
| 2011 | 10,075,279,101 | 22,214,900 | 625,793,733,000 | 0.0161 | −16,920,350,899 | −107,409,015,206 | 0.0431 |
| 2012 | 10,007,681,896 | 22,149,200 | 621,595,148,800 | 0.0161 | −21,164,740,104 | −128,573,755,310 | 0.0501 |
| 2013 | 9,944,941,550 | 21,755,300 | 617,698,232,900 | 0.0161 | −21,080,728,450 | −149,654,483,761 | 0.0502 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

*State aid:* annual state subsidies.

The unemployment rate in the period 2003–2013 ranged from 6.1 to 12.2 percent (Table 4.19). The share of coverage is 37 percent during the boom period, and 55 percent of the unemployed receive unemployment benefits during the recession. In the period under review, the average annual salary increased from EUR 23,069 to EUR 28,393, and the average monthly allowance increased accordingly ( from EUR 1,045 to EUR 1,488 in 2012; in 2013 the average monthly allowance amounted to EUR 1,371). The average replacement rate was 74 percent of the average salary before unemployment. In the period 2003–2013, the number of employees was constant (22 million). The increase in the total mass of wages and unemployment benefits can be attributed to the increase in




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.10 Unemployment Insurance Balance in Italy (2003–2013)

wages (Table 4.20). During the period under review, the statutory contribution rate did not change (1.6 percent); such a low contribution rate was not sufficient to cover all unemployment insurance expenditure. The hypothetically calculated equilibrium contribution rate, with zero balance, was approximately 3.2% in the boom period and up to 4.7% in the recession period in 2003–2013.

In the period 2003–2013, benefits were lower than unemployment insurance expenditure. On average, the annual balance was EUR –13.5 billion, which means that the cumulative balance at the end of the period under review was almost EUR –150 billion (Figure 4.10).

### *Latvia*

*Eligibility for compensation:* The person must be voluntary or involuntary unemployed, out of work, job-seeker, able to work and ready to enter employment without delay, over 15 years of age, has also not

TABLE 4.21 Unemployment Insurance Expenditure in Latvia (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 48,996,000 | 36,843,000 | 12.1 | 130,800 | 37,889 | 0.29 | 3,288 | 2,630 | 81.03 | 0.3697 |
| 2004 | 56,581,000 | 42,123,000 | 11.7 | 127,400 | 37,987 | 0.30 | 3,600 | 2,880 | 92.41 | 0.3850 |
| 2005 | 69,673,000 | 40,642,000 | 10.0 | 108,400 | 30,093 | 0.28 | 4,200 | 3,360 | 112.55 | 0.4019 |
| 2006 | 87,528,000 | 46,521,000 | 7.0 | 78,000 | 32,890 | 0.42 | 5,160 | 4,128 | 117.87 | 0.3426 |
| 2007 | 96,864,000 | 60,522,000 | 6.1 | 68,100 | 31,659 | 0.46 | 6,792 | 5,434 | 159.31 | 0.3518 |
| 2008 | 110,362,000 | 79,931,000 | 7.7 | 88,500 | 30,779 | 0.35 | 8,184 | 6,547 | 216.41 | 0.3966 |
| 2009 | 248,930,000 | 190,307,000 | 17.5 | 192,900 | 62,880 | 0.33 | 7,860 | 6,288 | 252.21 | 0.4813 |
| 2010 | 223,928,000 | 124,494,000 | 19.5 | 205,800 | 59,654 | 0.29 | 7,596 | 6,077 | 173.91 | 0.3434 |
| 2011 | 137,686,000 | 64,358,000 | 16.2 | 166,600 | 33,745 | 0.20 | 7,920 | 6,336 | 158.93 | 0.3010 |
| 2012 | 106,845,000 | 58,466,000 | 15.0 | 155,100 | 29,697 | 0.19 | 8,220 | 6,576 | 164.06 | 0.2994 |
| 2013 | 122,919,000 | 71,535,000 | 11.9 | 120,400 | 30,416 | 0.25 | 8,592 | 6,874 | 195.99 | 0.3422 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

TABLE 4.22 Unemployment Insurance Benefits in Latvia (2003–2013)

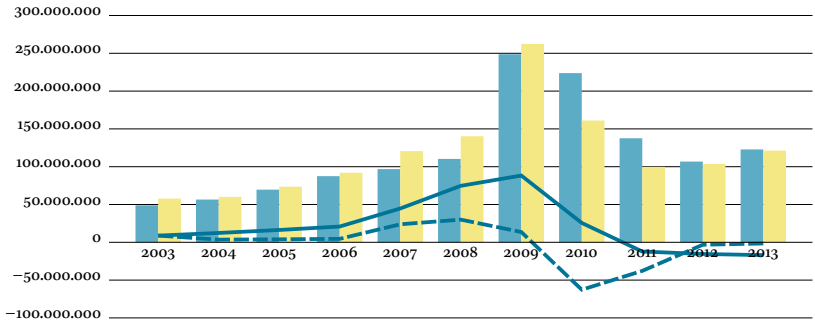
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 57,849,105 | 930,900 | 3,060,799,200 | 0.0189 | 8,853,105 | 8,853,105 | 0.0160 |
| 2004 | 60,102,000 | 927,500 | 3,339,000,000 | 0.0180 | 3,521,000 | 12,374,105 | 0.0169 |
| 2005 | 73,620,288 | 942,400 | 3,958,080,000 | 0.0186 | 3,947,288 | 16,321,393 | 0.0176 |
| 2006 | 92,099,808 | 991,600 | 5,116,656,000 | 0.0180 | 4,571,808 | 20,893,201 | 0.0171 |
| 2007 | 120,714,216 | 1,015,600 | 6,897,955,200 | 0.0175 | 23,850,216 | 44,743,417 | 0.0140 |
| 2008 | 140,352,326 | 1,008,800 | 8,256,019,200 | 0.0170 | 29,990,326 | 74,733,743 | 0.0134 |
| 2009 | 262,571,789 | 876,800 | 6,891,648,000 | 0.0381 | 13,641,789 | 88,375,532 | 0.0361 |
| 2010 | 161,166,459 | 828,800 | 6,295,564,800 | 0.0256 | −62,761,541 | 25,613,991 | 0.0356 |
| 2011 | 99,863,280 | 840,600 | 6,657,552,000 | 0.0150 | −37,822,720 | −12,208,729 | 0.0207 |
| 2012 | 103,626,581 | 851,800 | 7,001,796,000 | 0.0148 | −3,218,419 | −15,427,148 | 0.0153 |
| 2013 | 121,352,978 | 866,500 | 7,444,968,000 | 0.0163 | −1,566,022 | −16,993,170 | 0.0165 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

reached the age required for the award of a state old-age pension or has not been granted a state old-age pension (including early retirement). Should not be enrolled in a full-time primary or secondary school program, engage in commercial activities, or commercial activities should be discontinued in accordance with regulations, and it should not be fully supported by the state.

*Required minimum period of employment:* The person has been socially insured for at least one year, at least nine months of contributions have been paid in the last 12 months before unemployment.

*Method of calculating the compensation:* The average benefit is calculated on the basis of a person's contributions for a 12-month period




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.11 Unemployment Insurance Balance in Latvia (2003–2013)

ending two calendar months before the month in which the person acquired the status of unemployed person. If a person's contributions change during the said 12-month period, the two months in which the person received the minimum and maximum wages are disregarded.

*Duration of the period of receipt of benefit (coverage):* nine months.

*Amount of compensation:* Unemployment benefit is determined in proportion to the duration of the insurance and to the income for which the unemployment contributions are paid. In the case of the duration of insurance from one to nine years, the unemployment benefit is 50 percent of the average reference salary. In the case of the insurance period of 10 to 19 years, the unemployment benefit is 55% of the average reference salary. In the case of the insurance period from 20 to 29 years, the unemployment benefit is 60 percent of the average reference salary. In the case of insurance duration over 30 years, the unemployment benefit is 65% of the average reference salary. The amount of unemployment benefit decreases over time, with the unemployed person receiving one hundred percent of the benefit for the first three months of unemployment, 75 percent for the next three months and 50 percent for the last three months.

*Contribution rate:* Included in total contributions: 2.08 percent of gross salary.

*State aid:* The state budget pays mandatory contributions in the amount of EUR 71.14 per month on behalf of individuals in the period of childcare, persons receiving childcare allowance for an adopted child, spouses of persons in military service residing in a foreign country. The state budget pays mandatory contributions in the amount of EUR

142.29 per month on behalf of individuals caring for a child under 1.5 years of age and receiving child allowance. The special state budget for social insurance pays a mandatory contribution on behalf of recipients of sick leave, paternity or maternity benefits and on behalf of recipients of parental benefits in the amount of EUR 142.29.

The unemployment rate in the period 2003–2013 ranged from 6.1 to 19.5 percent (Table 4.21). The share of coverage in the boom period is 42 percent, and in the recession period only 26 percent of the registered unemployed receive benefits. In the period under review, the average annual salary increased from EUR 3,288 to EUR 8,592, and the average monthly allowance increased accordingly ( from EUR 81 to EUR 196). The average replacement rate was 37 percent of the average salary before unemployment. In the period 2003–2013, the number of employees increased until 2008, after which it decreased by more than ten percent, and the total wage bill increased or decreased accordingly (Table 4.22). Unemployment insurance benefits changed during the period under review, which can be attributed to the change in the statutory contribution rate, which ranged from 1.4 to 3.8 percent. The hypothetically calculated equilibrium contribution rate, with zero balance, was approximately 1.5% in the boom period and up to 2.5% in the recession period in 2003–2013.

In the period 2003–2013, there was no significant discrepancy between unemployment insurance income and expenditure. On average, the annual balance was EUR –1.5 million, which means that the cumulative balance at the end of the period under review was almost EUR –17 million (Figure 4.11).

### *Hungary*

*Eligibility for compensation:* The person must be a jobseeker (voluntarily or involuntarily unemployed but not a full-time student), without the right to an old-age pension, rehabilitation annuity or benefits for individuals with changed working capacity, job seeker (available for work and registered as a jobseeker) and cooperate with district government offices.

*Required minimum period of employment:* At least 360 days of insurance in the previous three years.

*Method of calculating the benefit:* The basis is the contribution of the previous four calendar quarters.

*Duration of the period of receipt of benefit (coverage):* For every ten

TABLE 4.23 unemployment insurance expenditure in Hungary (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 391,372,000 | 259,974,000 | 5.8 | 241,200 | 114,083 | 0.47 | 5,949 | 4,760 | 189.90 | 0.4788 |
| 2004 | 569,342,000 | 301,334,000 | 5.8 | 241,200 | 123,925 | 0.51 | 6,606 | 5,285 | 202.63 | 0.4601 |
| 2005 | 639,221,000 | 339,686,000 | 7.2 | 302,200 | 129,583 | 0.43 | 7,053 | 5,642 | 218.45 | 0.4646 |
| 2006 | 629,259,000 | 314,505,000 | 7.5 | 318,200 | 142,173 | 0.45 | 7,452 | 5,962 | 184.34 | 0.3710 |
| 2007 | 709,043,000 | 359,390,000 | 7.4 | 312,100 | 138,537 | 0.44 | 7,904 | 6,323 | 216.18 | 0.4103 |
| 2008 | 761,395,000 | 389,934,000 | 7.8 | 326,300 | 133,779 | 0.41 | 8,468 | 6,774 | 242.90 | 0.4303 |
| 2009 | 1,069,139,000 | 630,181,000 | 10.0 | 417,800 | 314,487 | 0.75 | 8,490 | 6,792 | 166.99 | 0.2950 |
| 2010 | 1,319,342,000 | 697,843,000 | 11.2 | 469,400 | 353,623 | 0.75 | 8,844 | 7,075 | 164.45 | 0.2789 |
| 2011 | 1,089,616,000 | 661,198,000 | 11.0 | 466,000 | 340,706 | 0.73 | 9,182 | 7,345 | 161.72 | 0.2642 |
| 2012 | 1,068,827,000 | 407,894,000 | 11.0 | 473,200 | 271,365 | 0.57 | 9,410 | 7,528 | 125.26 | 0.1997 |
| 2013 | 1,129,950,000 | 342,176,000 | 10.2 | 441,000 | 245,545 | 0.56 | 9,565 | 7,652 | 116.13 | 0.1821 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

TABLE 4.24 Unemployment Insurance Benefits in Hungary (2003–2013)

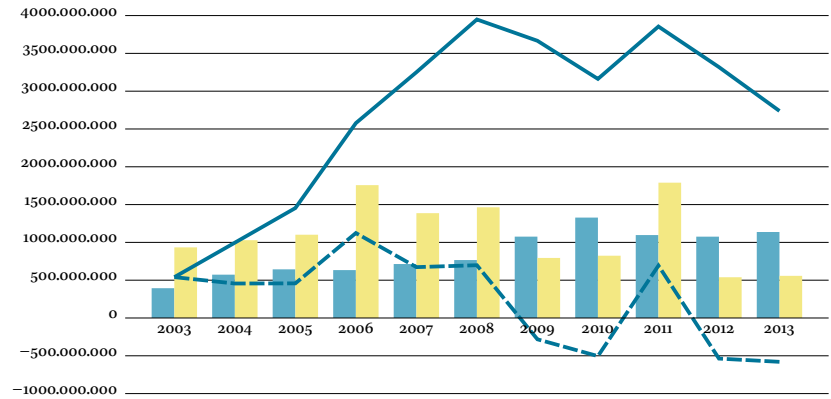
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 927,977,359 | 3,899,400 | 23,199,433,963 | 0.0400 | 536,605,359 | 536,605,359 | 0.0169 |
| 2004 | 1,022,402,880 | 3,869,100 | 25,560,071,997 | 0.0400 | 453,060,880 | 989,666,238 | 0.0223 |
| 2005 | 1,094,184,106 | 3,878,600 | 27,354,602,643 | 0.0400 | 454,963,106 | 1,444,629,344 | 0.0234 |
| 2006 | 1,745,646,006 | 3,904,000 | 29,094,100,094 | 0.0600 | 1,116,387,006 | 2,561,016,350 | 0.0216 |
| 2007 | 1,377,380,382 | 3,872,500 | 30,608,452,930 | 0.0450 | 668,337,382 | 3,229,353,732 | 0.0232 |
| 2008 | 1,454,886,912 | 3,818,000 | 32,330,820,263 | 0.0450 | 693,491,912 | 3,922,845,643 | 0.0236 |
| 2009 | 788,957,883 | 3,717,300 | 31,558,315,316 | 0.0250 | −280,181,117 | 3,642,664,526 | 0.0339 |
| 2010 | 818,389,199 | 3,701,300 | 32,735,567,959 | 0.0250 | −500,952,801 | 3,141,711,725 | 0.0403 |
| 2011 | 1,778,135,932 | 3,724,200 | 34,194,921,770 | 0.0520 | 688,519,932 | 3,830,231,657 | 0.0319 |
| 2012 | 535,368,869 | 3,792,800 | 35,691,257,911 | 0.0150 | −533,458,131 | 3,296,773,526 | 0.0299 |
| 2013 | 553,809,551 | 3,860,000 | 36,920,636,709 | 0.0150 | −576,140,449 | 2,720,633,077 | 0.0306 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

days of pre-insurance, the unemployed person receives one day of compensation for a maximum of 90 days.

*Amount of compensation:* Unemployment benefit: 60 percent of the beneficiary's average salary, up to the maximum possible amount of one hundred percent of the minimum wage of HUF 111,000 (EUR 350). If it is not possible to determine the average salary of the beneficiary, the amount of compensation is calculated on the basis of 130 percent of the state minimum wage. There are no special benefits for the self-employed.

*Contribution rate:* Employees 1.5 percent of gross salary, self-employed 1.5 percent of gross salary. The employer does not contribute.




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.12 Unemployment Insurance Balance in Hungary (2003–2013)

*State aid:* No participation from the state.

The unemployment rate ranged from 5.8 to 11.2 percent in the period 2003–2013 (Table 4.23). The coverage ratio averaged 55 percent. In the period under review, the average annual salary increased and increased from EUR 5,949 to EUR 7,652, while the average monthly benefits fluctuated due to changes in legislation (the highest was in 2008, namely EUR 243, and the lowest (EUR 116) in 2013). The average replacement rate fell in the period 2003–2013, from 47 percent to just 18 percent. In the period 2003–2013, the number of employees was constant. The increase in the total wage bill can be attributed to the increase in the average wage (Table 4.24). Unemployment insurance benefits fluctuated during the period under review, which can be attributed to the change in the statutory contribution rate (it was 4% in 2003 and only 1.5% in 2013; the exceptions are 2006 and 2011, when the statutory contribution rate was 6 and 5.2%, respectively). The hypothetically calculated equilibrium contribution rate, with zero balance, was approximately 2,2% in the boom period and up to 3.3% in the recession period in 2003–2013.

In the period 2003–2013, benefits were higher than unemployment insurance expenditures until 2008, and later they were lower, with the exception of 2011 (when the statutory contribution rate was 5.2 percent). On average, the annual balance was EUR 247 million, which means that the cumulative balance at the end of the period under review was EUR 2.7 billion (Figure 4.12).

### *Germany*

*Eligibility for compensation:* In the case of unemployment benefit, a person is considered to be unemployed when not being in an employment relationship (with no job), strives to change this situation (own efforts) and is available for the employment service's efforts (availability). Employment, self-employment or activities of a person, such as assistance to a family member, do not exclude the possibility that a person is out of work if these works or activities are performed for less than 15 hours per week. A person is considered to be available if he or she is able and fit to be employed for a suitable job for at least 15 hours a week, under conditions normal to the labor market, for an individual job. It can respond quickly to the offers of the employment service with a view to its integration into the labor market. Is ready to take on any reasonable job for at least 15 hours a week and participate in all career integration measures.

Employees who are entitled to a standard pension are no longer entitled to unemployment benefits from the month following their birthday. Unemployed people are required to register in person with the competent employment office. It is also allowed to register if unemployment has not yet occurred, but it can be expected in the next three months. An unemployed person is obliged to use all possibilities for vocational integration and is obliged to fulfil the obligations set out in the vocational integration agreement concluded between the unemployed person and the employment service. The efforts of the unemployed person include cooperation with third parties in vocational integration and consultation within the possibilities provided by the employment service. Only employees in Germany are insured. Under certain conditions and if there is a previous insurance period, it is possible for individuals employed abroad to remain insured on a voluntary basis.

In the case of basic assistance for jobseekers, employable beneficiaries receive unemployment benefit, regardless of whether they are unemployed within certain unemployment conditions. The following persons are entitled to unemployment benefits: they are between 15 years of age and the standard retirement age, are employable (i.e., they are not likely to be unable to work due to illness or disability, for at least three hours a day under normal labor market conditions in the near future), need help ( for example, cannot earn a living from income, property or other assistance), residing in Germany, are not excluded for hospital care for more than six months.

*Required minimum period of employment:* For unemployment benefit, an unemployed person must be insured for at least 12 months in the last two years. Basic compensation for jobseekers: no required period.

*Method of calculating the benefit:* In the case of unemployment benefits, the average daily wage in the last year up to the ceiling has compensated EUR 6,200 per month in the old federal states and EUR 5,400 per month in the new federal states. The basic compensation for jobseekers does not apply. Compensation is not based on income.

*Duration of the period of receipt of benefit (coverage):* In the case of unemployment insurance, the duration of the benefit (DB, months) depends on the duration of the compulsory insurance (DI, months) and the age of the beneficiary: 12–15: 6, 16–19: 8, 20–23: 10, 24–27: 12, 28–31: 14 (≥45), 32–35: 16 (≥45), 36–39: 18 (≥45), 40–43: 20 (≥47), 44–47: 22 (≥47), 48–53: 24 (≥52), 54–55: 26 (≥52), 56–59: 28 (≥57), 60–63: 30 (≥57), ≥64: 32 (≥57).

*Basic benefit for jobseekers:* Unemployment benefit and social assistance are in principle unlimited if the eligibility conditions are met. However, compensation is generally granted for a period of six months, after which eligibility must be proved again.

