How Europe can deliver

Optimising the division of competences among the EU and its member states

BertelsmannStiftung

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I. Contents

II. Preface

For a long time, the EU seemed to deliver. Prosperity continued to rise, and the blessings of the expanding social protection systems gave citizens a feeling of personal security and well-being that they had never known before. So why make a fuss about Brussels?

This picture has changed. With global competition intensifying, the pressure on labour markets in Europe had already increased, darkening the prospects of the lower-middle class and less-skilled workers. Then, the contraction of the economy that followed in the wake of the global financial crisis brought some EU member states to the brink of collapse and left millions jobless. These days, a whole generation of young people – especially in southern Europe – seems to be deprived of a viable future. And if that weren't already enough, the EU is no longer being spared from the deteriorating security situation around it, and Islamist-inspired terrorism has severely unsettled its member states. What's more, the many conflicts and wars in Europe's neighbourhood have led millions to flee their homes. At the peak of the crisis in 2015, more than a million people illegally overran the EU's external border.

A deep feeling of insecurity and losing control has taken hold. At the same time, more and more people have started viewing the EU as an epitome of accelerating globalisation rather than the solution to it. In reality, this ongoing trend is testing the governance of the nation-state as much as that of the EU. Nevertheless, whether they are unaware of or neglecting this fact, people have been far too eager to follow populists who have branded the EU as evil and promised to turn back the clock on globalisation.

The following study is an attempt to set the record straight by demonstrating that the European Union is actually in tune with the citizens of its member states. It can deliver the public goods they need most. Given the many threats and challenges, we asked ourselves one very simple question: Who could do better, the EU or the member states? Accordingly, our research focused on how an evidence-based distribution of competences and powers could make the EU a stronger, more efficient and more accepted union. The methodology was unbiased because it tested whether a national solution – and, in some instances, a reallocation of (currently EU) responsibilities to the member states – would bring about better results than a federal solution.

Our research shows clearly where and how citizens would profit from a new distribution of competences and powers – and where they wouldn't. Not surprisingly, we could prove that some of the tasks currently taken care of in all states at the national level (e.g. development aid, defence policy and asylum policy) would create better results if responsibilities were transferred to the European level. In turn, we could also provide evidence indicating that it would be better to renationalise agricultural policy than to continue on with the Common Agricultural Policy, which takes up a whopping 38 per cent of the EU's budget.

However, our research wasn't solely aimed at testing the optimal distribution of tasks in the fields we analysed. Instead, we also wish to offer our colleagues in the think-tank world and the European Commission a new methodology for determining where to expect better outputs regardless of the particular policy field being put to the test. We believe this methodology has great potential for generating fresh insights when testing the subsidiarity principle that governs the EU. Furthermore, we think it could strengthen the

case for designing the EU's next multiannual financial framework (MFF) in a way that would help channel funding to where the real challenges lie.

With this kind of truly quantitative impact assessment, we are continuing the evidence-based research approach that we adopted in 2013 with our exploratory study on how to calculate the European added value of EU spending. We know that it will ultimately need both output and input legitimation if it is to win over the hearts and minds of EU citizens for the European integration project. But if the EU cannot provide outputs superior to those achieved at the member-state level, arguments in favour of the EU will ultimately be lost. Likewise, an EU that overreaches with its regulatory power and interferes with the policies that national and even subnational bodies are better equipped to deal with by themselves will eventually estrange its citizens.

We thank the Mannheim-based Centre for European Economic Research (ZEW) for being our partner in this endeavour to find out what the right balance in the allocation of competences would look alike. Given the complexity of the matter, we owe a lot to the dedication and stamina of the ZEW's project team led by Friedrich Heinemann. Furthermore, we would never have arrived at these results without the support of the members of our advisory board and the many additional experts we were able to consult with to obtain first-hand insights into the different policy fields we examined.

Aart De Geus

Chairman and Chief Executive Officer
Bertelsmann Stiftung

III. Abstract

This study aims to give guidance for a better-performing EU through an improved allocation of competences between the European Union and its member states. The study analyses eight specific policies from a wide range of fields with respect to their preferable assignment. The analysis applies a unified quantified approach and is precise in its definition of 'counterfactuals'. These counterfactuals are understood as conceptual alternatives to the allocation of competences under the status quo. As such, they either relate to a new European competence (if the policy is currently a national responsibility) or a new national competence (if the policy is currently assigned to the EU). The comprehensive, quantification-based assessments indicate that it would be preferable to have responsibility for higher education and providing farmers with income support at the national level. Conversely, a shift of competences to the EU level would be advantageous when it comes to asylum policies, defence, corporate taxation, development aid and a (complementary) unemployment insurance scheme in the euro area. For one policy – railway freight transport – the findings are indeterminate. Overall, the study recommends a differentiated integration strategy comprising both new European policies and a roll-back of EU competences in other fields.

IV. *Key Findings*

1. This study was written in the context of Europe's multiple crises. In the eyes of many voters, the performance of the EU has been disappointing in the aftermath of the economic and euro area debt crisis. The decision of the United Kingdom to leave the Union drastically demonstrates this dissatisfaction. Against this background, this study aims to provide guidance for a better-performing EU through an improved allocation of competences between the European Union and its member states.

2. The study analyses eight specific policies with respect to their preferable assignment. These eight specific policies cover a wide range of policy fields. The study applies a unified quantified approach. Moreover, it is precise in the definition of 'counterfactuals'. These counterfactuals are understood as conceptual alternatives to the allocation of competences under the status quo. As such, they either relate to a new European competence (if the policy is currently a national responsibility) or a new national competence (if the policy is currently assigned to the EU). Thus, the study's design excludes any prior judgment regarding the desirable allocation.

3. The testing applies the following criteria to judge the appropriate assignment: free riding of member states on public goods provided by others, economies of scale through European provision, preference heterogeneity of voters across member states, the merits of intra-jurisdictional competition, and the interplay of competence allocation with the functioning of the European internal market. The wealth of detailed analyses along these criteria is transparently condensed by using a weighted scoring method.

4. For **Common Agricultural Policy (CAP)**, we concentrate on direct payments to farmers. We compare the current EU responsibility with a national counterfactual in which income support is the responsibility of the national welfare system. Our results point to significant free riding under the current European arrangement and massively excessive costs resulting from ill-targeted income support. According to our results, income protection through CAP exceeds the level defined by national minimum income support in 21 member states. Overall, we find that having national responsibility is clearly preferable to the current assignment.

5. For **asylum and refugee policy**, the status quo entails de jure a mixed division of responsibilities. De facto, however, member states largely decide their own policies. We compare this arrangement to a counterfactual featuring a truly European provision of harmonised asylum services. Our analysis concludes that European responsibility would be clearly superior, as it would reduce massive free riding on the reception efforts of other member states. In addition, annual cost savings of between €5 billion and €12 billion (given refugee numbers like those experienced in 2015) appear realistic as a result of economies of scale.

6. Since Europe largely lacks responsibilities for direct taxation, the study focuses on **corporate taxation** for that policy field. The specific counterfactual scenario involves both a harmonised corporate tax base definition and an apportionment of corporate profits among member states according to a

formula. The competence of tax-rate setting would remain at the national level. Taken together, the criteria indicate that there are disadvantages to having this remain a national prerogative. In addition to reducing inefficiencies in tax base competition, the European counterfactual would enable substantial cost savings in tax compliance. For example, tax compliance costs for a company with up to five foreign affiliates are currently 2.5 times larger than those of a purely domestic company. A uniform tax base could cut back this costs disadvantage.

7. For **defence policy**, the study lends support to current political initiatives for more Europe in defence. Our counterfactual is a fully integrated European army with unified decision-making and a centralised provision of military equipment financed from the EU budget. The analysis finds a large number of indications that the current fragmentation results in significant diseconomies of scale. For example, the armies of the EU member states currently deploy 89 different major weapon systems, while US forces utilise just 27. Moreover, the quantitative analysis of benefit- and burden-sharing shows the superiority of a European competence, as it would much better align benefits and costs for member states and thereby decrease the extent of free riding. Furthermore, a European army would also give a boost to the internal market for defence goods.

8. **Development policies** are currently a shared responsibility. We contrast this situation with a far-reaching European counterfactual in which development aid is fully financed and managed by the EU. As with defence and asylum policies, having development aid financed from the EU budget would reduce free riding on the efforts of other member states. Substantive economies of scale can be achieved by cutting back high administrative costs and reducing other inefficiencies associated with the current aid fragmentation. Moreover, voter preferences appear to be particularly homogeneous across member states.

9. The results of our study indicate that it would be more advantageous to have responsibility for **higher education** remain at the national level. The European counterfactual to the current national responsibility is a model of EU financing that is decentrally implemented by autonomous universities ('money follows students'). There is no evidence of European economies of scale. Free riding would increase compared to the status quo, under which national costs and benefits are largely aligned. Overall, the current approach of having the EU concentrate on mutual recognition of qualifications and fostering student mobility appears to be appropriate.

10. Results for **railway freight transport** are indeterminate. The study compares the current shared competences with a European counterfactual of a single EU-financed railway system without technical or operational barriers. Three criteria – economies of scale, preference heterogeneity and internal market consistency – weakly point to the advantages of a more European approach. However, European financing schemes would loosen the link between national costs and benefits, thereby increasing problems of free riding.

11. For stabilisation policies in the European Monetary Union, we screen the potential merits of a **European unemployment insurance scheme**. Here, instead of considering a counterfactual in which the competence of this policy field

is relocated, we consider a new European scheme that complements existing national unemployment protection in the euro area countries. The current protection may cause free riding by other countries, which also benefit from the general stabilisation effects of such national insurances. The results confirm that this problem, which may lead to under-provisions of unemployment insurances, could be resolved within a European scheme. Furthermore, the current unemployment insurance schemes are similar across countries with regard to basic design issues. Thus, no major preference asymmetry would preclude a partial Europeanisation.

12. Overall, we conclude (see table below) that our comprehensive, quantification-based assessment points to a desirable shift of competences to the EU level in five out of the eight policies covered by the study. While our findings are ambiguous for one policy (railway freight transport), we see better potentials for education and agriculture policy with a national responsibility.

Policies	Optimal allocation
Asylum & refugee policy	*EU*
Defence policy (European army)	*EU*
Corporate taxation (harmonised tax base)	*EU*
Development aid	*EU*
Unemployment insurance	*EU*
Railway freight transport	*indifferent*
Agricultural policy (income protection)	*national*
Post-secondary & tertiary education	*national*

V. Introduction

This study aims to provide guidance on the future allocation of policy competences between the European Union and its member states. The research has been undertaken in a time when a whole series of crises have shattered the long-standing consensus that there is no alternative but to be a member of the European Union.

Doubtless, the concentration of policy crises which Europe has seen since the beginning of the decade is unique: A financial crisis shocked the global economy in 2008/09 and led to a prolonged phase of financial and economic instability for the euro area. This acute economic crisis and the systemic instabilities have so far only been contained by a highly active – and, for many observers, excessively active – European Central Bank. The destabilisation of the Middle East triggered the flight of unprecedented numbers of refugees to Europe, which in turn sparked severe political clashes between the member states on the appropriate way to deal with this challenge. Moreover, the debate on appropriate refugee policies is increasingly indicating that there are different understandings of the fundamental values on which the Union is built. In addition, many more challenges related to security issues – both internal (e.g. terrorism) and external (e.g. the deterioration in relations with Russia and Turkey) – have given rise to ample disputes within the Union.

Among the current political reactions to Europe's multiple crises, two polar answers have emerged. On the one side of the spectrum, the answer is 'more Europe'. According to this perspective, all crises have demonstrated the inability of the national level to cope with the challenges of the 21st century, such as globalisation, digitalisation, migration and demographic change. This answer is also given in different variants, including the frequent pleas for a vague political union or a fiscal union that completes the monetary union. The other side of the spectrum sees the European crisis as the result of over-centralisation and therefore calls for competences to be returned to member states on a large scale. This position is represented by eurosceptical movements, which have enjoyed a major increase in public support. The desire to regain this kind of sovereignty was even a factor behind the UK's decision to exit the EU.

Crises should offer a welcome occasion for European policies and institutions to prove their value. A key argument in favour of European integration has always been that integration enables the old continent to cope with the challenges of economic and political globalisation. But, in this respect, the EU's performance over recent years has been disappointing in the eyes of many voters. The rise of euroscepticism indicates that the EU has not convincingly shown that it is providing added value to citizens in excess of what member states could provide using their own national means.

The current crisis of EU acceptance is clearly related to both input and output legitimacy (Scharpf 1999, 2006). EU policies and crisis decisions are increasingly perceived as being insufficiently responsive to voter preferences ('input legitimacy'). The narrative of the 'detached elites' is typical for a lack of input legitimacy. Moreover, Europe does not convincingly deliver what it had promised in terms of policy results and the common good ('output legitimacy').

This study contributes to the reflection on strategies for coping with this crisis of acceptance, placing a clear emphasis on one particular dimension of output legitimacy which focuses on good results as a consequence of an appropriate division of labour between jurisdictions. We aim to provide guidance for a better allocation of competences between the European and the national

level. In this study's understanding, 'better' is based on clear criteria which incorporate the idea of mutual benefit for all member states and their populations. Hence, our study does not address the 'altruistic European' who is willing to sacrifice short-run material objectives merely for the sake of integration. Instead, we ask which allocation of competences will be more efficient and therefore advantageous because, for example, it may save money through a more cost-efficient provision of public services or it reduces spillover effects arising from specific policies. In other words, we consider the idea of a 'union of results' in which continuously adjusting the mix of competences results in steadily improving policy performance to the advantage of the people and to thereby increasing their acceptance of the European project.

Our study applies concepts of fiscal federalism. In this literature, there are two main types of considerations relevant for optimum competence-sharing: The first generation fiscal federalism analyses the optimal allocation of tasks under the assumption that governments act as benevolent social planers (see, e.g., Boadway and Tremblay 2012; Oates 1972; Oates 2007; Tiebout 1956). The most important arguments in this context are cross-border spillover effects, economies of scale, and preference heterogeneity in line with a provision of (non-divisible) public goods. Spillover effects account for potential free riding of some member states on the goods or services provided by other member states. Preference heterogeneity analyses the homogeneity of European citizens' preferences regarding the execution of specific policies, while economies of scale refer to potential cost-saving advantages of larger entities that are, for instance, based on fixed cost degression.

The second generation fiscal federalism shifts the focus to politicians (see, e.g., Oates 2005). This literature criticises the assumption of welfare-maximising politicians and views policymakers as individuals following their own agenda. It thus adds insights from the public-choice perspective and focuses particularly on political incentives and the role of competition (Weingast 2009). On this basis, additional criteria for the optimal assignment of tasks in a federation emerge which, for example, relate to the role of intra-jurisdictional competition as a disciplining device for political agents or the importance of the internal market and current obstacles to this principle (for a detailed description of all indicators, see the next section).

With this theoretical basis, our study is in the tradition of earlier approaches applying fiscal federalism concepts. Alesina, Angeloni and Schuknecht (2005) analyse the main EU policy areas and ask whether this competence allocation is in line with normative reasoning. They base their judgment on various measures of political intensity, such as the number of regulations, directives and decisions as well as on court cases or spending decisions. Furthermore, the Eurobarometer questionnaire is evaluated to analyse citizens' preferences regarding a competence reallocation. However, Alesina, Angeloni and Schuknecht (2005) do not ask whether national competences at that time should be reallocated to the EU level and only focus on the assessment of EU competences. Similarly, a study from a research consortium led by ECORYS (ECORYS, CPB and IFO 2008) uses the EU budget of that time as a starting point for an assessment of which policy fields should be located on the national or the European level. In total, 14 policy areas with various subordinate policies are analysed. The judgment is mainly based on qualitative deliberations and lacks (autonomous) empirical analyses.

We go beyond these analyses in several respects. First, instead of orienting our analyses to the current EU budget, we select the case study policies

irrespective of whether the policy is currently located on the national or the EU level. The main selection criteria for these analyses are whether the policy is important with respect to current and future challenges emerging from globalisation, for example, and whether the policy is important with respect to the represented policy field.

Second, our policy-specific approach avoids generalisations (e.g. 'more or less Europe in taxation') and zooms in on specific, well-defined policies. Thus, we hope to offer more specific advice for the ongoing reform debate in Europe, which needs more operational suggestions regarding very specific competence allocations instead of generalised preconceptions that are always suspected of being purely ideological statements.

Third, and related to the second point, the study is precise about its 'counterfactual'. This counterfactual is the conceptual alternative to the allocation of competences under the status quo. We do not just compare the current national (or European) responsibility with a European (or national) responsibility, but also make this conceptual alternative precise. For example, we specify the European counterfactual in asylum-policy responsibility as a model with a European Asylum Agency which takes over responsibility for the acceptance of refugees (until a decision has been made on the asylum application) and for the conduct of the asylum process throughout the territory of the Union. This specification offers a conceptually precise reference point for conducting a meaningful comparison.

Fourth, it is the ambition of the analysis to be evidence-based and to rely on quantified indicators as much as possible. For that purpose, we have further developed and operationalised the existing fiscal federalism criteria towards a uniform applicability across very different policy fields and specific policies. In particular, the indicators 'spillover effects' and 'preference heterogeneity' follow an identical quantification and assessment procedure. The analysis of the latter indicator is also a distinct feature compared to the studies by Alesina, Angeloni and Schuknecht (2005), ECORYS, CPB and IFO (2008), and Ederveen, Gelauff and Pelkmans (2008). In contrast to these studies, we do not investigate the preferences of European citizens for a specific competence allocation at the national or the European level, but rather investigate the citizens' preferences for the execution of the specific policy. Only if these preferences are sufficiently homogenous can the policy be centrally managed by the EU.

In choosing which policies to scrutinise, we have been led by a double objective. On the one hand, we want to cover a broad range of policy fields representing the most important dimensions of governmental tasks. On the other hand, meaningful quantifications can only be applied to specific, well-defined policies. We solved this double objective by choosing a specific policy for each of the main governmental policy fields. The latter are compiled on the basis of the UN classification of the functions of government (COFOG)[1] in line with the distribution of government tasks presented by Watts (2008) (see Table 1 for an overview of the selected policy fields). For each of these policy fields, we chose a policy that is 1) characterised by an overall importance in terms of current and future challenges for both the member states and the EU, and 2) a matter of generic importance with respect to the represented policy field to the extent deemed possible.

[1] See http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=4.

Table 1:

Policy fields and chosen policies

Policy field	Chosen policy
International relations	1) Defence policy: National armies vs. a European army 2) Development aid: National development aid vs. development aid allocated and financed by the EU
Justice and home affairs	3) Asylum and refugee policy: National asylum and refugee policies vs. a European Asylum Agency
Finance and fiscal relations	4) Corporate taxation: National corporate taxation policies vs. a Common Consolidated Corporate Tax Base (CCCTB)
Transportation, communications and regional development	5) Railway freight transport policy: National railway systems vs. a EU-financed railway system without technical or operational barriers
Agriculture	6) Agricultural policy: National policies for agriculture subsidies vs. the Common Agricultural Policy (income protection)
European Monetary Union	7) Unemployment insurance: National (short-term) unemployment insurance policies vs. a European Unemployment Insurance (EUI)
Culture	8) Post-secondary and tertiary education: National financing of higher education policies vs. a European financing approach

For each policy, we contrast the status quo with the counterfactual situation. In doing so, we rely on a clear distinction between national and supranational competences. However, as most policies are characterised by mixed competences (i.e. the EU and the member states share responsibilities), we decide in a first step whether the primary competence is on the national or the European level (this decision is taken after carefully evaluating current national and European legislation). In a second step, we base our quantifications on the respective counterfactual situation.

Following this procedure, various forms of cooperation between the EU and its member states are left out of consideration. While we do not argue that only a purely national or a purely European competence must be effective, a meaningful analysis of all possible forms of cooperation is beyond the scope of this project. We therefore interpret our results in terms of guiding tendency: If the current competence allocation is rather national and our results point towards a clearly European competence, reinforced cooperation can be seen as the first step towards increased efficiency.

Furthermore, when comparing the status quo and the counterfactual, we do not account for possible changes in the member states' financial net-payer and net-receiver positions. While one could argue that the 'spillover effects' indicator already provides such an analysis, the results of this indicator must be interpreted in terms of a general cost-benefit comparison rather than with respect to actual payment flows. In contrast, since the main focus of this study lies on overall efficiency, we argue that if the latter is increased due to an efficiency-increasing competence reallocation, it should be easier for member states to negotiate compensation schemes that account for potential losers from the competence reallocation.

Finally, the analysis will result in recommendations on the allocation of competences for the specific policies we have selected. These recommendations must not be (mis)understood as statements on the broader policy fields in general. Take, for example, the policy field 'finance and fiscal relations' with the policy 'corporate taxation'. In this case, if we recommend a European approach to the determination of the corporate tax base, the same conclusion does not necessarily apply for any other type of tax without further scrutiny. Nevertheless, the selected policy should offer guidance for the policy field as a whole in terms of possible arguments and

methods, which must be included in any meaningful testing in a specific policy context.

The structure of this report is as follows: In the next section, we present its method and explain our indicators. This also includes a detailed description of the assessment procedure for each indicator. The results of our analyses are presented in the subsequent section. Based on this outcome, we supply detailed policy conclusions for all policies. Finally, the report closes with a presentation of the investigated case studies.

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VI. *Method and indicator description*

WEIGHTED SCORING METHOD

We use indicators capturing arguments from both the first and second generation of fiscal federalism, and combine these indicators quantitatively by applying the weighted scoring method. The latter is a decision-making technique that allows for an assessment of both qualitative and quantitative indicators, which can be weighed against each other and are finally summarised in a decision score for each policy field. Accordingly, the decision on which policies should be allocated to the national or the European level is based on a comprehensible procedure with similar criteria and identical weightings for all policy fields.

In a nutshell, the method's procedure is as follows: First, we need to identify the relevant criteria. Second, the criteria are evaluated for each policy field using an identical scale. Third, the individual criteria are weighted against each other. And, fourth, a final score based on a weighted average is calculated for each policy field.

For each criterion and policy, we assign scores on a scale ranging from 1 to 5, with a score equal to 3 indicating an indifferent position. That is, based on this criterion, neither a national nor a European competence is preferable. Scores smaller than 3 point towards a national allocation of the policy (a score of 2 indicates a weakly national preference, while a score of 1 points towards a clearly national allocation). On the other hand, scores larger than 3 indicate that the policy field should be located on the European level (again, a score of 4 indicates a weakly European preference, while a score of 5 points towards a clearly European competence allocation; see Figure 1).

Figure 1:

Indicator scoring for the allocation of competences

1	2	3	4	5
clearly national	*weakly national*	*indifferent*	*weakly European*	*clearly European*

Below, we explain the indicators and the general procedure for their assessment in the context of the weighted scoring method. For each indicator, we first explain the theoretical reasoning and then define its assessment.

SPILLOVER EFFECTS

Indicator description

To answer the question of the optimal division of competences between the EU and its member states, we examine public goods and investigate whether they should be provided at the national or the European level. An inherent property of public goods is non-excludability – that is, depending on the type of public good, it is only possible to exclude citizens from consumption (at least to a certain degree (Samuelson 1954, 1955)). These properties might cause externalities (costs or benefits that affect a market participant who did not choose to incur that cost or benefit) which may result in free riding, as those who benefit from goods or services do not (adequately) pay for them.

Without loss of generality, for instance, assume two governments (A and B) with identical citizens. In the case of a private good with perfect excludability (i.e. citizens not willing to pay for the good can be excluded from consumption; examples are food, clothing, cinemas and private parks), each government would provide the good as long as its marginal utility to citizens exceeds the marginal costs of provision.

In the case of a public good, however, the governments must consider that providing the public good affects not only the utility to its own citizens, but also the utility to the citizens of other jurisdictions. For instance, if Government A provides the optimal amount of the public good for its own citizens, Government B could free ride by contributing nothing to the provision of the public good by Government A but still use the benefits arising from the provided public good for its own citizens. It is reasonable to assume that both governments are aware of the free-riding possibility so that both assume that the other government will provide the public good in the optimal amount (note that an inherent property of public goods is that once the public good is provided, all citizens can use the public good irrespective of their individual contribution). The result would be underprovision of the public good, meaning that it will be provided less than in a socially optimal scenario. The worst case would be zero provision in the case of full non-excludability and great externalities (Stiglitz 1988). That is, each government would refuse to provide the public good because other governments can free ride on its provision.

Possible solutions to the detriment of the citizens in need of this kind of public good would be compensation payments for the providing government, coordination between governments for the provision of the public good or, in the case of a federal system, central provision of the public good.

The more recent literature on fiscal federalism also stresses the role of incentive effects as an important yardstick for measuring the allocation of competences in a federation. According to the correspondence principle in public finance, the federal level that benefits from a public good should be identical with the level that finances this good and that takes the decision to provide it (Kornai 1979). In contrast, if a certain federal level decides on the provision of a public good but does not have to bear the (full) costs of its provision, incentives for overprovision and thus free riding increase. This problem is growing larger with increasing centralisation, as subordinate levels often at least partially contribute to the provision of public goods.

The abovementioned problems arise in the context of the EU, as well. For instance, in case of a national competence for a specific policy with large externalities (i.e. the specific member state's decision also affects all other member states), the incentive to free ride on the provision of other member states is high. However, free riding might also be present in the case of an exclusively European competence. As the member states finance large parts of the EU budget and thus contribute to the policy even if it is provided by the EU, the member states' individual benefit from the centrally provided public good might deviate from the member states' individual contributions.

We aim therefore at identifying free riding both under the status quo and in a counterfactual situation, and analyse whether a reallocation of competences can help to reduce free riding.

Procedure

The assessment procedure comprises two steps: First, we investigate the specific character of the respective policy field to assess whether cross-jurisdictional spillover effects might be possible and economically meaningful. For instance, there is a clear case for meaningful spillover effects in the provision of national security or combatting environmental pollution. We therefore only conduct a quantitative free-riding analysis if the qualitative assessment of the first stage suggests that spillover effects are prevalent and meaningful. When this is the case, we compare contributions and payoffs for each member state under both the status quo and in the counterfactual situation. We aim at identifying net-contributor and net-receiver states as well as the amount of net payments and net contributions in both situations, and at assessing how the burden-sharing changes when moving from the status quo to the counterfactual situation.

While the analysis is calibrated for each policy field, which especially holds true for the quantitative assessment of payoff structures, the following general procedures are applied to measure the member states' contributions:

- In the case of national provision, we use the member states' national share in the sum of all member states' expenditures or other contributions in this policy field as an indicator for the contributions of individual member states.[2] However, this procedure is only possible in the case of a national status quo.
- In the case of supranational provision, we use the member states' financing share in the EU budget as an indicator for a member state's contribution.

Since both benefits and contributions are measured in per cent relative to the sum of the member states' benefits and contributions, the resulting net position of a member state is also measured in per cent. We then compare how the distribution of net-receiver and net-contributor positions changes when moving from a national to a supranational provision. For instance, if a European solution leads to a higher correlation between member states' shares in benefits and burdens, and thus reduces free riding compared to a national competence, a European competence should be preferred to the national solution.[3]

Score assessment and caveats

We focus on the difference in the distribution of free riding under the status quo and in the counterfactual situation by measuring the change in the standard deviation[4] of net benefits. A high standard deviation means that some countries have high burdens and relatively low benefits, while other countries have high benefits and relatively low burdens. The latter implies free riding, which is reduced if the transition from the national to the

2 We do not focus solely on expenditures because sometimes other indicators might offer better approaches (e.g. the number of hosted refugees in the case of asylum and refugee policy, or railway kilometres in the case of railway freight transport policy).

3 Note that, due to the fact that we compare differences of percentage figures, the mean is always close to zero, implying that a more equal distribution reduces the overall amount of free riding.

4 The standard deviation quantifies the variation of data points around the mean. A standard deviation close to zero indicates that the data points on average tend to be very close to the mean, while a high standard deviation indicates that the data points on average are spread out over a wider range of values.

European responsibility reduces the standard deviation. In contrast, if the standard deviation increases due to a change from a national to a European responsibility, the extent of free riding increases and the policy field should be located on the national level.

The scores for the weighted scoring method are determined as shown in Figure 2. The scoring decisions are based on the distribution of realised heterogeneity scores in the various case studies. The minimum and maximum figures of a percentage change in the standard deviation are -70 per cent and 57 per cent, respectively. The remaining realised values are rather equally distributed between these extremums. We therefore assign an indifferent score if the standard deviation changes within a bandwidth of ± 15 per cent around zero. Changes larger than 15 per cent but smaller than 45 per cent indicate a weakly national competence allocation. Finally, there is a clear case for a national provision if the change in the standard deviation is greater than 45 per cent (the opposite holds true for negative figures). Note that a change of 45 per cent already marks a non-negligible shift pointing towards efficiency gains from a reallocation of competences.

Figure 2:

Scoring decision for spillover effects

Change in standard deviation when moving from a national to a European responsibility is:				
> 45%	15% < × ≤ 45%	−15% ≤ × ≤ 15%	−45% ≤ × < -15%	< −45%
1	2	3	4	5
clearly national	*weakly national*	*indifferent*	*weakly European*	*clearly European*

Nonetheless, it is important to stress that an unequal distribution might be the result not only of potential free-riding behaviour, but also of diverging preferences. For instance, some countries could host more refugees than others due to philanthropic preferences (as is discussed in the case study on asylum and refugee policy), or defence expenditures in some countries might be particularly low due to a high share of pacifistic citizens (as is discussed in the case study on defence policy). It is thus important to reflect the results in combination with our preference indicators.

ECONOMIES OF SCALE

Indicator description

Economies of scale are the cost advantages of larger entities (e.g. enterprises or countries) in providing a specific good or service; in other words, a larger entity is able to produce the good with lower per-unit costs. Transferred to the public sector and its production of public goods and services, economies of scale refer to decreasing costs per capita.

If economies of scale are present in the provision of public goods and services, there is a strong case for a central – or, in our case, European – provision.

Procedure and caveats

Input-oriented indicators

The estimation of a cost function based, for instance, on the costs per capita relative to the absolute size of a country is one possibility for detecting economies of scale. Using this calculation and extrapolating the results towards the total population of the EU can give a first hint about how per capita costs would evolve if the EU were in charge of providing the specific service. Other examples refer to the share of administration or transaction costs relative to the respective member state's total costs for providing the policy.

However, the calculation of a cost function refers only to the input side (i.e. factors that are used in the production process to produce output). The necessary assumption in this case is that output levels (i.e. the amount of produced public goods or services) do not vary and are comparable between large and small countries. If this is not the case – for instance, if expenditure per capita is decreasing with population size but output levels differ between different countries – the interpretation is meaningless because it is not obvious whether the cost advantage results from economies of scale or from differing levels of public good provision. Additionally, in most cases, the relationship between per capita costs and population may be positive because smaller countries, in particular, provide fewer services. Such a comparison would then falsely result in the conclusion of diseconomies of scale. Finally, step fixed costs[5] and increasing output levels of larger units might be a problem for the estimation of a cost function because some public goods or services might only be provided by larger jurisdictions (e.g. Oates (1988) refers to the so-called 'zoo effect', meaning that only large cities provide public services like a zoo). In this case, unit costs do not decrease at all or decrease only slightly, which results in inappropriate conclusions based on the estimated cost function.

A careful selection of the comparison countries offers a possible solution to these problems. Instead of comparing all EU member states or using information from the national level, one could also use subsamples. For instance, if we compare unit costs of German states, the analysis does not suffer from biases resulting from varying institutional environments, as is the case when comparing EU member states. Or, put differently, the distortions arising from varying environmental surroundings in the case of an intra-country comparison are less severe than in the case of an inter-country comparison. This kind of investigation, however, comes at the cost of limited external validity – that is, we have to discuss whether and how the results of a subnational/national comparison can be transferred to the national/supranational level.

Output-oriented indicators

Another possibility for detecting economies of scale refers to the output side (i.e. the quantity of goods or services produced in a given time period). This comparison of output per capita and population represents the other side of the coin because economies of scale are also present if larger entities provide a disproportionally increasing output per capita. In the extreme, it could even be possible

5 Step fixed costs are constant over a low-level shift in activity but change incrementally when the activity shifts substantially.

that a national provision has not only a cost disadvantage over a supranational provision, but would not even be possible in the case of certain services – especially in case of small member states. This is a variant of the economies of scale criterion, which assumes a discontinuity in the cost structure resulting in a lack of problem-solving capacities at the subnational or national level.

To assess this criterion, a production function is estimated instead of a cost function.[6] However, again, the assumptions must be comparable. One has to ensure that the underlying preferences towards the amount of output provided are comparable across countries. If this is not the case, some countries might have higher output levels per capita that only reflect the countries' specific circumstances. For instance, output levels in the field of defence policy differ between EU member states owing to different perceptions of foreign threats (e.g. the Greek-Turkish conflict over borders in the Aegean Sea) or a country's international role (e.g. the UK's permanent membership in the UN Security Council and the ties to its former empire).

Input-output indicators

Combining both indicators offers a solution to the abovementioned caveats. Instead of using input or output indicators only, one could calculate the ratio of output and input indicators. The result gives information on the provided amount of output for a comparable amount of input (or, vice versa, the amount of input for a comparable amount of output). However, the application of this indicator depends on the availability of sufficient data/information.

Score assessment

The scores are derived from the slopes of the estimated cost or production functions, which represent the abovementioned input and output indicators. For instance, if we know for sure that output levels are comparable or can directly control the amount of output provided, a disproportional decreasing slope of the cost function would result in a clearly European score equal to 5. In contrast, if neither the cost-function estimation nor the recent literature or qualitative deliberations indicate the presence of economies of scale, we assign a clearly national score equal to 1. In addition, qualitative assessments – such as step fixed costs, higher problem-solving capacities or underlying output levels – are used to determine the scores.

PREFERENCE HETEROGENEITY

Indicator description

Voters and elected politicians may have different views about whether responsibility for a certain policy field should be placed in the national or the European sphere. However, these preference analyses on the preferred division of competences are (emphatically) not part of this study.

6 While the assumption of economies of scale in the production of public services basically results in a convex production function, it is also possible that efficiency gains can only be realised for a subset of population figures. For instance, if the underlying production function is of a classic nature (i.e. first positive increasing marginal returns, then positive decreasing marginal returns and, finally, negative marginal returns), a maximum production is reached, implying that crossing the maximum results in negative production effects.

In contrast, we analyse a different type of preference heterogeneity: the heterogeneity of views among the member states' citizens with respect to a desirable character and intensity of a certain policy (e.g. the desired level of redistribution and insurance through the welfare state). If there is no consensus in favour of a specific policy across EU countries but a broad consensus within countries, the policy field should be located at the national level because a sub-central autonomy allows policies to be tailored to the differing preferences of voters.[7] In contrast, if there is a strong consensus about the way the policy should be adapted, the EU could decide about the policy without welfare losses.[8]

Procedure

For assessing the preference heterogeneity of European citizens with respect to various policy fields, we aim at using the Eurobarometer questionnaire whenever possible. This questionnaire consists of regular questionnaires (Standard Eurobarometer), which have two waves per year, and non-regular questionnaires (Special Eurobarometer), which are based on in-depth thematic studies carried out for various services of the European Commission or other EU institutions. Each survey consists of approximately 1,000 face-to-face interviews per country.

It is important to stress that we are not primarily interested in mean answers. In other words, for the purpose of this indicator, it is not important to know whether respondents are in favour of or against a specific policy or want to have more or less policy intervention. Rather, we are specifically interested in the distribution of answers across countries. We want to know whether the preferences of European citizens are aligned (again, regardless of whether they are aligned in favour of or against specific measures) or highly diverse.

Based on the theory of fiscal federalism, such evidence directly points towards an assignment of the specific policy field to the national or the European level. If preferences are highly diverse, a one-size-fits-all policy decided on the supranational level is rather detrimental. If, in contrast, preferences are highly aligned, a European authority is able to decide on a policy intervention with relatively small welfare losses.

To quantify the distribution of citizens' preferences, we focus on the standard deviation. A standard deviation close to zero indicates a low heterogeneity, while a high standard deviation indicates a high heterogeneity. A major drawback of using this indicator is that the standard deviation does not allow for a comparison of distributions with varying scales. For instance, one cannot directly compare a standard error of 0.3 on a scale ranging from 0 to 1 with a standard error of 3 resulting from a scale ranging from 1 to 6, as the underlying scales affect the size of the standard error. However, in the context of this project and by using Eurobarometer questionnaires, we can always express answer categories on an identical scale ranging from 0

7 In the fiscal federalism literature, this assumption is discussed as the 'uniformity constraint' of central public good provision. The argument is that political, legal and information issues may prevent a central level from offering services which differ across regions.

8 It is important to stress that we do not focus on diverging preferences for single countries but on the overall consensus. If some countries deviate from the overall consensus, it should be easier to compensate these countries in the political process than it would be in the case in which the member states' opinions are completely divided.

to 100 per cent. This allows us to compare the standard deviation across various case studies and Eurobarometer questions, and to use this measure as the basis for the quantification of this indicator.

As a result of the identical scale ranging from 0 to 100, the extreme values of the standard deviation are 0 (all answers are equal to the mean) and 50 (half of the answers are located on the left border and half on the right border). This is also graphically illustrated by Scenario 1 and Scenario 2 in Figure 3 and Figure 4. In Scenario 1, a low heterogeneity of preferences is presented – that is, all answers are very close to the mean – resulting in a very small standard deviation (see Figure 3).[9]

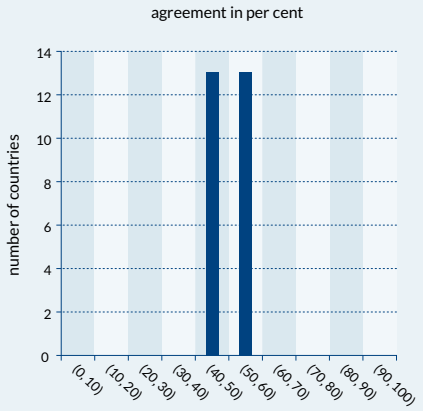
Figure 3:

Example of very low heterogeneity

Scenario 1: Very low heterogeneity

Sample question with very low heterogeneity, i.e. agreement is highly aligned.

Mean (μ)	50
Median	50
Std. Dev. (σ)	**5**
Heterogeneity	**10 %**



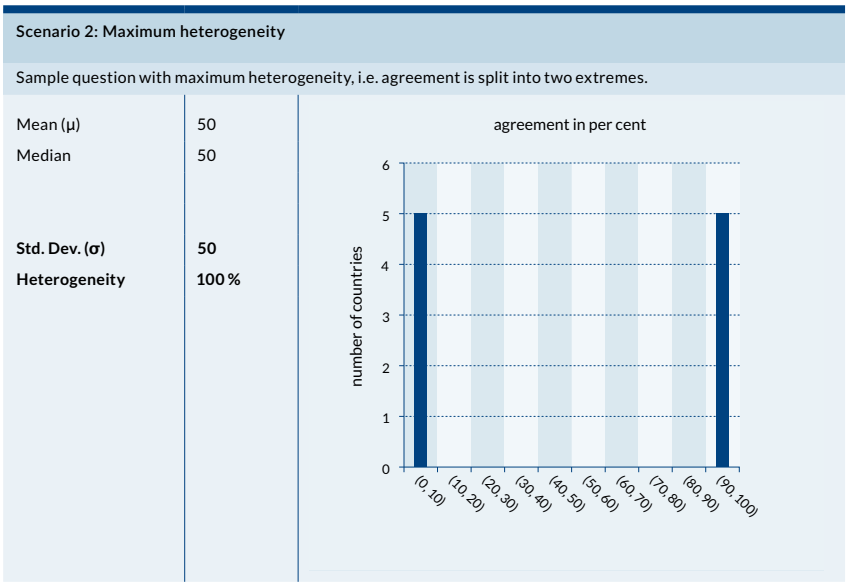
In contrast, Scenario 2 is the example for the maximum heterogeneity of preferences – that is, half of the answers are equal to zero and half of the answers are equal to one – which results in a standard deviation that is equal to the mean (i.e. the standard deviation is equal to 50; see Figure 4).

Since we know the maximum standard deviation, it is possible to express the actual standard deviation as a percentage of this extremum. This ratio (actual standard deviation/maximum standard deviation) is defined as our indicator of preference heterogeneity, with 'Heterogeneity' having a scale between 0 and 100 per cent (see Figure 3 and Figure 4, as an example).

9 Note that this result is unaffected by the mean itself, meaning that it is possible to shift the complete distribution to the left or to right without changing the standard deviation.

Figure 4:

Example of maximum heterogeneity



In the baseline scenarios, all statistics are calculated without weighting. This implies that regardless of the size or political power of a member state, all countries are treated equally.

To check for the robustness of our heterogeneity indicator, the standard deviation is recalculated by using the population size in 2014 as the weight. All countries obtain a weight according to their population size, with weights summing up to 100 per cent. As a result, for example, the weighted opinion in Germany counts 9.5 times as much as the opinion in Austria.

Such a weighting affects the interpretation. In other words, in contrast to the unweighted baseline results, the weighted results take political power into account. For example, if the preferences in the largest member states (e.g. France, Germany, Italy and the UK) are highly aligned but deviate from the preferences in smaller member states (e.g. Luxembourg and Malta), there is only little variation and the resulting heterogeneity index is rather small. In contrast, if Germany's preferences are highly aligned with preferences in Luxembourg and Malta, but preferences in France, Italy and the UK deviate from the German position, the resulting heterogeneity indicator is comparatively high.

Score assessment

Our primary assessment is based on the unweighted heterogeneity indices.[10] The scores are determined as shown in Figure 5. As we cannot expect to detect extremum results, such as a complete equal or unequal distribution, we apply a range stretching from 20 to 80 per cent. As for the cut-off in case of spillover effects, this spectrum already covers a non-negligible range of preference heterogeneity among the citizens of the member states.

10 The weighted results will be included in the case studies' output figures.

Figure 5:

Scoring decision for preference heterogeneity

Heterogeneity score in per cent is in the interval:				
[80,68]	[68,56]	[56,44]	[44,32]	[32,20]
1 *clearly national*	2 *weakly national*	3 *indifferent*	4 *weakly European*	5 *clearly European*

INTERNAL MARKET CONSISTENCY

Indicator description

This criterion is based on the assumption that the internal market is an indispensable element of European integration no matter how other competences of the EU may develop. Taking this as a starting point, it is essential that the division of competences between the EU and the national level is consistent with the principles of the internal market (e.g. the guarantee of identical rules and basic freedoms). To the extent that national policy competences endanger these principles, this could be a specific argument for centralisation.

Procedure, score assessment and caveats

To assess this criterion, we undertake a comprehensive stocktaking of the status quo and how a shift in policy competences away from or to the EU would affect the internal market. If a renewal of competences is neutral to the internal market – that is, if there is no difference between national and supranational provision – we assign a neutral score equal to 3, which serves as a benchmark. If a location on the supranational level is more beneficial to the internal market than a location on the national/subnational level, a higher score is assigned. The opposite holds true if a location on the national level has a rather beneficial effect.

However, the indicator partly suffers from a potential pro-centralisation bias, meaning that it is rather conceivable that a shift of competences from the national level to the European level would be beneficial to the internal market, whereas it is difficult to imagine that a policy reallocation from the European level to the national level would benefit the internal market. We therefore base our analysis mainly on current exceptions from the internal market, and ask whether these exceptions would be resolved if the competence were shifted to the EU. However, if the public good or service is decentrally provided but there are no obstacles to the internal market, a neutral score will be assigned. Furthermore, the caveat applies that instead of centralising the policy field, alternative measures (e.g. better coordination) may be sufficient for tackling related problems.

COMPETITION

Indicator description

The importance of competition for an optimal allocation of policy fields is stressed by authors of the second generation of fiscal federalism (e.g. Oates 2005; Weingast 2009). There are two contrasting views: On the one hand, Oates (1999) stresses the merits of decentralised policymaking since it offers the chance for policy innovations ('yardstick competition'). In other words, as Oates (1999: 1132) puts it, "in a setting of imperfect information with learning-by-doing, there are potential gains from experimentation with a variety of policies for addressing social and economic problems" when different jurisdictions compete on best practice solutions. In this sense, a decentralised allocation of competences functions as an innovation laboratory on best practises. Examples refer, for instance, to unemployment insurance policies or emission trading systems in the US, which were first implemented by the states and only later adopted on the national level, and to the introduction of a federal 'debt brake' in Switzerland, which also affected a debt brake reform in Germany. On the other hand, there is the threat of a 'race to the bottom', that is, that efficient standards may erode as a result of increasing competition. This argument can be most easily explained for taxation-related decisions. For instance, if competing jurisdictions are allowed to choose their own tax rates, the competition between the different jurisdictions for more or less mobile individuals and firms can incentivise jurisdictions to attract consumers by reducing tax rates. In the end, however, negative spillover effects can result in tax rates that are too small overall compared to an efficient level (Wilson 1986; Zodrow and Mieszkowski 1986).

Procedure, score assessment and caveats

We aim at a qualitative, evidence-based assessment of this criterion. In other words, for each policy field, both sides of the coin – possible merits from 'yardstick competition' and possible drawbacks from a threat of a 'race to the bottom', – are investigated and contrasted. The analysis covers both best practice examples in the case of 'yardstick competition' as well as examples of eroding standards due to a 'race to the bottom'. We then assess the relative strength of positive and negative aspects to assess whether decentral competition is more beneficial or detrimental.

