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An Unemployment Insurance Scheme for the Euro Area? A Comparison of Different Alternatives Using Micro Data

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Abstract

We analyze different options for the design of a common unemployment insurance system for the euro area (EA). We assess their effectiveness to act as an insurance device in the presence of asymmetric macroeconomic shocks. Running counterfactual simulations based on micro data for the period 2000-13, we quantify the trade-off between automatic stabilization effects and the degree of cross-country transfers. In the baseline, we focus on a non-contingent scheme covering short-term unemployment and find that it would have absorbed a significant fraction of the unemployment shock in the recent crisis. However, four member states of the EA18 would have been either a permanent net contributor or net recipient. Our results suggest that contingent benefits could limit the degree of cross-country redistribution, but might reduce desired insurance effects. We also study heterogeneous effects within countries and discuss moral hazard issues at the level of individuals, the administration and economic policy.

JEL-Codes: F550, H230, J650.

Keywords: European fiscal integration, unemployment insurance, automatic stabilizers.

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1 Introduction

The Great Recession and the resulting European debt crisis have revived the debate about deeper fiscal integration in the European Economic and Monetary Union (EMU). The EMU is an atypical monetary union because monetary policy is decided at the central (European) level while fiscal policy is carried out at the sub-central (member-state) level (Bordo et al. 2013).[1] Some observers argue that national automatic stabilizers provided insufficient income insurance during the crisis as some EMU member states lost access to private capital markets and conclude that common fiscal stabilization mechanisms are necessary to make EMU more sustainable and more resilient against asymmetric macroeconomic shocks (Bertola 2013, IMF 2013). The main concerns in this debate relate to the issues of permanent transfer flows within the currency union and moral hazard. In particular, national governments might neglect structural reforms or fiscal consolidation.

How could a fiscal risk sharing mechanism in the euro area be designed? In the so-called Four Presidents' Report published in 2012, the former President of the European Council, Herman van Rompuy, has suggested the following: "*An EMU fiscal capacity with a limited asymmetric shock absorption function could take the form of an insurance-type system between euro area countries. [...] The specific design of such a function could follow two broad approaches. The first would be a macroeconomic approach, where contributions and disbursements would be based on fluctuations in cyclical revenue and expenditure items [...]. The second could be based on a microeconomic approach, and be more directly linked to a specific public function sensitive to the economic cycle, such as unemployment insurance.*" (Van Rompuy 2012). The European Commission and more recently Jean-Claude Juncker in the Five Presidents' report built upon this initiative with own blueprints for the EMU (European Commission 2012, Juncker 2015).

Since then, the perspectives of a European fiscal union and different reform proposals along the lines of the Four Presidents' report have been analyzed in various studies.[2] For the 'macroeconomic approach', suggestions include a cyclical shock absorber based on output gaps (Enderlein et al. 2013) and a stabilization fund for the

[1] In the following we equivalently use "EA", "EMU" and "Eurozone" to refer to the 18 member states of the European Currency Union that had introduced the euro in 2014.

[2] First analyses of potential insurance effects if the EMU were more fiscally integrated date back to the introduction of the euro (Fatás 1998 and Forni and Reichlin 1999), adding to the vast literature on insurance effects in existing fiscal federations such as the US (see e.g. Bayoumi and Masson 1995 and Asdrubali et al. 1996). More recent contributions include Bargain et al. (2013) who analyze the economic implications of a fully integrated European tax and transfer system and a fiscal equalization mechanism based on taxing capacity and expenditure needs for 11 founding members of the euro area, and Feyrer and Sacerdote (2013) who ask to what extent economic shocks would be absorbed by the center if the EU were as fiscally integrated as the US. The question of how to optimally design insurance mechanisms and the political economy of fiscal unions has also gained renewed interest in the more theoretical literature (cf. Evers 2012, Farhi and Werning 2014, Luque et al. 2014).

euro area (Furceri and Zdzienicka 2015). For the 'microeconomic approach', the discussion has focused on the idea of a common EMU-wide unemployment insurance system (henceforth EMU-UI) as proposed among others by Deinzer (2004), Dullien (2014a) and Andor (2014).[3] Previous studies on the economic effects of an EMU-UI system are based on aggregate macro-level data and focus on overall net contributions across euro area member states.

This is the first paper that provides a comprehensive and systematic analysis of a wide range of design options for an EMU-UI system based on household micro data.[4] Our counterfactual experiment covers the period since the start of the euro in 1999 until 2013. The analysis includes the current 18 member states (EA 18) and simulates a sample of repeated cross-sections for each member state combining micro data from the EU Statistics on Income and Living Conditions (EU-SILC) and the EU Labor Force Survey (EU-LFS). We focus on redistributive and stabilizing effects of a basic EMU-UI scheme that partly replaces national UI systems. We quantify the coverage and stabilization gaps. These are defined as the differences in coverage and stabilization between i) the benchmark scenario of national UI alone and ii) a reform scenario where EMU-UI and national UI coexist as explained further below. Coverage and stabilization gaps are calculated at the aggregate household level as well as for different socio-demographic groups within each country. Automatic fiscal stabilization effects are decomposed into household income and government budget stabilization. In addition, we explore the effects of experience rating and compare the basic EMU-UI scheme to a variant with 'contingent', i.e., trigger-based benefit payments that provide income insurance only if the labor market situation deteriorates significantly in a given member state. Moreover, we run several sensitivity checks regarding coverage and generosity levels of the scheme. We also discuss various concerns and potential adverse effects of an EMU-UI system, in particular the view that such a system would lead to a transfer union in Europe and moral hazard issues. Importantly, the aim of the paper is not to serve as a policy proposal but rather as a conceptual experiment, providing general insights into the effects of various design options for a basic EMU-UI.

Our main results are as follows. We find that a basic EMU-UI scheme with a replacement rate of 50 per cent, a maximum duration of benefit receipt of 12 months and a broad coverage of all new unemployed with previous employment income could be implemented with a relatively small annual budget. Over the period 2000-13, average

[3] See also IAB (2013), Centre for European Policy Studies (2014), Dullien et al. (2014) and Lellouch and Sode (2014). Claeys et al. (2014) provide an overview of policy challenges associated with an EMU-UI system.

[4] Brandolini et al. (2014) and Jara and Sutherland (2014) also use micro data to analyze an EMU-UI system. The focus of their analyses differs from ours as in contrast to this study, the former considers a notional EMU-UI system backing national UI systems and thus disregards EMU-UI transfers at the micro level, while the latter assumes EMU-UI benefits to top up national benefits if minimum requirements are not met by national UI systems. In addition, these papers cover shorter time periods and fewer countries than our paper.

benefits would have amounted to roughly 47 billion euro per year, financed by a uniform contribution rate across member states of 1.56 per cent on employment income. The scheme is not designed to give rise to permanent redistribution across countries because only short-term (rather than structural) unemployment is insured. Nevertheless our simulations reveal that a small number of member states would have been net contributors or net recipients in each year of our simulation period. Largest net contributors are Austria, Germany and the Netherlands with average yearly net contributions of 0.19-0.39 per cent of GDP. Latvia and Spain are the largest net recipients (average yearly net benefits of 0.36 and 0.54 per cent of GDP).

We show that a basic EMU-UI scheme can provide insurance by stabilizing household incomes and government budgets. We compare automatic stabilization effects under dual insurance (the combination of national UI and EMU-UI) and the status quo. For 2009, the year with the most significant surge in unemployment across EA member states, we find that the average (unweighted) stabilization gap, that is the potential gain in stabilization through an EMU-UI for household incomes, would have amounted to 12 per cent of the gross income shock at the EA-level. Largest gaps are found for Southern European countries (e.g. 18 per cent in Italy, 17 per cent in Greece) and the Baltics (22 per cent in Latvia). Government budgets would have been stabilized by on average 6 per cent of the gross income shock in 2009. This is because governments would have spent less on national UI. The combined stabilization impact on household incomes and government budgets would have equalled 0.3 per cent of GDP on average, with values up to 1.1 (0.9) per cent in Latvia (Estonia). Schemes with lower coverage ratios and generosity levels generate smaller cross-country transfers but also reduce desired insurance effects.

Turning next to within-country heterogeneity, we find the largest coverage and stabilization gains for the young and, perhaps surprisingly, also for high-skilled unemployed. The reason for the former is that the young often do not meet eligibility conditions of national UI while they are covered by the simulated EMU-UI. The result for the high-skilled is due to a higher proportion of short-term relative to long-term unemployed (who are not eligible to EMU-UI) among them.

Finally, we consider a contingent benefit scheme which is activated if the unemployment rate in a given member state is 1 percentage point higher than in one of the previous three years. Under this system no member state would have been in a permanent net contributing/receiving position. With 22 billion euro per year, the overall budget and thus the amount of cross-country redistribution would have been less than half as large as under the non-contingent scheme in the baseline.

The paper is structured as follows. In section 2, we discuss different alternatives how a common EMU-UI system could be designed. In addition, we present key features of the simulated EMU-UI schemes. Section 3 describes the framework of the

analysis. Baseline results are presented in section 4. Alternative EMU-UI schemes with experience rating and contingent benefits are analyzed in section 5. Section 6 concludes.

2 Possible characteristics of an EMU-UI system

Design options. A common unemployment insurance system for the euro area could be designed in various ways. Three key options have been discussed in the literature and in the policy debate so far. A first option would be a common EMU-UI system that provides a basic level of insurance by partly replacing national unemployment insurance systems. Benefits from the euro area system could be topped up by additional payments from national unemployment insurance systems. Hence, there would be room for diversity across member states so that existing differences with regard to replacement rates and benefit duration could be preserved. The EMU-UI system would be financed by social insurance contributions with a contribution rate that could be uniform across Eurozone member states or country-specific and time-variant to restrict cross-country transfers.[5] An important feature of such a scheme is that it would provide income insurance to the unemployed (under certain eligibility conditions) irrespective of the size of the unemployment shock in a given member state. As an alternative, a common scheme could provide income stabilization only in the event of large (unemployment) shocks. Such contingent unemployment benefits would be triggered if the level and/or change in overall unemployment has reached a pre-determined threshold in a given period.[6] National unemployment insurance systems would still be in place in normal times. As a third option, the euro area unemployment insurance scheme could complement national systems by providing additional transfers which would either top up national benefits or kick in if national benefits expire. The payout rules of this scheme could be trigger-based as well. Such a system would be comparable to the US unemployment insurance system where regular state benefits can be complemented by two types of benefits extension programs which are at least partly provided by the federal government, the Extended Benefit program (EB) and emergency benefits.[7]

Concerns. A major concern with an EMU-UI system is that it would lead to permanent transfers across euro area member states. How do the three variants for an EMU-UI system differ with regard to the risk of permanent redistribution? A

[5] Cf. Dolls et al. (2014) and Dullien (2014b).

[6] Cf. Gros (2014). Other triggers could be the short-term unemployment rate or the insured unemployment rate which is used in the US unemployment insurance system (besides the total unemployment rate) as a trigger for benefit extension programs (Nicholson et al. 2014).

[7] Cf. Congressional Budget Office (2012) and Nicholson et al. (2014). Note that in the US regular state benefits are paid for a period which usually lasts not longer than 6 months. The large extensions of unemployment insurance provided by the US federal government in the 2009-12 period increased the benefit duration to 99 weeks in many US states. Unemployment benefits in the EMU are usually granted much longer than regular state benefits in the US (Esser et al. 2013).

basic EMU-UI scheme would not be designed to generate permanent redistribution because such a scheme conditions on *changes* in employment status rather than on unemployment *levels*. Differences in unemployment rates alone do not (necessarily) lead to permanent redistribution because benefits would be targeted to cyclical (short-time) unemployment and would expire after a certain time span. It may nevertheless happen that (net) transfers are unevenly distributed across member states if flows into unemployment diverge permanently or if there are permanent differences in the level of short-term unemployment.[8] This risk could be reduced by claw-back mechanisms based on experience rating or if transfers were trigger-based as under the contingent benefit scheme. Clearly, redistributive effects of the former (latter) scheme would depend on the exact claw-back mechanism (choice of the trigger). The risk of permanent transfers would be high with an EMU-UI scheme that provides extended benefits after national unemployment benefits expire because such a scheme would be likely to cover not only cyclical, but also structural unemployment. Moreover, it could incentivize governments to cut national unemployment insurance benefits as the EMU-UI system would step in.

A further concern related to moral hazard is that a common EMU-UI system could undermine incentives for national governments to address structural weaknesses of the labor market. One argument against this claim is that national governments would still bear the cost of long-term unemployment under a basic, contingent or non-contingent EMU-UI system. This argument is much weaker, however, with an extended benefit program which is likely to cover also structural unemployment. Moreover, incentives to pursue active labor market policies such as short-time work could be adversely affected by an EMU-UI system given that the cost of short-term unemployment would be borne by the common pool.

Additional concerns relate to other moral hazard issues including administrative manipulation and adverse incentive effects at the individual level with regard to job search and labor supply. National administrations would have incentives to use their discretion to increase the number of benefit recipients. Incentives to manipulate would depend on the characteristics of the system, e.g. the required employment period or a waiting period for EMU-UI benefits. The longer both periods are, the more costly would administrative manipulation be, but longer periods would also reduce desired insurance effects. Distortions at the individual level depend on the overall benefit level (EMU plus national benefits) and duration relative to the status quo. The effect of a common EMU-UI system on migration responses in case of unemployment is ambiguous. The portability of unemployment benefit claims might increase the willingness to migrate and to search for a job in a member state with better labor market conditions, but could potentially also reduce incentives for active job search if

[8] Economies where seasonal employment like in tourism plays an important role would be likely to have larger flows into and out of unemployment.

EMU-UI benefis are more generous than national benefits.