*Amount of compensation:* Unemployment benefits are received by beneficiaries with children, namely 67 percent of net salary. Beneficiaries without children receive 60 percent of the net salary. The basic allowance for jobseekers who are employable is the allowance in the form of per diems:

1. Common needs:
   - single person: EUR 404 per month;
   - partners over the age of 18: EUR 364;
   - EUR 237 for children under the age of 6;
   - EUR 270 for children between the ages of 7 and 14;
   - EUR 306 for children aged 15–18;
   - EUR 324 for children aged 18–25.
2. Reasonable accommodation and heating costs.
3. One-time assistance for home furnishings, including household appliances and clothing.
4. Educational benefits for school and kindergarten excursions lasting one or more days, for school supplies, school transport, lunches (at school, kindergarten or day care), as support for studies, as well as for social inclusion in social and cultural life in the community

TABLE 4.25 Unemployment Insurance Expenditure in Germany (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 74,908,433,000 | 47,159,957,000 | 9.8 | 3,894,000 | 4,256,252 | 1.09 | 29,775 | 23,820 | 923.35 | 0.4652 |
| 2004 | 75,194,298,000 | 48,677,076,000 | 10.7 | 4,261,100 | 4,180,109 | 0.98 | 30,062 | 24,050 | 970.41 | 0.4842 |
| 2005 | 69,751,249,000 | 43,057,027,000 | 11.2 | 4,570,800 | 4,390,688 | 0.96 | 30,470 | 24,376 | 817.20 | 0.4023 |
| 2006 | 61,344,296,000 | 37,646,994,000 | 10.3 | 4,245,400 | 3,976,512 | 0.94 | 30,820 | 24,656 | 788.95 | 0.3840 |
| 2007 | 51,126,379,000 | 28,413,212,000 | 8.7 | 3,601,000 | 3,264,695 | 0.91 | 31,269 | 25,015 | 725.26 | 0.3479 |
| 2008 | 48,281,680,000 | 24,488,256,000 | 7.5 | 3,136,000 | 2,921,874 | 0.93 | 31,997 | 25,598 | 698.42 | 0.3274 |
| 2009 | 60,257,900,000 | 34,431,401,000 | 7.8 | 3,228,200 | 4,201,176 | 1.30 | 31,992 | 25,594 | 682.97 | 0.3202 |
| 2010 | 56,131,394,000 | 31,698,114,000 | 7.1 | 2,945,500 | 3,440,613 | 1.17 | 32,740 | 26,192 | 767.74 | 0.3517 |
| 2011 | 47,532,417,000 | 25,370,387,000 | 5.8 | 2,398,800 | 2,859,932 | 1.19 | 33,980 | 27,184 | 739.25 | 0.3263 |
| 2012 | 44,582,713,000 | 24,687,019,000 | 5.4 | 2,224,400 | 2,756,652 | 1.24 | 34,879 | 27,903 | 746.29 | 0.3209 |
| 2013 | 46,336,558,000 | 26,826,010,000 | 5.2 | 2,181,800 | 2,816,101 | 1.29 | 35,671 | 28,537 | 793.83 | 0.3338 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

TABLE 4.26 Unemployment Insurance Benefits in Germany (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 68,750,326,125 | 35,523,000 | 1,057,697,325,000 | 0.0650 | −6,158,106,875 | −6,158,106,875 | 0.0708 |
| 2004 | 68,435,015,675 | 35,022,500 | 1,052,846,395,000 | 0.0650 | −6,759,282,325 | −12,917,389,200 | 0.0714 |
| 2005 | 70,992,220,585 | 35,844,700 | 1,092,188,009,000 | 0.0650 | 1,240,971,585 | −11,676,417,615 | 0.0639 |
| 2006 | 47,419,220,520 | 36,633,000 | 1,129,029,060,000 | 0.0420 | −13,925,075,480 | −25,601,493,095 | 0.0543 |
| 2007 | 38,589,310,544 | 37,397,200 | 1,169,373,046,800 | 0.0330 | −12,537,068,456 | −38,138,561,551 | 0.0437 |
| 2008 | 33,957,277,007 | 37,902,300 | 1,212,759,893,100 | 0.0280 | −14,324,402,993 | −52,462,964,544 | 0.0398 |
| 2009 | 33,867,319,853 | 37,807,800 | 1,209,547,137,600 | 0.0280 | −26,390,580,147 | −78,853,544,691 | 0.0498 |
| 2010 | 37,395,005,940 | 38,072,700 | 1,246,500,198,000 | 0.0300 | −18,736,388,060 | −97,589,932,751 | 0.0450 |
| 2011 | 38,783,480,760 | 38,045,400 | 1,292,782,692,000 | 0.0300 | −8,748,936,240 | −106,338,868,991 | 0.0368 |
| 2012 | 40,097,526,222 | 38,320,600 | 1,336,584,207,400 | 0.0300 | −4,485,186,778 | −110,824,055,769 | 0.0334 |
| 2013 | 41,349,823,200 | 38,640,000 | 1,378,327,440,000 | 0.0300 | −4,986,734,800 | −115,810,790,569 | 0.0336 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

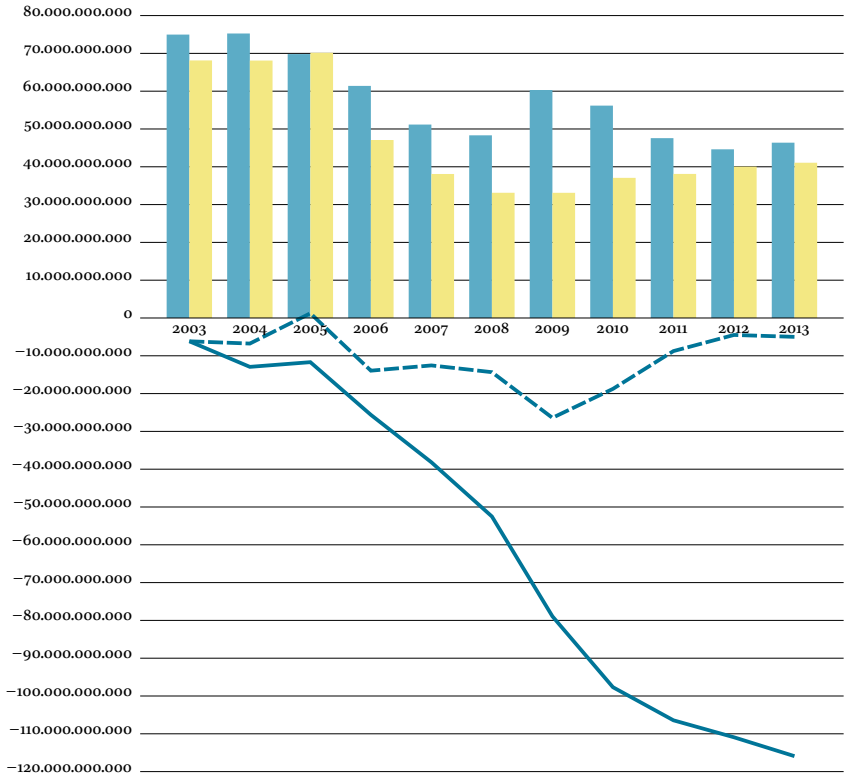
(sports and club activities) in the total amount of ten euros per month.

5. Loans for needs that cannot be covered by normal needs and cannot be refused.

The said financial assistance is reduced due to the potential income and assets of the beneficiary.

*Contribution rate:* The contribution rate for unemployment insurance is a total of three percent (1.5 percent employees, 1.5 percent employer). There are no contributions to the basic allowance for jobseekers, as it is financed from the budget.

*State aid:* Unemployment insurance: The state uses a loan to cover




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.13 Unemployment Insurance Balance in Germany (2003–2013)

possible deficits of the Federal Employment Service. The basic compensation for jobseekers is as follows: The state covers the costs of benefits granted by the Federal Employment Agency. Local authorities bear the costs of accommodation and heating, some one-off benefits (such as initial housing equipment) and education. The state covers a certain percentage of accommodation and heating costs to allow local authorities to fund education. In 2016, the state covered an average of 36 percent of federal subsidies for housing and heating.

The unemployment rate in the period 2003–2013 ranged from 5.2 to 10.7 percent (Table 4.25). The coverage ratio is high, even above 1, on the basis of which we can conclude that the vast majority of individuals receive unemployment benefits during the period of unemployment. In

the period under review, the average annual salary increased and increased from EUR 29,775 to EUR 35,671. Despite the increase in the average salary, average monthly benefits decreased until 2009 ( from EUR 923 to EUR 682), and later increased slightly (up to EUR 793 in 2013). The average replacement rate was 37 percent of the average salary before unemployment. In the period 2003–2013, the number of employees increased, and the total wage bill increased accordingly (Table 4.26). Unemployment insurance benefits fluctuated widely due to a change in the statutory contribution rate (6.5 percent in 2003 and only 3 percent in 2013). The hypothetically calculated equilibrium contribution rate, at which the balance was zero, was approximately 5 percent in the period 2003–2013.

In the period 2003–2013, benefits were lower than unemployment insurance expenditure. On average, the annual balance was EUR –10.5 billion, which means that the cumulative balance at the end of the period under review was almost EUR –116 billion (Figure 4.13).

### *The Netherlands*

*Eligibility for compensation:* The person must be involuntarily unemployed, at loss of at least five or half working hours per week, registered at the employment office in time, able to work, available for work, below the statutory retirement age, must seek employment, reside in the Netherlands, apply for compensation on the first day of unemployment.

*Required minimum period of employment:* A person who has received a salary for at least 26 weeks in the last 36 weeks before the first day of unemployment (a condition of weeks) is entitled to a three-month benefit. A person who received a salary of at least 208 hours in four of the five calendar years prior to the year of becoming unemployed (a condition of years) is entitled to receive benefits for as many months as the person had been employed (maximum 38 months).

*Method of calculating the benefit:* the last daily salary with a maximum limit of EUR 203.85.

*Duration of the period of receipt of benefit (coverage):* A person who fulfils only the condition of weeks receives the benefit for a maximum of three months. From 1 January 2016, the duration of the unemployment benefit has been gradually reducing from the current 38 to 24 months in April 2019. The beneficiary will be entitled to receive compensation for one month for each year of work for the first ten years and then for half a month for each year of work.

TABLE 4.27 Unemployment Insurance Expenditure in the Netherlands (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 15,543,536,000 | 8,695,100,000 | 3.6 | 302,900 | 661,000 | 2.18 | 35,738 | 28,590 | 1,096.21 | 0.4601 |
| 2004 | 16,142,253,000 | 9,595,600,000 | 4.7 | 394,800 | 696,900 | 1.77 | 36,831 | 29,465 | 1,147.41 | 0.4673 |
| 2005 | 15,925,441,000 | 9,527,600,000 | 4.7 | 402,100 | 659,930 | 1.64 | 37,504 | 30,003 | 1,203.11 | 0.4812 |
| 2006 | 14,608,546,000 | 8,334,700,000 | 3.9 | 335,700 | 572,465 | 1.71 | 38,465 | 30,772 | 1,213.28 | 0.4731 |
| 2007 | 13,098,825,000 | 7,030,400,000 | 3.2 | 277,900 | 487,500 | 1.75 | 39,797 | 31,838 | 1,201.78 | 0.4530 |
| 2008 | 12,683,483,000 | 6,601,800,000 | 2.8 | 243,000 | 471,800 | 1.94 | 40,890 | 32,712 | 1,166.07 | 0.4278 |
| 2009 | 15,341,999,000 | 8,534,200,000 | 3.4 | 303,700 | 629,348 | 2.07 | 42,041 | 33,633 | 1,130.03 | 0.4032 |
| 2010 | 16,130,658,000 | 9,135,700,000 | 4.5 | 389,900 | 621,260 | 1.59 | 42,708 | 34,166 | 1,225.43 | 0.4304 |
| 2011 | 15,326,725,000 | 8,746,700,000 | 5.0 | 434,300 | 639,200 | 1.47 | 43,358 | 34,686 | 1,140.32 | 0.3945 |
| 2012 | 16,080,248,000 | 10,428,300,000 | 5.8 | 515,800 | 732,630 | 1.42 | 44,232 | 35,386 | 1,186.17 | 0.4023 |
| 2013 | 18,134,115,000 | 12,683,400,000 | 7.3 | 647,000 | 859,750 | 1.33 | 45,253 | 36,202 | 1,229.37 | 0.4075 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

TABLE 4.28 Unemployment Insurance Benefits in the Netherlands (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 21,150,271,962 | 8,051,900 | 287,758,802,200 | 0.0735 | 5,606,735,962 | 5,606,735,962 | 0.0540 |
| 2004 | 21,667,997,730 | 8,004,200 | 294,802,690,200 | 0.0735 | 5,525,744,730 | 11,132,480,691 | 0.0548 |
| 2005 | 25,995,914,477 | 8,013,300 | 300,530,803,200 | 0.0865 | 10,070,473,477 | 21,202,954,168 | 0.0530 |
| 2006 | 25,869,251,100 | 8,152,000 | 313,566,680,000 | 0.0825 | 11,260,705,100 | 32,463,659,268 | 0.0466 |
| 2007 | 27,399,070,438 | 8,345,100 | 332,109,944,700 | 0.0825 | 14,300,245,438 | 46,763,904,706 | 0.0394 |
| 2008 | 14,368,966,806 | 8,467,600 | 346,240,164,000 | 0.0415 | 1,685,483,806 | 48,449,388,512 | 0.0366 |
| 2009 | 14,908,697,135 | 8,443,400 | 354,968,979,400 | 0.0420 | −433,301,865 | 48,016,086,647 | 0.0432 |
| 2010 | 14,756,886,698 | 8,226,900 | 351,354,445,200 | 0.0420 | −1,373,771,302 | 46,642,315,345 | 0.0459 |
| 2011 | 14,845,449,679 | 8,152,200 | 353,463,087,600 | 0.0420 | −481,275,321 | 46,161,040,024 | 0.0434 |
| 2012 | 6,146,766,228 | 8,174,500 | 361,574,484,000 | 0.0170 | −9,933,481,772 | 36,227,558,252 | 0.0445 |
| 2013 | 7,884,312,532 | 8,103,600 | 366,712,210,800 | 0.0215 | −10,249,802,468 | 25,977,755,785 | 0.0495 |

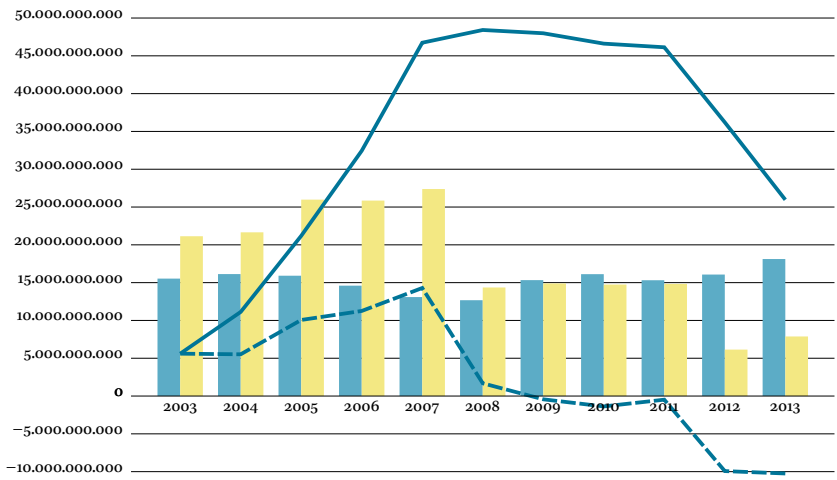
NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

*Amount of compensation:* 75 percent of the last daily wage (set at a maximum of EUR 203.85) in the first two months; 70 percent of the last daily wage after the first two months. Benefits are paid monthly. There is no minimum amount.

*Contribution rate:* Unemployment insurance contributions are paid into two different funds: a 2.07 percent contribution contributed by the employer and a 2.16 percent contribution (average) contributed by the employee.

*State aid:* no participation from the state; the fund's deficits are supplemented by general taxes.

The unemployment rate ranged from 2.8 to 7.3 percent in the pe-




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.14 Unemployment Insurance Balance in the Netherlands (2003–2013)

riod 2003–2013 (Table 4.27). The coverage ratio is high, even above 1, on the basis of which we can conclude that the vast majority of individuals receive unemployment benefits during the period of unemployment. In the period under review, the average annual salary increased from EUR 35,738 to EUR 45,253, and the average monthly benefits increased accordingly (from EUR 1,096 to EUR 1,229 euros). The average replacement rate was 44 percent of the average salary before unemployment. In the period 2003–2013, the number of employees was constant. The increase in the total wage bill can be attributed to the increase in the average wage (Table 4.28). Unemployment insurance benefits increased until 2007, but later decreased, which can be attributed to the reduction of the statutory contribution rate (from 8.6 in 2005 to 1.7 percent in 2012). From 2009 onwards, the statutory contribution rate was no longer sufficient to cover all unemployment insurance expenditure. The hypothetically calculated equilibrium contribution rate, at which the balance was zero, was approximately 4.6 percent in the period 2003–2013.

In the period 2003–2008, benefits were higher than unemployment insurance expenditure, and lower from 2009 onwards. On average, the

annual balance was EUR 2.3 billion, which means that the cumulative balance at the end of the period under review was almost EUR 26 billion (Figure 4.14).

### *Poland*

*Eligibility for compensation:* The person must be involuntarily unemployed, without work and pay, registered with an employment office, able to work, available for full-time work, at least 18 years of age and below the statutory retirement age, without the right to an old-age or invalidity pension, a citizen of Poland or the EU or the EEA or Switzerland, does not receive rehabilitation, sickness, maternity or child allowance.

*Required minimum period of employment:* At least 365 calendar days of paid employment in the last 18 months before unemployment.

*Method of calculating the benefit:* Is not being used. Compensation is not based on income.

*Duration of the period of receipt of compensation (coverage):* Six months in areas with an unemployment rate of less than 150 percent of the national average, 12 months in areas with an unemployment rate of more than 150 percent of the national average, or if the beneficiary has 20 years of service and is over 50, or if the beneficiary has an unemployment rate a spouse who is not entitled to the allowance and has at least one child under the age of 15.

*Amount of compensation:* Unemployment benefit is paid monthly as a percentage of the basic unemployment benefit, depending on the length of the beneficiary's employment: (i) 1 to 5 years of work: 80 percent, (ii) 5 to 20 years of work: 100 percent, and (iii) more than 20 years of work: 120 percent.

*Basic unemployment benefit:* PLN 831.10 (EUR 188 per day on 1 June 2017) per month for a period of three months, and after that PLN 652.60 (EUR 147).

*Contribution rate:* 2.45 percent of gross salary is contributed by the employer.

*State aid:* The government covers the deficit.

The unemployment rate ranged from 7.1 to 19.4 percent in the period 2003–2013 (Table 4.29). The coverage rate is very low, with an average of only 17 percent of people receiving unemployment benefits during the unemployment period. In the period under review, the average annual salary increased from EUR 6,083 to EUR 9,852, and the average

TABLE 4.29 Unemployment Insurance Expenditure in Poland (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 3,375,423,830 | 853,124,000 | 19.4 | 3,280,700 | 403,265 | 0.12 | 6,803 | 5,442 | 176.30 | 0.3887 |
| 2004 | 3,317,704,051 | 797,312,000 | 19.1 | 3,224,600 | 396,369 | 0.12 | 6,907 | 5,525 | 167.63 | 0.3640 |
| 2005 | 3,133,330,000 | 745,152,000 | 17.8 | 3,045,400 | 374,342 | 0.12 | 7,027 | 5,621 | 165.88 | 0.3541 |
| 2006 | 3,165,895,000 | 707,173,000 | 13.9 | 2,344,300 | 310,828 | 0.13 | 7,186 | 5,749 | 189.59 | 0.3957 |
| 2007 | 3,151,501,000 | 582,505,000 | 9.6 | 1,618,800 | 250,633 | 0.15 | 7,531 | 6,025 | 193.68 | 0.3858 |
| 2008 | 3,285,750,000 | 521,528,000 | 7.1 | 1,210,700 | 271,269 | 0.22 | 8,287 | 6,630 | 160.21 | 0.2900 |
| 2009 | 2,985,235,000 | 658,997,000 | 8.2 | 1,411,100 | 381,717 | 0.27 | 8,492 | 6,794 | 143.87 | 0.2541 |
| 2010 | 3,673,859,000 | 813,546,000 | 9.7 | 1,650,200 | 336,967 | 0.20 | 8,933 | 7,146 | 201.19 | 0.3378 |
| 2011 | 2,675,694,000 | 737,840,000 | 9.7 | 1,658,700 | 327,901 | 0.20 | 9,378 | 7,502 | 187.52 | 0.2999 |
| 2012 | 2,927,386,000 | 812,014,000 | 10.1 | 1,749,200 | 358,250 | 0.20 | 9,594 | 7,675 | 188.88 | 0.2953 |
| 2013 | 3,299,398,000 | 870,285,000 | 10.3 | 1,792,600 | 297,778 | 0.17 | 9,852 | 7,881 | 243.55 | 0.3708 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

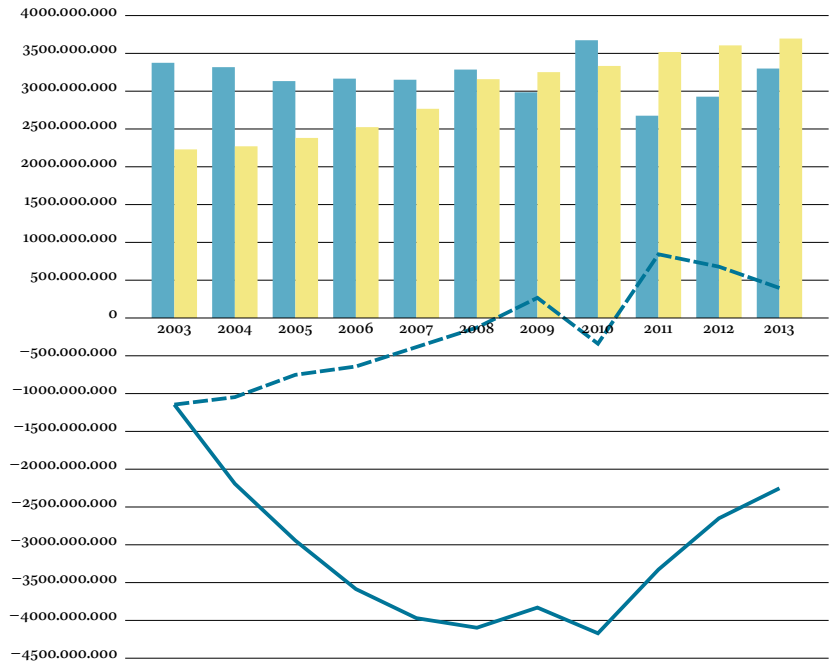
TABLE 4.30 Unemployment Insurance Benefits in Poland (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 2,229,906,863 | 13,379,500 | 91,016,606,654 | 0.0245 | −1,145,516,967 | −1,145,516,967 | 0.0371 |
| 2004 | 2,270,899,981 | 13,420,000 | 92,689,795,154 | 0.0245 | −1,046,804,070 | −2,192,321,037 | 0.0358 |
| 2005 | 2,381,581,173 | 13,834,200 | 97,207,394,816 | 0.0245 | −751,748,827 | −2,944,069,864 | 0.0322 |
| 2006 | 2,524,474,270 | 14,338,400 | 103,039,766,121 | 0.0245 | −641,420,730 | −3,585,490,594 | 0.0307 |
| 2007 | 2,766,938,693 | 14,996,500 | 112,936,273,169 | 0.0245 | −384,562,307 | −3,970,052,901 | 0.0279 |
| 2008 | 3,158,762,758 | 15,557,400 | 128,929,092,148 | 0.0245 | −126,987,242 | −4,097,040,144 | 0.0255 |
| 2009 | 3,251,882,951 | 15,629,500 | 132,729,916,372 | 0.0245 | 266,647,951 | −3,830,392,192 | 0.0225 |
| 2010 | 3,333,769,900 | 15,233,000 | 136,072,240,817 | 0.0245 | −340,089,100 | −4,170,481,292 | 0.0270 |
| 2011 | 3,518,235,415 | 15,312,800 | 143,601,445,500 | 0.0245 | 842,541,415 | −3,327,939,878 | 0.0186 |
| 2012 | 3,605,773,555 | 15,340,300 | 147,174,430,796 | 0.0245 | 678,387,555 | −2,649,552,323 | 0.0199 |
| 2013 | 3,696,066,727 | 15,313,300 | 150,859,866,409 | 0.0245 | 396,668,727 | −2,252,883,596 | 0.0219 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

monthly benefits increased accordingly (from EUR 176 to EUR 244). The average replacement rate was 34 percent of the average salary before unemployment. In the period 2003–2013, the number of employees increased, and the total wage bill and unemployment insurance benefits increased accordingly (Table 4.30). During the period under review, the statutory contribution rate did not change (2.45 percent). The hypothetically calculated equilibrium contribution rate, at which the balance was zero, was approximately 2.7 percent in the period 2003–2013.