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VII. *Case Study 1:*

Agricultural policy

Current and future challenges

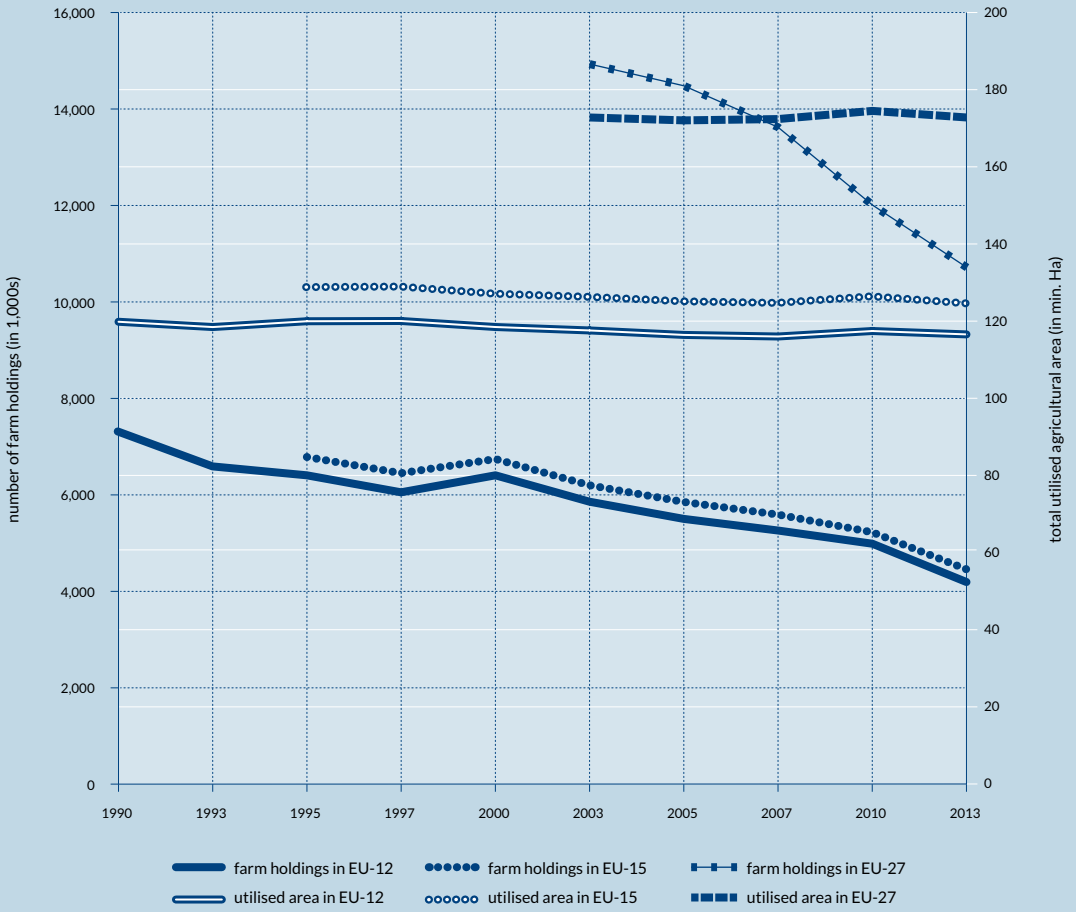
European farms are characterised by their small average unit sizes[11]; the fact that they are predominantly family-operated businesses; their widespread locations even in exposed areas, such as the Alps or Lapland (European Parliament 2014); and their adaptation to heterogeneous economic, social and climatic conditions (see, e.g., Brouwer 2006). As a result, production costs for agricultural commodities in Europe tend to be higher than in other regions of the world. With increasing global economic integration and the reduction or even abolishment of import tariffs on agricultural products, European farmers have had to and continue to adjust to global market prices which have been lower than EU market prices (Anania 2009).

Besides increased price pressure and general technological progress, high costs for farm machinery and socioeconomic factors (e.g. declining attractiveness of the countryside due to a reduction in rural infrastructure) have led to a decrease in the number of farmers and a consolidation of farms in the EU (European Parliament 2015b). Figure 1 shows the development of the EU farming structure since 1990. In the EU-12, the number of farms shrank by 43 per cent between 1990 and 2013, from 7.3 million to 4.1 million. In the same time horizon, total utilised agricultural area in the EU-12 remained constant, at between 115 and 120 million hectares. The same pattern of consolidation can also be found in the EU-27 (i.e. before the accession of Croatia). With the accession of 10 Eastern European member states in 2004, the number of farms rose to 14.5 million, though this figure fell to 10.7 million farms within a decade. The utilised agricultural area in the EU-27 is stagnating at 172 million hectares. Hence, fewer farms utilise the same area of land, meaning that the average size of European farms has increased and has continued to increase, especially in recent years.

11 According to Eurostat, the average farm size in the EU in 2013 was 16.1 hectares. Compared, e.g., with the average size of US farms (ca. 176 hectares) (USDA 2014:8), European farms can be classified as small-scale. However, compared with those in Asia or Africa, European farms are big (see, e.g., Masters et al. 2013).

Figure 1:

Development of farming structure in the EU



Source: Eurostat (own calculations).

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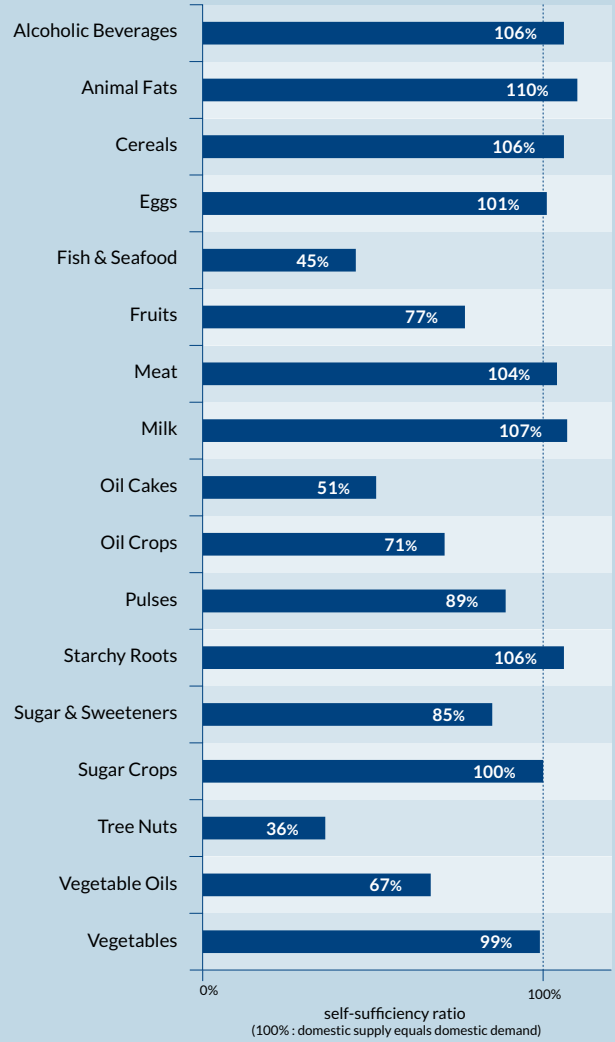
More important for assessing the vitality of the European agricultural sector is its performance. In Figure 2, we show the self-sufficiency ratios for agricultural products in 2013. A ratio of 100 per cent implies that domestic demand for items of this agricultural commodity group can be theoretically met by domestic supply. If the self-sufficiency ratio is greater than 100 per cent, it means that production of items in this product group exceeds domestic demand within the EU. If the self-sufficiency ratio is lower than 100 per cent, it means that domestic demand for these agricultural products could not have been met without imports. For roughly half of the agricultural product groups, the self-sufficiency index exceeded 100 per cent; for the other half, it was clearly below 100 per cent. However, when looking at the self-sufficiency ratios of single items, significant heterogeneity within a product group can be found. For example, the product category 'fruits' had a self-sufficiency ratio of 77 per cent in 2013. But when looking at single fruits, the self-sufficiency ratio for apples and grapes was close to 100 per cent, while the self-sufficiency ratio for oranges and mandarins respectively for bananas was 61 respectively 9 per cent.

Figure 2:

Self-sufficiency for agricultural commodity groups



Source: Noleppa and Cartsburg (2013) based on FAOSTAT data for 2013; own representation.

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Taken together, the demand for agricultural products within the EU is hardly met by domestic production. This can also be seen when looking at the international trade in agricultural commodities. Figure 3 presents the development of international trade in agricultural commodities between 2002 and 2013. Since 2002, the EU has steadily been in a net-importing position, that is, agricultural imports exceed agricultural exports in value and tonnage.[12] However, Figure 3 also reveals two other remarkable aspects: First, the level of imports is stagnating at around 1.2 million tonnes, while the value of the imports is rising. Hence, each unit of import became more and more expensive. Second, EU member states increased their exports of agricultural commodities from less than 600 million tonnes to almost 1 billion tonnes. This led to a significant reduction in the net-imported position, which implies a relative increase in productivity and efficiency in the European farming sector. However, despite narrowing the gap between imports and exports, the EU was still the largest importer and the second-largest exporter of agricultural products worldwide in 2013 (European Commission 2014).

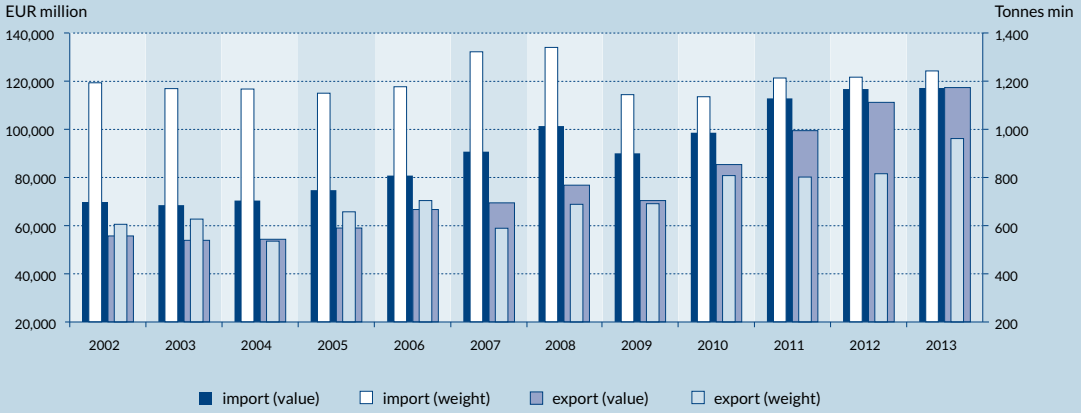
The Common Agricultural Policy (CAP) is one of the oldest policies located on the EU level. Since its establishment, demand for the CAP has clearly changed. For instance, the initial idea of a self-sufficient European agricultural sector has generally become less important due to ever-increasing free trade since the establishment of the CAP. In addition, the diets of European citizens have changed, and they now contain substantial shares of exotic food. This conflicts with the idea of self-sufficiency of agricultural commodities (Boulanger and Messerlin 2010). Hence, self-sufficiency or targeting balanced trade in agricultural commodities would not only result in omitted welfare gains from trade, but would also directly impact the utility to European citizens negatively.

Currently and in the short run, food security is and will be guaranteed by European farmers and imports. Developments in recent years, such as a declining trade deficit for agricultural commodities, show that the European agricultural sector is competitive overall. Hence, sufficient food supply and reasonable prices are expected to continue.

12 In 2014, coffee was the highest-ranking single import item, with a share of 7.2 per cent of total agricultural commodity imports. Exotic fruit accounted for about 17 per cent of all imports (European Commission 2014).

Figure 3:

Development of agricultural imports and exports in the EU



Source: Eurostat 2014.

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However, the European agricultural sector is challenged by structural changes in the overall agricultural sector and increasing competition for farmers increasingly participating in the global agricultural market (Anania 2009). In the long run, agricultural policy in the EU and beyond will primarily be confronted with an increase in demand for agricultural commodities, climate change and limitations on natural resources (European Environment Agency 2012; OECD 2011b). The global increase in demand for agricultural commodities is mainly driven by global population growth,[13] which dampens excess supply and thereby leads to price increases as well as income growth in less developed parts of the world, which in turn leads to higher demand for quality food (Boulanger and Messerlin 2010). The effects of climate change on agriculture are unclear, but farming needs to adapt to changing climate conditions (Anania 2009). Climate change will also affect the availability of natural resources; but even without climate change, intensified farming influences the availability of natural resources, such as soil (Wall 2012) and water (Sakadevan and Nguyen 2015).

In addition, funding for the policy field agriculture faces increasing pressure in the EU as challenges in other policy areas emerge and gain in importance. With a limited amount of total funds, retaining the status quo of current funding for agriculture will become more and more difficult (Roederer-Rynning 2010).

Status quo

From a budgetary perspective, agriculture is the most prominent policy field located on the European level. Established in 1962 by the EU-6 (European Commission 2012), the objectives of the Common Agricultural Policy (CAP) defined in Article 39 (TFEU) are to increase productivity and efficiency in the farming sector, ensure a fair standard of living for farmers, stabilise markets,

13 While significant population growth is projected for developing countries, in particular, the EU's population is expected to stagnate or even shrink (United Nations 2015).

assure the availability of supplies, and ensure the supply for EU citizens at reasonable prices (see also Burrell 2009; European Commission 2012). Initially intended to balance power between what were then industry-focused Germany and agriculture-focused France, the CAP gradually evolved as its policy design and implicit policy objectives were adapted several times (Tangermann and von Cramon-Taubadel 2013).

When introduced, the CAP aimed to harmonise commodity prices with price support, including export subsidies. This resulted not only in mismatches in demand and supply – including infamous excess supply of certain commodities, such as milk and butter[14] – but also in international criticism. In the course of the negotiations for the WTO's General Agreement on Tariffs and Trade (GATT), the incompatibility between free trade and the old CAP design clearly emerged (see, e.g., Weyerbrock 1998). This resulted in several reforms of the CAP aimed at aligning it with market economy principles and improving the efficiency of its policy design. The most notable reforms were the MacSharry reform implemented in 1992, the Agenda 2000 introduced in 1999, and the Fischler reform which became effective in 2003 (see, e.g, Ackrill 2000; Burrell 2009; Greer 2013; OECD 2011a).

With the MacSharry reform, the internal market for agricultural commodities was fully established, as tariffs on imports were abolished, price support was cut, and quotas for suppliers were phased out. Instead of efficiency-distorting market interventions, the CAP's focus was shifted to direct payments to compensate farmers for income losses. In addition, the CAP's scope was intensified in rural development. With the Agenda 2000 proposal, the focus on rural development was strengthened and expanded. The Fischler reform ceased product support almost completely[15] and has installed a decoupled system of direct payments as income support for farmers, which is independent from the type and amount of commodity farmed. Figure 4 shows the migration of the focus away from price support towards direct payments. While the majority of CAP funding was price support until 1994, it was decreased over time and finally almost completely abolished in 2013.[16] In its stead, direct payments were introduced in 1992 and increased in importance soon thereafter.

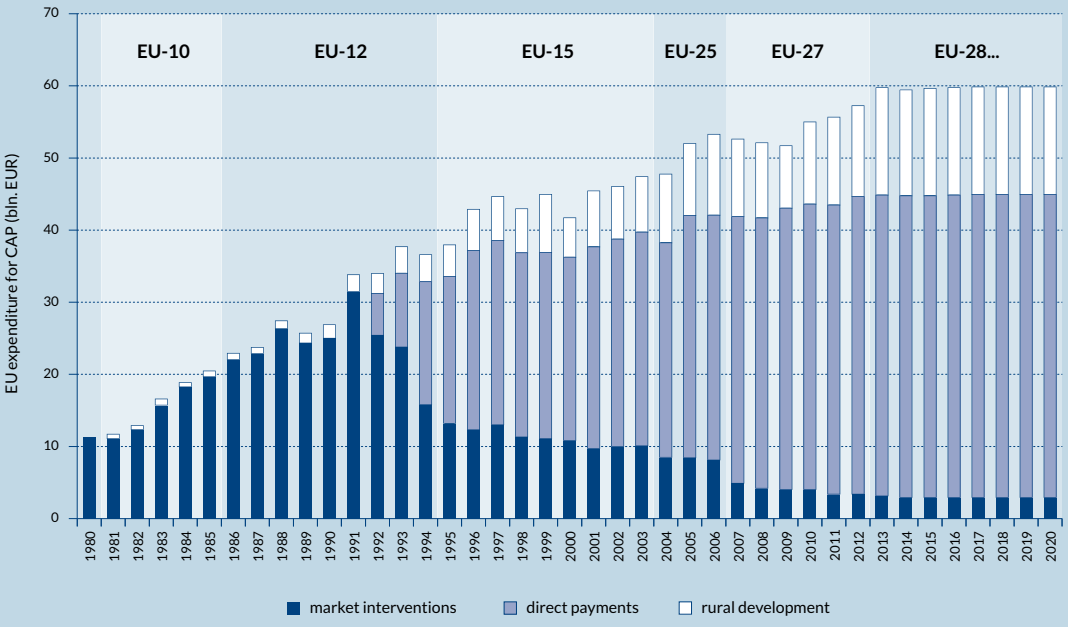
14 This had led to the infamous 'butter mountains' and 'milk lakes'. For a detailed explanation of economic mechanisms behind this result, see, e.g., Corron, He and Westerhoff (2007).

15 A longer transition period was granted for some quotas. For example, the milk quota was only abolished for dairy farmers in 2015 (Sorrentino, Henke and Severini 2016), and the sugar beet quota will remain in place until 30 September 2017 (European Commission 2016a).

16 Since 2013, market interventions have been reduced to a negligible share of 5 per cent of total expenditures. Market interventions are now only exceptionally used in time of crisis (European Commission 2013b).

Figure 4:

Development of composition of CAP expenditures



Source: Tangermann and von Cramon-Taubadel (2013) (based on European Commission (2013a)); own calculations.

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Today, the CAP consists of two pillars (European Commission 2013b). About three-quarters of CAP funding is dedicated to the production-orientated Pillar One, which in turn is predominantly composed of decoupled direct payments to farmers. Since the latest amendment of the CAP, in 2013, 30 per cent of the direct payments have been dedicated to so-called 'greening', which implies environmental efforts aimed at accentuating the public good character of farming (European Commission 2013b; European Environment Agency 2012; Matthews 2013).[17] Pillar Two targets rural development and, unlike Pillar One, is co-financed by both the EU and its member states (Cantore, Kennan and Page 2011). In addition, member states are free to transfer up to 15 per cent of Pillar One funding to Pillar Two ('modulation') and vice versa (OECD 2011a).

The CAP is administered at both the EU and national levels (European Parliament 2015a). While the allocation of total funding per member state is decided at the EU level, each member state distributes subsidies to its farmers according to national allocation schemes.[18] The current configuration implies double bureaucracy due to the involvement of both EU and national administrations (Niemi and Kola 2005). Also, due to the heterogeneous national agricultural sectors and the different negotiation powers of member states, the CAP has been the cause of special rulings for some member states on several occasions, with the UK's rebate being the most prominent example (Ackrill 2000; Cantore, Kennan and Page 2011).[19]

17 Various scholars argue that the current greening system is not very effective for different reasons, including weak standards and limited scope; see, e.g., Matthews (2013).

18 National allocation schemes have to be approved by the European Commission (European Parliament 2015a).

19 In 1985, when the UK rebate was introduced the first time, the CAP's share of the EU budget was about 70 per cent and the UK had a relatively small agricultural sector, which gave the UK strong negotiation power.

In the analysis to follow, we focus on direct payments, which are the main element of Pillar One and exclusively of EU concern at present. Direct payments have two functions (European Commission 2011b). First, they are used to subsidise the income of farmers, which implies a social welfare purpose. Second, they serve as remuneration for farmers for providing agriculture-related local public goods, such as landscape preservation or biodiversity enhancement. As the European Commission (2011b) notes, these two functions are interdependent and cannot be separated. For this reason, in what follows, we will analyse direct payments and their associated agriculture-related local public goods.

Counterfactual situation

For the counterfactual situation, we assume a system in which direct payments to farmers are integrated into existing national social welfare programmes of the member states, and in which financing is of national concern.

Overview

Score	Description
	Spillover effects
1	We analyse **spillover effects arising from local public goods farmers provide** by contrasting the current EU direct payments with a possible national financing of related public goods. We find that a national financing of agriculture-related local public goods would **align national costs much better with national benefits** and, hence, **limit spillover effects and free riding**.
	Economies of scale
1	By investigating the **difference between hourly compensation of farmers and national low-income wages**, we find **significant diseconomies of scale** due to an inaccurate targeting of direct payments from a welfare perspective. Integrating income support for farmers into existing national social welfare programmes would **improve the efficiency of the allocation of direct payments to farmers and reduce duplications**.
	Preference heterogeneity
3	We analyse the **opinion of citizens about an increase in financial support for farmers in the next 10 years** (Special Eurobarometer 440, QC11). We find modest variance in the opinion of citizens among member states, and therefore assign an **indifferent** score for preference heterogeneity.
	Internal market consistency
3	The end of CAP market interventions has largely eliminated market distortions. **Decentralising agricultural policy is not expected to create any new distortions or obstacles for the internal market**. Hence, we find that internal market consistency is unaffected by the location of agricultural policy, which leads to an **indifferent** score.
	Competition
2	Under the status quo, we find a **lack of incentives for optimising the existing income-subsidy system**, which leads to an **absence of positive yardstick competition**. A **national competence for farmers' income support would trigger competition**, but mainly **between agricultural policy and other policy fields with a national focus**. The result would be **more efficient policy mixes on the national level**.

Further information

SPILLOVER EFFECTS

Methodology and data sources

Currently, the aim of the direct payments is twofold. First, it compensates farmers for low commodity supplier prices. Second, it explicitly pays farmers for providing the public goods 'preservation of the landscape', 'contributions to biodiversity' and 'ecological focus areas' (European Commission 2011a). These goods exhibit externalities for nearby industries and populations. For instance, beautiful landscapes are a prerequisite for tourism, but also provide utility for the local population. Crop rotation enables biodiversity and establishes habitats for animals and plants (see Cooper, Hart and Baldock 2009).

For determining potential spillover effects in the field of agricultural policy, we focus on the externalities arising from local public goods provided by farmers. We analyse the benefits and burdens resulting from greening measures. The starting point is the calculation of the benefit shares for each member state arising from agriculture-related local public goods. We approximate the benefit share for each member state by quantifying the three main goals of greening: maintenance of permanent grassland, ecological focus areas and crop diversification (European Commission 2013b). The benefit stemming from the maintenance of permanent grassland can be measured by the member state's share of the EU's total permanent grassland. The benefit resulting from ecological focus areas can be measured by each member state's share of the EU's total arable land.[20] The benefit of crop diversification, however, is hard to quantify since it is a qualitative measure interfering with the first two goals. Crop diversification means that farmers must cultivate multiple types of crops in their fields, which affects all farmers equally and is best measured in terms of the share of total permanent grassland and the share of total arable land. Hence, we construct the benefit share for each member state as the unweighted sum of its share of total permanent grassland and its share of total arable land. We assume that the benefit share for each member state is constant regardless of whether the agriculture-related local public goods are provided at the EU or the national level.

The burden share for each member state in the current situation of an EU competence is calculated by its contribution share of the EU budget. For the counterfactual scenario with a decentralised competence for burden-sharing, we apply a two-step procedure (described in detail in the Appendix). In a nutshell, we start with current total EU greening expenditures, which we allocate to member states according to their shares of total utilised land in the EU. To allow for heterogeneity in national agricultural policy goals, we adjust the previously calculated preliminary allocation using a multidimensional factor. The idea of the multidimensional factor is to capture the characteristics of national agricultural sectors and national preferences for agriculture in order to approximate the outcome of national decisions on the size for agriculture-related local public goods. It aims to take into account revealed preferences indicated by six proxies, which control for the importance of the national agricultural sector, national ecological awareness and

20 Five per cent of arable land must be reserved for ecological focus areas (European Commission 2013b).

positive externalities stemming from greening.[21] After applying this adjustment scheme, we calculate burden shares for a scenario of national financing of agriculture-related local public goods. We compute the net benefits by subtracting the burden share from the benefit share for each member state for the current (EU) and hypothetical counterfactual (national) scenarios.

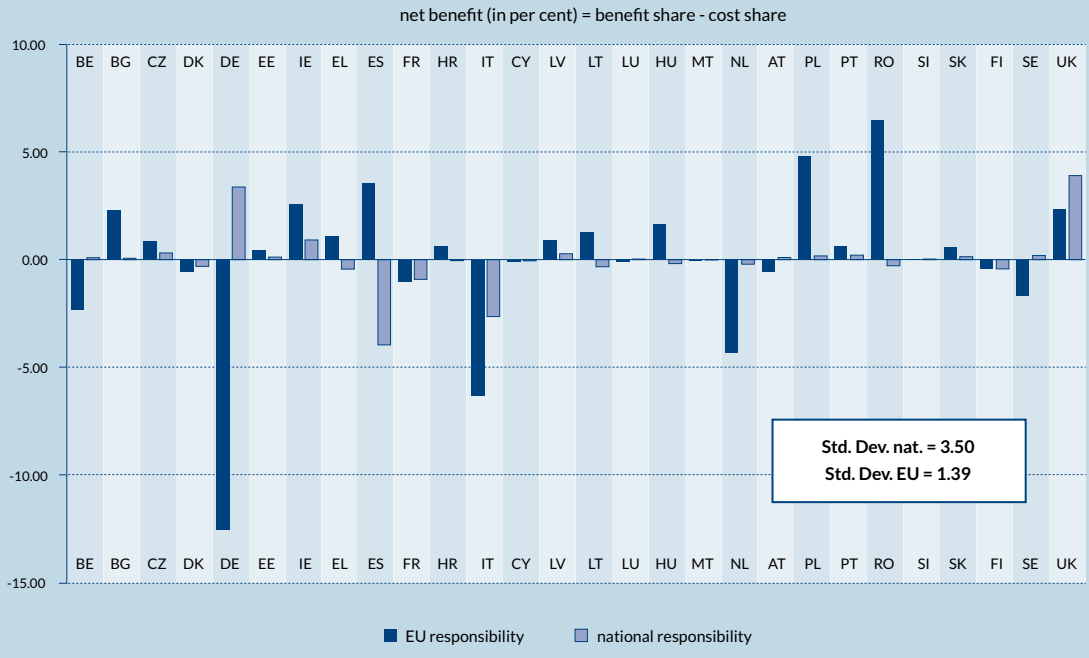
Results

The results are presented in Figure 5 (the precise values for the benefit and burden shares are given in Table 3 in the Appendix). Under the status quo, Germany, Italy and the Netherlands are the biggest net-payer countries, meaning that their contributions to their agriculture-related local public goods exceed their received benefits the most. On the other hand, Poland, Romania and Spain exhibit the highest degree of net benefits, meaning that the burden share for these countries is relatively small compared to their benefit share under the current regime of supranational funding of agriculture-related local public goods.

In a scenario with responsibilities for funding the provision of agriculture-related local public goods being a national concern, the results change significantly. For instance, the burden share for Germany would be reduced

Figure 5:

Net benefits from greening, by country (in per cent)



Source: Own calculations based on data from Eurostat (2010–2016) and European Commission (2014).

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21 More specifically, the six proxies employed are: national agricultural expenditures (percentage share of GDP), agricultural share of total value added, national environmental expenditures, declared ecological focus areas' share of national arable land, share of population living in rural areas, and overnight stays per 1,000 inhabitants.

by more than two-thirds, and Romania would become a net-payer country. Interestingly, Italy and the United Kingdom would be almost unaffected by a shift to national responsibility, which implies that the current funding system coincides with the preferences of these countries.

To sum up, transferring the responsibility for financing agriculture-related local public goods from the EU to its member states reduces extreme values. Overall, the standard deviation in the current situation of EU financing is 3.50. In the counterfactual situation with national funding, the standard deviation of net benefits would be significantly reduced, to 1.39. Hence, the degree of free riding can be lowered by 60.26 per cent, which results in a score equal to 1. This clearly speaks in favour of national competence. In other words, member states are more capable than the EU of aligning their benefits with the burdens stemming from agriculture-related local public goods.

ECONOMIES OF SCALE

Data source

We analyse potential economies of scale with regard to the allocation of the direct payment system by employing the Farm Accounting Data Network (FADN) database operated by the European Commission (DG Agriculture). The FADN database aims to capture the financial situation as well as the key characteristics of European farms on a harmonised basis. Data on 80,000 farms is collected overall, which are a representative sample for about 5,000,000 farms and about 90 per cent of the total utilised agricultural area in the EU (European Commission 2010b).[22] To the best of our knowledge, this data source is the most comprehensive one regarding European farms. In addition, we use data on national low incomes (defined as 66 per cent of national median income) on an hourly basis provided by Eurostat.[23]

Methodology

Direct payments represent the major share of CAP expenditures, and were originally introduced to compensate farmers for reductions in support prices. However, the effect of direct payments is that of subsidising farmers' income (European Commission 2011b).

We investigate potential economies of scale with regard to the allocation of the direct payment system. Essentially, income support for farmers can be implemented at the national level as part of a national transfer system or remain at the EU level. Sticking to the subsidiarity principle,[24] a national agenda should only be moved to the EU level if the EU can provide the service more efficiently. Currently, the agenda of direct payments is regulated at the EU level. Hence, we analyse whether there are economies of scale that result

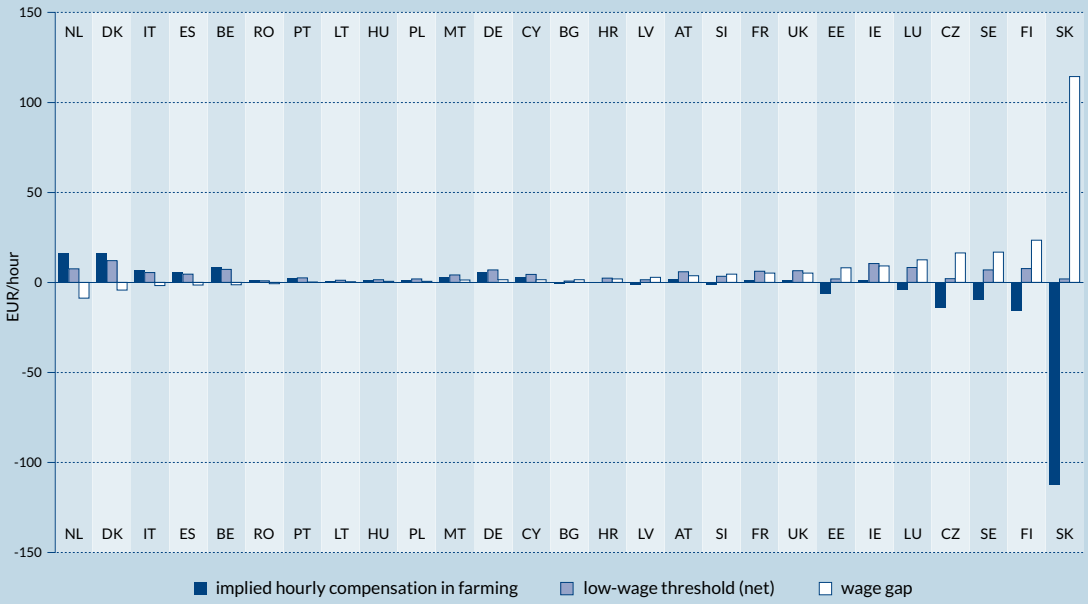
22 The considered farms are representative since they are stratified according to region, economic size and type of farming. Farms below certain country-specific economic size thresholds are considered non-commercial and not included in the FADN database. Hence, the average FADN farm is bigger than the average farm in the EU. In the following, this leads to overestimations of the average direct payments and fictional national payments per farm. Since the FADN database is the best data source available, we use it for our analysis nonetheless.

23 Since national low incomes are only available before taxes, we subtract the average tax wage (income tax and social security contributions) for low-income earners to get hourly net low income, which is comparable with implied hourly compensation for farmers.

24 The subsidiarity principle is implemented in Article 5 of the Treaty on European Union.

Figure 6:

Implied hourly compensation in farming and national hourly low-income wage thresholds



Source: FADN database for farming compensation and Eurostat for national low-income thresholds (own calculations).
FADN data for 2013; low-income wage data for 2010. Since no data was available for Greece, it is excluded.

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from the current handling of direct payments. Economies of scale arise in this specific context if a centralised solution is able to provide direct payments with similar accuracy at a lower cost than a decentralised solution.

If centralisation leads to significant efficiency losses due to a non-targeted distribution of direct payments, potential gains of centralising the administration are outweighed. This assumes that administration expenditures for direct payments are about 6 per cent, as for the total EU budget (European Commission 2010a), and therefore of minor importance regardless of where the policy field is located.[25]

We determine whether there are economies of scale by contrasting the current situation of EU responsibility with a situation in which member states compensate farmers for their realised low market incomes. To be more specific, for the counterfactual situation, we assume that member states would subsidise farmers' hourly net income up to the national low-income threshold net of taxes.[26] If farmers' hourly income is higher than the national low-income threshold, member states would abstain from subsidies due to the political infeasibility of such a policy.

The FADN database contains information about revenues, expenditures, the resulting income and labour input for farms. The farm's net income is defined as gross profit minus subsidies and taxes before unpaid labour

25 Hence, we are interested in the net effect of centralisation, which consists of cost savings due to reductions in duplications and extra costs arising from the creation of inaccuracies using a 'one-size-fits-all' solution.

26 National low income is defined as hourly earnings that are less than two-thirds of national median hourly earnings (Eurostat definition).

input,[27] meaning that the labour provided by the farmers should be compensated with farm net income.

To compare farming income with national low-income levels, we calculate the hourly compensation of farmers by dividing farm net income without direct payments by the number of work hours. The difference between the hourly compensation of farmers and the national low-income threshold is the wage gap, which we assume will be narrowed by the member states in the counterfactual situation. Hence, in the counterfactual situation, the subsidy for the average farm is the wage gap multiplied by the amount of unpaid labour input.

Results

Figure 6 illustrates the implied hourly compensation for farmers across EU member states in the absence of subsidies, and compares it to national low-income threshold. The resulting difference is the wage gap (i.e. the difference between hourly compensation of farmers and hourly wages in manual industries). The wage gap differs significantly between member states. On average, the wage gap is €7.96 for the EU-28, but varies between €114.44 in Slovakia[28] to minus €8.58 in the Netherlands (negative values mean that hourly compensation of farmers exceeds national low-income hourly wages). In six of the member states, the hourly compensation of farmers without subsidies exceeds national low-income wages.

Figure 7 presents the results for the average farm in each member state. Currently, the average farm in Slovakia receives by far the highest amount of subsidies per year (€155,583). In contrast, annual payments for the average farm in Romania are €1,858. In a national counterfactual scenario in which the member states focus on the wage gap, only 21 member states would continue subsidising the income of their farmers. Since the implied hourly compensation for farmers in the other member states exceeds the national low-income threshold, these member states can refrain from providing income support to their farmers. Notably, the fit between current payments and hypothetical national subsidies can be classified as rather poor. Besides the cessation of income subsidies for farmers in six member states, farmers in 15 member states would receive lower subsidies than in the current situation, and national subsidies would be higher than today's payments in six member states.[29]

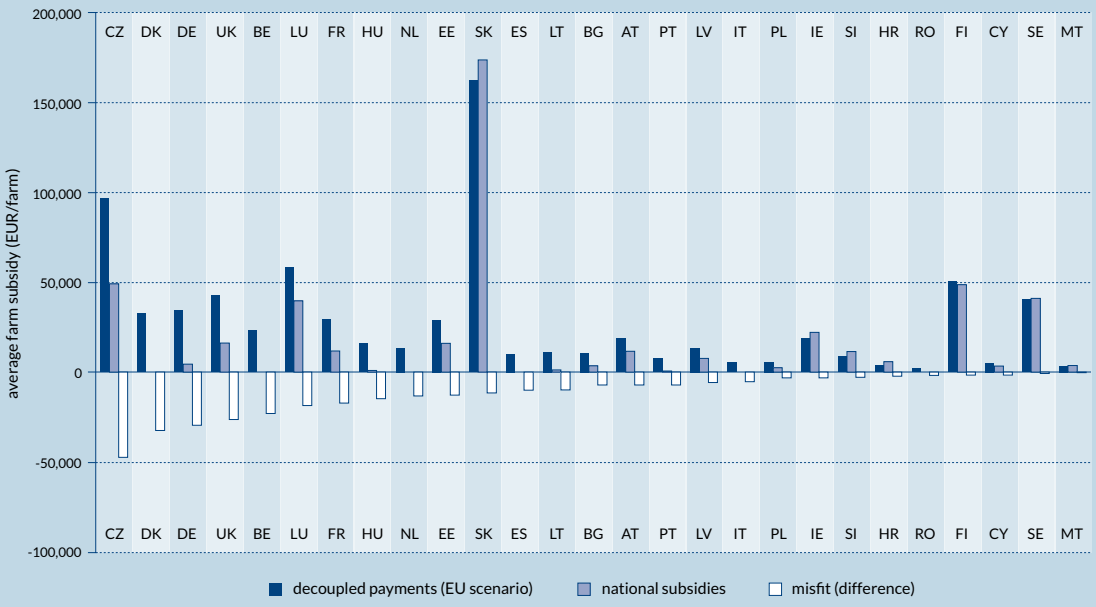
27 Gross profit consists of all earnings a farm makes in the agricultural sector and beyond (e.g. it also includes earnings from agricultural tourism). Own consumption is not reflected as income in kind, which may lead to some underestimation of farmers' income in countries with low income levels. For details regarding the methodology of the FADN, see European Commission (2010b).

28 Slovakia is the only country in the FADN for which the average farm reports negative farm income in the current system of direct payments.

29 Since there is no data available on the low-income threshold for Greece, this country is excluded from the analysis.

Figure 7:

Subsidies for the average farm in each member state – EU and national scenarios



Sources: FADN database for farming compensation and Eurostat for national low-income thresholds (own calculations). FADN data for 2013, low-income wage data for 2010. Since no data was available for Greece, it is excluded. Note: For member states without an orange bar, implied hourly compensation in farming exceeds national average wage in manual industries, meaning that these member states would refrain from subsidizing the income of their farmers.

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Hence, our results suggest that the current allocation of the direct payments system to the EU level is not efficient. For the majority of member states, direct payments for the average farm are either too high or too low. This is an implication of the current system of decoupled payments, which is primarily based on the amount of utilised land while neglecting heterogeneity in farm structures and national labour markets. It follows that the current system of direct payments is inaccurate and therefore underperforming in terms of the CAP's objective of enabling a fair standard of living for farmers across the EU. To overcome inaccuracy, the EU level would need an enormous amount of information on each farmer, which is hardly feasible. In addition, such a specified system would establish duplications since member states already apply functioning social welfare programmes specifically designed for their country-specific situation.

To sum up, the current system of handling direct payments does not create economies of scale due to inaccuracy in closing the wage gap of farmers. If anything, under the current system, diseconomies of scale are created due to the inefficient distribution of decoupled payments. National provision of direct payments would increase efficiency in terms of accuracy. Economies of scale can be exploited by integrating direct payments into existing national social welfare programmes. Hence, we assign a score of 1 for this indicator, meaning that there are no economies of scale for farm subsidies.

PREFERENCE HETEROGENEITY

Data source

To investigate preference heterogeneity of Europeans regarding farm subsidies, we rely on data from the Special Eurobarometer 440 on 'European, Agriculture and the CAP', which was published in October 2015 for the third time. In particular, we use QC11: "And over the next 10 years, would you like to see an increase, decrease or no change in the EU financial support to farmers?" People were asked to answer this question by choosing 'increase', 'decrease' or 'no change'. In addition, respondents were offered the fourth option of 'don't know'.

Methodology

We focus on the item 'increase' to analyse preference heterogeneity since the majority of people in most countries chose this item.[30] The results based on the other response items (excluding 'don't know') can be found in the Appendix. For our calculations, we adjust the figures by subtracting the number of people with no opinion. This number is on average 13 per cent, but varies between 3 per cent (Latvia) and 28 per cent (Bulgaria).

Our results are gathered by calculating the share of people in favour of increasing subsidies for farmers followed by a computation of dispersion measures on the EU level.

Results

Figure 8 shows the results. The heterogeneity indicator is 36 per cent, meaning that the realised standard deviation is moderate compared to the maximum standard deviation. The application of the formula for assessing the score leads to a value of 3.

It has to be noted that the question covers the extensive margin – in other words, people were only asked whether they think subsidies for farmers should be increased, but not by how much. Considering heterogeneity in farm incomes, one would expect greater preference heterogeneity concerning the desired size of increase. However, such a question was not asked in the Eurobarometer questionnaire.

30 It was the least frequently chosen item in only Denmark and the Netherlands. In Finland, more people chose 'no change' than 'increase'.

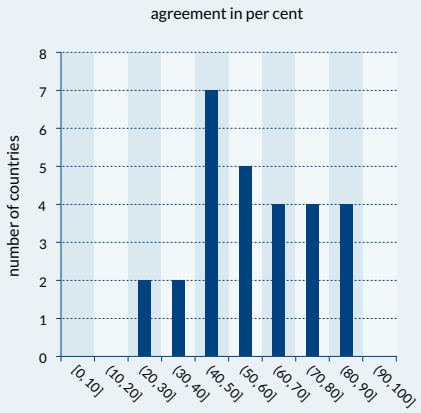
Figure 8:

Preference heterogeneity regarding subsidies for farmers

Increase in farmer subsidies

Eurobarometer question EB84.2 QC11: "And over the next 10 years, would you like to see an increase, decrease or no change in the EU financial support to farmers?" (percentage values for increase per country)

Mean (μ)	0.573
Median	0.536
Std. Dev. (σ)	**0.180**
Heterogeneity	**36.0 %**



Notes: The X-axis denotes the share of answers with 'increase' in the country. Respondents with no opinion about this question are not considered. If we use the country population size in 2014 as weights, the standard deviation = 0.144, resulting in a heterogeneity of 28.7 per cent.

INTERNAL MARKET CONSISTENCY

The internal market is primarily based on the four basic freedoms and undistorted competition, implying that competition policy provides similar rules for all market participants (Tache 2007). In contrast, until major reforms in the 1990s, the CAP assumed market failures and aimed to correct the outcome of the market. This made the CAP and competition policy seemingly contradictory policies (Boulanger and Messerlin 2010).[31] While competition policy aims to establish a competitive market outcome, previously used instruments (e.g. price support or quotas) prevented a competitive market outcome. The results were striking, with price support leading to distortions in the market price signals or quotas which limited the supply of certain commodities (Ingco and Winters 2004). This influenced both farmers and consumers in their decisions regarding the types and quantities of farmed goods and the quantities of demanded goods, which led to well-known excess supplies and reduced economic surplus (see, e.g., European Commission 2012; Mahé and Roe 1996). Prior to the Fischler reform in 2003, the cost of market interventions amounted to about 0.8 per cent of the total GDP of member states (Borrell and Hubbard 2000).[32]

In the course of several reforms leading to the current system, which were primarily based on direct payments, the focus of the CAP underwent a transition from market interventions to income subsidies for farmers (Burrell 2009). By focusing on market principles and putting a halt to price support and quotas, the CAP is currently aligned with competition policy principles

31 Regulations 26/62 and 1184/2006 explicitly state that agricultural policy has to be in line with competition policy.

32 Since the agricultural sector contributed less than 5 per cent to GDP, the market intervention cost of 0.8 per cent of total GDP can be considered substantial.

(Boulanger and Messerlin 2010). Hence, the current design of the CAP, with its focus on direct payments, has contributed to complying with the criterion of internal market consistency.[33]

Decentralising agricultural policy is not expected to interfere with internal market consistency, either. Decentralisation of direct payments in line with national transfer schemes does not imply any new distortions. Since a decentralisation comes with potential leeway for member states, it is important to monitor the compatibility of national agricultural policies with internal market consistency. This task could be conducted by already-existing competition authorities at the national level as well as by the European Commission through a strict application of state aid rules to the agricultural sector (ibid).

To sum up, with respect to the objective of protecting farmers' income, it is irrelevant whether agricultural policy is assigned to the EU level or the member-state level. Hence, integrating income subsidies for farmers into existing national social welfare programmes would not affect internal market consistency. Therefore, we assign an indifferent score of 3 to express that internal market consistency is largely fulfilled under the status quo as well as in the counterfactual scenario.