Key features of the simulated EMU-UI schemes. The current debate focuses on a basic EMU-UI system (contingent and non-contingent) as the risk of permanent transfers and moral hazard issues are perceived to be less severe compared to an extended benefit system. In the baseline scenario, we therefore focus on a basic, non-contingent EMU-UI scheme with a replacement rate of 50 per cent of previous gross earnings and a broad coverage of the short-term unemployed.[9] Eligible to EMU-UI benefits are all newly unemployed with previous employment income for a period of up to 12 months (upper bound estimate in terms of coverage). The scheme is financed by social insurance contributions with a uniform contribution rate across member states and calibrated to be revenue-neutral at the Eurozone-level (but not the member-state level) over the simulation period. This scheme is labeled as variant A henceforth. In addition, we explore how our results change if we vary some key parameters of the baseline scheme in terms of coverage rates and generosity levels. We introduce a waiting period of 2 months after job loss before eligibility to EMU-UI benefits begins in order to diminish the effect of seasonal unemployment and limit the maximum benefit to 50 per cent of median income (variant B). Variant C has a replacement rate of 35 per cent of gross income which is on average equivalent to a replacement rate of 50 per cent of net income. Benefits are capped at 50 per cent of median income, but there is no waiting period. Variant D combines variants B and C (maximum benefit amount of 50 per cent of median income, 35 per cent replacement rate, waiting period). Variant E is based on variant D, but only those short-term unemployed that receive national UI benefits are eligible to EMU-UI benefits (lower bound estimate in terms of coverage). Additionally, we compare the baseline EMU-UI scheme (variant A) to two alternative scenarios in which we impose revenue-neutrality at the member-state level (experience rating) and make the basic EMU-UI scheme trigger-based (contingent benefits). The analysis of redistributive and stabilizing properties of these additional scenarios is an important extension to the previous literature because they are often assumed to alleviate the risk of permanent redistribution and moral hazard issues.

3 Data and methodology

Different methodological approaches for an analysis of the economic effects of an EMU-UI system are possible. While previous research has mainly used aggregate macro level

[9] This is on average equivalent to a replacement rate of 71 per cent of net income. To be precise, it corresponds to a replacement rate of 71.4 per cent applied to 70 per cent of gross income, i.e., taking into account the average share of income taxes and social insurance contributions in the euro area. A key advantage of applying the replacement rate to gross rather than net earnings is that in the former case the generosity of the scheme is not affected by the size (and progressivity) of national net taxes (income taxes, social insurance contributions and cash benefits) which vary considerably across euro area member states.

data, we rely on representative household micro data for the EA18 using EUROMOD, a static tax-benefit calculator for the European Union countries. EUROMOD is mainly based on cross-sectional micro data from the EU Statistics on Income and Living Conditions (EU-SILC) released by Eurostat (Eurostat 2012) which we combine with micro data from the EU Labor Force Survey (EU-LFS).[10] The key advantage of our approach in the present context is that we exploit both detailed income distribution information contained in EUROMOD as well as information on changing labor market patterns over time contained in the LFS. We are thus able to account for heterogeneity in various characteristics of the populations in different countries which macro data approaches cannot capture.

In our simulation experiment, we introduce an unemployment insurance scheme for the EA18 member states and ask what would have happened if such a scheme had been introduced from the start of the euro in 1999. As there are neither panel data nor repeated cross-sectional data available containing both income distributions and labor market conditions for all EA member states over this period, we construct a series of reweighted cross-sections for the period of analysis which exactly replicates changes in labor market conditions (unemployment rate, share of short- and long-term unemployed, size and composition of the labor force) and average earnings over time.[11] Our baseline input data is from EU-SILC 2008, the most recent data available with the version of EUROMOD used, including the EA18 member states. For each country, these data are first reweighted to reflect labor market conditions as observed in 1999 and then reweighted subsequently for each year of the analysis.

From the LFS, we impute changes in (un)employment rates, size of the labor force, shares of short- and long-term unemployment, and coverage rates of national UI systems for 18 gender-age-education strata (male/female, three age groups, three education levels) on an annual basis. We simulate (un)employment changes over time for each of the 18 socio-demographic subgroups so that our series of reweighted cross-sections precisely matches these dimensions both at the subgroup and aggregate level. Earnings growth is imputed from the AMECO-database in order to account for changes in the tax base of the EMU-UI and national UI systems. These imputations ensure that our reweighted micro data are consistent with aggregate statistics in each year of our simulation period (see Technical Appendix A.2 for further information). The analysis at the subgroup level allows us to examine individual heterogeneity within each member

[10] Sutherland and Figari (2013) provide more detailed information on EUROMOD, the underlying input data and validation. The EU-LFS, conducted by the national statistical institutes across Europe and processed by Eurostat, is a representative household survey covering the years from 1983 onwards. It is the most important source for labor market statistics in the EU. Cf. http://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey for further information.

[11] See Immvervoll et al. (2006), Bargain et al. (2012) and Dolls et al. (2012) for further applications of the reweighting approach. Similar imputations from the LFS to EUROMOD input data have been conducted by Navicke et al. (2014) and Salgado et al. (2014).

state showing which groups in the population would benefit/lose from the introduction of an EMU-UI system (section 4.4). In addition, we construct a national UI calculator that incorporates all important policy rules of national UI systems over the period 2000-13 and simulate national unemployment benefits in addition to EMU-UI benefits in case of dual insurance and in the benchmark scenario.[12]

Our analysis is based on the following simplifying assumptions. First, we do not take into account general equilibrium effects of an EMU-UI system, i.e., our analysis remains in a partial equilibrium context. This implies that we abstract both from potential moral hazard of national governments and administrations which could have adverse labor market effects as well as from potential growth-enhancing effects of an EMU-UI scheme. Accounting for these macroeconomic feedback effects would require to link our micro data to a macro-econometric simulation model (Peichl 2009). Second, we do not simulate individual behavioral responses, e.g. potential migration responses, changes in hours worked or different patterns of entries and exits to the labor force which could follow the introduction of an EMU-UI.[13] In the light of these assumptions, our results should be interpreted as 'first-round' effects of an EMU-UI system. A further assumption relates to the interaction between EMU-UI and national UI systems given that a basic EMU-UI system analyzed in this paper would partly replace national UI systems. As elaborated in section 4.3, we assume that national UI systems would top up the EMU-UI scheme if national UI systems are more generous in their coverage or replacement rate so that no unemployed would be worse off after the introduction of an EMU-UI system. Finally, we run our simulations as if the EA18 had existed from 1999 onwards as it would complicate the interpretation of our results if we included new member states only after adoption of the euro.

4 Main results

4.1 Coverage rates

Figure 1 provides descriptive statistics on unemployment and (counterfactual) coverage rates of EMU-UI and national UI for EA member states over the period 2000-13. It shows that significant differences in unemployment (blue line) exist across countries both in levels and trends which can be exemplified by a comparison of Germany on the one hand and Greece, Ireland and Spain on the other hand. In Germany, the unemploy-

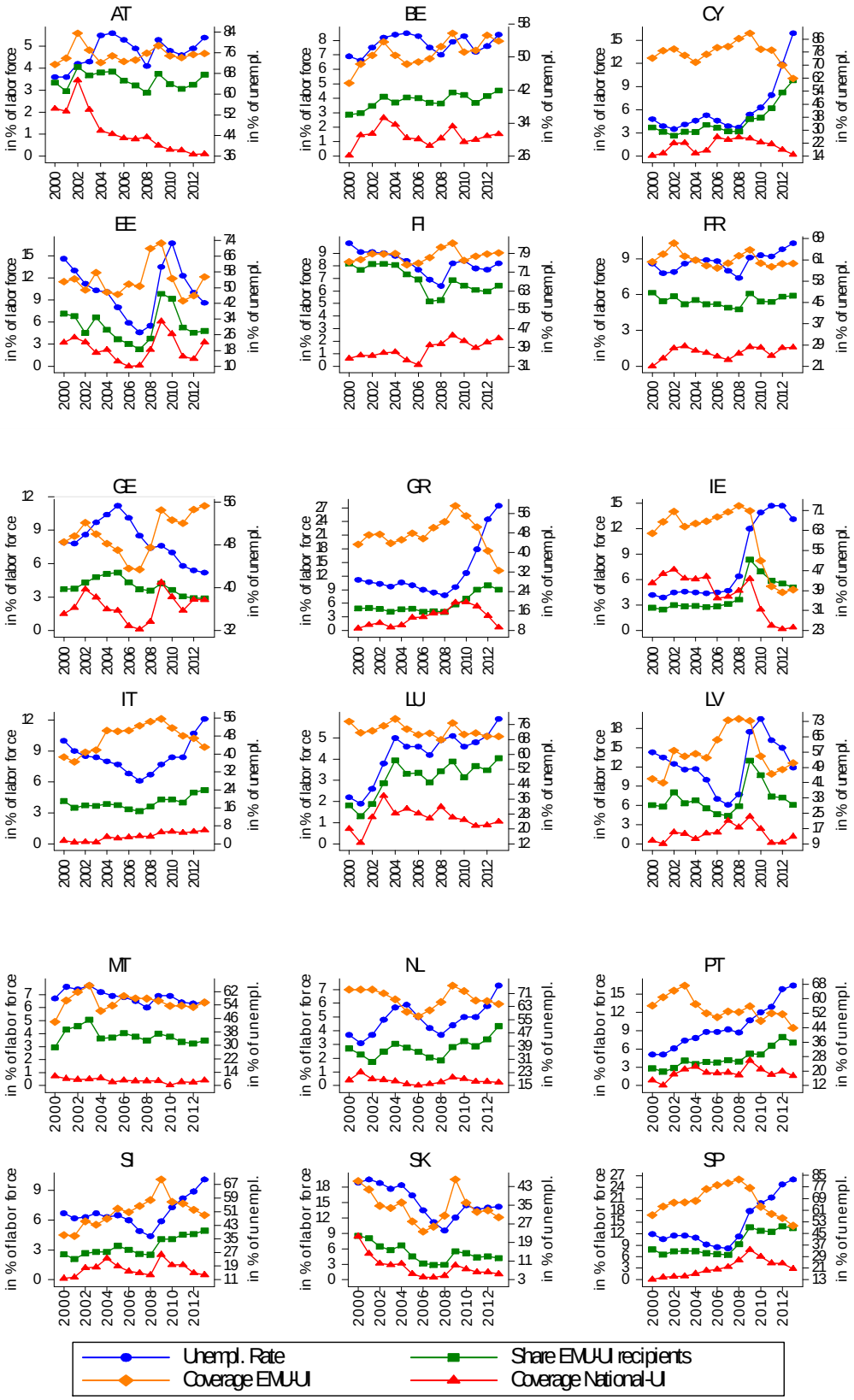
[12] Detailed policy rules of national UI systems are collected from country chapters of the OECD series "Benefits and Wages" (http://www.oecd.org/social/benefits-and-wages.htm) and from the EU's MISSOC-Comparative Tables Database (http://ec.europa.eu/social/main.jsp?langId=en&catId=815). Actual coverage rates are imputed from the EU-LFS.

[13] Bargain et al. (2013) account for labor supply behavior after the introduction of a European tax and transfer system. They find that labor supply responses are marginal and do not alter their main results.

ment rate increased from 2001 onwards, peaked at 11.2 per cent in 2005 being the second highest rate in the EA in that year, but constantly fell afterwards. In contrast, unemployment rates increased tremendously in Greece, Ireland and Spain from 2008/2009 onwards, up to 14.7 per cent in Ireland in 2011/2012 and 26.1 (27.5) per cent in Spain (Greece) in 2013. Other member states such as Cyprus, Estonia, Italy and Portugal were also hit by large unemployment shocks during the crisis. Figure 1 indicates that the share of unemployed relative to the total labor force receiving EMU-UI benefits (variant A, green line) follows closely trends in overall unemployment. However, coverage rates of EMU-UI measured as the share of unemployed receiving EMU-UI benefits relative to all unemployed (orange line) diverge from unemployment rates in times of rising or falling unemployment as can be seen, for instance, for Germany in the early 2000s or for Greece, Ireland and Spain during the recent crisis period. The reason is that the share of long-term unemployed usually goes up (down) in prolonged recessions (upswings) and that EMU-UI benefits are only paid to short-term unemployed.

Figure 1 shows further that coverage rates of EMU-UI differ substantially across EA countries ranging from an average of 34 per cent in Slovakia to 79 per cent in Finland (EMU-UI variant A) which is due to differences in the share of short-term unemployment. In the following sections, we show that EMU-UI schemes with a waiting period of 2 months (variants B, D and E) would reduce redistributive and insurance effects relative to the baseline variant as seasonal unemployment (like in tourism) would to some extent be excluded from coverage. Finally, Figure 1 points to a significant coverage gap between our simulated EMU-UI scheme and national UI revealed by a comparison of the orange and red lines. Coverage of national UI is particularly low in some Southern and Eastern European member states such as Greece, Italy, Latvia, Malta or Slovakia, all with average coverage rates of the short-term unemployed over the period 2000-13 below 15 per cent.

Figure 1: Unemployment and coverage rates of EMU-UI and national UI

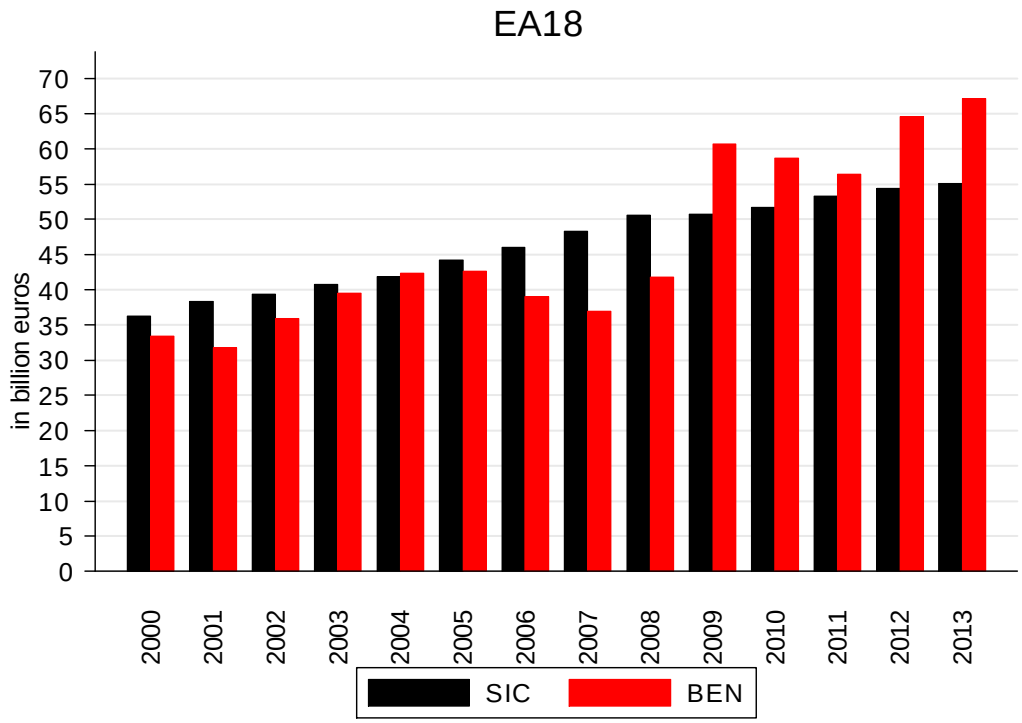


Note: Unemployment rate and share EMU-UI recipients measured in per cent of the labor force. Coverage EMU-UI and national UI calculated as number of short-term unemployed receiving UI benefits relative to total number of unemployed. Coverage national UI includes UI benefits and assistance. If coverage information is missing in the LFS for a given country in one year, it is imputed from the closest country-year cell available. Sources: LFS and own calculations based on EUROMOD.

