

Reinsurance of National Unemployment Benefit Schemes

Miroslav Beblavý, Daniel Gros, Ilaria Maselli

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Abstract

This study is a contribution to the debate around the creation of an unemployment insurance scheme for the EU/euro area by proposing an alternative mechanism to the Europeanisation of national insurance schemes. The authors make the case for a *reinsurance* mechanism and show that such a system delivers, for a small average contribution, large shock-absorption capacities. At the same time, due to a threshold issue, it is not suitable for EU-level absorption of small national shocks. It is rather meant to deliver a large punch once activated, which should occur only in case of *MAJOR* events for the labour market. Had such a scheme been in place in the EU during the period 2000-2012, it would have been triggered 40 times.

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1. Introduction

This short study analyses theoretical and practical aspects of introducing an EU-wide reinsurance scheme for national unemployment insurance systems. The objective of the study is to elaborate on the welfare gains of such a setup, and to flesh out what such a scheme could look like from a practical point of view and thus provide policy-makers and the wider public with a ‘tangible’ example they can examine.

The study has four sections in addition to this brief introduction.

In Section 2, we review existing reinsurance schemes in the United States and Switzerland. Although both schemes are very different from our proposal for Europe, they provide inspiration for particular aspects of the proposal.

In Section 3, we assess reinsurance schemes from a theoretical point of view, outlining the rationale for such schemes, in principle, and their welfare benefits.

In Section 4, we discuss possible key characteristics of the scheme, namely contributions (including their macroeconomic impact and the possibility to differentiate rates/premiums according to country risks), pay-outs (with or without earmarking) and the size of the scheme, issues regarding the potential triggering of the pay-out and possible threshold effects, and stabilisation effects. We do this by presenting a detailed scheme design as well as a simple retrospective simulation of how the scheme would have operated in the period 2000-12, had it been in existence.

In Section 5, we summarise our findings in an accessible and clear way.

2. The Swiss and US models

We start this study by looking for inspiration in two (con)federations: the United States and Switzerland. Despite their different sizes, the two case studies shed light on how federal states manage unemployment insurance (UI) schemes and their estimation of the best level at which to organise such schemes. The decision to centralise UI at the highest level has not only produced different systems but also seems to have been determined by different needs.

For each of the two cases, we sketch answers to the following questions:

- How is unemployment insurance organised?
- What do the data say?
- Why is the case interesting?

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2.1 The Swiss system

How does it work?

For wages up to 10,500 Swiss francs (€8,588) per month, the replacement rate of unemployment insurance in the Swiss system is 70% of the worker's average wage over the last six to twelve months of his/her employment. The rate goes up to 80% for workers with dependent children. The unemployment allowance is granted on a daily basis (five allowances a week). The maximum duration of the allowance is 260 daily allowances if the insured person can demonstrate a contribution period of 12 months in total, and 400 daily allowances if the insured person proves a contribution period of 18 months in total.

The main organisation responsible for unemployment benefits is the State Secretariat for Economic Affairs (SECO), but cantons and communes play a very important role in the administration of the process, especially in light of the very close link established by the Swiss system between active and passive labour market policies. The unemployment scheme in Switzerland is rather generous, but it is conditional on the participation of the unemployed person in the active labour market programmes, under the supervision of the regional unemployment office, as stipulated by the federal law.

Battaglini and Giraud (2003) argue that different cantons use different “policy styles” in their approach to labour market policies: some cantons primarily use ALMP instruments aimed at improving the reintegration of unemployed persons into the labour market, while others are more intent on preventing unemployment benefit abuse. The authors argue that “policy styles influenced by interventionist traditions and more leftist political forces are more prone to use job-seeker reintegration instruments. On the contrary, policy styles influenced by more liberal traditions and conservative political forces give preference to control instruments or the simultaneous use of both types of instruments”. According to Battaglini and Giraud, another factor that explains how the same federal law is applied locally in different ways is the regional diversity that results from language or religious segmentations.

Unemployment insurance is compulsory for all non-self-employed employees and is financed both by employers and employees. Contributions are collected along with other social insurance schemes and are split equally between the employer and employee. The contribution rate is set at 2.2% (i.e. 1.1% each for the employer and employee) of insured earnings, up to a maximum gross salary of 126,000 francs (€103,051) per year. Workers earning higher wages pay an additional solidarity contribution.¹

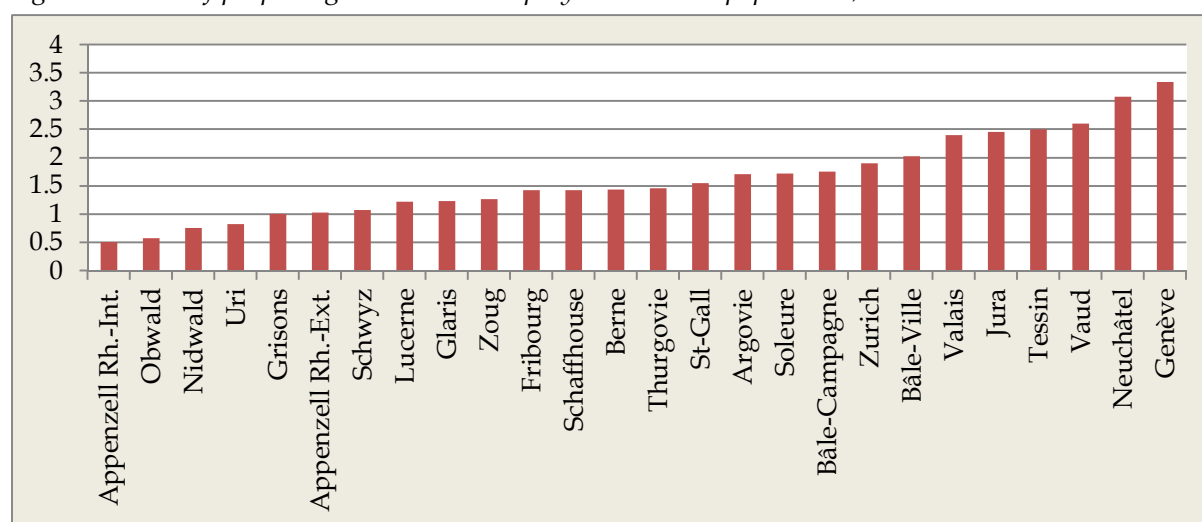
Both the Confederation and the cantons support the financing of the unemployment insurance. The Confederation contributes to the costs of the employment service and of the active labour market programmes at the rate of 0.159% of the total amount of salaries subject to contributions, while the share of the cantons is 0.053%. The payments from all over Switzerland are gathered in a single fund at the federal level and the unemployment benefits are paid out of this same fund. This Unemployment Insurance Compensation Fund also derives revenue from returns on its assets. In case the means described above are not sufficient to cover the costs of insurance, the federal government grants short-term cash loans according to market conditions. To ensure long-term stability of the fund, the Federal Council can, at the end of the year, raise or lower the contribution rate.

¹ Solidarity of 1% (employee: 0.5%; employer: 0.5%) is levied on pay bands between 126,000 francs (€103,051) and 315,000 francs (€257,627).

Some data

The performance of the Swiss labour market is the envy of many advanced economies. According to data provided by the Swiss Federal Office of Statistics, the average rate of unemployment of Swiss nationals over the decade 2003-13 was 3%.² Despite the low levels, however, there are relatively strong disparities between cantons. For instance, the unemployment ratio observed in Geneva in December 2010 was more than six times larger than that observed in Obwald in the same month (Figure 1).

Figure 1. Ratio of people registered as unemployed to canton population, December 2010

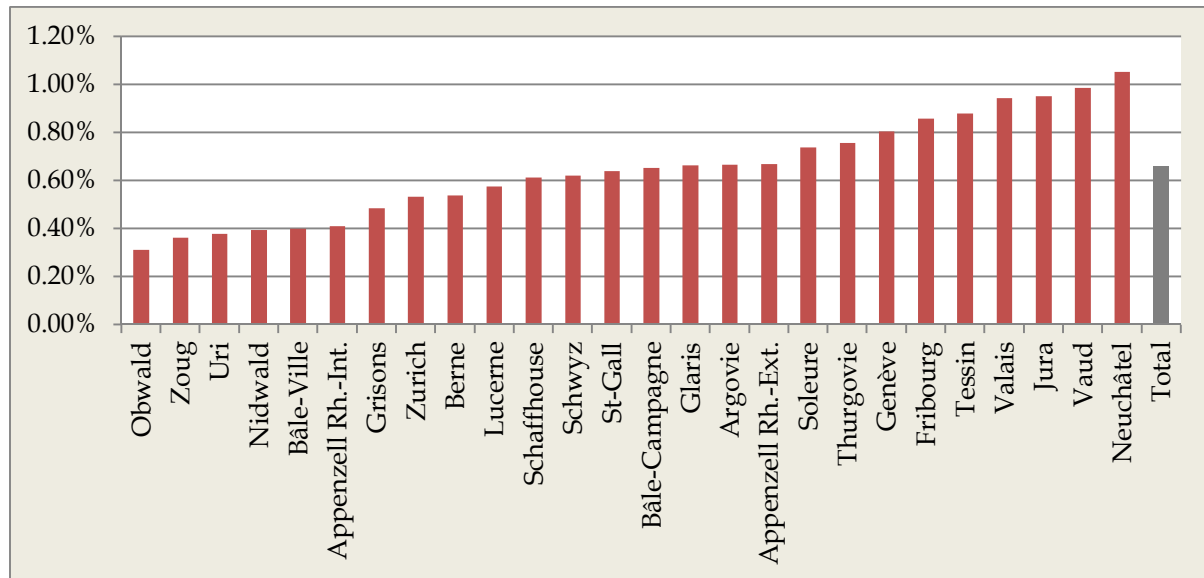


Source: Office fédéral de la statistique, Switzerland.

According to a study carried out by the Swiss State Secretariat for Economic Affairs (Flückiger et al., 2006), cantonal differences are sensitive to the business cycle in such a way that they increase during upswings and decrease during downturns. When the situation deteriorates, all cantons are affected by the decrease in economic activity that results in an increase in unemployment inflows proportional to the size of the labour force. However, when the economy improves, the rate of unemployment falls more in some cantons than others, which show more pronounced exit rates from unemployment. One could infer that the divergence in recovery patterns is due to structural differences between the small entities. As a result, different cantons spend different shares of their GDP on income protection measures (Figure 2).

² The Swiss Federal Office of Statistics also calculates a separate rate for foreigners. The average over the same period is 8.1%, but they constitute a small share of the population.

Figure 2. Yearly unemployment benefit payments as a percentage of canton GDP, average 2008-11



Source: Office fédéral de la statistique, Switzerland.

Why is the Swiss case interesting?

The Swiss Confederation gives large powers to its 26 cantons and 2,396 communes in the organisation of policies. Yet, unemployment insurance (as well as disability and ageing insurance) is organised at the federal level. The question is therefore: Why is income protection against unemployment a federal rather than a local policy, despite the divergences observed among the local labour markets?

A review of the literature and official reports suggest two main reasons. The first is a 'solidarity element'; the second is dictated by the 'law of large numbers'. For the fund to be balanced, a large number of contributors is needed. Given the small size of the cantons and of the country itself, the optimal level to organise an unemployment insurance scheme can therefore only be the federal one.

2.2 The US system

How does it work?

The US federal unemployment compensation (UC) programme provides income support to workers who lose their jobs for up to a maximum of 26 weeks in most states. Approximately 130 million jobs are covered by the programme. As at the end of the week of 17 August 2013, 2.9 million unemployed workers were receiving unemployment compensation with an average weekly compensation of \$307. Estimated expenditure on regular unemployment benefits in 2014 amounts to \$40.5 billion (Whittaker and Isaacs, 2013).

In case of severe recessions and consequent high unemployment in a state, extended benefits can be launched, funded 50% by the state and 50% by the federal government (and exceptionally, 100% by the federal government in the 2009 stimulus package).

The US system constitutes an obvious point of comparison for the potential European system, given that the UC programme centralises part of the organisation but still allows each state the possibility to tailor certain features and requirements.

UC in the United States in fact is administered by a joint federal-state programme financed by federal taxes under the Federal Unemployment Tax Act (FUTA) and by state payroll taxes

under the State Unemployment Tax Acts (SUTA). The FUTA tax rate for employers is 6% of labour costs, but a credit of 5.4% is granted for employers in states that have a national system in place, which is the case today for all US states. The provision served in the past as an incentive for all states to create an insurance scheme, as it constituted a minimum floor for employers in every state.