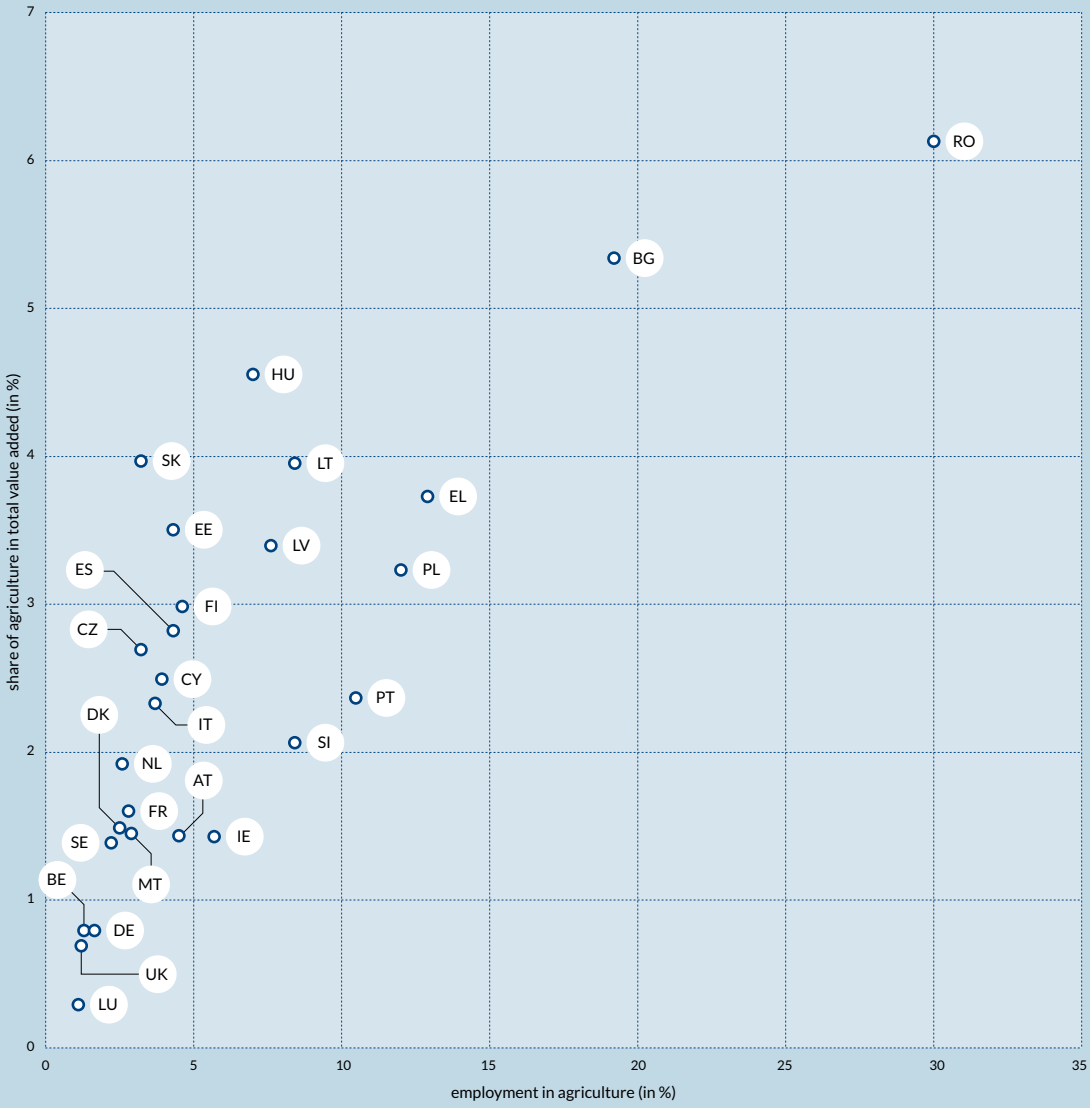
COMPETITION

National farm sectors vary significantly with respect to their economic importance to member states. Figure 9 shows the nexus of agricultural importance for employment and value added. While the share of people working in the agricultural sector in 2013 was 30 and 19 per cent, respectively, in Romania and Bulgaria, the share was less than 2 per cent in Belgium, Germany, Luxembourg and the UK. When looking at the share of agricultural in total value added, a similar picture emerges. In 2013, the agricultural share of value added only exceeded 5 per cent in Romania and Bulgaria, while the share for the older EU member states (except Greece) was below 3 per cent and even below 1 per cent for some member states (Belgium, Germany and Luxembourg). This highlights that there is significant heterogeneity in the economic importance and structures of the farming sectors of the member states.

33 With decoupled payments, some farmers continue production in the short run, but they would cease production in the absence of decoupled payments. However, this is not a sustainable strategy in the long run since the opportunity costs of altering or halting production are the highest for these farmers. Hence, the deviation in the market caused by this type of farmer can be considered minor.

Figure 9:

Importance of national agricultural sectors



Source: Eurostat, values for 2013 (own calculations). Note: For Croatia, employment in agriculture was not available.

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Since a major part of the EU budget is still dedicated to the CAP, the differences in national agricultural sectors lead to different budget negotiation objectives (de Wilde 2012; Greer 2013). Depending on the structure and importance of their agricultural sectors and their net-recipient position, member states vary in their interest and power when it comes to negotiating their share of CAP funding. Hence, negotiations for CAP funding shares are also driven by factors beyond agriculture (see, e.g., Roederer-Rynning 2010).

However, once the CAP funding is distributed among member states, member states allocate subsidies to their farmers according to national allocation schemes. National allocation schemes aim to capture country-specific characteristics of the agricultural sector and can therefore be considered to

be substantially heterogeneous (European Parliament 2015a).[34] As a result, national allocation schemes are only partially comparable at best.[35]

Under the status quo of centralised agricultural policy, competition only manifests itself when it comes to negotiations for national CAP funding shares. After the CAP funding is distributed to the member states, incomparable national allocation schemes make it impossible to have yardstick competition. In addition, the member states have few incentives to participate in yardstick competition as neither specific goals to achieve best practices nor consequences for inefficient national allocation schemes are defined.

Decentralising the CAP by integrating income subsidies for farmers into existing national social welfare programmes would concentrate financing and spending, and thereby lead to increased accountability. This would resolve the current common pool problem for agricultural subsidies, and would put agricultural policy back in a similar position as other policy fields with national scope (Roederer-Rynning 2010). Hence, equality of institutional settings of policy fields would be established, and agricultural policy would have to compete with similar policy fields for funding.

To sum up, the status quo of agricultural policy at the EU level combines degrees of freedom for member states for their national allocation schemes with a lack of incentives for improvements, which in turn leads to a lack of competition. Currently, competition between member states can only be observed in negotiations for national CAP funding shares. Decentralising agricultural policy would mainly trigger competition between agricultural policy and similar policy fields at the national level, thereby leading to a more efficient policy mix. Hence, we assign a score of 2 to denote that decentralised provision would tend to foster efficiency.

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34 The current design of the CAP allows member states to individualise aspects of it (in what is known as 'national CAP tailoring').

35 In addition, the resulting effects of national CAP allocation schemes are different. For example, the impact of the CAP on agricultural labour exodus varies among member states (Tocco, Davidova and Bailey 2013).

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APPENDIX

Spillover effects

For the scenario of national responsibility for funding agriculture-related local public goods, we have to create a counterfactual for the national burden. We make the reasonable assumption that the benefit of agriculture-related local public goods, measured by the share of permanent grassland and the share of ecological focus areas, is unaffected by a change in financing. Therefore, we focus on the burden shares and construct counterfactual burden shares using a two-step procedure.

We take the current total sum of greening payments for the EU-28 as a starting point. This total sum is allocated to member states according to their shares of total utilised land. This intermediate result implies that each member state exhibits the same preferences for agriculture-related local public goods and is willing to contribute the same relative amount for their provision. However, this is not a plausible result since, in reality, member states value agriculture-related local public goods to varying degrees due to differences in the number of beneficiaries and the respective importance of their agricultural sector.

To take this national heterogeneity into account, we adjust the above-described intermediate result by a multidimensional factor. This factor is constructed using six single indicators which comprise: the importance of the agricultural sector to the national economy (approximated by current national agricultural spending and the agricultural sector's share in value added); national preferences for environmental actions (approximated by the expenditures for environmental reasons and the share of ecological focus areas in national arable land); and the size of beneficiaries (approximated by the share of the population living in rural areas which profit directly from cultural landscapes and the share of tourism overnight stays per 1,000 inhabitants[36]). The country-specific figures for each indicator can be found in Table 1. To construct the multidimensional factor, we first calculate the mean $\overline{x_i}$ in the EU-28 for each of the five indicators i. Then, we set the realisation of each indicator for each member state $x_i^{country}$ in relation to the previously calculated means to calculate an indicator score:

$$Score_i^{country} = \frac{x_i^{country}}{\overline{x_i}}$$

Finally, the multidimensional factor for each country is constructed as the equally weighted sum of its individual indicator scores:

$$multidimensional\ factor^{country} = \sum_{i=1}^{6} \frac{Score_i^{country}}{6}$$

The computed indicator scores and the multidimensional factor for each member state can be found in Table 2.

36 Concerning tourism overnight stays, the primary beneficiary of intact landscape is the tourism sector in rural areas. Due to data limitations, it is impossible to distinguish between urban and rural tourism. For this reason, the total of overnight stays in cities and in the countryside is employed.

The second step in creating the counterfactual is conducted by adjusting the intermediate result from the first step by the multidimensional factor. More technically, this is done as follows:

$$greening\ burden^{\ country} = intermediate\ result \cdot \left(1 + multidimensional\ factor^{\ country}\right)$$

Table 1:

Indicator values for EU member states

		Importance of agriculture		Ecological awareness		Externalities	
Country	ISO	National agricultural expenditures	Agricultural share of value added	Environmental expenditures	Ecological focus areas	Rural population	Overnights
Austria	AT	0.5	1.2	0.137	6	41.4	1,306
Belgium	BE	n.a.	0.6	0.308	7.75	8.7	1,024
Bulgaria	BG	0.6	4.6	0.399	8	36.2	183
Croatia	HR	n.a.	3.6	0.465	14.5	--	709
Cyprus	CY	0.9	2.1	0.311	14	22.2	1,576
Czech Rep.	CZ	0.5	2.4	0.067	7.5	30.0	549
Denmark	DK	0.2	1.4	0.507	5	41.0	654
Estonia	EE	0.7	3.0	0.026	8.5	32.0	123
Finland	FI	1.1	2.4	0.254	6	53.6	60
France	FR	0.4	1.5	0.366	n.a.	29.0	633
Germany	DE	0.2	0.6	0.075	6	19.1	981
Greece	EL	0.0	3.4	n.a.	8.5	38.6	611
Hungary	HU	0.5	3.8	0.072	9	43.3	249
Ireland	IE	0.5	1.4	n.a.	12.5	44.2	414
Italy	IT	0.4	1.9	0.368	9	28.8	1,263
Latvia	LV	0.4	2.9	0.074	10	34.3	55
Lithuania	LT	1.0	3.1	0.182	11.5	36.2	88
Luxembourg	LU	0.5	0.3	0.114	n.a.	28.0	984
Malta	MT	0.7	1.3	0.260	21	0.1	24,786
Netherlands	NL	0.2	1.7	0.428	8	6.8	2,023
Poland	PL	0.6	2.6	0.152	7.5	40.3	198
Portugal	PT	0.4	2.0	0.184	9	26.9	507
Romania	RO	0.4	4.7	0.174	8	48.3	80
Slovak Rep.	SK	n.a.	4.0	0.005	7.5	40.7	220
Slovenia	SI	0.5	1.9	0.307	4	55.5	464
Spain	ES	0.5	2.3	0.263	15.75	26.9	756
Sweden	SE	0.2	1.2	0.141	8.5	69.3	111
UK	UK	0.2	0.6	0.169	10	12.2	1,221
EU-28 (avg.)		**0.484**	**2.232**	**0.193**	**9.346**	**33.096**	**631,169**

Source: Eurostat. National agricultural expenditures are a member state's subsidies for agriculture, forestry, fishing and hunting for 2011, and they are measured as a percentage of GDP. The share of value added by the agricultural sector is measured as a percentage of GDP for 2014. Environmental expenditures are member states' total environmental-protection expenditures (e.g. for protection and remediation of soil, groundwater and surface water, protection of biodiversity and landscapes, or environmental R&D) in 2011 in billions of €. The figures under 'Ecological focus areas' represents the weighted share of arable land declared to be an ecological focus area in 2016 (each member state has to declare at least 5 per cent of its arable land as ecological focus area, but can freely choose a higher level. For more information, see European Commission (2016b)). Rural population is the share of the population and land area in rural local administrative units level 2 (LAU2) in 2010. Overnights refer to total overnight stays per km² in 2012. Missing values are indicated by 'n.a.' and imputed by the EU-28 average value of the corresponding indicator.

Table 2:

Score values and multidimensional factors

		Importance of agriculture		Ecological awareness		Externalities		Multi-dimensional factor
Country	ISO	National agricultural expenditures	Agricultural share of value added	Environ-mental expenditures	Ecological focus areas	Rural population share	Over-nights	
Austria	AT	0.03	-0.46	-0.29	-0.33	0.25	1.07	**0.05**
Belgium	BE	0.00	-0.73	0.59	-0.14	-0.74	0.62	**-0.07**
Bulgaria	BG	0.24	1.06	-0.79	-0.11	0.09	-0.71	**-0.04**
Croatia	HR	0.00	0.61	-0.76	0.61	0.00	0.12	**0.10**
Cyprus	CY	0.86	-0.06	0.61	0.56	-0.33	1.50	**0.52**
Czech Rep.	CZ	0.03	0.08	-0.65	-0.17	-0.09	-0.13	**-0.16**
Denmark	DK	-0.59	-0.37	1.62	-0.44	0.24	0.04	**0.08**
Estonia	EE	0.45	0.34	-0.87	-0.06	-0.03	-0.81	**-0.16**
Finland	FI	1.27	0.08	0.31	-0.33	0.62	-0.91	**0.17**
France	FR	-0.17	-0.33	0.89	0.00	-0.12	0.01	**0.05**
Germany	DE	-0.59	-0.73	-0.61	-0.33	-0.42	0.55	**-0.36**
Greece	EL	-1.00	0.52	0.00	-0.06	0.17	-0.03	**0.10**
Hungary	HU	0.03	0.70	-0.63	0.00	0.31	-0.61	**-0.03**
Ireland	IE	0.03	-0.37	0.00	0.39	0.34	-0.34	**0.01**
Italy	IT	-0.17	-0.15	0.91	0.00	-0.13	1.00	**0.24**
Latvia	LV	-0.17	0.30	-0.62	0.11	0.04	-0.91	**-0.21**
Lithuania	LT	1.07	0.39	-0.06	0.28	0.09	-0.86	**0.15**
Luxembourg	LU	0.03	-0.87	-0.41	0.00	-0.15	0.56	**-0.14**
Malta	MT	0.45	-0.42	0.35	1.33	-0.99	2.21	**0.49**
Netherlands	NL	-0.59	-0.24	1.22	-0.11	-0.80	2.21	**0.28**
Poland	PL	0.24	0.17	-0.21	-0.17	0.22	-0.69	**-0.07**
Portugal	PT	-0.17	-0.10	-0.05	0.00	-0.19	-0.20	**-0.12**
Romania	RO	-0.17	1.11	-0.10	-0.11	0.46	-0.87	**0.05**
Slovak Rep.	SK	0.00	0.79	-0.97	-0.17	0.23	-0.65	**-0.13**
Slovenia	SI	0.03	-0.15	0.56	-0.56	0.68	-0.27	**0.05**
Spain	ES	0.03	0.03	0.36	0.75	-0.19	0.20	**0.20**
Sweden	SE	-0.59	-0.46	-0.27	-0.06	1.09	-0.82	**-0.19**
UK	UK	-0.59	-0.73	-0.12	0.11	-0.63	0.94	**-0.17**

Notes: For missing realisation of indicator values, it is assumed that the country exhibits the EU-28 average value, leading to a score value of 0.00. The score value for Malta for overnights (38.27) is censored, meaning that it is replaced by the second-biggest value, namely, that of the Netherlands (2.21).

Table 3:

Benefit- and burden-sharing among EU member states (in per cent)

Share in total of the EU (in per cent)							
Country	ISO	Greening payments share	Permanent grassland share	Ecological focus areas share	Benefit share	Burden share (EU)	Burden share (national)
Austria	AT	1.71	2.18	1.31	1.74	2.31	1.64
Belgium	BE	1.36	0.82	0.77	0.79	3.14	0.70
Bulgaria	BG	1.43	2.13	3.15	2.64	0.35	2.58
Croatia	HR	0.23	1.04	0.84	0.94	0.33	0.99
Cyprus	CY	0.13	0.00	0.08	0.04	0.12	0.10
Czech Rep.	CZ	2.17	1.61	2.39	2.00	1.12	1.70
Denmark	DK	2.26	0.33	2.30	1.31	1.90	1.63
Estonia	EE	0.24	0.54	0.60	0.57	0.15	0.46
Finland	FI	1.28	0.05	2.13	1.09	1.53	1.53
France	FR	17.59	13.84	17.72	15.78	16.80	16.70
Germany	DE	12.57	7.76	11.40	9.58	22.15	6.20
Greece	EL	5.54	3.53	1.74	2.64	1.57	3.08
Hungary	HU	3.17	1.18	3.65	2.41	3.17	2.63
Ireland	IE	3.02	6.57	1.00	3.79	1.22	2.88
Italy	IT	9.12	5.57	6.46	6.01	12.33	8.66
Latvia	LV	3.54	1.10	1.16	1.13	0.21	0.86
Lithuania	LT	0.92	0.94	2.19	1.56	0.27	0.19
Luxembourg	LU	0.08	0.11	0.06	0.09	0.20	0.06
Malta	MT	0.01	0.00	0.01	0.00	0.06	0.01
Netherlands	NL	1.99	1.30	1.00	1.15	5.48	1.36
Poland	PL	7.35	5.38	10.33	7.85	3.03	7.69
Portugal	PT	1.56	3.05	1.06	2.05	1.40	1.85
Romania	RO	3.10	7.38	7.87	7.63	1.16	7.91
Slovak Rep.	SK	0.92	0.87	1.31	1.09	0.54	0.95
Slovenia	SI	0.32	0.48	0.17	0.32	0.28	0.29
Spain	ES	12.11	13.37	10.84	12.10	8.56	16.07
Sweden	SE	1.67	0.75	2.48	1.62	3.29	1.43
UK	UK	7.79	18.12	6.02	12.07	9.73	8.16

Notes: Payments data for 2014 (source: European Commission (n.d.). EU expenditure and revenue 2000–2014 data download); benefit data for 2013 (source: Eurostat). The benefit share is the unweighted average of greening payments share, permanent grassland share and ecological focus area share.

PREFERENCE HETEROGENEITY

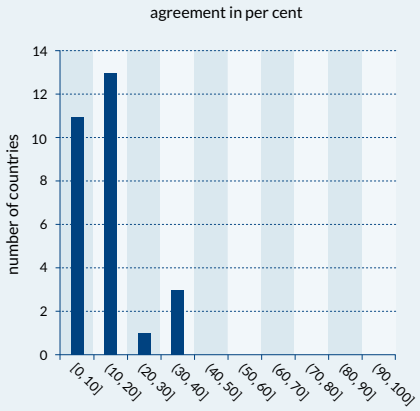
Figure 10:

Preference heterogeneity regarding farmer subsidies: Prefer decrease

Decrease in farmer subsidies

Eurobarometer question EB84.2 QC11: "And over the next 10 years, would you like to see an increase, decrease or no change in the EU financial support to farmers?" (percentage values for decrease per country)

Mean (μ)	0.132
Median	0.123
Std. Dev. (σ)	**0.098**
Heterogeneity	**19.6 %**



Notes: The X-axis denotes the share of answers with 'decrease' in the country. Respondents with no opinion about this question are not considered. If we use the country population size in 2014 as weights, the standard deviation = 0.075, resulting in a heterogeneity of 14.9 per cent.

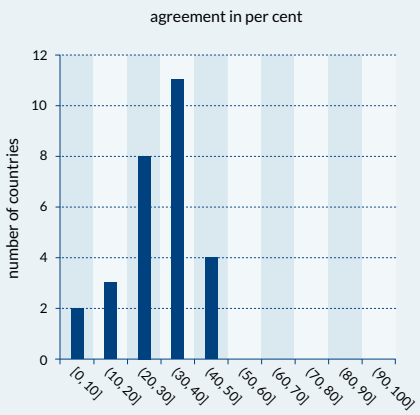
Figure 11:

Preference heterogeneity regarding farmer subsidies: Prefer no change

No change in farmer subsidies

Eurobarometer question EB84.2 QC11: "And over the next 10 years, would you like to see an increase, decrease or no change in the EU financial support to farmers?" (percentage values for no change per country)

Mean (μ)	0.295
Median	0.312
Std. Dev. (σ)	**0.106**
Heterogeneity	**21.3 %**



Notes: The X-axis denotes the share of answers with 'no change' in the country. Respondents with no opinion about this question are not considered. If we use the country population size in 2014 as weights, the standard deviation = 0.085, resulting in a heterogeneity of 17.0 per cent.

VIII. *Case Study 2:*

Asylum & refugee policy

Current and future challenges

In summer 2015, a dramatic increase in the number of refugees from Syria, but also from other countries in the Middle East and Africa, made this policy field a greater focus of EU policies. This escalation has revealed obvious shortcomings – if not a complete failure – of the current policy design.

The current situation in Europe has been induced both by longer-run political and economic developments as well as by recent escalations in war-torn countries, such as Syria. Globalisation has facilitated the mobility of factors (e.g. people, goods, etc.), but it also reveals more clearly the differences in global standards of living. This is accompanied by resource shortages in many regions of the world, which contribute to increased social tensions. Threats to security (e.g. conflicts, civil wars, poverty, famines, terrorism and the radicalisation of various groups) have recently destabilised the political and economic situation in many countries, especially in the Middle East and in North and West Africa. Already in 2014, forced displacement worldwide increased to an unprecedented level (UNHCR 2015). This also led to an increasing number of refugees coming to Europe. As Figure 1 shows, the number of asylum-seekers in Europe increased rapidly in recent years, especially between 2012 and 2014, and this number was expected to rise dramatically in 2015. EU member states along the Mediterranean Sea (e.g. Italy and Greece) and those further north that appear particularly attractive as final destinations, in particular, face inflows of refugees that are exhausting these states' capacities to provide reception and accommodation.

Status quo

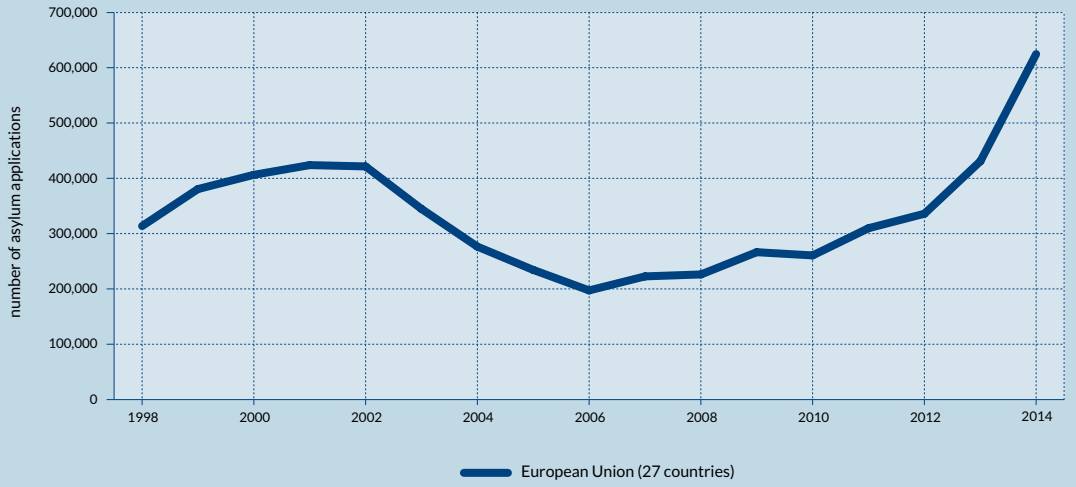
According to the 1951 Refugee Convention of the United Nations, a person must be recognised as a refugee in case of fear of persecution for reasons of race, religion, nationality, membership of a particular social group, or political opinion. Asylum-seekers, on the other hand, are persons that seek asylum because of political persecution in their home country.

In the EU, member states are responsible for the reception and accommodation of refugees as well as the processing of their asylum applications. However, there are several EU organisations, directives and doctrines that determine the allocation and reception of refugees – most importantly, the Qualification Directive, the Procedures Directive and the Conditions Directive as well as the EURODAC database and the Dublin regulations. In addition, the European border guard agency Frontex supports EU member states in performing border controls, naval rescue and return operations. Therefore, the status quo of migration policy in the EU represents neither a centralised nor a purely national case.

In the last two decades, several measures and steps have been taken towards developing a common migration policy in the EU. When the Treaty of Amsterdam entered into force in 1999, the EU made an initial attempt to shift the legislation of migration policy and border security towards a supranational legislation level in an effort to establish "an area of freedom, security

Figure 1:

Number of asylum applications in EU-27 countries (1998–2014)



Source: Eurostat

BertelsmannStiftung

and justice". Since then, the EU has worked towards setting up a Common European Asylum System (CEAS) to promote the harmonisation of national migration policies and standards of protection in the member states.[37] Another goal is the expression of financial solidarity by finding a concept of equal burden-sharing. For example, a common European Refugee Fund (ERF) was set up for the 2008–2013 period within the Hague Programme, which supports the intra-EU relocation of refugees from Malta, among other things. In 2011, the European Asylum Support Office (EASO) was founded and, in 2014, the Asylum, Migration and Integration Fund (AMIF) was set up. One of many goals is improving the economic and political conditions in home countries in order to reduce the influx of refugees.

The number of asylum-seekers varies greatly across member states. Despite the Schengen Agreement, which guarantees the free movement of persons within its 26 signatory countries making up the Schengen Area, refugees cannot choose their host country freely. According to the Dublin Regulation, which entered into force in 1997, the first European country in which a refugee arrives is responsible for taking fingerprints for the common European fingerprint database (EURODAC). This country is also responsible for assessing asylum claims and accommodating refugees. This competence is often delegated to the federal states or communities within the respective EU member state. However, the ongoing escalation of the situation has demonstrated that the Dublin rules lack effectiveness. If a refugee or asylum-seeker comes from a 'safe country of origin', he or she will be sent back. Although EU directives have established the notion of safe countries of origin, each EU member state independently decides what it will categorise as a 'safe' country.[38]

37 An overview of the CEAS can be found in a factsheet published by the European Commission (European Commission 2014a).

38 See Council Directive 2005/85/EC of 1 December 2005 on minimum standards on procedures in member states for granting and withdrawing refugee status.

Despite the common European regulations, there are still large differences among EU member states in the provision of accommodation and benefits to asylum-seekers. Whether asylum-seekers are allowed to look for a private accommodation themselves or to work while their asylum application is pending differs among countries. In addition, there are still considerable differences among member states in the national implementation of EU migration directives.

Counterfactual situation

If the EU had centralised regulations regarding migration policy, they could include the following elements:

- Common standards of accommodation and personal allowances for refugees could be introduced, including the formation of necessary EU institutions/organisations to enable the implementation of these standards.
- Common criteria for the assessment of asylum applications could be established, such as a common 'safe country of origin' list.
- A system of allocating refugees to member states that is more geared towards the respective member state's capacities (e.g. measured by size, population, GDP, GDP growth, unemployment) could be established.
- A binding quota for the allocation of refugees among member states could be introduced and enforced.
- If necessary, transfer payments among member states for fair burden-sharing or a common fund that covers all costs related to the common asylum policy could be introduced.
- Border enforcement could be conducted jointly.

Overview

Score	Description
	Spillover effects
5	We create an index for the responsibility-sharing between member states both under the current status quo and in a hypothetical counterfactual situation of a centralised European asylum and refugee policy. We then compare these indicators and analyse whether free riding is reduced with European provision. Our indicator of free riding is markedly reduced if an integrated European asylum and refugee policy is created.
	Economies of scale
4	We compare the expenses of European countries for receiving and hosting refugees and asylum-seekers to detect potential economies of scale when moving to a European solution. There is evidence that a broader European solution leads to economies of scale in various cost categories. Thus, we conclude that shifting competences to the European level would be beneficial.
	Preference heterogeneity
5	We rely on Eurobarometer 82.3 ('Standard Eurobarometer') and evaluate questions QA11.1 ("Please tell me whether each of the following statements evokes a positive or a negative feeling for you – Immigration of people from other EU Member States") and QA11.2 ("Please tell me whether each of the following statements evokes a positive or a negative feeling for you – Immigration of people from outside the EU"). The standard deviations of the distributions are 0.125 and 0.137, respectively, resulting in a heterogeneity indicator of 25 and 27.4 per cent.

	Internal market consistency
5	Since the Schengen Agreement was introduced in 1995, there have been no internal borders between Schengen countries, and persons, goods, services and capital have been able to move freely within the borderless Schengen Area. This makes it easier for refugees to move within Europe without being effectively controlled or held back from crossing national borders. The free-movement agreement is threatened if responsibilities for refugees among member states are unclear, as states might reintroduce border controls (Thielemann et al. 2010). This risk has massively increased with the dramatic surge in refugees in 2015. Thus, a centralised solution would clearly help prevent the reintroduction of border controls and thereby support the internal market.
	Competition
4	Competition in the policy field of asylum and refugees has two effects: On the one hand, yardstick competition might encourage the further development of best practices that could improve the quality of refugee-hosting efforts. On the other hand, without effective sanctions and binding standards, there will be a race to the bottom that only worsens the situation of refugees and asylum-seekers. Thus, combining centralised non-competitive regulations at the EU level and local initiatives that compete to further improve good practices would be best.

Further information

SPILLOVER EFFECTS

Data source

To quantify the extent of free riding among member states in the case of hosting asylum-seekers and refugees, we use data on the member states level from Eurostat, the European Commission, the World Bank and the UNHCR.

We collect information on the number of refugees and asylum-seekers for all EU-28 countries using the UNHCR database. We include all persons being categorised as either a refugee or an asylum-seeker whose application was pending at the end of 2014. Stateless persons and other refugees (e.g. intra-country refugees) are excluded. The share of each member state's contribution to the EU budget is taken from the EU Budget 2013 Financial Report (European Commission 2014b). Since information on the EU budget for 2014 was not available at the time of the computations, we refer to the 2013 figures. In order to compute our capacity indices, we make use of various information on the EU-28 countries available from Eurostat, including population, population density, area, unemployment rate, house price index and GDP for all countries over various years. Since not all data is available for the year 2014, we replace the missing values with the information from the most recent year in our data set (mostly 2013 or 2012). The data on long-term unemployment and the old-age-dependency ratio are downloaded from the World Bank's database. Again, missing values in 2014 are replaced with data from previous years. Information is available for nearly all countries, except for the house price index, which is missing for Greece and Poland.

Methodology

It is a one-sided and distorted view to regard the immigration of refugees as merely a costly process. In the medium and longer term, societies can greatly benefit in cultural and economic terms if the economic and social integration of refugees is successful. This particularly holds true for EU countries, with their aging and shrinking populations. Nevertheless, in what follows, we concentrate on the more short-run aspect, the process of the

initial reception of refugees, including the administrative burden related to the reception, hosting and legal processes of refugees.[39]

The initial hosting of refugees and their administration implies the provision of a public good with cross-border spillover effects. All EU countries benefit when a country hosts refugees, for example, because it enhances international stability or satisfies the shared European obligation to safeguard human rights. Nevertheless, each individual member country has an incentive to free ride and to minimise the number of refugees it hosts, such as by using restrictive policies to discourage applicants (see Thielemann 2010). If all states expect this to happen, none will be willing to shoulder the costs of hosting additional refugees anymore (Suhrke 1998; Hatton 2012). Thielemann (2010) argues that Europe's asylum policy needs to be a level playing field that guarantees comparable help for all persons in need across all member states, which might prevent free riding and a race to the bottom. The current dramatic increase in the number of refugees and the striking misbalance in the reception rates of EU countries demonstrate that the free-riding issue under the status quo is of massive importance and carries far-reaching risks for European integration in general.

If the free-rider problem is large and the responsibility for hosting refugees is concentrated in only some countries, one needs to think about a cooperative system of fair responsibility-sharing. The idea behind the capacity index is that dealing with large numbers of incoming refugees from other countries at the EU's external borders in a manner that adheres to the Dublin Regulation makes it necessary to fairly distribute this inflow among all European countries. But the question remains of how such a capacity is to be determined. Various indices can be computed given that individual factors and their weighting can be adjusted in several ways, which in turn influences the capacities (for further discussion, see Czaika 2005 and Thielemann et al. 2010). We compute two different capacity indices (see Figure 2) to account for the fact that there is not one single index that perfectly maps the capacity of countries to cope with refugees and asylum-seekers. The range for both indices is between 0 and 100. If a country has a capacity index of 15, then it should host 15 per cent of all refugees across Europe.

For all subsequent computations, we averaged the existing data over the last five years to account for possible shocks in a certain year. An outlier would probably have a major influence on the capacity index even if it were only an outlier for a single year. For example, if Germany's GDP collapsed in 2014 due to some cyclical imbalances, we would presume that Germany's capacity would be much lower even though its GDP might have been stable over many years and will recover in 2015. Thus, averaging over previous years makes the indicators less prone to cyclical imbalances.

The first capacity index (CI 1), following suggestions in Angenendt, Engler and Schneider (2013), is composed of four factors for each country: GDP, population, area and unemployment. Since we aim at distributing refugees coming to the EU, all numbers are expressed in shares of total EU values. The higher a country's share of GDP is in terms of overall European GDP, the higher its capacity is to take care of additional refugees. It is assumed that countries with relatively high shares of GDP generally have higher

39 Measuring the long-term benefits of refugees and asylum-seekers is hard to do, as Czaika (2005), for example, has pointed out.

capacities to accommodate more people in need. For countries with a higher share of overall European population and surface area, it might be easier to integrate refugees. Since even big and economically prosperous economies can experience periods of high unemployment, this factor is also included in the calculation. The higher a country's unemployment rate is in comparison to other European countries, the smaller the labour market's ability is to absorb additional workers.[40] Another argument, which is presented in the report by the council of experts, posits that people are less willing to provide safety to refugees during periods of high unemployment due to rising xenophobia.[41] In the expert council's suggested method of calculation, a country's economic power and population size are weighted the most, whereas its area and unemployment level are weighted less.[42]

$$CI\ 1_i = 0.4 * GDP_i + 0.4\ Population_i + 0.1 * Area_i + 0.1\ Unemployment$$

We come up with an alternative measure of capacity (CI 2) that differs in terms of both the criteria considered and the weights assigned. Though based on general considerations, it reflects our own thoughts and ideas on how to measure capacities best. As in the previous case, economic power (measured by GDP) is the most important criterion and is weighted with a factor of 0.4. For the same reasons as explained above, we include the unemployment rate in our index and weight it with a factor of 0.2. We replace the share of the population and the share of the area with the population density of countries, assuming that countries across Europe with a higher density have fewer capacities to absorb additional people. This accounts for the fact that there are some small countries with relatively many inhabitants (e.g. Malta) and some rather large countries with relatively few inhabitants (e.g. Sweden). The tension on the national housing market might be another point impacting a country's capacity, as finding accommodations for additional refugees in an already tight housing market will presumably drive up the costs of taking care of people in need. Indeed, if the tension is pronounced, countries might not be able to provide any housing for refugees. Thus, a higher house price index in the European context decreases the capacities of countries. The last criterion should reflect the demographic change in countries with aging societies. As a proxy for this, we include the old-age-dependency ratio in our computations, which reflects the number of people above 64 as the share of all working-age people (15- to 64-years-old). However, the direction of the effect is unclear, as it could increase or decrease the capacity. On the one hand, a larger dependency ratio might express the financial pressure on the welfare state since a shrinking number of workers need to take care of an increasing number of elderly individuals, which would denote a lower capacity to accept additional refugees. On the other hand, a larger ratio reveals that a country needs to have more and younger people to combat demographic changes and cope with aging societies. In this case, refugees might fill this gap and help resolve demographic problems. Due to the well-known

40 This is especially true if refugees and asylum-seekers do not fill jobs that are open due to a shortage of specialists.

41 The Expert Council of German Foundations on Integration and Migration (SVR).

42 Some criteria are said to have a negative effect on a country's capacity. In these cases, we use the inverse of the respective criterion, which is defined as: $\frac{1}{Criterion_i}$

When a criterion has no natural comparison group (such as in the case of EU population or EU area) and is said to reduce a country's capacity, it is calculated as: $\frac{\frac{1}{Criterion_i}}{\sum_{i=1}^{28}\left(\frac{1}{Criterion_i}\right)}$

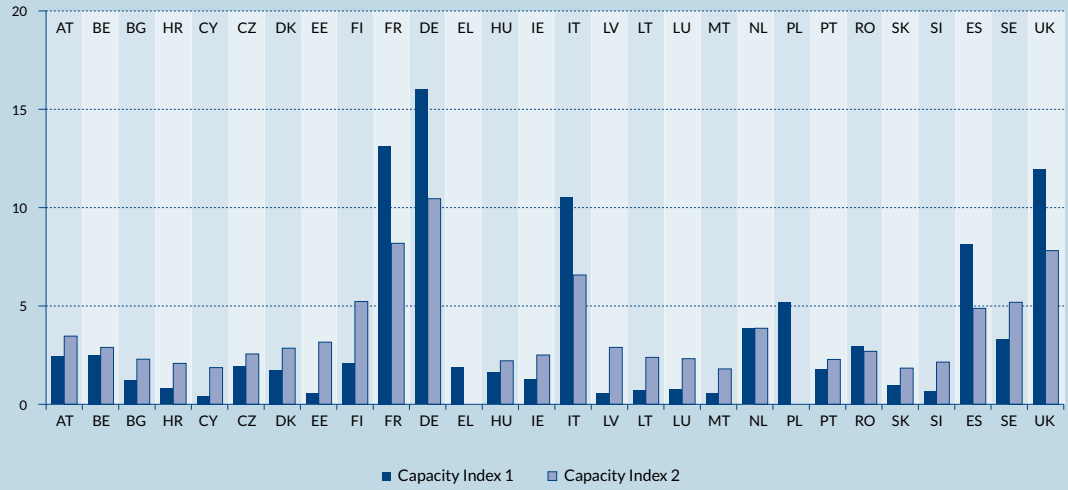
demographic problems in mature economies, we expect the latter effect to dominate, which results in an increasing effect of the old-age-dependency ratio on the capacity index.[43]

$$CI\ 2_i = 0.4 * GDP_i + 0.2\ Population\ Density_i + 0.2 * Unemployment_i + 0.1 * Dependency\ Ratio_i + 0.1 * House\ Price\ Index_i$$

Figure 2 shows the distribution of incoming refugees and asylum-seekers across countries in per cent. When comparing both indices, it is obvious that the first one (blue bars) concentrates the pressure of taking care of refugees on economically stronger and larger states, such as Germany, France, Italy, Spain and the United Kingdom. When including a broader set of criteria (red bars) that might counteract economic power or attenuate its effect, the burden is shared more equally across all European countries.

Figure 2:

Different capacity indices for EU countries (in per cent)



Sources: Eurostat, World Bank, UNHCR

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The computed capacity indices are used to identify countries that benefit from the current situation ('net receivers') and those that disproportionately fund it ('net payers'). To determine these capacities, we compute a measure that compares the current situation, in which countries are essentially responsible for taking care of refugees on their own, to a situation into which a fixed quota has been introduced. In doing so, we can then determine which countries are hosting fewer refugees than the indices would suggest – in other words, which countries are free riding on the efforts of countries hosting more refugees than they should, based on relative calculated capacities.

43 Replacing the positive effect of the old-age-dependency ratio with a negative one does not extensively alter the capacity per country.

Results

To determine whether there is significant free riding under the status quo and whether this can potentially be attenuated by using another mechanism, we compute two different measures for both scenarios. Instead of calling them 'burden shares', we refer to them as 'responsibility shares', which is used more commonly when talking about refugees (Thielemann et al. 2010).[44]

First, to determine the extent of free riding under the status quo, we compute the responsibility share when the asylum and refugee policy is executed by the member states alone, using the following equation:

$$\begin{aligned} &National\ Responsibility\ Share_i \\ &\quad = Capacity\ Index_i^{1\ or\ 2} - Share\ of\ Hosted\ Refugees\ 2010\text{–}2015_i \end{aligned}$$

At present, there is no binding mechanism that obliges states to provide accommodations to a certain number of refugees coming to Europe or to distribute the refugees based on a quota. According to the Dublin Regulation, each member state is supposed to take care of the refugees that come into the country using its own means. Thus, we compare the capacity with the actual number of hosted persons. We then compute the standard deviation of the distribution to detect the diversity of the distribution.

The counterfactual represents a situation in which the distribution of refugees is centralised at the EU level. We assume that the total number of people in need is distributed among member states according to two different indicators: a quota proposed by the European Commission in May 2015 (see European Commission 2015) and the member states' share of total contributions to the overall EU budget. Both distribution mechanisms will be examined in detail further below.

The first suggestion assumes that a fair distribution of refugees can be achieved by using the countries' shares of the overall EU budget. It can be computed easily and already reflects some differences between countries and their respective capacities. The rationale behind this is that wealthier and larger countries should shoulder a bigger burden than smaller or poorer countries. A country's share of the EU budget is computed as its own contribution in relation to the overall EU budget.

$$EU\ Budget\ Share_i = \frac{Contribution_i}{EU\ Budget}$$

Due to the massive inflow of refugees from several crisis-stricken countries and the uneven distribution of refugees among member states, the European Commission (EU COM) suggested that a fair quota should be introduced.[45] Using a variation of this quota, we compute the share of refugees that each member state would need to host. The quota is calculated as follows:

$$\begin{aligned} EU\ COM_i = {} & 0.4 * GDP_i + 0.4 * Population_i + 0.1 \\ & * Share\ of\ Hosted\ Refugees\ 2010\text{–}2015_i + 0.1 \\ & * Unemployment\ Rate_i \end{aligned}$$

44 An overview of all computed indices can be found in Table 2 in the Appendix.

45 The quota proposed by the European Commission includes the following factors: GDP (40%), population (40%), average number of asylum applicants between 2010 and 2014 (10%), and the unemployment rate (10%).

Thus, this quota takes into account each country's economic power and population as well as its share of already-hosted refugees and its unemployment rate. According to this logic, if either the EU budget share or the quota were similar or equal to the capacity index, free riding would be no longer be a problem.

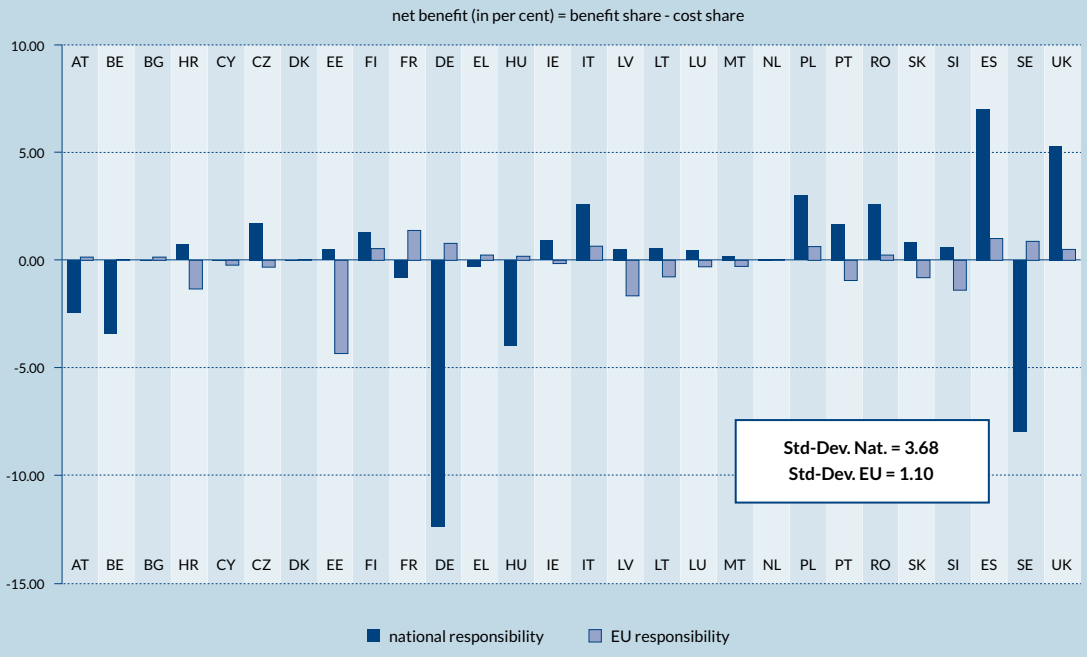
We then compute the same responsibility shares as we have done in the national case. To estimate the extent of free riding, we subtract the alternative measure (EU COM or Budget) from the capacity indices and examine whether the distribution among states becomes more even. This is again measured as the standard deviation of the distribution.

$$EU\ Responsibility_{\ i} = Capacity\ Index_{\ i} - Alternative\ Index_{\ i}^{Com\ or\ Budget}$$

Figure 3 and Figure 4 (below) represent the net-receiver and net-payer countries for both scenarios, with blue bars indicating national responsibility and red bars European responsibility. On the Y-axis, one can see the gap between the capacity index and the alternative measure in per cent. In both figures, one can observe that extreme cases are more frequent in the national case than they are in the European one. Using the European Commission's proposal as the counterfactual situation and comparing it to CI 1 reduces the diversity of the distribution by 70 per cent. In the alternative case, the EU budget would decrease the unequal distribution by about 55 per cent. Figures for the case of the second capacity index for both the European Commission's suggestion and the EU budget can be found in the Appendix (Figure 8 and Figure 9).

Figure 3:

Net benefit of asylum policies using the European Commission's suggestion and CI 1 (in per cent)



Sources: Eurostat, World Bank, UNHCR

BertelsmannStiftung

Since we have designated the net payers and net receivers under the status quo, turning to a European solution will of course leave some countries worse off and other countries better off. This would mean that some countries need to increase the number of refugees they host, while others would be allowed to decrease their number accordingly.

The biggest effects in terms of aligning benefits and costs can be achieved if we use the first capacity index (CI 1) and distribute refugees according to the suggestion of the European Commission.[46] In addition, inequality is similarly reduced if we distribute persons according to a country's share of the EU budget.

Figure 4:

Net benefit of asylum policies using the EU budget and CI 1 (in per cent)

Sources: Eurostat, World Bank, UNHCR

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For both preferred cases – CI 1 with EU COM and CI 1 with EU budget – we compute the change in the standard deviation. In case of the first scenario (CI 1/EU COM), we achieve a reduction of 70 per cent, while the second scenario (CI 1/EU budget) gives us a reduction of about 60 per cent. We end up with a score of 5, which indicates that free riding will be significantly reduced in either case. Thus, reallocating the competences in the asylum and refugee policy from the national to the European level will generate benefits and reduce free riding.

However, one should note that these results were calculated using data until mid-2015. Since misbalances in the 2015 reception quotes are likely to massively increase, this result is likely to underestimate the potential benefits of an EU approach.