4.2 Budgetary effects and financial flows

Based on simulated EMU-UI benefits and the overall tax base, we calculate the contribution rate that would have led to revenue-neutrality at the EA-level over the period 2000-13. For the baseline scheme (variant A), the contribution rate amounts to 1.56 per cent on employment income.[14] Next, we simulate contribution payments to EMU-UI under the assumption that the scheme can run deficits and surpluses in single years. Figure 2 shows the evolution of contributions and benefits for the EA18. While contributions would have almost constantly grown over the period due to growth in nominal earnings, benefit payments would have fluctuated to a much larger extent. On average, benefits and contributions amount to roughly 47 billion euro per year. The scheme would have run surpluses from 2000-03 and from 2005-08 and deficits in the remaining years, in particular during the recent financial and economic crisis.

Figure 2: Overall contributions and benefits at Eurozone-level, 2000-13



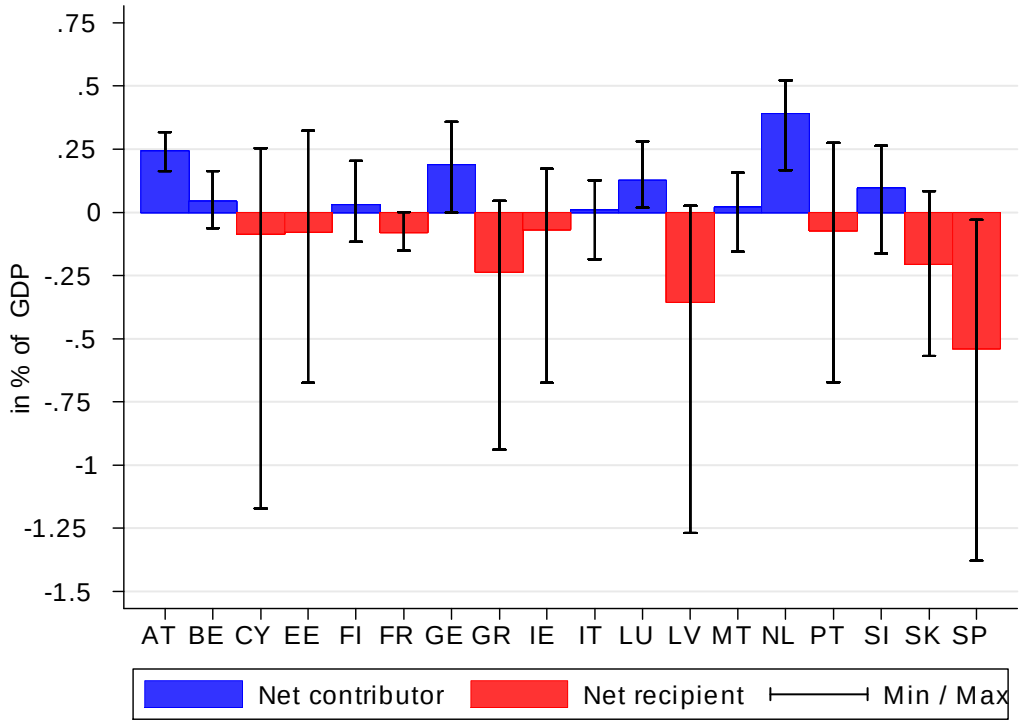
Note: Social insurance contributions (SIC) and benefits (BEN) at Eurozone-level in nominal terms. Contribution rate uniform across member states. Scheme is revenue-neutral over the simulation period. Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

Figure 3 shows average yearly net contributions as well as minimum and maximum payments for the baseline scenario. Relative to GDP, Austria, Germany and the

[14] Social insurance contributions include employer and employee contributions. If self-employed were excluded from the scheme, the revenue-neutral contribution rate would be 1.7 per cent.

Netherlands would have been the largest net contributors with average net contributions of 0.19 per cent in Germany, 0.24 per cent in Austria and 0.39 per cent in the Netherlands. Latvia (-0.36 per cent) and Spain (-0.54 per cent) would have been the largest net recipients. Interestingly, the majority of member states would have been net contributors in some years and net recipients in other years. Notable exceptions are Austria, Luxembourg and the Netherlands (Spain). These countries would have been in a permanent net contributor (recipient) position.

Figure 3: Average yearly net contributions, 2000-13

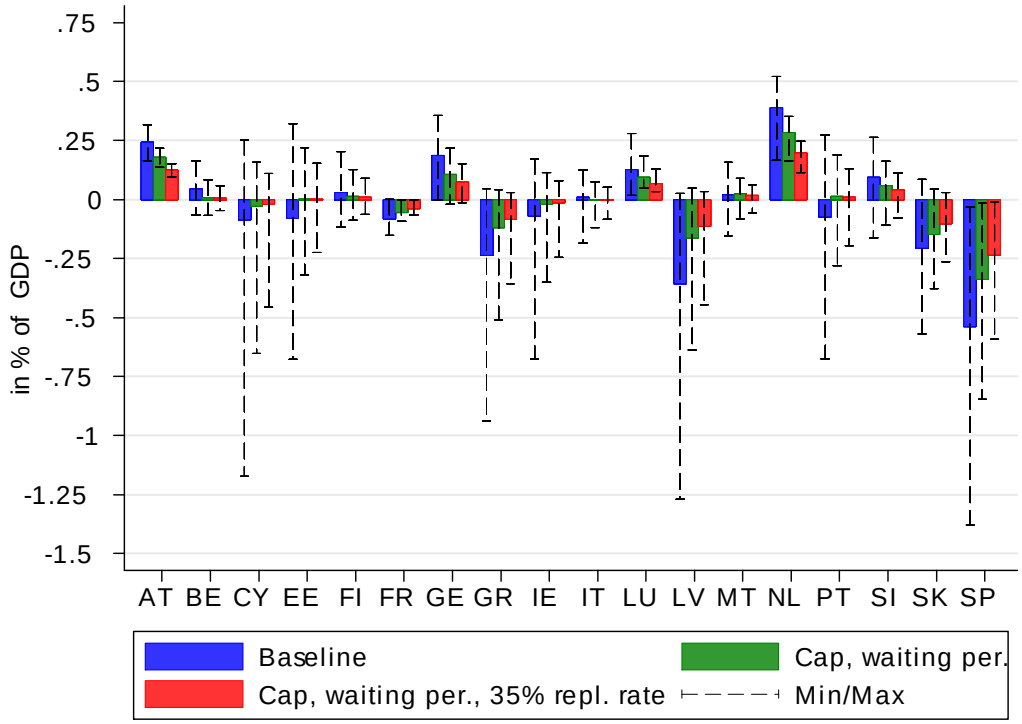


Note: Net contributions (SIC - BEN) for baseline scheme (variant A). Contribution rate uniform across member states. Scheme is revenue-neutral over the simulation period. Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

Finally, we compare the baseline EMU-UI scheme (variant A) to variants with lower coverage and generosity levels (variants B-E). Results are presented in Figure 4 and in Table 3 in the Appendix. Figure 4 shows average yearly net contributions under variants A (blue bars), B (green bars, maximum benefit amount capped at 50 per cent of a country's median income and no benefits paid within the first two months of the unemployment spell) and D (red bars, based on variant B, but with a gross replacement rate of 35 per cent instead of 50 per cent). Table 3 shows the full set of results. Average net contributions under variants B-E are usually smaller than in the baseline. France becomes a permanent net recipient under variants B-D, albeit with

average net contributions below -0.1 per cent of GDP. In Estonia and Portugal, the average net position changes from recipient to contributor which is due to low median incomes in these member states.

Figure 4: Average yearly net contributions - Other EMU-UI variants



Note: Net contributions (SIC - BEN) for variants A (Baseline), B (Cap, waiting period) and D (Cap, waiting period, 35% replacement rate). Contribution rate uniform across member states. Schemes are revenue-neutral over the simulation period. Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

4.3 Automatic fiscal stabilization

Automatic fiscal stabilization is associated with the ability of taxes and transfers to automatically stabilize disposable income and consequently consumption in the event of macroeconomic shocks. This relies on a simple mechanism: in the presence of a given negative shock to gross income, taxes decline and transfers increase, with the decline in disposable income being smaller than the shock to gross income (Auerbach and Feenberg 2000, Kniesner and Ziliak 2002, Dolls et al. 2012). Several components of government budgets are affected by the macroeconomic situation in ways that operate to smooth the business cycle, with progressive income taxes and unemployment benefits being the most prominent examples.[15]

[15] Automatic stabilization might not only have effects on disposable income and consumption but also on GDP itself (cf. Fatás and Mihov 2001). If fewer taxes are collected and more transfers are

There are two channels through which an EMU-UI system that partly replaces national UI systems can achieve additional automatic stabilization effects: First, it can stabilize household incomes if the EMU-UI system had higher replacement rates or a broader coverage than national UI systems.[16] Second, it can stabilize government budgets as governments could (partly) cut back national UI benefits.

In order to compare stabilization effects in case of dual insurance of national UI and EMU-UI with the benchmark of national UI alone, we have to make an assumption how national UI systems would be adjusted after the introduction of an EMU-UI system. In our simulations, we assume that national UI benefits top up EMU-UI benefits if the former are more generous than the latter and are fully cut back otherwise. If, for example, the replacement rate of national UI is 60 per cent of gross income and the replacement rate of EMU-UI 50 per cent, we assume that the replacement rate of EMU-UI is topped up by 10 percentage points such that the overall replacement rate is still 60 per cent. If national unemployment benefits are less generous than EMU-UI benefits, we assume that no national UI benefits are paid out. In order to properly account for these policy adjustments, we employ a national UI calculator as described in section 3 and simulate national unemployment benefits in addition to EMU-UI benefits in case of dual insurance and in the benchmark scenario.

We follow Auerbach and Feenberg (2000) and Dolls et al. (2012) and estimate automatic stabilization effects by calculating stabilization coefficients for household incomes, τ_{hh}, and government budgets, τ_{gov}, that show to what extent (un)employment shocks are absorbed by changes in unemployment benefits and social insurance contributions. τ is computed using arithmetic changes (Δ) in benefit and contribution payments as well as changes in employment income in a given year t ($\sum_i \Delta B_i, \sum_i \Delta SIC_i$ and $\sum_i \Delta Y_i^{EMPL}$) which are aggregated across individuals i in each member state (subscript t suppressed for simplicity). Note that changes in employment income as well as in contribution and benefit payments are calculated for employment changes along the extensive margin only in order to isolate the stabilizing effect in the event of (un)employment shocks from (intensive margin) income changes. The household income stabilization coefficient for national UI and EMU-UI reads:

$$\tau_{hh} = \frac{\sum_i \Delta B_i - \sum_i \Delta SIC_i}{|\sum_i \Delta Y_i^{EMPL}|}. \tag{1}$$

In fact, UI has a cushioning effect both in booms and recessions as benefit and contribution payments react countercyclically to changes in employment. In our simulations, we want to separate the cushioning effects in upswings and downturns. Therefore, we

paid in a recession, this should support private incomes and dampen adverse movements in aggregate demand.

[16] Precisely speaking, a broader coverage would lead to more stabilization if EMU-UI benefits were higher than means-tested transfers such as social assistance that those unemployed not eligible to UI benefits would receive.

divide changes in benefits and contributions from t to $t+1$ by the absolute value of the aggregate gross income change so that τ_{hh} is positive (negative) when unemployment rises (declines). τ_{hh} is computed both for the benchmark of national UI alone and for the scenario of dual insurance so that the gain in stabilization can be expressed as follows:

$$\tau_{hh}^{dual-ins.} - \tau_{hh}^{NAT} = \frac{(\sum_i \Delta B_i^{dual-ins.} - \sum_i \Delta SIC_i^{dual-ins.}) - \left(\sum_i \Delta B_i^{NAT} - \sum_i \Delta SIC_i^{NAT}\right)}{|\sum_i \Delta Y_i^{EMPL}|}. \tag{2}$$

Stabilization of government budgets is measured accordingly:

$$\tau_{gov} = \frac{(\sum_i \Delta B_i^{NAT} - \sum_i \Delta SIC_i^{NAT}) - (\sum_i \Delta B_i^{NAT,dual-ins.} - \sum_i \Delta SIC_i^{NAT,dual-ins.})}{|\sum_i \Delta Y_i^{EMPL}|}. \tag{3}$$

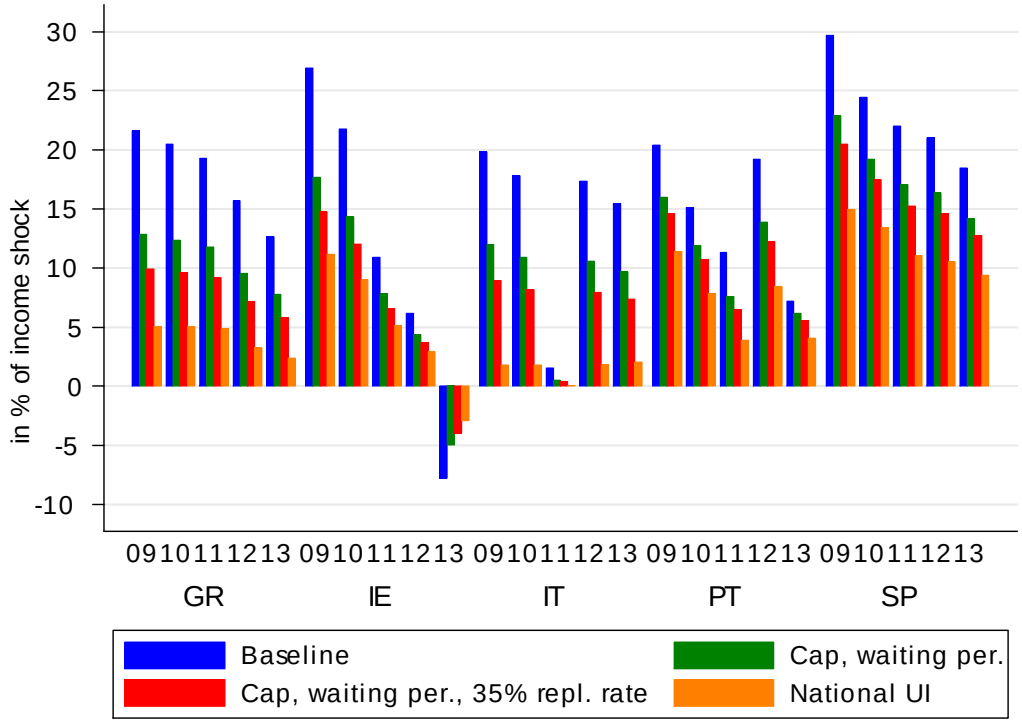
τ_{gov} shows to what extent government budgets are stabilized in the event of unemployment shocks due to the fact that national UI benefit and contribution payments have to increase less in case of dual insurance relative to the benchmark ($\tau_{gov} > 0$). Conversely, when unemployment goes down, unemployment benefit and contribution payments decline less in case of dual insurance than in the status quo ($\tau_{gov} < 0$). Note, however, that government budgets would not be affected by rising (declining) UI benefit payments if UI contribution rates could be raised (reduced) in a revenue-neutral way ($\tau_{gov} = 0$). As for EMU-UI, we calculate changes in contribution payments for national UI based on contribution rates that balance budgets over the whole simulation period. Our measure for government budget stabilization is thus based on the assumption that governments would not alter UI contribution rates instantaneously when national UI disbursements change. Note further that our estimate for τ_{gov} is a lower bound estimate as national governments would not need to pay any longer social assistance to those short-term unemployed covered by EMU-UI, but not by national UI. For the same reason, our estimates for the gain in household income stabilization represent an upper bound estimate.