In the period 2003–2010, benefits were lower than unemployment insurance expenditure, and from 2011 to 2013 they were higher. On average, the annual balance was EUR −204 million, which means that the




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.15 Unemployment Insurance Balance in Poland (2003–2013)

cumulative balance at the end of the period under review was almost EUR −2.3 billion (Figure 4.15).

## *Portugal*

*Eligibility for compensation:* Unemployment benefit is received by a person who is involuntarily unemployed, with no job, registered as a jobseeker at an employment office, able to work, available for work, does not receive an invalidity or old-age pension, is actively looking for work, resides in Portugal. Unemployment aid is received by individuals who have exhausted their right to unemployment benefit or are not entitled to unemployment benefit.

*Required minimum period of employment:* Unemployment benefit: at least 360 days of employment and payment of contributions in the last 24 months before unemployment. Unemployment benefit: at least 180 days of employment in the last 12 months before unemployment.

*Method of calculating the benefit:* Unemployment benefit: the average

daily gross wage for the last 12 months before the start of unemployment. Unemployment aid: the social support reference index.

*Duration of the period of receipt of benefit (coverage):* Unemployment benefit: duration of benefit commensurate with age and length of contribution. For unemployed individuals receiving benefit before 1 April 2012 who have not been able to prove a minimum registration period, the following duration of benefit applies:

1. under 30:
   - contribution period <15 months: 150 days;
   - contribution period ≥15 months and <24 months: 210 days;
   - contribution period ≥24 months: 330 days, 30 additional days for every five years of registered income in the last 20 years before unemployment;
2. aged 30 to 40:
   - contribution period <15 months: 180 days;
   - contribution period ≥15 months and <24 months: 330 days;
   - contribution period ≥24 months: 420 days, 30 additional days for every five years of registered income in the last 20 years before unemployment;
3. aged 40 to 50:
   - contribution period <15 months: 210 days;
   - contribution period ≥15 months and <24 months: 360 days;
   - contribution period ≥24 months: 540 days, 45 additional days for every five years of registered income in the last 20 years before unemployment;
4. over 50 years:
   - contribution period <15 months: 270 days;
   - contribution period ≥15 months and <24 months: 480 days;
   - contribution period ≥24 months: 540 days, 60 additional days for every five years of registered income in the last 20 years before unemployment.

Periods are different if the unemployment occurred after 1 April 2012, when the unemployed person could prove the registration period, the most favorable period shall be taken into account:

1. under 30:
   - contribution period <24 months: 270 days;

TABLE 4.31 Unemployment Insurance Expenditure in Portugal (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 2,528,556,000 | 1,445,129,000 | 6.2 | 333,100 | 248,474 | 0.75 | 13,482 | 10,786 | 484.67 | 0.5392 |
| 2004 | 2,728,612,000 | 1,584,740,000 | 6.4 | 341,900 | 294,003 | 0.86 | 13,765 | 11,012 | 449.18 | 0.4895 |
| 2005 | 2,954,413,000 | 1,778,969,000 | 7.7 | 414,100 | 304,287 | 0.73 | 14,169 | 11,335 | 487.20 | 0.5158 |
| 2006 | 2,818,983,000 | 1,737,029,000 | 7.8 | 420,600 | 305,673 | 0.73 | 14,326 | 11,461 | 473.55 | 0.4958 |
| 2007 | 2,604,704,000 | 1,606,926,000 | 8.1 | 440,600 | 276,962 | 0.63 | 14,941 | 11,953 | 483.50 | 0.4854 |
| 2008 | 2,621,328,000 | 1,546,374,000 | 7.7 | 418,000 | 219,539 | 0.53 | 15,337 | 12,270 | 586.98 | 0.5741 |
| 2009 | 3,469,988,000 | 2,030,639,000 | 9.6 | 517,400 | 335,932 | 0.65 | 15,760 | 12,608 | 503.73 | 0.4794 |
| 2010 | 3,561,023,000 | 2,220,062,000 | 11.0 | 591,200 | 350,748 | 0.59 | 16,034 | 12,827 | 527.46 | 0.4934 |
| 2011 | 3,236,099,000 | 2,103,278,000 | 12.9 | 688,200 | 305,307 | 0.44 | 15,809 | 12,647 | 574.09 | 0.5447 |
| 2012 | 3,498,478,000 | 2,592,797,000 | 15.8 | 835,700 | 386,724 | 0.46 | 15,422 | 12,338 | 558.71 | 0.5434 |
| 2013 | 3,625,693,000 | 2,737,149,000 | 16.4 | 855,200 | 419,213 | 0.49 | 15,896 | 12,717 | 544.10 | 0.5134 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

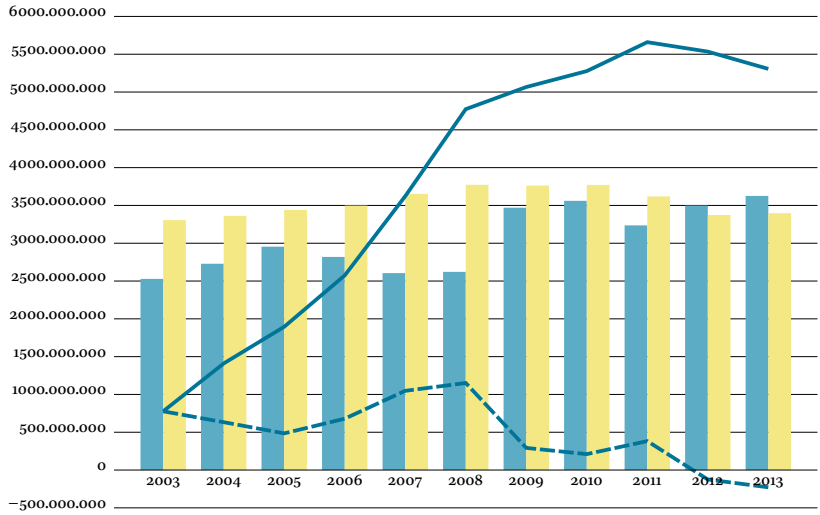
TABLE 4.32 Unemployment Insurance Benefits in Portugal (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 3,305,628,391 | 4,770,200 | 64,311,836,400 | 0.0514 | 777,072,391 | 777,072,391 | 0.0393 |
| 2004 | 3,361,432,271 | 4,751,000 | 65,397,515,000 | 0.0514 | 632,820,271 | 1,409,892,662 | 0.0417 |
| 2005 | 3,439,697,612 | 4,723,000 | 66,920,187,000 | 0.0514 | 485,284,612 | 1,895,177,274 | 0.0441 |
| 2006 | 3,498,134,714 | 4,750,600 | 68,057,095,600 | 0.0514 | 679,151,714 | 2,574,328,988 | 0.0414 |
| 2007 | 3,652,529,751 | 4,756,100 | 71,060,890,100 | 0.0514 | 1,047,825,751 | 3,622,154,739 | 0.0367 |
| 2008 | 3,772,671,638 | 4,785,700 | 73,398,280,900 | 0.0514 | 1,151,343,638 | 4,773,498,377 | 0.0357 |
| 2009 | 3,762,666,274 | 4,644,900 | 73,203,624,000 | 0.0514 | 292,678,274 | 5,066,176,651 | 0.0474 |
| 2010 | 3,771,711,491 | 4,576,500 | 73,379,601,000 | 0.0514 | 210,688,491 | 5,276,865,142 | 0.0485 |
| 2011 | 3,618,592,834 | 4,453,200 | 70,400,638,800 | 0.0514 | 382,493,834 | 5,659,358,976 | 0.0460 |
| 2012 | 3,373,612,776 | 4,255,900 | 65,634,489,800 | 0.0514 | −124,865,224 | 5,534,493,752 | 0.0533 |
| 2013 | 3,397,312,195 | 4,158,000 | 66,095,568,000 | 0.0514 | −228,380,805 | 5,306,112,947 | 0.0549 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

- contribution period ≥24 months: 360 days, 30 additional days for every five years of registered income in the last 20 years before unemployment;

2. aged 30 to 40:
   - contribution period <48 months: 360 days;
   - contribution period ≥48 months: 540 days, 30 additional days for every five years of registered income in the last 20 years before unemployment;
3. aged 40 to 50:
   - contribution period <60 months: 540 days;
   - contribution period ≥60 months: 720 days, 30 additional days




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.16 Unemployment insurance balance in Portugal (2003–2013)

for every five years of registered income in the last 20 years before unemployment;

4. over 45 years:
   - contribution period <72 months: 720 days;
   - contribution period ≥72 months: 900 days, 60 additional days for every five years of registered income in the last 20 years before unemployment.

*Unemployment benefit:* The duration of the benefit is determined by age and period of employment, the same as for unemployment insurance. If unemployment benefit is granted after the unemployment benefit has been exhausted, the duration of the payments is halved for beneficiaries under the age of 40. For other beneficiaries, it is the same as for unemployment insurance.

*Amount of compensation:* Unemployment benefit: 65 percent of the reference salary, reduced by ten percent after 180 days. The amount is increased by ten percent in cases where both spouses, or persons living in an extramarital relationship are entitled to unemployment benefits and have dependent children, or if the recipient of unemployment benefits is the head of a single-parent household and does not receive child maintenance. It amounts to a maximum of 75 percent of the net value

of the reference salary taken into account for the calculation of benefits, which is equal to 2.5 times the reference index of social support (EUR 419.22).

*State aid:* State participation in unemployment benefits.

The unemployment rate in the period 2003–2013 ranged from 6.2 to 16.4 percent (Table 4.31). The coverage ratio averaged 62 percent. In the period 2003–2010, the average annual salary increased and increased from EUR 13,482 to EUR 16,034, and from 2011 it decreased slightly (EUR 15,896 in 2013), and the average monthly benefits increased or decreased accordingly ( from EUR 484 to EUR 544). The average replacement rate was 52 percent of the average salary before unemployment. In the period 2003–2013, the number of employees was constant, and the total wage bill was constant, while the number of employees and the total wage bill fell slightly in 2009 (Table 4.32). During the period under review, the statutory contribution rate did not change (5.14 percent); such a high contribution rate was sufficient to cover all unemployment insurance expenditure until 2011, and in 2012 and 2013 the balance was negative. The hypothetically calculated equilibrium contribution rate, at which the balance was zero, was approximately 4.5 percent in the period 2003–2013.

In the period 2003–2011, benefits were higher than unemployment insurance expenditures, while in 2012 and 2013 they were negative. On average, the annual balance was EUR 482 million, which means that the cumulative balance at the end of the period under review was EUR 5.3 billion (Figure 4.16).

### *Slovakia*

*Eligibility for compensation:* The person must be involuntarily unemployed, registered as a jobseeker, available to the employment service and reporting to it within three days, able to work, available on the labor market without any restrictions, without the right to an old-age pension, must actively seek employment.

*Required minimum period of employment:* At least two years of paid unemployment insurance contributions in the last three years ( four years in the case of temporary employment).

*Method of calculating the benefit:* The average estimate is based on average gross wages over a maximum of the last three years. Maximum: twice the national average monthly salary.

*Duration of the period of receipt of benefit (coverage):* Unemployment

TABLE 4.33 Unemployment Insurance Expenditure in Slovakia (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 155,463,141 | 92,436,829 | 17.1 | 447,700 | 68,158 | 0.15 | 6,730 | 5,384 | 113.02 | 0.2519 |
| 2004 | 170,499,000 | 101,377,000 | 18.6 | 491,000 | 74,750 | 0.15 | 7,334 | 5,867 | 113.02 | 0.2312 |
| 2005 | 232,526,000 | 66,298,000 | 16.3 | 430,000 | 38,497 | 0.09 | 8,024 | 6,419 | 143.51 | 0.2683 |
| 2006 | 291,505,000 | 53,847,000 | 13.4 | 355,400 | 27,029 | 0.08 | 8,694 | 6,955 | 166.02 | 0.2864 |
| 2007 | 321,798,000 | 55,274,000 | 11.1 | 295,700 | 21,825 | 0.07 | 9,469 | 7,575 | 211.05 | 0.3343 |
| 2008 | 446,910,000 | 68,644,000 | 9.5 | 255,700 | 22,285 | 0.09 | 9,991 | 7,993 | 256.69 | 0.3854 |
| 2009 | 581,467,000 | 182,301,000 | 12.0 | 323,500 | 50,330 | 0.16 | 10,334 | 8,267 | 301.84 | 0.4381 |
| 2010 | 617,260,000 | 158,917,000 | 14.4 | 389,200 | 43,039 | 0.11 | 10,897 | 8,718 | 307.70 | 0.4236 |
| 2011 | 546,788,000 | 170,222,000 | 13.6 | 365,000 | 42,153 | 0.12 | 11,218 | 8,974 | 336.52 | 0.4500 |
| 2012 | 493,663,000 | 182,447,000 | 14.0 | 378,000 | 42,521 | 0.11 | 11,475 | 9,180 | 357.56 | 0.4674 |
| 2013 | 460,596,000 | 179,434,000 | 14.2 | 386,100 | 40,582 | 0.11 | 11,716 | 9,373 | 368.46 | 0.4717 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

TABLE 4.34 Unemployment Insurance Benefits in Slovakia (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 290,722,540 | 2,159,900 | 14,536,127,000 | 0.0200 | 135,259,399 | 135,259,399 | 0.0107 |
| 2004 | 314,100,552 | 2,141,400 | 15,705,027,600 | 0.0200 | 143,601,552 | 278,860,951 | 0.0109 |
| 2005 | 354,195,408 | 2,207,100 | 17,709,770,400 | 0.0200 | 121,669,408 | 400,530,359 | 0.0131 |
| 2006 | 399,089,376 | 2,295,200 | 19,954,468,800 | 0.0200 | 107,584,376 | 508,114,735 | 0.0146 |
| 2007 | 445,137,690 | 2,350,500 | 22,256,884,500 | 0.0200 | 123,339,690 | 631,454,425 | 0.0145 |
| 2008 | 484,243,788 | 2,423,400 | 24,212,189,400 | 0.0200 | 37,333,788 | 668,788,213 | 0.0185 |
| 2009 | 487,062,088 | 2,356,600 | 24,353,104,400 | 0.0200 | −94,404,912 | 574,383,301 | 0.0239 |
| 2010 | 502,831,168 | 2,307,200 | 25,141,558,400 | 0.0200 | −114,428,832 | 459,954,469 | 0.0246 |
| 2011 | 516,745,952 | 2,303,200 | 25,837,297,600 | 0.0200 | −30,042,048 | 429,912,421 | 0.0212 |
| 2012 | 531,797,400 | 2,317,200 | 26,589,870,000 | 0.0200 | 38,134,400 | 468,046,821 | 0.0186 |
| 2013 | 543,083,464 | 2,317,700 | 27,154,173,200 | 0.0200 | 82,487,464 | 550,534,285 | 0.0170 |

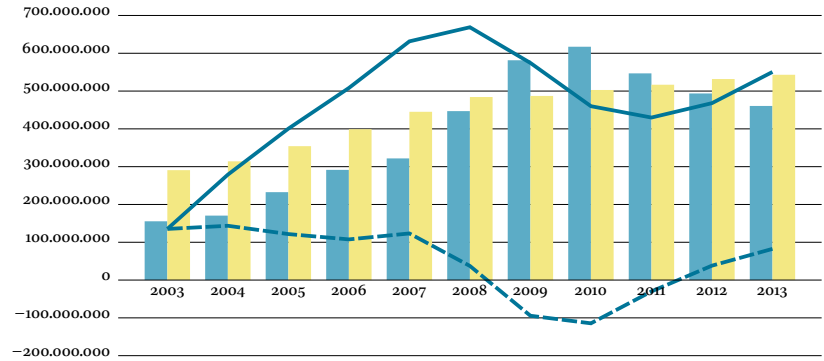
NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

benefit: six months ( four months in the case of fixed-term workers). After three months, the beneficiary has the choice of whether to continue receiving the benefit ( for a maximum of three months) or to cancel the registration as a jobseeker and obtain the supplement.

*Amount of compensation:* 50 percent of the reference salary (assessment basis).

*Contribution rate:* One percent of the gross salary is contributed by the employee and one by the employer. Voluntary insurance is also possible, where the contribution depends on the insurance company.

*State aid:* The state subsidy covers the deficit and costs of employment services.




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.17 Unemployment insurance balance in Slovakia (2003–2013)

The unemployment rate ranged from 9.5 to 18.6 percent in the period 2003–2013 (Table 4.33). The coverage ratio is low, averaging only 11%. In the period under review, the average annual salary increased from EUR 6,730 to EUR 11,716, and the average monthly benefits increased accordingly ( from EUR 113 to EUR 368). The average replacement rate was 36 percent of the average wage before unemployment. In the period 2003–2013, the number of employees was constant, and the increase in the total mass of wages and unemployment benefits can be attributed to the increase in the average wage (Table 4.34). During the period under review, the statutory contribution rate did not change (2%), despite the low contribution rate, it was sufficient to cover all unemployment insurance expenditure (except in 2009–2011), which can be attributed to the low coverage ratio. The hypothetically calculated equilibrium contribution rate, at which the balance was zero, was approximately 1.7 percent in the period 2003–2013.

In the period 2003–2013, benefits were higher than unemployment insurance expenditure (except in 2009–2011). On average, the annual balance was EUR 50 million, which means that the cumulative balance at the end of the period under review was almost EUR 550 million (Figure 4.17).

### *Slovenia*

*Eligibility for compensation:* The person must be able to work, registered with the employment office, must be actively looking for work, be prepared to accept appropriate or suitable employment and must

not belong to one of the following categories: a person in an employment relationship, a self-employed person, a member of a partnership, a farmer, a pensioner, a student, an apprentice or an adult education participant under the age of 26.

*Required minimum period of employment:* At least nine months of insurance in the previous 24 months, and for unemployed persons under the age of 30, at least six months of insurance in the past 24 months.

*Method of calculating the benefit:* Average monthly salary (no ceiling) received in the eight months prior to termination of employment, including wage compensation (health insurance, family protection insurance, pension and disability insurance). If the person has not received other payments, the basic salary (including the corresponding allowances) is taken as a reference.

*Duration of the period of receipt of benefit (coverage):* It depends on the duration of the insurance and the age of the beneficiary. In the case of an insurance period of nine months to five years, the unemployed person receives the benefit for three months. In the case of an insurance period of five to 15 years, the unemployed person receives the benefit for six months. In the case of an insurance period of 15 to 25 years, the unemployed person receives the benefit for nine months. In the case of an insurance period of more than 25 years, the unemployed person receives the benefit for 12 months (19 months if the beneficiary is older than 50 years, 25 months if older than 55). Unemployed persons under the age of 30 who have obtained an insurance period of at least six months receive benefits for two months.

*Amount of compensation:* Unemployment benefit is paid monthly. The lowest value is EUR 350 and the highest EUR 892.50. It is 80 percent of the reference salary in the first three months and 60 percent in the next nine months. After one year, the unemployment benefit is 50 percent of the reference salary.

*Contribution rate:* 0.14 percent of the gross salary is contributed by the employee and 0.06 percent of the gross salary by the employer.

*State aid:* The majority (90 percent) is financed by the state.