46 Of course, this is due to the high weights given to GDP and population size in both measures.

ECONOMIES OF SCALE

Data source and methodology

The policy field of asylum and refugees might reveal economies of scale when going from national to European-wide competences or full European responsibility. Detecting them is a difficult task, however, as the availability of data – and especially administrative data – is poor. Indeed, since it is nearly impossible to obtain budgetary data from EU countries on the costs of hosting asylum-seekers, we rely on two studies that have tried to collect data on these costs by themselves (Thielemann et al. 2010; Urth et al. 2013).[47] In comparing their data, one notices that they differ greatly in terms of costs per case even between countries with similar costs of living. This might point to severe data problems and/or a high degree of variance in actual service provision (e.g. high detention rates in the UK). Nevertheless, there are a number of quantitative hints and compelling arguments indicating potential savings along several dimensions:[48]

- In countries with a homogenous group of asylum-seekers, caseworkers are able to process more cases per year than their counterparts in countries with heterogeneous groups (Urth et al. 2013). This indicates specialisation advantages over all phases of the asylum process, including preparation, decision-making (through economies in information provision on country of origin) and appeal procedures.

- Some of the countries with very high costs per case are ones with both a very low number of asylum-seekers and a GDP level far below the EU average (Thielemann et al. 2010). This is a clear indication of high fixed costs and speaks in favour of potential economies of scale.[49]

- Having the EU provide (and finance) all services would render the Dublin system redundant. No mechanism would be needed to determine which member state bears these responsibilities because the EU would have taken them over. As a consequence, all particular Dublin-related tasks and expenses, including the administration and enforcement of Dublin transfers, could be eliminated. This study does not aim at estimating these cost savings.

- A European solution may be better at coping with volatility in the regional distribution of immigration flows. Currently, national administrations suffer from capacity constraints that lead to costly delays in asylum decisions. A European administration, however, could more easily shift its resources to the critical entry points and speed up final decisions.[50]

47 For details, see Table 4 in the Appendix.

48 One caveat that is standard in any reflection on a transfer of competences to the EU level applies here: Economies of scale are only realistic if the service continues to be applied at average wage scales of national administrations. If average national pay were replaced by EU salaries, the most likely impact would be a cost push rather than a balancing of any economies in European service provision. For an example of this based on European defence, see Bassford et al. (2013).

49 The example given is Estonia, which had a very low number of applicants in the reference year. No evidence exists on whether economies of scale are still important at the much larger numbers characterising the current situation. Calculations by the authors do not indicate economies of scale for Germany's 16 federal states, with their different sizes and numbers of asylum cases.

50 Under the status quo, the European Asylum Support Office (EASO) already has the function of organising assistance for particularly needy member states in order to speed up decision-making processes.

To cope with the data problems described above, we base our quantification on an anchor provided by Thielemann et al. (2010): a standardised average measure of unit costs across EU countries for the year 2007 per asylum application.[51] We then inflate this amount in proportion to the growth in nominal GDP between 2007 and 2015 (resulting in an EU average of €16,570 per asylum application).[52] In the following, we assume that this amount also indicates the (GDP-adjusted) costs of asylum services at a truly unified EU standard (assuming a convergence to the mean of current EU standards). On that basis, we are able to provide country-specific unit costs that, by design, only mirror differences in GDP (see Table 4 in the Appendix). The assumption is that country costs vary along with average income (which approximates differences in the costs of living, including health-related service provision, accommodation and transfer needs).

To relate actual costs to potential cost savings, we compute the emerging costs per EU country and in total, which are based on estimates of the uniform service unit costs that would arise in 2015 (given our projection of refugees for that year).[53, 54] The resulting total budgetary estimate is €30.3 billion, or 21.5 per cent of the current 2015 EU budget, which is €141.2 billion in total. According to our projections, this amount would suffice to finance the processes of all asylum-seekers who apply in 2015. If we assume that the flow of new asylum-seekers will remain at that constant level, this amount can be viewed as the necessary annual budget for handling asylum-seekers.

Results

No reliable quantifications for potential economies of scale exist or could be derived given the available data. However, we can indicate potential magnitudes using assumption-based scenarios. For that purpose, we distinguish between the different categories in asylum-related costs. European service

51 National unit costs are adjusted in proportion to a country's per capita GDP to the EU average (population weighted). For more details, see Thielemann et al. (2010), Appendix 4.

52 In Germany, the federal government has recently committed itself to reimbursing the 16 federal states for each applicant with €670 per month, which amounts to annual unit costs of €8,040 (assuming the procedure lasts 12 months). No information was given on whether this refund is meant to be a partial or full compensation for all costs incurred. Furthermore, this refund is meant to help the states perform reception services, whereas it is still the central government's responsibility to execute and fund the asylum procedure.

53 For details on the costs per country, see Table 3 in the Appendix.

54 We base our projections of the number of asylum-seekers in Europe for 2015 on figures provided by Eurostat. The data displays all registered asylum-seekers who made a claim for asylum in the respective country and month. The number of asylum claims is reported until June 2015 for all EU-28 countries, while the numbers for the following two months were not completely available at the time of writing. For this reason, we have supplied missing values for August and September by using the average growth rate of asylum claims between January and June. We extrapolate the remaining months of the year by applying the average growth rates between January and September, and project the total number of asylum applicants per country for the year 2015. Our projections certainly show a lower bound of the number of asylum claims, as we have only taken into account the official number of asylum applications. Since there is a time lag between the date when a refugee enters a country and the date when he or she submits an official claim for asylum (this can currently take more than three months in some countries), we note that we have not fully tracked the massive inflow of refugees who arrived in August and September and will only be registered in the following months. In order to avoid any largely speculative guesses, we base our calculations on the projection as described. The massive increase in the number of asylum-seekers in Hungary is mainly due to the fact that we base our projections on a period when Hungary's borders were open and the government was registering all incoming persons. The closing of Hungary's borders in the beginning of September 2015 reduced the pressure on the country and passed it on, so to speak, to other European countries, such as Austria and Germany. Thus, it is likely that our numbers are either underestimates, as in the case of Germany, or overestimates, as with Hungary.

provision, for example, is likely to have a larger cost-saving potential when it comes to assessing applications than providing healthcare services to applicants. Thus, economies of specialisation could be larger for the former and would be smaller for the latter.[55]

Table 1 provides an estimate of the cost structure of asylum expenses derived from a country survey (Thielemann et al. 2010). On that basis, we calculate a 'conservative' and an 'optimistic' scenario with respect to the cost savings from European processing. For example, we assume that, in a scenario with centralised competences, housing could be provided to refugees at a cost advantage of 5 per cent for the moderate scenario (and 30 per cent for the optimistic scenario) compared to national provision. An advocate of the optimistic scenario for housing would point to the shorter duration of the asylum process, which would consequentially reduce the need to finance accommodation over the course of the asylum procedure. In line with the above reasoning, we assume that economies of scale have a larger potential for the asylum process as such than for the costs of reception (e.g. for providing housing, healthcare and material reception items, such as clothing and food). We assume that the largest savings from European service provision would come in the areas of custody and travel expenses, which are strongly influenced by the Dublin rules under the status quo.

The scenario-based calculus indicates cost savings ranging between 16 and 40 per cent as a consequence of European service provision. In absolute terms, based on the calculations for total costs for 2015 (see Table 3 in the Appendix), this would amount to savings of between €4.8 billion and €12 billion.

Table 1:

Scenarios on economies of scale from EU service provision in asylum policies

	Share of cost item (in per cent)	Assumed cost advantage (in per cent)	Resulting costs, as a percentage of current total costs		
		Conservative	Optimistic	Conservative	Optimistic
	(1)	(2)	(3)	(4) = (1) × (2)	(5) = (1) × (3)
Housing	42.7	95	70	40.5	29.9
Healthcare	4.6	95	70	4.4	3.2
Material reception conditions	11.5	95	70	10.9	8.0
Translation	1.0	80	60	0.8	0.6
Application assessment	13.8	80	60	11.0	8.3
Legal aid	3.9	80	60	3.1	2.3
Legal appeals	1.2	85	65	1.0	0.8
Taking and storing fingerprints	0.2	100	95	0.2	0.2
Custody	15.6	50	20	7.8	3.1
Travel	2.2	50	20	1.1	0.4
Other costs	3.5	100	100	3.5	3.5
	100.0			**84.3**	**60.3**

Sources: Column (1): Thielemann et al. (2010): 90; columns (2) and (3): scenario assumptions; columns (4) and (5): own calculations. Therefore, we assign a score of 4 to account for the potential benefits of a European solution as is given in our analyses while acknowledging that the computation of economies of scales is difficult to do.

55 For a similar approach to the potential cost savings resulting from EU service provision, see Heinemann et al. (2013).

PREFERENCE HETEROGENEITY

Data source

For determining preference heterogeneity of EU citizens regarding asylum, we use two questions from the Eurobarometer questionnaire No. 82 (Autumn 2014). To be more specific, we focus on questions QA11.1 ("Please tell me whether each of the following statements evokes a positive or a negative feeling for you – Immigration of people from other EU Member States") and QA11.2 ("Please tell me whether each of the following statements evokes a positive or a negative feeling for you – Immigration of people from outside the EU").

Answers could be given in a scale with four levels ('very positive', 'positive', 'negative' and 'very negative'). In addition, participants had the opportunity to suppress their opinion.

Figure 5:

Preferences for migration from the EU (in per cent)

Notes: The X-axis denotes the share of answers with 'very positive' and 'fairly positive' in a country. The answer choice 'very positive' is merged with 'fairly positive', and 'fairly negative' is merged with 'very negative'. Respondents with no opinion about this question are not considered. If we use the country population size as weights, the standard deviation equals 0.114, resulting in a heterogeneity value of 22.9 per cent.

Methodology

We reduce the scale from four to two levels, meaning we merge the answer level of 'very positive' with 'fairly positive' and that of 'fairly negative' with 'very negative'. We also exclude all participants who suppressed their opinion, that is, we adjust our sample such that the shares of answers in our two levels add up to 100 per cent. This leads to a reduction in the country-sample size of up to 4 per cent (in Spain and Latvia). The overall reduction on the EU level of 2 per cent is of minor importance and can therefore be neglected without materially affecting our results.

The results are calculated in a two-step procedure. First, we calculate the percentage of answers with 'very positive' and 'fairly positive' for each country. Then, we aggregate the results at the country-level and calculate measures of dispersion on the EU level (see Figure 5 and Figure 6).

Results

Since both distributions show that preferences are pretty homogenous across countries (with heterogeneity indicators between 25 and 30 per cent), we presume that this does not point to any large preference costs from centralising the policy on the European level.[56] Hence, following our methodology, we assign a score of 5 to this indicator.

The finding of rather homogeneous views on immigration may come as a surprise given the very different policies applied in the current refugee crisis. However, this current behaviour is a logical outcome of incentives for free riding rather than a reflection of highly diverse voter preferences. Even with rather homogeneous voter preferences across countries, it is a rational reaction of one country to free ride on the costs imposed on other countries.

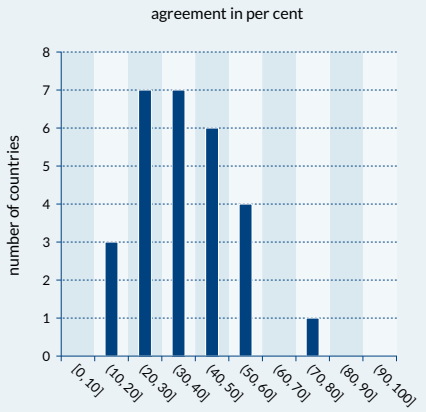
Figure 6:

Preferences for migration from outside the EU (in per cent)

Migration from outside the EU

Eurobarometer question EB82.3 QA11.2: "Please tell me whether each of the following statements evokes a positive or a negative feeling for you – Immigration of people from outside the EU"

Mean (μ)	0.365
Median	0.340
Std. Dev. (σ)	**0.139**
Heterogeneity	**27.8 %**



Notes: The X-axis denotes the share of answers with 'very positive' and 'fairly positive' in a country. The answer choice 'very positive' is merged with 'fairly positive', and 'fairly negative' is merged with 'very negative'. Respondents with no opinion about this question are not considered. If we use the country population size as weights, the standard deviation equals 0.118, resulting in a heterogeneity value of 23.7 per cent.

INTERNAL MARKET CONSISTENCY

The internal market as introduced on 1 January 1993 guarantees the free movement of persons, goods, services and capital. In addition, the establishment of the Schengen Area in 1995 guarantees that all Europeans can move freely within the Schengen Area without being subject to any border or pass controls – in other words, that all internal borders can be crossed without any obstacle. However, asylum-seekers and refugees from outside the EU do not enjoy the same rights as European citizens under the Schengen regulation. Instead, they are obliged to stay in the country where they were first registered and issued their asylum application. According to the Dublin regulations, the asylum application needs to be assessed in the first member state in which

56 In the Appendix, we check whether attitudes towards migration are stable over time and across countries.

a refugee entered the European Union (see Dublin regulations II and III).[57]

At present, no country has an incentive to stick to the Dublin rules and thereby allow refugees to stay in the country, but all have an incentive to send them on to other countries. If the number of refugees and asylum-seekers increases over time and countries refuse to register them, members of the Schengen Area may be tempted to reintroduce border checks and passport controls or even to close their borders.[58] Doing so would not only hold refugees back from crossing borders, but would also harm the free movement of European citizens as well as the free exchange of goods.

A recent study by the Bertelsmann Stiftung (Petersen, Böhmer and Weisser 2014) tried to compute the gains from the single market and increased integration over the last 20 years. It finds that almost all countries have benefited from the opening of the internal borders as a result of rising economic prosperity and per capita income. Limitations on the freedoms of the internal market, however, would probably dampen the positive effects they have brought about in recent years. Thus, the uncoordinated asylum and refugee policy of EU member states, as it is applied under the recent legal rules, could potentially harm the internal market. One option for trying to avert such damage could be a coordinated and harmonised policy that is binding for all member states.

Given the importance of the free movement of goods and people within the Schengen Area, we assign the maximum number of points (5) to this policy field.

COMPETITION

Following the theory of fiscal federalism, competition can result in either positive or negative effects. Yardstick competition in the field of asylum policy among member states can encourage best practice solutions (Schamman 2015). Likewise, in the spirit of Oates (1999), the European Union can be thought of as an innovative laboratory in which member states continuously improve the asylum procedure. Best practice solutions of one member state may be recognised, adopted and further improved by others. Non-optimal solutions will be replaced by more efficient ones, thereby leading to an increase in overall welfare. In the course of the asylum procedure, there are many stages at which the processes can be enhanced by experimenting with different solutions. For instance, a member state may improve its asylum application procedure by enhancing efficiency while maintaining quality. In addition, different local units taking care of refugees may try to experiment with different kinds of accommodation (central vs. decentral) or the various ways of organising healthcare, as can be observed among Germany's federal states (see Schamman 2015).[59]

57 For more information, see the most recent and the preceding regulation issued by the European Council: Council Regulation (EC) No 343/2003 of 18 February 2003, Regulation (EU) No 604/2013 of the European Parliament and of the Council of 26 June 2013.

58 The introduction of border controls was widely discussed among European countries in 2015 (e.g. in Austria, Germany and Hungary). In late summer 2015, many countries refused to register refugees under the Dublin Regulation and instead let refugees pass through their country and on to Central Europe (an example is Hungary in September 2015).

59 In Germany, some federal states (the city-states of Hamburg and Bremen) decided to insure refugees and asylum-seekers in the local insurance funds (Krankenkassen) right from the start. They issued insurance

In general, a functioning yardstick competition requires mechanisms for sanctions and rewards that need to be available for the affected persons. The mechanisms are standard voting (i.e. replacing politicians who do not act according to the will of the majority of voters) or 'voting by feet' (i.e. leaving the jurisdiction and moving to another jurisdiction with a better policy match). In contrast, refugees and asylum-seekers are not allowed either to choose their location freely or participate in elections (ibid.). Without sanctions, however, there is no incentive for member states to improve the quality of the treatment of refugees and asylum-seekers. If anything, this creates an incentive to minimise inputs and reduce the quality of output, thereby triggering a 'race to the bottom' among members of a federal union. Insufficiently binding minimum standards for member states regarding how to treat refugees might exacerbate this situation (Czaika 2005).

Recent evidence pointing to the existence of such a race to the bottom, as well as to discrepancies in terms of the quality of treatment provided to refugees and asylum-seekers, can be found in Greece, for example. Although Germany would theoretically be allowed to send back to Greece all refugees originally registered there, it refuses to do so because living conditions in the camps in Greece are classified as not complying with human rights (Schamman 2015). Likewise, already back in 2011, the European Court of Human Rights (ECtHR) decided that Belgium had no right to send an Afghan refugee back to Greece because the treatment there violated minimum standards and human rights (see European Court of Human Rights 2011).

The race to the bottom regarding the quality of treatment is one concern when considering competition in the policy field of asylum and refugees. But common standards regarding the accommodation and treatment of refugees and asylum-seekers are not the only pitfalls, as there is also the issue of divergent classification standards. Under the current system, every EU member state can define its own list of 'safe countries of origin' and calibrate its designation of 'safe' based loosely on criteria set by the EU (Lambert 2012). Accordingly, asylum-seekers from countries designated as safe have poorer chances of being officially recognised and accepted – and may therefore be sent home immediately (see, e.g., Hunt 2014 for a comprehensive overview). Given this situation, rather than positive competition for the best solutions, states may be tempted to enter into a race to the bottom by compiling longer lists of 'safe' countries and thereby reducing the number of potentially successful asylum applications.

In general, the hosting of asylum-seekers and refugees is outsourced to some members states (countries with external borders in the south and the east or some attractive countries, such as Germany and Sweden), while others refuse to accommodate additional refugees. Thus, instead of having fair burden-sharing among European countries, some kind of a race to the bottom seems to be happening (Trauner 2015). This can be attributed to a missing mechanism for equitably distributing persons among member states.[60]

Other sources of harmful heterogeneity are the national asylum procedures. For instance, the admission rates for Syrian refugees varied between 0 and 100

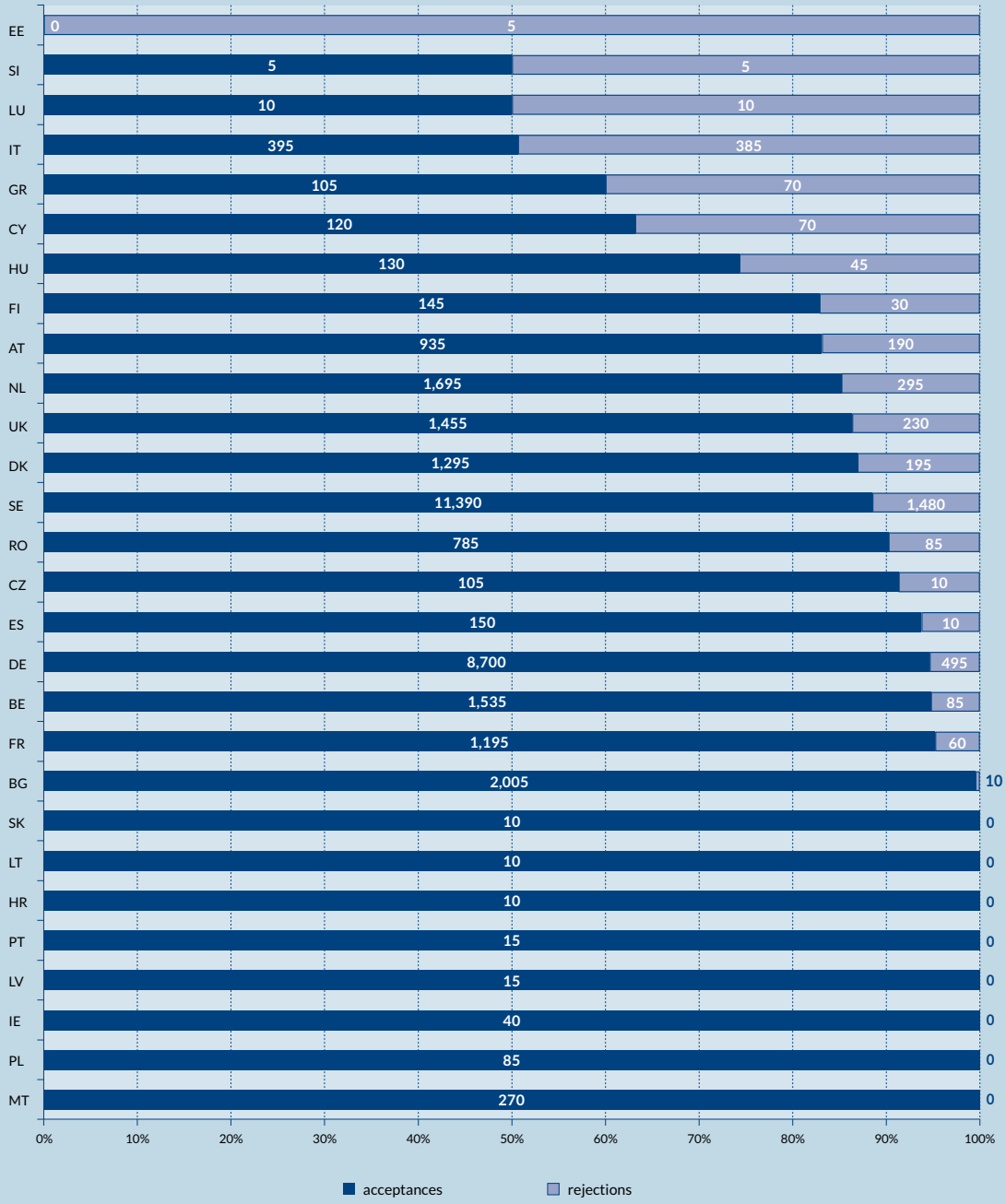
cards that can be used to visit doctors and receive basic treatment, and any costs are reimbursed by the state government. In most other states, however, it is still common that refugees and asylum-seekers need to go the authorities and obtain a certificate that enables them to see a doctor if they are ill. Only urgent illnesses are subject to treatment (e.g. pain management), but treatment is not provided for chronic illnesses. Since 2011, everyone who has been in Germany for at least one year has received an insurance card (see, e.g., Rasche 2015).

60 A comprehensive discussion of the failure of the Common European Asylum Policy and the Dublin Regulation can be found in Guild et al. (2015).

per cent across member states in 2013 (see Figure 7), which lends support to the hypothesis that chances for admission differ across member states (de Haan and Toshkov 2013; Trauner 2015). A comparable finding of varying admission rates with similar refugees was found in the Swiss context, where part of the variation could be attributed to the different treatments found in the individual cantons (Holzer, Schneider and Widmer 2000).

Figure 7:

Admission rates of Syrian refugees across Europe in 2013 (in per cent)



Notes: The X-axis denotes the share of positive decisions, which is represented for each country by dark-grey bars; the light-grey bars represent the rejections. The bold numbers are the absolute number of refugees with positive or negative decisions. The sum of both bold numbers is the sum of asylum applicants in the corresponding country in 2013. Source: Eurostat (own calculations).

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To let positive effects from competition unfold, institutional settings must be adapted to implement mechanisms for sanctions and rewards. A possible solution would be to uncouple the asylum procedure from hosting and integrating refugees, as is done in the Canadian immigration system, in which immigration control policy is centralised and immigration integration policy is the concern of the provinces (Boushey and Luedtke 2006; Hatton 2015; Schuck 1997). Despite limited comparability of refugees and migrants, such a division of competences between the EU and its member states could eliminate mechanisms that encourage a race to the bottom by ensuring harmonised minimum standards in the sensitive area of refugee admission (e.g. fair division among member states, accommodation, etc.). Positive effects from yardstick competition can improve the situation of recognised refugees on the local level. For enabling positive effects from yardstick competition, a sensitive part of asylum policy must be shifted to the European level, and binding minimum standards for the member states must be defined and enforced by the supranational level. Competition can be significantly improved by allowing 'more Europe', although a complete reallocation of competences would leave out gains from yardstick competition. Hence, we assign a score of 4 to this indicator.

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APPENDIX

Spillover effects

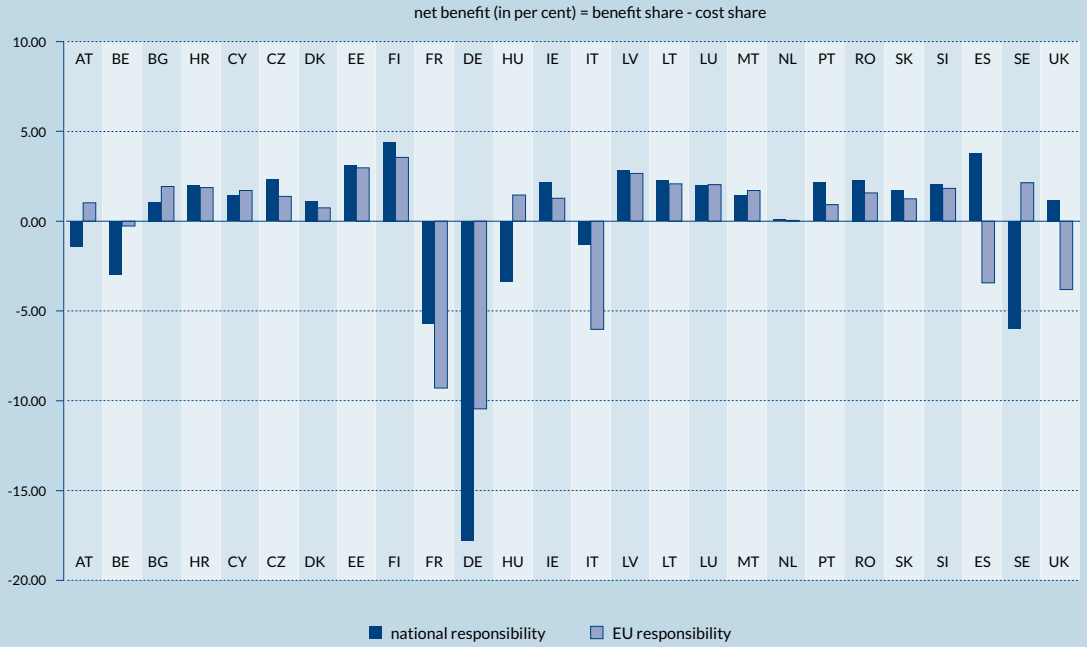
Table 2:

Computed indices for asylum and refugee policy

Country	ISO	Share of Refugees	CI 1	CI 2	Responsibility Share Nat. (CI 1)	Responsibility Share Nat. (CI 2)	Responsibility Share EU Budget (CI 1)	Responsibility Share EU COM (CI 1)	Responsibility Share EU Budget (CI 2)	Responsibility Share EU COM (CI 2)
Austria	AT	4.88	2.43	3.47	-2.45	-1.41	-0.01	0.16	1.03	1.20
Belgium	BE	5.91	2.50	2.89	-3.41	-3.02	-0.66	0.05	-0.27	0.44
Bulgaria	BG	1.21	1.22	2.29	0.01	1.09	0.88	0.16	1.95	1.23
Croatia	HR	0.07	0.81	2.08	0.74	2.01	0.63	-1.33	1.90	-0.06
Cyprus	CY	0.43	0.42	1.87	-0.01	1.44	0.28	-0.21	1.73	1.24
Czech Rep.	CZ	0.2	1.95	2.56	1.75	2.36	0.79	-0.32	1.40	0.29
Denmark	DK	1.71	1.73	2.85	0.02	1.14	-0.36	0.04	0.76	1.16
Estonia	EE	0.02	0.55	3.16	0.52	3.14	0.39	-4.34	3.01	-1.72
Finland	FI	0.77	2.09	5.23	1.32	4.45	0.46	0.55	3.59	3.68
France	FR	13.96	13.13	8.19	-0.83	-5.77	-4.46	1.40	-9.39	-3.54
Germany	DE	28.41	16.01	10.45	-12.41	-17.97	-5.00	0.79	-10.56	-4.77
Greece	EL	2.22	1.91		-0.31		0.46	0.25		
Hungary	HU	5.61	1.61	2.22	-4.00	-3.39	0.87	0.19	1.48	0.80
Ireland	IE	0.34	1.27	2.51	0.94	2.17	0.05	-0.15	1.29	1.09
Italy	IT	7.91	10.55	6.58	2.64	-1.34	-2.11	0.66	-6.09	-3.31
Latvia	LV	0.06	0.59	2.89	0.53	2.84	0.39	-1.65	2.69	0.65
Lithuania	LT	0.11	0.71	2.39	0.60	2.28	0.43	-0.76	2.11	0.92
Luxembourg	LU	0.32	0.79	2.32	0.46	1.99	0.54	-0.30	2.07	1.23
Malta	MT	0.36	0.56	1.80	0.20	1.44	0.50	-0.28	1.74	0.96
Netherlands	NL	3.76	3.85	3.87	0.09	0.11	0.04	0.05	0.05	0.06
Poland	PL	2.15	5.20		3.04		2.12	0.65		
Portugal	PT	0.09	1.78	2.28	1.70	2.19	0.43	-0.93	0.93	-0.44
Romania	RO	0.37	2.98	2.69	2.61	2.32	1.88	0.24	1.59	-0.04
Slovakia	SK	0.11	0.98	1.83	0.87	1.72	0.41	-0.80	1.26	0.05
Slovenia	SI	0.07	0.68	2.14	0.61	2.07	0.39	-1.39	1.85	0.07
Spain	ES	1.06	8.13	4.88	7.07	3.81	-0.21	1.02	-3.47	-2.24
Sweden	SE	11.27	3.29	5.19	-7.97	-6.08	0.26	0.90	2.16	2.80
UK	UK	6.62	11.96	7.82	5.34	1.20	0.29	0.52	-3.85	-3.62

Figure 8:

Net benefit of asylum policies using the EU budget and CI 2 (in per cent)



Sources: Eurostat, World Bank, UNHCR

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Figure 9:

Net benefit of asylum policies using the EU Commission's suggestion and CI 2 (in per cent)

Sources: Eurostat, World Bank, UNHCR

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Economies of scale

Table 3:

Cost estimates for EU financing of 2015 asylum applications

Country	Asylum applications	Annual costs per case (in €)	EU financing (in billions of €) EU 100 per cent	EU financing (in billions of €) EU 50 per cent
Germany	514,240	21,163	10.8828	5.4414
Sweden	139,249	25,814	3.5946	1.7973
Hungary	509,677	6,628	3.3781	1.6890
Austria	124,984	22,674	2.8339	1.4170
Italy	121,644	15,581	1.8954	0.9477
France	88,979	19,128	1.7020	0.8510
Netherlands	61,468	22,791	1.4009	0.7004
Belgium	64,248	21,337	1.3709	0.6854
UK	59,670	22,907	1.3669	0.6834
Finland	21,278	21,977	0.4676	0.2338
Denmark	14,956	27,151	0.4061	0.2030
Spain	21,872	13,663	0.2988	0.1494
Greece	18,193	9,419	0.1714	0.0857
Luxembourg	2,357	49,767	0.1173	0.0587
Poland	17,061	6,686	0.1141	0.0570
Ireland	4,382	24,535	0.1075	0.0538
Bulgaria	20,919	3,430	0.0718	0.0359
Cyprus	2,306	11,744	0.0271	0.0135
Malta	2,373	11,337	0.0269	0.0135
Czech Rep.	1,726	8,953	0.0155	0.0077
Portugal	1,196	10,000	0.0120	0.0060
Romania	1,656	4,593	0.0076	0.0038
Estonia	417	9,012	0.0038	0.0019
Latvia	489	7,326	0.0036	0.0018
Lithuania	464	7,558	0.0035	0.0018
Slovenia	288	10,756	0.0031	0.0015
Slovakia	236	8,314	0.0020	0.0010
Croatia	194	5,988	0.0012	0.0006
Total	**1,816,522**		**30.2859**	**15.1430**

Source: Own calculations (as explained in text) based on cost data from Thielemann et al. (2010); for the calculation of the number of asylum applicants, see footnote 18.

Table 4:

Data on annual costs per asylum application (in €)

Country	Source					
	TBW, 2007	Own calculation, 2015, inflated with nominal GDP growth 2007–2015, own calculation	Own calculation, 2015, standardised costs of uniform provision, accounting for differences in per capita GDP, own calculation		U, 2011: Whole procedure, including return and reception	U, 2011: Reception only
Belgium	24,875	28,090	21,337	"Country B"		6,743
Bulgaria	375	527	3,430	"Country C"	26,874	
Czech Rep.	375	431	8,953	"Country E"	1,477	
Denmark	26,250	28,642	27,151	"Country F"	30,755	23,000
Germany	53,125	63,194	21,163	"Country G"	24,066	18,381
Estonia	20,625	26,420	9,012			
Ireland	78,125	73,591	24,535			
Greece	-	-	9,419			
Spain	5,000	4,916	13,663			
France	9,750	10,552	19,128			
Italy	1,250	1,223	15,581			
Cyprus	2,500	2,225	11,744			
Latvia	2,375	2,905	7,326			
Lithuania	-	-	7,558			
Luxembourg	39,750	44,478	49,767			
Hungary	125	141	6,628			
Malta	10,000	13,732	11,337			
Netherlands	70,000	73,369	22,791			
Austria	14,375	16,489	22,674			
Poland	1,250	1,753	6,686			
Portugal	1,500	1,554	10,000			
Romania	1,500	1,975	4,593			
Slovenia	1,875	1,994	10,756			
Slovak Rep.	1,875	2,578	8,314			
Finland	25,000	26,771	21,977			
Sweden	11,250	12,808	25,814			
UK	33,750	37,670	22,907			
Average	17,475	19,304				
Standardised	15,000	16,570				

Sources: TBW: Thielemann et al. (2010): 85 (Fig. 22). Note that there is a degree of imprecision with the data because it was presented in a bar chart. A request to the authors for more precise data was unsuccessful.
U: Urth et al. (2013), page 92. They only provide anonymised country information.

XI. *Case Study 3:*

Corporate taxation

Current and future challenges

At the end of 2014, it was reported that Luxembourg, a member state of the European Union, had been acting as a tax haven for many multinational companies (e.g. IKEA and Fiat) to reduce their tax liabilities. This undertaking is said to violate European law and became known as the LuxLeaks affair.[61] In a nutshell, Luxembourg offered preferential tax treatments to these companies to guarantee low taxes on profits which were channelled through the country. In some cases, companies ended up with effective tax rates on their profits of less than 1 per cent (Wayne et al. 2014).

In summer 2016, the European Commission ruled that Ireland's tax provision for Apple is forbidden state aid and sued Ireland for €13 billion in undue tax benefits. Beginning in 2013, Apple's declared profits were taxed at less than 1 per cent; in 2014, its profit was taxed at 0.005 per cent (European Commission 2016b).

These recent cases of preferential tax treatment for some companies provided by EU member states have shed light on a relevant topic which is attracting more and more political attention (see, e.g., the OECD's BEPS initiative[62]). These issues have emerged as a consequence of the increased globalisation of business activities, which is leading to an increase in the number of companies active across borders, also known as multinational enterprises (MNEs). The rise of MNEs has been accompanied by significantly more degrees of freedom for these companies to avoid taxes on their income due to loopholes and constructional flaws in international tax laws. Available strategies to reduce tax burdens include shifting profits from a high-tax to a low-tax country by manipulating prices on intra-firm transactions (transfer prices), by exploiting mismatches between national corporate tax systems (e.g. by using loans one jurisdiction recognises as equity and another as debt),[63] or by strategically locating intangible assets (i.e. trademarks and patents).[64]

In particular, multinational companies heavily rely on intangible assets which are highly mobile and therefore relatively easy to locate at affiliates in low-tax countries (Karkinsky and Riedel 2012). Since intangible assets are non-divisible, their cost is split up among affiliates with the help of royalty payments. In the best of all worlds, each affiliate's royalty payments for using the intangible asset is its benefit share. In reality, however, this true benefit share is difficult to observe (even for the company), as the underlying intangible asset is unique by definition (OECD 2015a). However, if an affiliate makes royalty payments that are too high (low), profit can be shifted out of (into) the country the affiliate resides in.

61 Technically, Luxembourg's advance tax rulings are considered to be illegal state aid (FAZ 2015). In the case of Fiat, the European Commission already decided that the preferential tax treatment is selective illegal state aid (European Commission 2015).

62 In 2013, the OECD launched the BEPS (base erosion and profit shifting) initiative to counteract tax practices considered to be harmful. In 2015, the OECD announced concrete BEPS action plans (OECD 2015b).

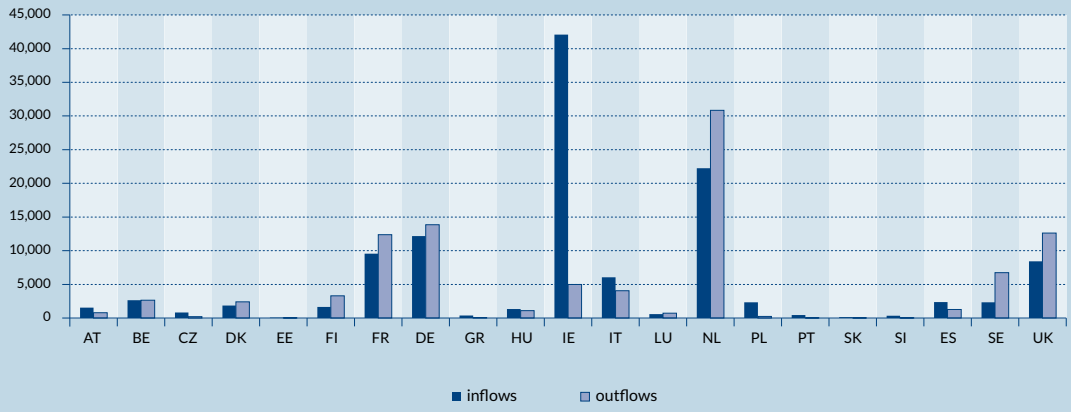
63 Using these cross-border constructions, known as 'hybrid mismatch arrangements', firms exploit loopholes in the interaction of national tax laws to reduce their tax burden (for an overview, see OECD 2015c).

64 Such actions are not necessarily illegal, but they often are against the intention of tax laws.

Figure 1 shows the total sum of inflows and outflows of royalty payments for various EU member states. Differences in inflows and outflows may be explained by different levels of innovation and research and development (R&D) in member states. But the situation of some countries is peculiar. Strikingly, Ireland receives by far the largest share of all royalty payments, which is nearly four times the size of Germany's inflows. The second-biggest receiver is the Netherlands. If one agrees that it is unlikely that these rather small countries are the biggest exporters of patents, there must be another explanation. One possible explanation is that especially Ireland and the Netherlands have corporate tax codes with special regulations for intellectual property which make it more beneficial to locate intellectual property and the resulting payments in these countries. Both countries are regarded as low-tax countries which attract foreign investments (see, e.g., the example of the 'Double Irish with a Dutch Sandwich'[65]) (IMF 2013). This assumption is in line with studies which find evidence of the tax-sensitivity of the decision to locate intellectual property (Dischinger and Riedel 2011; Griffith, Miller and O'Connell 2014; Karkinsky and Riedel 2012) and royalty flows (Dudar, Spengel and Voget 2015).

Figure 1:

Royalty flows in Europe



Source: OECD (2015e), own illustration. Note: Figures represent royalty and license payments in millions of US dollars for the year 2012. The red bars show the inflow of payments from other countries (worldwide) to the respective country. The blue bars represent the level of royalty payments flowing out of the country.

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Especially in the context of the European Union, where economic integration is pronounced and several measures to strengthen intra-European business activities (e.g. directives on cross-border activities) have been implemented, international corporate income taxation is of great importance.[66] But economic integration is incomplete with respect to the tax dimension. For instance, member states have still not agreed on harmonising corporate taxes and their regulations on the determinations of the corporate income tax base

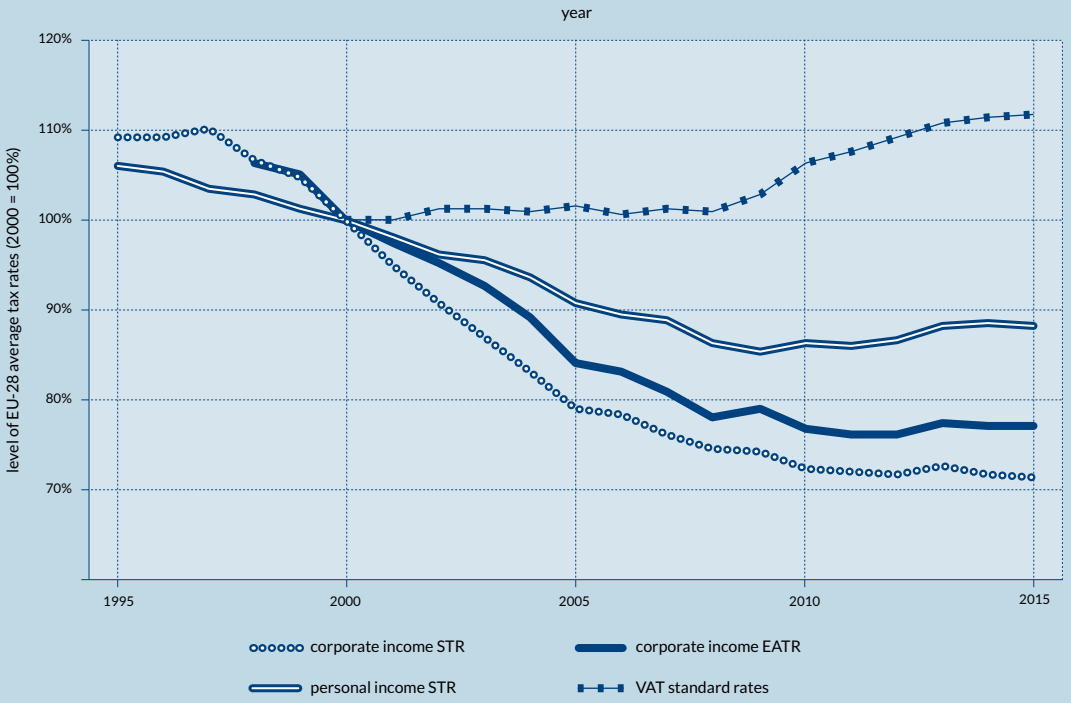
65 The 'Double Irish with a Dutch Sandwich' refers to a tax avoidance strategy based on royalty flows from intellectual property which exploits loopholes in Irish tax law. The strategy involves tunnelling royalty flows through the Netherlands.

66 For an overview of the history of corporate taxation in the EU, see European Commission (2001).

(Wasserfallen 2013). Instead, member states participate in fiscal competition and undercut each other in setting corporate tax rates. As can be seen in Figure 2, corporate income tax rates have steadily declined in recent years, especially when compared to other taxes (e.g. consumption or personal income taxes). The decline in the statutory corporate tax rate was partly compensated for by a broadening of the tax base ('tax rate cut cum base broadening'; see, e.g., Finke et al. (2010)), which is reflected in the relatively smaller decline in the effective average tax rate on corporate income.[67] Despite the decreasing trend in corporate tax rates, there is still considerable heterogeneity in corporate tax rates across Europe, as statutory tax rates range between 10 and 38 per cent (Eurostat 2014).[68] Nevertheless, corporate tax revenues are still important for EU member states to finance their governmental tasks, as they make up between 10 and 20 per cent of all tax revenues.

Figure 2:

Taxation trends in Europe over time



Source: De Groen (2015), own illustration. Based on data from the European Commission, DG Tax. STR stands for 'statutory tax rate'. EATR stands for 'effective average tax rate', which is the STR adjusted for deductions and allowances. Base year (=100 per cent) is 2000.

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Currently, international corporate income taxation is often regulated by double tax treaties involving two or more countries. But this does not solve the overall problem of diverging tax systems and regulations, which makes it costly both for companies to comply with tax laws and for member states to enforce them. The European Commission has implemented several changes in the regulations, but the fundamental flaws still exist (De Groen 2015). In

67 Unlike the statutory tax rate, the effective tax rate takes into account exemptions, deductions and allowances, which reduce taxable income and therefore tax liability.

68 Top statutory tax rates on corporate income in 2014.

the context of international taxation, how to tax multinational enterprises and how to assign profits and tax revenues to countries are matters of much debate (see, e.g., Freedman and Macdonald 2008; Kußmaul, Niehren and Pfeifer 2010; Mayr 2008). The most basic question is whether to tax profits according to the source or residence principle. But the definition of source and residence is even more difficult in large and globalised networks like those present in many multinational enterprises (Devereux and Vella 2014).

Both the OECD and the European Union are trying to solve problems of international corporate taxation by introducing several measures. In 2013, the OECD set up a programme aiming at fighting tax base erosion and profit shifting (BEPS).[69] And, in 2001, the European Commission launched its first initiative to harmonise corporate taxation of multinational companies (common consolidated corporate tax base, CCCTB) (Kolassa 2016). However, since the CCCTB initiative did not result in any policy changes, it was relaunched in fall 2016 (European Commission 2016a).[70]

Status quo

The main competence for direct taxation, and thus corporate taxation, is currently located at the level of the member states. They have the primary right to set tax regulations, tax rates and definitions of the tax base. In contrast, the EU's competence is limited to issuing regulations or directives on general matters which restrict member states in their right to act in this policy field. This is especially true for tax matters which directly influence the establishment or functioning of the internal market (Kolassa 2016).

To date, the EU has implemented three directives regulating economic activities in two or more member states: the Mergers Directive, the Interest and Royalties Directive, and the Parent-Subsidiary Directive (CEU 1990, 2003, 2011). The Mergers Directive was introduced to remove financial obstacles in cross-border activities, while the Interest and Royalties Directive is supposed to eliminate problems with withholding taxes on cross-border royalties and interest payments within corporate groups. The Parent-Subsidiary Directive updated the rules made in the Merges Directive from 1990.

Due to the location of corporate taxation competence at the member-state level, multinational companies are subject to corporate taxation by all tax authorities of countries in which they operate affiliates. Therefore, national profits are calculated by treating each entity in each member state as an independent entity which is taxed according to national tax law (Devereux and Fuest 2010). The disentanglement of a multinational company's profits is conducted by separate accounting principles. Specifically, cross-border transactions within the multinational company are captured by means of transfer pricing. With transfer pricing, this kind of transactions is booked in the same way as a transaction with a third-party customer or supplier, meaning the so-called arm's length principle (ALP) is applied (Haskic 2009).