Figure 5 presents household income stabilization coefficients for the so-called GIIPS countries (Greece, Ireland, Italy, Portugal and Spain) for the recent crisis period. The blue, green and red bars show stabilization effects under dual insurance for three variants of EMU-UI (A , B and D), while the orange bars depict income stabilization in the benchmark scenario of national UI.[17] Our results suggest that relative to the benchmark, EMU-UI (variant A) would have provided significant additional income stabilization in 2009 when the crisis hit. We find stabilization gaps amounting to 17

[17] Note that we simulate national UI benefits only for the short-term unemployed given that receipt of EMU-UI benefits is restricted to 12 months. This ensures that stabilization coefficients for EMU-UI and national UI are comparable.

per cent of the gross income shock in Greece (τ_{hh} equals 22 per cent in case of dual insurance and 5 per cent in the benchmark), 16 per cent in Ireland (27 per cent vs. 11 per cent), 18 per cent in Italy (20 per cent vs. 2 per cent), 9 per cent in Portugal (20 per cent vs. 11 per cent) and 15 per cent in Spain (30 per cent vs. 15 per cent). The average (unweighted) stabilization gap in the EA in 2009 amounts to 12 per cent and ranges from 2 per cent in Germany to 22 per cent in Latvia. Variants B (maximum EMU-UI benefit 50 per cent of median income and waiting period of 2 months) and D (variant B with a replacement rate of 35 per cent of gross income) come with smaller stabilization gaps which indicates that schemes with lower coverage or replacement rates are less effective in stabilizing disposable incomes. These findings point to a trade-off between the amount of redistribution (ex-post) across member states on the one hand and the insurance and stabilization effects on the other hand. Another important result evident in Figure 5 is that stabilization effects are weaker in the more recent years of the crisis which is due to a growing share of non-eligible long-term unemployed in these years as documented in section 4.1.

Figure 5: Household income stabilization

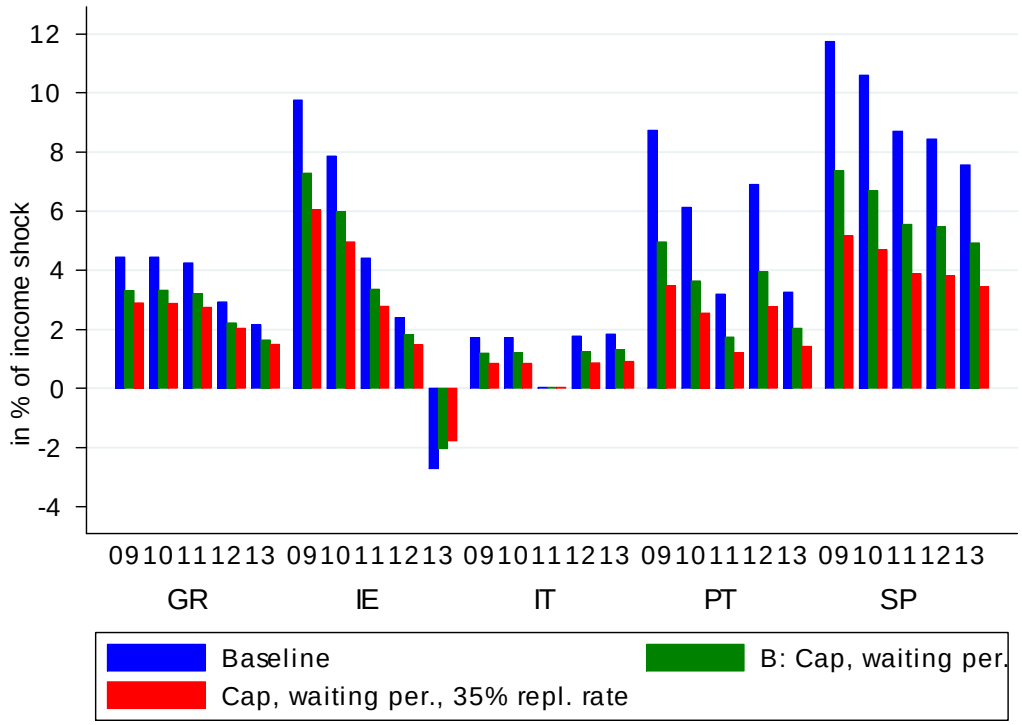


Note: Household income stabilization coefficient τ_{hh} for variants A (baseline), B (max. EMU-UI benefit 50% of median income and waiting period) and D (B + 35% replacement rate) under dual insurance and for national UI.
Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

Figure 6 presents stabilization coefficients for government budgets. They are sub-

stantially smaller than household income stabilization coefficients ranging from below 2 per cent in Italy to roughly 12 per cent in Spain in 2009. The (unweighted) EA average in 2009 amounts to 6 per cent. Eligibility conditions and replacement rates of national UI systems are important drivers of government budget stabilization as these policy rules determine to what extent national UI systems could be cut back in case of dual insurance. As shown in Figure 6, the effect would be rather small in countries like Italy or Greece whose UI systems have coverage rates far below the EA average and somewhat larger in Ireland, Portugal and Spain.[18]

Figure 6: Government budget stabilization



Note: Government budget stabiliziation coefficient $\mathcal{T}_{gov}$ for variants A (baseline), B (max. EMU-UI benefit 50% of median income and waiting period) and D (B + 35% replacement rate). Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

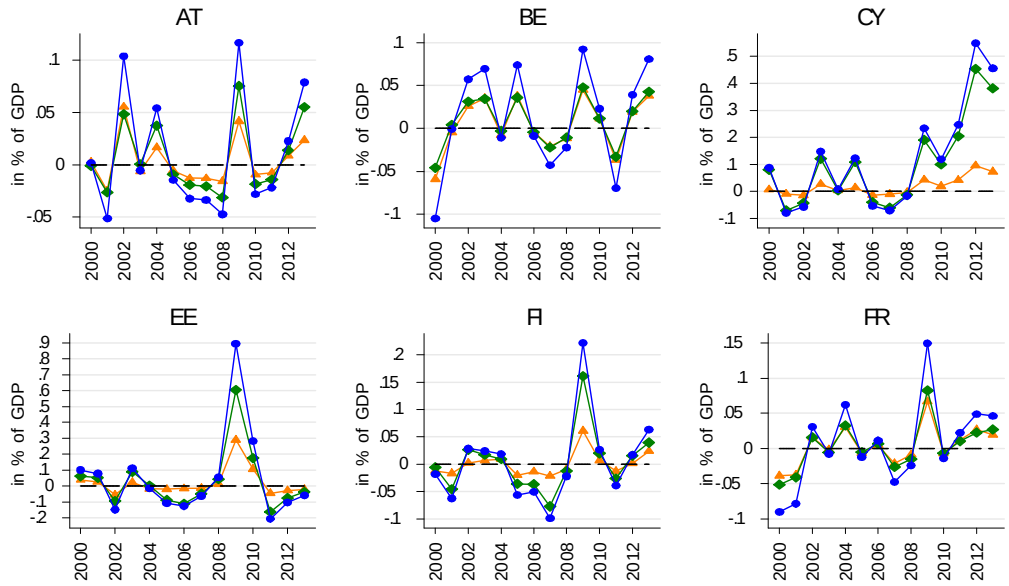
How large is the combined stabilization effect of household incomes and government budgets relative to GDP? In order to estimate the additional stabilization effect in case of dual insurance relative to national UI alone, we add the stabilization gain for households (numerator in formula 2) to the stabilization effect for governments (numerator in formula 3):

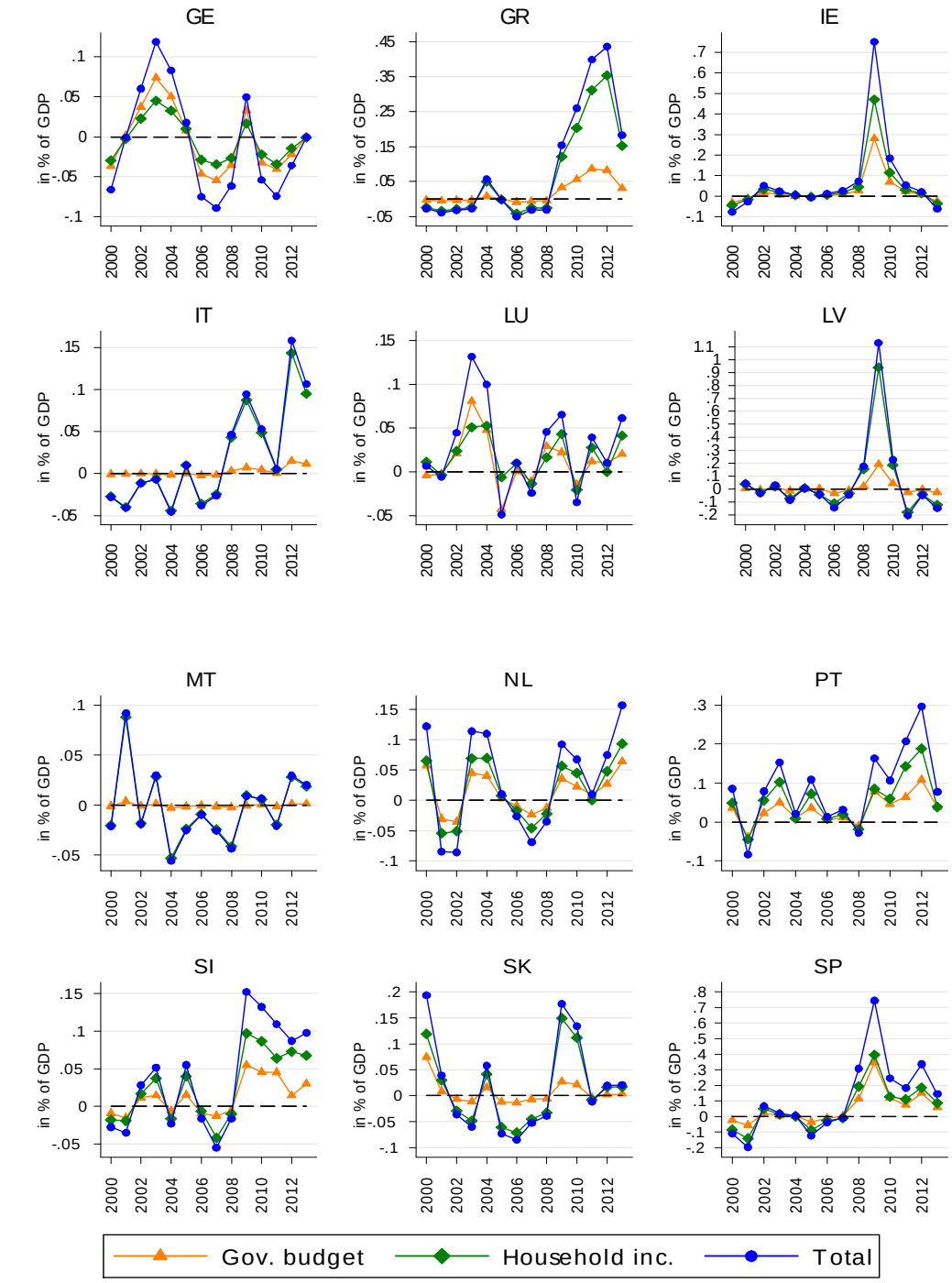
[18] Table 4 in the Appendix presents stabilization coefficients for household incomes (baseline variant A under dual insurance, benchmark of national UI alone as well as the gap between the two) and government budgets (baseline variant A) for all EA member states over the period 2000-13.

$$
\begin{aligned}
\tau_{tot} &= \frac{\left(\sum_i \Delta B_i^{dual-ins.} - \sum_i \Delta SIC_i^{dual-ins.}\right) - \left(\sum_i \Delta B_i^{NAT} - \sum_i \Delta SIC_i^{NAT}\right)}{GDP} \\
&+ \frac{\left(\sum_i \Delta B_i^{NAT} - \sum_i \Delta SIC_i^{NAT}\right) - \left(\sum_i \Delta B_i^{NAT,dual-ins.} - \sum_i \Delta SIC_i^{NAT,dual-ins.}\right)}{GDP} \\
&= \frac{\sum_i \Delta B_i^{EMU-UI} - \sum_i \Delta SIC_i^{EMU-UI}}{GDP}.
\end{aligned} \tag{4}
$$

These estimates do not reflect potential growth effects of EMU-UI, but merely relate changes in benefit and contribution payments following entries into or exits from unemployment in a given year to GDP in that year. Macroeconomic stabilization effects would depend on the fiscal multiplier of government spending and the marginal propensity to consume of individuals benefiting from EMU-UI. Figure 7 shows stabilization effects for the baseline EMU-UI scheme (variant A). In several countries, largest stabilization gains would have been achieved in the recent crisis period with cushioning effects up to 1.1 per cent of GDP in Latvia, 0.9 per cent in Estonia, 0.75 per cent in Ireland and Spain or 0.5 per cent in Cyprus. Germany and Luxembourg belong to those countries that would have been stabilized mainly in the early 2000s and very little afterwards due to improving labor market conditions in the following years. In these two countries as well as in Austria, government budget stabilization would have played a more important role than household income stabilization in some years.