The unemployment rate in the period 2003–2013 ranged from 4.4 to 10.1 percent (Table 4.35). The share of coverage averaged 40 percent, with the year 2009 standing out (93 percent coverage). In the period under review, the average annual salary increased from EUR 14,684 to EUR 21,992, and the average monthly benefits increased accordingly ( from EUR 652 to EUR 801, except for 2009, when the aver-

TABLE 4.35 Unemployment Insurance Expenditure in Slovenia (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 184,767,259 | 105,588,818 | 6.5 | 62,100 | 13,483 | 0.22 | 14,684 | 11,747 | 652.59 | 0.6666 |
| 2004 | 180,006,750 | 102,868,333 | 6.0 | 60,500 | 13,136 | 0.22 | 15,848 | 12,678 | 652.59 | 0.6177 |
| 2005 | 196,371,000 | 112,220,000 | 6.5 | 66,000 | 14,330 | 0.22 | 16,834 | 13,467 | 652.59 | 0.5815 |
| 2006 | 202,129,000 | 118,876,000 | 6.0 | 60,800 | 30,527 | 0.50 | 17,791 | 14,233 | 324.51 | 0.2736 |
| 2007 | 171,810,000 | 103,448,000 | 4.9 | 49,900 | 18,074 | 0.36 | 18,922 | 15,138 | 476.97 | 0.3781 |
| 2008 | 166,076,000 | 99,564,000 | 4.4 | 45,500 | 14,545 | 0.32 | 20,283 | 16,226 | 570.44 | 0.4219 |
| 2009 | 341,562,000 | 217,120,000 | 5.9 | 61,000 | 56,538 | 0.93 | 20,644 | 16,515 | 320.02 | 0.2325 |
| 2010 | 420,952,000 | 239,876,000 | 7.3 | 75,400 | 38,146 | 0.51 | 21,560 | 17,248 | 524.03 | 0.3646 |
| 2011 | 444,246,000 | 314,460,000 | 8.2 | 83,200 | 35,699 | 0.43 | 21,887 | 17,510 | 734.05 | 0.5031 |
| 2012 | 392,832,000 | 296,433,000 | 8.9 | 89,600 | 32,996 | 0.37 | 21,578 | 17,262 | 748.66 | 0.5204 |
| 2013 | 424,213,000 | 288,962,000 | 10.1 | 101,800 | 30,055 | 0.30 | 21,992 | 17,594 | 801.20 | 0.5465 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

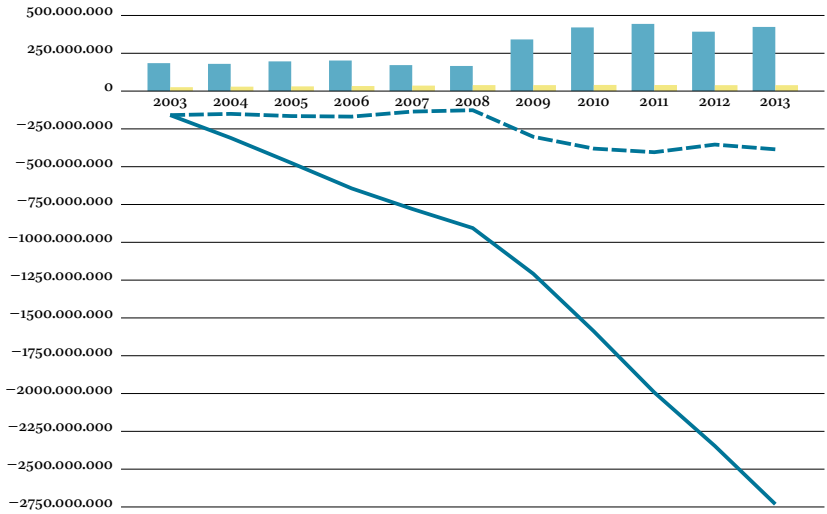
TABLE 4.36 Unemployment Insurance Benefits in Slovenia (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 25,758,673 | 877,100 | 12,879,336,400 | 0.0020 | −159,008,586 | −159,008,586 | 0.0143 |
| 2004 | 29,296,613 | 924,300 | 14,648,306,400 | 0.0020 | −150,710,137 | −309,718,723 | 0.0123 |
| 2005 | 31,139,533 | 924,900 | 15,569,766,600 | 0.0020 | −165,231,467 | −474,950,190 | 0.0126 |
| 2006 | 33,329,659 | 936,700 | 16,664,829,700 | 0.0020 | −168,799,341 | −643,749,531 | 0.0121 |
| 2007 | 36,216,708 | 957,000 | 18,108,354,000 | 0.0020 | −135,593,292 | −779,342,823 | 0.0095 |
| 2008 | 39,559,963 | 975,200 | 19,779,981,600 | 0.0020 | −126,516,037 | −905,858,860 | 0.0084 |
| 2009 | 39,421,782 | 954,800 | 19,710,891,200 | 0.0020 | −302,140,218 | −1,207,999,077 | 0.0173 |
| 2010 | 40,597,480 | 941,500 | 20,298,740,000 | 0.0020 | −380,354,520 | −1,588,353,597 | 0.0207 |
| 2011 | 40,044,455 | 914,800 | 20,022,227,600 | 0.0020 | −404,201,545 | −1,992,555,142 | 0.0222 |
| 2012 | 39,120,914 | 906,500 | 19,560,457,000 | 0.0020 | −353,711,086 | −2,346,266,228 | 0.0201 |
| 2013 | 39,062,190 | 888,100 | 19,531,095,200 | 0.0020 | −385,150,810 | −2,731,417,038 | 0.0217 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

age monthly allowance was only EUR 320). The average replacement rate was 46 percent of the average wage before unemployment. In the period 2003–2008, the number of employees increased, and later decreased to the initial level by 2013 (2003), and the total wage bill and unemployment insurance benefits also increased or decreased accordingly (Table 4.36). During the period under review, the statutory contribution rate did not change (0.2 percent); such a low contribution rate was not sufficient to cover all unemployment insurance expenditure. The hypothetically calculated equilibrium contribution rate, at which the balance was zero, was approximately 1.6 percent in the period 2003–2013.

In the period 2003–2013, benefits were lower than unemployment in-




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.18 Unemployment Insurance Balance in Slovenia (2003–2013)

surance expenditure. On average, the annual balance was EUR −248 million, which means that the cumulative balance at the end of the period under review was almost EUR −2.8 billion (Figure 4.18).

### *Spain*

*Eligibility for compensation:* Unemployment benefit: person she must be involuntarily unemployed, registered as a jobseeker and available to the employment service with the obligation to actively seek employment. Must be able and ready to work, over the age of 16 and below the regular retirement age, registered in a social security system that covers the risk of unemployment, and pay contributions until the day of unemployment.

*Unemployment aids:*

- *Aid:* The person must have used up the right to unemployment benefit and have family obligations or is older than 45 years (no family obligations); is not entitled to receive unemployment benefits due to lack of contributions (under certain conditions regarding the period of payment of contributions and family obligations), unemployed, people over 55, under certain conditions, other groups (emigrant workers returning from abroad, individu-

als released from prison, disabled pensioners who cease to receive such a pension).

- *Active integration income:* For the long-term unemployed persons over the age of 45 and under the age of 65 who are not entitled to cash benefits or unemployment benefits; other special groups under certain conditions (emigrant workers returning from abroad, the disabled, victims of sexual or domestic violence).
- *Vocational retraining program:* For individuals who are entitled to unemployment benefit and are not entitled to unemployment benefit or have already exhausted it between 16 February and 15 August 2016 (automatic extension for six months if the unemployment rate exceeds 18 percent), are registered as unemployed at the Autonomous Community Employment Service for at least 12 months in the last 18 months or have dependent family members.
- *Employment activation program:* for individuals who have exhausted active integration income and vocational retraining program at least six months ago, are not entitled to unemployment benefit or aid, are registered as unemployed at the Autonomous Community Employment Service for at least 12 months in the last 18 months, their last employment was terminated involuntarily and they have dependent family members.

*Required minimum period of employment:* At least 360 days of paid contributions in the six years before unemployment.

- *Aid:* There are generally no conditions, but some unemployment benefits require a minimum of three months of contributions (with family obligations) or six months of contributions (without family obligations) or six years of contributions throughout a person's working life ( for older than 55 years).
- *Active integration income:* No period required.
- *Vocational retraining program:* No period required.
- *Employment Activation Program:* No period required.

*Method of calculating the benefit:* Unemployment benefit: The amount of the benefit is determined according to the average employee contributions for the 180 days before unemployment. The maximum contribution limit is EUR 3,642 per month. Unemployment aid: does not apply. The amount of aid is not based on income.

*Duration of the period of receipt of benefit (coverage):* Unemployment benefit: It depends on the period of payment of contributions in the last six years. The duration of compensation payments is from a minimum of four months to a maximum of two years.

- *Aid:* Normally six months, with possible extensions over six-month periods, up to a maximum of 18 months. An extension of this period is possible in special cases. For workers over the age of 55 who meet all the conditions for retirement except age, it is extended until they reach retirement age.
- *Active integration income:* Maximum eleven months.
- *Vocational retraining program:* Maximum six months.
- *Employment activation program:* Maximum six months.

*Amount of compensation:* Unemployment benefit: 70 percent of the basis for calculating the first 180 days, then 50 percent. The upper limit of 175, 200 or 225 percent of total public income is set according to the number of dependent children. The lower limit is 107 percent of the general public income with dependent children and 80 percent of the general public income without dependent children. Other unemployment aids:

- *Aid:* 80 percent of general public income;
- *Active integration income:* 80 percent of total public income;
- *Vocational retraining program:* 75 percent of general public income (85 percent in the case of three dependent family members);
- *Employment activation program:* 80 percent of total public income.

The general public income is EUR 17.75 per day or EUR 532.51 per month or EUR 6,390.13 per year. All the above benefits are paid monthly.

*Contribution rate:* 1.55 percent of the gross salary is contributed by the employee and 5.50 percent of the gross salary by the employer.

*State aid:* The state covers that part of the cost of unemployment benefits which is not covered by contributions.

The unemployment rate ranged from 8.2 to 26.1 percent in the period 2003–2013 (Table 4.37). The coverage ratio averaged 62 percent. In the period under review, the average annual salary increased from EUR 20,420 to EUR 26,967, and the average monthly benefits increased accordingly ( from EUR 773 to EUR 1,010). The average replacement rate

TABLE 4.37 Unemployment Insurance Expenditure in Spain (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 15,850,202,000 | 11,200,955,000 | 11.3 | 2,216,000 | 1,206,373 | 0.54 | 20,420 | 16,336 | 773.73 | 0.5684 |
| 2004 | 17,883,310,000 | 12,314,144,000 | 11.1 | 2,247,600 | 1,262,613 | 0.56 | 20,907 | 16,726 | 812.74 | 0.5831 |
| 2005 | 19,419,282,000 | 12,887,152,000 | 9.2 | 1,933,600 | 1,294,893 | 0.67 | 21,740 | 17,392 | 829.36 | 0.5722 |
| 2006 | 21,310,053,000 | 13,674,068,000 | 8.5 | 1,840,900 | 1,332,638 | 0.72 | 22,464 | 17,971 | 855.08 | 0.5710 |
| 2007 | 22,930,594,000 | 14,754,040,000 | 8.2 | 1,846,100 | 1,421,432 | 0.77 | 23,514 | 18,811 | 864.98 | 0.5518 |
| 2008 | 28,243,348,000 | 19,817,870,000 | 11.3 | 2,595,900 | 1,814,630 | 0.70 | 25,269 | 20,215 | 910.10 | 0.5402 |
| 2009 | 39,660,254,000 | 30,784,358,000 | 17.9 | 4,153,500 | 2,681,224 | 0.65 | 26,622 | 21,298 | 956.79 | 0.5391 |
| 2010 | 41,959,564,000 | 32,568,524,000 | 19.9 | 4,640,100 | 3,042,737 | 0.66 | 26,488 | 21,190 | 891.97 | 0.5051 |
| 2011 | 38,654,127,000 | 29,699,080,000 | 21.4 | 5,012,700 | 2,845,652 | 0.57 | 26,673 | 21,338 | 869.72 | 0.4891 |
| 2012 | 38,311,713,000 | 31,140,225,000 | 24.8 | 5,811,000 | 2,942,061 | 0.51 | 26,584 | 21,267 | 882.04 | 0.4977 |
| 2013 | 34,749,409,000 | 34,749,409,000 | 26.1 | 6,051,100 | 2,865,153 | 0.47 | 26,967 | 21,574 | 1,010.69 | 0.5622 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

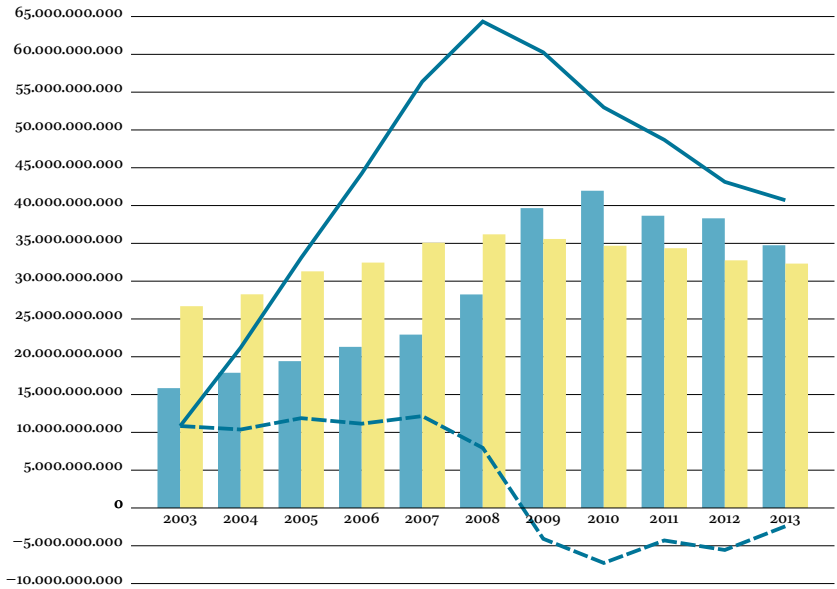
TABLE 4.38 Unemployment Insurance Benefits in Spain (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 26,689,158,494 | 17,311,400 | 353,498,788,000 | 0.0755 | 10,838,956,494 | 10,838,956,494 | 0.0448 |
| 2004 | 28,260,763,368 | 17,903,800 | 374,314,746,600 | 0.0755 | 10,377,453,368 | 21,216,409,862 | 0.0478 |
| 2005 | 31,297,643,160 | 19,068,000 | 414,538,320,000 | 0.0755 | 11,878,361,160 | 33,094,771,022 | 0.0468 |
| 2006 | 32,456,838,586 | 19,792,300 | 444,614,227,200 | 0.0730 | 11,146,785,586 | 44,241,556,608 | 0.0479 |
| 2007 | 35,080,388,462 | 20,436,900 | 480,553,266,600 | 0.0730 | 12,149,794,462 | 56,391,351,070 | 0.0477 |
| 2008 | 36,193,123,514 | 20,316,500 | 513,377,638,500 | 0.0705 | 7,949,775,514 | 64,341,126,584 | 0.0550 |
| 2009 | 35,580,402,833 | 18,957,500 | 504,686,565,000 | 0.0705 | −4,079,851,168 | 60,261,275,416 | 0.0786 |
| 2010 | 34,684,601,675 | 18,573,700 | 491,980,165,600 | 0.0705 | −7,274,962,325 | 52,986,313,091 | 0.0853 |
| 2011 | 34,357,449,957 | 18,270,900 | 487,339,715,700 | 0.0705 | −4,296,677,043 | 48,689,636,048 | 0.0793 |
| 2012 | 32,754,529,210 | 17,476,800 | 464,603,251,200 | 0.0705 | −5,557,183,790 | 43,132,452,258 | 0.0825 |
| 2013 | 32,322,991,378 | 17,001,600 | 458,482,147,200 | 0.0705 | −2,426,417,622 | 40,706,034,635 | 0.0758 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

was 54 percent of the average wage before unemployment. In the period 2003–2008, the number of employees increased, but later began to decrease (in 2013 the number of employees was the same as in 2003), and the total wage bill and unemployment insurance benefits also increased or decreased accordingly (Table 4.38). In the period under review, the statutory contribution rate ranged from 7 percent to 7.5 percent. Despite such a high contribution rate, it has not been sufficient to cover all unemployment insurance expenditure since 2009. The hypothetically calculated equilibrium contribution rate, at which the balance was zero, was approximately 4.8 percent in the boom period and up to eight percent in the recession period in 2003–2013.

In the period 2003–2008, benefits were higher than unemployment




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.19 Unemployment Insurance Balance in Spain (2003–2013)

insurance expenditure, and lower from 2009 to 2013. On average, the annual balance was EUR 10.7 billion during the boom period and EUR −4.7 billion during the recession, which means that the cumulative balance at the end of the period under review was almost EUR 41 billion (Figure 4.19).

### *Sweden*

*Eligibility for compensation:* Individuals are entitled to compensation in the case of unemployment, if they are registered as jobseekers at the employment office, are able to work for at least three hours every working day and on average at least 17 hours a week, are under 65, are available on the labor market.

*Required minimum period of employment:* Employed or self-employed for at least six months and at least 80 hours of work per month in the last 12 months or have been employed or self-employed for at least 480 hours in a consecutive period of six months with at least 50 hours of work per month in the last 12 months. Additional conditions: taken out unemployment insurance for at least 12 months.

*Method of calculating the benefit:* In the case of income-related compensation, the calculation is usually based on daily average wages over a reference period of 12 months. For self-employed persons, it is calculated on the basis of the last tax return or, if more favorable, on the basis of the average operating income in the last two years before the year of unemployment. Each month in which a person has worked for at least 80 hours is included in the basis for calculating the unemployment benefit. Income ceiling: SEK 25,025 (EUR 2,653 from 1 June 2017) per month or SEK 910 (EUR 96) per day. Basic unemployment benefit is not based on income.

*Duration of the period of receipt of benefit (coverage):* 300 days, 450 days for beneficiaries who have a child under 18 years of age. Benefit receiving period cannot be extended.

*Amount of compensation:* Income-related compensation is 80 percent of the reference salary for the first 200 days, then 70 percent of the reference salary for the next 100 days, a maximum of SEK 910 (EUR 96) per day for the first 100 days and a maximum of SEK 760 (EUR 81) per day for remaining days. The basic unemployment aid is SEK 365 (EUR 39) per day.

*Contribution rate:* Employees 0 percent (self-employed 0.10 percent), 2.64 percent of gross wages are contributed by the employer.

*State aid:* Partial financing by the state.

The unemployment rate in the period 2003–2013 ranged from 5.6 to 8.6 percent (Table 4.39). The share of coverage is high (the average is 91 percent). In the period under review, the average annual salary increased and increased from EUR 28,904 to EUR 39,555. The average monthly compensation was more than EUR 800 during the boom period and around EUR 700 during the recession. The average replacement rate was 35 percent of the average wage before unemployment. In the period 2003–2013, the number of employees was constant. The increase in the total wage bill can be attributed to the increase in the average wage (Table 4.40). During the period under review, the statutory contribution rate changed (in the period 2003–2008 it increased from 3.7 to 4.5 percent, in 2009 it decreased to 2.4 percent, in 2010 it increased again to 4.7 percent, and in the period 2011–2013 it was 2.9 percent), in line with the fluctuation of the statutory contribution rate, unemployment insurance benefits increased or decreased. The hypothetically calculated equilibrium contribution rate, at which the balance was zero, was approximately 4.5 percent in the period 2003–2013.