69 For more information, see the project homepage of the OECD: http://www.oecd.org/ctp/beps.htm.

70 In 2016, the European Commission relaunched CCCTB, but in a two-step procedure (European Commission 2016a). In the first step, the focus is on the harmonisation of corporate tax base definitions ('common corporate tax base', CCTB); in the second step, consolidation is addressed.

Counterfactual situation

As our counterfactual, we assume a system with a harmonised European definition of corporate profits and an apportionment of corporate profits among member states by using a formula. This formula relies on indicators which should relate profits of companies to real economic activity in member states. With this counterfactual, the member states would retain the competence of setting corporate tax rates but use a uniform tax base definition. Companies would have to file their tax return only once, resulting in a 'one-stop-shop' principle. This counterfactual system would shut down most profit-shifting channels and establish a unified corporate tax system for the internal market.

Our analysed counterfactual situation follows principles of the concept of the common consolidated corporate tax base (CCCTB) proposed by the European Commission (2011).

Overview

Score	Description
	Spillover effects
4	We calculate net benefits under the status quo and the hypothetical counterfactual situation of unified corporate taxation by calculating the benefit shares and contribution shares of member states. Burden shares are based on efforts to provide infrastructure for companies, benefit shares on tax revenue shares. In the counterfactual situation, net benefits are more equally distributed, implying a better alignment of taxable profits and efforts made by member states. Our indicator of free riding is reduced by 31 per cent in the case of a European coordination of corporate taxation.
	Economies of scale
4	We compare a European unified corporate tax system and the status quo with regard to the implications for companies and fiscal authorities. By analysing tax compliance costs for companies, we find significantly higher compliance costs under the status quo resulting from fragmented national tax laws. By analysing economies of scale for fiscal authorities, we do not find efficiency gains when centralising fiscal administration of corporate taxation.
	Preference heterogeneity
4	For determining preference heterogeneity, we rely on Eurobarometer 83 (Spring 2015) and assess question QC3.4: "Thinking about reforming global financial markets, please tell me whether you are in favour [of] or opposed to the following measures to be taken by the EU." One of the asked measures was 'Tougher rules on tax avoidance and tax havens'. The standard deviation of answers is 0.038, resulting in a heterogeneity indicator of 7.5 per cent. However, the importance of corporate income taxes in national tax systems varies considerably. On the whole, we find rather homogeneous preferences.
	Internal market consistency
5	We analyse decentralised corporate taxation in the context of the internal market. Heterogeneous national corporate tax systems lead to a different treatment of domestically and internationally organised companies. This inherently conflicts with the principles of the internal market, in particular the freedom of establishment and free movement of capital. In addition, companies participating in the internal market face different tax burdens depending on the country of residence.
	Competition
4	Fiscal competition between member states takes place in various ways. By analysing the development of corporate taxation in the EU, we find a decline in tax rates on corporate profits. However, this decline was compensated for by a broadening of corporate tax bases, which can be interpreted as a rechannelling of fiscal competition. We expect that by centralising corporate taxation, fiscal competition would also not vanish, but be reframed in a fairer setting fostering efficiency for both member states and companies.

Further information

SPILLOVER EFFECTS

Methodology and data source

We detect spillover effects by comparing the current situation of a national competence for corporate taxation with the counterfactual of an EU competence. We compute benefit and burden shares as well as the net benefit, which is defined as the difference between benefit share and burden share (for details, see Table 1 in the Appendix). Then, we compare net benefits under the status quo and in the counterfactual situation to assess the change in spillover effects among member states.

National burden shares are calculated as the efforts member states make to provide infrastructure for firms that is either tangible (e.g. roads) or intangible (e.g. legal framework). They approximate the contribution of a member state to fostering corporate profits generated by companies. We measure member states' efforts for providing tangible infrastructure as public investment spending, while we determine effort for intangible infrastructures using three indicators for 'Doing Business' provided by the World Bank (2016).[71] We assume that higher indicator scores represent a higher degree of effort. To make efforts for intangible infrastructure comparable between member states, we normalise the indicator scores between 0 and 1 and weight them by national GDP. We then calculate each member state's share of the European Union's public investment spending and GDP-weighted intangible indicator scores. For the final step in calculating member states' burden share, the shares for tangible and intangible infrastructure are equally weighted. Centralising corporate taxation should presumably have a negligible impact on member states' efforts since their incentive to host firms remains unchanged.[72] Hence, the burden shares of member states are assumed to stay the same both under the national status quo and in the hypothetical scenario with EU competence.

National benefit shares under the status quo represent the member states' shares of total corporate profits generated within the EU-28. Due to data availability and potential biases caused by profit shifting, we approximate corporate profits using the gross operating surplus.[73] The latter is defined as gross corporate profits minus labour input costs, and is calculated as part of the GDP.[74] In the counterfactual scenario of a centralised corporate taxation competence, corporate profits generated by all companies active in EU member states are distributed to member states according to three macro indicators: number of employees, physical assets and GDP. We calculate the national share for each indicator. The national benefit share of total corporate profits results from equally weighting national indicator shares.

71 More specifically, we use the indices for the quality of judicial processes, the quality of the land administration, and the quality of building control. For more information, see Table 2 in the Appendix.

72 Benefits for member states from hosting corporations are not limited to corporate tax revenues, but also include benefits such as employment effects or technology. Corporate tax revenues certainly play a role, but as long as in the centralised-solution tax bases are not tremendously redistributed, the effort that member states make to host corporations is unaffected.

73 Taking the value added as a measure for profit is also proposed by Nerudová (2012).

74 The GDP calculation is based on a complex procedure which takes multiple data sources into account and is checked for consistency, such as by using different approaches (Statistisches Bundesamt 2016). Due to the usage of multiple data sources, the application of sophisticated algorithms, and consistency checks, the GDP – and therefore also gross operating surplus – should be a reasonably good and unbiased proxy for true profits (assuming capital input is homogenous within the EU-28).

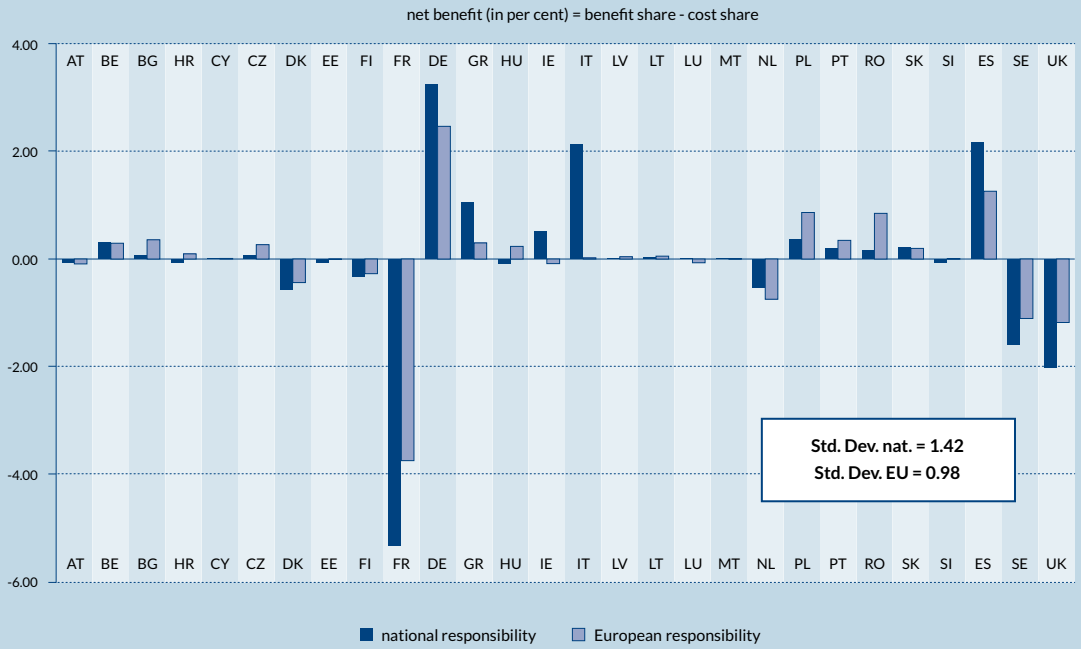
Finally, we calculate the net benefit for both scenarios. A positive net benefit indicates that the corporate tax base assigned to a member state exceeds the member state's relative effort. One reason behind a positive net benefit is a high inflow of foreign profits. In contrast, a negative net benefit may be the result of excessive outward profit shifting.

Results

The results are presented in Figure 3. Under the status quo, France exhibits the highest negative net benefit. Put differently, compared to its relative contribution to provide public infrastructure for firms, its relative share of total corporate profit is the lowest. At the other extreme, Germany gains the highest net benefit, with the relative share of corporate profits exceeding its relative burden the most. Note that, by itself, a discrepancy in benefit share and cost share under the status quo does not necessarily have to be fully driven by free riding in the form of attracting foreign corporate profits. Other hard-to-quantify factors (e.g. differences in entrepreneurial ability or productivity) may also affect the size of national corporate profits and, ultimately, the net benefit of a member state.

Figure 3:

Net benefits from corporate taxation policy, by country (in per cent)



Source: Own calculation based on Eurostat and World Bank data.

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To assess spillover effects in corporate taxation, we also calculate net benefits for the case of European responsibility and compare the outcome with the status quo. In this counterfactual situation, the benefit share is on average more aligned with the burden share. Most strikingly, Italy would have an almost neutral net benefit and France could improve its negative net-benefit position.

To sum up, the implementation of a centralised distribution scheme for corporate profits among member states would reduce the net-benefit position of the majority of member states. While the standard deviation of net benefits among member states is 1.42 under the status quo, it can be reduced to 0.98 in the case of a European competence. The corresponding relative reduction in the standard deviation is equal to 31 per cent. We therefore assign a score of 4, which indicates that it would be better to allocate this competence to the EU level.

ECONOMIES OF SCALE

Data source

Potential economies of scale in corporate taxation can be found at the level of the taxpayer and at the level of the tax administration. For firms, centralising corporate taxation potentially affects tax compliance costs. For administering corporate taxes, centralisation would render multiple processing of the same tax subjects unnecessary.

To assess economies of scale in the case of corporate taxation, we rely on two data sources. For economies of scale on the firm level, we utilize the European Tax Survey conducted by the European Commission (2004). This survey, conducted in 15 EU member states with 700 firms responding, captures corporate tax compliance costs of companies operating in the internal market in one or more member states. Tax compliance costs entail all costs related to complying with tax laws and filing corporate income tax returns. For economies of scale on the level of tax authorities, we use data from the OECD (2015d) and assess whether administrative costs per taxpayer decrease if a tax authority handles more taxpayers.

Methodology

For determining economies of scale for companies resulting from corporate taxation, we analyse tax compliance costs. We focus on relative changes in tax compliance costs in the number of foreign affiliates.[75] If companies are facing constant relative tax compliance costs regardless of the number of foreign affiliates, this would point to constant returns to scale. If companies with many foreign affiliates report tax compliance costs relatively lower than those with few foreign affiliates, this would imply economies of scale for companies in handling taxation. However, if companies with many foreign affiliates report relatively higher tax compliance costs than their counterparts with few foreign affiliates, diseconomies of scale in the tax handling of companies would be in place.

Concerning potential economies of scale for tax authorities, we analyse costs for administering taxes with respect to the number of taxpayers. To make the administrative costs of tax authorities of smaller and larger member states comparable, we calculate the administrative costs per €1 of corporate income tax revenue. If there are economies of scale in administering taxes, it would make sense to reorganise the levy of corporate income taxes by

75 Due to data limitations, we stick to the number of foreign affiliates as a proxy for the number of different member states in which the company operates affiliates.

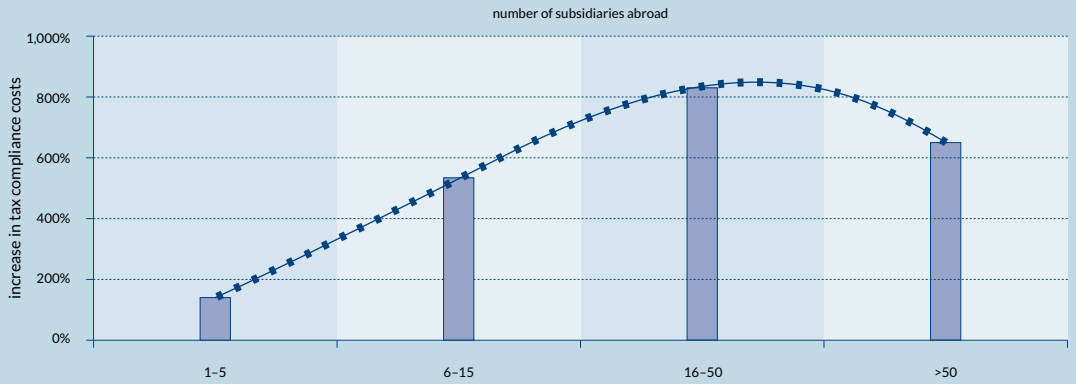
concentrating tax administration either at fewer national tax authorities or at a single EU corporate income tax agency. Beyond cost savings, arguments for such a reorganisation are the implementation of a harmonised procedure for a harmonised corporate tax and the creation of an excess administration capacity usable for other taxes due to the implementation of the 'one-stop-shop' principle for companies.

Results

Companies without foreign affiliates spend between 0.02 and 2.6 per cent of their turnover for tax compliance purposes (European Commission 2004). Figure 4 illustrates the relative change in tax compliance costs to this baseline in accordance with the number of affiliates abroad. For a company with up to five foreign affiliates, tax compliance costs increase by 141 per cent (i.e. tax compliance costs are about 2.5 times larger than those of a purely domestic company). Companies with more than five but fewer than 16 foreign affiliates face an increase in tax compliance costs of 535 per cent, while those with more than 15 but fewer than 51 foreign affiliates report tax compliance costs which are 831 per cent higher than those reported by purely domestic companies. Lastly, very large companies with more than 50 foreign affiliates report tax compliance costs which are 649 per cent higher than those of their purely domestic counterparts.[76]

Figure 4:

Foreign affiliates and compliance costs



Own calculation based on European Commission (2004), unweighted results. Baseline: Firms with no affiliate abroad. Relationship approximated by a third-degree polynomial.

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Our results suggest that tax compliance costs are increasing with the number of foreign affiliates. The increase is sizeable, and it stems from the fact that different countries have different corporate tax laws, which increases information costs and administrative burdens alike. The company has to report tax returns to the tax authorities of each country it operates affiliates in.

76 The lower increase in tax compliance costs for companies with more than 50 foreign affiliates may be caused by economies of scale in complying with taxes for very big companies or a concentration of foreign affiliates in fewer member states. Due to data availability, we cannot infer the reason. However, the principal result holds of a sizeable increase in tax compliance costs relative to domestic companies.

Therefore, it needs to keep separate country-specific accounts and to apportion profits using transfer pricing. These two factors were also singled out by companies as the most burdensome in the European Tax Survey (European Commission 2004). Hence, our results strongly suggest that the resulting costs of separate accounting are disproportionally increasing with the number of different national corporate tax systems, which results in diseconomies of scale in tax handling for companies.

Economies of scale may also arise on the side of the fiscal authorities. The implementation of a 'one-stop-shop' principle for companies' taxation concerns could be supplemented by a European fiscal authority for corporate income taxation. The main argument for such an institution would be the existence of economies of scale in tax administration and the resulting cost efficiency. To test this argument empirically, in Figure 5, we analyse the relation between tax administration cost and the number of tax subjects. We find that national fiscal authorities spend between 0.39 and 1.60 per cent of their tax revenues for administrative purposes. However, there seems to be no pattern between the per-unit administration cost and the number of taxpayers administered, meaning that the fiscal authorities of larger countries are not operating more or less efficiently than those of smaller member states. Hence, we find no evidence for or against economies of scale for corporate tax administration.

Figure 5:

Administration cost of national fiscal authorities

Source: OECD (2015d) and Eurostat (population and number of corporations), own calculation. Number of taxpayers is the sum of population and corporations. Administration cost is measured relative to net tax revenue. The line represents the relationship between administration cost and number of taxpayers approximated by a third-degree polynomial.

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To sum up, we analyse potential economies of scale in corporate taxation for both companies and fiscal authorities. For companies, we find substantial economies of scale in compliance costs under a system of European corporate taxation competence. Companies' tax compliance burdens increase with the number of different national corporate tax systems they have to deal with. Since centralising corporate taxation would abolish heterogeneous

national corporate tax systems, it would significantly reduce tax compliance costs and abolish currently existing diseconomies of scale. For fiscal authorities, we do not find evidence of the existence of either economies of scale or diseconomies of scale. Hence, reorganising tax administration by centralising the levy of corporate income taxes is expected to be neutral. Thus, we assign a score of 4 for this indicator, indicating that a centralised solution would improve efficiency.

PREFERENCE HETEROGENEITY

Data source

We determine preference heterogeneity of EU citizens regarding corporate taxation by analysing Eurobarometer survey data. In addition, we analyse the share of corporate income tax in total tax revenue, which we use as a proxy for the revealed preferences of member states regarding corporate income taxation.

In particular, we use question QC3.4 ("Thinking about reforming global financial markets, please tell me whether you are in favour [of] or opposed to the following measures to be taken by the EU – Tougher rules on tax avoidance and tax havens") from the Eurobarometer questionnaire No. 83 (Spring 2015). Answers could be given on a four-level scale ('strongly in favour', 'fairly in favour', 'fairly opposed', 'strongly opposed'). In addition, participants had the opportunity to suppress their opinion.

For the revealed preferences analysis, we use tax revenue data from 2013 from the OECD, which covers all 21 EU member states which are also members of the OECD.[77]

Methodology

For our Eurobarometer results, we reduce the scale from four to two levels (i.e. we merge the answer levels of 'strongly in favour' with 'fairly in favour', and 'fairly opposed' with 'strongly opposed'). We also exclude all participants who suppressed their opinion (i.e. we adjust our sample such that the shares of answers in our two levels sum up to 100 per cent). This leads to a reduction in country-sample size of between 1 per cent (in Greece and the Netherlands) and 16 per cent (in Lithuania). The overall reduction of the EU-28 is of minor importance (on average 6 per cent) and can therefore be neglected without affecting our results.

The results are calculated in a two-step procedure. First, we calculate the percentage of answers with either 'very important role' or 'important role' for each country. Then, we aggregate the results at the country level and calculate measures of dispersion on the EU level.

Additionally to our Eurobarometer results, we stick to the concept of revealed preferences and calculate the share of corporate taxes in national tax revenues. The resulting shares serve as revealed preferences of national governments concerning corporate taxation. The idea here is that a high share of corporate taxes in total tax revenue reveals a national preference to

77 EU member states not actively participating in the OECD are Bulgaria, Croatia, Cyprus, Latvia, Lithuania, Malta and Romania.

tax companies rather than, for example, individuals for providing public goods. For better visualisation, we categorise these shares of corporate income tax revenues into ten bins with widths of 1.3 percentage points each, which capture all realised shares.[78]

Results

The results for the Eurobarometer survey analysis are presented in Figure 6. The resulting heterogeneity indicator amounts to 7.5 per cent (unweighted). In other words, compared to the maximum standard deviation, the realised standard deviation of mean population preferences is extremely small.

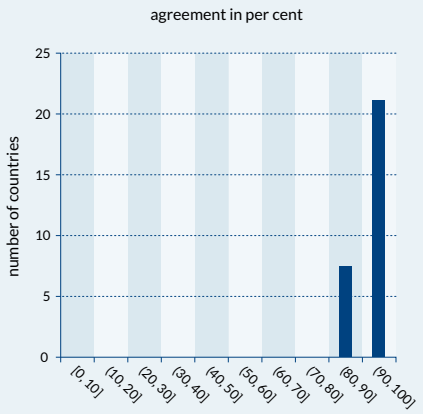
Figure 6:

Preferences regarding tougher rules against tax avoidance and tax havens

Tougher tax rules

Eurobarometer question EB83 QC3.4: "Thinking about reforming global financial markets, please tell me whether you are in favour [of] or opposed to the following measures to be taken by the EU – Tougher rules on tax avoidance and tax havens"

Mean (μ)	0.916
Median	0.920
Std. Dev. (σ)	**0.038**
Heterogeneity	**7.5 %**



Notes: The X-axis denotes the share of answers with 'strongly in favour' and 'fairly in favour' in a country. The answer choices 'strongly in favour' is merged with 'fairly in favour', and 'fairly opposed' is merged with 'strongly opposed'. Respondents with no opinion about this question are not considered. If we use the country population size as weights, the standard deviation = 0.041, resulting in a heterogeneity of 8.2 per cent.

The result for revealed preferences for corporate taxation of member states is presented in Figure 7 and shows moderate heterogeneity on a relatively small scale of national corporate income tax shares ranging from 3.26 per cent (Slovenia) to 12.43 per cent (Luxembourg).

However, the concept of revealed preferences suffers from multiple (data-related) issues. First, a high share of corporate income taxes in total tax revenue may also indicate success in attracting foreign profits. Also, a country hosting highly productive companies may also exhibit a higher share of corporate income taxes. The same holds true for countries with high shares of incorporated firms, as non-incorporated firms are not subject to corporate income taxation. Due to the severity of these issues and the impossibility of accounting for them, we interpret the revealed preferences results

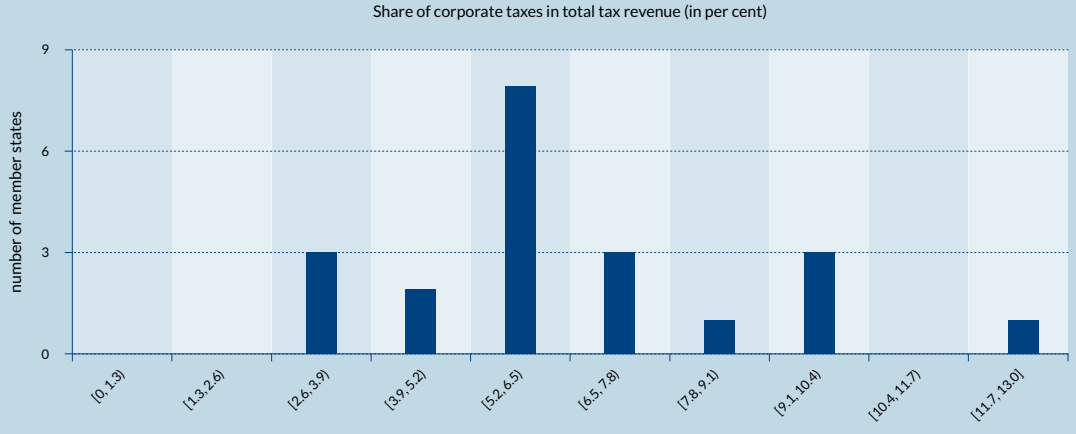
78 This size of the bin was chosen to best fit the data.

as fuzzy. Despite its fuzziness, we can still infer from our result that there is significant heterogeneity among member states when it comes to the importance of corporate income taxes for total tax revenue.

To sum up, according to the Eurobarometer analysis, the preferences of citizens concerning tougher rules on tax avoidance and tax havens are highly aligned, which would justify a score of 5. However, as is shown with the revealed preferences analysis, national tax systems exhibit heterogeneous emphases on corporate income taxation, which implies disagreement on the appropriate tax level for companies. We therefore do not use the maximum score and only assign a score of 4, which nonetheless points towards a European competence.

Figure 7:

Revealed preferences regarding taxation of corporate income



Source: OECD (own calculation), values for 2013. Notes: The X-axis denotes the share of corporate income taxes in the total tax revenues of member states. Member states are binned in bins with widths of 1.3 percentage points each.

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INTERNAL MARKET CONSISTENCY

Ideally, the internal market promotes the efficient allocation of investment and business activity across Europe, which is not distorted by national tax regulations or the crossing of borders. European primary law specifies that member states need to choose their economic policy so as to promote the coordination of member states and the internal market (TFEU Article 119 (1)). In addition, it is stated that economic policy should enhance the principles of the open market economy, which should favour the efficient allocation of resources (TFEU Article 120).

Wasserfallen (2013) explains the problems which occur if the overall (political) European integration is far ahead of fiscal integration, particularly in the field of tax harmonisation. The development of the internal market has been pushed forward while member states have hesitated to transfer competences in taxation to the EU. As a result, firms enjoy an integrated internal market, which should promote an efficient allocation of resources and a business environment without borders, while corporate tax systems undermine these efforts by not being unified.

The fragmentation in national corporate tax systems creates obstacles to corporate investment, cross-border trade, relocation decisions and the multinational mergers and acquisitions (M&As) of companies (see, e.g., Devereux 2004). Corporate taxes reduce the net return on investment. Within the internal market, the interplay of different corporate tax systems results in heterogeneous tax burdens depending on the organisation of the company and its ability to 'double dip'[79] (Mintz 2002). In addition, national systems of corporate taxation exhibit features which create a bias toward domestic investment (European Commission 2001).

Concerning trade within companies, the burden of tax handling increases disproportionally once there are affiliates residing in multiple member states due to the separate accounting and information costs of multiple corporate tax systems (ibid). These factors lead to higher tax compliance costs for multinational companies than for their solely domestic counterparts. In the European Tax Survey, multinational companies reported tax compliance costs which were 253 per cent higher than for domestic companies (European Commission 2004). These major compliance costs are a threat to the functioning of the internal market (Bénassy-Quéré, Trannoy and Wolff 2014).

Multinational reorganisations and takeovers both challenge national corporate tax systems. If a company relocates from one member state to another, it changes corporate tax system. The member state the company is leaving often levies exit taxes (e.g. on unrealised capital gains). Exit taxes create a barrier for companies wishing to leave, thus potentially violating the internal market freedom of establishment. However, although the European Court of Justice (ECJ) ruled that exit taxes do affect the freedom of establishment, it nevertheless deemed them a legitimate tool for reconciling the transition from one corporate tax system to another one (von Brocke and Müller 2013). Concerning takeovers, various scholars find evidence of the influence of national corporate tax systems on the price of cross-border M&As and subsequent firm reorganisation. Regarding the latter, Voget (2011) presents evidence of the influence of taxes on the decision of where to locate the headquarters of the newly formed company. Likewise, Huizinga and Voget (2012) show a negative impact of dividend taxation on M&A prices. Feld et al. (2016) find a similar negative effect on M&A prices caused by capital gains taxation.[80]

The current system of a national competence for corporate taxation creates various obstacles for the internal market. These obstacles arise from the fact that national corporate tax systems typically end at the border of the member state. Since the implementation of the internal market, numerous infringements on the internal market have been eliminated by rulings of the European Court of Justice. However, numerous obstacles will remain as long as national corporate tax systems are not coordinated (Cerioni 2015). Our counterfactual scenario of an EU competence for corporate taxation would remove currently existing impediments to internal market consistency. Therefore, we assign a score of 5 to emphasise that a centralisation of corporate taxation would contribute to internal market consistency.

79 The term 'double dip' refers to systematically exploiting incompatibilities of national tax systems to reduce one's tax burden.

80 In 2006, the Mergers Directive was implemented to reduce the barriers to cross-border M&As. However, heterogeneous corporate tax systems still create obstacles impeding internal market consistency (European Commission 2013).

Fiscal competition among EU member states in the field of corporate taxation has been widely discussed in academia (see, e.g., Altshuler and Goodspeed 2015; Crabbé 2013; Zodrow 2003) and beyond (see, e.g., European Commission 2001; European Parliament 1998). Researchers studying corporate tax competition have identified positive effects by pointing to efficiency gains as well as negative effects resulting in efficiency losses. Positive effects stemming from (corporate) tax competition include counteracting over-taxation and limiting inefficient public spending,[81] while negative effects encompass a potential 'race to the bottom' impairing member states in public good provision, higher compliance costs for taxpayers, and reduced transparency (Schön 2002).[82]

Fiscal competition for corporate taxation in Europe emerges via two channels. First, member states compete in setting their corporate income tax rate, which serves as an important indicator of the size of the tax burden. In recent years, we have seen a significant decline in the statutory corporate income tax rates of EU member states (see Figure 8). The average top statutory tax rate on corporate income in the EU-28 fell from 34.17 per cent in 1998 to 22.93 per cent in 2012. However, lowering corporate tax rates was accompanied by broadening tax bases (Carone, Schmidt and Nicodème 2007).[83] Although profits are now taxed at a lower tax rate, corporate taxes capture a wider-reaching definition of corporate profits (Bénassy-Quéré, Trannoy and Wolff 2014). This can be seen in the relatively smaller decline in the effective average tax rate (EATR), which was reduced from 29.1 per cent in 1998 to 20.8 per cent in 2012.[84] Therefore, tax revenue from corporate income stagnated at around 3 per cent of GDP during this period of time (with the exceptions of an increase before the financial crisis in 2008 and a lower level during the immediate aftermath). Concerns about a harmful 'race to the bottom' for corporate taxes can therefore not be confirmed.

81 The underlying idea regarding positive effects caused by tax competition is that governments also pursue non-benevolent objectives (Brennan and Buchanan 1980).

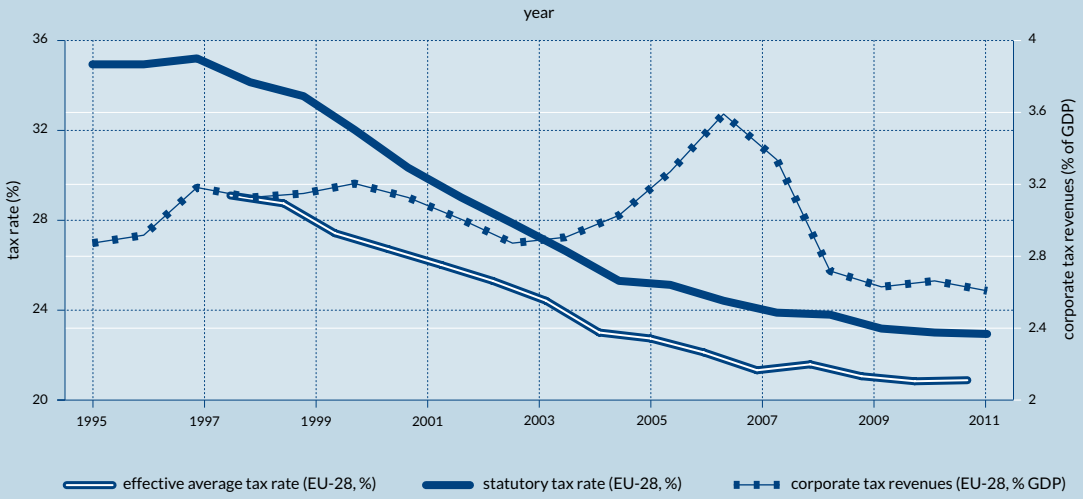
82 Reduced transparency arises from increased complexity and enables profit shifting.

83 Also, the European Commission follows a strategy of shifting the focus of taxation from direct taxes to indirect taxes in order to reduce distortions (Bénassy-Quéré, Trannoy and Wolff 2014).

84 The effective average tax rate (EATR) takes the corporate tax base into account. For detailed information on the concept of the EATR, see Schreiber, Spengel and Lammersen (2001).

Figure 8:

Development of corporate income taxation 1995–2012



Sources: ZEW, Eurostat and European Commission (DG Tax), own illustration. All values represent averaged values for the EU-28 for the corresponding year. Corporate tax revenues do not include Germany (1995–2004) and Croatia (1995–2001) due to the non-availability of data in these periods of time.

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Rather than ending fiscal competition between member states, centralising corporate taxation with a formulary apportionment of profits would rechannel competition (Devereux and Fuest 2010). One would expect the member states to change their focus on specifically attracting factors of the apportionment formula to increase their share of total corporate tax base and, ultimately, corporate tax revenue. Hence, it is not expected that centralising corporate taxation would limit positive welfare effects arising from competition.

However, when looking at the level of the targets of corporate tax competition, centralising corporate tax competition would shut down commonly used profit-shifting channels (Fuest 2008).[85] This would, in turn, establish a fairer setting for companies by eliminating competitive advantages for those participating in profit shifting. However, new concerns of potential discrimination against certain member states could arise. For example, knowledge-based economies could be disadvantaged if intangible assets were neglected in the apportionment formula (Evers et al. 2016).

To sum up, we have analysed corporate tax competition among EU member states under the status quo. Despite a decrease in corporate tax rates in recent last years, corporate income tax revenues have remained at a constant level. This can be explained by a broadening of the corporate income tax base. We find no evidence of a harmful 'race to the bottom'. Centralising corporate taxation is not expected to abolish competition, but rather to redirect it to other channels. However, a centralisation of corporate taxation would increase fairness among member states and companies as targets of the competition. Hence, we find some additional benefits in the centralised scenario and therefore assign a score of 4, which indicates that it would be better to allocate this competence to the EU level.

85 In particular, a centralisation of corporate taxation would cease hybrid mismatch arrangements, manipulation of transfer pricing, strategical location of highly mobile intangible assets for tax purposes, and artificial debt arrangements within the EU.

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APPENDIX

Spillover effects

Table 1:

Benefit- and contribution-sharing among EU member states (in per cent)

Share of EU total (in per cent)							
Country	ISO	Benefit share (nat.) (= corporate profits)	Workforce	Assets	GDP	Benefit share (EU)	Burden share
Austria	AT	2.40	1.90	2.83	2.36	2.36	2.45
Belgium	BE	2.78	2.12	3.29	2.88	2.76	2.47
Bulgaria	BG	0.39	1.37	0.37	0.31	0.68	0.32
Croatia	HR	0.31	0.72	0.35	0.33	0.47	0.37
Cyprus	CY	0.15	0.18	0.11	0.14	0.14	0.13
Czech Rep.	CZ	1.46	2.28	1.52	1.20	1.66	1.40
Denmark	DK	1.52	1.24	1.83	1.88	1.65	2.09
Estonia	EE	0.15	0.28	0.20	0.13	0.20	0.21
Finland	FI	1.36	1.15	1.63	1.49	1.42	1.69
France	FR	13.40	12.10	17.28	15.54	14.97	18.71
Germany	DE	20.40	18.13	20.24	20.51	19.63	17.16
Greece	EL	2.17	1.72	1.10	1.42	1.41	1.11
Hungary	HU	0.77	1.79	0.73	0.74	1.09	0.85
Ireland	IE	1.57	0.85	0.75	1.30	0.97	1.05
Italy	IT	13.64	10.48	12.11	12.02	11.54	11.51
Latvia	LV	0.22	0.40	0.22	0.16	0.26	0.21
Lithuania	LT	0.34	0.59	0.24	0.25	0.36	0.30
Luxembourg	LU	0.35	0.11	0.36	0.32	0.26	0.33
Malta	MT	0.06	0.08	0.05	0.05	0.06	0.05
Netherlands	NL	4.58	3.87	4.39	4.80	4.35	5.10
Poland	PL	3.94	7.26	3.15	2.90	4.44	3.57
Portugal	PT	1.32	2.01	1.14	1.25	1.47	1.12
Romania	RO	1.44	3.89	1.49	0.99	2.12	1.27
Slovak Rep.	SK	0.77	1.10	0.61	0.54	0.75	0.55
Slovenia	SI	0.25	0.43	0.27	0.27	0.32	0.31
Spain	ES	9.08	8.27	8.50	7.76	8.18	6.92
Sweden	SE	2.40	2.13	3.33	3.15	2.87	3.97
UK	UK	12.76	13.56	11.95	15.29	13.60	14.77

Source: Eurostat and World Bank. Notes: Data on workforce, assets and GDP is for 2012 and stems from Eurostat. For the calculation of the burden shares, see below.

Table 2 holds detailed information of the derivation of burden shares. We approximate national burdens for attracting firms (and, ultimately, corporate profits as a tax base) with efforts member states undertake towards providing tangible and intangible infrastructure. The effort towards providing tangible infrastructure can be directly measured by government spending on public infrastructure. For the efforts towards providing intangible infrastructure, we rely on three indicators from the World Bank measuring the respective quality of judicial processes, land administration and building control. The key assumption here is that higher quality reflects a higher degree of effort. We sum up the three realised indicator values for each country and weight them by GDP (column 'Total score') to make efforts comparable across member states. The next step is transforming calculated values into relative national shares. Finally, we calculate total burden share as the simple average of government spending on tangible infrastructure and national share of tangible infrastructure efforts.

Table 2:

Calculation of burden shares

Tangible infrastructure		Intangible infrastructure					Total
	Government spending	Judicial processes	Land administration	Building control	Total score	National share	Burden share
	% of EU total	Quality index [0-100]			GDP weighted	% EU total	% EU total
Austria	2.24	77.78	80.00	86.67	775025	2.66	2.45
Belgium	2.35	44.44	76.67	73.33	753314	2.58	2.47
Bulgaria	0.36	58.33	60.00	86.67	85471	0.29	0.32
Croatia	0.38	83.33	75.00	80.00	104708	0.36	0.37
Cyprus	0.14	44.44	76.67	60.00	35260	0.12	0.13
Czech Rep.	1.63	58.33	71.67	80.00	337483	1.16	1.40
Denmark	2.35	55.56	81.67	73.33	532527	1.83	2.09
Estonia	0.27	75.00	91.67	66.67	42014	0.14	0.21
Finland	1.97	50.00	90.00	66.67	412905	1.42	1.69
France	20.59	66.67	81.67	86.67	4904283	16.82	18.71
Germany	15.10	66.67	73.33	63.33	5601548	19.21	17.16
Greece	1.16	66.67	15.00	80.00	309112	1.06	1.11
Hungary	0.90	55.56	86.67	93.33	233135	0.80	0.85
Ireland	0.88	47.22	70.00	86.67	356487	1.22	1.05
Italy	10.07	72.22	88.33	73.33	3776539	12.95	11.51
Latvia	0.26	69.44	73.33	80.00	48972	0.17	0.21
Lithuania	0.32	80.56	95.00	73.33	82966	0.28	0.30
Luxembourg	0.33	47.22	85.00	90.00	96831	0.33	0.33
Malta	0.06	58.33	41.67	73.33	12530	0.04	0.05
Netherlands	5.88	33.33	95.00	66.67	1258069	4.32	5.10
Poland	4.47	58.33	61.67	80.00	778546	2.67	3.57
Portugal	1.01	69.44	70.00	73.33	358313	1.23	1.12
Romania	1.57	72.22	53.33	86.67	283340	0.97	1.27
Slovak Rep.	0.53	66.67	88.33	73.33	165359	0.57	0.55
Slovenia	0.36	61.11	76.67	83.33	79574	0.27	0.31
Spain	6.30	55.56	75.00	80.00	2195824	7.53	6.92
Sweden	4.70	66.67	90.00	66.67	945460	3.24	3.97
UK	13.81	83.33	80.00	60.00	4586401	15.73	14.77

Source: Eurostat and World Bank. Data for government spending and GDP are for 2012. Data on the respective quality of judicial processes, land administration and building control are for 2015 and standardised.

X. *Case Study 4:*

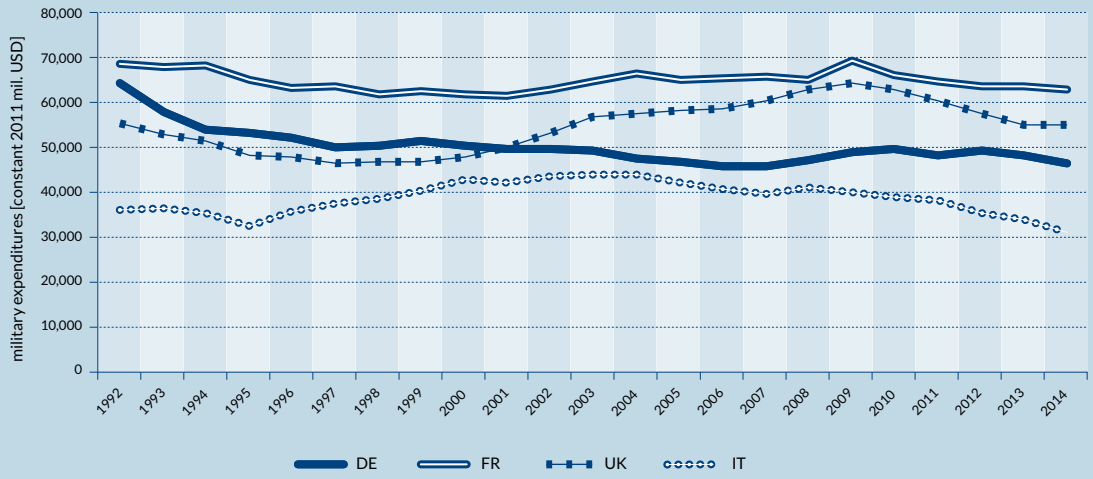
Defence policy

Current and future challenges

Since the end of the Cold War, most EU member states have cut military spending (see, e.g., Ballerster 2013; Larrabee et al. 2012; McKinsey 2013). As a result, with the exception of the United Kingdom, military expenditures (expressed in constant 2011 USD) in large EU member states are below their 1992 levels (see Figure 1).

Figure 1:

Development of military expenditures in large EU member states (constant 2011 million USD)



Source: SIPRI Military Expenditure Database 2012 (http://milexdata.sipri.org).

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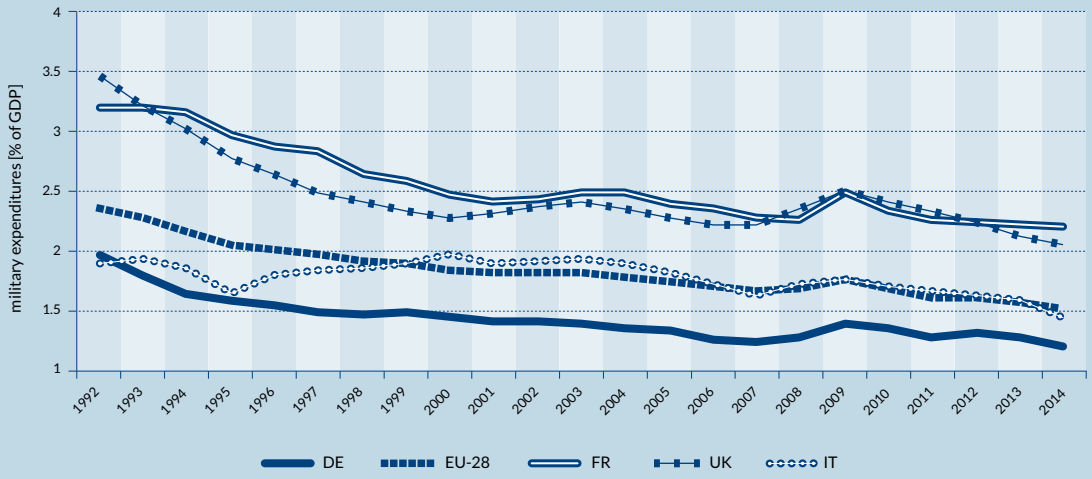
The impression even worsens if relative figures are taken into account. Figure 2 shows the development of military expenditures in per cent of GDP for the EU-28 and the four biggest European economies. In 2014, the average spending on defence by the EU-28 countries was 1.52 per cent of GDP, which marks a new all-time low (the small peak in 2009 can be explained by the drop in most national GDPs after the outbreak of the economic crisis in 2008). The time series for Germany, France, Italy and the United Kingdom also exhibit a clearly falling trend (i.e. member states have either cut military spending or not adjusted spending to GDP growth).

Figure 2:

Development of military expenditures (in per cent of GDP)



Source: World Bank (World Development Indicators). The figure shows military expenditures using the NATO classification.

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In 2002, NATO member states adopted a non-binding requirement of spending 2 per cent of their GDP for military purposes (Mölling 2014). However, in 2014, only France, Greece, Lithuania and the United Kingdom managed to have military expenditures exceeding 2 per cent of national GDP.

The failure to achieve this objective stands in direct contrast to an increase in current and future European challenges. For example, the recent conflict between Russia and Ukraine about Crimea has revealed the need for a common and effective defence policy (Major and Mölling 2015), and an EU army could more effectively intervene than single national operations to establish peace in the sub-Saharan region (Gallhöfer 2014). Finally, the growth of terrorism also increases the need for effective military operations. Given these circumstances, a simultaneous easing of tension regarding budgetary restrictions must be viewed as unrealistic (see, e.g., Brune and Mölling 2011; Larrabee et al. 2012; Major and Mölling 2013), as it would only further increase the pressure to have more and tighter collaboration in the policy field of defence.

Status quo

European defence is a policy field that has EU member states cooperating in a wide range of different ways, for example, with procurement or international interventions. However, even with such cooperation, decision-making is often difficult and complex (Gallhöfer 2014). This stands in sharp contrast to the requirements of a powerful military structure. A root cause for the heterogeneity of cooperation can be found in the two distinct types of member states: neutral and non-neutral states.[86] The neutral member states have committed to not join military alliances, while all non-neutral member states

86 Neutrality is directly enacted in the national constitution. This applies to Austria, Finland, Ireland, Malta and Sweden.

(except Cyprus) are currently members of NATO (see, e.g., von Ondarza 2005). Concerning the coordination of procurement of military equipment, some attempts at harmonisation exist. The goal of organisations and unions such as OCCAR[87] and EDA[88] is to set common standards, harmonise procurement and exploit resulting cost advantages. These attempts, however, can be viewed as having room for improvement (see, e.g., Mölling 2015).

At present, the European Union has 28 different armies with 28 different army structures. Although some multinational military units have been established (e.g. EUFOR, Eurocorps and the EU battlegroups), they are small (Staack and Krause 2014). In addition, since their organisation is primarily multinational and not supranational, fundamental decisions must still be taken by the national parliaments, and most of the soldiers are still the concern of their home countries. When it comes to efficiency gains, for instance, the European Parliament (2015) calculated that more than €7.7 billion could be saved each year through greater cooperation.

Counterfactual situation

For the counterfactual situation, we assume a fully integrated European army. This includes unified decision-making and centralised provision of military equipment.