Most businesses are subject to state and federal unemployment taxes. An estimated \$6.7 billion in federal unemployment taxes (FUTA) and \$44.47 billion in state unemployment taxes (SUTA) should have been collected in the financial year 2011-12 (Whittaker and Isaacs, 2011). Part of the former is used by each state to cover the administrative costs of its system, and the latter part finances the extended benefits when needed.

Unlike in most European countries, the US version of an unemployment insurance scheme is fully financed by employers. The mechanism is based on the principle that those that fire more also need to contribute more to the fund. For the firms' side of the labour market, the system is organised as insurance: companies need to insure themselves against the risk of firing a certain number of workers. The same is not true for employees, who do not contribute to the fund. From their point of view, therefore, the benefits qualify instead as social assistance in the form of income protection.³

The system is administered by the US Department of Labor (DOL). Federal law sets broad rules that the state programmes must follow, including the broad categories of workers that must be covered by the programme, the method for triggering the Extended Benefit (EB) and Emergency Unemployment Compensation 2008 programmes, the highest state unemployment tax rate to be imposed on employers (5.4%), and how the states will repay Unemployment Trust Fund (UTF) loans. If the states do not follow these rules, their employers may lose a portion of their state unemployment tax credit when their federal income tax is calculated. The federal tax pays for both federal and state administrative costs, the federal share of the EB programme, loans to insolvent state UC accounts, and state employment services (Whittaker and Isaacs, 2011).

Maximum benefit levels vary enormously, from \$133 per week in Puerto Rico to \$625 in Massachusetts.⁴ States can obtain loans from the Federal Unemployment Account should they run low on funds, but the deficit needs to be cleared in the long run.

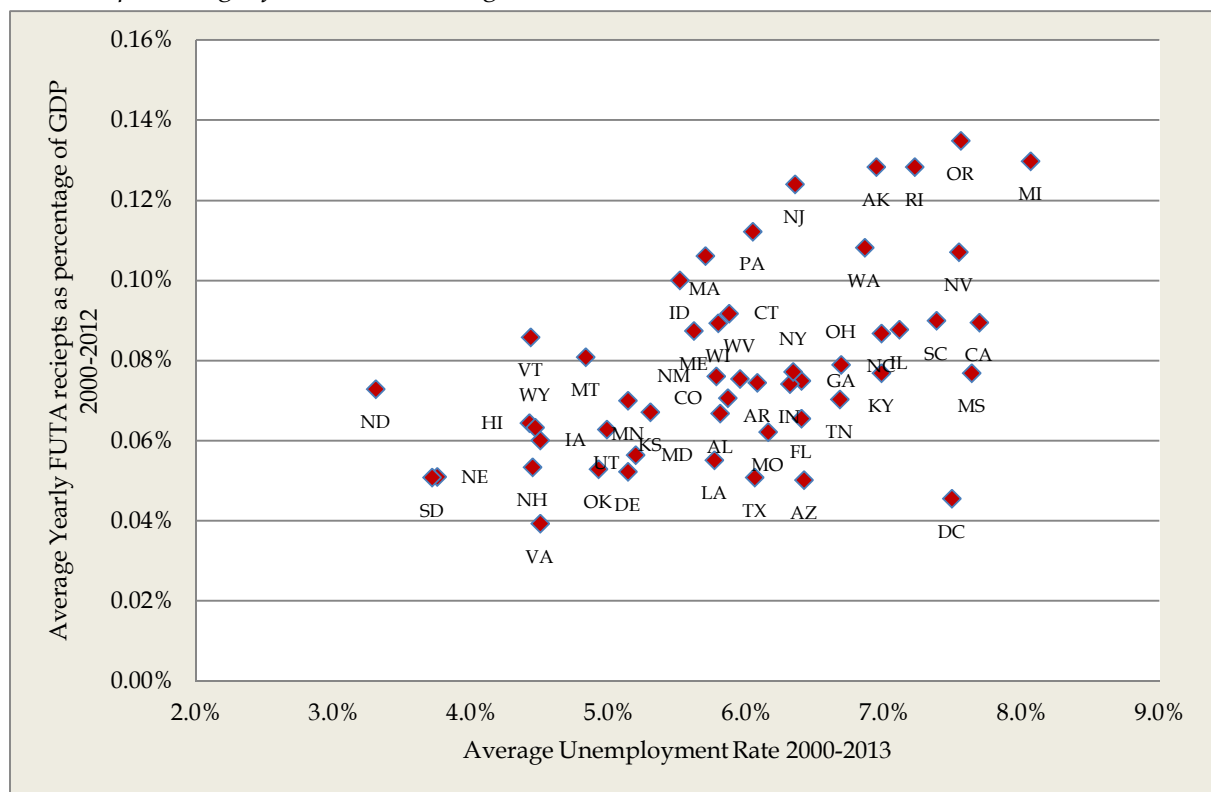
Some data

A certain level of dispersion around the average national unemployment rate also exists in the United States. For example, at the height of the financial crisis in 2009-10, the rate of unemployment in Michigan was three times higher than that of North Dakota. According to the long-term average, unemployment in California is more than two times higher than in North or South Dakota. As shown in Figure 3, States with higher unemployment rates spend a higher portion of their budgets on unemployment benefits.

³ This is due to the fact that it is not the workers that insure themselves against the risk of unemployment, since the contribution is paid by employers. Workers simply receive the benefit in case of job loss.

⁴ 2011 data.

Figure 3. Correlation by state between unemployment rates and unemployment payments as a percentage of state GDP, average 2000-13



Source: Bureau of Labor Statistics, US Department of Labor.

Why is the US case interesting?

The US case is worth studying not only due to the size of the labour market, which is comparable to the European one, but also for three additional reasons:

- the reason why the UC system was brought in at the federal level – i.e. to avoid social dumping;
- the experience rating at state level; and
- the additionality in case of severe recessions.

The origin of the system dates back to the mid-1930s. The Great Depression had made it clear that an income support mechanism was necessary, and a number of states started to investigate and make proposals in this direction. The main obstacle, however, remained employers' fears of losing competitiveness vis-à-vis neighbouring states. This made intervention at the federal level necessary. Witte (1936) explains:

Throughout the history of the unemployment compensation provisions of the Social Security Act, there was general agreement regarding the necessity for federal legislation. It was recognized by everyone who believed in the desirability of unemployment insurance that little headway could be made unless employers in all states would be subject to the same (or substantially the same) costs, whether their respective states enacted unemployment insurance laws or not.

As a result, the creation of a common minimum standard was not expressed in terms of the level of protection, but in terms of employers' contributions necessary in order to finance the policy.

The experience rating at state level

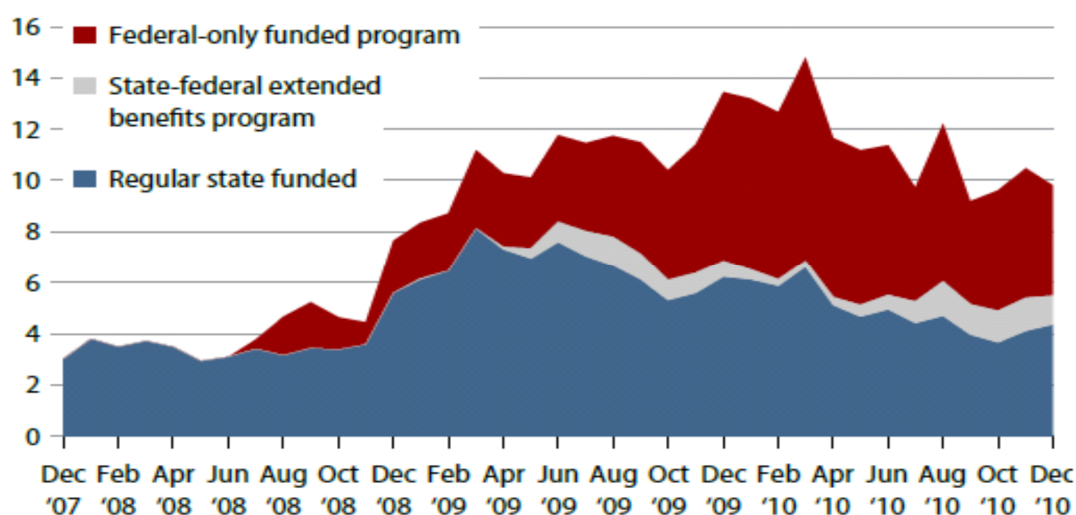
In case of a lack of liquidity, a state can borrow from federal funds, with interest charged on loans that are not repaid by the end of the fiscal year in which they were obtained. States facing troubles in financing their own insurance can therefore ask for help from the federal fund, but only in the form of a loan that needs to be repaid based on an agreement with the US Secretary of Labor. If the state fails to restore the balance between revenues and expenditure of national funds in the medium run, the federal authority raises the firms' contribution.⁵

A less remarked upon, but interesting aspect of the US system is its capacity to strike a balance vis-à-vis individual states over the cycle. Each state can indeed borrow from the federal cash pot in hard times, but these remain loans and as such need to be returned. This in principle ensures that the objective of stabilising income when most needed is not missed, but at the same time avoids free-riding. If a state is unable to repay the loan, the employers' contribution is raised by the federal authority, as happened recently in California, for example, where the fund currently runs a deficit of almost \$10 billion (Employment Development Department, 2013).

Additionality in case of severe recessions

One of the added values of the federal system lies in the possibility to extend benefits in exceptional cases of severe recessions in one or more states, i.e. when the stabilisation tool is most needed. This takes place via the extended and emergency benefits, with the former partially and the latter completely financed at the federal level. Extended benefits are the geographically redistributive part of the system.

Figure 4. Total unemployment insurance benefits paid by month and type of programme in the United States, 2007-10



Source: Boushey and Eizenga (2011).

2.3 Lessons from the two (con)federations

This section raises two main questions:

⁵ "For calendar year 2013, employers in 13 states and the Virgin Islands face an increased net federal unemployment tax (FUTA) because the state UC program had borrowed funds from the federal UTF loan account for two consecutive years" (Whittaker and Isaacs, 2014).

- What are the reasons behind the decision to make income stabilisation via unemployment benefits a federal policy in the United States and in Switzerland?
- Can the EU learn anything from the way in which the two (con)federations organised their policy?

In response to the first question, according to our review, the reasons behind the two countries' decisions are:

- a solidarity principle;
- a problem with the size of the federal entities in Switzerland; and
- the need to create an income stabilisation tool in case of recession, without generating a competitive disadvantage for national firms, which is able to absorb even severe blows.

The extent of solidarity is essentially a political issue. Most EU member countries are at least as big as Switzerland, so the size issue is not very relevant. Therefore, the key issue is the need to create an income stabilisation tool in case of recession.

On the one hand, unlike in the United States in the 1930s, national unemployment benefits systems have been in place in European countries for approximately a century, albeit with different levels of generosity and taxation. However, different systems in Europe clearly have very different stabilisation capacities.⁶ The experience of the recent years has also shown that severe recessions can overcome the ability of some national systems to cope and can lead to pro-cyclical policies.

The US case also offers inspiration in two ways. One is additionality at the highest level – in case of a severe recession, unemployment benefits can be extended, paid by the federal budget. The possibility to top up national systems whenever there is no sign of recovery in the economy is certainly an interesting feature. Such decisions, however, can be taken in the United States relatively quickly. For additionality to be implemented in the EU, automated decision-making would be necessary given the intrinsic slow nature of decision-making at the European level. The experience rating is also an element worth examining. Each US state can receive funds from the federal pot, but the deficit needs to be cleared in the long run. These two principles will factor in our proposal for how to organise a European Unemployment Insurance (EUI).

3. A fiscal shock absorber for the eurozone? Lessons from the economics of insurance

Even before the euro crisis started, it had been widely argued that the eurozone needed a mechanism to help countries overcome idiosyncratic shocks. The experience of the crisis itself seemed to make an overwhelming case for this argument, and throughout the EU institutions it is now taken for granted that the eurozone needs a system of fiscal shock absorbers. For example, a 2012 Report of the President of the European Council calls for: “Stage 3 (post-2014): establish a well-defined and limited fiscal capacity to improve shock absorption capacities, through an insurance system set up at the central level...” (Van Rompuy, 2012, p. 5).

Following this line of thought, a number of shock-absorber mechanisms have been proposed recently. These mechanisms usually stipulate that a certain percentage of each upswing or downturn in the economy should be offset by payments to a central fund (e.g. Dullien, 2013; Enderlein et al., 2013). But this approach neglects a key insight from the economics of insurance.