TABLE 4.39 Unemployment Insurance Expenditure in Sweden (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 6,584,139,000 | 3,577,519,000 | 5.6 | 255,900 | 353,938 | 1.38 | 28,904 | 23,123 | 842.31 | 0.4371 |
| 2004 | 7,102,134,000 | 4,047,401,000 | 6.7 | 309,200 | 384,316 | 1.24 | 30,015 | 24,012 | 877.62 | 0.4386 |
| 2005 | 7,145,504,000 | 3,820,650,000 | 7.8 | 368,200 | 383,837 | 1.04 | 30,937 | 24,750 | 829.49 | 0.4022 |
| 2006 | 7,150,437,000 | 3,374,296,000 | 7.1 | 336,800 | 354,124 | 1.05 | 32,066 | 25,653 | 794.05 | 0.3714 |
| 2007 | 5,795,181,000 | 2,489,999,000 | 6.2 | 298,100 | 282,241 | 0.95 | 33,576 | 26,860 | 735.19 | 0.3284 |
| 2008 | 4,696,735,000 | 1,920,402,000 | 6.2 | 305,400 | 236,993 | 0.78 | 35,100 | 28,080 | 675.27 | 0.2886 |
| 2009 | 5,369,743,000 | 2,673,752,000 | 8.4 | 410,000 | 322,487 | 0.79 | 36,121 | 28,896 | 690.92 | 0.2869 |
| 2010 | 6,736,865,000 | 2,791,933,000 | 8.6 | 426,200 | 316,139 | 0.74 | 36,877 | 29,502 | 735.95 | 0.2993 |
| 2011 | 6,988,989,000 | 2,433,295,000 | 7.8 | 391,600 | 268,623 | 0.69 | 37,962 | 30,370 | 754.87 | 0.2983 |
| 2012 | 7,934,209,000 | 2,675,423,000 | 8.0 | 403,600 | 276,180 | 0.68 | 38,999 | 31,199 | 807.27 | 0.3105 |
| 2013 | 8,677,048,000 | 2,954,457,000 | 8.1 | 412,000 | 278,030 | 0.67 | 39,555 | 31,644 | 885.53 | 0.3358 |

NOTES Column headings are as follows: (1) year, (2) total unemployment insurance expenditure (in EUR), (3) unemployment insurance expenditure spent on benefits (in EUR), (4) unemployment rate (in %), (5) number of registered unemployed, (6) number of beneficiaries, (7) share of coverage, (8) average salary (in EUR), (9) average salary before unemployment (in EUR), (10) average monthly benefit (in EUR), (11) average replacement rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

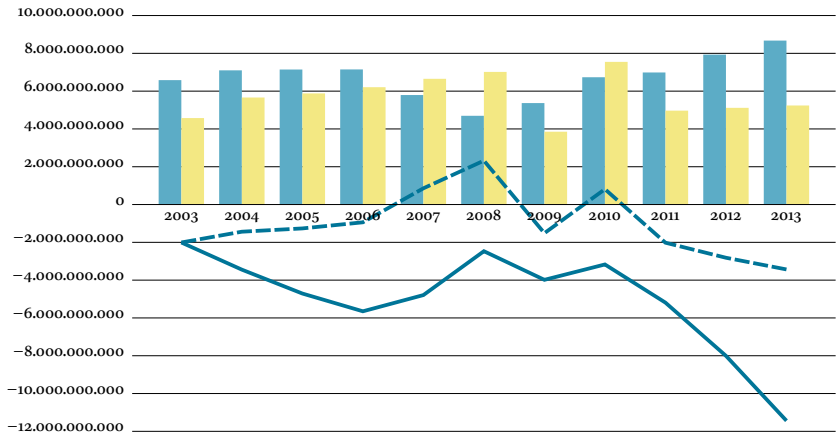
TABLE 4.40 Unemployment Insurance Benefits in Sweden (2003–2013)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| 2003 | 4,576,074,106 | 4,278,900 | 123,677,678,535 | 0.0370 | −2,008,064,894 | −2,008,064,894 | 0.0532 |
| 2004 | 5,664,267,837 | 4,240,800 | 127,286,917,681 | 0.0445 | −1,437,866,163 | −3,445,931,057 | 0.0558 |
| 2005 | 5,881,326,783 | 4,272,000 | 132,164,646,802 | 0.0445 | −1,264,177,217 | −4,710,108,275 | 0.0541 |
| 2006 | 6,209,954,309 | 4,351,900 | 139,549,535,045 | 0.0445 | −940,482,691 | −5,650,590,965 | 0.0512 |
| 2007 | 6,653,734,380 | 4,453,300 | 149,522,120,902 | 0.0445 | 858,553,380 | −4,792,037,585 | 0.0388 |
| 2008 | 7,019,024,960 | 4,493,800 | 157,730,897,968 | 0.0445 | 2,322,289,960 | −2,469,747,625 | 0.0298 |
| 2009 | 3,854,467,593 | 4,391,400 | 158,620,065,543 | 0.0243 | −1,515,275,407 | −3,985,023,033 | 0.0339 |
| 2010 | 7,550,425,384 | 4,403,100 | 162,374,739,440 | 0.0465 | 813,560,384 | −3,171,462,649 | 0.0415 |
| 2011 | 4,969,015,476 | 4,498,100 | 170,756,545,560 | 0.0291 | −2,019,973,524 | −5,191,436,173 | 0.0409 |
| 2012 | 5,117,857,979 | 4,509,600 | 175,871,408,203 | 0.0291 | −2,816,351,021 | −8,007,787,194 | 0.0451 |
| 2013 | 5,242,255,081 | 4,554,300 | 180,146,222,730 | 0.0291 | −3,434,792,919 | −11,442,580,113 | 0.0482 |

NOTES Column headings are as follows: (1) year, (2) unemployment insurance benefits (in EUR), (4) number of employed, (5) total wage bill (in EUR), (6) statutory contribution unemployment insurance rate, (7) balance (in EUR), (8) cumulative balance (in EUR), (9) equilibrium contribution rate. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

In the period 2003–2013, benefits were higher than unemployment insurance expenditure only in 2007, 2008 and 2010. On average, the annual balance was EUR −1 billion, which means that the cumulative balance at the end of the period under review was almost EUR −11.5 billion (Figure 4.20).

We also examined the statutory contribution rate in EU 20 (Table 4.41). We find that the statutory contribution rate for unemployment insurance is sufficiently high only in a smaller 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 contribu-




NOTES Blue columns – expenditure of unemployment insurance, yellow columns – benefits of unemployment insurance, dashed line – balance, solid line – cumulative balance; in EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

FIGURE 4.20 Unemployment insurance balance in Sweden (2003–2013)

TABLE 4.41 Difference between Statutory and Equilibrium Contribution Rate

| Country | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|
| Austria | 0.017 | 0.016 | 0.017 | 0.020 | 0.019 | 0.017 | 0.016 | 0.018 | 0.018 |
| Belgium | **−0.039** | **−0.038** | **−0.036** | **−0.033** | **−0.035** | **−0.037** | **−0.039** | **−0.037** | **−0.035** |
| Bulgaria | **−0.021** | **−0.017** | **−0.012** | **−0.008** | **−0.007** | **−0.007** | **−0.008** | **−0.009** | **−0.011** |
| Cyprus | 0.043 | 0.043 | 0.044 | 0.047 | 0.046 | 0.043 | 0.039 | **−0.013** | **−0.020** |
| Czech Rep. | 0.005 | 0.004 | 0.004 | 0.004 | 0.001 | **−0.006** | **−0.007** | **−0.005** | **−0.003** |
| Denmark | 0.008 | 0.014 | 0.024 | 0.032 | 0.033 | 0.028 | 0.022 | 0.019 | 0.020 |
| Estonia | 0.009 | 0.010 | 0.005 | 0.004 | **−0.006** | **−0.014** | 0.015 | 0.021 | 0.024 |
| Finland | **−0.041** | **−0.033** | **−0.026** | **−0.021** | **−0.031** | **−0.036** | **−0.034** | **−0.029** | **−0.028** |
| France | 0.002 | 0.006 | 0.010 | 0.013 | 0.013 | 0.011 | 0.009 | 0.009 | 0.010 |
| Italy | **−0.018** | **−0.017** | **−0.015** | **−0.015** | **−0.019** | **−0.024** | **−0.028** | **−0.030** | **−0.032** |
| Latvia | 0.002 | 0.001 | 0.003 | 0.003 | **−0.003** | **−0.010** | 0.007 | 0.002 | **−0.002** |
| Hungary | 0.019 | 0.018 | 0.017 | 0.037 | 0.018 | 0.012 | **−0.010** | **−0.009** | 0.021 |
| Germany | **−0.004** | 0.002 | 0.011 | **−0.004** | **−0.011** | **−0.017** | **−0.016** | **−0.008** | **−0.005** |
| Netherlands | 0.020 | 0.022 | 0.040 | 0.042 | 0.043 | **0.000** | **−0.002** | **−0.003** | **−0.004** |
| Poland | **−0.010** | **−0.008** | **−0.006** | **−0.003** | **−0.001** | **−0.001** | 0.002 | 0.003 | 0.004 |
| Portugal | 0.010 | 0.009 | 0.011 | 0.014 | 0.011 | 0.008 | 0.004 | 0.002 | 0.000 |
| Slovakia | 0.008 | 0.007 | 0.006 | 0.004 | 0.001 | **−0.002** | **−0.003** | **−0.001** | 0.001 |
| Slovenia | **−0.011** | **−0.010** | **−0.009** | **−0.008** | **−0.010** | **−0.014** | **−0.018** | **−0.019** | **−0.019** |
| Spain | 0.029 | 0.028 | 0.028 | 0.023 | 0.012 | **−0.002** | **−0.011** | **−0.012** | **−0.009** |
| Sweden | **−0.017** | **−0.009** | **−0.003** | 0.005 | 0.010 | 0.009 | **−0.015** | 0.004 | **−0.016** |

NOTES In percent. Countries and years when the equilibrium contribution rate was higher than the statutory one have been marked in bold

tions do not cover all expenditures, which means that countries cover the difference from the state budget.

After having examined and describing the unemployment insurance in the EU 20, we can conclude that unemployment insurance systems

in the EU 20 vary widely, in particular 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 unemployment insurance scheme. In addition to the examined characteristics of unemployment insurance, countries differ in terms of fluctuations in the unemployment rate, the unemployment insurance balance and the dynamics of economic growth.

# Chapter Five

# Model Simulation of the Unemployment Reinsurance System in the EU

In the following, a simulation model of reinsurance in the case of unemployment in the EU (URS EU) is presented, with special emphasis on measuring the effects and operation of the URS EU model. We have demonstrated the heterogeneity of unemployment insurance systems in the EU, and the results of the survey, by focusing on the protection of the income of the unemployed and the stabilizing power of the URS EU. The chapter ends with some recommendations to economic policy.

By simulating and evaluating the operation of the model we used for simulating the operation of the URS EU, we confirmed that heterogeneity of EU countries, the different dynamics of economic growth and unemployment make it possible to set up a URS EU. Various characteristics of countries are important for the functioning of the URS EU, which is based on heterogeneity. By simulating the URS EU operation, we demonstrated and determined the extent to which it would contribute to better income protection and at the same time to the stabilization of the economy.

With the data collected, we had designed a model to examine in which countries equilibrium unemployment insurance was set (statutory unemployment insurance contribution rate and equilibrium unemployment insurance contribution rate were equal) and 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 (2003–2013). 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 5.1) shows the cash flow of the URS EU with basic elements

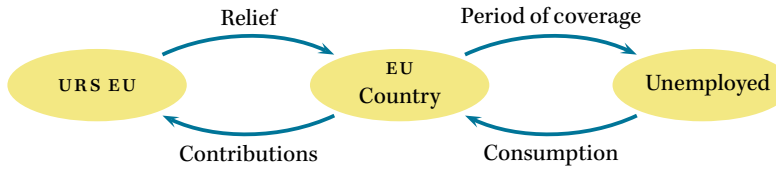



FIGURE 5.1 URS EU Cash Flow

such as triggers, contributions and the 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 more detail.

## Description of the Simulation Model of Unemployment Reinsurance in the EU

In designing the URS EU model, we relied on already conducted research (Beblavý and Maselli 2014; Dolls et al. 2014; Dullien 2007, 2013) and the US Unemployment reinsurance system. All research has a common purpose, namely to examine the possibility of operating joint reinsurance in the event 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 benefit receiving period during economic recession with automatic triggers, similarly to the operation of the US unemployment reinsurance system, makes special sense.

Based on the research results, trigger levels were determined in an original way – when should a certain country be entitled to funds from the unemployment reinsurance system and to what extent. The obtained results show 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 in reducing the inflation and the output gap.

The URS EU model exploits the financial and economic heterogeneity of countries, and its implementation, especially in times of crisis, would 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 a balance between unemployment benefits payments 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 in times of recession and repay the debt in times of boom.

The basic elements of the URS EU model are the expenditure (amount of aid to individual countries and period of receiving it) and receipts (contributions of individual countries). Expenditures were determined on the basis of the US Unemployment reinsurance system, which has been used there since 1935 and is proving to be an effective mechanism for maintaining stability in the US federal states. The amount of aid to each country in our URS EU model was 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. The individual country begins to receive assistance 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 aid amount classes to ensure fairness and political acceptability.

The amount of URS EU aid to an individual EU country is modeled 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. On the basis of historical data for the EU 20 in the period 2003–2013, we have calculated total potential URS EU expenditure. With the expenditure calculated, we determined, in terms of the URS EU, how much money could additionally be 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.

In the simulations conducted, countries would have been entitled to absorb financial means from the URS EU if the unemployment rate increased above average compared to the average of the last three years. Our model comprises five aid classes, and the amount of aid depends on the increase in the unemployment 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 aid amount affects the number of additional weeks of receiving the benefit. A sustained source of funding must be provided for the financial sustainability of the URS EU.

TABLE 5.1 Aid Classes

NOTES Column headings are as follows: (1) aid class, (2) increase of the unemployment rate compared to the average of the last three years, (3) aid amount – percentages of total expenditure intended for unemployment benefits

| (1) | (2) | (3) |
|---|---|---|
| 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 | 50% and more | 38 |

The equilibrium contribution rate for unemployment reinsurance varies from country to country. It was calculated in a way that the difference between the payments of unemployment benefits and the collected unemployment insurance contributions in the period under review equals zero. The expected long-term net receipts in the unemployment reinsurance system equal zero. The simulation was used to determine 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 5.1).

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 have calculated the amounts of contributions (cumulative contributions) and the amounts 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 increases by ten percent annually until the country balance is zero or positive. The current reinsurance system in the US works in a similar way (US Department of Labor 2015a).

### *Measuring the Impact of the Model*

If redistribution between countries is allowed, the effect of stabilization could be greater. In simulations, we focused on the alternative with no redistribution, as this 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 under study.

In one of the models, we also simulated the operation of the URS EU, with countries having 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 (i) up

to 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, the single contribution rate has been set so that the fund is balanced 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 of 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 done according to the Dullien method (2013), which defines stabilizing power as the ratio between the change in contributions or payments in the unemployment reinsurance in the EU (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) as well, 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. As for the assumption that the additional aid obtained is immediately returned to the economy, we can foresee to be normally met.

The effectiveness of the URS EU can also be measured by other indicators presented in Chapter five (Contribution to science and suggestions for further research), namely the factor of prevention of the long-term unemployment, especially among young people, and the harmful effect of long-term unemployment for health and a factor in maintaining employment.

### *Structure and Operation of the URS EU Model: Methodology*

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 below.

### *Unemployment Reinsurance Expenditure in the EU (URS EU)*

Based on historical data (2003–2013), we calculated the expenditure of the reinsurance system in the case of unemployment in the EU. With the expenditure calculated, we determined, in terms of the URS EU, how much money was earmarked for the unemployed (in each EU 20 country and in every year of the period under review). The calculation of URS EU expenditure is presented below.

For the country $i$ and year $t$, the URS EU expenditure is calculated as follows:

$$\begin{aligned} URS\ EU\ expenditure_{i,t} = {} & average\ wage\ before\ unemployment_{i,t} \\ & \times number\ of\ registered\ unemployed_{i,t} \\ & \times share\ of\ coverage_{i,t} \\ & \times average\ replacement\ rate_{i,t}. \end{aligned} \tag{5.1}$$

The components of expenditure are defined by (1) the average wage before unemployment, (2) the number of registered unemployed, (3) the share of coverage of benefit recipients and (4) the replacement rate.

*Average Salary before Unemployment.* Data on the past wages of the unemployed are not available directly, which means that we estimate them on the basis of assumptions and thus get to their real value as close as possible. Given that lower-skilled and lower-wage workers are more likely to be unemployed, a possible solution could be that, in order to approximately calculate the average wage that the currently unemployed were receiving before losing their job, the average wage received by the currently employed is multiplied by the constant ($0 < k < 1$). According to Dullien (2013), in simulations we assume a constant value $k$, being equal to 0.8, which means that the average pre-unemployment wage would be 80 percent of the average wage in the economy:

$$\begin{aligned} Average\ wage\ before\ unemployment_{i,t} &= k \times average\ wage_{i,t} \\ &= 0.8 \times average\ wage_{i,t}. \end{aligned} \tag{5.2}$$

*Number of Registered Unemployed.* The number of registered unemployed includes individuals who are registered at appropriate institutions, are able to work and actively looking for employment, and are willing to accept it.

*Share of Coverage of Benefits Recipients.* The share of coverage is the share (in percent) of the total number of short-term unemployed who actually receive unemployment benefits. The coverage rate was calculated based on historical data. In the simulation, we were able to take into account the heterogeneity of labor market institutions in individual countries by using historical data. The share of coverage is calculated as follows:

$$Share\ of\ coverage_{i,t} = \frac{number\ of\ benefit\ recipients_{i,t}}{number\ of\ unemployed_{i,t}}. \tag{5.3}$$

*Average Replacement Rate.* The average replacement rate was the share (in percent) of the previous salary received by the unemployed as unemployment benefit.

The URS EU would act as a common unemployment reinsurance system for all EU 20. The received URS EU expenditure for each individual country was summed up to obtain the total expenditure of the URS EU, which shows how much money from the URS EU have all EU 20 members spent on the unemployed in a given year.

Total URS EU expenditure for the EU 20 per year $t$ is the sum of total URS EU expenditure in the EU 20 in the year $t$:

$$Total\ URS\ EU\ expenditure_t = \sum_{i=1}^{i=20} URS\ EU\ expenditure_{i,t}. \tag{5.4}$$

It is crucial to maintain the same percentage of protection during the recession (coverage rate – share of the total number of short-term unemployed actually receiving unemployment benefits) as before the recession. Financial aid to the unemployed maintains the level of consumption, which contributes to increased income of the unemployed and thus to an increase in aggregate demand, which leads to a halt (slowdown) in further redundancies and a reduction in GDP. Therefore, in the simulation, we also checked how much the total expenditure of the URS EU should increase during the recession ( from 2009 onwards), in order to maintain the share of coverage from before the recession (until 2008).

### *URS EU Receipts (Source of Funding)*

A stable source of funding must be provided for smooth operation of the URS EU. The URS EU Fund would be financed from contributions from employees and employers, and a contribution rate should be set at such a level that the expected net remuneration in the URS EU would be zero in the long term. The calculation of the URS EU receipts is presented below. For the country $i$ and year $t$, the URS EU receipts are defined as follows:

$$\begin{aligned} \textit{URS EU receipts}_{i,t} = {} & \textit{average wage}_{i,t} \times \textit{number of employed}_{i,t} \\ & \times \textit{equilibrium contribution rate}_{i,t}. \end{aligned} \tag{5.5}$$

or more simply:

$$\begin{aligned} \textit{URS EU receipts}_{i,t} = {} & \textit{total wage bill}_{i,t} \\ & \times \textit{equilibrium contribution rate}_{i,t}. \end{aligned} \tag{5.6}$$

Equilibrium contribution rate for unemployment insurance in the period under review (2003–2013) is one in which the balance (receipts minus expenditures) equals zero. The expected net receipts in the unemployment reinsurance system equal zero in the long run – the receipts of the URS EU are equal to the expenditures of the URS EU. If redistribution is not enabled, the equilibrium contribution rate is determined for each country separately, if redistribution is not allowed, however, the equilibrium contribution rate is calculated at the level of all countries included in the URS EU (three different contribution rates according to the principle that in countries that use the system more often, the contribution rate is also higher). The simulation was used to determine the optimal – equilibrium contribution rate for unemployment insurance. With the URS EU, countries would be, under certain conditions, eligible for additional aid. It is necessary to consider how to cover these additional expenses. For countries that borrow money from the unemployment reinsurance system, we have set new (increased) contribution rates for unemployment insurance (until, for example, the debt is settled, the contribution rate increases by 0.3 percentage points each year; the current reinsurance system in the US operates in a similar way (US Department of Labor 2015a)), which would be valid until the state repays the debt – the country would not repay the debt during the recession, but in times of boom.

Based on historical data, we calculated the equilibrium contribution

rate for unemployment insurance at the URS EU level. Determining the equilibrium contribution rate is one of the fundamental elements of the URS EU. It would, of course, be best to set rates for each country separately. This would establish a neutral system based on forecasts rather than historical data. The likelihood for each country to experience recession leading to higher unemployment should be assessed. This is a task that goes beyond the scope of the monograph; we therefore determine equilibrium contribution rates based on historical data, not by forecasting. In the following, two versions of the calculation of the equilibrium contribution rate are presented. With the designed model, we simulated the operation of the URS EU with both versions: (a) with no redistribution and (b) with redistribution.

*Description of the URS EU without Redistribution.* With the URS EU without redistribution, we want to reduce permanent transfers, so contribution rates vary from country to country and are set in such a way that the fund is balanced at country level.

In the case of insurance without redistribution, URS EU benefits during the period under review (2003–2013) are equal to those of the URS EU expenditures in each country. Therefore, the following equation for the country has to be considered for country $i$ and year $t$:

$$\sum_{t=2003}^{t=2013} (URS\ EU\ funds_{i,t} - URS\ EU\ expenditure_{i,t}) = 0. \tag{5.7}$$

The equilibrium contribution rates of individual countries are therefore defined as follows:

$$Equilibrium\ contribution\ rate\ per\ country_i = \frac{\sum_{t=2003}^{t=2013} URS\ EU\ expenditure_{i,t}}{\sum_{t=2003}^{t=2013} total\ wage\ bill_{i,t}}. \tag{5.8}$$

*Description of the URS EU with Redistribution.* In the case of insurance with redistribution in the period under review (2003–2013) the receipts of the URS EU are equal to the expenditures of the URS EU of all countries included in the scheme. Therefore, it is necessary for the year $t$ to consider the following equation:

$$\sum_{i} \sum_{t=2003}^{t=2013} (URS\ EU\ funds_{i,t} - URS\ EU\ expenditure_{i,t}) = 0. \tag{5.9}$$

The single equilibrium contribution rate at the URS EU level is therefore defined as follows:

$$\begin{aligned} &\textit{Single equilibrium contribution rate at the URS EU level}_i \\ &= \frac{\sum_i \sum_{t=2003}^{t=2013} \textit{URS EU expenditure}_{i,t}}{\sum_i \sum_{t=2003}^{t=2013} \textit{total wage bill}_{i,t}}. \end{aligned} \tag{5.10}$$

In order to avoid a permanently negative financial position in the post-recession system, the contribution rate should balance the fund at the EU 20 level. In setting up such a system, we are likely to encounter some reluctance from prosperous and stable countries that would use the URS EU less frequently.

Equilibrium contribution rates may vary (equilibrium contribution rates of individual countries or a single equilibrium contribution rate at the URS EU level), however, the contribution of each country is determined according to the previous application of the URS EU. In this case, countries that persistently or permanently receive the URS EU funds in bad times, shall end up paying more in better times; countries that do not receive transfers from the URS EU shall not be required to contribute to the funding of countries absorbing from the URS EU permanently. It should be noted that gross flows in both directions are possible at the same time. For example, if a country receives the URS EU funds, its contribution rate shall increase, leading to a gradual increase in its gross payments, but if the unemployment rate continues to rise rapidly, this would at the same time include additional benefits from the system.

### *Methodology*

In the designed model, we simulated the operation of URS EU (with redistribution and without redistribution), by taking into account the version of the equilibrium contribution rates of individual countries. We also calculated equal 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, in the event of having an equal equilibrium rate, should increase the statutory rate and which could lower it.