Overview

Score	Description
	Spillover effects
4	We create an index for the burden-sharing between member states under both the status quo and the hypothetical counterfactual situation of an integrated European army, and compare these indicators with an indicator of the relative benefits of a common defence policy. Based on these figures, we are able to judge how much a European competence would better align benefits and costs for member states and thereby decrease the extent of free riding. Our indicator of free riding is reduced by 37 per cent if an integrated European defence policy is created.
	Economies of scale
4	Using both data from the European Defence Agency (EDA 2015) and information from a recent study conducted by the Bertelsmann Stiftung (2013), we investigate economies of scale in the provision of defence. There are some hints regarding the presence of economies of scale, e.g., the number of deployable land forces increases disproportionately to the total number of land-force soldiers. Furthermore, the overall number of land-force soldiers can be reduced if an integrated European army is created. However, some countervailing effects prevail: The potential cost savings sink dramatically if an EU salary scheme is applied. Furthermore, the positive effect in the case of increasing deployment shares is mainly driven by the four largest European armies.
	Preference heterogeneity
5	We rely on the Special Eurobarometer 432 questionnaire ('Europeans' attitudes towards security') and evaluate question QA9: "In your view, what role should each of the following play in ensuring the security of citizens in (OUR COUNTRY)?" 'Army' was one of the elements mentioned. The standard deviation of the distribution is 0.119, resulting in a heterogeneity indicator of 23.8 per cent, which in turn points to rather homogenous preferences of European citizens across EU member states.
	Internal market consistency
5	The market for defence goods is exempted from the internal market (Article 346 TFEU). This results in 28 national markets with national regulations intended to protect national defence industries. Despite efforts aimed at fostering better integration of Europe's armament sector (e.g. the European Defence Technological and Industrial Base, EDTIB), the focus is still primarily national. Shifting this policy field to the European level could improve efficiency, reduce military spending significantly and enhance the competitiveness of the European armament sector.
	Competition
5	Undersized markets for the armament sector and decreasing military expenditures counteract yardstick competition. Some member states already cooperate in various projects. An integrated European army could enable real competition in the armament sector, reduce redundancies and improve overall efficiency.

87 OCCAR is the abbreviation for Organisation conjointe de coopération en matière d'armement (Organisation for Joint Armament Cooperation).

88 EDA is the abbreviation for the European Defence Agency.

Further information

SPILLOVER EFFECTS

Methodology and data source

For the computation of spillover effects, we create indices for the burden- and benefit-sharing among member states under both the status quo (i.e. national provision of individual armies) and the counterfactual European provision of an integrated European army. This enables us to approximate the degree of free riding for both cases and to compare changes when moving from the national provision of military services to a supranational provision.

The benefit share is based on academic literature (see, e.g., Kollias 2008) and captures the specific benefits an EU country enjoys from military protection. Benefits comprise the protection of citizens, land and wealth. Accordingly, using Eurostat data for 2013, we compute each country's share of the European Union's total population (citizens' protection), total land area (territorial protection) and total GDP (wealth protection). The figures are shown in Table 2 in the Appendix.

Since we do not know the exact preferences of the various countries for each of the benefit elements, we calculate an unweighted average of the three percentage shares (i.e. we add up the shares for population, area and GDP, and then divide this figure by three).[89] The resulting figure is a rough approximation of the benefits a specific country enjoys from military protection (see Table 2, column 6).

In contrast to authors who assume that these benefits only are prevalent in the case of an integrated EU provision of military services (e.g. Kollias 2008), we argue that the calculated benefit share approximates a country's benefits from military protection under both the status quo (national armies) and in the counterfactual situation (European army). Thus, we assume that a national provision of military services also has de facto spillover effects that are positive on the EU-wide level, in the sense that the military capacities of EU member countries augment the security of the other EU partners (e.g. through its deterrence effects or its contribution to EU capacities in international conflicts).

However, in contrast to the benefits, the burden-sharing of military protection obviously differs between national and supranational provision. For burden-sharing under a national provision, we calculate a country's share of military expenditures relative to the sum of military expenditures of all EU countries.[90] Since defence budgets in France and the United Kingdom include nuclear deterrence costs that serve an exclusively national purpose, we subtract these costs from the budgets before calculating the shares.[91]

For the counterfactual situation (i.e. a European army), we argue that there is a strong case that such an army would be financed out of the European

89 We have also used an economy's capital stock instead of GDP. The results are not affected by this modification and are presented in the Appendix (see Figure 7).

90 Figures are only available until 2011. We have extrapolated these figures using the development of overall defence expenditure in 2012 and 2013 (with the underlying assumption being that nuclear and total defence expenditures follow similar trajectories).

91 It would be misleading to expect nuclear deterrence in these countries to add to a general European deterrence because both nuclear strategies are only applicable for assaults on national territories. We are thankful to Hilmar Linnenkamp for pointing this out.

budget.[92] Accordingly, we use a country's share of the EU budget as an indicator for the specific burden-sharing among member states.[93]

For both cases, we then subtract the burden share from the benefit share to detect free riding. Positive figures denote net-receiver countries (i.e. the country's benefits from military protection are higher than its respective contributions), whereas negative figures denote net-payer countries (i.e. the country's contributions are higher than its benefits).

Results

The results are presented in Figure 3. The United Kingdom, in particular, suffers from free riding by other member states under the status quo – in other words, compared to its relative benefits from military protection, the UK's relative contributions are rather high. However, one should bear in mind that the UK aims not only at protecting itself, but also at playing a major role in international military operations. The same, albeit to a lesser extent, holds true for France. In contrast, other large member states – such as Italy, but also Germany – do not suffer that much from free riding under the status quo.

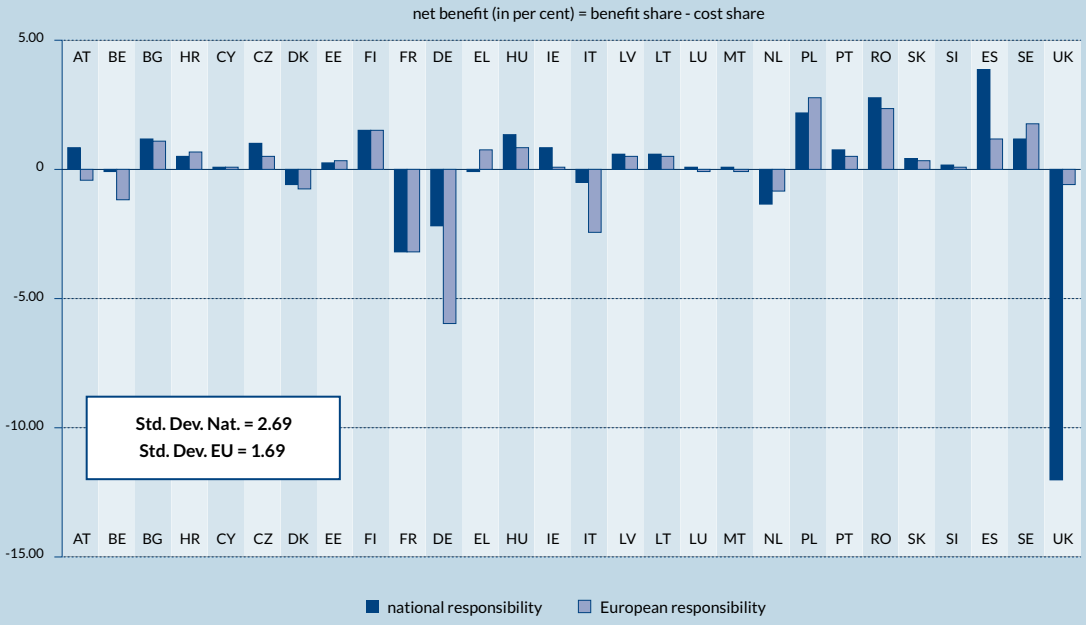
However, the picture changes when moving to a European provision of military services. If a European army were financed under the current financing structure of the EU budget, the contribution of Germany (and Italy) would increase to the benefit of the UK. The situation in France would remain unchanged, as it (and then Germany) is the largest net payer. However, it should be stressed that some of the differences in net payment also occur due to differences in the types of states. Neutral states (e.g. Austria, Finland, Ireland, Malta and Sweden) have lower defence expenditures per se, which might cause a net-receiving position. In this case, the result should not be mis- or over-interpreted as free riding. Furthermore, free riding must not necessarily be viewed as something negative. For example, the free riding of surrounding countries might be of only minor importance in the eyes of a well-meaning hegemon (i.e. a specific country providing them with defensive protection).

92 There may be other distributions, as well. However, we do assume that the financing scheme will follow the current burden-sharing in the EU budget. Of course, burden-sharing in the EU budget is endogenously determined by the structure of the spending side. But since the outcome of budget negotiations with an EU defence competence is impossible to predict, we abstain from any speculation on this issue.

93 The data source is the EU Budget 2013 Financial Report (see Annex 2c, p. 123).

Figure 3:

Net benefits from defence policy, by country (in per cent)



Source: Own calculations based on Eurostat and Global Zero (2011).

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However, it also becomes evident from the estimated figures that moving from national to EU responsibility drastically reduces the extremes (from 3.9 to 2.8 per cent for net payers, and from -12.08 to -6.03 per cent for net contributors). This is also reflected in the standard deviation, which decreases from 2.69 to 1.69 (i.e. our indicator of free riding is reduced by around 37 per cent). We therefore assign a score equal to 4, which points towards an allocation to the European level.

ECONOMIES OF SCALE

Data source

Economies of scale in defence may arise from both the input and output perspectives. On the input side, a European army may provide defence with lower per-unit costs (e.g. by reducing redundancies in headquarters and/or overhead). On the output side, there is the chance that a European army may use the overall resources more efficiently compared to smaller armies. For example, training facilities could be used at capacity and staff workload optimised. Similarly, there could be opportunities for better exploiting complementarities in equipment, logistics and operational capabilities.

We rely on two different sources to detect economies of scale. First, we use data from the European Defence Agency (EDA 2015) from 2013 to investigate potential capability advantages in the provision of military services. Second, we take into account the results of a study conducted by the Bertelsmann Stiftung (2013) that already estimated the cost-savings estimated the potential cost savings of having integrated European land forces and thus points towards the presence of economies of scale in this specific field of military services.

Methodology

For the investigation of capability advantages, we compare the number of deployable land forces and the number of sustainable land forces (both measured either as the total number or as a share of land-force soldiers) to the total number of land forces per country.[94]

Another possibility for detecting economies of scale would be a unit-cost comparison between small and large countries. However, when unit costs are compared, one has to ensure that the output level is comparable across countries. This is particularly not the case in the field of defence policy because some countries primarily focus on national defence while others aim at playing a major role in international interventions.[95] Furthermore, the needs for national defence differ between countries because of neighbourhood or other foreign conflicts. We therefore refrain from drawing inferences from unit-cost comparisons, relying instead on the results on potential cost savings presented in the Bertelsmann Stiftung (2013) study.

Results

With respect to capabilities, there is some evidence that larger armies exhibit a substantially higher share of both deployable and sustainable soldiers. Their number increases disproportionately to the number of land-force soldiers (see Figure 4).

However, this effect is mainly induced by the four largest European armies (i.e. those of France, Greece, Spain and the UK).[96] If these armies are disregarded (and there might be some good arguments for doing so due to specific characteristics, such as the neighbourhood conflicts between Turkey and Greece or the specific focus on international interventions in France and the UK), a different picture emerges. This becomes evident in Figure 4: If we disregard the four largest armies (mentioned above), a much less pronounced positive relationship emerges.[97] Taken together, the positive results on the presence of economies of scale with respect to deployability/sustainability must be treated with caution.

Concerning the potential cost savings in the provision of land forces, the Bertelsmann Stiftung (2013) has investigated the monetary European added value in the provision of integrated European land forces. The total estimate for the number of European soldiers necessary to fulfil the Petersberg tasks is between 480,000 and 750,000, and is thus far below the current total sum of 890,000 land-force soldiers in 28 national armies. Depending on the assumed payment scheme (i.e. differentiating between a common European payment and retained national payment), the authors detect enormous potential cost savings in the case of retained national wages (the estimated cost savings of having integrated European land forces range from €3.1 billion in

94 Deployable (land) forces are the strength of (land) forces troops structured, prepared and equipped for deployed operations (the NATO 50% usability target). Sustainable land forces are the strength of (land) forces troops undertaking or planned for sustained operations, including those on high readiness standby (the NATO 10% usability target). It is a subset of deployable (land) forces. Source: http://www.eda.europa.eu/info-hub/defence-data-portal/definitions.

95 Furthermore, military expenditures might be higher owing to political reasons, such as when a country aims at gaining or keeping a (permanent) seat on the UN Security Council.

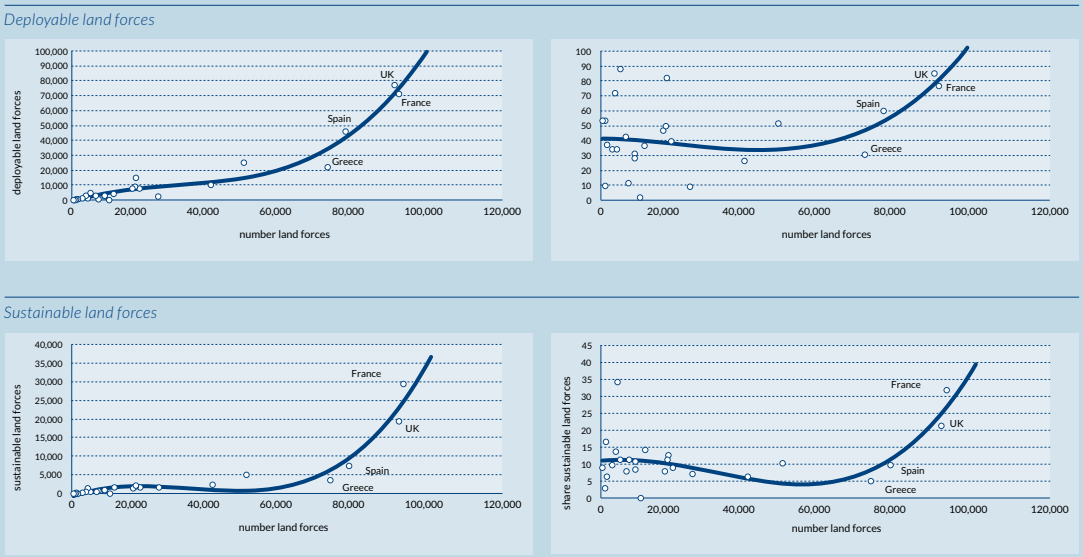
96 Information on the number of deployable/sustainable soldiers for Germany and Italy is not available.

97 The corresponding graphs are presented in the Appendix; see Figure 8.

case of the upper bound to more than €9.2 billion in case of the lower bound).[98] Furthermore, there might be additional cost savings resulting from improved cooperation or joint military procurement (see 'Internal market consistency' section below). For instance, the European Parliament estimates a potential for efficiency gains through intensified cooperation in procurement of €12 billion annually (European Parliament 2015).

Figure 4:

Deployable and sustainable land forces relative to the total number of land forces



Notes: Data refer to 2013. Source: EDA (2015). A third-order polynomial is calculated to detect the best fit.

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Taken together, there are some indications of the presence of cost savings in the provision of military services in the case of European provision. However, the results are not as clear-cut as might be expected. We therefore assign a score equal to 4.

PREFERENCE HETEROGENEITY

Data source

For determining preference heterogeneity of EU citizens regarding the army, we use information from the Special Eurobarometer 432 questionnaire ('Europeans' attitudes towards security') and investigate question QA9. EU citizens were asked the following: "In your view, what role should each of the following play in ensuring the security of citizens in (OUR COUNTRY)?" One institution to rate was the army.

Answers could be given in a scale with four levels ('very important role', 'important role', 'limited role', 'no role'). In addition, participants had the opportunity to suppress their opinion.

98 However, as a robustness test, the authors show that the potential savings decline and partly disappear if a European payment scheme is applied since this would imply enormous wage increases for a large number of soldiers.

Methodology

For our results, we reduce the scale from four levels to two (i.e. we merge the answer levels of 'very important role' with 'important role', and of 'limited role' with 'no role').

We also exclude all participants who suppressed their opinion (i.e. we adjust our sample so that the shares of answers in our two levels add up to 100 per cent). This leads to a reduction in country-sample size of up to 4 per cent (in Spain and Latvia). The overall reduction on the EU-28 level is of minor importance (less than 2 per cent reduction) and can therefore be disregarded without affecting our results.

The results are calculated in a two-step procedure. First, we calculate the percentage of answers with either 'very important role' or 'important role' for each country. Then, we aggregate the results at the country level and calculate measures of dispersion on the EU level.

Results

The results are presented in Figure 5. The heterogeneity indicator amounts to 23.8 per cent (unweighted), meaning that, compared to the maximum standard deviation, the realised standard deviation of mean population preferences is rather small.[99] Referring to the scoring decision for preference heterogeneity, we assign a score of 5.

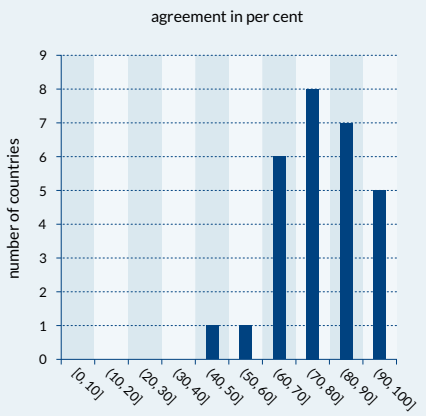
Figure 5:

Preference heterogeneity regarding the role of the army across Europe (in per cent)

Role of army

Eurobarometer question SEB432 QA9: "In your view, what role should the army play in ensuring the security of citizens in (OUR COUNTRY)?"

Mean (μ)	0.771
Median	0.781
Std. Dev. (σ)	**0.119**
Heterogeneity	**23.8 %**



Notes: The X-axis denotes the share of answers with 'very important role' and 'important role' in a country. The answer choices 'very important role' is merged with 'important role', and 'limited role' is merged with 'no role'. Respondents with no opinion about this question are not considered. If we use the country population size as weights, the standard deviation = 0.101, resulting in a heterogeneity of 20.2 per cent.

99 The results still hold if we exclude the four largest armies (i.e. those of France, Greece, Spain and the UK) from our calculations.

INTERNAL MARKET CONSISTENCY

According to Article 346 of the Treaty on the Functioning of the European Union (TFEU), "any Member State may take such measures as it considers necessary for the protection of the essential interests of its security which are connected with the production of or trade in arms, munitions and war material." This exception from the internal market provision allows member states to internally regulate production and trade in the field of defence, and it is widely used in all member states because each member state aims at protecting its national defence industry by claiming 'essential security interests' (Mölling 2015).

The exemption from the internal market has the de facto result of leaving 28 national defence markets (Gallhöfer 2014). On average, member state governments invest 75 per cent of all military funding domestically (European Commission 2013). This leads to a highly fragmented defence industry in Europe with many relatively small (in the global context) national companies (Hartley 2011a, b). In the United States, by contrast, a higher number of companies account for only one-third of the US annual investment volume (EDA 2012). Thus, the exemption from the internal market for defence-related goods leads to a significant lack of competition and overpriced goods (Briani et al. 2013).

Furthermore, although there is an agreement on fostering a better-integrated armament sector in Europe (European Defence Technological and Industrial Base, EDTIB), the focus still remains predominantly national with only a few exceptions (Ballerster 2013; Briani et al. 2013; Mölling 2015). One result is a distinct heterogeneity in weapon systems. Table 1 compares the weapon systems in use in the EU and the US, showing that the EU uses more than three times as many weapon systems as the US does. Since the US operates a fully integrated army, the difference between the EU and the US is primary driven by competing systems, which lead to expensive redundancies in R&D, procurement and operation (Gallhöfer 2014; Hartley 2011b; McKinsey 2013).

Table 1:

Weapon systems in the EU and the US

Weapon system	EU	US
Tank	20	4
Artillery	3	1
Fighter	13	6
Helicopter	7	5
Missile	17	7
Frigate	11	1
Submarine	18	3
TOTAL	**89**	**27**

Source: Based on Gallhöfer (2014).

The policy field of defence is thus a textbook example of the kinds of negative effects there can be in the absence of the internal market. An integrated European army, in addition to removing the exception to the internal market provision, could contribute to solving this dilemma as many reasons for protecting national defence industries would disappear. This is particularly

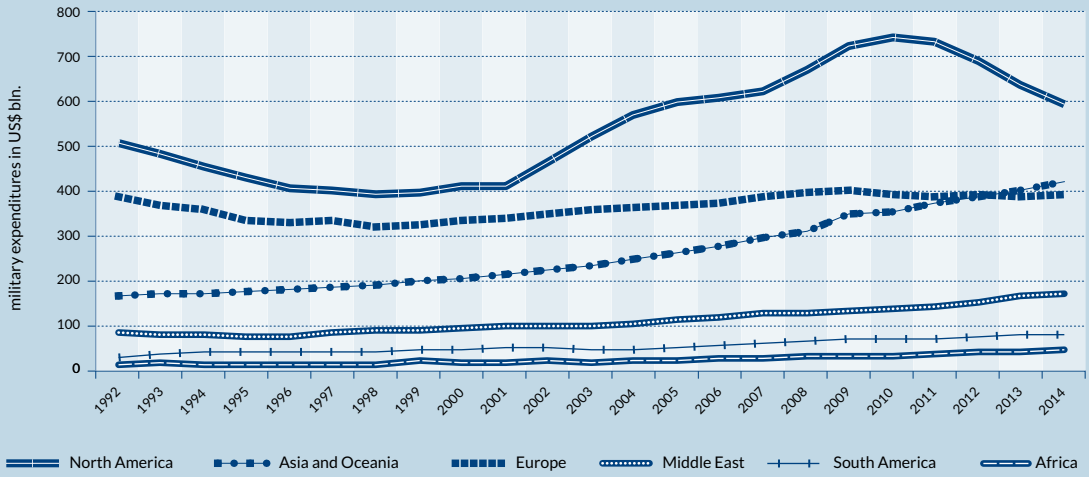
true with respect to currently predominantly national weapon systems and national procurement. In contrast, if only internal market restrictions were removed but the current system of national defence (industries) were maintained, national standards in line with secrecy deliberations could counteract the merits of an internal market in the field of defence policy. Even if governments are committed to Europe-wide public submissions, national considerations may hinder the full exploitation of trans-European benefits and the creation of trans-European champions in the production of specific defence goods. Taken together, assuming that a European defence competence would also imply a large step towards internal market consistency, we assign a score of 5 for this indicator.

COMPETITION

Nominal military expenditures in Europe have been stagnating for years. At the same time, military expenditures in the other regions of the world have evolved more dynamically and reached a higher level in 2014 than in 1992. Figure 6 illustrates the development between 1992 and 2014 for six world regions. In 2013, Asia and Oceania overtook Europe and are now the regions with the second-highest military expenditures. Even if looking at spending in isolation from capabilities only displays one side of the coin, these developments point towards the fact that the EU's primary concern is not about competition between member states, but about competition with other world regions (Gallhöfer 2014; Mölling 2015).

Figure 6:

Development of military expenditures in six world regions (1992–2014)



Source: SIPRI Military Expenditure Database 2012 (http://milexdata.sipri.org). Figures are in 2011 USD at constant prices and exchange rates.

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The fact that technological progress generally leads to increased R&D efforts particularly applies to defence goods (Ablett and Erdmann 2013). This, in turn, leads to higher prices and maintenance costs for these defence goods

(Kirkpatrick 2004, 2008; Lefeez 2013). To bear the costs of technologically sophisticated defence goods, member states are forced to cooperate on R&D (see, e.g., Gallhöfer 2014; Mölling 2015), which typically involves the member states that have a substantial armament industry, namely, France, Germany, Spain, Sweden and the United Kingdom (Schmitt 2005).[100] Prominent examples of jointly developed defence goods include the Airbus A400M military transport plane and the Eurofighter Typhoon. Thus, in general, instead of competing with each other, member states prefer to collaborate in the policy field of defence.

However, a major shortcoming of current cooperation is the application of the 'juste retour' principle. For instance, the standard rate for cooperation within the Organisation for Joint Armament Cooperation (OCCAR) is 66 per cent (i.e. if a national government contributes €30 million to an OCCAR procurement project, the organisation will place orders worth €20 million in the contributing country) (OCCAR 1996). The rate was even 100 per cent in the case of Eurofighter procurement, meaning that for each euro a country contributes to the Eurofighter project, one euro is spent in that country in turn (Mölling 2015). This causes inefficient or even insufficient resource allocations because orders are not allocated to the firms offering the leading technologies (i.e. the trans-European champions), but are instead allocated based only on considerations of fairness (Edwards 2011; Gallhöfer 2014; Keohane 2002).

Competition between member states mostly occurs after a phase of cooperation (e.g. if a new defence good is developed, national governments compete for the best-equipped version of the good) (Edwards 2011; Maulny and Liberti 2008), leading to a high fragmentation of national orders. A prominent example is the ordering of the NH90 helicopters, which has even more versions than participating member states (Mölling 2015). In contrast, by pooling the demand of all member states, procurement costs could be cut by 30 per cent (McKinsey 2013).

Concerning the innovative function of competition, pure national advances in defence goods leading to innovation spillover effects have been rare in recent years. One exceptional example is the Type 212A submarine, which was developed in Germany for the German navy to replace its predecessor type, which was almost 40 years old. That attracted the Italian navy, which finally bought licences to rebuild the submarine (see Gallhöfer 2014). Thus, this case can be considered an example of successful yardstick competition: One member state developed a best practice defence good, and another one adopted it.[101]

Taken together, the current competition is generally not welfare-enhancing (Mölling 2015), and there is only limited evidence of welfare-enhancing innovative competition, such as in the case of the submarine. For positive effects from yardstick competition, member states would need sufficient resources for defence (e.g. for R&D). However, given how much the 2008 economic crisis impacted public budgets, there are only limited chances that there will be sufficient national resources for defence in the short and medium terms (see, e.g., Brune and Mölling 2011; Larrabee et al. 2012; Major

100 In 1998, these countries signed a letter of intent (LoI) to facilitate cross-border consolidation and cooperation of defence industries. In 2000, the LoI countries signed a framework agreement covering security of supply, exports and transfers.

101 The submarine, however, suffers from various technological problems, which decreases its value as a best practise example for the provision of defence technologies (see Repinski, Rosenbach and Traufetter 2015).

and Mölling 2013). Hence, the discussion is about how to improve output given constant input, or at least how to maintain output given decreasing input (Ballerster 2013). The European Parliament (2015) estimates that EU member states would reduce military expenditures by 66 per cent[102] if the military agenda were to be organised in a fashion similar to that of the US (i.e. if Europe had an integrated army). Assigning the policy field of defence to the European level may thus eliminate negative effects from competition, improve military organisation and increase overall welfare. Therefore, we assign a score of 5 for this indicator.

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102 To be more specific, the European Parliament estimates that military expenditures of currently €193 bln/year could be reduced to €62.9 bln/year.

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APPENDIX

Spillover effects

Table 2:

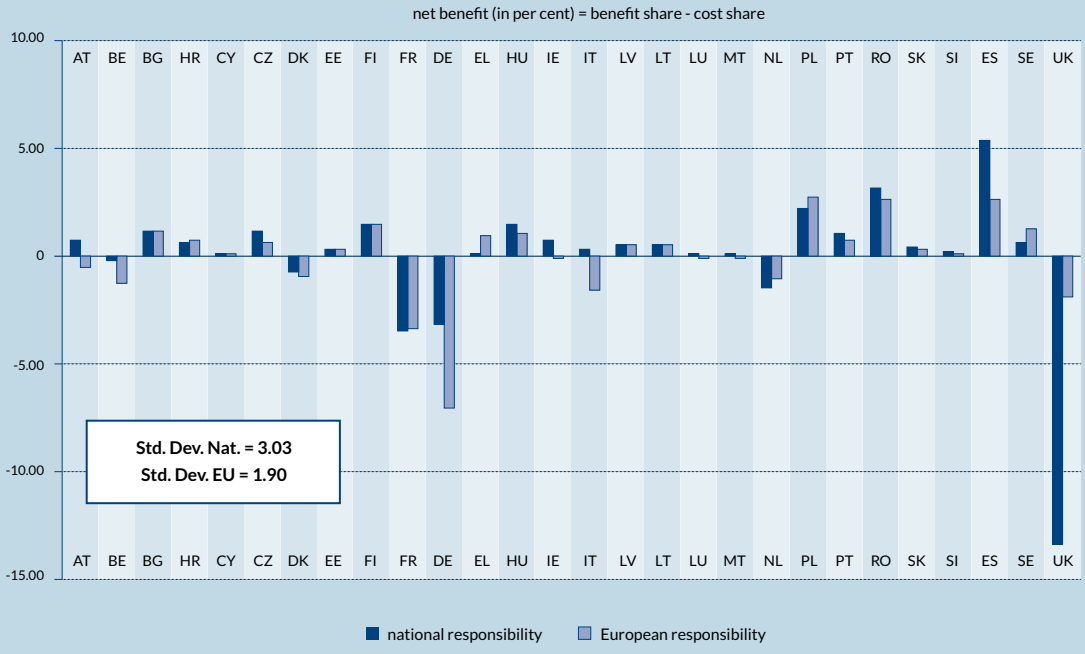
Benefit- and burden-sharing among EU member states (in per cent)

Share of EU total (in per cent)							
Country	ISO	Population	Area	GDP	Benefit share	Burden share (nat.)	Burden share (EU)
Austria	AT	1.67	1.89	2.39	1.98	1.14	2.43
Belgium	BE	2.21	0.70	2.92	1.94	2.08	3.16
Bulgaria	BG	1.44	2.50	0.30	1.42	0.28	0.34
Croatia	HR	0.84	1.30	0.32	0.82	0.31	0.18
Cyprus	CY	0.17	0.21	0.13	0.17	0.16	0.14
Czech Rep.	CZ	2.08	1.77	1.16	1.67	0.68	1.16
Denmark	DK	1.11	0.98	1.87	1.32	1.92	2.10
Estonia	EE	0.26	1.00	0.14	0.47	0.19	0.15
Finland	FI	1.07	6.98	1.49	3.18	1.69	1.63
France	FR	12.98	14.53	15.65	14.39	17.62	17.59
Germany	DE	15.94	8.20	20.78	14.97	17.17	21.00
Greece	EL	2.18	3.00	1.35	2.18	2.19	1.44
Hungary	HU	1.96	2.14	0.74	1.61	0.28	0.74
Ireland	IE	0.91	1.57	1.29	1.26	0.38	1.22
Italy	IT	11.82	6.94	11.90	10.22	10.73	12.66
Latvia	LV	0.40	1.43	0.17	0.67	0.11	0.20
Lithuania	LT	0.59	1.44	0.26	0.76	0.19	0.28
Luxembourg	LU	0.11	0.06	0.33	0.17	0.09	0.25
Malta	MT	0.08	0.01	0.06	0.05	0.03	0.06
Netherlands	NL	3.32	0.77	4.75	2.95	4.27	3.81
Poland	PL	7.54	7.18	2.93	5.88	3.70	3.08
Portugal	PT	2.08	2.12	1.25	1.82	1.04	1.35
Romania	RO	3.96	5.28	1.07	3.44	0.64	1.10
Slovak Rep.	SK	1.07	1.13	0.54	0.91	0.52	0.57
Slovenia	SI	0.41	0.46	0.27	0.38	0.20	0.30
Spain	ES	9.25	11.52	7.76	9.51	5.60	8.34
Sweden	SE	1.89	9.35	3.23	4.82	3.65	3.03
United Kingdom	UK	12.65	5.57	14.92	11.05	23.12	11.67

Notes: Data for 2013 (source: Eurostat). Nuclear deterrence costs in France and the UK are subtracted from national defence expenditure before calculating the shares (source: Global Zero 2011).

Figure 7:

Net benefits of defence policy by country using capital stock (in per cent)



Sources: Eurostat; Feenstra, Inklaar and Timmer (2015).

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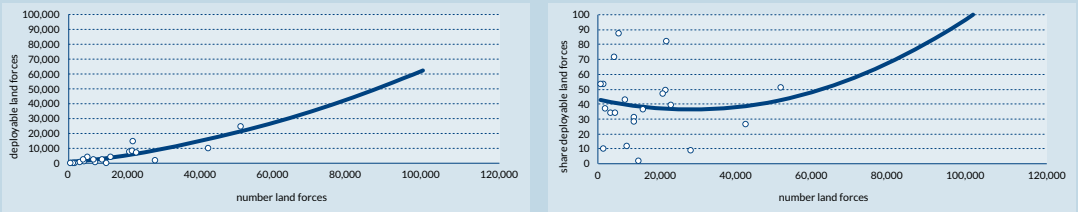
Economies of scale

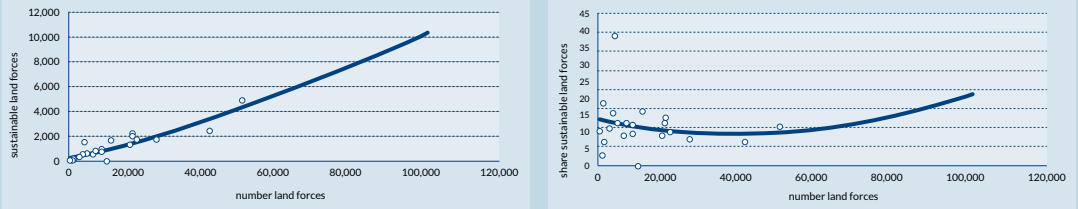
Figure 8:

Deployable and sustainable land forces relative to the total number of land forces
(excluding France, Greece, Spain and the UK)

Deployable land forces



Sustainable land forces



Notes: Data refer to 2013. Source: EDA (2015). The fitted line is calculated using a second-order polynomial.

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XI. *Case Study 5:*

Development aid

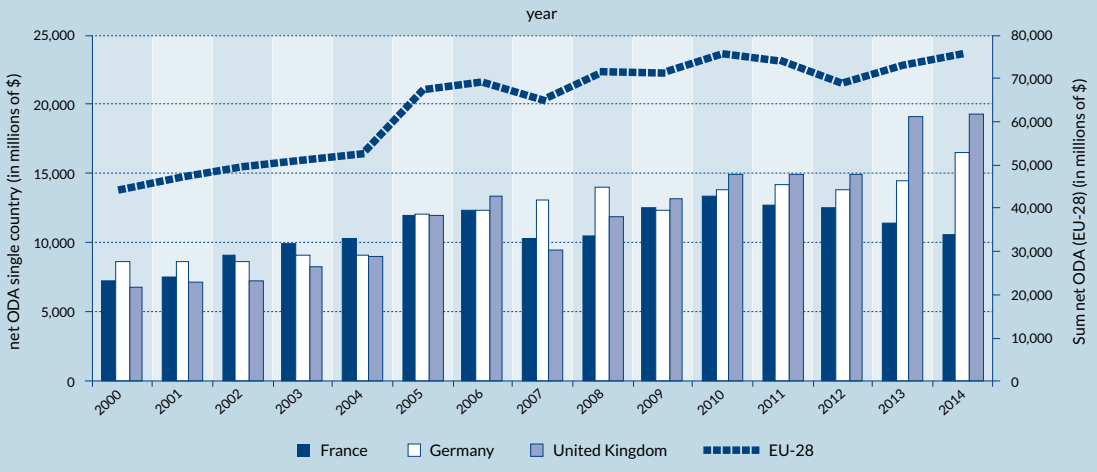
Current and future challenges

There is wide consensus about the challenges regarding developing countries. No poverty, zero hunger, good health and well-being, quality education and gender equality are some of the Sustainable Development Goals (SDGs) adopted in 2015 by 193 members of the United Nations (The Guardian 2015; United Nations 2016). While some progress has been achieved in recent decades, many of those problems are still serious. For example, almost 800 million people still suffered from hunger between 2014 and 2016, and an estimated 5.9 million children below the age of five died in 2015 for reasons that could have been prevented (United Nations 2016).

The onset of diseases, poverty and climate change have made development aid an even more important subject – not just from a perspective of altruism, but also with respect to donor self-interest (Ayers and Huq 2009; BAMF 2016; World Bank 2002). As a consequence, the amount of official development assistance (ODA) provided by international organisations as well as national agencies reached a new peak in 2015 – even without in-donor expenditures for refugees – and an increasing number of different international declarations underlines the importance of development aid as a global task (OECD 2016). The same holds true for the EU member states. As shown in Figure 1, the total net ODA of the EU-28 increased considerably in recent years, reaching $75.84 billion in 2014.[103] In recent years, the net ODA from Germany and the United Kingdom, in particular, has driven this result.

Figure 1:

Net ODA trend for the EU-28 and selected EU member states (2000–2014)



Notes: The figure shows net ODA for France, Germany and the United Kingdom (left scale) as well as the sum of all EU-28 net ODA (right scale).
Source: OECD (http://stats.oecd.org/).

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103 Net ODA is defined as ODA minus repayments on the principal. See, e.g., http://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/global_econ_partnership/net_oda.pdf and https://data.oecd.org/oda/net-oda.htm.

Recent challenges (e.g. the increasing number of refugees and immigrants coming from developing countries) highlight the importance of development aid for creating liveable conditions there. Fundamental problems – such as unemployment, a lack of education, a poor healthcare system, climate change, in several cases bad governance, wars and persecution – have triggered the flows of immigrants and refugees (BMZ 2011).

Another difficult challenge will emerge in the long run, as the number of people living in developing countries will increase considerably. The population in African countries, for instance, will reach 2.4 billion by 2050, which is twice as high as its current level (United Nations 2015). This population growth, which will further increase emigration pressure, underlines the need for a successful approach to development policies.

Status quo

The EU and its member states share responsibility for development aid (European Parliament 2014). The individual member states, the EU institutions (especially the European Commission), a combination of the two, and other official agencies can either directly support developing countries or fund the agencies that perform development aid. The European Development Fund (EDF), launched in 1959, is the most important example of multilateral cooperation among EU member states outside the EU budget (see European Commission n.d.; European Parliament 2014).

According to an agreement reached by members of the OECD Development Assistance Committee (DAC), ODA is defined as: "Grants or loans to countries and territories on the DAC List of ODA Recipients (developing countries) and to multilateral agencies which are: (a) undertaken by the official sector; (b) with promotion of economic development and welfare as the main objective; (c) at concessional financial terms (if a loan, having a grant element of at least 25 per cent). In addition to financial flows, technical cooperation is included in aid. Grants, loans and credits for military purposes are excluded. Transfer payments to private individuals (e.g. pensions, reparations or insurance payouts) are in general not counted" (OECD n.d.-b).

Accordingly, ODA can be executed via grants, loans or technical cooperation. As an example, Germany's Federal Ministry for Economic Cooperation and Development (BMZ) distinguishes between (1) financial cooperation aimed at supporting partner countries in the financing of measures which are important for their development and (2) technical cooperation, which is focused on transferring technical, economic and organisational knowledge and skills. The latter is provided free of charge (grant element of 100%) to the partner countries and consists, for example, of advisory services and the supply of materials and equipment (BMZ n.d.-a, n.d.-b). The grant level for financial cooperation depends on a country's level of development, and the least developed countries are eligible for a grant element of 100 per cent.

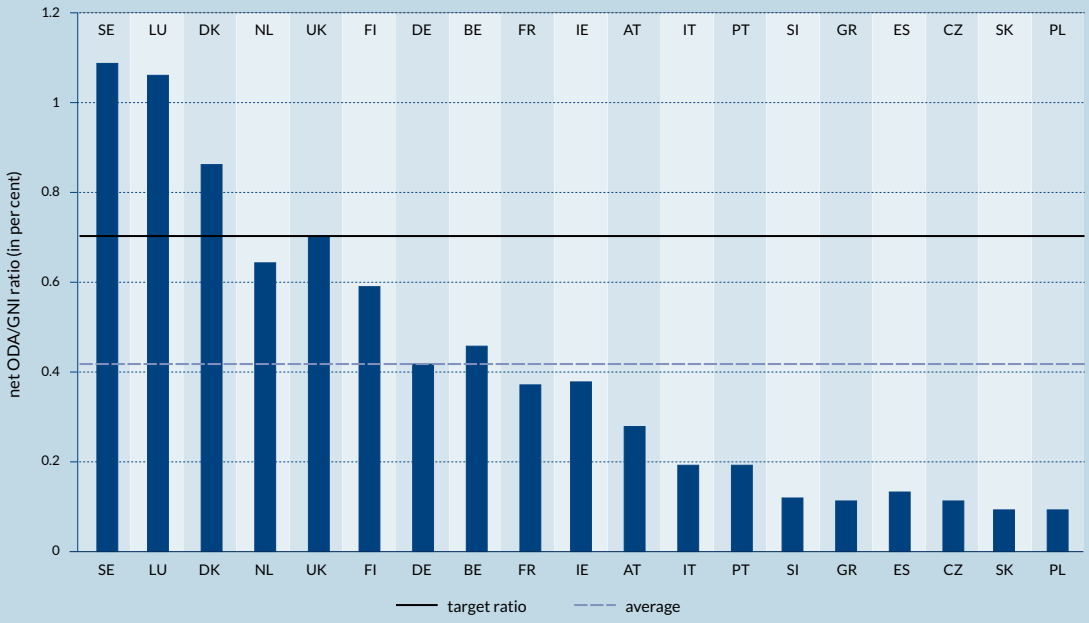
Several commitments have been made regarding the way development aid should be fulfilled (see 'Internal market consistency' section below). For instance, donors want to harmonise their aid (better coordination, simplification of procedures, and sharing of information), reduce aid fragmentation (reduce the number of small aid projects in a sector and merge them into a larger project with more impact) and achieve better policy cohesion (Council of the European Union 2011; OECD 2008). Especially the latter is very relevant to the EU. The European

Commission has identified 12 policy areas (e.g. trade, environment, security) in which contradictions should be avoided and synergies could be achieved among different EU policies (European Commission 2005, 2015).

However, there is still room for improvement. For instance, although the problem of aid fragmentation seems to be at the top of the European development agenda, international coordination and cooperation lag behind to a significant degree. Furthermore, current development payments are below pledged levels, as the EU has not achieved the net ODA/GNI (gross national income) ratio of 0.7 per cent agreed upon by the United Nations. While only four countries fulfilled this commitment level in 2014 (Denmark, Luxembourg, Sweden and the UK), many others have not (see Figure 2). The average net ODA/GNI ratio for the considered countries is equal to 0.41 per cent.

Figure 2:

Net ODA/GNI ratios of 19 EU member states (2014)



Source: OECD (https://data.oecd.org/natincome/gross-national-income.htm; http://stats.oecd.org/).
Notes: The figure displays the net ODA/GNI ratio (in per cent) of 19 EU countries in 2014. The solid black line indicates the target ratio of 0.7 per cent, while the dotted blue line shows the average ratio of the 19 countries. Countries are sorted in descending order.

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Counterfactual situation

For the counterfactual situation, we assume a very far-reaching scenario in which national development aid is terminated and all European development aid is instead centrally financed and managed by the EU. In financial terms, this means that development aid ceases to be a national expenditure and is instead fully financed from the EU budget. The full shift of expenditures to the EU budget under this radical scenario also implies that the allocation of European development aid is completely determined via EU decision-making. Moreover, this also entails having all payments made to international organisations determined by the EU.

Overview

Score	Description
	Spillover effects
4	Spillover effects are present if a member state does not pay for development aid in foreign countries but receives benefits stemming from development aid paid by other countries. We calculate national benefits from development aid based on commercial and security motives and contrast these figures with current (national) and counterfactual (EU) payments for development aid. Our indicator of free riding decreases by 36 per cent when moving from a national to a European competence. This result points towards a European allocation of competences.
	Economies of scale
5	We use OECD data on administration costs for development aid to show that there are potential cost savings if development aid were centrally executed by the EU. Relative administration costs decrease disproportionally with an increasing size of the donor. Furthermore, we show that aid concentration increases with donor size, which points towards a more efficient use of funds if development aid were allocated to the EU level.
	Preference heterogeneity
5	We analyse questions from the Special Eurobarometer 441 (The European Year for Development – Citizens' views on development, cooperation and aid) from February 2016, and find that preferences for development aid are highly comparable across EU member states. The heterogeneity varies from 9.7 to 21.9 per cent, indicating that development aid could be allocated to the European level.
	Internal market consistency
3	While the member states and the EU have expressed their desire to foster better coordination, a large part of development aid is still executed on the national level. This could pose a problem with respect to the functioning of the internal market if the procedures for public procurement differ between the member states and if the member states bias public procurement towards national contractors. However, the member states and their implementing organisations adhere to the EU's public procurement rules, which prohibit the preferred selection of national contractors. As the member states have likewise agreed to halt tied aid, there is no problem with respect to the internal market.
	Competition
4	We contrast the threat of a race to the bottom with the merits of potential yardstick competition. Concerning the latter, competition has negative effects as member states care about the impact of their aid disbursements relative to the aid disbursements of other member states, which increases aid fragmentation. As there are enough international players preventing a European monopoly on development aid, the competence could be allocated to the European level. However, there is no evidence of a race to the bottom, which limits the indication of a clear European competence.

Further information

SPILLOVER EFFECTS

Methodology and data source

Spillover effects in this policy field are present if a member state does not (adequately) pay for development aid in foreign countries but receives benefits stemming from development aid paid by other countries.

To approximate the presence of these spillover effects, we calculate the member states' benefit and burden shares for both the status quo (of a national provision of development aid) and the counterfactual situation (with development aid being centrally managed by the EU).