Figure 7: Household income and government budget stabilization





Note: Government budget and household income stabilization in per cent of GDP for variant A (baseline). Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

4.4 Within-country heterogeneity

An important contribution of this paper is to explore the effects of an EMU-UI scheme at the micro level. While the previous sections were focussing on aggregate effects *across* countries, this section asks what impact dual insurance of EMU-UI and national UI systems would have on different individuals *within* each country. If EMU-UI benefits were indeed topped up by national UI benefits in case national UI regulations are more generous (higher coverage or replacement rates) and in the absence of further policy changes, no unemployed would be worse off after the introduction of an EMU-UI system. As outlined above, both is assumed in our simulation exercise. While all short-term unemployed receiving an unemployment benefit that is larger than the EMU-UI benefit were not affected, those not covered by national UI or with an EMU-UI benefit exceeding the national one would gain from the introduction of an EMU-UI system. Whether the employed would gain or lose crucially depends on the difference in contribution rates in case of dual insurance and national UI alone.

Table 1 compares contribution rates for different variants of EMU-UI topped up by national UI (columns A-E) with contribution rates in the benchmark scenario of national UI alone (column NAT-UI). Columns A-E display the sum of the uniform EMU-UI and the country-specific national UI contribution rates necessary to top up EMU-UI if needed. Both contribution rates are calculated such that revenue-neutrality over the whole simulation period is ensured. Column NAT-UI shows revenue-neutral contribution rates for national UI alone which are calculated under the assumption that national UI benefits were only paid to the short-term unemployed to make sure that contribution rates are indeed comparable. Table 1 reveals that the additional stabilization achieved under dual insurance comes at the cost of higher contribution rates than in the benchmark case of national UI alone. This is mainly due to coverage gaps between EMU-UI and national UI (section 4.1). Only under variant E (EMU-UI with actual coverage rate of national UI systems), contribution rates under dual insurance would be lower in a few countries. Interestingly, both countries which are – on average – net contributors (Belgium, Germany) as well as net recipients (France, Ireland, Spain) belong to this group. The reason is that in a scenario of EMU-UI where national eligibility rules are applied, not only the evolution of the short-term unemployment rate in a given country vis-à-vis the rest of the EA would determine whether contribution rates under dual insurance are higher or lower than in the benchmark, but also the extent to which the unemployed are covered by national UI systems.

While the employed would face higher contribution rates in all variants except for variant E, an interesting question is which socio-demographic groups would benefit most from dual insurance. To answer this question, we split the labor force into 18 subgroups according to three socio-demographic characteristics, namely gender, age and education (cf. section 3). The groups solely comprise individuals who are part of

Table 1: Contribution rates in case of dual insurance vs. benchmark

	A	B	C	D	E	NAT-UI
AT	1.57	1.12	1.05	0.89	0.52	0.38
BE	1.68	1.32	1.28	1.18	0.81	0.90
CY	1.60	1.15	1.09	0.91	0.54	0.37
EE	1.57	1.17	1.10	0.95	0.58	0.51
FI	1.67	1.23	1.09	0.96	0.59	0.55
FR	1.74	1.49	1.46	1.35	0.98	1.04
GE	1.57	1.18	1.10	0.99	0.62	0.68
GR	1.60	1.14	1.01	0.86	0.49	0.42
IE	1.65	1.27	1.12	1.04	0.67	0.80
IT	1.56	1.04	0.98	0.76	0.39	0.10
LU	1.78	1.39	1.34	1.16	0.79	0.63
LV	1.56	1.21	1.14	0.98	0.61	0.50
MT	1.56	1.02	0.95	0.72	0.35	0.07
NL	1.69	1.25	1.20	0.99	0.62	0.40
PT	1.75	1.49	1.46	1.30	0.93	0.87
SI	1.69	1.28	1.25	1.07	0.70	0.58
SK	1.56	1.13	1.09	0.90	0.53	0.38
SP	1.98	1.83	1.81	1.76	1.39	1.61

Notes: Country-specific contribution rates (in % of employment income) in case of dual insurance (columns A-E) and in the benchmark (column NAT-UI). A: Baseline, all new unemployed with previous employment income covered. B: Max. EMU-UI benefit 50% of median income and waiting period of 2 months. C: Max. EMU-UI benefit 50% of median income and EMU-UI replacement rate of 35%. D: Max. EMU-UI benefit 50% of median income, EMU-UI repl. rate of 35%, waiting period of 2 months. E: D + EMU-UI with actual coverage of national UI. NAT-UI: national UI alone. Sources: EU-LFS and own calculations based on EUROMOD.

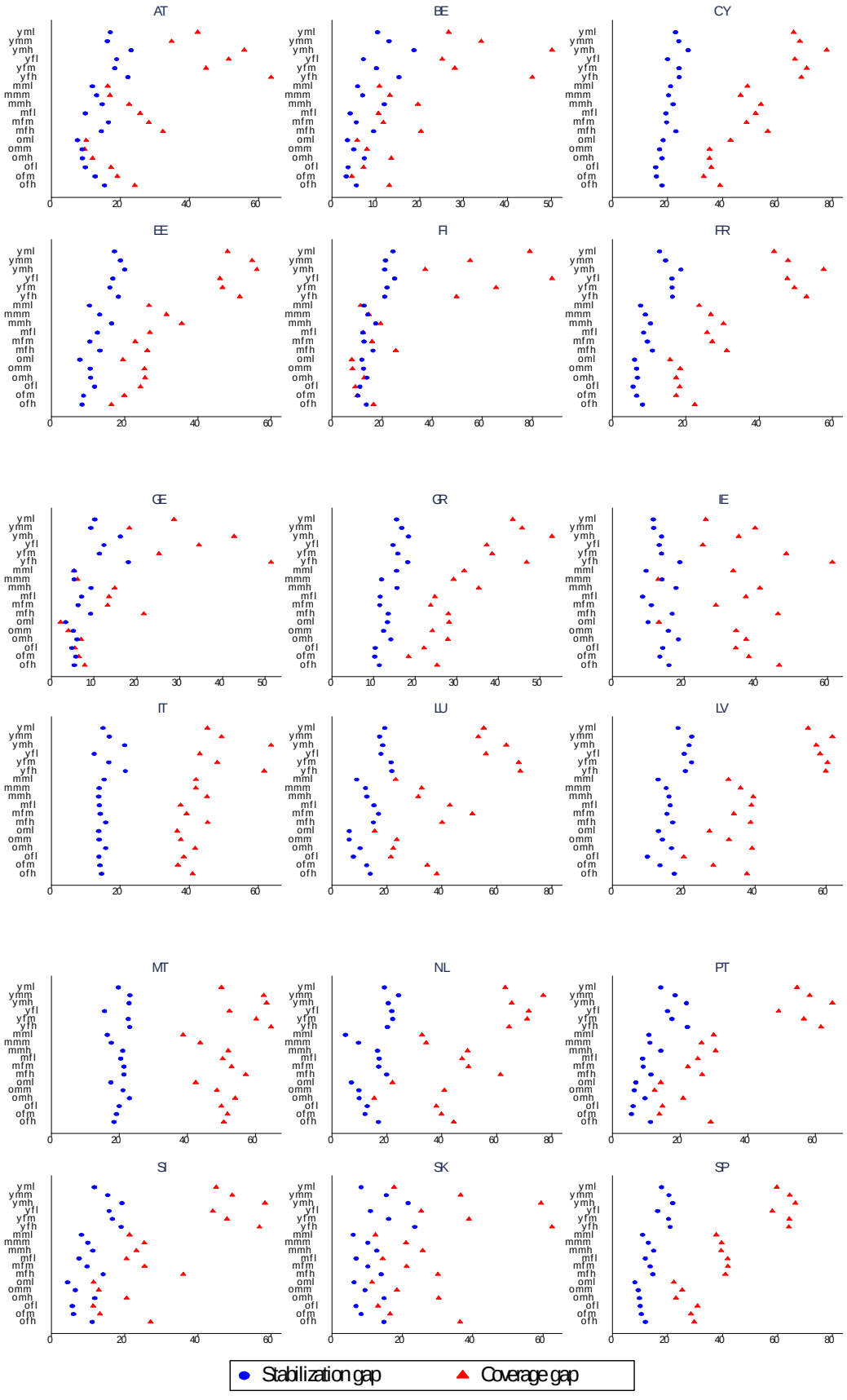
the labor force, i.e. who are either employed or unemployed.

Figure 11 in the Appendix shows average short- and long-term unemployment rates as well as the average share of winners in each subgroup over the period 2000-13. In each group, winners are those short-term unemployed who are better off under dual insurance compared to the benchmark, either because of broader coverage or higher generosity of EMU-UI. Figure 11 reveals that the young tend to benefit most, simply because the short-term unemployment rate is highest among the young. In a few countries, almost all short-term unemployed would gain under dual insurance (Estonia, Italy, Latvia, Malta, Slovakia) indicating that EMU-UI would not only increase coverage, but also provide more generous transfers. Figure 11 further shows that the short-term unemployment rate decreases by skill in the majority of countries.

Figure 8 presents coverage (stabilization) gaps which are calculated as the difference in average coverage rates (stabilization coefficients τ_{hh}) under dual insurance (variant A) and the benchmark (national UI alone). For the stabilization gap, we take absolute values of stabilization coefficients so that the cushioning effects in booms and recessions do not cancel out. In several member states, largest coverage and stabilization gaps are found for young unemployed who often do not meet eligibility conditions of national UI due to insufficient contribution periods. Interestingly, high-skilled unemployed tend to face larger coverage and stabilization gaps and hence would gain more in terms of insurance than the low- or medium-skilled. This can be explained by a higher proportion of short-term relative to long-term unemployed among the high-skilled. In other words, long-term unemployment which is not covered by EMU-UI is more prevalent among the low- and medium-skilled (see Figure 11). To illustrate this finding, take France or Spain as an example. In these countries, the share of winners is higher among the low-skilled due to higher short-term unemployment rates. However, long-term unemployment rates also decrease by skill which explains why the high-skilled would face larger gains in stabilization compared to the low- or medium skilled.

Our results suggest that less stringent eligibility conditions could improve income insurance especially for the young, while more generous UI for the short-term unemployed might not be an effective policy to provide income protection for the low-skilled unemployed.

Figure 8: Coverage and stabilization gaps across socio-demographic groups



Note: First letter: age. y = young, m = middle-aged, o = old. Second letter: gender. m = male, f = female. Third letter: skill. l = low-skilled, m = medium-skilld, h = high-skilled. For example, y m l stands for "young/male/low-skilled". Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

5 Alternative scenarios

5.1 Experience rating

Until now, we have analyzed an EMU-UI system with a uniform contribution rate across member states that is revenue-neutral at the EA-level. The analysis in the previous section has shown that under EMU-UI variant A, four member states would have been either a permanent net contributor (Austria, Luxembourg and the Netherlands) or net recipient (Spain). Therefore, an interesting analytical exercise is to calculate country-specific contribution rates that balance the EMU-UI budget in each member state. This is done for illustrative purposes to show gains and losses across countries and should not be interpreted as a policy alternative as this extreme form of experience rating would undermine the insurance effects of risk-sharing.

Table 2 presents country-specific contribution rates for the different variants of EMU-UI that would have led to revenue-neutrality over the period 2000-13. The last row of Table 2 shows uniform contribution rates that balance the budget at the EA, but *not* the member-state level. Given the differences in net contributions across member states presented in the previous section, it is not surprising that country-specific contribution rates differ significantly ranging from 0.75 per cent in the Netherlands to 3.29 per cent in Spain under variant A. Less generous schemes (columns B-E) require lower contribution rates for revenue-neutrality.

Figure 9 presents average country-specific contribution rates for EMU-UI that balance national budgets in each year as well as maximum and minimum contribution rates over the period. In Austria, Luxembourg and the Netherlands, the three member states that would have been permanent net contributors, revenue-neutral contribution rates are always below the uniform (Eurozone-wide) contribution rate of 1.56 per cent (dashed horizontal line), while the opposite is true for Spain, the only permanent net recipient throughout the simulation period in the baseline scenario (variant A).

5.2 Contingent transfers

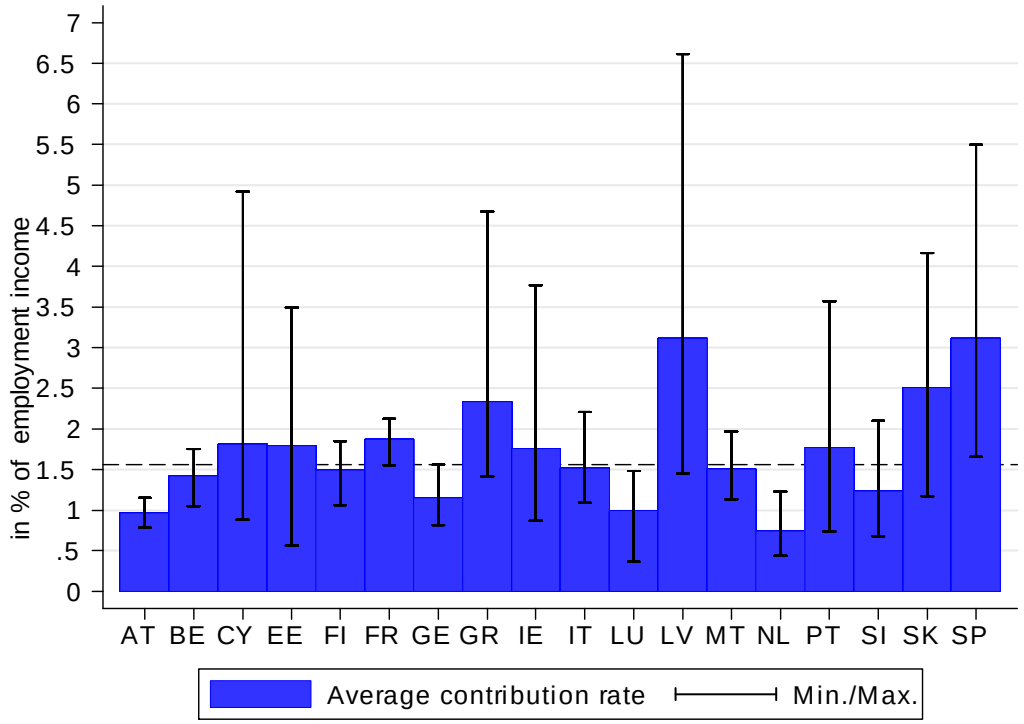
As a further variant, we simulate an EMU-UI scheme with contingent benefits which are activated once certain triggers are reached and analyze its stabilizing and redistributive properties, in particular whether such a scheme reduces cross-country transfers. Our choice of the trigger is guided by the US Extended Benefit (EB) program which permits states to use either the insured or the total unemployment rate to qualify for extended unemployment benefits (Nicholson et al. 2014). We choose the total unemployment rate as a trigger so that activation of contingent transfers is independent from eligibility conditions of national unemployment insurance systems. Precisely, benefits from the EMU-UI system are triggered if the unemployment rate in year t is at least 1 percentage