⁶ For a discussion, see Dolls et al. (2012).

3.1 Insurance and convexity

Insurance is particularly useful when the cost of unpredictable events is convex, i.e. when a shock of twice the magnitude of another one causes more than twice as much damage, because if this is the case the expected value of the cost of being hit by a shock is not simply a linear function of the disturbance. The standard case for insurance at the microeconomic level is simply that utility functions are assumed to be concave (and hence the cost of losing income is also convex). In macroeconomic terms, this means that the political and economic cost of a recession with an increase of unemployment by 4 percentage points is not simply twice that of a recession which is half as strong in terms of unemployment (i.e. with a 2 percentage point increase). The euro crisis has vividly illustrated that the costs of large shocks can be disproportionately large, especially when the shock impairs access to financial markets. In this case, consumption smoothing is no longer possible, or is very expensive. The case of Greece has also shown that the social cost of very large, ‘catastrophic’ shocks can be extremely severe, because a shock that leads to insolvency creates other problems, including widespread bankruptcy costs. By contrast, the small shocks that were prevalent during the Great Moderation did not involve large costs, as temporary shocks to output or income can be smoothed at a low cost via savings or borrowing in capital markets.⁷

There are thus good reasons why social loss functions are assumed to be convex. Most optimal control models simply assume a special form of convexity, namely that the social loss function is quadratic in output (or in output compared to its equilibrium level; see Blanchard and Fischer, 1989).⁸

3.2 Insurance with deductible first best

A widespread practice in the insurance industry is to offer clients full coverage only above a certain deductible or threshold. This approach should be applied to the discussion about the need for a shock absorber for the eurozone as well.

The basic idea behind insurance with a deductible can be illustrated easily. Figure 5 shows the usual quadratic social loss function (blue lines) as the square of the shock that is hitting the economy (e.g. the increase in unemployment or the fall in GDP) on the horizontal axis. This is what the economy would be subject to in the absence of an insurance mechanism.

With a (partial) shock absorber that offsets a certain percentage of the shock (as proposed by Enderlein et al., 2013), the welfare impact of all shocks is lower, as indicated by the red line.

An alternative to a shock absorber is to introduce a deductible, but to fully compensate all shocks above that threshold. The resulting welfare loss as a function of the shock is indicated by the green line (where the threshold was set at 1).

The actuarially fair price for both insurance policies will of course depend on the parameters of the probability density function of the shocks, the percentage of the shock absorbed and the deductible.

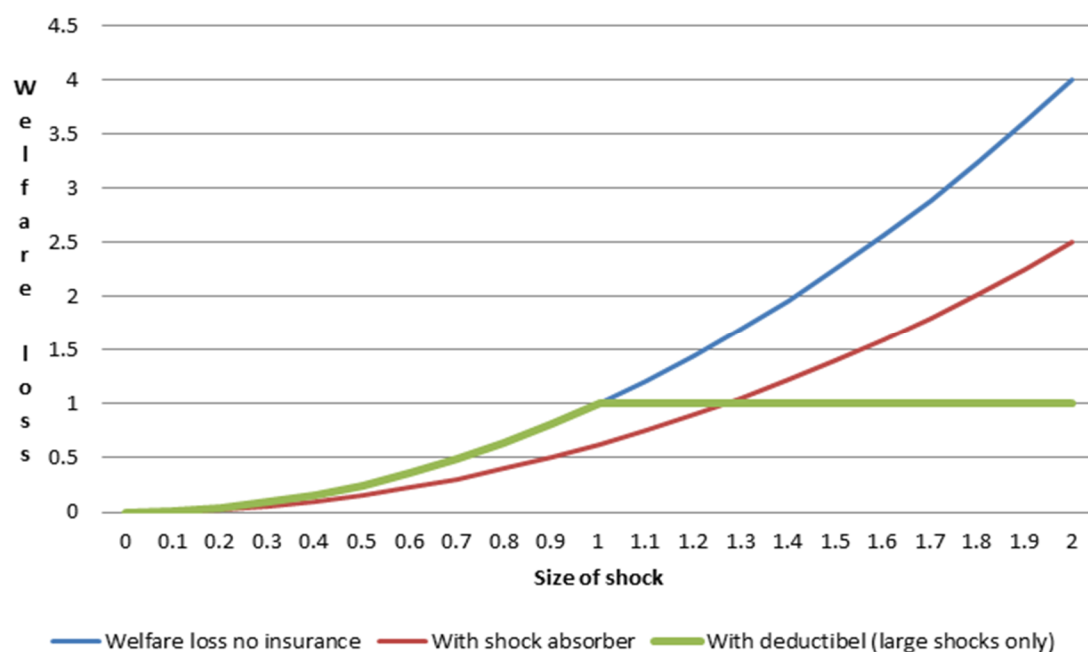
⁷ There is some confusion in the literature on the purpose of shock absorbers. In principle, the ultimate motive for insurance should be to smooth consumption over time. But most empirical analysis concentrates on the variability of income (GDP). Asdrubali et al. (1996) are among the few to analyse how variations in income are transmitted to variations in consumption. Furcieri and Zdzienicka (2013) build their proposal on this approach.

⁸ Benigno and Woodford (2004) derive this functional form somewhat more generally. For a critique, see Mayer (2002).

In Figure 5, the difference between the welfare losses under the two approaches can be determined as the difference between the areas between the green and the red lines to the left and to the right of the point where they meet. In the example drawn here, the area to the right is much larger, but the two areas must be weighted by the probability of these shocks occurring. It thus seems that, a priori, it is not possible to say whether a shock absorber or an insurance contract with a deductible is superior.⁹

However, there exists a general theorem that insurance with a deductible is superior. Arrow (1974) proved that “if we stay within the class of contracts with the same expected loss, EU [expected utility] maximisers prefer a contract with full (100%) insurance above a fixed deductible”.¹⁰

Figure 5. Welfare loss with a (partial) shock absorber vs. insurance with deductible



Source: Own calculations.

3.3 An illustration: Normally distributed shocks

The advantage of insurance with a deductible over a shock absorber (with the same premium) can be illustrated graphically using the most widely used functional form concerning the distribution of the shocks, namely a normal distribution. This is often a convenient assumption to solve linear quadratic problems, but has the disadvantage that, for the normal (Gaussian) distribution (or probability density function) of the shock, one can

⁹ Formally, the cost of a shock absorber under which a fraction α of any shock, x , is absorbed by the insurer is given by $\alpha \cdot E(x)$. If welfare losses are a quadratic function of the shock, one can calculate the following expected losses: 1) No shock absorber. In this case, the welfare loss would be proportional to the variance of the shock, i.e. $E(x^2)$. 2) Shock absorber: In this case, the welfare loss would be proportional to the variance of the shock attenuated by the fraction α , or $(1-\alpha)^2 \cdot E(x^2)$. 3) Insurance with deductible: In this case, the welfare loss would be given by the sum of two elements. For a shock smaller than the deductible (indicated by γ), one has to take the expected value of x^2 , but for larger shocks (i.e. $x > \gamma$) the welfare loss will be just equal to γ^2 (which has to be multiplied by the probability that $x > \gamma$).

¹⁰ See Russel (2004). See also Gollier and Schlesinger (1996) for a more general version of the theorem about the optimality of full insurance above some fixed deductible.

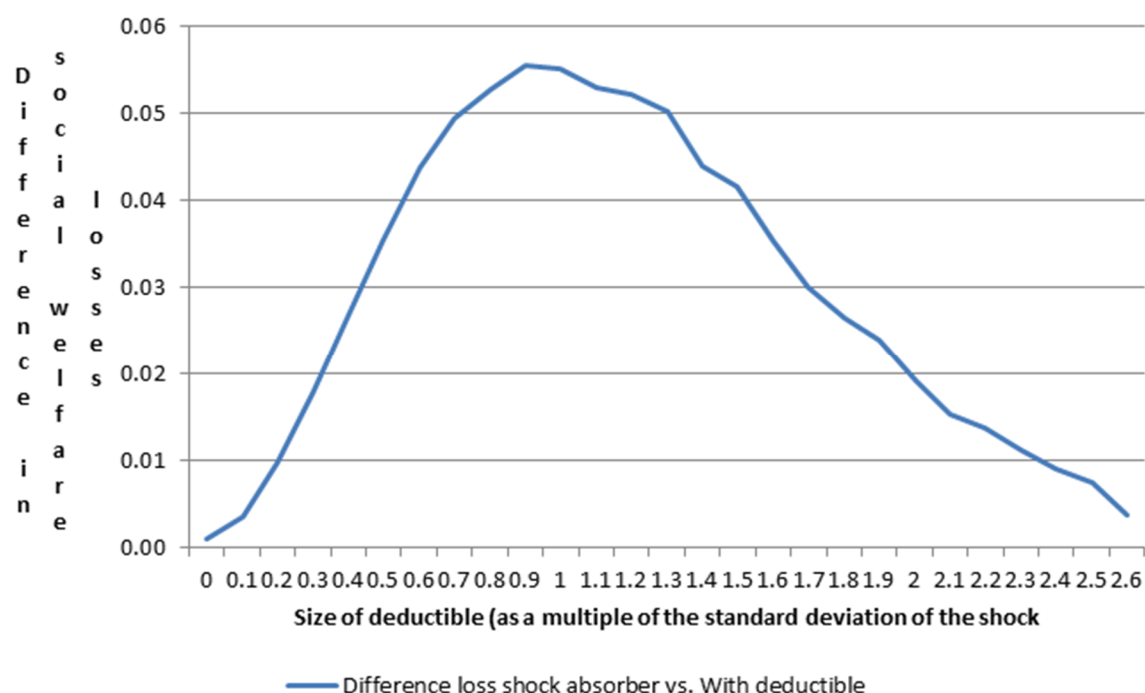
only calculate numerically the truncated variances and expected values that one needs to evaluate the welfare losses and the actuarially fair cost of providing either a shock absorber or insurance with a deductible. Another drawback of the normal distribution is that reality has 'fat tails', i.e. large events occur more often than one would expect if the distribution were normal.

Figure 6 shows the difference between the welfare loss under a shock absorber and under insurance with a deductible as a function of the deductible in terms of the standard deviation of the distribution of the shock. The size of the shock absorber was adjusted in all cases so that the actuarially fair price of both contracts was the same.

It is apparent from Figure 6 that the welfare loss is always lower under an insurance contract with a deductible, as proven more generally by Arrow (1974).

Figure 6 also shows a general property of insurance with a deductible: the value of such an insurance contract depends on the size of the deductible. If the deductible is zero, the contract provides full insurance, whereas if it is infinity, there is no insurance at all. This also implies that the difference between a shock absorber and insurance with a deductible must approach zero as the deductible approaches zero (in this case, the shock absorber will have to approach full shock absorption); and it must also approach zero as the deductible approaches infinity, since at that point there will be little difference between the two types of insurance.

Figure 6. Difference between social losses with a proportional shock absorber and an insurance mechanism with a deductible



Source: Own calculations, based on data provided by Claudius Gros.

Figure 6 depicts the case of the shock having a standardised Gaussian distribution. In this case, the difference in social welfare losses (a positive value means that the loss is greater under a proportional shock absorber without a deductible) reaches a maximum if the deductible is equal to one (one standard deviation). In other words, a deductible equal to one standard deviation of the shock is the situation under which the advantage of this type of contract is largest.

3.4 Conclusions

Many observers and policy-makers now argue that the eurozone needs a system of fiscal shock absorbers similar to that of the US.

Recent studies by the IMF (2013a, 2013b) find that about 20% of shocks to state income are offset by the US federal fiscal system. But such a system would have been of limited value in the euro crisis. Offering a country whose output falls by 1% (relative to the eurozone average) a transfer of 0.2% of GDP would be of limited use, as explained below.

A country hit by a very large shock, say 5% of GDP (like Portugal or Ireland), would of course receive a larger transfer, but the problems would not be substantially different (a fall of income by 4% instead of 5%). By contrast, in a system of insurance with a deductible of, say, 1% of GDP, the country hit by a small shock would receive nothing. But most of the large shock – everything above the 1% deductible – could then be fully offset, safeguarding financial stability.

The overall conclusion that emerges from these considerations is that in the face of large shocks, a system that offsets all shocks by some small fraction is of limited use. What would really be needed is a system that protects against those shocks that are rare, but potentially catastrophic. The many minor cyclical shocks that do not impair the functioning of financial markets can then be dealt with via borrowing at the national level.