For the approximation of the member states' benefits, we focus the analysis on development aid objectives. Based on the aforementioned SDGs and the classification of donor aid motives by Bandyopadhyay and Vermann (2013), we can distinguish between the following development aid motives:

1. Altruistic motives (e.g. improving economic growth to help developing countries for humanitarian reasons)
2. Paternalistic motives (e.g. building institutions, improving governance)

3. Political motives (e.g. fostering reciprocal support in international organisations)
4. Commercial motives (e.g. improving trade relationships, developing resources)
5. Migration and security motives (e.g. reducing migration, fighting terrorism)

These motives are in principle used to develop a base for calculating the benefit share. However, both paternalistic and political motives are very hard to quantify. Furthermore, the importance of altruistic motives and the contribution of aid to economic growth is highly controversial in the academic literature (see, e.g., Nowak-Lehmann et al. 2012). We therefore disregard these rather qualitative motives and base our calculation instead on commercial as well as migration and security motives. On top of being quantifiable, the latter motives have an additional advantage in that a member state's benefits accruing from these motives can spill over to other countries relatively easily. For instance, the allocation of development aid to reduce migration benefits all EU member states irrespective of their contribution. The same applies to improvements in global security due to activities in developing countries. The reasoning behind the latter aspect is that development aid can be used to prevent terrorism by tying aid to counterterrorism measures or by using aid to fight the grassroots causes of terrorism, such as for education and conflict prevention (Bandyopadhyay, Sandler and Younas 2011; Young and Findley 2011).

To measure commercial motives, we use OECD data on the member states' imports and exports with least developed countries (LDCs) and compute the respective percentage share of each member state in total imports and exports.[104]

Concerning the objective of limiting migration pressure, we use data from Eurostat on the number of asylum-seekers from non-EU countries in the 2009–2014 period and compute the percentage distribution of these figures across member states.[105] The underlying assumption is that the relative number of asylum-seekers in one country is a good indicator for the benefits a member state has from limiting migration pressure via development aid.[106]

The member states' incentives to fight terrorism are approximated using the Global Terrorism Database (National Consortium for the Study of Terrorism and Responses to Terrorism 2016).[107] We use figures on the attacks on the member states' citizens worldwide and figures on the attacks on the member states' territory.[108] For both figures, we compute the percentage distribution

104 Another idea would be to use information on the member states' foreign direct investments (FDI) in countries receiving ODA. However, information on this indicator is lacking for too many countries (according to the OECD), which renders the application of this measure infeasible.

105 The lower bound of the time frame is driven by data availability. We exclude migration figures from 2015 due to the large increase in asylum-seekers in this year and the potential biases resulting from the 2015 European asylum crisis.

106 Of course, development aid is not the only solution for fighting migration. Furthermore, the topic has become particularly important in recent years. Nonetheless, we assume that development aid contributes to a reduction in migration as the incentives to stay in the respective LDC increases. This is still an assumption, however, as one could also argue that development aid contributes to migration because very poor citizens do not have the chance to migrate whereas (only relatively) poor citizens can migrate to other countries. Given these caveats, we will also present robustness tests which disregard migration benefits.

107 See, e.g., Dreher and Fuchs (2011) on the importance of development aid to fighting terrorism.

108 For both indicators, we include all types of attacks, all types of weapons, and all kinds of targets. The number of attacks only refers to international terrorism, meaning that the attack was ideologically international and that the nationality of the perpetrator group differs from the nationality of the target(s)/victim(s). If the perpetrator group or target is multinational, the attack is ideologically international.

across the member states and calculate the average of both shares. The assumption is that the higher this average is, the more a country benefits from its own development aid and that of other member states.[109]

In the baseline scenario, we calculate the unweighted average of the four individual benefit measures (import, export, migration and terrorism share), meaning that commercial as well as migration and security motives are equally weighted with 50 per cent. Furthermore, we present robustness tests without migration and security motives as both motives rely on relatively strong assumptions. In the first alternative scenario, commercial motives are calculated with equal weights for imports and exports. In the second alternative scenario, we take the comparatively strong importance of exploiting natural resources into account, and thus weight a member state's imports with LDCs with 75 per cent (exports with 25 per cent). In each scenario, we assume that the distribution of benefits is – at least in the short run – independent of the financing of development aid.

Burden shares under the status quo are calculated using the percentage distribution of the sum of the member states' ODA contributions in the 2013–2015 period.[110] The figures comprise bi- and multilateral aid and thus also include the member states' payments to the UN, the World Bank and EU institutions (the latter comprise, e.g., payments to the European Commission, the European Development Fund and the European Investment Bank).

For the counterfactual, we assume that development aid is financed from the EU budget, and we use the current distribution of the member states' contributions to the EU budget as an approximation of the member states' share in the case of centrally managed development aid.

Finally, we calculate net benefits of development aid under the status quo and in the counterfactual situation by subtracting the individual burden shares from the benefit shares (see Table 2 to Table 4 in the Appendix). Due to missing information for some components in the calculation of the benefit share and the status quo burden share, the analysis only includes 18 countries.[111] All percentage shares are adjusted to these missing values and sum up to 100 per cent.

Results

The baseline results of the calculation of net benefits for the benefit share based on commercial as well as migration and security motives are presented in Figure 3.

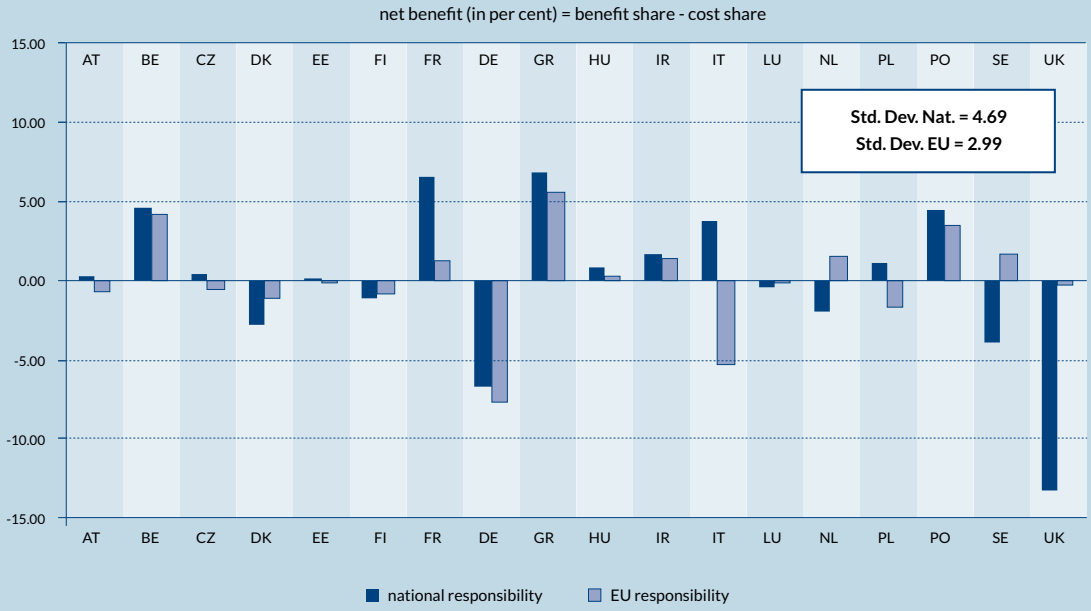
109 We assume that improved development decreases the chances that the LDC may be susceptible to terroristic perpetrator groups. As for migration, we will present robustness tests without the terrorism indicator in the Appendix.

110 We use the sum of payments from this period to smooth outlier years. The selection of the time frame is driven by data availability. As a caveat, our results (especially for 2015) may be biased by in-donor expenditures for refugees.

111 In particular, small member states are dropped. The included countries are Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Poland, Portugal, Sweden and the United Kingdom.

Figure 3:

Net benefits from development aid, by country (in per cent)



Notes: Own calculations based on data from Eurostat (http://ec.europa.eu/eurostat/web/asylum-and-managed-migration/data/main-tables), the National Consortium for the Study of Terrorism and Responses to Terrorism (https://www.start.umd.edu/gtd/) and the OECD (http://stats.oecd.org/). The benefit share includes commercial (50%) as well as migration and security (50%) motives.

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The United Kingdom, in particular, would benefit from a change from the status quo to a European competence of development aid. Put differently, under the current situation and its focus on national payments, the other member states free ride on the comparatively high development aid payments made by the UK.[112] A similar result would occur for Sweden, which would transition from a relatively large net-payer to a minor net-receiver position. The opposite applies for Italy, whereas changes in the net-benefit position of other countries (e.g. Germany, Greece and Poland) are rather negligible. Taken together, the standard deviation decreases from 4.69 to 2.99 when shifting the competence from the national to the European level. The corresponding relative decrease is equal to 36 per cent.

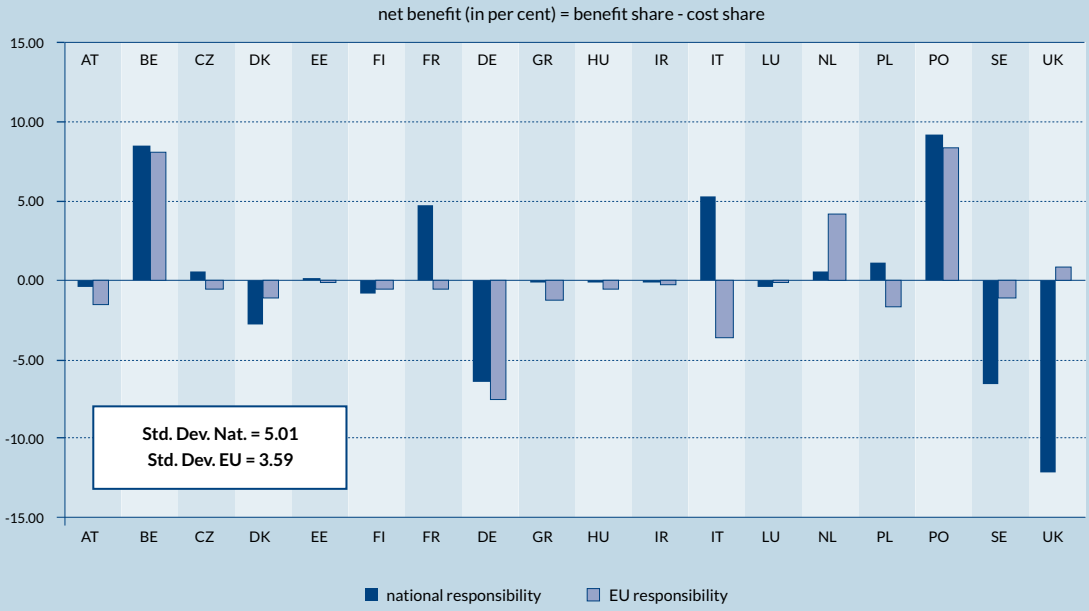
The results of the analysis without migration and security motives are highly comparable. In Figure 4, we present net benefits from development aid with equal weights for member states' imports and exports with LDCs. The main difference to the baseline result presented in Figure 3 occurs in Greece, which shifts from a net-receiver to a small net-payer position. Taken together, the standard deviation decreases by 28.33 per cent. A similar result is found for the analysis with higher weights for imports (see Figure 12 in the Appendix). The standard deviation decreases by 37 per cent, which is similar to the decrease in the standard deviation in the case of the baseline result.

Combining these results, we assign a score equal to 4 for the 'spillover effects' indicator, which points towards a European competence of development aid.

112 The payments can in part be traced back to historical ties or specific foreign policy strategies of the UK.

Figure 4:

Net benefits from development aid (only commercial motives, equal weights), by country (in per cent)



Notes: Own calculations based on data from the OECD (http://stats.oecd.org/). The benefit share only includes commercial motives with equal weights for imports and exports.

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ECONOMIES OF SCALE

Methodology and data source

To investigate economies of scale in development aid, we first analyse potential cost savings based on fixed cost degression in administrative costs if development aid were centrally executed by the EU. The underlying idea regarding these cost savings is that the number of headquarters, administrative staff members and transaction costs could be reduced if the number of individual donors were to decrease. The analysis is based on information regarding administrative costs from the OECD Creditor Reporting System (CRS) on ODA in 2014.

We calculate the ratio of administrative costs to total ODA for members of the OECD Development Assistance Committee (DAC),[113] various international organisations (IDB Special Fund, Global Alliance for Vaccines and Immunization (GAVI), UNHCR, UNICEF and UNRWA), and European institutions (European Commission, European Development Fund and European Investment Bank), and plot this ratio against the total ODA payments of the countries or institutions. If economies of scale are present, there should be a disproportional decrease in relative administration costs with increasing donor size.

Second, we refer to the effectiveness of development aid and point to the merits of centralising development aid with respect to aid fragmentation. As

113 Only 29 DAC members provide information on administrative costs: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, the United Kingdom and the United States.

was already mentioned above, developing countries share the problem of "too little aid from too many donors" (OECD 2011: 3). Due to the lack of concerted and coordinated aid allocation, transaction costs hinder a more efficient use of funds. We therefore investigate how the concentration of development aid depends on the size of the donor. Using data on aid fragmentation provided by the OECD, we compute aid concentration rates of EU member states and of European institutions, and relate these figures to the total ODA of the member states and the European institutions.[114] The concentration ratio measures "the number of donors' significant aid relations to all of its aid relations", with significance denoting that the donor is "among the largest donors that cumulatively account for at least 90% of the partner country's aid" (OECD 2011: 6). The higher this concentration ratio, the less fragmented a donor's ODA.

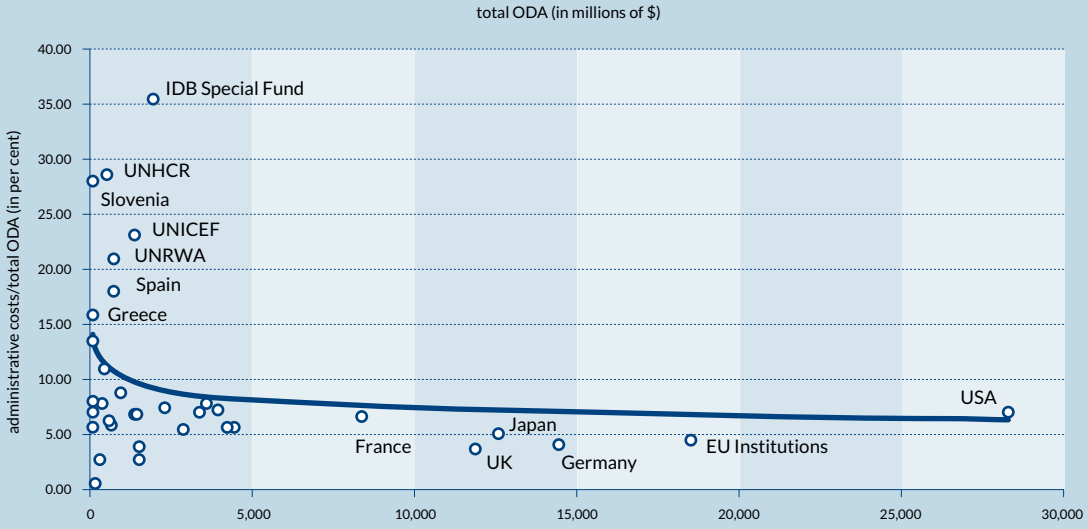
Results

The results for economies of scale in administrative costs using gross disbursements as a measure of ODA are presented in Figure 5 (plot of administrative cost share against total ODA for DAC members, international organisations and EU institutions) and Figure 6 (plot of administrative cost share against total ODA for DAC members only). All figures rely on information on gross disbursements and refer to 2014. Both graphs indicate a decreasing share of administrative costs in total ODA with increasing donor size, and thus point to potential cost savings due to fixed cost degression in administrative costs if development aid were executed by the EU. However, the figures do not differentiate between the various ways in which development assistance can be executed. For instance, administrative costs for budgetary assistance could be smaller than for project assistance. Nonetheless, the results are underpinned by recent studies that focus on potential cost savings on transaction costs. For instance, an estimated €800 million in transaction costs could be saved each year if donors concentrated their aid efforts on fewer countries (see Bigsten 2013; Klingebiel, Morazán and Negre 2013).

114 The data can be downloaded at https://www.oecd.org/dac/aid-architecture/fragmentation-orphans.htm and include information about 4,000 pairs of donor/receiver aid relations for all OECD Development Assistance Committee (DAC) members (for more information, see http://www.oecd.org/dac/dacmembers.htm) and major multilateral agencies. However, other donors (e.g. additional multilateral organisations or non-DAC members) are not included (OECD 2011).

Figure 5:

Ratio of administrative costs to total ODA (gross disbursements) compared to total ODA (DAC members, international organisations and EU institutions, 2014)



Notes: Data source: OECD (http://stats.oecd.org/). The figure includes a logarithmic line of best fit.

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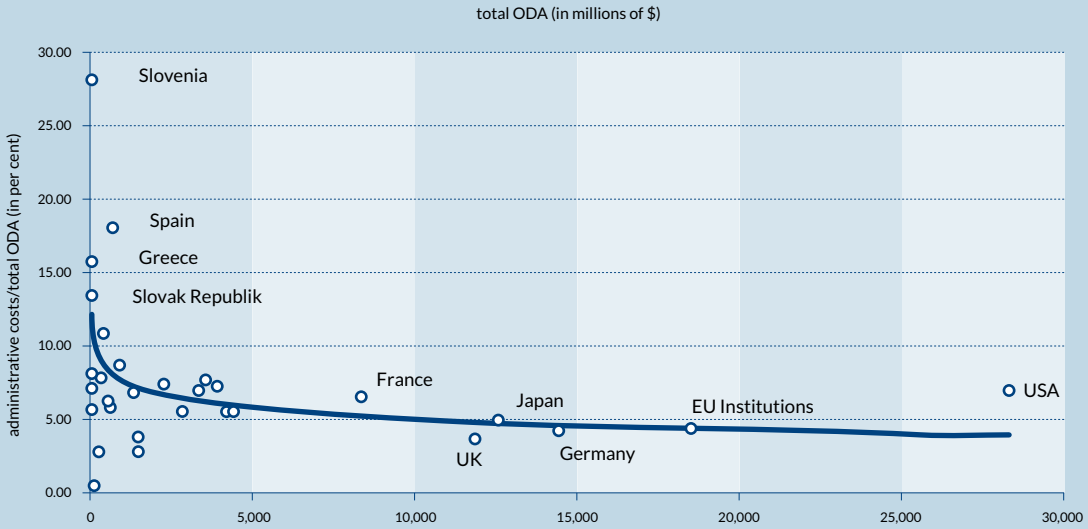
Figure 6:

Ratio of administrative costs to total ODA (gross disbursements) compared to total ODA (only DAC members, 2014)



Notes: Data source: OECD (http://stats.oecd.org/). The figure includes a logarithmic line of best fit.

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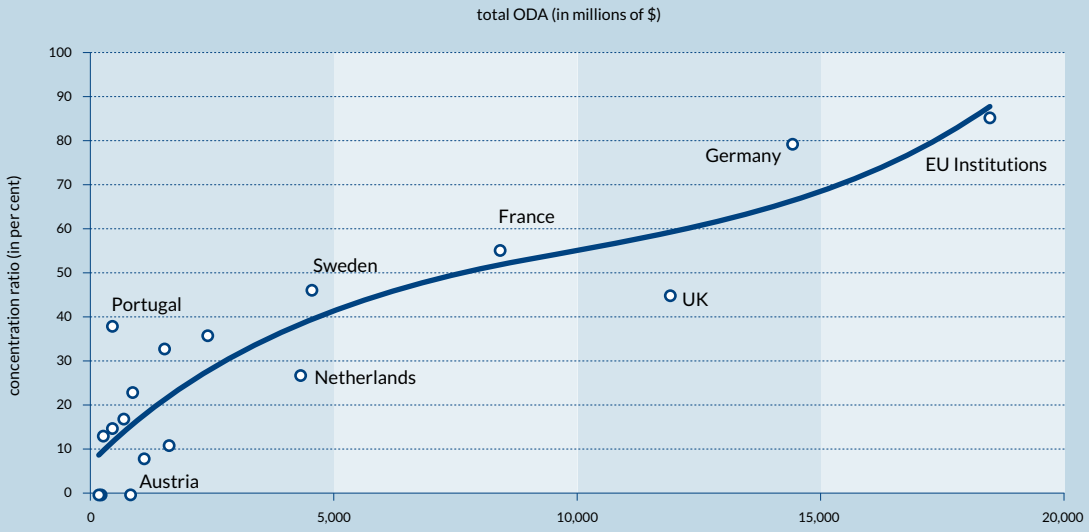
The results concerning the correlation of development aid concentration and donor size are presented in Figure 7. The figures refer to 2014 and include a polynomial line of best fit. The concentration ratio increases with a donor's ODA, indicating that aid allocated by larger donors is less fragmented than aid provided by smaller donors. Of course, this result seems to be the natural outcome given the way aid concentration is measured (i.e. larger donors can more easily account for a cumulated 90 per cent of a receiver country's aid). Furthermore, donations defined as non-significant in financial terms according to the applied definition can be well targeted and have an effective impact in the receiving country (OECD 2011: 6). Nonetheless, the result supports the assumption that combined aid allocated by the EU would be less fragmented and could be allocated more efficiently and with lower transaction costs.[115]

Figure 7:

EU member states' ODA concentration ratio to total ODA (2014)



Notes: Data refer to 2014. Source: OECD (https://www.oecd.org/dac/aid-architecture/fragmentation-orphans.htm).
ODA is measured in gross disbursements, and the figure includes a third-order polynomial line of best fit.

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Overall, we assign a score of 5 for economies of scale, as both potential cost savings in administration costs and effectiveness deliberations point towards the merits of a European competence for development aid.

PREFERENCE HETEROGENEITY

Data source

For determining the preference heterogeneity of EU citizens regarding development aid, we use information from the Special Eurobarometer 441 (The European Year for Development – Citizens' views on development, cooperation and

115 However, several political economy arguments may explain why this potential has gone unutilised to date. See Klingebiel, Negre and Morazán (2016: 5ff) for a detailed survey.

aid) published in February 2016. In the baseline analysis, we investigate the following questions:

- QA1: "In your opinion, is it very important, fairly important, not very important or not at all important to help people in developing countries?"

- QA5: "The EU (the European Commission and Member States) has promised to increase the level of its aid to developing countries. Given the current economic situation, which of the following statements best describes your opinion?"
  - *We should increase aid to developing countries beyond what is already promised*
  - *We should keep our promise to increase aid to developing countries*
  - *We should not increase aid to developing countries even though it has been promised*
  - *We should reduce aid to developing countries as we can no longer afford it*

- QA6: "Would you be prepared to pay more for groceries or other products from developing countries to support people living in these countries (for instance, for fair trade products)?"
  - *Not ready to pay more*
  - *Ready to pay up to 5% more*
  - *Ready to pay 6 to 10% more*
  - *Ready to pay more than 10%*

Furthermore, for each question, respondents could choose the answer 'don't know'.

Methodology

For all questions, we reduce the scale of answers from four to two levels (i.e. for QA1, we merge the answer levels 'very important' and 'fairly important' as well as 'not very important' and 'not at all important'). The same is done for the QA5 answers 'increase aid to developing countries beyond what is already promised' and 'keep our promise to increase aid to developing countries' as well as for 'not increase aid to developing countries even though it has been promised' and 'reduce aid to developing countries as we can no longer afford it'. For QA6, we combine 'not ready to pay more' and 'ready to pay up to 5% more' as well as 'ready to pay 6 to 10% more' and 'ready to pay more than 10% more'.

For each question, we investigate the approval with one of the two merged answer categories. Thus, with QA1, we look at the approval rates of those who agree that development aid is important; for QA5, we investigate the approval rates of people thinking that development aid should be (further) increased; and, for QA6, we analyse the respondents' willingness to pay a premium of more than 5 per cent to support people in developing countries.

To take differences in population size into account, we also calculate the weighted standard deviation and heterogeneity index using the population size of each country as weights (with the weighted results being displayed in the respective figure notes).

Results

The results are presented in Figure 8 to Figure 10. The unweighted heterogeneity indicator varies from 14.9 per cent (QA1) over 24.2 per cent (QA6) to 24.6 per cent (QA5). The weighted results are even smaller, ranging from 9.7 to 21.9 per cent.

According to our scoring scheme, this results in an overall score of 5. Nonetheless, some caveats need to be stressed. First, QA1 and QA5 only ask for the importance of development aid and the total amount of spending. However, the answers do not account for any preferences regarding the precise manner in which ODA should be allocated to developing countries. For instance, there might be differences between various donors with respect to programmes aimed at economic promotion or programmes aimed at direct payments to households. Second, different EU countries may have different preferences with respect to individual recipient countries, for example, due to historic ties or specific foreign policy strategies (see, e.g., Klingebiel, Negre and Morazán 2016). Third, the goals of development aid may differ between countries. While some countries might be driven by altruistic motives, others might be primarily engaged in fighting migration or allocate development aid for economic or political reasons. The importance of these issues, however, cannot be determined using the available Eurobarometer questions.

Figure 8:

Preferences regarding willingness to help developing countries

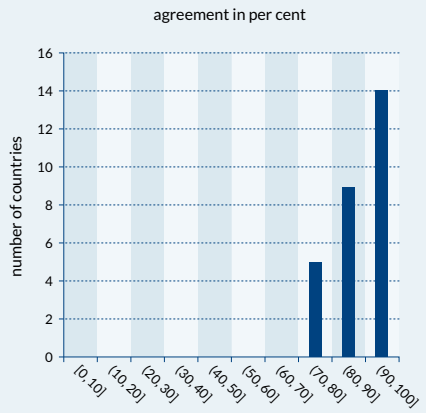
Development aid

Special Eurobarometer 441 QA1: "In your opinion, is it very important, fairly important, not very important or not at all important to help people in developing countries?"

a. *Very important and fairly important*
b. *Not very important and not at all important*

Results are shown for answer category a).

Mean (μ)	0.869
Median	0.893
Std. Dev. (σ)	**0.074**
Heterogeneity	**14.9%**



Notes: The X-axis denotes the share of answers with 'very important and fairly important' in a country. Respondents with no opinion about this question are not considered. If we use the country population size in 2014 as weights, the standard deviation = 0.049, resulting in a heterogeneity of 9.7 per cent.

Figure 9:

Preferences regarding the amount of development aid

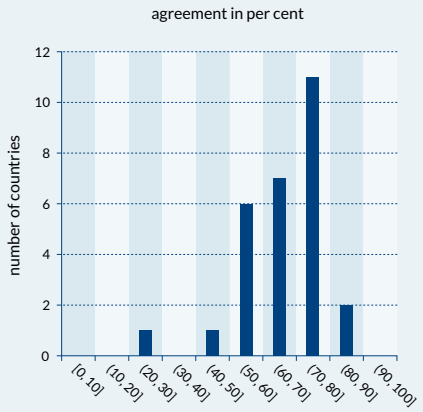
Development aid

Special Eurobarometer 441 QA5: "The EU (the European Commission and Member States) has promised to increase the level of its aid to developing countries. Given the current economic situation, which of the following statements best describes your opinion?"

a. *Keep the promise to increase aid or increase aid beyond what is already promised*
b. *Do not increase aid or reduce aid, even if it is promised*

Results are shown for answer category a).

Mean (μ)	0.667
Median	0.689
Std. Dev. (σ)	**0.123**
Heterogeneity	**24.6%**



Notes: The X-axis denotes the share of answers with 'keep the promise to increase aid or increase aid beyond what is already promised' in a country. Respondents with no opinion about this question are not considered. If we use the country population size in 2014 as weights, the standard deviation = 0.087, resulting in a heterogeneity of 17.5 per cent.

Figure 10:

Preferences regarding willingness to pay for development aid

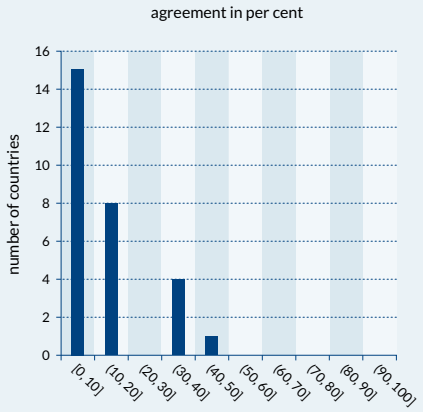
Development aid

Special Eurobarometer 441 QA6: "Would you be prepared to pay more for groceries or other products from developing countries to support people living in these countries (for instance, for fair trade products)?"

a. *Ready to pay a premium of more than 5%*
b. *Not ready to pay a premium of more than 5% or to pay a premium at all*

Results are shown for answer category a).

Mean (μ)	0.089
Median	0.138
Std. Dev. (σ)	**0.121**
Heterogeneity	**24.2%**



Notes: The X-axis denotes the share of answers with 'ready to pay a premium of more than 5%'. Respondents with no opinion about this question are not considered. If we use the country population size in 2014 as weights, the standard deviation = 0.109, resulting in a heterogeneity of 21.9 per cent.

After a decade of declining ODA flows in the 1990s, firm targets for ODA were established in 2002 at the International Conference on Financing for Development held in Monterrey (OECD n.d.-a). Beside the need to increase ODA, the conference also agreed upon the need for a more effective use of the financial resources (United Nations 2003). Further agreements between OECD countries were made at the High Level Fora on Aid Effectiveness (OECD 2003, 2008). Together with the proposals in the European Commission's Agenda for Change (European Commission 2007, 2011) and the Treaty on the Functioning of the European Union (TFEU), these agreements formed the standards of the internal market for development aid in the EU:

- Starting with the Declaration of Rome of 2003 (OECD 2003), donor countries agreed to strengthen the leadership role of partner countries in the coordination of development assistance and to enhance harmonisation of aid activities (reduce donor missions, reviews and documentation; streamline conditionality and reporting).
- With the subsequent Paris Declaration of 2005 (OECD 2008), donor countries committed to result-oriented management of aid, mutual accountability and aligning their overall support with the partners' national development strategies.
- The TFEU outlines further guidelines for development aid. In Article 210, the EU member states agree to coordinate their policies on development cooperation and to undertake development activities with other member states and/or international organisations.
- The Code of Conduct on Division of Labour concretised the importance of complementarity regarding aid activities.[116] First, the already-mentioned aid fragmentation is a problem on the in-country level, which shall be solved through better coordination. Second, cross-country complementarity shall be achieved, tackling the problem of aid orphans and darlings (European Commission 2007; see footnote 119).
- In line with the former is the approach of joint programming, which is one aim of the EU resulting from the findings of the Fourth High Level Forum on Aid Effectiveness (Council of the European Union 2011).[117]
- Furthermore, it is not necessary that all EU member states build up capacity in all sectors. Each country should focus on its specific know-how, which will add up to a complete 'toolbox' for the EU as a whole (European Commission 2007).

Overall, the member states and the EU have expressed their desire to better coordinate development aid in a number of internal and external commitments (Klingebiel, Morazán and Negre 2013). This notwithstanding, a large part of development aid is still executed on the national level. As national development aid is financed with public money but – at least in some countries – executed via private market agencies (implementing organisations), the national allocation scheme could pose a problem with respect to the functioning of the internal market if the procedures for public procurement differ between the

116 It should be noted that the Code of Conduct on Division of Labour as well as other recommendations or agreements made at the EU level are not legally binding, but rather – as described in the European Consensus on Development – a "common vision".

117 Joint programming implies the determination of a joint strategy for the EU development partners working in a partner country.

member states and if the member states bias public procurement for development aid towards national contractors. However, the member states and their implementing organisations adhere to the EU's public procurement rules, which prohibit the preferred selection of national contractors.[118]

Tied aid (i.e. official grants or loans that limit procurement to companies in the donor country or in a small group of countries) could pose another problem to the internal market. However, already at the DAC High Level Meeting in 2001, the DAC members agreed to untie ODA to LDCs, and they continue to pursue this objective (see OECD 2014). From 2001 to 2008, the proportion of untied bilateral aid rose from 46 to 82 per cent (Clay, Geddes and Natali 2009), and several countries (Australia, Finland, France, Germany, Ireland, Japan, the Netherlands, Norway, Portugal, Sweden, Switzerland and the United Kingdom) have even untied ODA "beyond the requirements of the recommendation" (OECD n.d.-c).

To summarise, the currently shared competences for ODA do not hinder the completion of the internal market. We therefore assign an indifferent score equal to 3.

COMPETITION

We contrast the threat of a race to the bottom with the merits of potential yardstick competition. Starting with the latter, there is little evidence of positive yardstick competition. While the member states care about the impact of their aid disbursements relative to the aid disbursements of other member states (Knack, Rogers and Eubank 2011), this 'relativeness' does not foster positive competition – though it does come at the cost of overall aid effectiveness. As the absolute impact of aid is hard to quantify, each donor has an incentive to surpass other donors in important relative donor rankings. While one could argue that this competition could lead to improved ODA allocations, more than anything it increases aid fragmentation (see Annen and Moers 2016). The current pattern of how aid is delivered and received shows that aid is splintered across too many donors, which leads to increased transaction costs and administrative burdens for recipient countries (see also the "Economies of scale' section above). In a theoretical model and an empirical application, Annen and Moers (2016: 24) show that donor competition for aid impact "inherently leads to aid fragmentation" and thus has detrimental effects on aid effectiveness. As a result, the "two commonly discussed ways to increase aid effectiveness, namely, improving aid impact evaluations and increasing donor coordination, can work against each other if improved aid impact evaluations lead to stronger relativeness and thus donor competition for aid impact" (Annen and Moers 2016: 3).[119]

118 In two case studies for France and Germany, we compare procurement rules for France's 'Agence Française de Développement' (AFD) and the major German implementing organisations, the 'Deutsche Gesellschaft für Internationale Zusammenarbeit' (GIZ) and the 'Kreditanstalt für Wiederaufbau' (KfW). In the case of the AFD, contracts above the thresholds of €5,000,000 for works and €200,000 for supply and consultancy projects "shall be subject to international competitive bidding" (AFD 2015). A similar threshold (€200,000) is used for services in the case of the GIZ (GIZ n.d.). The rulings of the KfW do not state exact figures for any thresholds but foresee that public procurement "in principle" must be applied using a public tendering procedure (KfW 2016).

119 Another negative effect of an overly fragmented aid system is the emergence of so-called 'aid orphans' and 'aid darlings', meaning countries which are respectively under- or over-aided. Due to the lower attractiveness of some recipient countries and a lack of coordination among donors, there is a negative herding effect for orphan countries. This can cause negative cross-border spillover effects which reduce the effectiveness

The allocation of development assistance to the European level could do away with these negative effects and thus contribute to increased aid effectiveness. While one could think about a potential monopoly problem in the case of the latter, the number of international players (e.g. Japan, the UN, the US and the World Bank) would limit a far-reaching monopolistic role of European development aid (Klingebiel, Morazán and Negre 2013).

Concerning the threat of a potential race to the bottom, we analyse the subcomponent aid from the Commitment to Development Index (CDI) (Center for Global Development n.d.). This index ranks 27 of the world's richest economies in seven categories (aid, finance, technology, environment, trade, security and migration) that directly or indirectly affect developing countries. Until 2013, the aid component of the CDI was calculated as the sum of aid volumes from each donor discounted by certain quality measures (e.g. the extent of tied aid or good governance of the recipient countries) (Center for Global Development 2016). Starting in 2014, aid quantity and quality entered the aid component as two equally weighted subcomponents. Aid quantity is now measured by a country's ODA/GNI share. Aid quality is approximated as quality of official development assistance (QuODA), which comprises the following four dimensions: maximising impact, fostering institutions, reducing burden, and transparency and learning. An overview of their subcomponents is presented in Table 1.

Table 1:

Subcomponents to measure the quality of ODA

Maximising Impact	Fostering Institutions	Reducing Burden	Transparency and Learning
Share of allocation to poor countries#	Share of aid to recipients' top development priorities*#	Significance of aid relationships#	Signatory of IATI#
Share of allocation to well-governed countries#	Avoidance of PIUs*+	Fragmentation across donor agencies#	Implementation of IATI data reporting standards
Low unit administrative costs#	Share of aid recorded in recipient budgets*+	Median project size*#	Recording of project title and description
High country programmable aid share#	Share of aid to partners with good operational strategies#	Contribution to multilaterals#	Detail of project description
Focus/specialisation by recipient country*#	Use of recipient country systems*+	Coordinated missions*+	Reporting of aid delivery channel
Focus/specialisation by sector*	Share of scheduled aid recorded as received by recipients*+	Use of programmatic aid*+	Quality of main agency evaluation policy
Support of select global public goods facilities#	Coordination of technical cooperation*+	Coordinated analytical work*+	Completeness of project-level commitment data
Share of untied aid*+	Coverage of forward spending plans/Aid predictability*#		Aid to partners with good M&E frameworks#

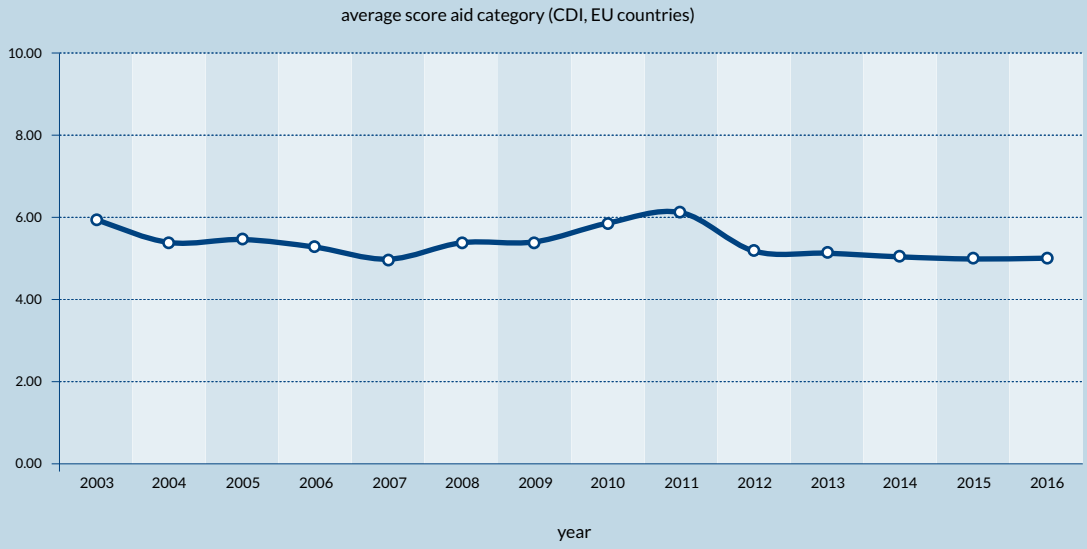
Source: Center for Global Development (2014: 5). Notes: IATI = International Aid Transparency Initiative; PIU = project implementation unit; M&E = monitoring and evaluation. Labels denote benchmarks: * = recipient governments; + = the Paris Declaration; # = the academic literature.

of aid (Pietschmann 2016). However, there is no evidence of improvements if development aid were to be organised by the EU, as the latter might likewise focus on (or neglect) particular countries or regions.

Based on the index scores of the subcomponent aid, we compute yearly average scores for all European countries included in the CDI.[120] As shown in Figure 11, the average scores for the EU member states do not vary much over time. The minimum and maximum figures are 4.99 (2007 and 2015) and 6.12 (2011). This points to a rather limited threat of eroding standards, and does not indicate a clear European competence. However, there are some arguments in favour of a European competence due to the detrimental effects of yardstick competition. We therefore assign a score of 4, which points towards an allocation to the European level.

Figure 11:

Development of the average score for aid from the Commitment to Development Index (2003–2016)



Source: Own computations based on data from Center for Global Development/CESifo Group (http://www.cgdev.org/publication/ft/commitment-development-index-2015; http://www.cgdev.org/commitment-development-index; https://www.cesifo-group.de/ifoHome/facts/DICE/Country-Characteristics/Basic-Country-Characteristics/Development-Aid/commitment-development-index.html).
Only EU countries are included.

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120 In the 2003–2011 period, the following EU member states were included: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. From 2012 to 2016, the Czech Republic, Hungary, Luxembourg, Poland and Slovakia were also included.

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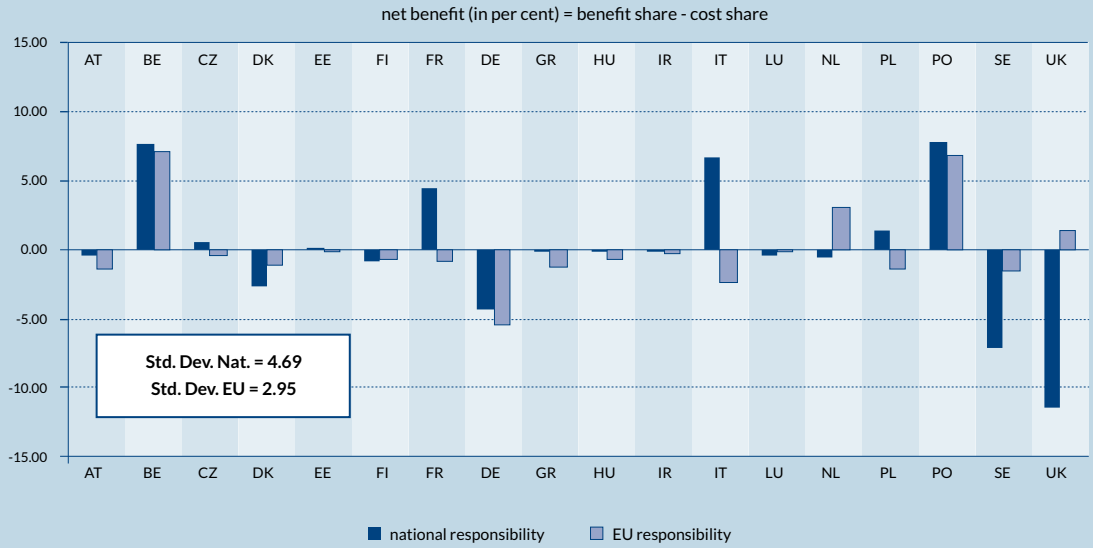
Spillover effects

Figure 12:

Net benefits from development aid (only commercial motives; 75% imports, 25% exports), by country (in per cent)



Notes: Own calculations based on data from the OECD and Eurostat. The benefit share only includes commercial motives (75% weight for imports, 25% weight for exports).

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Table 2:

Benefit- and burden-sharing among EU member states (in per cent) – using Benefit Share 1

Country	Benefit Share 1	Burden Shares		Net Benefit 1	
		National	EU	National	EU
Austria	1.95	1.69	2.75	0.26	-0.80
Belgium	7.69	3.10	3.57	4.59	4.12
Czech Rep.	0.71	0.29	1.31	0.42	-0.60
Denmark	1.20	3.97	2.37	-2.76	-1.16
Estonia	0.10	0.05	0.17	0.05	-0.07
Finland	0.92	2.04	1.85	-1.12	-0.93
France	21.08	14.56	19.88	6.51	1.20
Germany	16.02	22.68	23.74	-6.67	-7.72
Greece	7.10	0.36	1.63	6.74	5.47
Hungary	1.01	0.20	0.84	0.81	0.17
Ireland	2.74	1.11	1.38	1.62	1.35
Italy	9.01	5.27	14.31	3.74	-5.30
Luxembourg	0.14	0.57	0.28	-0.43	-0.14
Netherlands	5.87	7.86	4.31	-1.98	1.56
Poland	1.71	0.65	3.48	1.06	-1.77
Portugal	4.95	0.57	1.53	4.38	3.42
Sweden	5.01	8.94	3.42	-3.93	1.59
UK	12.80	26.10	13.18	-13.29	-0.38

Notes: Benefit Share 1 is based on equal weights for commercial as well as migration and security motives.

Table 3:

Benefit- and burden-sharing among EU member states (in per cent) – using Benefit Share 2

Country	Benefit Share 2	Burden Shares		Net Benefit 2	
		National	EU	National	EU
Austria	1.20	1.69	2.75	-0.49	-1.55
Belgium	11.58	3.10	3.57	8.48	8.01
Czech Rep.	0.78	0.29	1.31	0.49	-0.54
Denmark	1.16	3.97	2.37	-2.81	-1.21
Estonia	0.13	0.05	0.17	0.09	-0.04
Finland	1.22	2.04	1.85	-0.81	-0.62
France	19.33	14.56	19.88	4.76	-0.55
Germany	16.20	22.68	23.74	-6.48	-7.54
Greece	0.28	0.36	1.63	-0.08	-1.35
Hungary	0.19	0.20	0.84	-0.01	-0.64
Ireland	1.00	1.11	1.38	-0.11	-0.38
Italy	10.59	5.27	14.31	5.32	-3.72
Luxembourg	0.08	0.57	0.28	-0.49	-0.20
Netherlands	8.40	7.86	4.31	0.54	4.09
Poland	1.76	0.65	3.48	1.12	-1.72
Portugal	9.80	0.57	1.53	9.22	8.27
Sweden	2.32	8.94	3.42	-6.62	-1.10
UK	13.98	26.10	13.18	-12.12	0.80

Notes: Benefit Share 2 is only based on commercial motives (equal weights for imports and exports).

Table 4:

Benefit- and burden-sharing among EU member states (in per cent) – using Benefit Share 3

Country	Benefit Share 3	Burden Shares		Net Benefit 3	
		National	EU	National	EU
Austria	1.29	1.69	2.75	-0.40	-1.46
Belgium	10.70	3.10	3.57	7.60	7.13
Czech Rep.	0.82	0.29	1.31	0.52	-0.50
Denmark	1.23	3.97	2.37	-2.74	-1.14
Estonia	0.09	0.05	0.17	0.05	-0.08
Finland	1.16	2.04	1.85	-0.88	-0.69
France	19.05	14.56	19.88	4.48	-0.83
Germany	18.28	22.68	23.74	-4.41	-5.46
Greece	0.30	0.36	1.63	-0.06	-1.33
Hungary	0.11	0.20	0.84	-0.08	-0.72
Ireland	1.00	1.11	1.38	-0.11	-0.38
Italy	11.85	5.27	14.31	6.59	-2.45
Luxembourg	0.07	0.57	0.28	-0.50	-0.21
Netherlands	7.30	7.86	4.31	-0.56	2.99
Poland	2.00	0.65	3.48	1.35	-1.49
Portugal	8.35	0.57	1.53	7.78	6.83
Sweden	1.84	8.94	3.42	-7.10	-1.58
UK	14.57	26.10	13.18	-11.53	1.38

Notes: Benefit Share 3 is based on 75% weights for imports and 25% weights for exports.