Table 2: Contribution rates for EMU-UI variants

	A	B	C	D	E
AT	0.97	0.57	0.54	0.40	0.24
BE	1.44	0.99	0.93	0.69	0.43
CY	1.91	1.14	1.07	0.80	0.22
EE	1.74	0.96	0.90	0.67	0.26
FI	1.46	0.95	0.92	0.66	0.37
FR	1.88	1.21	1.15	0.85	0.39
GE	1.14	0.76	0.71	0.53	0.40
GR	2.31	1.38	1.28	0.96	0.29
IE	1.86	1.09	1.02	0.77	0.48
IT	1.53	1.01	0.95	0.71	0.06
LU	1.05	0.61	0.58	0.43	0.17
LV	3.18	1.74	1.62	1.22	0.33
MT	1.46	0.92	0.87	0.64	0.14
NL	0.75	0.42	0.39	0.29	0.11
PT	1.82	0.98	0.91	0.69	0.27
SI	1.29	0.84	0.78	0.59	0.21
SK	2.25	1.51	1.37	1.06	0.25
SP	3.29	2.08	1.96	1.45	0.55
EA18	1.56	1.00	0.94	0.70	0.33

Notes: Country-specific contribution rates (in % of employment income) that balance the EMU-UI budget in each member state over the period 2000-13. Last row: uniform contribution rates that balance the overall EMU-UI budget at Eurozone-level (but not in each single member state). A: Baseline, all new unemployed with previous employment income covered. B: Max. EMU-UI benefit 50% of median income and waiting period of 2 months. C: Max. EMU-UI benefit 50% of median income and EMU-UI replacement rate of 35%. D: Max. EMU-UI benefit 50% of median income, EMU-UI repl. rate of 35%, waiting period of 2 months. E: D + EMU-UI with actual coverage of national UI. Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

Figure 9: Country-specific contribution rates: Annual balanced budget



Note: Dashed horizontal line: Revenue-neutral uniform contribution rate (1.56 per cent) at EA-level for the period 2000-13. Blue bars: Average country-specific contribution rates that balance the budget in each single year. Black vertical lines: Maximum/Minimum country-specific contribution rates that balance the budget in each single year. Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

point higher than the unemployment rate in i) year $t-1$, ii) years $t-1$ or $t-2$, iii) years $t-1$ or $t-2$ or $t-3$. Longer look-back periods ensure that EMU-UI benefits can remain activated in sustained periods of high unemployment.[19] In all other dimensions (payout rules, uniform contribution rate across member states), the contingent benefit schemes i-iii are identical to the baseline scheme (variant A) which implies that by construction member states are net contributors in those years when contingent benefits are not triggered.

Table 5 in the Appendix shows that while with a three-year look-back period, contingent benefits would have been triggered in all member states at least once, they would not have been activated in Malta (Belgium and Malta) in any year with a two-year (one-year) look-back period. The divergence in unemployment across countries since the start of the euro in 1999 becomes evident by a comparison of activation periods. While the short-term unemployed in Germany or Luxembourg, for instance,

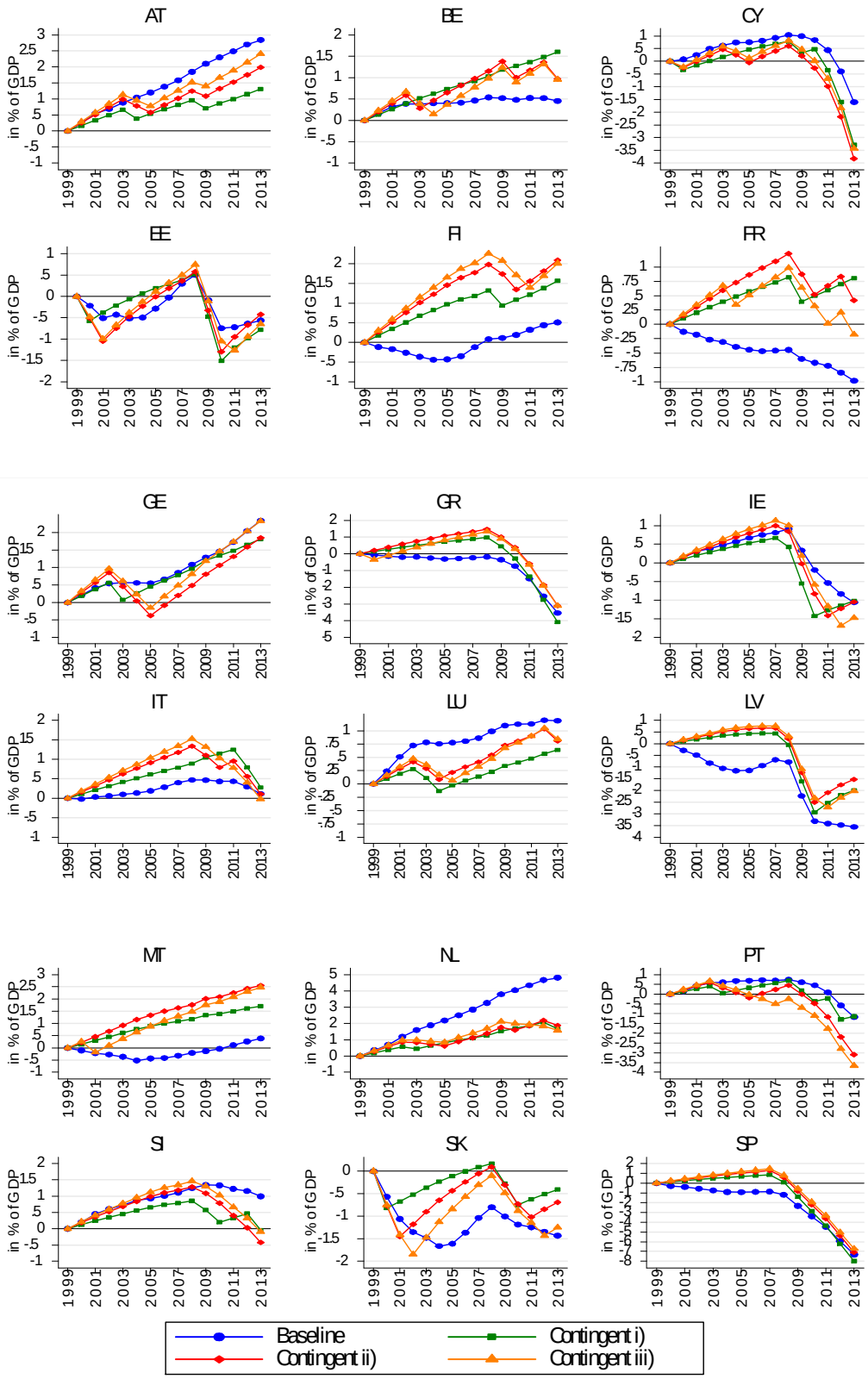
[19] In the US the Tax Relief Act changed the look-back period in the EB program from a two-year to a three-year period in the recent recession to increase its stabilization impact (Nicholson and Needels 2011).

would have received EMU-UI benefits only in the period 2003-05 (and in 2013 in Luxembourg under variant iii), transfers would have been activated in Greece, Ireland, Italy and Spain only from 2008/09 onwards (with the exception of Greece under variant iii in 2000). Not surprisingly, with average yearly benefit and contribution payments of 13, 19 and 22 billion euro at the Eurozone-level, the overall budget of the contingent benefit schemes i-iii would have been significantly lower than in our baseline scenario with non-contingent benefits (47 billion per year). Consequently, revenue-neutral contribution rates would have been less than half as large as in the baseline (0.42, 0.64 and 0.72 rather than 1.56 per cent).

Figure 10 compares cumulative net contributions under the contingent benefit schemes to the baseline (variant A). A key finding is that a few member states change their net contributing position in terms of accumulated net contributions at the end of the simulation period (France, Slovenia). Austria, Luxembourg and the Netherlands, the three member states that would have been net contributors in each year in the baseline, are now net receivers in some years. In the Netherlands, accumulated net contributions are reduced by more than 50 per cent by the end of the simulation period relative to the baseline. Spain, a net recipient in the baseline throughout the simulation period, is a net contributor until 2007 and a net recipient in the remaining years. These results show that an EMU-UI system with contingent benefits could indeed provide more targeted transfers to member states which see their labor market conditions significantly deteriorating.

What are the automatic stabilization effects of such a scheme? Given that the contingent benefit schemes considered here correspond to the non-contingent baseline scheme in all dimensions besides the activation of the scheme, stabilization effects are similar once EMU-UI benefits are triggered. However, it must be taken into account that countries that have not reached the trigger (but might well be in a recession) would be worse off compared to the baseline EMU-UI system as the link between contribution and benefit payments would be broken. Households in these member states would need to finance both their national unemployment insurance system as well as the EMU-UI system. This potential destabilizing effect could be prevented by suspending contribution payments to the EMU-UI system under certain circumstances such as rising unemployment rates.

Figure 10: Cumulative net contributions - Contingent benefits



Note: Baseline and contingent benefits. Contingent scheme i): Benefits are paid if unemployment rate in a given member state in year t is at least 1 percentage point higher than in t-1 (one-year look-back period). Contingent scheme ii): 2-year look-back period, i.e., benefits are triggered if unemployment rate in year t is at least 1 percentage point higher than in t-1 OR t-2. Contingent scheme iii): 3-year look-back period, i.e., benefits are triggered if unemployment rate in year t is at least 1 percentage point higher than in t-1 OR t-2 OR t-3. Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

6 Conclusion

The economic crisis in the Eurozone has revived the debate on deeper fiscal integration and has brought this topic to the top of the European policy agenda. A common unemployment insurance system is one key reform proposal which could serve as a fiscal risk sharing mechanism in the EA. Supporters of this idea argue that a centralized EMU-UI system would dampen asymmetric shocks in the Eurozone and provide income insurance to those households which are most vulnerable. It would thus not only improve the economic resilience of EMU and make its institutional architecture more sustainable, but also strengthen the social dimension of European policy-making. However, main concerns include the risk of permanent transfer flows across member states and moral hazard for national governments and administrations, which could lead to adverse labor market effects.

The aim of this paper has been to present different options for the design of a common unemployment insurance system and to assess their redistributive and stabilizing properties. Moreover, we have discussed how different design options would affect moral hazard issues. In our empirical analysis, we have used counterfactual simulation techniques based on harmonized European micro data to examine the economic effects of a hypothetical common EMU-UI system for the time period 2000-13.

Our main results can be summarized as follows. A basic scheme, partly replacing national unemployment insurance systems, with a replacement rate of 50 per cent, a maximum duration of benefit receipt of 12 months and a broad coverage of all new unemployed with previous employment income could be implemented with a relatively small annual budget. On average, it would have amounted to 47 billion euro per year at the Eurozone-level financed by a contribution rate of 1.56 per cent on employment income. The scheme would have provided significant (additional) stabilization to household incomes and government budgets relative to the status quo. In 2009, the average stabilization gain at EA-level would have amounted to 12 per cent for households and 6 per cent for government budgets. Stabilization effects would have become smaller over the course of the crisis due to the coverage of short-term unemployed only. We find, perhaps surprisingly given that the scheme does not lead to permanent redistribution per se, that 4 out of 18 member states would have been either net contributor or net recipient in each year of our simulation period. Running various sensitivity checks including different coverage and generosity levels as well as experience rating, we show that there is a trade-off between the degree of cross-country redistribution and desired automatic stabilization effects.

In terms of within-country heterogeneity, we find that in particular young unemployed would benefit from broader UI coverage while the employed would face higher social insurance contributions. Finally, our analysis shows that a common EMU-UI system with contingent benefits would lead to less cross-country redistribution as it

would provide more targeted transfers to member states with deteriorating labor market conditions. However, contingent benefits can have undesirable side effects such as a broken link between contribution and benefit payments if benefits are not activated.

One should note that the simulations assume revenue-neutrality over the entire time span considered (2000-2013), but not in each period. This raises the issue of whether the EMU-UI would be allowed to issue debt. In our calculations the EMU-UI would have produced a surplus in its early phase, so that reserves would have been available to finance higher benefits in the crisis. But there is, of course, a concern that political pressures would build up to let the EMU-UI accumulate more and more debt until it needs to be 'bailed out' by the member states. Clearly, while a balanced budget in each period would limit the ability of the system to act as a fiscal stabilizer, an effective debt limitation would be needed. One possible approach would be to start by deliberately accumulating reserves which would provide a buffer in the next recession.

We should emphasize that our analysis has a number of limitations which should be taken into account in the interpretation of the results. Most importantly, it is not the objective of this paper to establish whether or not the introduction of an EMU-UI scheme is desirable in terms of overall welfare. Our analysis focuses on the financial flows implied by different unemployment insurance schemes and the ability of these flows to act as an automatic stabilizer. In so far our analysis is purely positive, rather than normative. In addition, we take economic behavior as given. If EMU-UI had the desired stabilizing effects, the financial flows in the system would differ from those calculated here; the redistributive effects would probably be smaller. However, if the moral hazard effects dominated, the financial flows from contributors to recipients could also be larger. Adding behavioral effects to the analysis is a promising subject for future research.