With the designed model, we simulated several possible versions with different variables. In all cases, we studied the period between

2003 and 2013 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). We obtained data on GDP, output gaps as a percentage of possible GDP, output gaps in euros, all unemployment insurance expenditures, unemployment insurance expenditures spent on 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 insurance benefits, the statutory contribution rate for unemployment insurance, the total wage bill and the number of employed. All data are presented in more detail in Chapter 3 (except for data on the output gap as a percentage of potential GDP and the output gap in euros, which are presented below).

Prior to the the simulation, we determined the amount of assistance from the URS EU to each country, so that the maximum aid covers the average state costs of 20 weeks of receiving unemployment benefits for the period 2003–2013.

In the following, a comprehensive simulation of the most efficient version of the URS EU, which does not allow for redistribution is presented, so the URS EU contributions are set in a way that the balance of each country at the end of the period under review is zero. Also, in the simulation which does not allow redistribution, due to the solidarity of countries (Germany, in our case), which do not benefit from the URS EU in the period under review (2003–2013), a contribution rate amounts to 0.005 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):

$$\mathrm{AUR}_t = \frac{\mathrm{UR}_{t-1} + \mathrm{UR}_{t-2} + \mathrm{UR}_{t-3}}{3}. \tag{5.11}$$

The AUR is the average unemployment rate of the last three years, the UR being the unemployment rate and $t$ being the year.

The average unemployment rate thus obtained was compared with the unemployment rate in the current year, as a difference in percentages (trigger). Given the amount of difference between the average un-

employment 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). We calculated, for each country separately, in which year it should receive the 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:

$$\sum_{2003}^{2013} (URS\ EU\ funds_t - URS\ EU\ expenditure_t) = 0. \tag{5.12}$$

Contribution rates are therefore defined as follows:

1. Country balance $i$ in year $t$ is greater than or equal to zero

$$Contribution\ rate_{i,t} = \frac{URS\ EU\ expenditure_{i,t}}{total\ wage\ bill_{i,t}}. \tag{5.13}$$

2. Country balance $i$ in year $t$ is negative

$$Contribution\ rate_{i,t} = \frac{URS\ EU\ expenditure_{i,t}}{total\ wage\ bill_{i,t}} \times 1{,}1. \tag{5.14}$$

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 5.2). The lowest calculated contribution rate is in Poland and the highest in Spain.

### Results of the URS EU Model Simulation

According to the presented model, we performed a simulation of the unemployment reinsurance system operation in the EU 20. We used secondary data from databases of the European Commission – Mutual Information System on Social Protection (http://www.missoc.org), Eurostat (https://ec.europa.eu/eurostat), the International Labor Organization (http://www.ilo.org)) and the Organization for Economic Co-Operation and Development (https://www.oecd.org).

TABLE 5.2 Equilibrium Contribution Rates Used in the URS EU Model

| (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) |
|---|---|---|---|---|---|---|---|
| Austria | 0.040 | Denmark | 0.144 | Latvia | 0.156 | Portugal | 0.206 |
| Belgium | 0.022 | Estonia | 0.179 | Hungary | 0.078 | Slovakia | 0.015 |
| Bulgaria | 0.110 | Finland | 0.041 | Germany | 0.005 | Slovenia | 0.084 |
| Cyprus | 0.273 | France | 0.044 | Netherlands | 0.218 | Spain | 0.637 |
| Czech Rep. | 0.023 | Italy | 0.163 | Poland | 0.009 | Sweden | 0.034 |

NOTES In percent. Germany did not receive any URS EU aid during the period under review, so the calculated contribution rate is zero; due to solidarity, we have determined that countries that do not use the URS EU have a contribution rate of 0.005 percent, which is approximately half of the lowest calculated contribution rate. In addition to solidarity and strengthening of the EU as a federation, potential effects for net contributor countries (Germany) may be, for example: maintaining exports in times of crisis and foreign investors.

The model simulation is based on the described URS EU model without redistribution (the balance of each country is zero at the end of the study period 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 according to the set hypotheses and the research question. The results of the research are presented from two aspects:

- protection of the income of the unemployed (which includes the first hypothesis);
- automatic stabilizer (which includes the first research question).

### *URS EU and Protection of the Unemployment Benefit*

*HYPOTHESIS 1 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 5.3). Most countries received the most URS EU aid between 2009 and 2010, with the exception of Germany, which never received URS EU aid 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. Extension 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 benefit period by 4, 8, 12, 16 or 20 weeks, depending on the in-

TABLE 5.3 Difference between the URS EU Transfers and Contributions

| Country | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | −43.8 | −43.8 | −46.7 | −49.3 | −51.9 | −54.9 | 220.8 | −56.9 | −58.6 | −60.9 | 246.1 |
| Belgium | −29.5 | −30.8 | −32.0 | −33.4 | −35.2 | −36.9 | −36.9 | 380.1 | −43.2 | −48.5 | −53.7 |
| Bulgaria | −5.2 | −5.8 | −6.4 | −7.5 | −9.3 | −12.2 | −13.2 | 24.2 | 24.0 | 13.8 | −2.5 |
| Cyprus | −15.6 | −16.3 | −17.5 | −19.0 | −20.8 | −22.3 | −5.3 | 3.7 | 13.9 | 38.1 | 61.2 |
| Czech Rep. | −8.6 | −9.2 | −9.8 | −10.5 | −11.3 | −12.0 | 34.4 | 72.1 | −13.6 | −15.1 | −16.4 |
| Denmark | −155.7 | −163.6 | −169.3 | −179.7 | −184.8 | −196.2 | 463.8 | 827.3 | 270.3 | −244.8 | −267.3 |
| Estonia | −5.8 | −6.6 | −7.4 | −8.9 | −11.3 | −12.3 | 62.8 | 36.3 | −13.4 | −15.5 | −17.9 |
| Finland | −28.3 | −29.2 | −30.3 | −31.9 | −33.6 | −35.6 | 160.4 | 167.7 | −41.6 | −46.6 | −51.1 |
| France | −303.3 | −314.4 | −329.2 | −342.5 | −356.9 | −370.6 | 1.684.4 | 1.764.1 | −429.8 | −477.7 | −524.2 |
| Italy | −818.4 | −867.8 | −897.3 | −941.0 | −966.6 | −1,005.9 | 505.2 | 606.0 | −1,022.4 | 2,679.7 | 2,728.5 |
| Latvia | −4.8 | −5.2 | −6.2 | −8.0 | −10.7 | −12.8 | 62.5 | 27.4 | −12.3 | −14.0 | −15.9 |
| Hungary | −18.0 | −19.8 | −21.2 | 1.6 | −23.7 | −25.1 | 72.5 | 82.0 | 21.8 | −33.0 | −37.0 |
| Germany | −52.9 | −52.6 | −54.6 | −56.5 | −58.5 | −60.6 | −60.5 | −62.3 | −64.6 | −66.8 | −68.9 |
| The Neth. | −627.3 | −642.6 | −655.1 | −683.5 | −724.0 | −754.8 | −773.8 | 1,342.3 | 575.1 | 816.2 | 2,127.5 |
| Poland | −7.9 | −8.0 | −8.4 | −8.9 | −9.8 | −11.1 | −11.5 | 50.8 | 44.3 | −14.0 | −15.6 |
| Portugal | −132.8 | −135.0 | −138.1 | −6.9 | −146.7 | −151.5 | 5.1 | 190.1 | 178.3 | 263.4 | 74.1 |
| Slovakia | −2.2 | −2.3 | −2.6 | −3.0 | −3.3 | −3.6 | −3.6 | 20.7 | 9.2 | −4.4 | −4.9 |
| Slovenia | −10.8 | −12.3 | −13.1 | −14.0 | −15.2 | −16.6 | 0.1 | 38.3 | 31.5 | 6.4 | 5.8 |
| Spain | −2,251.8 | −2,384.4 | −2.640,6 | −2,832.2 | −3,061.2 | −221.3 | 6,257.2 | 4,381.9 | 1,464.7 | 1,831.3 | −543.5 |
| Sweden | −41.9 | −43.1 | −44.8 | −47.3 | −50.7 | −53.5 | 357.6 | 154.4 | −68.9 | −77.0 | −84.9 |

NOTES In EUR million.

crease in the unemployment rate. According to the URS EU model, the maximum aid is set to cover the extension of the unemployment benefit of all unemployed persons in the current year for a maximum of 20 weeks (Table 5.4). 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 the coverage/benefit period), which the unemployed usually spend in the home environment and for basic needs, maintain 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 calculated how extending the compensation period would affect GDP, which is presented below. Thus, we were able to confirm the first hypothesis (An EU unemployment reinsurance system would contribute to better income protection by directly affecting the income of the unemployed).

### *URS EU as an Automatic Stabilizer*

The role of macroeconomic and structural policies is important in the recovery of the labor market. The unemployment rate in the OECD has

TABLE 5.4 Aid Granted, as Extended Benefits

| Country | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | | | | | | | 4 | | | | 4 |
| Belgium | | | | | | | | 4 | | | |
| Bulgaria | | | | | | | | 12 | 12 | 8 | 4 |
| Cyprus | | | | | | | 8 | 12 | 12 | 16 | 16 |
| Czech Republic | | | | | | | 4 | 8 | | | |
| Denmark | | | | | | | 12 | 16 | 8 | | |
| Estonia | | | | | | | 20 | 20 | | | |
| Finland | | | | | | | 4 | 4 | | | |
| France | | | | | | | 4 | 4 | | | |
| Italy | | | | | | | 4 | 4 | | 8 | 8 |
| Latvia | | | | | | | 20 | 16 | | | |
| Hungary | | | | 4 | | | 8 | 8 | 4 | | |
| Germany | | | | | | | | | | | |
| The Netherlands | | | | | | | | 12 | 8 | 8 | 12 |
| Poland | | | | | | | | 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 | | | | 4 | | 8 | 9 | 9 | 8 | 9 | 7 |

NOTES In weeks.

approached pre-crisis levels (2008–2009), but the unemployment costs of the great recession are nevertheless very high and long-lasting in many countries. In addition, as the recovery in production has been weak compared to the employment recovery, productivity and wage growth remain low. Labor market resilience depends on macroeconomic policy and labor market settings. Macroeconomic policy is effective in limiting employment decline in times of slower economic growth and preventing the cyclical rise in unemployment from becoming structural. Spending on active labor market policies needs to respond strongly to the cyclical rise in unemployment in order to encourage a rapid return to work in the recovery. Too strict employment protection for regular workers reduces flexibility and encourages the use of temporary contracts, and slows down job creation in recovery (OECD 2019).

The research focuses on the URS EU model simulation without redistribution. The contribution rate of each country is set to put the balance by country at the end of the period under review to zero. To explore the first research question, we performed:

- calculations according to the Dullien method (2013) for the case of the URS EU without 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;

- 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 the automatic stabilizer inherent in unemployment insurance. The URS EU would complement public unemployment insurance schemes and help increase their efficiency. Public systems contribute to protect the income and thus to maintain the level of consumption of the unemployed, and they also act as automatic stabilizers at the aggregate level. In times of recession, 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.

*RESEARCH QUESTION 1 Whether and how would the EU unemployment reinsurance system act as an automatic stabilizer of the economy?*

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. Authors 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,

TABLE 5.5 Stabilizing Power of the URS EU

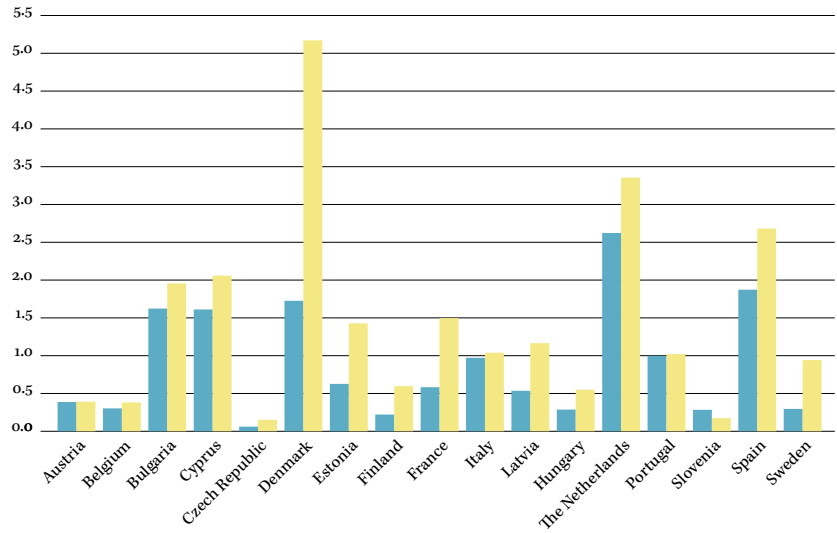
| Country | Without redistribution | | | With redistribution | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) |
| Austria | 2008–2013 | 0.387 | 0.016 | 2008–2009 | 0.391 | 0.023 |
| Belgium | 2008–2013 | 0.303 | 0.009 | 2008–2010 | 0.382 | 0.007 |
| Bulgaria | 2008–2013 | 1.623 | 0.019 | 2009–2012 | 1.956 | 0.029 |
| Cyprus | 2008–2013 | 1.611 | 0.098 | 2008–2013 | 2.059 | 0.125 |
| Czech Republic | 2008–2013 | 0.061 | 0.006 | 2008–2009 | 0.153 | 0.010 |
| Denmark | 2008–2013 | 1.726 | 0.072 | 2008–2011 | 5.171 | 0.160 |
| Estonia | 2008–2013 | 0.627 | 0.053 | 2008–2010 | 1.428 | 0.240 |
| Finland | 2008–2013 | 0.221 | 0.016 | 2008–2010 | 0.597 | 0.040 |
| France | 2008–2013 | 0.583 | 0.017 | 2008–2010 | 1.497 | 0.042 |
| Italy | 2008–2013 | 0.972 | 0.057 | 2008–2013 | 1.039 | 0.061 |
| Latvia | 2008–2013 | 0.536 | 0.038 | 2008–2010 | 1.166 | 0.160 |
| Hungary | 2008–2013 | 0.287 | 0.018 | 2008–2010 | 0.550 | 0.036 |
| Germany | 2008–2013 | | | 2008–2013 | | |
| The Netherlands | 2008–2013 | 2.623 | 0.107 | 2008–2013 | 3.355 | 0.137 |
| Poland | 2008–2013 | 0.295 | 0.002 | 2008–2013 | | |
| Portugal | 2008–2013 | 0.998 | 0.068 | 2008–2013 | 1.021 | 0.069 |
| Slovakia | 2008–2013 | 0.065 | 0.004 | 2008–2013 | | |
| Slovenia | 2008–2013 | 0.284 | 0.037 | 2009–2012 | 0.173 | 0.004 |
| Spain | 2008–2013 | 1.873 | 0.209 | 2007–2013 | 2.681 | 0.337 |
| Sweden | 2008–2013 | 0.296 | 0.012 | 2008–2010 | 0.942 | 0.029 |

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.

with a relatively high stabilizing power (2 to 16 percent reduction in the output gap).

In the monograph we assume that, despite the lower stabilizing power, the URS EU model, not allowing redistribution, is politically more acceptable. The contribution rate of each country is set so that the balance by country at the end of the period under review is zero. In the version where redistribution is not allowed, the stabilizing power of the URS EU is slightly smaller 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 and Slovakia are also included in the system. These are countries that do receive aid but pay more each year in contributions than they receive in aid (Table 5.5). 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 labor 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



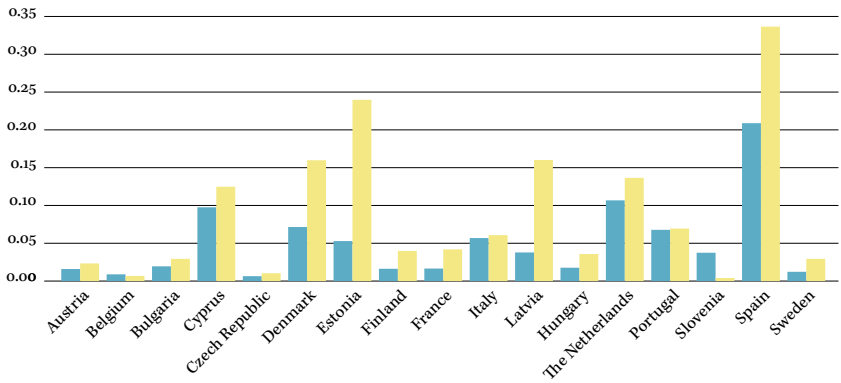

NOTES Blue columns – without redistribution, yellow columns – with redistribution.

FIGURE 5.2 Change in Balance as a Percentage of Change in the Output Gap

increase in consumption as the received aid as a percentage of GDP.

Under certain assumptions, the URS EU influences reduction of the output gap and increases consumption. In the simulation, we assumed that the additional aid received by the unemployed is used for their most urgent needs and thus immediately returned to the economy, as consumption increases, which in turn has an impact on GDP growth (Table 5.5 and Figure 5.2). We calculated the stabilizing power for each country separately – how the aid received affects the GDP is determined as follows:

1. 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.
2. We calculate the change in the euro balance over the period under review.
3. We calculate the change in the balance as a percentage of GDP over the period under review.
4. We calculate the change in the output gap as a percentage of GDP over the period under review.
5. We calculate the change in the balance as a percentage change




NOTES Blue columns – without redistribution, yellow columns – with redistribution.

FIGURE 5.3 Increase in Consumption as a Percentage of GDP

in the output gap; the result obtained indicates by how much the output gap would be reduced.

With the financial aid for the unemployed, the level of consumption is maintained. Increase in unemployment benefits or the extension of the coverage period increases the aggregate demand. By using the URS EU model, we calculated how extending the compensation period would affect the GDP (Figure 5.3), namely:

$$\textit{Increase in consumption}_{t,i} = 100 \times \frac{\textit{change in balance}_{t,i}}{\text{GDP}_{t,i}}. \tag{5.15}$$

The additional euro spent on unemployment benefits impacts the GDP. Potential effects of the unemployment insurance system 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 euro spent on unemployment benefits affects 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 Ramey research (2011).

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 5.6):

$$\textit{Stabilization}_t = 1{,}5 \times \sum_{i}^{j} \textit{URS EU balance (in \% GDP)}, \tag{5.16}$$

TABLE 5.6 Stabilization as a Percentage of GDP

| Country | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | −0.03 | −0.03 | −0.03 | −0.03 | −0.03 | −0.03 | **0.12** | −0.03 | −0.03 | −0.03 | **0.11** |
| Belgium | −0.02 | −0.02 | −0.02 | −0.02 | −0.02 | −0.02 | −0.02 | **0.16** | −0.02 | −0.02 | −0.02 |
| Bulgaria | −0.05 | −0.04 | −0.04 | −0.04 | −0.04 | −0.05 | −0.05 | **0.09** | **0.09** | **0.05** | −0.01 |
| Cyprus | −0.20 | −0.18 | −0.17 | −0.18 | −0.18 | −0.18 | −0.04 | **0.03** | **0.11** | **0.29** | **0.51** |
| Czech Rep. | −0.02 | −0.01 | −0.01 | −0.01 | −0.01 | −0.01 | **0.03** | **0.07** | −0.01 | −0.01 | −0.02 |
| Denmark | −0.13 | −0.12 | −0.12 | −0.12 | −0.12 | −0.12 | **0.30** | **0.51** | **0.16** | −0.15 | −0.16 |
| Estonia | −0.11 | −0.10 | −0.10 | −0.10 | −0.10 | −0.11 | **0.67** | **0.37** | −0.12 | −0.13 | −0.14 |
| Finland | −0.03 | −0.03 | −0.03 | −0.03 | −0.03 | −0.03 | **0.13** | **0.13** | −0.03 | −0.04 | −0.04 |
| France | −0.03 | −0.03 | −0.03 | −0.03 | −0.03 | −0.03 | **0.13** | **0.13** | −0.03 | −0.03 | −0.04 |
| Italy | −0.10 | −0.09 | −0.09 | −0.09 | −0.09 | −0.09 | **0.05** | **0.06** | −0.09 | **0.25** | **0.26** |
| Latvia | −0.07 | −0.07 | −0.07 | −0.07 | −0.07 | −0.08 | **0.50** | **0.23** | −0.09 | −0.10 | −0.10 |
| Hungary | −0.04 | −0.04 | −0.04 | **0.00** | −0.04 | −0.03 | **0.12** | **0.13** | **0.03** | −0.05 | −0.05 |
| Germany | −0.16 | −0.14 | −0.14 | −0.14 | −0.14 | −0.14 | −0.15 | −0.14 | −0.14 | −0.15 | −0.15 |
| The Neth. | −0.20 | −0.18 | −0.18 | −0.18 | −0.18 | −0.18 | −0.19 | **0.32** | **0.13** | **0.19** | **0.49** |
| Poland | −0.01 | −0.01 | −0.01 | 0.00 | 0.00 | 0.00 | −0.01 | **0.02** | **0.02** | −0.01 | −0.01 |
| Portugal | −0.15 | −0.13 | −0.13 | −0.01 | −0.13 | −0.13 | **0.00** | **0.16** | **0.15** | **0.23** | **0.07** |
| Slovakia | −0.01 | −0.01 | −0.01 | −0.01 | −0.01 | −0.01 | −0.01 | **0.05** | **0.02** | −0.01 | −0.01 |
| Slovenia | −0.07 | −0.07 | −0.07 | −0.07 | −0.06 | −0.07 | **0.00** | **0.16** | **0.13** | **0.03** | **0.02** |
| Spain | −0.46 | −0.42 | −0.43 | −0.42 | −0.42 | −0.03 | **0.87** | **0.61** | **0.21** | **0.26** | −0.08 |
| Sweden | −0.02 | −0.02 | −0.02 | −0.02 | −0.02 | −0.02 | **0.17** | **0.06** | −0.03 | −0.03 | −0.03 |

*t* being the country, *i* the initial year when the balance is the highest, and *j* the last year, when the balance is the lowest. The calculated stabilization as a percentage of GDP (Beblavý and Maselli 2014) shows a slowdown in economic overheating by 2008 and an impact/aid for a faster exit from the crisis from 2009 onwards). Based on previous illustrations and calculations, we can give an affirmative answer to the research question: Would and how would the EU unemployment reinsurance system act as an automatic stabilizer of the economy?