It is clear that any such scheme would raise a number of important issues, such as threshold effects and potentially also moral hazard problems, as one could argue that coverage of 100% of costs (above the threshold) might lead to less self-insurance. All of these problems exist of course in the insurance industry as well. At the macroeconomic level, one can argue that the political cost of a deep recession will be large even if transfers from the European level limit the damage to the economy. The incentive to take measures against such shocks (for example, through national macro-prudential measures) should thus remain. The practical problems in defining thresholds and pay-outs will be discussed in detail below.

It is also clear that a scheme that covers rare events implies a high probability that, ex post, a few countries (those hit by the rare shocks) will have received large transfers, and all those that have not been hit by such a shock during the period of observation will have made a (small) loss.

As an aside, we would argue that the European Stability Mechanism – the eurozone’s rescue mechanism – does not provide the needed insurance function because it only provides loans, which have to be repaid with interest, rather than a transfer when a shock materialises.

One practical way to create an insurance mechanism with a deductible would be to create a system of reinsurance for national unemployment insurance systems, under which the national systems would pay regular premiums to a central eurozone fund. This fund would then support the national system in countries where the unemployment rate has increased suddenly above a certain threshold. This is the type of absorption capacity that the decision-makers of the EU should be considering – not merely copying the way the US federal fiscal system appears to offset a small proportion of all shocks. The remainder of this study benchmarks this approach against others.

4. The reinsurance in practice

The main conclusion from the previous theoretical section is that a system of fiscal insurance with a fixed deductible would be preferable to a fiscal shock absorber that offsets a certain percentage of all fiscal shocks. Our task is far from being concluded at this point; moving

from theory to the actual design of the policy is not only a tricky job, it also requires taking a number of decisions. What is, for example, the reference unemployment indicator? And which type of shock should be insured? What is the optimal set of countries to subscribe to this system? We describe in detail in this section every element of the insurance we propose: the trigger, the claim, the deductible, the pay-in and the pay-out. We also present the results of our Excel-based simulations of how the European unemployment reinsurance system would work.¹¹

4.1 The trigger

In our model, what triggers the mechanism that starts the policy is a certain type of unemployment shock. In order to be eligible for help, the unemployment rate in the country hit by a recession must be higher than a certain threshold. Which unemployment rate and which threshold?

For the former, we consider the short-term unemployment rate, whereby the number of workers unemployed for less than 12 months and willing to work is divided by the active population (employed and unemployed aged 15 to 64). Among several ways to measure unemployment, this is the one that is affected most by the cycle; the total unemployment rate also includes the long-term unemployed whose condition is more structural than cyclical.

The threshold we consider for country i at time t is equal to

$$stUR_{it} > \overline{stUR}_i + \gamma\sigma_{stUR_i}$$

Where \overline{stUR}_i stands for the 10-year moving average of the short-term unemployment rate and σ for the 10-year moving standard deviation of the short-term unemployment rate. In less technical terms, the scheme is triggered when actual short-term unemployment exceeds the sum of the 10-year average and a multiple of the standard deviation of the short-term unemployment rate.

We multiply the standard deviation by several values of γ to test different triggers, closer or larger to the average: 0.1, 1 and 2, which we call respectively 'Brussels rain', a 'storm' and a 'tornado'.

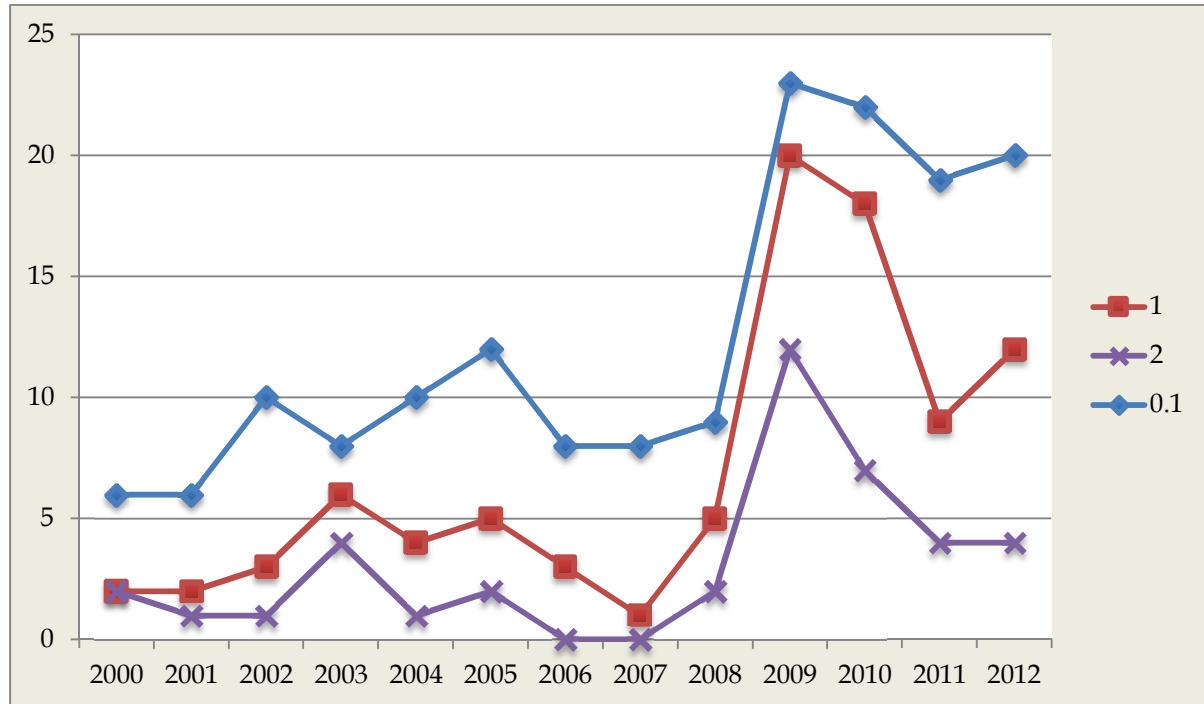
We chose ten years as the reference to calculate the moving averages and standard deviations because such a period is long enough to include a complete cycle, but at the same time not too long to make changes in structural unemployment remarkable.

As can be seen in Figure 7, based on such a mechanism, had the policy been in place in the period 2000-12, it would have intervened:

- 161 times in case of Brussels rain (standard deviation equal to 0.1);
- 90 times in case of storms (standard deviation equal to 1); and
- 40 times in case of tornados (standard deviation equal to 2).

¹¹ From a methodological point of view, it should be emphasised that Excel-based simulation has advantages and limitations. The key advantage is that we can quickly simulate a variety of options at both the EU and country level with limited resources. It is suitable for the calculation of revenues and expenditures and to give a flavour of how important the system would be compared to the existing national stabilisers. On the other hand, it is not a general or partial equilibrium model that would show dynamic effects of such a system on the member states, or on the EU economy as a whole. Nevertheless, the results that emerge from the simulation suggest that the size of the stimulus would not in any case be large enough to have material second-order effects.

Figure 7. Number of cases had the reinsurance been in place since 2000

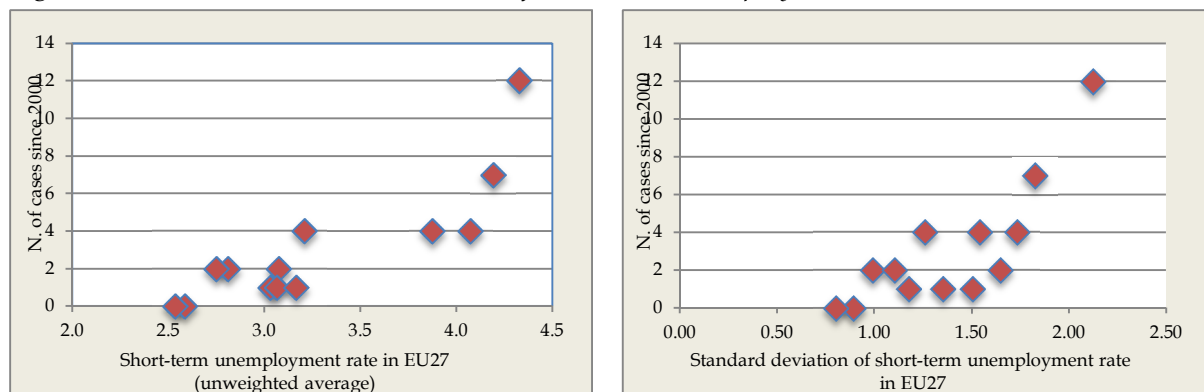


Sources: Authors' elaboration based on Eurostat and AMECO data.

For larger values of γ , the country is eligible for funding if it is hit by a shock of a magnitude that goes beyond 'business as usual'. The underlying assumption is that national social policies, in many countries in place for more than 100 years, are well equipped to deal with a normal crisis. The added value of such a supra-national mechanism is that it would provide assistance in case of major downturns, where countries will most likely have to face not only the unemployment surge, but also financial pressure.

As can be seen from Figure 8, the number of interventions increases not only with higher unemployment rates, but also with higher deviations from it. This means that the policy is triggered more often in case of asymmetric shocks.

Figure 8. Correlation between the number of cases¹² and unemployment rates and standard deviation



Sources: Authors' elaboration based on Eurostat and AMECO data.

¹² For SD = 2, the tornado cases.

Box 1. Short-term vs. total unemployment rate

The unemployment rate would be *prima facie* the most natural choice of indicator, because it is indeed meant for the assessment of employment policies. In addition, it is a solid indicator, given that it is based on a headcount.¹³ Nevertheless, it presents some issues.

First, an old debate exists among labour economists on the solidity of this indicator, which is considered by many experts to be inappropriate for measuring the temperature of the labour market. The reason is that the unemployment rate does not measure the share of people who do not have work in the population, but the share of those in the labour force who do not have a job and are also actively looking for one. Therefore, those who are available to work but are not actively job-seeking are not recorded by the unemployment statistics collected following the standard ILO definition.¹⁴

Second, it is important to note that a significant part of the unemployment rate is unrelated to short-term shocks and is of a structural nature. The group of unemployed which it measures is made up of two main sub-groups: those whose unemployment duration is a small natural transition from one job to another, and those with a longer unemployment duration due to the fact that their skills do not match existing vacancies. The former has a short-term nature, whereas the latter is much more persistent and requires enormous effort to be curbed. A policy that does not take structural differences into account would, as a consequence, give rise to a rather unbalanced flow of funds over time. This is a problem if one focuses on the redistribution rationale rather than on one aimed at cushioning shocks.

Since the cushioning rationale appears to be among the key arguments for the creation of an EUI, we do not recommend using a headline unemployment rate. For this reason, we propose considering not the overall unemployment rate, but the short-term rate. This would be consistent with the fact that unemployment benefits generally do not cover the entire unemployment spell, but instead have a maximum length of eligibility.¹⁵ An unlimited duration constitutes a disincentive to look for a job, especially if the income subsidy is generous.

The EU short-term unemployment rate, defined as less than 12 months of unemployment, was on average 4% during the period 2003-12.

4.2 The claim

The claim is the materialised utility of insurance, i.e. what the insured is entitled to receive based on the agreement with the insurer. We base the claim on the same reference indicator as the trigger: short-term unemployment. We argue that the amount required by a country to face a crisis without the need to cut unemployment benefits when they are needed the most is based on the following formula:

$$C_{it} = 0.4NCE_{it} \times 12months_{it} \times 0.8stU_{it}$$

¹³ The headcount is not based on the entire working population – only a small share of the population is interviewed for the Labour Force Survey. However, the methodology is solid and agreed at the EU level via Eurostat.

¹⁴ Further explanation can be found on the Eurostat website at http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Underemployment_and_potential_additional_labour_force_statistics.

¹⁵ Belgium, where unemployment benefits are provided until the worker finds a new occupation, is an exception. In all countries during the past two decades, systems have become less and less generous in order to create the incentive to reduce the length of the work-to-work transition.

The claim for country i at time t is equal to 12 months of benefits, equal to 40% of the national average compensation of employees (NCE), paid to 80% of short-term unemployed workers (stU).

The figures “0.4, 12 and 0.8” are discretionary parameters. Our choice is justified by the compromise between a sound policy and the need to ensure a strong stabilising effect. More specifically, we design the insurance in such a way that:

- It covers as many unemployed workers as possible, but not all because it is unlikely that all qualify for unemployment benefits, which in all countries are linked to a contribution for a certain number of months (ranging from 6 months of contribution over the previous 24 in the UK to 12 months over the previous 18 in Belgium).
- It is characterised by a relatively generous replacement rate.¹⁶
- It lasts long enough to secure an income for unemployed workers in times with few employment opportunities, but not too long to discourage them from finding another job.