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A Appendix:

A.1 Additional results

Table 3: Net contributions (in per cent of GDP)

	2000					2001					2002					2003					2004				
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
AT	0.25	0.18	0.16	0.13	0.01	0.30	0.21	0.19	0.15	0.04	0.16	0.14	0.12	0.10	-0.01	0.21	0.16	0.15	0.11	0.01	0.20	0.15	0.14	0.11	0.02
BE	0.16	0.08	0.08	0.06	0.01	0.16	0.08	0.08	0.06	-0.00	0.08	0.03	0.03	0.02	-0.02	0.00	-0.02	-0.02	-0.01	-0.05	0.04	-0.00	0.01	-0.00	-0.05
CY	0.08	0.05	0.05	0.04	0.07	0.17	0.12	0.11	0.08	0.08	0.25	0.16	0.15	0.11	0.07	0.15	0.12	0.11	0.09	0.07	0.17	0.12	0.11	0.09	0.08
EE	-0.22	-0.07	-0.07	-0.05	-0.01	-0.32	-0.13	-0.11	-0.09	-0.05	0.03	0.04	0.04	0.03	0.02	-0.13	-0.03	-0.03	-0.02	0.03	-0.03	0.02	0.02	0.02	0.03
FI	-0.12	-0.09	-0.09	-0.06	-0.05	-0.06	-0.05	-0.06	-0.03	-0.04	-0.10	-0.08	-0.08	-0.05	-0.05	-0.10	-0.08	-0.09	-0.06	-0.05	-0.09	-0.07	-0.08	-0.05	-0.05
FR	-0.13	-0.09	-0.08	-0.06	-0.02	-0.05	-0.04	-0.04	-0.03	-0.01	-0.09	-0.06	-0.06	-0.04	-0.02	-0.05	-0.03	-0.03	-0.02	-0.01	-0.10	-0.07	-0.06	-0.05	-0.02
GE	0.21	0.12	0.12	0.08	-0.03	0.21	0.12	0.11	0.08	-0.03	0.13	0.07	0.07	0.05	-0.06	0.03	0.00	0.01	0.00	-0.10	0.01	-0.01	-0.01	-0.01	-0.09
GR	-0.08	-0.03	-0.03	-0.02	0.06	-0.06	-0.02	-0.02	-0.01	0.05	-0.07	-0.03	-0.02	-0.02	0.05	0.01	0.02	0.02	0.01	0.06	-0.08	-0.04	-0.03	-0.03	0.05
IE	0.14	0.10	0.09	0.07	0.01	0.17	0.12	0.11	0.08	0.02	0.11	0.08	0.07	0.06	0.01	0.12	0.08	0.08	0.06	0.01	0.12	0.08	0.08	0.06	0.01
IT	-0.02	-0.03	-0.02	-0.02	0.08	0.06	0.02	0.02	0.02	0.08	0.03	0.00	0.01	0.00	0.08	0.04	0.01	0.01	0.01	0.08	0.04	0.02	0.02	0.01	0.08
LU	0.24	0.16	0.15	0.11	0.06	0.28	0.18	0.17	0.13	0.07	0.24	0.16	0.15	0.11	0.06	0.11	0.11	0.10	0.07	0.03	0.02	0.05	0.05	0.03	0.01
LV	-0.29	-0.13	-0.11	-0.09	0.01	-0.22	-0.10	-0.08	-0.07	0.02	-0.37	-0.17	-0.16	-0.12	-0.01	-0.24	-0.10	-0.09	-0.07	0.01	-0.22	-0.10	-0.09	-0.07	0.02
MT	-0.10	-0.04	-0.04	-0.03	0.05	-0.11	-0.04	-0.05	-0.03	0.06	-0.07	-0.02	-0.02	-0.01	0.06	-0.09	-0.02	-0.03	-0.02	0.06	-0.16	-0.08	-0.07	-0.06	0.05
NL	0.36	0.27	0.25	0.19	0.10	0.36	0.29	0.27	0.20	0.11	0.52	0.35	0.33	0.25	0.13	0.43	0.30	0.28	0.21	0.11	0.34	0.25	0.24	0.17	0.10
PT	0.15	0.14	0.13	0.10	0.06	0.27	0.19	0.18	0.13	0.09	0.19	0.15	0.14	0.11	0.07	0.04	0.06	0.06	0.04	0.05	0.09	0.09	0.09	0.06	0.04
SI	0.20	0.12	0.12	0.08	0.05	0.26	0.16	0.15	0.11	0.06	0.18	0.11	0.11	0.08	0.04	0.15	0.09	0.09	0.07	0.03	0.18	0.11	0.11	0.08	0.03
SK	-0.57	-0.38	-0.34	-0.26	-0.13	-0.53	-0.36	-0.32	-0.25	-0.07	-0.39	-0.27	-0.23	-0.19	-0.03	-0.29	-0.21	-0.18	-0.15	-0.01	-0.38	-0.27	-0.23	-0.19	-0.03
SP	-0.29	-0.21	-0.19	-0.15	0.02	-0.12	-0.09	-0.08	-0.06	0.04	-0.20	-0.15	-0.14	-0.10	0.03	-0.23	-0.16	-0.15	-0.11	0.03	-0.21	-0.14	-0.14	-0.10	0.02

	2005					2006					2007					2008					2009				
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
AT	0.20	0.15	0.14	0.10	0.02	0.24	0.18	0.16	0.12	0.04	0.27	0.19	0.18	0.13	0.05	0.32	0.22	0.20	0.15	0.06	0.21	0.16	0.15	0.11	0.04
BE	0.02	-0.01	-0.01	-0.01	-0.04	0.03	0.00	0.00	0.00	-0.03	0.07	0.02	0.02	0.02	-0.02	0.09	0.04	0.03	0.03	-0.01	-0.02	-0.03	-0.03	-0.02	-0.05
CY	0.07	0.06	0.05	0.04	0.07	0.11	0.09	0.08	0.06	0.06	0.17	0.13	0.11	0.09	0.07	0.18	0.14	0.12	0.10	0.07	-0.06	-0.01	-0.02	-0.01	0.05
EE	0.14	0.13	0.11	0.09	0.07	0.21	0.16	0.15	0.11	0.08	0.32	0.22	0.20	0.15	0.09	0.21	0.16	0.14	0.11	0.08	-0.68	-0.30	-0.29	-0.21	-0.09
FI	-0.00	-0.01	-0.02	-0.01	-0.02	0.06	0.03	0.01	0.02	0.00	0.20	0.12	0.11	0.09	0.02	0.20	0.13	0.11	0.09	0.03	0.02	0.02	0.00	0.01	-0.02
FR	-0.06	-0.04	-0.04	-0.03	-0.01	-0.05	-0.03	-0.03	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	0.01	0.00	-0.00	-0.00	-0.00	0.01	-0.15	-0.09	-0.09	-0.07	-0.03
GE	-0.00	-0.02	-0.01	-0.01	-0.11	0.13	0.07	0.07	0.05	-0.06	0.22	0.13	0.12	0.09	-0.02	0.25	0.15	0.14	0.10	-0.01	0.16	0.09	0.09	0.07	-0.05
GR	-0.07	-0.03	-0.02	-0.02	0.04	0.01	0.02	0.02	0.01	0.04	0.02	0.03	0.03	0.02	0.05	0.05	0.04	0.04	0.03	0.05	-0.17	-0.07	-0.07	-0.05	0.02
IE	0.15	0.10	0.09	0.07	0.01	0.14	0.09	0.09	0.07	0.01	0.10	0.08	0.07	0.05	0.00	0.06	0.05	0.05	0.04	-0.01	-0.67	-0.35	-0.32	-0.25	-0.18
IT	0.06	0.03	0.03	0.02	0.08	0.10	0.06	0.05	0.04	0.08	0.13	0.08	0.07	0.05	0.08	0.08	0.04	0.04	0.03	0.08	-0.02	-0.02	-0.02	-0.01	0.07
LU	0.09	0.08	0.07	0.05	0.03	0.11	0.08	0.07	0.05	0.03	0.13	0.09	0.09	0.06	0.04	0.12	0.08	0.08	0.06	0.02	0.06	0.05	0.05	0.04	0.03
LV	-0.15	-0.05	-0.05	-0.04	0.02	-0.01	0.02	0.02	0.02	0.04	0.03	0.05	0.04	0.03	0.04	-0.15	-0.04	-0.05	-0.03	0.04	-1.27	-0.64	-0.59	-0.45	-0.11
MT	0.06	0.05	0.05	0.04	0.07	-0.00	0.01	0.01	0.01	0.06	0.07	0.06	0.05	0.04	0.07	0.09	0.07	0.07	0.05	0.07	0.08	0.04	0.04	0.03	0.08
NL	0.38	0.27	0.25	0.19	0.11	0.42	0.29	0.27	0.20	0.11	0.49	0.33	0.31	0.23	0.12	0.52	0.35	0.33	0.25	0.13	0.42	0.30	0.28	0.21	0.11
PT	0.04	0.07	0.07	0.05	0.04	0.06	0.08	0.07	0.05	0.04	0.01	0.05	0.05	0.04	0.03	0.06	0.08	0.07	0.06	0.05	-0.15	-0.03	-0.03	-0.02	-0.01
SI	0.11	0.06	0.06	0.04	0.04	0.15	0.09	0.09	0.06	0.05	0.20	0.13	0.12	0.09	0.06	0.22	0.14	0.13	0.10	0.07	0.03	0.02	0.02	0.01	0.02
SK	-0.14	-0.10	-0.08	-0.07	0.03	0.03	0.01	0.01	0.00	0.04	0.07	0.04	0.04	0.03	0.05	0.09	0.04	0.05	0.03	0.05	-0.19	-0.14	-0.12	-0.09	0.03
SP	-0.09	-0.05	-0.06	-0.03	0.04	-0.04	-0.02	-0.03	-0.02	0.04	-0.03	-0.01	-0.03	-0.01	0.04	-0.35	-0.21	-0.21	-0.14	-0.01	-1.09	-0.67	-0.63	-0.47	-0.21

	2010					2011					2012					2013				
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
AT	0.27	0.19	0.18	0.13	0.05	0.30	0.21	0.19	0.15	0.06	0.27	0.19	0.18	0.14	0.06	0.20	0.16	0.14	0.11	0.04
BE	-0.02	-0.04	-0.03	-0.03	-0.04	0.06	0.02	0.02	0.01	-0.02	0.01	-0.01	-0.01	-0.01	-0.03	-0.06	-0.07	-0.06	-0.05	-0.06
CY	-0.12	-0.05	-0.05	-0.04	0.04	-0.38	-0.19	-0.18	-0.13	0.02	-0.84	-0.45	-0.42	-0.31	-0.03	-1.17	-0.65	-0.60	-0.46	-0.07
EE	-0.66	-0.32	-0.29	-0.22	-0.11	-0.06	0.01	0.01	0.01	0.03	0.04	0.07	0.06	0.05	0.05	0.04	0.07	0.06	0.05	0.04
FI	0.08	0.05	0.03	0.04	-0.02	0.14	0.10	0.07	0.07	0.02	0.12	0.08	0.06	0.06	-0.00	0.07	0.05	0.03	0.04	-0.02
FR	-0.08	-0.06	-0.05	-0.04	-0.02	-0.07	-0.05	-0.05	-0.03	-0.01	-0.13	-0.09	-0.08	-0.06	-0.03	-0.15	-0.09	-0.09	-0.06	-0.03
GE	0.23	0.13	0.12	0.09	-0.02	0.33	0.20	0.19	0.14	0.02	0.36	0.22	0.20	0.15	0.03	0.36	0.21	0.20	0.15	0.03
GR	-0.37	-0.19	-0.18	-0.13	-0.02	-0.70	-0.37	-0.34	-0.26	-0.07	-0.94	-0.51	-0.46	-0.36	-0.10	-0.85	-0.47	-0.42	-0.33	-0.06
IE	-0.53	-0.28	-0.25	-0.20	-0.15	-0.35	-0.17	-0.15	-0.12	-0.11	-0.30	-0.14	-0.12	-0.10	-0.09	-0.23	-0.10	-0.08	-0.07	-0.07
IT	-0.02	-0.02	-0.02	-0.02	0.07	0.01	-0.00	-0.00	-0.00	0.07	-0.14	-0.09	-0.08	-0.06	0.06	-0.19	-0.12	-0.11	-0.08	0.05
LU	0.13	0.10	0.09	0.07	0.04	0.07	0.06	0.06	0.04	0.04	0.10	0.08	0.07	0.05	0.04	0.06	0.05	0.05	0.04	0.03
LV	-1.01	-0.52	-0.46	-0.36	-0.09	-0.46	-0.22	-0.20	-0.15	0.01	-0.38	-0.18	-0.17	-0.13	0.01	-0.24	-0.11	-0.10	-0.07	0.01
MT	0.08	0.04	0.04	0.03	0.09	0.16	0.09	0.09	0.06	0.09	0.15	0.09	0.09	0.06	0.08	0.13	0.08	0.08	0.06	0.08
NL	0.33	0.26	0.24	0.18	0.10	0.38	0.28	0.26	0.20	0.11	0.33	0.26	0.24	0.18	0.10	0.17	0.16	0.15	0.11	0.08
PT	-0.15	-0.03	-0.03	-0.02	-0.01	-0.37	-0.13	-0.12	-0.09	-0.01	-0.67	-0.28	-0.25	-0.20	-0.06	-0.59	-0.23	-0.21	-0.16	-0.05
SI	-0.01	-0.01	-0.00	-0.00	0.02	-0.08	-0.04	-0.04	-0.03	0.01	-0.10	-0.06	-0.05	-0.04	0.02	-0.16	-0.11	-0.10	-0.08	0.02
SK	-0.23	-0.16	-0.14	-0.12	0.02	-0.11	-0.09	-0.07	-0.06	0.03	-0.14	-0.10	-0.08	-0.07	0.03	-0.11	-0.08	-0.06	-0.06	0.03
SP	-1.07	-0.66	-0.62	-0.47	-0.22	-1.08	-0.66	-0.62	-0.46	-0.19	-1.38	-0.85	-0.78	-0.59	-0.26	-1.36	-0.83	-0.77	-0.58	-0.23

Notes: Net contributions (in % of GDP) for EMU-UI. A: Baseline, all new unemployed with previous employment income covered. B: Max. EMU-UI benefit 50% of median income and waiting period of 2 months. C: Max. EMU-UI benefit 50% of median income and EMU-UI replacement rate of 35%. D: Max. EMU-UI benefit 50% of median income, EMU-UI repl. rate of 35%, waiting period of 2 months. E: D + EMU-UI with actual coverage of national UI. Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