## Heterogeneity of Unemployment Insurance Systems in the EU

The purpose of this section is to provide an answer to Hypothesis 2: The EU unemployment reinsurance system could exploit the heterogeneity of EU countries and consequently the differences in the dynamics of economic growth and unemployment. In order to achieve the purpose, we examined in more detail:

- trends in the unemployment rate in the EU 20 in the period 2003–2013;
- trends in the unemployment insurance balance in the EU 20 in the period 2003–2013;
- dynamics of economic growth in the EU 20 in the period 2003–2013.

TABLE 5.7 Unemployment Rate in the EU 20 (2003–2013)

| Country | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 4.80 | 5.80 | 5.60 | 5.30 | 4.90 | 4.10 | 5.30 | 4.80 | 4.60 | 4.90 | 5.40 |
| Belgium | 7.70 | 7.40 | 8.50 | 8.30 | 7.50 | 7.00 | 7.90 | 8.30 | 7.20 | 7.60 | 8.40 |
| Bulgaria | 13.80 | 12.10 | 10.10 | 9.00 | 6.90 | 5.60 | 6.80 | 10.30 | 11.30 | 12.30 | 13.00 |
| Cyprus | 4.20 | 4.40 | 5.30 | 4.60 | 3.90 | 3.70 | 5.40 | 6.30 | 7.90 | 11.90 | 15.90 |
| Czech Rep. | 7.60 | 8.20 | 7.90 | 7.20 | 5.30 | 4.40 | 6.70 | 7.30 | 6.70 | 7.00 | 7.00 |
| Denmark | 5.40 | 5.20 | 4.80 | 3.90 | 3.80 | 3.40 | 6.00 | 7.50 | 7.60 | 7.50 | 7.00 |
| Estonia | 11.30 | 10.20 | 8.00 | 5.90 | 4.60 | 5.50 | 13.50 | 16.70 | 12.30 | 10.00 | 8.60 |
| Finland | 10.50 | 10.40 | 8.40 | 7.70 | 6.90 | 6.40 | 8.20 | 8.40 | 7.80 | 7.70 | 8.20 |
| France | 8.30 | 8.90 | 8.50 | 8.50 | 7.70 | 7.10 | 8.70 | 8.90 | 8.80 | 9.40 | 9.90 |
| Italy | 8.90 | 7.90 | 7.70 | 6.80 | 6.10 | 6.70 | 7.80 | 8.40 | 8.40 | 10.70 | 12.20 |
| Latvia | 12.10 | 11.70 | 10.00 | 7.00 | 6.10 | 7.70 | 17.50 | 19.50 | 16.20 | 15.00 | 11.90 |
| Hungary | 5.80 | 5.80 | 7.20 | 7.50 | 7.40 | 7.80 | 10.00 | 11.20 | 11.00 | 11.00 | 10.20 |
| Germany | 9.80 | 10.70 | 11.20 | 10.30 | 8.70 | 7.50 | 7.80 | 7.10 | 5.80 | 5.40 | 5.20 |
| The Neth. | 3.60 | 4.70 | 4.70 | 3.90 | 3.20 | 2.80 | 3.40 | 4.50 | 5.00 | 5.80 | 7.30 |
| Poland | 19.40 | 19.10 | 17.80 | 13.90 | 9.60 | 7.10 | 8.20 | 9.70 | 9.70 | 10.10 | 10.30 |
| Portugal | 6.20 | 6.40 | 7.70 | 7.80 | 8.10 | 7.70 | 9.60 | 11.00 | 12.90 | 15.80 | 16.40 |
| Slovakia | 17.10 | 18.60 | 16.30 | 13.40 | 11.10 | 9.50 | 12.00 | 14.40 | 13.60 | 14.00 | 14.20 |
| Slovenia | 6.50 | 6.00 | 6.50 | 6.00 | 4.90 | 4.40 | 5.90 | 7.30 | 8.20 | 8.90 | 10.10 |
| Spain | 11.30 | 11.10 | 9.20 | 8.50 | 8.20 | 11.30 | 17.90 | 19.90 | 21.40 | 24.80 | 26.10 |
| Sweden | 5.60 | 6.70 | 7.80 | 7.10 | 6.20 | 6.20 | 8.40 | 8.60 | 7.80 | 8.00 | 8.10 |
| Average | 9.00 | 9.07 | 8.66 | 7.63 | 6.56 | 6.30 | 8.85 | 10.01 | 9.71 | 10.39 | 10.77 |

NOTES In percent.

The URS EU system is based on 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 both in 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. 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. The country gets the right to help in times of recession and debt is repaid during the boom period.

In order to determine heterogeneity, we examined the movement of the unemployment rate in the EU 20 in the period 2003–2013. The average unemployment rate in all countries in 2003 was nine percent, falling to 6.3 percent by 2008 and later rising to 10.8 percent in 2013. This trend ( falling by 2008 and rising unemployment rate by 2013) does not apply to all countries, as the unemployment rate in Germany has been falling since 2005 ( from 11.2 to only 5.2 percent) regardless of the

TABLE 5.8 Correlation Coefficient of the Unemployment Rate between the EU 20 Countries

| Country | AT | BE | BG | CY | CZ | DK | EE | FI | FR | IT | LV | HU | DE | NL | PL | PT | SK | SI | ES | SE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria (AT) | 1.0 | | | | | | | | | | | | | | | | | | | |
| Belgium (BE) | 0.6 | 1.0 | | | | | | | | | | | | | | | | | | |
| Bulgaria (BG) | 0.3 | 0.2 | 1.0 | | | | | | | | | | | | | | | | | |
| Cyprus (CY) | 0.1 | 0.3 | 0.5 | 1.0 | | | | | | | | | | | | | | | | |
| Czech Rep. (CZ) | 0.7 | 0.5 | 0.7 | 0.2 | 1.0 | | | | | | | | | | | | | | | |
| Denmark (DK) | 0.0 | 0.2 | 0.6 | 0.7 | 0.4 | 1.0 | | | | | | | | | | | | | | |
| Estonia (EE) | 0.0 | 0.2 | 0.4 | 0.1 | 0.5 | 0.8 | 1.0 | | | | | | | | | | | | | |
| Finland (FI) | 0.5 | 0.2 | 0.7 | 0.1 | 0.8 | 0.2 | 0.4 | 1.0 | | | | | | | | | | | | |
| France (FR) | 0.5 | 0.5 | 0.7 | 0.8 | 0.7 | 0.8 | 0.5 | 0.4 | 1.0 | | | | | | | | | | | |
| Italy (IT) | 0.2 | 0.3 | 0.7 | 0.9 | 0.4 | 0.7 | 0.3 | 0.3 | 0.8 | 1.0 | | | | | | | | | | |
| Latvia (LV) | 0.0 | 0.1 | 0.3 | 0.3 | 0.4 | 0.9 | 1.0 | 0.3 | 0.5 | 0.4 | 1.0 | | | | | | | | | |
| Hungary (HU) | 0.3 | 0.1 | 0.0 | 0.6 | 0.1 | 0.8 | 0.5 | 0.4 | 0.5 | 0.5 | 0.7 | 1.0 | | | | | | | | |
| Germany (DE) | 0.5 | 0.2 | 0.1 | 0.7 | 0.4 | 0.7 | 0.3 | 0.4 | 0.4 | 0.6 | 0.5 | 0.9 | 1.0 | | | | | | | |
| The Neth. (NL) | 0.4 | 0.4 | 0.7 | 0.9 | 0.5 | 0.7 | 0.2 | 0.2 | 0.9 | 0.9 | 0.3 | 0.5 | 0.5 | 1.0 | | | | | | |
| Poland (PL) | 0.6 | 0.2 | 0.6 | 0.3 | 0.7 | 0.2 | 0.0 | 0.8 | 0.1 | 0.0 | 0.2 | 0.7 | 0.8 | 0.0 | 1.0 | | | | | |
| Portugal (PT) | 0.1 | 0.2 | 0.3 | 0.9 | 0.0 | 0.8 | 0.2 | 0.3 | 0.7 | 0.8 | 0.4 | 0.8 | 0.9 | 0.8 | 0.5 | 1.0 | | | | |
| Slovakia (SK) | 0.6 | 0.3 | 0.8 | 0.1 | 0.9 | 0.3 | 0.3 | 0.9 | 0.5 | 0.3 | 0.2 | 0.4 | 0.4 | 0.4 | 0.9 | 0.2 | 1.0 | | | |
| Slovenia (SI) | 0.2 | 0.4 | 0.7 | 0.9 | 0.4 | 0.8 | 0.4 | 0.1 | 0.9 | 0.9 | 0.5 | 0.6 | 0.6 | 0.9 | 0.1 | 0.9 | 0.3 | 1.0 | | |
| Spain (ES) | 0.1 | 0.1 | 0.4 | 0.9 | 0.1 | 0.9 | 0.5 | 0.1 | 0.7 | 0.8 | 0.7 | 0.9 | 0.9 | 0.7 | 0.5 | 0.9 | 0.0 | 0.9 | 1.0 | |
| Sweden (SE) | 0.3 | 0.5 | 0.1 | 0.5 | 0.3 | 0.7 | 0.6 | 0.2 | 0.7 | 0.4 | 0.7 | 0.8 | 0.5 | 0.5 | 0.4 | 0.7 | 0.0 | 0.6 | 0.7 | 1.0 |

NOTES Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

global financial crisis. We can also say that the unemployment rate is constant in Austria, Belgium and Sweden. In some countries, however, the unemployment rate rose well above average in 2013 (26.1% in Spain, 16.4% in Portugal and 15.9% in Cyprus) (Table 5.7).

For a more detailed review of the correlations between countries, we calculated the Pearson correlation coefficient between individual countries, which shows whether the trend in the unemployment rate is the same or how similar it is (0.00 – no correlation; 0.01–0.19 – insignificant correlation; 0.20–0.39 – low/weak correlation, 0.40–0.69 – medium/moderate correlation, 0.70–0.89 – high/strong correlation, 0.90–0.99 – very high/very strong correlation, 1.00 – full correlation). The Pearson correlation coefficient of all EU 20 countries in the period 2003–2013 is 0.48 on average, which means that the movement of the unemployment rate between countries is medium/moderately correlated (Table 5.8).

The correlation between the unemployment rates of the EU 20 is weak in 31%, moderate in 33% and strong in 36% (Figure 5.4).

In order to determine heterogeneity, we also examined the movement of the unemployment insurance balance in the EU 20 in the pe-


FIGURE 5.4 Distribution of the Unemployment Rate Correlation between the EU 20

TABLE 5.9 Unemployment Insurance Balance in the EU 20 (2003–2013)

| Country | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 2,136 | 1,865 | 1,843 | 2,033 | 2,636 | 3,122 | 1,990 | 2,182 | 2,768 | 2,944 | 2,466 |
| Belgium | −5,016 | −5,599 | −5,748 | −5,518 | −5,247 | −5,402 | −6,722 | −6,804 | −6,719 | −6,553 | −6,476 |
| Bulgaria | −131 | −106 | −98 | −91 | −63 | −50 | −108 | −89 | −105 | −145 | −199 |
| Cyprus | 253 | 260 | 260 | 308 | 364 | 396 | 353 | −74 | −127 | −156 | −252 |
| Czech Republic | 180 | 185 | 174 | 155 | 182 | −30 | −397 | −424 | −228 | −117 | −204 |
| Denmark | 397 | 558 | 1,603 | 2,919 | 4,211 | 5,224 | 3,806 | 2,427 | 2,796 | 2,817 | 2,904 |
| Estonia | 26 | 32 | 17 | 25 | 33 | 16 | 28 | 90 | 148 | 77 | 92 |
| Finland | −2,831 | −2,674 | −2,284 | −2,053 | −2,502 | −2,533 | −3,035 | −2,934 | −2,442 | −2,479 | −3,194 |
| France | −615 | 966 | 4,588 | 7,589 | 10,138 | 14,143 | 7,961 | 5,333 | 9,703 | 9,598 | 7,825 |
| Italy | −10,060 | −9,413 | −9,654 | −8,839 | −7,591 | −9,435 | −17,306 | −18,189 | −16,920 | −21,165 | −21,081 |
| Latvia | 9 | 4 | 4 | 5 | 24 | 30 | 14 | −63 | −38 | −3 | −2 |
| Hungary | 537 | 453 | 455 | 1,116 | 668 | 693 | −280 | −501 | 689 | −533 | −576 |
| Germany | −6,158 | −6,759 | 1,241 | −13,925 | −12,537 | −14,324 | −26,391 | −18,736 | −8,749 | −4,485 | −4,987 |
| The Nether. | 5,607 | 5,526 | 10,070 | 11,261 | 14,300 | 1,685 | −433 | −1,374 | −481 | −9,933 | −10,250 |
| Poland | −1,146 | −1,047 | −752 | −641 | −385 | −127 | 267 | −340 | 843 | 678 | 397 |
| Portugal | 777 | 633 | 485 | 679 | 1,048 | 1,151 | 293 | 211 | 382 | −125 | −228 |
| Slovakia | 135 | 144 | 122 | 108 | 123 | 37 | −94 | −114 | −30 | 38 | 82 |
| Slovenia | −159 | −151 | −165 | −169 | −136 | −127 | −302 | −380 | −404 | −354 | −385 |
| Spain | 10,839 | 10,377 | 11,878 | 11,147 | 12,150 | 7,950 | −4,080 | −7,275 | −4,297 | −5,557 | −2,426 |
| Sweden | −2,008 | −1,438 | −1,264 | −940 | 859 | 2,322 | −1,515 | 814 | −2,020 | −2,816 | −3,435 |
| Average | −361 | −309 | 639 | 258 | 914 | 237 | −2,298 | −2,312 | −1,262 | −1,914 | −1,997 |

NOTES In EUR. Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

riod 2003–2013. The average unemployment insurance balance of all countries in 2003 was EUR −370 million, rising to EUR 915 million by 2007 and then falling to EUR −2 billion in 2013 (in 2010 and 2011 even to EUR −2.3 billion). This trend (growth until 2007 and decrease in the unemployment insurance balance until 2013) does not apply to all countries. The balance in Poland had been growing steadily over the period under review, with only a slight decline in 2010. In 2009, the balances in Germany and Italy had fell well below the average of other countries (by 2013, the situation in Germany had improved and Italy had maintained a strongly negative balance until 2013). Regardless of the financial and economic crisis, there is a persistently negative unemployment insurance balance in certain countries. These countries include Belgium, Bulgaria, Finland, Italy and Slovenia. On the other hand, there are countries where the balance has been consistently positive (Austria, Denmark, and Estonia) (Figure 5.9).

TABLE 5.10 Correlation Coefficient of the Unemployment Insurance Balance between EU 20 Countries

| Country | AT | BE | BG | CY | CZ | DK | EE | FI | FR | IT | LV | HU | DE | NL | PL | PT | SK | SI | ES | SE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria (AT) | 1.0 | | | | | | | | | | | | | | | | | | | |
| Belgium (BE) | 0.1 | 1.0 | | | | | | | | | | | | | | | | | | |
| Bulgaria (BG) | 0.1 | 0.4 | 1.0 | | | | | | | | | | | | | | | | | |
| Cyprus (CY) | 0.3 | 0.7 | 0.7 | 1.0 | | | | | | | | | | | | | | | | |
| Czech Rep. (CZ) | 0.2 | 0.9 | 0.2 | 0.5 | 1.0 | | | | | | | | | | | | | | | |
| Denmark (DK) | 0.6 | 0.1 | 0.4 | 0.1 | 0.3 | 1.0 | | | | | | | | | | | | | | |
| Estonia (EE) | 0.4 | 0.7 | 0.4 | 0.9 | 0.6 | 0.0 | 1.0 | | | | | | | | | | | | | |
| Finland (FI) | 0.1 | 0.4 | 0.5 | 0.3 | 0.6 | 0.1 | 0.2 | 1.0 | | | | | | | | | | | | |
| France (FR) | 0.8 | 0.2 | 0.3 | 0.0 | 0.3 | 0.9 | 0.2 | 0.2 | 1.0 | | | | | | | | | | | |
| Italy (IT) | 0.3 | 0.9 | 0.7 | 0.8 | 0.8 | 0.1 | 0.7 | 0.5 | 0.2 | 1.0 | | | | | | | | | | |
| Latvia (LV) | 0.1 | 0.7 | 0.2 | 0.7 | 0.6 | 0.3 | 0.8 | 0.2 | 0.2 | 0.5 | 1.0 | | | | | | | | | |
| Hungary (HU) | 0.1 | 0.7 | 0.6 | 0.6 | 0.7 | 0.0 | 0.4 | 0.7 | 0.0 | 0.9 | 0.4 | 1.0 | | | | | | | | |
| Germany (DE) | 0.0 | 0.3 | 0.4 | 0.3 | 0.6 | 0.5 | 0.1 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 1.0 | | | | | | | |
| The Neth. (NL) | 0.4 | 0.7 | 0.7 | 0.8 | 0.7 | 0.1 | 0.6 | 0.6 | 0.2 | 0.9 | 0.3 | 0.8 | 0.0 | 1.0 | | | | | | |
| Poland (PL) | 0.6 | 0.8 | 0.3 | 0.6 | 0.7 | 0.5 | 0.7 | 0.2 | 0.7 | 0.8 | 0.3 | 0.5 | 0.2 | 0.7 | 1.0 | | | | | |
| Portugal (PT) | 0.1 | 0.8 | 0.8 | 0.8 | 0.6 | 0.2 | 0.6 | 0.4 | 0.1 | 0.9 | 0.5 | 0.8 | 0.1 | 0.8 | 0.6 | 1.0 | | | | |
| Slovakia (SK) | 0.2 | 0.8 | 0.1 | 0.3 | 0.9 | 0.4 | 0.5 | 0.4 | 0.3 | 0.6 | 0.6 | 0.5 | 0.7 | 0.5 | 0.6 | 0.4 | 1.0 | | | |
| Slovenia (SI) | 0.2 | 0.9 | 0.6 | 0.9 | 0.8 | 0.1 | 0.9 | 0.4 | 0.2 | 0.9 | 0.7 | 0.7 | 0.1 | 0.8 | 0.8 | 0.8 | 0.7 | 1.0 | | |
| Spain (ES) | 0.3 | 0.9 | 0.4 | 0.7 | 0.9 | 0.2 | 0.7 | 0.5 | 0.3 | 0.9 | 0.6 | 0.8 | 0.3 | 0.8 | 0.8 | 0.8 | 0.8 | 0.9 | 1.0 | |
| Sweden (SE) | 0.2 | 0.3 | 0.9 | 0.6 | 0.1 | 0.5 | 0.4 | 0.2 | 0.4 | 0.5 | 0.1 | 0.4 | 0.4 | 0.5 | 0.3 | 0.7 | 0.2 | 0.5 | 0.3 | 1.0 |

NOTES Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).


FIGURE 5.5 Distribution of the Unemployment Insurance Balance Correlation between the EU 20

For a more detailed overview, we calculated the Pearson correlation coefficient between individual countries. It shows whether the trend of the unemployment insurance balance is the same, or shows how similar it is. Pearson correlation coefficient of all EU 20 countries in the period 2003–2013 is 0.48 on average, which means that the movement of the unemployment insurance balance is moderately related between countries (Table 5.10). The correlation between the unemployment insurance balance and the EU 20 is weak in 32%, moderate in 31% and strong in 37% (Figure 5.5).