In this proposal, no conditionality is applied to how the funds are spent.

4.3 The deductible

In Section 2, we explain how “if we stay within the class of contracts with the same expected loss, EU [expected utility] maximizers prefer a contract with full (100%) insurance above a fixed deductible” (Arrow, 1974). This is based on the assumption that the insurance is useful when the cost of unpredictable events is convex, i.e. when a shock of twice the magnitude of another one causes more than twice as much damage. The deductible can also be considered a form of additionality, a principle often applied to EU funds (i.e. the EU should only contribute in addition to what the national government is normally spending, not replace the national expenditure). From another perspective, this magnifies the stabilisation function of the expenditure for a given size of the EUI system.

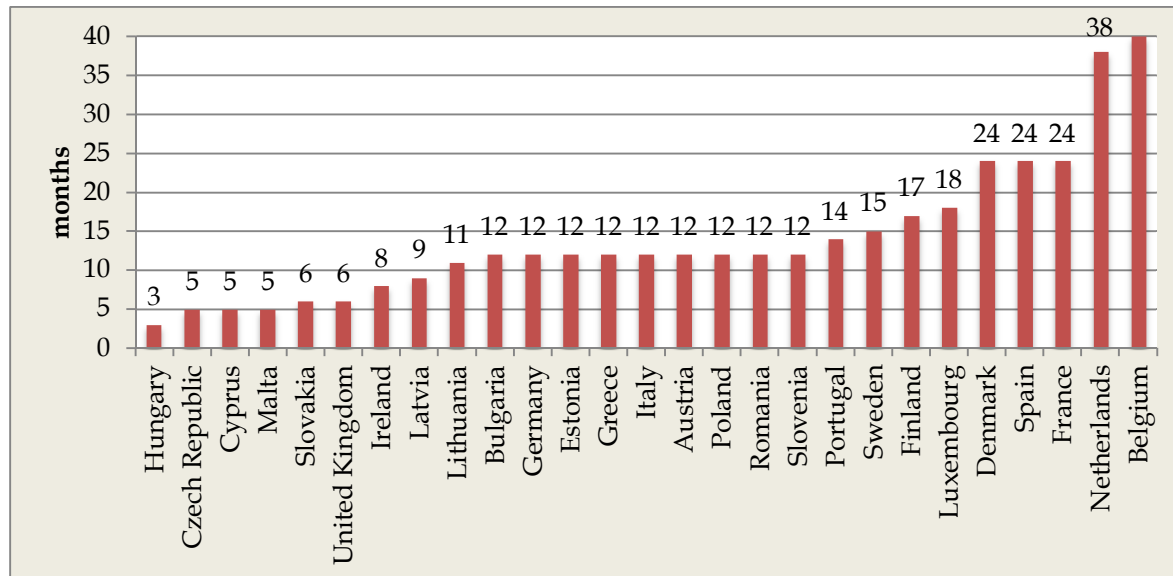
What should the deductible look like? We base the calculation on the expenditure on passive labour market policies. However, for countries that have unemployment benefits for unemployed for extended periods (more than 12 months), we cannot include all such expenditure. The reason is that the EUI needs to contribute to the part of the expenditure that is related to short-term unemployment and not to the structural/long-term component. The longer the duration of unemployment benefits in a certain country, the smaller the percentage of passive labour market policies (PLMP) that is counted, since larger portions of the expenditure go to non-short-term unemployed.

Eurostat collects data from EU countries on what portion of their public budgets is dedicated to labour market policies, broken down in great detail by type of expenditure. Employment subsidies, for instance, are distinguished from early-retirement schemes. However, it is not possible to derive the share of expenditure by duration of the unemployment spell. For this reason, we rely on a formula that is based on the assumption that countries that grant unemployment benefits for a longer period spend a lower share of their budget on newly unemployed. Our calculation is only an approximation, but if the EUI were to be implemented, it would be fairly easy to collect such data on a precise basis.

As can be seen in Figure 9, there is high heterogeneity in Europe when it comes to the maximum duration of unemployment benefits (UB), from three months in Hungary to essentially unlimited in Belgium.

¹⁶ Only in four countries in the eurozone is the gross replacement rate below 40%: Malta, Ireland, Austria and Germany.

Figure 9. Maximum duration of unemployment benefits in Europe



Sources: Mutual Information System on Social Protection (MISSOC) database.

For this reason and based on the formula below, we design a larger deductible for those countries that grant unemployment benefits for a longer duration.

The deductible is equal to the smaller of the following values:

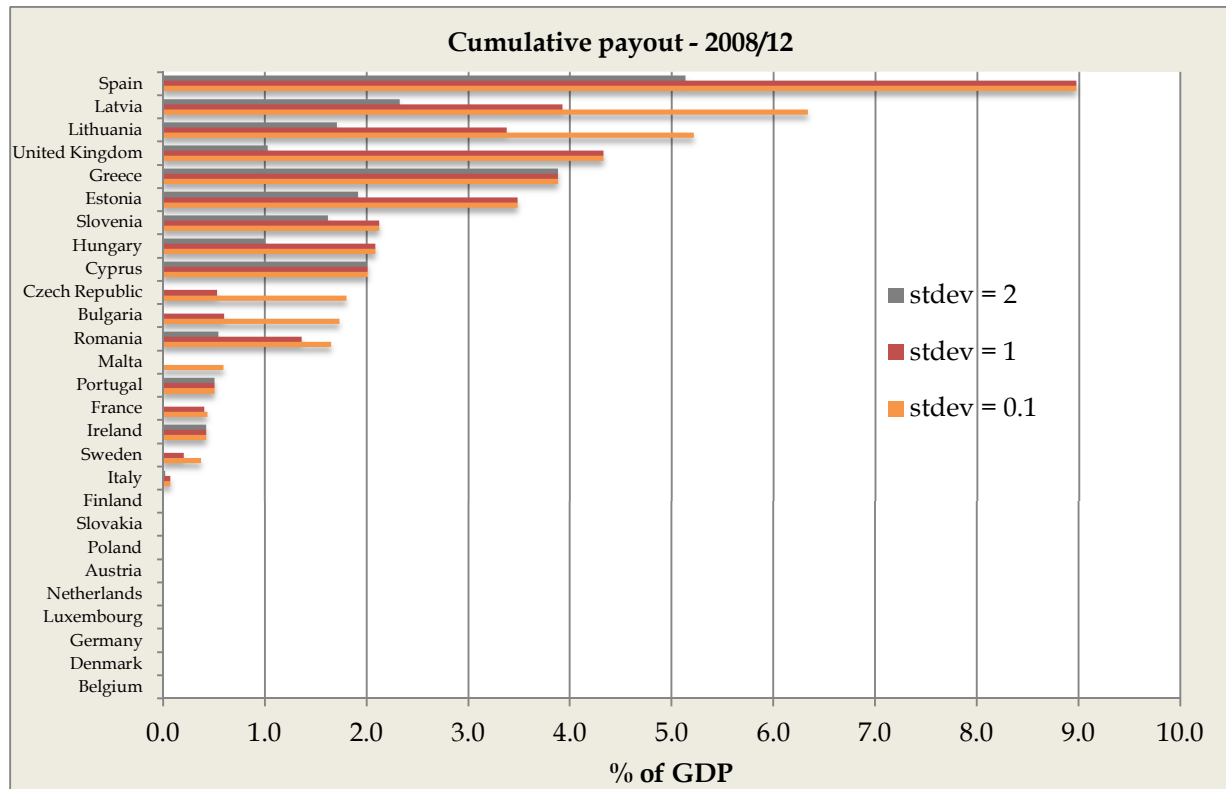
- $1/(1+1/2*(length\ on\ UB\ provision\ in\ months -12)/12)$
- 1

The deductible is applied to the 10-year average expenditure on PLMP. Based on the above coefficient, a country such as the Netherlands, with long provision of unemployment benefits, will be applied a deductible equal to half of its expenditure on PLMP for that year.

4.4 The pay-out

The actual pay-out of the fund boils down to the difference between the claim and the deductible for every short-term unemployment rate higher than $\overline{stUR}_i + \gamma\sigma_{stUR}_i$. Had the EUI been in place since the beginning of the Great Recession, depending on the trigger chosen and assuming it was more or less sensible, it would have disbursed on average between 0.5% and 1.3% of GDP in each country between 2008 and 2012 (details by country in Figure 10).

Figure 10. Cumulative payout, 2008-12



Sources: Authors' elaboration based on Eurostat and AMECO data.

In the most stringent version – i.e. standard deviation equal to 2 – 12 countries would have benefited from the reinsurance for at least one year: Spain, Greece, Latvia, Estonia, the UK, Cyprus, Hungary, Ireland, Slovenia, Romania, Portugal and Lithuania. Only in the first three countries would the total pay-out have been higher than 2% of GDP over the period 2008-12.

4.5 The pay-in

How is the system financed? A basic contribution of 0.1% of GDP is paid annually until 0.5% of EU GDP is accumulated. Contributions would then stop and would be restarted if the fund fell to below 0.5% of EU output. In practice, if the trigger is really low (for example, standard deviation of 0.1), the pay-in is continuous. If the triggers are higher, it becomes a start-stop mechanism.

The basic contribution is multiplied by a form of 'experience rating'¹⁷ that reflects the country balance with the fund over the last ten years. Technically:

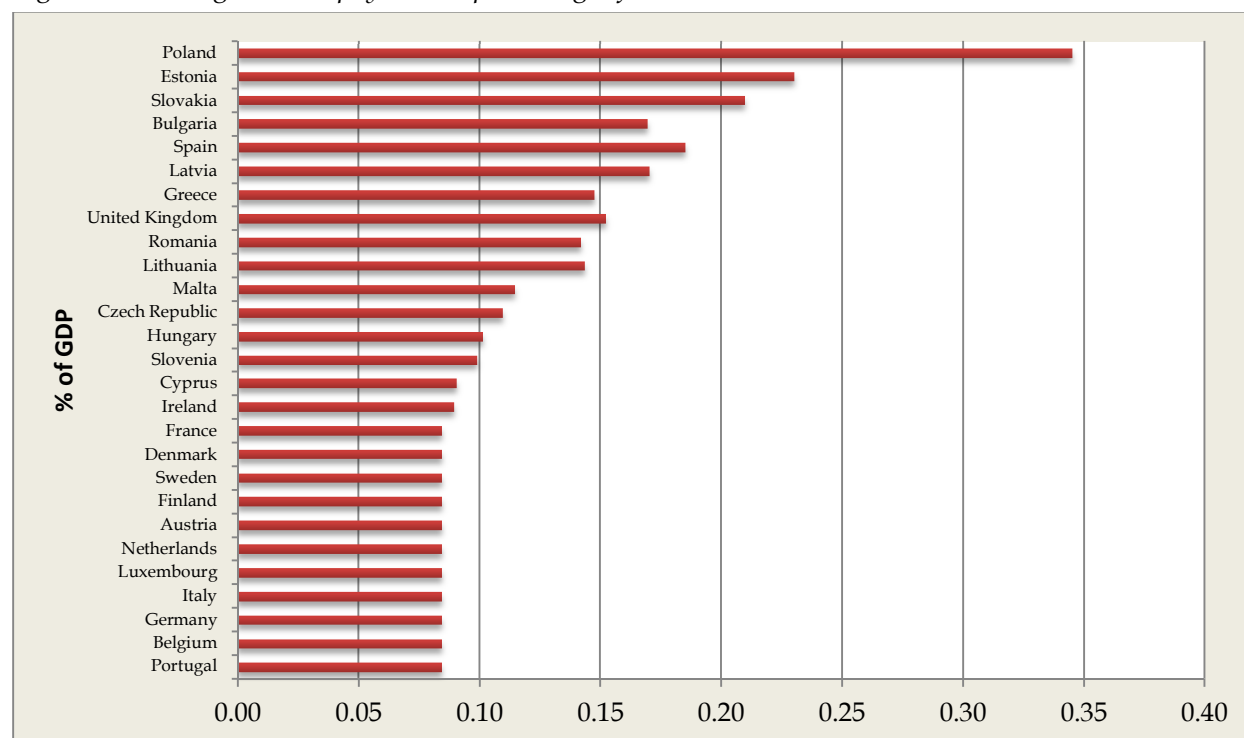
- The coefficient equals the sum of 10 annual coefficients.
- The annual coefficient is 0.1 if the country balance in a given year is positive or negative, but less than 0.1% of GDP.
- But if the country balance in a given year is negative and equal to or higher than 0.1% of GDP, then the annual coefficient is equal to the balance.