Table 4: Stabilization coefficients

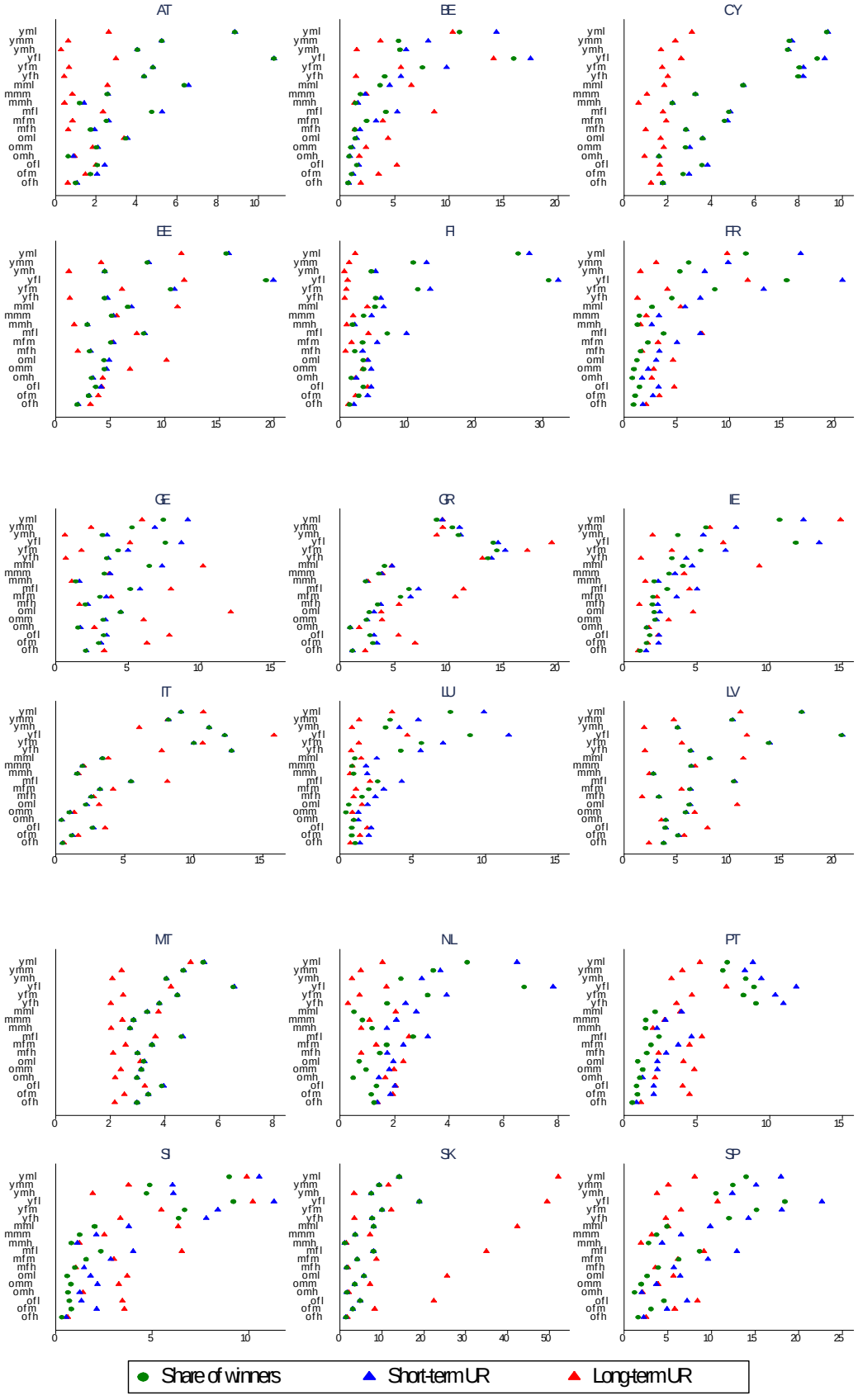
	2000				2001				2002				2003				2004			
	DI	NAT	GAP	GOV	DI	NAT	GAP	GOV	DI	NAT	GAP	GOV	DI	NAT	GAP	GOV	DI	NAT	GAP	GOV
AT	-4	-2	-2	-2	-18	-9	-9	-9	21	10	10	10	-7	-4	-3	-4	18	7	11	6
BE	-14	-9	-5	-7	0	-1	1	-1	11	6	5	5	12	7	6	6	-7	-5	-2	-5
CY	-3	-2	-2	-1	-12	-2	-10	-2	-5	-2	-4	-1	15	3	11	3	1	1	1	0
EE	3	1	1	1	4	2	2	2	-11	-4	-7	-4	14	4	10	4	-5	-3	-2	-2
FI	-8	-5	-3	-4	-15	-7	-9	-5	-2	-2	1	-1	9	2	7	3	-1	-1	-0	-0
FR	-21	-10	-10	-9	-21	-11	-10	-9	8	5	3	4	-3	-1	-2	-0	12	6	6	5
GE	-16	-9	-7	-9	-0	1	-1	1	12	7	5	7	20	12	8	12	18	10	7	10
GR	-5	-1	-4	-0	-10	-2	-8	-1	-1	0	-1	0	-8	-1	-6	-1	12	2	10	2
IE	-20	-9	-11	-8	-6	-2	-4	-2	12	5	8	4	8	3	5	2	-6	-3	-3	-3
IT	-12	-0	-11	-0	-9	-0	-9	-0	-1	-0	-1	-0	1	0	1	0	-11	-1	-10	-1
LU	0	-3	3	-1	-7	-4	-3	-3	16	6	10	4	20	13	6	9	32	18	15	12
LV	2	-0	2	-0	-9	-2	-8	-2	-0	-0	0	-0	-10	-3	-8	-3	-1	-1	-0	-1
MT	-24	-1	-23	-1	22	1	21	1	-20	-1	-19	-1	21	1	20	1	-24	-1	-23	-1
NL	11	6	5	5	-32	-14	-18	-9	-17	-8	-9	-6	27	11	15	8	24	9	14	6
PT	11	6	5	5	-10	-5	-5	-4	15	5	10	4	18	7	11	5	0	-0	1	-0
SI	-8	-4	-5	-3	-10	-5	-4	-4	9	4	5	4	5	2	3	2	-5	-2	-3	-1
SK	16	6	9	6	8	2	6	2	-6	-2	-4	-2	-5	-1	-4	-1	10	3	8	3
SP	-18	-6	-12	-4	-23	-9	-14	-6	19	7	12	6	9	3	6	2	4	2	1	2

	2005				2006				2007				2008				2009			
	DI	NAT	GAP	GOV	DI	NAT	GAP	GOV	DI	NAT	GAP	GOV	DI	NAT	GAP	GOV	DI	NAT	GAP	GOV
AT	-1	-1	-0	-1	-20	-8	-12	-7	-18	-7	-11	-7	-11	-3	-7	-3	23	8	14	8
BE	18	10	8	8	1	1	0	1	-17	-9	-8	-8	-5	-3	-2	-2	15	7	7	6
CY	3	1	3	1	-11	-4	-7	-4	-8	-1	-6	-1	-4	-1	-4	-1	21	4	17	4
EE	-7	-2	-5	-2	-17	-3	-14	-3	-15	-3	-11	-3	16	4	12	4	25	9	16	9
FI	-15	-8	-8	-6	-12	-6	-6	-4	-10	-4	-6	-3	-15	-6	-9	-5	25	7	17	7
FR	-7	-4	-3	-3	4	2	2	2	-20	-10	-10	-9	-8	-5	-3	-4	23	12	11	10
GE	1	-0	1	-1	-12	-7	-5	-7	-9	-6	-4	-6	-10	-6	-4	-6	7	5	2	5
GR	1	0	1	0	-13	-3	-10	-2	-13	-3	-10	-3	-3	-1	-2	-1	22	5	17	4
IE	-9	-3	-5	-3	9	4	5	3	7	2	5	2	9	3	7	3	27	11	16	10
IT	5	0	5	0	-15	-1	-14	-1	-15	-1	-14	-1	17	1	15	1	20	2	18	2
LU	-6	-8	2	-6	-1	-2	1	-1	-15	-10	-5	-6	4	4	1	3	7	2	5	2
LV	-8	-1	-7	-1	-18	-4	-14	-4	-9	-3	-6	-3	22	3	19	3	27	5	22	5
MT	-18	-1	-17	-1	-20	-1	-19	-1	-19	-1	-18	-1	-20	-1	-19	-1	3	0	3	0
NL	2	1	2	1	-18	-6	-11	-4	-23	-9	-14	-6	-15	-8	-7	-5	17	7	11	4
PT	19	9	10	7	8	3	4	2	12	6	6	5	-1	0	-2	0	20	11	9	9
SI	9	3	6	3	-4	-2	-2	-2	-11	-4	-7	-3	1	-1	3	-1	19	8	12	7
SK	-10	-2	-8	-2	-12	-2	-10	-2	-8	-1	-7	-1	-13	-2	-11	-2	16	3	14	3
SP	-22	-9	-14	-6	-13	-6	-7	-4	0	1	-1	1	27	11	16	9	30	15	15	12

	2010				2011				2012				2013			
	DI	NAT	GAP	GOV	DI	NAT	GAP	GOV	DI	NAT	GAP	GOV	DI	NAT	GAP	GOV
AT	-16	-6	-10	-5	-7	-3	-5	-3	14	5	9	5	21	7	14	7
BE	7	4	3	3	-17	-10	-7	-9	3	2	2	1	17	9	8	8
CY	12	1	11	1	13	2	11	2	25	5	20	4	23	4	18	4
EE	19	7	12	7	-7	-2	-5	-2	-12	-4	-9	-4	-5	-2	-3	-2
FI	-0	-1	1	-0	-8	-4	-3	-3	-7	-4	-3	-3	11	4	7	4
FR	-12	-7	-5	-5	15	8	7	7	18	11	8	9	9	4	4	4
GE	-8	-5	-3	-5	-14	-7	-6	-7	-9	-5	-4	-5	1	1	1	1
GR	20	5	15	4	19	5	14	4	16	3	12	3	13	2	10	2
IE	22	9	13	8	11	5	6	4	6	3	3	2	-8	-3	-5	-3
IT	18	2	16	2	2	0	1	0	17	2	16	2	15	2	13	2
LU	0	1	-0	1	9	5	4	3	9	6	3	5	13	5	8	4
LV	21	4	17	4	-17	-2	-15	-2	-8	-1	-7	-1	-13	-2	-11	-2
MT	2	0	2	0	-10	-1	-10	-1	1	0	0	0	6	0	6	0
NL	26	11	15	8	2	2	1	2	16	7	9	5	22	10	12	7
PT	15	8	7	6	11	4	7	3	19	8	11	7	7	4	3	3
SI	19	7	12	6	19	8	11	6	17	5	12	4	15	5	10	4
SK	16	3	13	3	-5	-1	-4	-1	1	0	1	0	10	2	8	2
SP	24	13	11	11	22	11	11	9	21	11	10	8	18	9	9	8

Notes: Stabilization coefficients for household incomes and government budgets. DI: τ_{hh} for baseline variant A (dual insurance), NAT: τ_{hh} for the benchmark scenario of national UI alone, GAP: stabilization gap between DI and NAT, GOV: τ_{gov} for baseline variant A. Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

Figure 11: Short- and long-term unemployment rates and winners across groups



Note: First letter: age. y = young, m = middle-aged, o = old. Second letter: gender. m = male, f = female. Third letter: skill. l = low-skilled, m = medium-skilld, h = high-skilled. For example, y m l stands for "young/male/low-skilled". Sources: AMECO, EU-LFS and own calculations based on EUROMOD.

Table 5: Trigger for contingent benefits

	2000			2001			2002			2003			2004			2005			2006		
	i	ii	iii	i	ii	iii	i	ii	iii	i	ii	iii	i	ii	iii	i	ii	iii	i	ii	iii
AT	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	0	0
BE	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0
CY	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0
EE	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
GE	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	1	1	0	0	0
GR	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LU	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	1	0	0	0
LV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MT	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	1	1	0	0	0
PT	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	1	1	0	0	1
SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SK	1	1	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
SP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	2007			2008			2009			2010			2011			2012			2013		
	i	ii	iii	i	ii	iii	i	ii	iii	i	ii	iii	i	ii	iii	i	ii	iii	i	ii	iii
AT	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
BE	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1
CY	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1
EE	0	0	0	0	0	0	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0
FI	0	0	0	0	0	0	1	1	1	0	1	1	0	0	1	0	0	0	0	0	0
FR	0	0	0	0	0	0	1	1	1	0	1	1	0	0	1	0	0	0	0	1	1
GE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GR	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IE	0	0	0	1	1	1	1	1	1	1	1	1	0	1	1	0	0	1	0	0	0
IT	0	0	0	0	0	0	0	1	1	0	1	1	0	0	1	1	1	1	1	1	1
LU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
LV	0	0	0	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0
MT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	1	1	1	1
PT	0	0	1	0	0	0	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1
SI	0	0	0	0	0	0	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1
SK	0	0	0	0	0	0	1	1	1	1	1	1	0	1	1	0	0	1	0	0	0
SP	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Notes: Years in which contingent benefits are activated. Contingent scheme i): Benefits are paid if unemployment rate in a given member state in year t is at least 1 percentage point higher than in t-1 (one-year look-back period). Contingent scheme ii): 2-year look-back period, i.e., benefits are triggered if unemployment rate in year t is at least 1 percentage point higher than in t-1 OR t-2. Contingent scheme iii): 3-year look-back period, i.e., benefits are triggered if unemployment rate in year t is at least 1 percentage point higher than in t-1 OR t-2 OR t-3. Source: AMECO.

A.2 Reweighting procedure for modeling (un)employment changes

In EUROMOD, the baseline household weights supplied with the national cross-sectional databases have been calculated to adjust for sample design and/or differential non-response. In our empirical analysis, we follow the approach taken by Immvervoll et al. (2006), Bargain et al. (2012) and Dolls et al. (2012) and employ reweighting techniques to simulate a sample of repeated cross-sections for each EA member state over the period 2000-13. We impute various labor force characteristics from the LFS micro data based on 18 age-gender-education strata. For each subgroup-year cell, these are number of people in the labor force, unemployment rates, shares of short- and long-term unemployed as well as coverage rates of national UI systems.

The 18 subgroups are defined according to the following socio-demographic characteristics:

- gender
- age (<30, 30–50, >50)
- education (low: not completed primary, primary and lower secondary; middle: upper secondary and post secondary; high: tertiary).

(Un)employment changes over the period of analysis are modeled at the subgroup level. An increase (a decrease) of the group-specific unemployment rate is computed by increasing the weights of the unemployed (employed) in each subgroup while the weights of the employed (unemployed) are decreased correspondingly, i.e., in effect a fraction of employed (unemployed) individuals is made unemployed (employed). Hence, the size and composition of the labor force in each reweighted cross-section matches the labor force as reflected in the LFS both at the subgroup and aggregate level. Growth in average earnings along the intensive margin, modeled in order to account for changes in the tax base, is imputed from the AMECO-database.