In order to determine heterogeneity, we also examined the dynamics of economic growth in the EU 20 in the period 2003–2013. The dynamics of economic growth was determined according to the output gap (International Monetary Fund 2015). Potential product is a measure of the supply side (maximum product) at full employment of production capacities without inflationary pressures. The actual product is deter-

TABLE 5.11 Production Gap in the EU 20 (2003–2013)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | −1.60 | −1.75 | −1.16 | 0.97 | 3.72 | 3.29 | −2.68 | −1.70 | 0.24 | −0.15 | −0.84 |
| Belgium | −1.27 | 0.06 | 0.07 | 0.60 | 2.24 | 1.68 | −1.59 | −0.10 | 0.60 | −0.27 | −1.25 |
| Bulgaria | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | −0.60 | −0.30 |
| Cyprus | −1.56 | −0.96 | −0.80 | −0.27 | 1.61 | 2.76 | −0.85 | −1.17 | −2.41 | −3.30 | −3.30 |
| Czech Rep. | −3.27 | −2.58 | 0.26 | 3.79 | 6.19 | 6.14 | −0.62 | −0.03 | 0.23 | −2.05 | −4.38 |
| Denmark | −0.93 | 0.17 | 1.23 | 3.87 | 3.81 | 2.43 | −3.05 | −1.62 | −0.66 | −1.01 | −1.72 |
| Estonia | −0.70 | −0.01 | 4.24 | 10.37 | 15.09 | 6.13 | −11.29 | −10.66 | −5.24 | −2.09 | −2.31 |
| Finland | 0.06 | 1.67 | 1.79 | 3.30 | 6.09 | 4.66 | −4.32 | −2.01 | −0.14 | −1.88 | −2.70 |
| France | −0.72 | 0.15 | 0.08 | 0.86 | 1.86 | 1.02 | −2.69 | −1.78 | −0.80 | −1.54 | −1.82 |
| Italy | −1.08 | −0.32 | 0.00 | 1.48 | 2.69 | 1.78 | −3.17 | −1.31 | −0.46 | −2.79 | −4.07 |
| Latvia | −0.61 | −0.01 | 3.66 | 8.95 | 18.36 | 7.46 | −13.73 | −12.97 | −6.37 | −1.80 | 0.40 |
| Hungary | 0.08 | 1.73 | 3.27 | 5.34 | 3.87 | 3.57 | −3.62 | −2.93 | −1.47 | −3.27 | −2.59 |
| Germany | −1.60 | −2.00 | −2.30 | 0.14 | 2.25 | 2.14 | −4.03 | −1.33 | 1.02 | 0.40 | −0.43 |
| The Neth. | −3.19 | −1.96 | −1.69 | −0.06 | 1.00 | −0.59 | −4.90 | −4.03 | −3.19 | −4.39 | −4.66 |
| Poland | −2.33 | −0.82 | −1.54 | −0.04 | 1.15 | 1.53 | −0.48 | 0.41 | 1.81 | 0.67 | 0.70 |
| Portugal | −1.74 | −1.16 | −1.04 | −0.31 | 1.46 | 0.90 | −1.89 | −0.68 | −2.10 | −5.19 | −5.89 |
| Slovakia | −1.13 | −1.81 | −2.01 | 0.07 | 4.73 | 5.38 | −3.33 | −0.32 | −0.13 | −0.89 | −1.37 |
| Slovenia | −1.58 | −0.52 | 0.64 | 3.11 | 6.97 | 7.53 | −2.02 | −1.39 | −1.36 | −4.33 | −5.66 |
| Spain | 2.58 | 2.86 | 3.78 | 5.02 | 5.95 | 4.54 | −0.80 | −1.81 | −3.04 | −5.37 | −6.60 |
| Sweden | −0.71 | 1.41 | 1.71 | 3.73 | 4.56 | 1.50 | −5.50 | −1.61 | −0.74 | −2.25 | −2.64 |
| Average | −1.02 | −0.25 | 0.55 | 2.59 | 4.72 | 3.24 | −3.48 | −2.31 | −1.17 | −2.10 | −2.57 |

NOTES In percent of potential output. Based on data from International Monetary Fund (2015).

mined by demand. The difference between the potential and the actual product is the output gap – an indicator of the utilization of production capacity. It is measured as a percentage of the potential product (D'Auria et al. 2010). The average output gap of all countries in 2003 was –1% and increased to 4.7% by 2007 (3.2% in 2008), but later decreased to –2.6% in 2013 (in 2009 even to –3.5 percent). However, the described trend with growth until 2007 and decrease until 2013 does not apply to all countries. The output gap in Poland has been steadily increasing during the period under review, with only a slight decline in 2010. In 2009, the output gap in Estonia and Latvia narrowed well below the average of other countries (Figure 5.11).

For a more detailed overview, we calculated the Pearson correlation coefficient between individual countries; it shows whether the trend in the output gap is equal or at least how similar it is. The Pearson correlation coefficient of all EU 20 countries in the period 2003–2013 is on average 0.6, which means that the movement of the output gap between countries is moderately correlated (Table 5.12). The output gap correlation between the EU 20 is weak in 11%, moderate in 15% and strong in 74% (Figure 5.6).

The variables studied vary between countries, the EU 20 countries differ from each other, and they are heterogeneous. From the previous descriptions and presentation of the key characteristics of unemploy-

TABLE 5.12 Correlation Coefficient of the Output Gap in the EU 20 (2003–2013)

| Country | AT | BE | BG | CY | CZ | DK | EE | FI | FR | IT | LV | HU | DE | NL | PL | PT | SK | SI | ES | SE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria (AT) | 1.0 | | | | | | | | | | | | | | | | | | | |
| Belgium (BE) | 0.9 | 1.0 | | | | | | | | | | | | | | | | | | |
| Bulgaria (BG) | 0.1 | 0.3 | 1.0 | | | | | | | | | | | | | | | | | |
| Cyprus (CY) | 0.7 | 0.7 | 0.6 | 1.0 | | | | | | | | | | | | | | | | |
| Czech Rep. (CZ) | 0.8 | 0.9 | 0.5 | 0.9 | 1.0 | | | | | | | | | | | | | | | |
| Denmark (DK) | 0.8 | 0.8 | 0.3 | 0.7 | 0.8 | 1.0 | | | | | | | | | | | | | | |
| Estonia (EE) | 0.8 | 0.7 | 0.2 | 0.6 | 0.7 | 0.9 | 1.0 | | | | | | | | | | | | | |
| Finland (FI) | 0.8 | 0.9 | 0.4 | 0.8 | 0.8 | 0.9 | 0.9 | 1.0 | | | | | | | | | | | | |
| France (FR) | 0.8 | 0.9 | 0.4 | 0.7 | 0.7 | 1.0 | 0.9 | 1.0 | 1.0 | | | | | | | | | | | |
| Italy (IT) | 0.7 | 0.9 | 0.6 | 0.8 | 0.9 | 0.9 | 0.8 | 1.0 | 0.9 | 1.0 | | | | | | | | | | |
| Latvia (LV) | 0.8 | 0.7 | 0.1 | 0.5 | 0.6 | 0.9 | 1.0 | 0.9 | 0.9 | 0.7 | 1.0 | | | | | | | | | |
| Hungary (HU) | 0.6 | 0.7 | 0.5 | 0.7 | 0.7 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 1.0 | | | | | | | | |
| Germany (DE) | 0.9 | 0.8 | −0.1 | 0.4 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.4 | 1.0 | | | | | | | |
| The Neth. (NL) | 0.8 | 0.8 | 0.5 | 0.8 | 0.8 | 1.0 | 0.9 | 1.0 | 1.0 | 1.0 | 0.9 | 0.9 | 0.6 | 1.0 | | | | | | |
| Poland (PL) | 0.6 | 0.6 | −0.2 | 0.2 | 0.5 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | −0.1 | 0.7 | 0.1 | 1.0 | | | | | |
| Portugal (PT) | 0.5 | 0.7 | 0.9 | 0.9 | 0.8 | 0.7 | 0.5 | 0.7 | 0.7 | 0.9 | 0.4 | 0.7 | 0.2 | 0.8 | 0.0 | 1.0 | | | | |
| Slovakia (SK) | 0.9 | 0.9 | 0.2 | 0.7 | 0.8 | 0.7 | 0.7 | 0.8 | 0.7 | 0.7 | 0.7 | 0.5 | 0.9 | 0.7 | 0.6 | 0.6 | 1.0 | | | |
| Slovenia (SI) | 0.8 | 0.9 | 0.6 | 1.0 | 0.9 | 0.8 | 0.7 | 0.9 | 0.9 | 0.9 | 0.7 | 0.8 | 0.5 | 0.9 | 0.2 | 0.9 | 0.8 | 1.0 | | |
| Spain (ES) | 0.4 | 0.6 | 0.7 | 0.8 | 0.7 | 0.8 | 0.7 | 0.8 | 0.8 | 0.9 | 0.6 | 0.9 | 0.1 | 0.9 | −0.3 | 0.9 | 0.5 | 0.8 | 1.0 | |
| Sweden (SE) | 0.7 | 0.8 | 0.4 | 0.6 | 0.7 | 1.0 | 0.9 | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 | 0.6 | 1.0 | 0.1 | 0.7 | 0.6 | 0.8 | 0.8 | 1.0 |

NOTES Calculation based on data from MISSOC (http://www.missoc.org) and Eurostat (https://ec.europa.eu/eurostat).

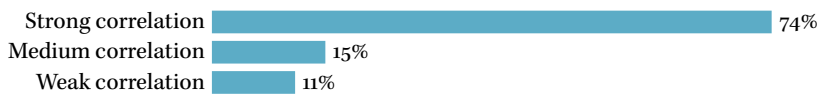



FIGURE 5.6 Distribution of the Output Gap Correlation between the EU 20

ment insurance, i.e. (i) eligibility for unemployment benefit; (ii) amount of unemployment benefit; (iii) duration of the unemployment benefit; (iv) sources of funding for unemployment insurance; and (v) administration of the unemployment insurance system can be understood that unemployment insurances in the EU 20 are heterogeneous. Fluctuations in the unemployment rate, the unemployment insurance balance and the output gap in the countries represented are also only partially correlated, or may vary, which is also confirmed by our Hypothesis 2 (EU Unemployment Reinsurance System could use the heterogeneity of EU countries and consequently differences in the dynamics of economic growth and unemployment).

## Economic Policy Recommendations for Establishing 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. 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 constitutes 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 constitutes a group of countries with a slight increase in unemployment. The latter was fairly unevenly distributed across socio-demographic groups. The third sample constitutes 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 led to 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 in assessing a coherent EU policy approach to macroeconomic stabilization and microeconomic conditionality (Boeri and Jimeno 2016).

Institutional reforms are much needed in the euro area, as the monetary union reduces macroeconomic stabilization policies at a national level. At the same time, the optimal design of institutions is not independent of the basic cyclical conditions (Gnocchi, Lagerborg, and Pappa 2015). Policies aimed at reducing unemployment should address 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 stabilization policy reducing the risk of side effects of these reforms is not feasible in the context of a 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 the EU conditionality to 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 room for maneuver in the monetary union.

In anticipation of the strengthened role of European transnational institutions in improving the labor markets operation, Boeri and Jimeno (2016) offered some proposals for changing the functioning of labor markets. In order to strengthen the role of European transnational institutions, they propose greater coherence between the main guidelines for the 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 national policies in the field of employment security and unemployment insurance. Proposals should be introduced in the context of positive conditionality, which provides different and likely 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 be a possible solution to the problems outlined in the previous paragraphs. Prior to the design of the model, we wanted and expected the URS EU to act as an automatic stabilizer and contribute to maintaining the level of consumption. 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 econometrically demonstrated that despite numerous automatic stabilizers in the EMU, the discretionary fiscal policy neutralized those 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.

With a model simulation, we confirmed that it would be expedient to introduce the URS EU in the EU. On the basis of the data examined it can be argued that the EU needs mechanisms that act as automatic stabilizers, as the monetary union reduces the scope of macroeconomic stabilization policies at a national level. We have proved that in times of crisis, the URS EU could mitigate the fall in production and increase the level of consumption by increasing the income of the unemployed. By using a model simulation, we confirmed that it would have a positive effect on reducing the output and inflation gaps of all countries under

review. Based on the performed model simulations with different variables, it can be argued that the most efficient and at the same time politically acceptable version of the URS EU is the one where: (i) the maximum length of the benefit extension period is limited to 20 weeks (we determined five classes of extension of the benefit-receiving period – 4, 8, 12, 16 or 20 weeks – depending on the increase in the unemployment rate); (ii) the trigger is determined by the level of the unemployment rate – an above-average increase in the unemployment rate compared to the average of the last three years; (iii) the long-term balance of an individual country equals zero, i.e. long-term redistribution between countries is not enabled; (iv) the contribution rate is determined on a country-by-country basis according to the frequency of application of the URS EU. We also propose that the URS EU should be integrated into existing national unemployment insurance schemes and use existing infrastructure; also, Blanchard and Wolfers (2000) believe that additionally or parallel management of unemployment reinsurance in addition to the already existing unemployment insurance structures in individual countries is pointless.

# Chapter Six

# Conclusion

The main and original contribution of the monograph to science in the field of unemployment reinsurance system research is development of the model that we used to simulate the operation of the unemployment reinsurance system at the EU level in the period 2003–2013. The study is comprehensive: based on a literature study, analysis of the current reinsurance system in the USA and analysis of existing unemployment insurance in the EU, we have designed a model of the unemployment reinsurance system in the EU. We observed the unemployment rate, the number of benefits recipients, 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 is the balance between the collected unemployment insurance contributions and the benefits paid in the EU 20 in individual years and what is the cumulative difference in the period under review (2003–2013). 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 (Evropska komisija 2014).

Based on the analysis of unemployment insurance systems we had set, in an original way, the levels of triggers that determine when and to what extent the state would be entitled to funds from the unemployment reinsurance system. By model simulation, we found that the URS EU could 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.

It would be appropriate to introduce an unemployment reinsurance system in the EU. The URS EU – as an aid to the national unemployment insurance – 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 previously conducted research (Buti et al. 2002; Dullien 2012; Epaulard

2014; Evropska komisija 2014) 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 much needed in the euro area, as the monetary union reduces macroeconomic stabilization policies at a national level. The EU members have not used the fiscal policy to alleviate the recession, while the unemployment reinsurance system could achieve just that, as it acts as an automatic stabilizer. We believe that the need for an automatic stabilizer has become even more apparent because of the recession.

The EU needs mechanisms that act as automatic stabilizers, even more so in times of recession. 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, the differences in the unemployment rate have been increasing, between EU countries and 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. The authors also argue that the introduction of such an unemployment reinsurance system would give the EU its first common institution. In their opinion, with no common institutions the EU cannot be a federation of states, such as e.g., the USA.

Unemployment reinsurance contributes to the protection of income and thus to the 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 the amount of contributions paid decrease. On the other hand, expenditure increases without the need to introduce a new government measure. Contrary to that, in case of increased economic activity expenditure decreases and benefits increase (Dullien 2012). 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. Financial assistance to the unemployed (by extending the coverage of the benefits period) maintains the level of consumption, as the unemployed spend financial assistance in their home 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.

The EU 27 countries were the focus of our research. After having reviewed the available data and national unemployment insurance systems, seven countries, not being suitable for participating in the model simulation (as, for instance, their unemployment insurance contributions are not based on the previous salaries of the unemployed), were excluded.

By simulating and evaluating the operation of the model used to simulate the URS EU operation, we confirmed the basic thesis, namely that the unemployment reinsurance system in the EU would improve the basic function of insurance – it would contribute to maintaining consumption levels and affect the economic stability of the EU. We confirmed that heterogeneity of EU countries (different dynamics of economic growth and unemployment) allows for the establishment of the URS EU. With a model simulation, we have proven that the URS EU could contribute to better income protection by directly influencing the income of the unemployed.

Based on the research and models studied, we find that EU countries have not applied fiscal policy effectively enough to stabilize the economic cycle; the unemployment reinsurance, however, 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.

The URS EU model exploits the financial and economic heterogeneity of countries. Its implementation, especially during the crisis, would contribute to maintaining the level of consumption and thus to the economic stabilization in both individual EU countries and the EU as a whole. At individual country level, it is very difficult to ensure balance between the unemployment benefits payments and the unemployment insurance contributions collected during (its) economic crisis. Unemployment insurance at the EU level can be introduced without 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, Dolls et al. (2014) and Dullien (2007; 2013) note that the unemployment reinsurance system in the euro area could be implemented with a relatively small budget but, on the other hand, with a relatively high stabilizing power (2 to 16 percent reduction in the output gap).

The basic elements of the URS EU model are expenditure and receipts. Expenditures were determined on the basis of the US Unemployment reinsurance system, as it has been proven to be an effective mechanism for maintaining stability in the US federal states. Receipts in the presented URS EU model were determined to cover the total additional expenditure of an individual country in the period under review, which is conducive for sustainability of the system. Individual countries begin to receive aid 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 along the lines 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 the unemployed. On the basis of historical data for the EU 20 in the period 2003–2013, total potential URS EU expenditure was calculated. With the expenditure calculated 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).

Countries with the unemployment rate above average, compared to the average of the last three years, are eligible to absorption from the URS EU funds. Our model comprises five aid classes. The amount of aid depends on the increase in the unemployment rate. Calculation of the aid amount is based on the expenditure for extending the aid for up to 20 additional weeks; consequently, the aid amount affects the number of additional weeks of receiving the benefit. Equilibrium contribution rate for unemployment reinsurance varies from country to country. It was calculated in a way that the difference between the payment of unemployment benefits and the collected unemployment insurance contributions in the period under review equals zero.

The EU unemployment reinsurance would be integrated into existing national unemployment insurance schemes and politically acceptable to all countries. Labor market reforms have generally been implemented without learning from the heterogeneity of labor market responses to euro area shocks, and without taking into account that fiscal measures and labor market reforms, effective in normal economic conditions, can be very ineffective in times of major recessions. Times of recession made it obvious that fiscal constraints can be used as a tool to induce institutional reforms. The release of fiscal constraints dur-

ing the recession was considered to pose moral hazard problems in the monetary union. A typical (and current) concern that arises when discussing the implementation of market reforms is that countries are less prepared for labor market reforms without strong fiscal constraints. We anticipate that policy makers, by having recognized the need for institutional reforms in the euro area as the monetary union reduces the level of macroeconomic stabilization policies in the EU, should be in favor of establishing the unemployment reinsurance system.

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# Reviews

The monograph presents empirical studies relating to European environment and contributing to development and integration of the EU. Establishment of transnational institutions is of paramount importance for EU integration, not only today, but also in the future. The authors discuss adequacy of possible reinsurance in the event of unemployment in the European Union countries in terms of maintaining the level of consumption of the unemployed and promoting economic efficiency. The main original contribution of the monograph to science in the field of unemployment reinsurance research is the development of a model by which the authors simulated the operation of the EU 20 unemployment insurance system in the period 2003–2013. The monograph demonstrates that a model based on the economic and financial heterogeneity of the EU member states would contribute to safeguarding income, maintaining consumption levels and act as an automatic stabilizer of the economy. The results show a contribution to: (i) improving the availability and financing of unemployment reinsurance in the EU and (ii) maintaining the level of consumption of the unemployed, which contributes positively to reducing the inflation gap.

In the first chapter, the authors present a research problem. In the second chapter, they describe previous research on unemployment reinsurance systems. Then, in the third chapter, the authors focus on a functioning unemployment reinsurance system in the USA. In this way, they identify the pros and cons, and offer an insight into effectiveness of such a system in practice. The fourth chapter describes the rules and operation of unemployment insurance schemes in individual European countries. In the fifth, the authors present the designed model of unemployment reinsurance in the EU, and evaluate its operation and efficiency by performing a simulation. Chapter five ends with some economic policy recommendations. The monograph concludes with a sixth chapter summarizing the key findings; the authors have confirmed that heterogeneity of the EU countries allows for the establishment of the URS EU – different country characteristics are important for the functioning of the URS EU which is based on heterogeneity, and demonstrated that the URS EU would contribute to better income protection by directly affecting the automatic stabilizer

of the economy. Based on the literature reviewed and studies carried out previously, as well as their own model simulation, the authors arrive at a conclusion that introducing an unemployment reinsurance system would be appropriate for the EU.

Žiga Čepar

The main topic of the monograph is unemployment reinsurance in the countries of the European Union. The monograph is divided into six chapters: (i) Introduction: presentation of the monograph and an overview of the possibility of setting up an EU reinsurance system in the event of unemployment; (ii) Literature review – description of proposed reinsurance models in the EU: presentation of research already carried out; (iii) US unemployment reinsurance system: analysis of the existing (already operational) US unemployment reinsurance system; (iv) Analysis of unemployment insurance systems in European countries: review of existing unemployment insurance systems in the EU; (v) Model simulation of the EU reinsurance system in the case of unemployment: description of model simulations and interpretation of results; (vi) Conclusion: key findings and original contribution to science.

In the monograph, research methods are clearly defined and hypotheses and research questions are appropriately raised. The central part of the publication is quantitative research – a simulation of the EU unemployment reinsurance system operation, where the authors use secondary data from databases of the European Commission, the International Labor Organization and the Organization for Economic Cooperation and Development. They examine the possibilities of establishing an EU unemployment reinsurance system and design and test a model of an EU unemployment reinsurance system. The model simulation was performed by using various parameters. By conducting a research, they examined whether the unemployment reinsurance system could contribute to the stability and efficiency of the EU Member States, and consequently of the EU as a whole, and what role would it play as an automatic stabilizer. In parallel, they examined the costs of setting up and operating the proposed system.

By simulation and evaluation of the performance of the model by which the authors simulate the URS EU operation, they have demonstrated that the URS EU would contribute to better income protection

by directly affecting the income of the unemployed while acting as an automatic stabilizer of the economy. By model simulation, the authors determine the level of triggers and the amount of financial assistance to the unemployed in a way that makes the system sustainable and acting as an automatic stabilizer. In addition, the model simulation shows the balance between the collected unemployment insurance contributions and paid benefits in the EU 20 by year, as well as the cumulative difference over the period studied (2003–2013).

The field of unemployment reinsurance research in Slovenia is relatively new, which is why this monograph contributes to the development of professional and scientific terminology. In Slovenia, only a few articles and individual chapters are found in the field of unemployment reinsurance in the EU; the present monograph is, according to my knowledge, the first publication attempting to present this field more comprehensively. 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.

Jaka Vadnjal

The monograph presents empirical studies relating to European environment and contributing to development and integration of the EU. Establishment of transnational institutions is of paramount importance for EU integration, not only today, but also in the future. The authors discuss adequacy of possible reinsurance in the event of unemployment in the European Union countries in terms of maintaining the level of consumption of the unemployed and promoting economic efficiency. The main original contribution of the monograph to science in the field of unemployment reinsurance research is the development of a model by which the authors simulated the operation of the EU20 unemployment insurance system in the period 2003–2013. The monograph demonstrates that a model based on the economic and financial heterogeneity of the EU member states would contribute to safeguarding income, maintaining consumption levels and act as an automatic stabilizer of the economy. The results show a contribution to: (i) improving the availability and financing of unemployment reinsurance in the EU and (ii) maintaining the level of consumption of the unemployed, which contributes positively to reducing the inflation gap.

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