As a result, countries that draw heavily on the fund gradually start paying in more, but with a delay of several years until this becomes noticeable so that the net stabilisation effect of the reinsurance is strong even for a pronounced recession. In Figure 11, we can see that a heavy

¹⁷ Also called 'claw-back' in the jargon of this debate. The main objective is to adjust the contributions to the fund in such a way as to avoid large and permanent transfers between member states.

use of funds by Poland, the Baltic states and Slovakia in the early 2000s due to the post-1998 recession, combined with renewed utilisation in the post-2008 recession, would result in high pay-in during the period we show. Extremely heavy use of the funds by Spain at the end of the 2000s would not yet translate into a cumulatively very high pay-in by 2012, but Spain would continue to have high contributions for years to come.

Figure 11. Average annual pay-in as a percentage of GDP, 2000-10



Sources: Authors' elaboration based on Eurostat and AMECO data.

Note: Figures refer to SD = 0.1. Differences are very small when SD=1 and SD=2 are considered.

Box 2. Technical aspects of the simulation

The simulation is based on historical data from 2000 to 2012, which gives a 13-year period. Thus, the simulation shows how the reinsurance would have worked if these mechanisms had existed at the time. Since it is an intellectual exercise, it includes countries that joined in the 2004 and 2007 waves as if they had been EU members at the time. The point is to show the potential effects of the EUI based on historical data as a counterfactual, not to simulate history. The decision to start in 2000 was based on data availability, particularly for the new member states.

The main data we use are: GDP, unemployment and short-term unemployment rates, passive labour market policies expenditure, nominal compensation per employee, and duration of unemployment benefits. As a source of data, we use AMECO, the annual macroeconomic database of the European Commission's Directorate General for Economic and Financial Affairs and Eurostat.

We start our simulation in the year 2000, which means we start the time series from the year 1990 to construct the 10-year moving averages. This means that for the early years, we resort to simulations to fill the gaps of missing data. This concerns, in particular, detailed information on unemployment by duration. Given that the short-term unemployment rate is a vital variable for this simulation, to fill the gaps, we use the complete series to determine a linear

relationship between short-term unemployment and output growth, a sort of short-term Okun coefficient. We produce one coefficient per country and, based on output data, we use the coefficient to estimate what the short-term unemployment would have been in that year. In some cases like France, Italy and Slovakia, the relationship is strong (R-squared higher than 0.5); in some others, like Poland and Austria, it is much weaker. Yet, this remains a fictitious problem – if the EUI were to be set up tomorrow in the way we propose, all the necessary data would be available for all countries.

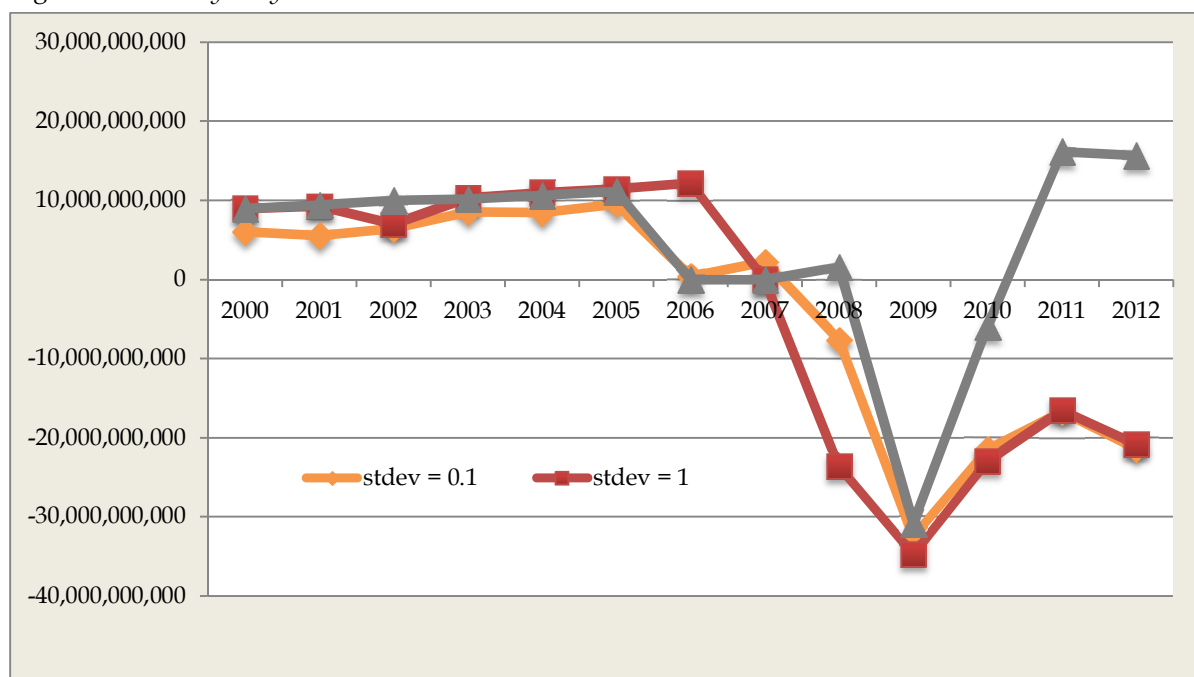
We also used 10-year average expenditure on passive labour market policies (PLMP) in each country. The information is used to calculate the deductible applicable to the insurance. The time series starts in 1998 for older EU member states, and in the mid-2000s for the remaining ones. To fill in the gaps for the earlier years, we simply refer to the long-term average. This may not be an optimal solution, as it does not take into account variations determined by the business cycle, but such variations are not as large as one would imagine given that only a portion of the expenditure goes to the newly unemployed workers.

4.6 The EUI balance for the EU and for selected countries

Based on the selected parameters, we compute the balance of the fund over the entire period as the difference between the pay-in and the pay-out. Whether the yearly or cumulative balance is considered, three observations need to be made:

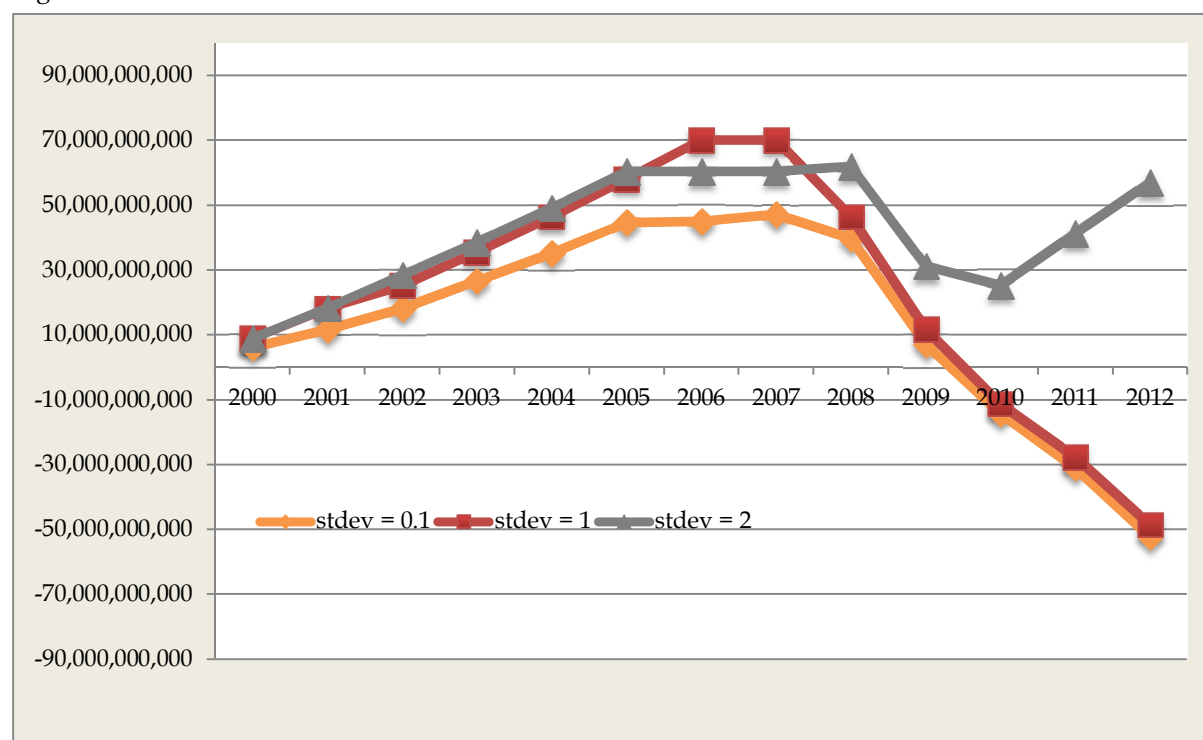
- The balance remains largely positive until the Great Recession. Then, because of the magnitude of the crisis, it passes from almost +€20 billion to less than -€20 billion.
- The difference between Brussels rain or a storm versus the tornado emerges clearly. In the latter case, in fact, the balance returns to positive very quickly after 2010 (Figure 12).
- Expressed in terms of a percentage of EU output, the highest annual contribution of the fund to crisis countries (-€30 billion) is 0.3% in 2009.

Figure 12. Fund yearly balance



Sources: Authors' elaboration based on Eurostat and AMECO data.

Figure 13. Fund cumulative balance



Sources: Authors' elaboration based on Eurostat and AMECO data.

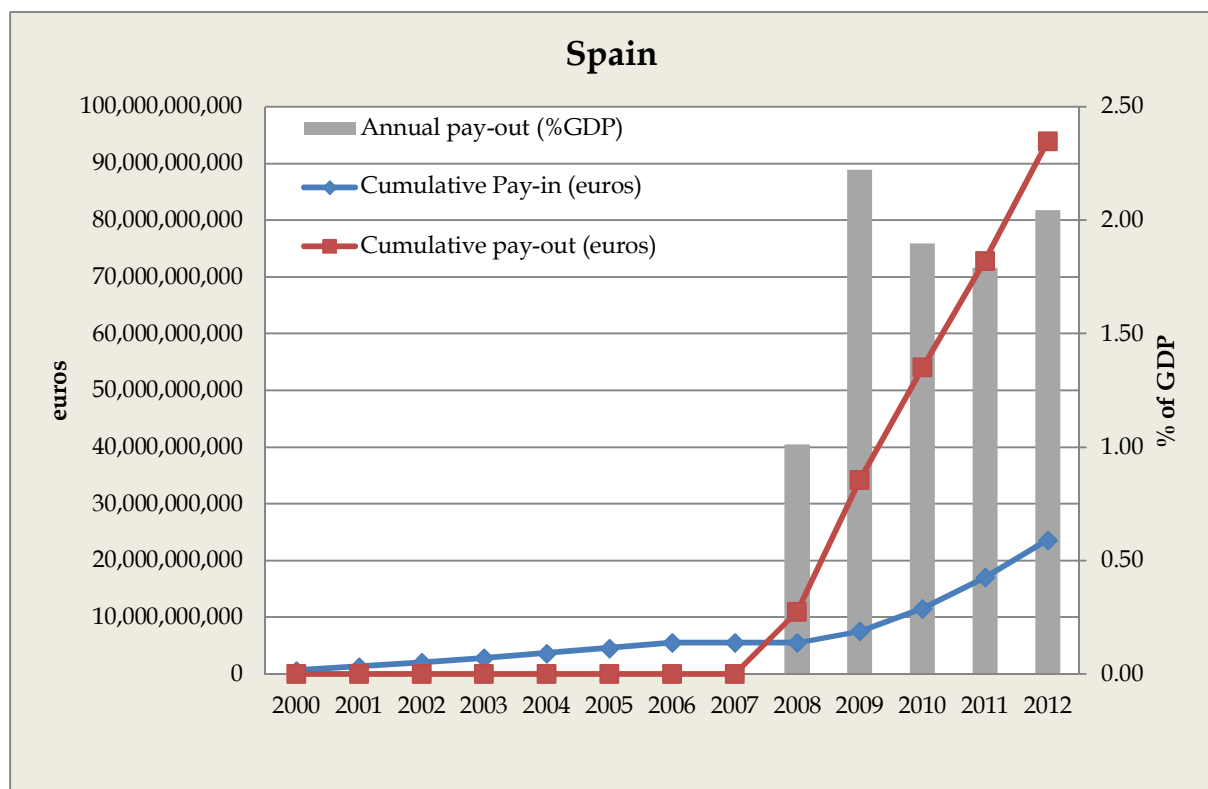
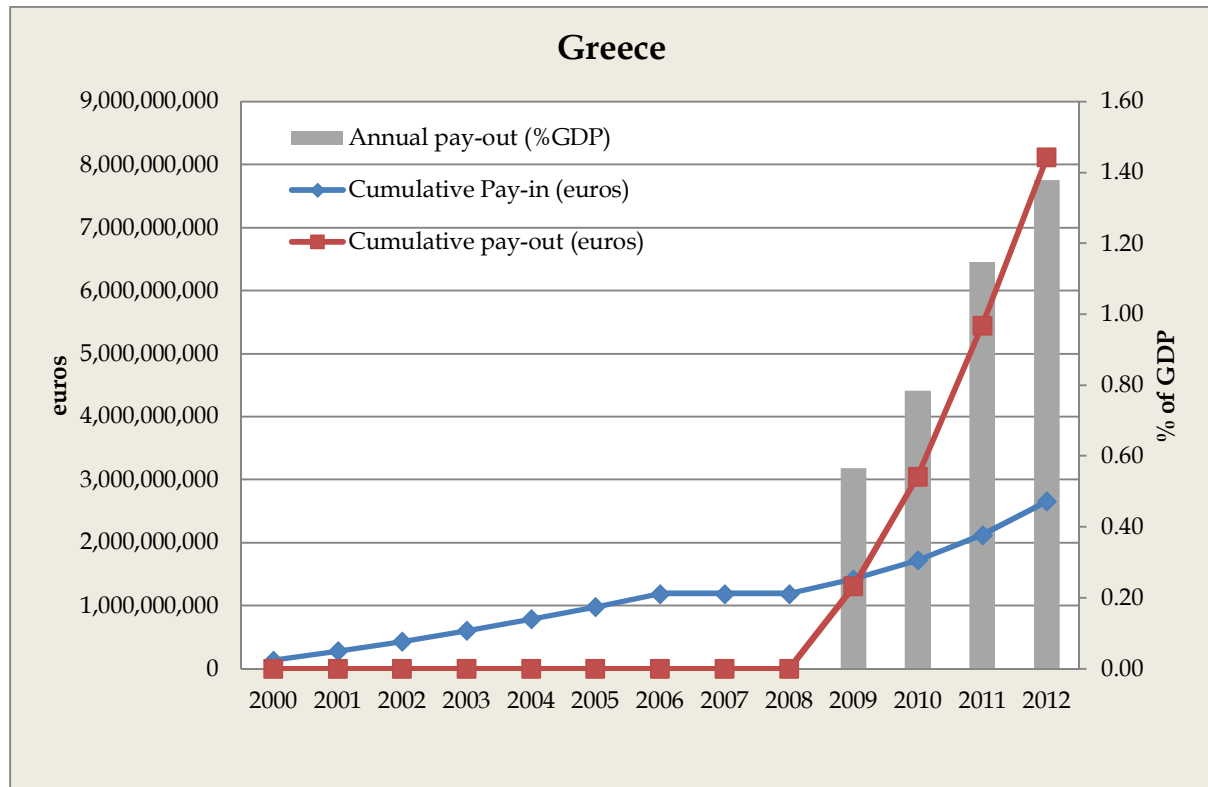
In Figure 14, detailed data are provided for selected countries for 'stormy times'. In the case of Greece and Spain, the net balance of the fund remains positive until the outbreak of the Great Recession, which impacts on labour markets first in Spain (by 2008) and then in Greece (in 2009). The annual contribution received by the fund is in the range of 0.6% to 2.2% of GDP. In 2008 in Spain and in 2010 in Greece, the balance of the fund turns from positive to negative: the pay-out peaks rapidly due to the severe downturn, while the pay-in also increases but more slowly. Both Spain and Greece are hit heavily by the Great Recession, but in Spain the absolute numbers are much larger. The difference comes not only from short-term unemployment, in the range of 3 million workers in Spain, but also the nominal compensation per employee, which is 30% higher in Spain, influencing the size of the claim.¹⁸

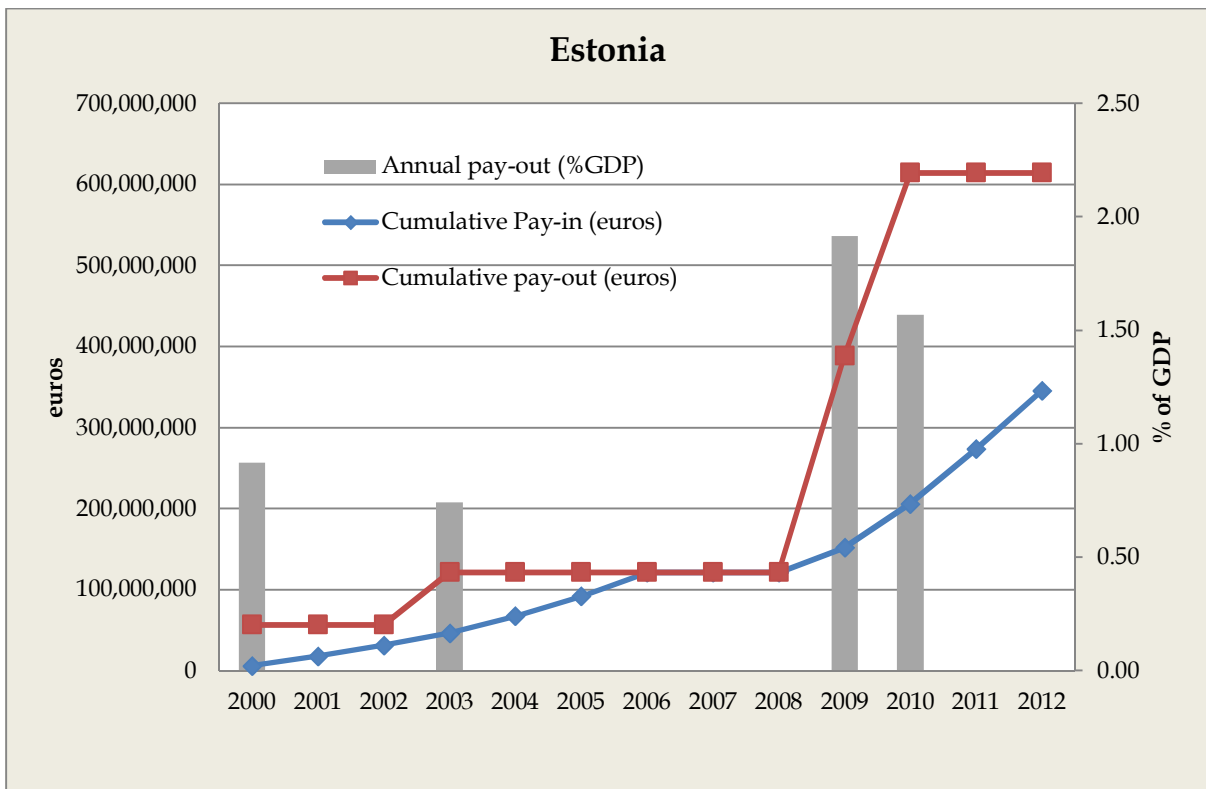
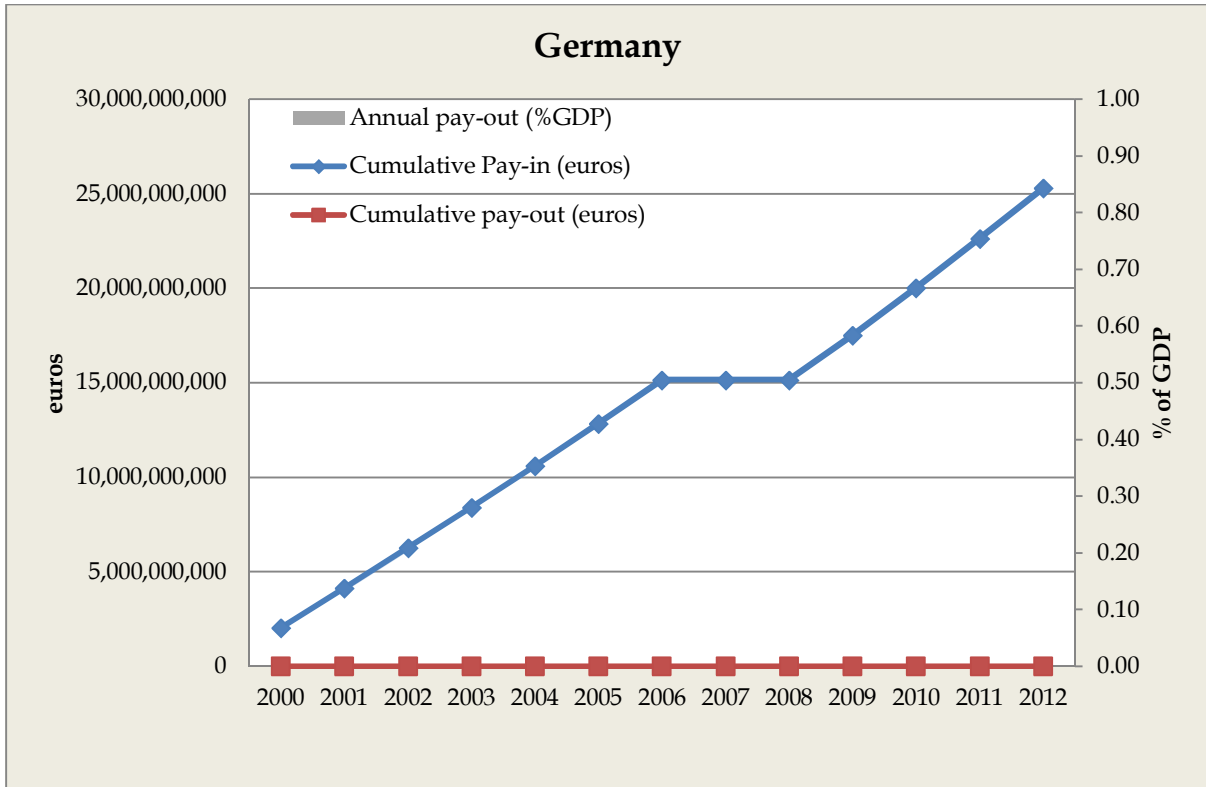
Estonia benefits from the fund during the Great Recession, but also qualifies for benefits earlier in 2000 and 2003. Germany does not qualify for help during the period analysed (2000-2012), and therefore remains a net contributor.

¹⁸ Spain and Greece compared in 2009.

	Spain	Greece
Short-term unemployed (1,000)	3,100	274
Short-term unemployment rate	9.9%	3.6%
Claim (billion euros)	34	2.3
Deductible (% of GDP)	1.03	0.44%
Nominal compensation of employees (euros)	33,600	26,600

Figure 14. Fund balance in selected countries for 'stormy days' (SD = 1).





Sources: Authors' elaboration based on Eurostat and AMECO data.

4.7 The stabilisation impact of the reinsurance

This section presents a range of estimates of stabilisation effects of the European unemployment insurance system. We use a simple estimate of the stabilisation effect: every

year starting from 2008, we multiply the net inflow coming from the EUI fund by a multiplier.

The rationale is that this allows us to calculate the value added of the European mechanism had it existed at the time. We propose calculations only for major shocks, which means that only certain countries are considered. Our underlying argument is that the cost of ‘non-Europe’ is disproportionately high in case of large downturns. Economic policies that have existed in European countries for a century are more than able to cope on their own with small output fluctuations. This does not exclude other rationales for creating a EUI even for minor shocks (as presented by the ‘Brussels rain’ option with standard deviation equal to 0.1).

Deciding on the multiplier is a non-trivial and somewhat subjective exercise. As shown in Box 3, estimations provided by the literature on this issue vary between \$0.7 and \$3 for every \$1 spent on unemployment insurance. The issue is further complicated by the fact that estimates vary not only according to the methodology chosen, but also by country. An additional obstacle is the fact that most studies analyse the US example, which, while it is the closest among advanced economies to the European one in terms of size, cannot be considered identical due to the fact that the US economy is structurally different. We therefore need to make a choice.

Despite such complications, we consider a multiplier of 1.5 to be safe, which is a conservative estimate close to that from four of the five studies selected (see Box 3). We apply this multiplier to the net inflow from the EUI funds for the period 2008-12 to six countries (those that suffered most during the Great Recession) as an illustration.

Box 3. Review of the literature on the multiplier effect of unemployment benefits

Among the different categories of public expenditure, unemployment benefits emerge with the most virtues. First, they kick in automatically, as soon as unemployment starts soaring and workers who have lost their jobs apply for them. A second important virtue is that this type of expenditure goes where it is most needed: to support the consumption capacity of households whose labour income has suddenly vanished.

Since Keynes’ times, economists have believed that public expenditure generates an input to growth that is higher than the expenditure itself due to a multiplier effect. The multiplier varies according to both the type of expenditure and the characteristics of the economy (IMF, 2009).

Quantifying this multiplier is extremely challenging, as witnessed by the fact that studies do not agree on a common number. Different methodologies lead to different results, even when the same case is analysed (IMF, 2009). Zandi (2008) calculates that in the United States, a \$1 increase in unemployment benefits generates an estimated \$1.64 in near-term GDP. Vroman (2010) believes this impact to be larger: every \$1 spent on unemployment insurance increases economic activity by \$2. An older study by the US Department of Labor estimates that on average (over six periods defined between 1972 and 2001), \$1 of unemployment insurance benefit generated GDP growth of \$2.15, with the multiplier effects of each of these six periods ranging between \$1.54 and \$3.07. Monacelli et al. (2010) estimate that “in response to an increase in government spending normalised to 1% of GDP, we estimate an output multiplier well above one, in the range of 1.2-1.5 (at one-year and two-year horizon respectively)”.

A recent estimate by the US Congressional Budget Office (2010) is less precise: increasing aid to the unemployed by \$1 is estimated to have increased GDP by between \$0.7 and \$1.9 during the period 2010-15.

As already explained, we look at episodes of major distress, where the value added of the EUI is most relevant. Calculations are shown in Table 1.

Table 1. Example of stabilisation effect of the reinsurance during the Great Recession in selected countries (percentage of GDP)¹⁹

Stdev = 0.1						
	2008	2009	2010	2011	2012	SUM
Estonia		2.49	1.74	0.00		4.22
Greece		0.58	0.86	1.34	1.60	4.38
Ireland		0.48				0.48
Latvia	1.07	3.25	1.85	0.50	0.42	7.08
Lithuania		2.42	2.13	0.91	0.62	6.08
Spain	1.37	3.06	2.28	1.91	2.12	10.74
Portugal				0.03	0.43	0.46
Stdev = 1						
	2008	2009	2010	2011	2012	SUM
Estonia		2.55	1.79			4.33
Greece		0.70	0.97	1.44	1.65	4.76
Ireland		0.48				0.48
Latvia		3.34	1.93			5.27
Lithuania		2.42	2.13			4.54
Spain	1.52	3.05	2.27	1.90	2.11	10.84
Portugal				0.03	0.43	0.46
Stdev = 2						
	2008	2009	2010	2011	2012	SUM
Estonia		2.62				2.62
Greece		0.70	0.97	1.44	1.65	4.76
Ireland		0.48				0.48
Latvia		3.34				3.34
Lithuania		2.42				2.42
Spain	1.37	3.06	2.28			6.71
Portugal				0.03	0.43	0.46

Sources: Authors' calculations based on Eurostat and AMECO data.

We start with the Spanish case, which is in the limelight during the current crisis due to skyrocketing unemployment figures. The net inflow, multiplied by the fiscal multiplier of unemployment benefits, generates an additional output equal to between 6.7% and 10.8% of GDP over the 2008-2012 period. Another interesting case is that of the Baltic countries, where the combined effect of the EUI funds and their (assumed) multiplier is no less than 2.4% of GDP in 2009. However, it declines faster than in Spain due to the faster recovery of the three

¹⁹The reader may notice that these numbers are different from those in Figure 10. The reason is that they show different things: in Figure 10 the cumulative payout is presented, while Table 1 shows the fund balance multiplied by the multiplier of 1.5.

economies. In Greece, the European mechanism kicks in from 2009. The total impact on the economy is around 4.7% of GDP over the entire period, for any standard deviation considered. Finally, in Ireland, EUI funds are provided in 2009 and, combined with their multiplier effect, generate an additional output equal to 0.5% of GDP.

In Table 2 we compare the actual evolution of GDP growth with that estimated in Table 1, that is, if the EUI had been in place. It is important to note that the exercise is as speculative as it is interesting, since second-round general equilibrium effects are completely ignored in the calculation due to the fact that it is not based on general equilibrium model. Yet, it shows how a supranational stabiliser could provide partial relief to a crisis country. In the cases of Spain, Estonia and Lithuania, a European fund would have turned negative growth positive. In the remaining cases, it would have reduced the negative impact of the crisis.

It is worth noting that the differences between the contribution triggered by a standard deviation of 0.1, 1 or 2 are not huge, meaning that similar results can be achieved via a fund that is triggered only by 'catastrophic' unemployment events.

Table 2. Comparison of actual GDP evolution and GDP growth with EUI

Stdev = 0.1		
	Actual GDP growth	Actual GDP growth + EUI fund * multiplier
Estonia	-2.2	2.0
Greece	-22.4	-18.0
Ireland	-7.3	-6.8
Latvia	-11.3	-4.2
Lithuania	-0.6	5.4
Spain	-4.7	6.0
Portugal	-5.5	-5.0
Stdev = 1		
	Actual GDP growth	Actual GDP growth + EUI fund * multiplier
Estonia	-2.2	2.1
Greece	-22.4	-17.6
Ireland	-7.3	-6.8
Latvia	-11.3	-6.0
Lithuania	-0.6	3.9
Spain	-4.7	6.1
Portugal	-5.5	-5.0
Stdev = 2		
	Actual GDP growth	Actual GDP growth + EUI fund * multiplier
Estonia	-2.2	0.4
Greece	-22.4	-17.6
Ireland	-7.3	-6.8
Latvia	-11.3	-7.9
Lithuania	-0.6	1.8
Spain	-4.7	2.0
Portugal	-5.5	-5.0

Sources: Authors' calculations based on Eurostat and AMECO data.

5. Summary of results and recommendations

In this section, we summarise our results and offer recommendations. Since the paper itself is relatively brief, this final summary does not rehash all the data and conclusions, but focuses on key messages and conclusions.

✚ Why reinsurance?

The primary motivation for designing the reinsurance proposal was to discover whether a national shock absorption mechanism for the EU (eurozone) can be designed that can deliver relevance in terms of size/fiscal stabilisation effects for individual countries and, at the same time, be politically realistic in terms of contributions/costs. This study has shown that the reinsurance proposal delivers, for a small average contribution, large shock absorption capacities. At the same time, due to a threshold issue, it is not suitable for EU-level absorption of small national shocks (because it delivers a large punch once activated, low thresholds lead to fairly arbitrary results). The design that we have presented is not the only possible one, but we believe it presents a balanced package delivering on our aim to devise a scheme that is economically and politically feasible.

✚ What should be the trigger for assistance?

In the analysis we included triggers of various sizes, all based on deviation of short-term unemployment from its long-term average. We calculated triggers of 0.1, 1 and 2 standard deviations from the long-term average, which we call 'Brussels rain', a 'storm' and a 'tornado', respectively.

Based on this analysis, our view is that the optimal trigger is between 1 and 2 standard deviations of short-term unemployment (i.e. between a storm and a tornado), since a trigger in this range is sufficiently high to be activated only in situations of severe shock, but sufficiently low to react to such situations.

Where to place the trigger within this range is a matter of political preference. We calculated that, had the policy been in place in the period 2000-12, it would have intervened:

- 90 times in case of storms (standard deviation equal to 1), and
- 40 times in case of tornados (standard deviation equal to 2).

The key difference between a standard deviation of 1 and 2 was *not* in calmer times, but during the height of the financial and economic crisis. A standard deviation of 2 led to approximately half of the countries drawing on reinsurance during the height of the crisis, while a standard deviation of 1 led to nearly all of the member states drawing on assistance at the height of the crisis.

✚ How much should the reinsurance system pay to affected countries?

In defining how much the system should pay out once it is activated, there are four main questions:

- What should be the size of the claim?
- Should there be a deductible?
- If there is a deductible, how large should it be?
- Should there be conditionality?

The first question is how to determine the reinsurance claim – what should the affected country in principle be entitled to? We based this on actual short-term unemployment and generous (although notional) unemployment benefit coverage. We use the term 'notional' because we do not propose to link this to actual payments to the unemployed, but for

determining transfers to national coffers. We design it relatively generously to ensure a sizeable stabilisation impact, particularly since a deductible is also foreseen. The claim for country i at time t is equal to 12 months of benefits (12UB) equal to 40% of the national average compensation of employees (NCE) paid to 80% of short-term unemployed workers (stU).

The next issue is whether to include a deductible. We recommend the inclusion of a deductible for several reasons:

- According to economic theory, the inclusion of a deductible in insurance is welfare-enhancing.
- For a given amount of funding, it amplifies the stabilisation function of the system.
- It makes the proposal more politically appealing, as it includes the principle of additionality whereby the EU assistance is in addition to national funding rather than replacing it.

How should the deductible be determined? Our formula for a claim is based on a notion of coverage of short-term unemployment benefits in a crisis. Therefore, it is logical that the deductible should be based on actual long-term average spending on benefits for the short-term unemployed. In such a case, the actual payment would be the difference between shock-induced ST unemployment and the long-term average of ST unemployment, multiplied by the difference between the standardised EU-level notion of unemployment benefits and the actual country benefits.

Therefore, the payment would be a positive function of the shock's severity and a negative function of the national system's generosity (in terms of the replacement rate and the coverage of short-term unemployed).

We do not propose any conditionality on the use of payments from the European fund. However, if there were a political decision to impose such conditionality, then we would advise:

- linking it to general use for passive and active labour market policies rather than to specific prescriptions on structural size of national unemployment insurance, and
- not linking the whole amount to labour market policy use, since there is a need for national governments to retain some fiscal flexibility in times of severe shock.

How should the national contribution be calculated?

With regard to the financing of the system, we propose three features:

- The size of the fund and the annual contributions should be large enough to cover all but the most severe EU-wide symmetric shocks.
- For severe EU-wide symmetric shocks, the fund should retain an option for borrowing or one-time extraordinary contributions by members.
- Country premiums should be differentiated according to risk, and this risk should be based on backward-looking expectations. This would also ensure a rough long-term balance between contributions and benefits for each country.

Our specific proposal features a basic contribution of 0.1% of GDP paid annually by each country until 0.5% of EU GDP is accumulated. Contributions would then stop, and would be restarted if the fund fell to below 0.5% of EU output. The basic contribution is multiplied by a form of 'experience rating' that reflects the country's balance with the fund over the last ten years (if a country has a negative balance of more than 0.1% of GDP in any given year, the experience rating starts to worsen proportionally to the negative balance).

The size of the macroeconomic impact

We also calculated the possible macroeconomic stabilisation impact of the European unemployment insurance if it were designed according to our proposals. Our figures are just rough estimates based on an expected multiplier of 1.5, but they offer a useful guide to verify the thesis that the system should have a sizeable stabilisation property. During the crisis years of 2009 and 2010, the hard-hit Baltic countries and Spain could have counted on a stabilisation effect of between 1.75% and 3.25% of GDP annually. For Greece and Ireland, the effects would have been much smaller – between 0.5% and 0.9% of GDP in 2009 and 2010 – but assistance for Greece would have continued in 2011 and 2012, exceeding 1% of GDP in both years. These are indeed non-trivial numbers, so a properly designed reinsurance scheme could deliver significant stabilisation benefits for fairly limited costs.

Which group of countries should optimally participate in the scheme?

For the European unemployment reinsurance to function, it can be applied to either the whole EU (i.e. the 28 member states) or to just the eurozone. While there is a general presumption that it should be just the Eurozone, and our proposal can easily be adjusted to such a sample, we would recommend considering the whole EU for the following reasons:

- *Ceteris paribus*, broader membership allows for better diversification of risks for all members.
- Many of the member states that are not members of the eurozone have their exchange rate policies tightly linked to the euro (fixed exchange rates, currency boards, etc.).
- From a pure simulation point of view, only the UK and Denmark have a permanent opt-out from euro membership, so any long-term simulation should presume that eurozone membership would resemble the current EU membership.

Our simulations were therefore based on the inclusion of 27 EU member states (Croatia was excluded due to the unavailability of data).

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