XII. *Case Study 6:*

Post-secondary & tertiary education

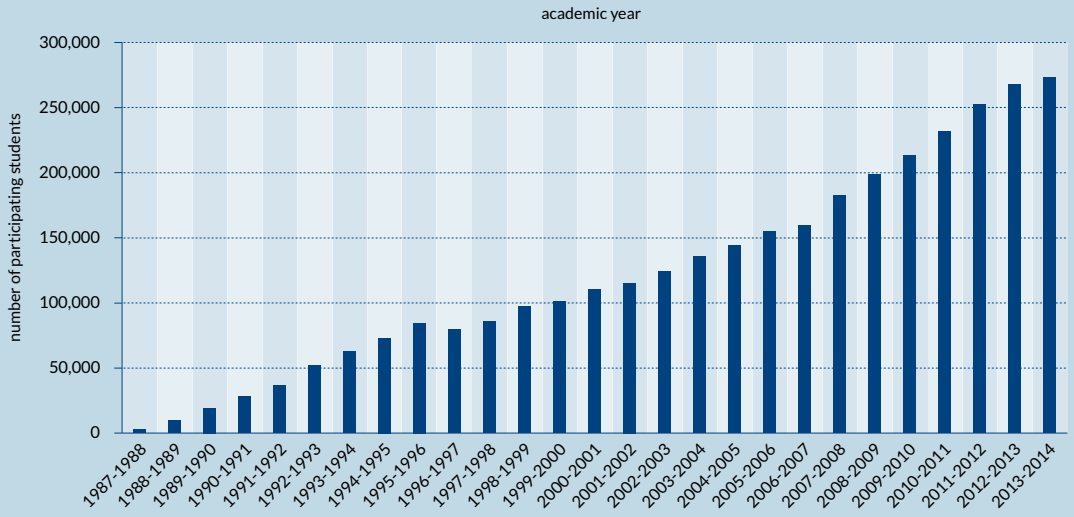
Current and future challenges

Globalisation, in particular, in addition to increased student mobility, increased demand for higher education, varying demographic trends in several regions of the world, and budgetary bottlenecks affecting the financing of higher education, are major challenges for today's higher education systems (EHEA 2016).

Traditional higher education institutions cannot retain their national focus, but compete with higher education institutions in several areas of the world. For instance, the total number of students studying outside their home country amounted to approximately 5 million students in 2014. The figures have more than doubled since 2000 and almost quadrupled since 1990.[121] The OECD estimates that the number of mobile students will have reached 8 million by 2015 (Oxford University 2015). Part of this development is encouraged by (inter) national programmes. The Bologna Process (for more details on this programme, see below), for instance, is an important driver of increased student mobility (OECD 2012), and the number of students participating in the programme has continuously increased since 1987 (see Figure 1). To date, over 3 million students have benefited from the programme. The successor of this programme, Erasmus+, had a budget of €580 million for the 2013–2014 period, and continues to advance the European Commission's aim of further enhancing student mobility (European Commission 2015b: 4).[122]

Figure 1:

Number of students participating in the Erasmus programme



Source: European Commission (2015b: 30).

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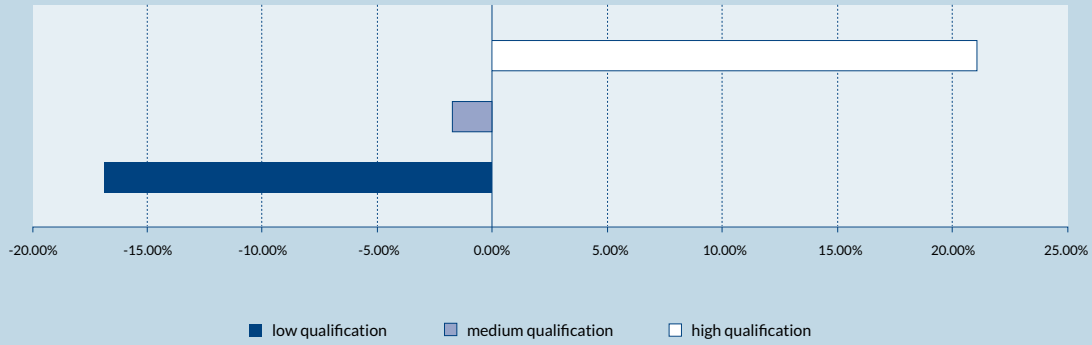
121 See http://monitor.icef.com/2015/11/the-state-of-international-student-mobility-in-2015. The figures do not include students engaging in language studies.

122 Erasmus+ integrates seven existing programmes, including pupil, student and staff mobility, amongst others (European Commission 2014a).

Another challenge is the changing labour market. While the number of jobs requiring high qualifications is expected to grow by 21.1 per cent between 2015 and 2025, the number of jobs requiring low or medium qualifications will decrease by 16.8 and 1.7 per cent, respectively (see Figure 2). Consequently, promoting higher education is at top of the EU's agenda and mentioned in the Europe 2020 strategy, which aims at a higher education rate of 40 per cent for 30- to- 34-year-olds by 2020 (European Commission 2015a).

Figure 2:

Employment growth rates in the EU-28 for different skill levels (2015–2025)



Source: http://www.cedefop.europa.eu/de/publications-and-resources/data-visualisations/employment-trends.

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The challenge of the changing labour market is closely connected with Europe's demographic situation. Between 2008 and 2050, the number of EU citizens is expected to fall from 500 million to 470 million (van Vught 2009). At the same time, the population in other parts of the world is increasing, and higher education systems outside Europe are becoming more and more competitive (Oxford University 2015). This trend, in turn, requires an improvement in the EU's education systems as well as an increase in the number of higher education graduates who can meet the standards of the future labour market. This aspect becomes all the more true with respect to the funding of higher education. Increased participation rates in higher education have increased the financial burden particularly in those countries which traditionally rely on public financing of higher education. This trend has forced several countries to implement reforms aimed at increasing private contributions as well as at decreasing the public share of higher education financing (OECD 2012).

Accordingly, we investigate whether the financing of higher education should be located on the national level or should be shifted to being an EU competence.

Status quo

The previously mentioned Erasmus programme is one example of cooperation in higher education in Europe. However, decision-making and budgets

are still on the national or even subnational level. As a consequence, the framework of higher education systems varies across the EU.

Article 165 of the Treaty on the Functioning of the European Union (TFEU) states that the European Union competence on education is supportive and supplementary. Nevertheless, there is a movement towards European convergence in higher education policy. In 1999, the Bologna Process was started, which aims to increase students' employability and mobility as well as the compatibility and comparability of European higher education systems. As a result of this process, the European Higher Education Area (EHEA) was launched in 2010 (EHEA 2016).[123] Nonetheless, while the Bologna Process is crucial for transitioning towards a more integrated higher education policy in the EU, it is important to note that the Bologna Process is intergovernmental and not grounded in EU law (van Vught 2009: 7).

Two aspects are important for the following analysis: a) the identification of the (public) good provided, and b) a discussion of its public-good characteristics. Starting with the former, higher education comprises various dimensions (e.g. the provision of university places and learning facilities), but also social dimensions and mobility aspects (see, e.g., European Commission 2016). In this analysis, we particularly refer to the provision and allocation of higher education places to study. However, when analysing the question of whether the competences for higher education should be shifted to the European level, the caveat applies that higher education cannot fully be treated as a public good. In particular, there is excludability or, in other words, the possibility to exclude consumers from higher education via the price mechanism. For instance, only those students willing to pay tuition fees can sit an examination.[124] The same – although to a lesser extent – holds true for rivalry consumption, such as with respect to crowded lecture halls or occupied laboratories. As a result, in addition to having public competences located on the national or the supranational level, higher education can also be provided via private markets. We will take this caveat into account when interpreting the results, such as when discussing spillover effects.

Counterfactual situation

For the counterfactual situation, we primarily focus on the financing of higher education. In contrast to a rather old-fashioned model of a benevolent planner that centrally allocates university places and fields of studies across Europe, we assume a modern competition model that is centrally financed but decentrally implemented ('money follows students').[125] As under the current system (e.g. in Germany), the individual education institution provides higher education and is responsible for the strategic focus of the fields of study as well as the number of student places provided. The counterfactual thus respects educational autonomy of education institutions and only changes the financing of higher education. We assume that the European Union would finance higher education in a competitive way with funds from the EU budget.

123 The EHEA currently comprises 48 countries. For more information, see http://www.ehea.info.

124 Furthermore, one could argue that the private returns from higher education (e.g. in terms of higher income or lower risk of unemployment) exceed the public returns.

125 The idea is based on Centrum für Hochschulentwicklung (CHE) und Stifterverband für die Deutsche Wissenschaft (1999). For further suggestions on counterfactual scenarios, see CHEPS (2004).

In a nutshell, such a financing model could comprise three pillars based on fixed payments, performance-oriented fund allocations based on specific formulas, and additional funds based on target agreements and profiling (Ziegele, Tumbas and Otilija 2010). The idea behind the counterfactual is thus geared towards recent trends in higher education financing, such as a "greater targeting of resources, performance-based funding and competitive procedures" (OECD 2012: 26).[126]

However, while the major change would be on the financing side, some side aspects would accompany this shift in competences. For instance, such a system would require the definition of common European standards, such as with respect to the recognition of qualifications.

Overview

Score	Description
	Spillover effects
2	Spillover effects are present if member states finance higher education but do not receive the benefits from these studies because of post-graduation migration. We calculate national benefits from higher education based on information from the OECD, and adjust these figures for migration of higher education graduates. We then calculate the distribution of higher education net benefits by subtracting the costs of higher education (both under the status quo and in the counterfactual situation) from our measure of higher education benefits. Our indicator of free riding increases when moving from a national to a European competence, which indicates that keeping the competence on the national level would be preferable.
	Economies of scale
1	We use OECD data to perform input-, output- and input-output-oriented analyses. For input data, we refer to expenditures per student, while the staff-per-student ratio is employed for the output-oriented analysis. Finally, we combine both indicators and investigate expenditures per staff for the input-output analysis. There is no evidence of and only limited theoretical arguments for the presence of economies of scale when shifting the funding of higher education to the European level.
	Preference heterogeneity
4	We conduct a system analysis on national student fees and use information from the Flash Eurobarometer questionnaire 260 on students and higher education reform. For the latter, three questions focusing on the admission and selection of students by universities and the role of student fees are investigated. The corresponding heterogeneity ranges from 20.8 to 33.4 per cent. Furthermore, the system analysis points to rather smooth patterns of national student fees, implying that differences in revealed preferences would not prevent a European competence from being efficient.
	Internal market consistency
3	The persistent lack of harmonisation of recognition procedures for academic qualifications, in particular, is a hindrance to the completion of the internal market. The free movement of people with respect to education and training is not yet completed. This fosters uncertainty and makes highly skilled university graduates prefer to pursue their careers in their home countries. Nonetheless, the current obstacles to the internal market do not render a decentralised solution infeasible, i.e., the internal market could also be achieved via increased cooperation.
	Competition
3	The EU may benefit from increased competition among internationally mobile students due to a higher quality of and lower prices for higher education. Furthermore, centralisation strengthens the EU's position to compete against higher education markets across the world. In contrast, the threat of a race to the bottom is negligible. However, this does not result in the necessity of a competence reallocation. Current (and, in the future, potentially increased) collaboration seems sufficient to gain advantages from competition.

126 Additionally, a clearing component could be added, such as the one implemented in Switzerland. While each Swiss canton offers higher education for all Swiss students, the cantons of a student's origin "pay the canton in which the educational establishment is located a specific fixed amount for the purposes of burden equalisation"; see https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/index.php/Switzerland:Higher_Education_Funding.

Further information

SPILLOVER EFFECTS

Methodology and data source

Spillover effects are present if member states finance higher education but do not receive the benefits from these studies owing to post-graduation migration. In contrast, if a member state finances higher education studies and students stay in the educating country, no spillover effects occur. The presence of spillover effects is thereby irrespective of the nationality of students (i.e. free riding by other countries is also present if the educating country only educates national students but all of these students or a share of them leave the country after graduation). We calculate member states' net benefits for both the status quo and the counterfactual situation to assess the extent of free riding for both a national and aa European provision of financing for higher education.

The calculation of benefit shares is based on the indicators 'public benefits for a man (woman) attaining tertiary education', which are provided by the OECD (2015). The indicators are calculated as the earnings difference between a man (woman) who attained tertiary education compared to a man (woman) who attained an upper secondary or post-secondary non-tertiary education. The figures comprise additional income tax earnings, social contribution earnings and transfer payments in addition to taking the probability of employment and unemployment benefits in the case of unemployment into account (OECD 2015: 140f).[127] We multiply these earnings differences for men and women by the number of male and female higher education graduates in 2013 to calculate a country's total public benefits from higher education.[128] Based on these results, we compute national benefit shares in relation to the total sum of public benefits for all EU countries, and assume that these benefits can be achieved irrespective of whether the national or European level is responsible for financing higher education.[129]

These shares, however, do not control for post-graduation migration flows of higher-education graduates. Optimally, we would add the net-migration of higher-education graduates who just finished their studies to the number of graduates. This adjustment would account for both higher-education graduates leaving the country after graduation (i.e. the other countries' free riding on the educating country) and higher-education graduates who studied abroad and enter the workforce in the non-educating country (i.e. the non-educating country's free riding on other countries). Unfortunately, such figures are not available.[130] We therefore use general intra-EU migration rates of people aged 20 to 29 years without any education restriction.[131] To restrict these migration

127 Figures are expressed in equivalent USD converted using PPPs for GDP. We use average figures for 2010 and 2011 for our calculations.

128 Since there are too many missing values for various countries in previous years, we cannot use average figures. However, there is only a minor degree of variation over time.

129 The benefit shares capture differences between tertiary and post-secondary non-tertiary education, and thus do not comprise the absolute benefits of higher education. This aspect, however, does not affect our result since we are primarily interested in the relative distribution of benefits, so benefit changes to non-tertiary education are sufficient.

130 Note that we need the number of 1) higher-educated migrants 2) within a specific age group 3) distributed across European countries. Neither Eurostat, the World Bank, nor the OECD delivers this compound indicator.

131 Figures are taken from Eurostat. We use emigration and immigration rates to and from the European Union without the respective emigration/immigration country at hand.

figures to higher-educated migration (i.e., those graduates who achieve additional public benefits from higher education), we use the shares of students enrolled in higher education per country.[132] As Eurostat does not provide information on intra-European migration for several countries (including Portugal, France and the United Kingdom), we start by calculating the adjusted benefit shares without these countries (benefit shares with missing values). In a second step, we use the proportion of migrants aged 20 to 29 years in comparable countries (such as Germany in the case of France, and the UK or Spain in the case of Portugal) to calculate adjusted benefit shares for all member states (benefit shares with filled missing values).

Cost shares in the case of the status quo are calculated using the sum of private and public costs for a man or woman attaining higher education. The indicator is taken from the OECD and comprises "all expenditures on education for all levels of government combined (public direct cost) and all education-related household expenditure (private direct cost)" (OECD 2015: 139).[133] Regarding benefits, the figures are calculated as the difference between a man (woman) attaining tertiary education compared to a man (woman) attaining upper secondary or post-secondary non-tertiary education. We use both public and private costs to deal with different ways of funding higher education (e.g. systems with and without private contributions, such as student fees). The figures are multiplied by the average number of higher education graduates in 2013 to calculate cost shares in the case of the status quo. In contrast to the calculation of the benefit share, we do not adjust these shares for migration, as only the educating country bears the costs of higher education.[134]

For the counterfactual situation, we assume that higher education is financed out of the EU budget. We use the current distribution of the budget's financing structure as a hypothetical cost share in the case of a European responsibility.[135] In doing so, we do not distinguish between private and public costs. On the one hand, this could be interpreted as a situation without private contributions, such as student fees. On the other hand, however, we argue that this procedure should instead be treated as the comparable equivalent. Whether higher education is financed via taxpayers' money or via private contributions is a question of national preference. The cost distribution and thus the cost shares of higher education, however, are not affected by this decision.[136]

Finally, we calculate net benefits of higher education under the status quo and in the counterfactual situation by subtracting the costs shares from the benefit shares (see Table 1 in the Appendix).

132 Migration rates are divided into cohorts of 20- to 24-year-olds and 25- to 29-year-olds. For the former, Eurostat provides average figures for the percentage of students enrolled in higher education. For the latter, we calculate average figures based on indicators for students aged 26 and 28 years that are provided by Eurostat.

133 A caveat using these figures is that private direct costs are net of loans, and that public loans are not included in public direct costs (see OECD 2015: 139). However, we are not aware of any source providing better data on the sum of private and public costs for higher education studies.

134 The figures do not account for short-term student exchange programmes, such as Erasmus.

135 Due to missing information for the Czech Republic, Latvia, Lithuania, Luxembourg, Slovakia and Slovenia, the budget structure is recalculated to add up to 100 per cent.

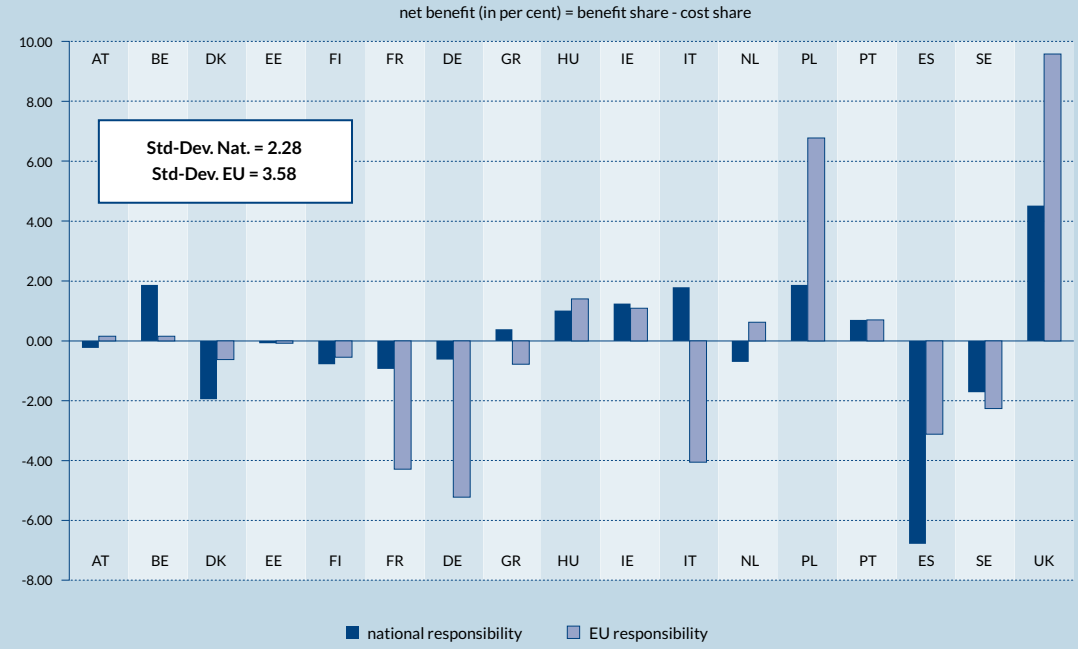
136 In the case of missing values for adjusted benefit shares, we also adjust the counterfactual cost shares and exclude EU budget contributions from those countries with missing benefit shares.

Results

The results of the calculation of net benefits with filled missing values for national benefit shares are presented in Figure 3. Poland and the United Kingdom, in particular, would benefit from a shifting of competences to the European level. The opposite holds true, in particular, for France, Germany and Italy, with the latter changing from a net-receiver to a net-payer country. That is, if paying for higher education were to become an EU competence, and if the current distribution of the EU budget were used to finance it, the relatively high financial burden in these countries would cause a disproportionately high cost share and create negative net benefits. Taken together, the standard deviation increases from 2.28 to 3.58 when shifting the competence from the national to the European level, with the corresponding relative increase being equal to 57 per cent.

Figure 3:

Net benefits from tertiary education, by country (in per cent)



Source: Own calculations based on OECD and Eurostat.

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In the Appendix, we also present the results for the calculation of net benefits without making an adjustment for missing values of national benefit shares. In particular, information is missing for large member states, such as France and the UK. As in the results presented above, the standard deviation increases when moving from a national to a European competence. The relative increase, however, is much smaller and only amounts to 18 per cent. Combining these results and the scoring decision for spillover effects (see 'Spillover effects' in the 'Method and indicator description' section above), we assign a pro-national score equal to 2. While the former result would also justify assigning a score equal to 1, several caveats – such as the assumption of comparable migration relative to total population for several country pairs (e.g. Spain and Portugal or Germany and France) – point towards a rather

careful interpretation. For instance, the result without these adjustments would justify a score equal to 2.

Our result is thus in line with findings from other studies. For example, in a recent analysis, Fischer and Wigger (2016: 246) find that German states "do not free-ride on each other's higher education spending." The results thus suggest that the degree of free riding resulting from a decentralised organisation of tertiary education is less severe than expected.

ECONOMIES OF SCALE

Data source

Economies of scale in higher education may arise from both the input and output perspectives. On the input side, cost savings may be achieved by reducing overhead costs. Nations administering to more students may achieve potential cost savings due to an improved workload; in other words, less administrative staff per student may be needed on average, resulting in lower costs per student. A similar argument can be made for the output side: If more students are enrolled, the employment of additional teaching staff or the purchase of specific information technology may be efficient due to an increased average utilization, which may lead to an increased output per student.

However, while both perspectives may be true in general, the arguments are weaker compared to potential economies of scale in other policy fields, such as defence or transport policy. Under the current system, higher education students are primarily administered to by single education institutions, such as universities. The question thus arises of whether a European competence could achieve economies of scale given that national overhead costs, and thus fixed cost degression at the national level, only play a limited role. This becomes all the more true as the counterfactual situation underlying this study particularly refers to a competitive allocation of financial means instead of centralising higher education administration.

With these caveats in mind, we will nonetheless present evidence on potential economies of scale using data on higher education expenditures as well as staff and student numbers. The data are taken from the OECD (2015) and refer to 2012 (the exception is the staff-per-student ratio, which refers to 2013).[137] For all figures, we refer to levels 5 to 8 from the International Standard Classification of Education 2011 (UNESCO 2011), which comprises all tertiary education.

Methodology

In our analysis, we consider input-, output- and input-output-oriented indicators. All indicators are plotted against a country's total number of enrolled students.[138]

137 The data are downloaded from the OECD economic statistics database.

138 Another possibility would be to use the total number of inhabitants. However, in several countries, higher education is financed by subnational jurisdictions and administered by individual universities or other higher education institutions (as it is the case, e.g., in Germany). Furthermore, the share of citizens enrolled in higher education differs between countries. Using population figures would therefore result in biased outcomes.

With the input-oriented indicator, we focus on expenditures per student. If there are economies of scale, this indicator should decrease given an increasing number of students. To investigate economies of scale based on capability advantages of larger higher education systems, we instead use the staff-per-student ratio. Accordingly, the indicator should increase given an increasing number of students.

However, both indicators may suffer from the problem that the counterpart is missing. Larger (smaller) expenditures per student may be associated with a higher (lower) staff-per-student ratio. In a third step, we therefore combine both indicators and look at expenditures per staff. This indicator is derived by a division of input- and output-oriented indicators, and measures expenditures per staff underlying a comparable number of students.

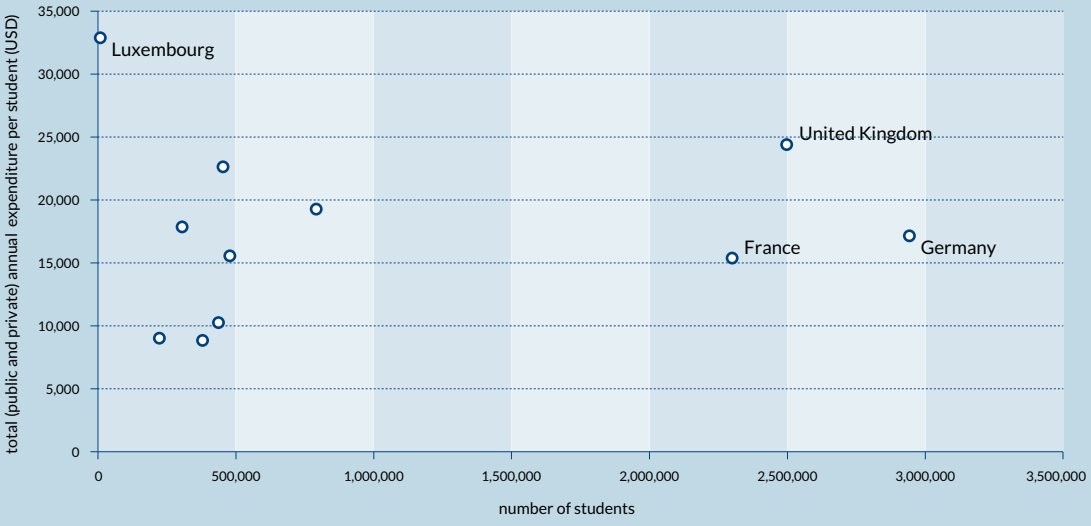
$$\frac{Input\text{-}Indicator}{Output\text{-}Indicator} = \frac{\frac{Expenditures}{Student}}{\frac{Staff}{Student}} = \frac{Expenditures}{Staff}$$

Results

Results for the input-oriented indicator are presented in Figure 4, while those for the output-oriented indicator are shown in Figure 5.[139] In both figures, we do not detect (dis)economies of scale, meaning that there is neither a positive nor a negative relationship between our indicators and the number of enrolled students.

Figure 4:

Input-oriented indicator: Expenditures per student



Source: Own calculations based on OECD (2015). Data are available for Belgium, the Czech Republic, Finland, France, Germany, Hungary, Luxembourg, the Netherlands, Slovakia, Sweden and the United Kingdom. Outliers are denoted.

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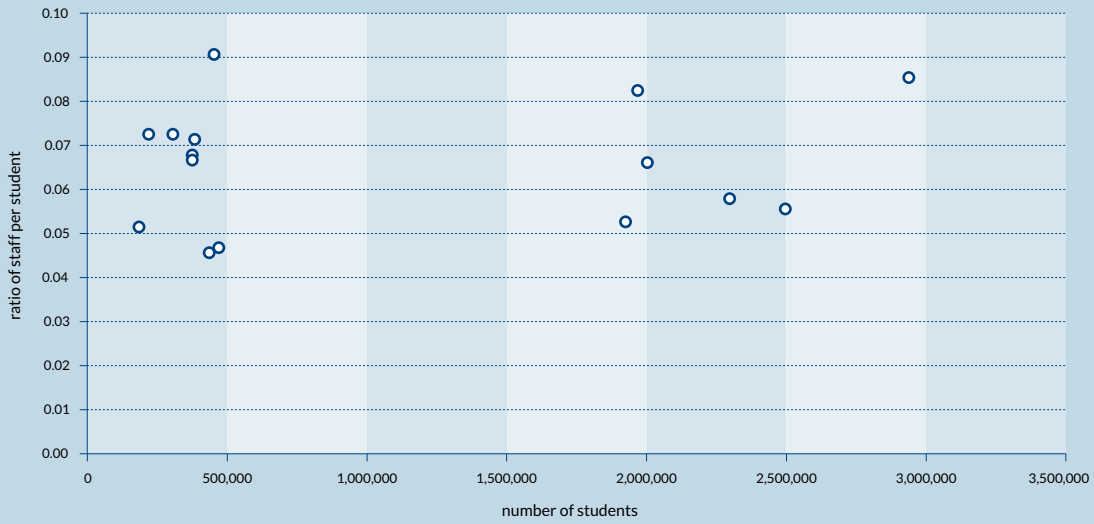
139 A staff-per-student ratio equal to 0.09 implies that there are nine academic staff members for every 100 students.

Figure 5:

Output-oriented indicator: Staff per student



Source: Own calculations based on OECD (2015). Data are available for Austria, Belgium, the Czech Republic, Finland, France, Germany, Hungary, Ireland, Italy, Poland, Portugal, Slovakia, Spain, Sweden and the United Kingdom.

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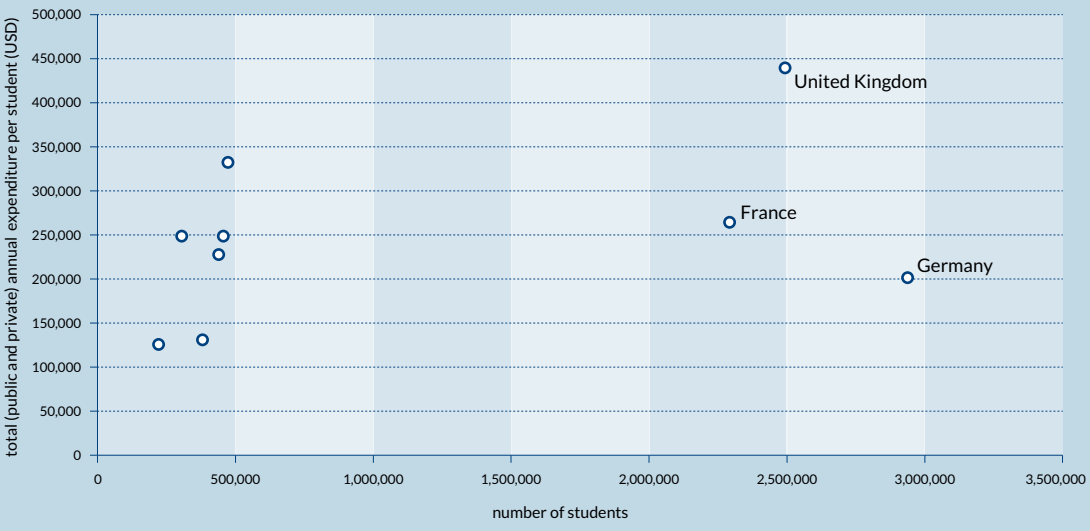
Results of the input-output-oriented analysis are presented in Figure 6. While there is a slightly positive relationship between expenditures per staff and the number of enrolled students, the validity of the analysis is questionable. Due to missing figures, the number of observations decreases to nine, meaning that there are too few observations to draw strong inferences.

Figure 6:

Input-output-oriented indicators: Expenditures per staff



Source: Own calculations based on OECD (2015). Data are available for Belgium, the Czech Republic, Finland, France, Germany, Hungary, Slovakia, Sweden and the United Kingdom. Outliers are denoted.

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Taken together, the analysis does not point to either economies or diseconomies of scale, which is plausible given that the cost issue is determined on the university level. Economies of scale may be prevalent with respect to the size of universities, but this would be irrespective of a national or European competence allocation as described above.[140] Furthermore, the methodology suffers from various drawbacks. First, the output indicator may be questioned. As was mentioned in the data subsection, there are arguments both in favour of and against the effects of the number of students enrolled on the number of staff employed (i.e. having many students may lead to relatively few administrative staff but relatively more teaching staff). Since the output indicator does not distinguish between both types of staff, it is unclear whether a higher staff-to-student ratio is positive or negative. Second, the analysis suffers from missing information on expenditure data. While we include both public and private expenditures to cope with different ways of funding higher education (e.g. systems with and without private contributions, such as student fees), we cannot distinguish between teaching and research expenditures. As a result, to interpret the results of Figure 4 and Figure 6 correctly, we need to assume that the distribution of both types of expenditures is identical in all countries. This assumption, however, is highly doubtful. Third, the average figures do not distinguish between relatively 'expensive' and 'cheap' courses of study. National higher education systems that primarily offer natural science-oriented courses of study (which require, among other things, costly laboratories) are much more expensive than systems offering courses of study in the human sciences. Thus, another assumption underlying these figures is that the distribution of human and natural sciences among countries is rather comparable. Again, this assumption is highly questionable. Fourth, the individual states in federal countries can have different systems. Germany, for example, is plotted using the total number of university-level students (ca. 270,000), but these students are enrolled in 16 different systems for each of the 16 federal states. Finally, as already argued above, there are only limited arguments for economies of scale from a theoretical point of view.

Nonetheless, there is still one argument in favour of the presence of economies of scale, as there probably is a minimum size for higher education institutions to be able to offer specific services. For instance, medical laboratories or scientific testing facilities cannot fully be implemented if a critical mass of students (and funds) is not reached. A centralised allocation of funds may tackle this issue and contribute to an improved distribution of higher education facilities across Europe. This argument, however, is only relevant for relatively poor member states.

Combining these arguments, there is both limited evidence of and limited theoretical arguments for the presence of economies of scale when shifting the competence for the funding of higher education to the European level. We therefore assign a score indicating a competence allocation on the national level (score = 1).

140 A similar result has been found by the OECD (2012: 26). Furthermore, the authors of a study on EU spending find that "(i)n the area of tertiary education, arguments point towards the same conclusion: there is heterogeneity in the quality of universities, and evidence of scale economies and externalities is absent" (ECORYS Nederland BV, Netherlands Bureau for Economic Policy Analysis (CPB) and Institute for Economic Research (IFO) 2008: 34).

PREFERENCE HETEROGENEITY

Data source

For determining preference heterogeneity of EU citizens regarding higher education policy, we conduct a system analysis on national student fees based on the information sheet 'National Student Fee and Support Systems' (Eurydice 2015) and analyse questions from the Flash Eurobarometer questionnaire 'Students and Higher Education Reform' (European Commission 2009). For the latter, we specifically investigate questions Q1A, Q1B and Q1C. For each of these three questions, higher education students were asked which statement they agree with more:

Q1A: "All qualified students should have the right to study." (or)
"Only the very best students should have the right to study."
Q1B: "Universities should admit all students." (or)
"Universities should have the right to select students which match their profile."
Q1C: "Higher education should be free of charge." (or)
"Student fees are acceptable, when combined with grants and loans." [141]

Methodology

Regarding the Eurobarometer questions, all participants who did not submit an answer are dropped. As a result, the overall sample size decreases by 0.9 per cent for Q1A, 2.1 per cent for Q1B, and 1.7 per cent for Q1C.[142] The results are calculated in a two-step procedure: First, we select one of the two statements per question and calculate the percentage of answers agreeing with each statement. Second, we aggregate the results per question at the country level and calculate measures of dispersion on the EU level.

Regarding the system analysis on national student fees, we assume that rather equal tuition fees imply similar preferences across countries, while rather diverse fees show the contrary. As most countries do not impose a uniform fee for all kinds of students and fields of study, we use average regular and average actual student fees. The latter takes account of the fact that student fees are not paid by all students owing to exemptions. The procedure for the calculation of regular average fees is as follows: When the primary source already states average fees (so-called 'common values'; see Eurydice 2015), we refer to these figures. If no average fee is stated but there is information on minimum and maximum figures for both full- and part-time students, we compute the arithmetic mean for full- and part-time students and compute a weighted average fee based on the proportion of full- and part-time students.[143] If no information on full- and part-time student

141 A critical comment to this question may refer to the fact that some countries, such as the United Kingdom, have a long tradition of student fees. Therefore, respondents in these countries might not imagine a system without student fees at all, which could result in a biased outcome. We therefore also include a system analysis on national student fees to investigate revealed preferences, as well.

142 The most noticeable reductions of sample size of individual countries are: for Q1A, Cyprus with 3.2 per cent; for Q1B, Sweden with 4.6 per cent, the UK with 4.5 per cent, and Malta with 4.3 per cent; and for Q1C, Italy with 5.8 per cent and Spain with 5.2 per cent. Nonetheless, as the overall reduction is rather small, the analysis is unlikely to be biased.

143 The percentage of enrolled full-time students is extracted from OECD (2015, Table B5.1a) data. Missing information about the share of full-time students is replaced by the average proportion of full-time students (= 80 per cent; see Table 2 to Table 5).

fees is available but there is information on the range of student fees for all students, we compute the arithmetic mean for these figures.

To compute actual average student fees, we additionally account for the share of students paying tuition fees and multiply this share by the average general student fees. An overview of the data is presented in Table 2 and Table 3 (bachelor's degree students) as well as Table 4 and Table 5 (master's degree students) in the Appendix. Tables 2 and 4 include those countries where an average fee is stated in the primary source (Eurydice 2015), whereas Tables 3 and 5 include those countries where the average fee is based on the fees for and proportions of full- and part-time students. Countries which have no fees at all (Austria, Finland, Greece (bachelor's degree students)) and Sweden are not listed in the tables.

Results

The results for the Eurobarometer questionnaire analysis are presented in Figure 7 to Figure 9, whereas Figure 10 and Figure 11 depict the results of the system analysis on national student fees. With regard to the former, the heterogeneity indicator varies from 20.2 per cent (Q1A) over 28.8 per cent (Q1C) to 33.4 per cent (Q1B), which results in scores equal to 5 (Q1A & Q1B) and 4 (Q1C), according to our assessment criteria.

Considering the results of the system analysis, Figure 10 points to a rather comparable structure of yearly average regular student fees. Neglecting the exceptions (e.g. in England, Ireland and Lithuania), average regular student fees for bachelor's degree programmes are highly comparable across the EU, and most member states do not charge fees at all. In general, a similar result is found for master's degree programmes – though with a wider dispersion. Several member states do not charge fees at all or only charge fees of €2,000 per year, while other member states charge yearly fees equal to €6,000 on average (e.g. Ireland, Lithuania and the parts of the UK).

This result is confirmed by the comparison of average actual student fees, as shown in Figure 11. For a bachelor's degree programme, 24 out of 28 member states charge less than €2,000 per year.

The smooth patterns in both graphs therefore imply that, on average, differences in revealed preferences for student fees are not an obstacle to a common financing of higher education. While some countries (e.g. the UK) deviate from the general trend, the preferences in other member states are rather comparable.

Taking both analyses together, we assign a score equal to 4 for preference heterogeneity.

Figure 7:

Preferences regarding the right to study

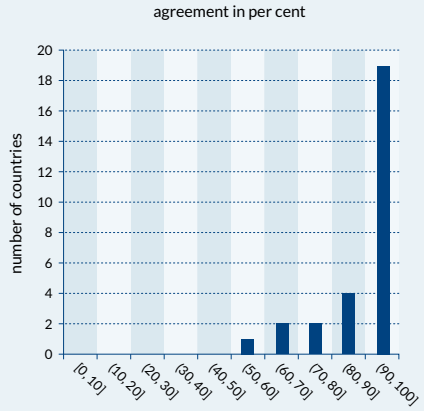
Education

Flash Eurobarometer 260 Q1A: "I would like to ask you a few questions on your opinion about the higher education system in general. Which statement do you agree with more?"

a. *All qualified students should have the right to study.*
b. *Only the very best students should have the right to study.*

Results are shown for answer category a).

Mean (μ)	0.883
Median	0.926
Std. Dev. (σ)	**0.101**
Heterogeneity	**20.2 %**



Notes: The X-axis denotes the share of answers with "All qualified students should have the right to study" in a country. Respondents with no opinion about this question are not considered. If we use the country population size as weights, the standard deviation = 0.078, resulting in a heterogeneity of 15.6 per cent.

Figure 8:

Preferences regarding university selection

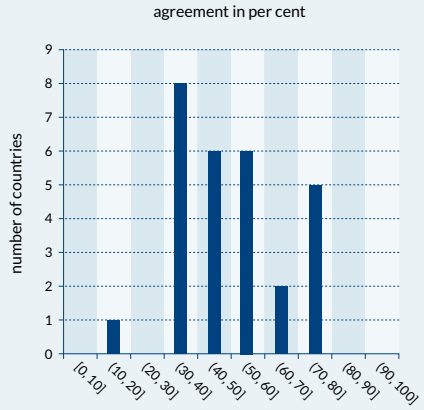
Education

Flash Eurobarometer 260 Q1B: "I would like to ask you a few questions on your opinion about the higher education system in general. Which statement do you agree with more?"

a. *Universities should admit all students.*
b. *Universities should have the right to select students which match their profile.*

Results are shown for answer category a).

Mean (μ)	0.501
Median	0.483
Std. Dev. (σ)	**0.167**
Heterogeneity	**33.4 %**



Notes: The X-axis denotes the share of answers with "Universities should admit all students" in a country. Respondents with no opinion about this question are not considered. If we use the country population size as weights, the standard deviation = 0.167, resulting in a heterogeneity of 32.3 per cent.

Figure 9:

Preferences regarding student fees

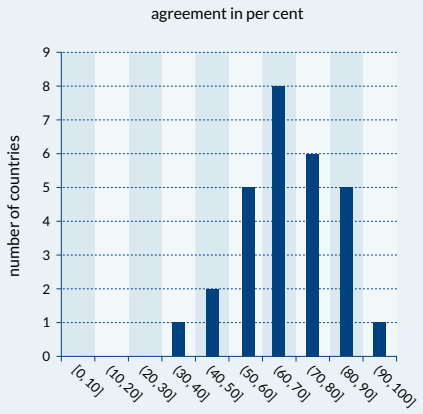
Education

Flash Eurobarometer 260 Q1C: "I would like to ask you a few questions on your opinion about the higher education system in general. Which statement do you agree with more?"

a. *Higher education should be free of charge.*
b. *Student fees are acceptable, when combined with grants and loans.*

Results are shown for answer category a).

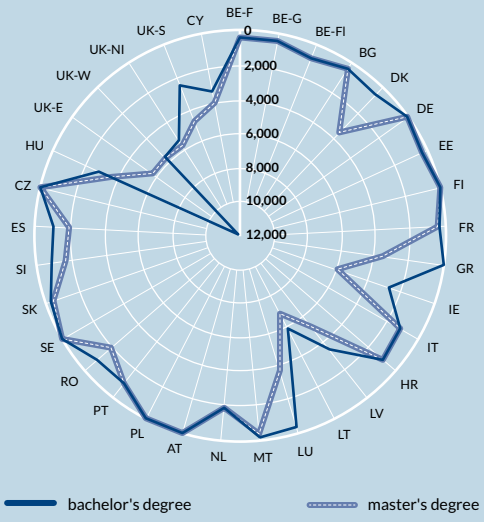
Mean (μ)	0.670
Median	0.680
Std. Dev. (σ)	**0.144**
Heterogeneity	**28.8 %**



Notes: The X-axis denotes the share of answers with "Higher education should be free of charge" in a country. Respondents with no opinion about this question are not considered. If we use the country population size as weights, the standard deviation = 0.109, resulting in a heterogeneity of 21.9 per cent.

Figure 10:

Distribution of yearly average regular student fees across EU member states



Notes: The UK (England, Wales, Northern Ireland and Scotland) and Belgium (French, German and Flemish) are divided by regions. Figures are given in €/year.

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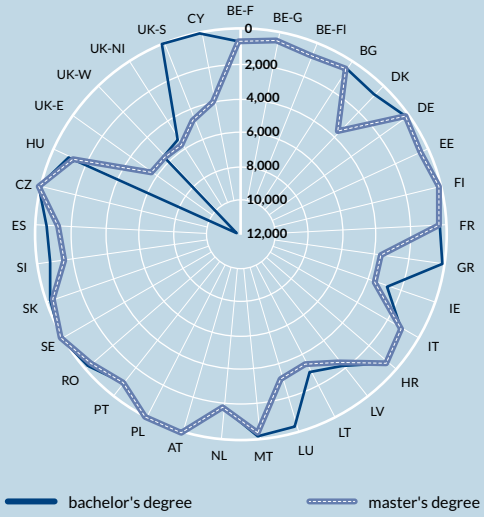
Figure 11:

Distribution of yearly average actual student fees across EU member states



Notes: The UK (England, Wales, Northern Ireland and Scotland) and Belgium (French, German and Flemish) are divided by regions. Figures are given in €/year.

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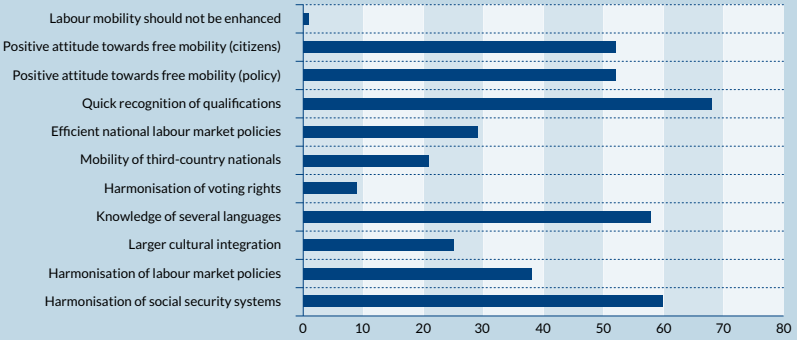
INTERNAL MARKET CONSISTENCY

In addition to the free movement of goods, services and capital, the internal market also entails the free movement of persons. This freedom is particularly exercised via the right to carry out work as an employee or in a self-employed capacity as well as the right for young people and students to be trained in countries belonging to the European Economic Area. Accordingly, the question arises of whether the current allocation of the higher education competence to the national level is sufficient to achieve this labour mobility. Furthermore, if this is not the case, there is the question of whether a reallocation of competences or increased harmonisation of rules are better solutions.

As Krause, Rinne and Zimmermann (2014) show, a quick recognition of qualifications is particularly mentioned when experts in the field of labour market policy are asked about determinants that could enhance labour mobility in Europe (see Figure 12). The analysis is based on an IZA Expert Opinion Survey on the Single European Labour Market, which was conducted in early 2014 and received responses from 284 of the more than 1,300 labour economists worldwide contacted for the survey (Krause, Rinne and Zimmermann 2014: 11).

Figure 12:

Determinants for enhanced labour mobility in Europe



Source: Krause, Rinne and Zimmermann (2014).

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In this case, recognition of qualifications refers to both education (i.e. academic qualifications) and profession (i.e. professional qualifications) (European Area of Recognition 2016: 19).[144] While both aspects are important for labour mobility, the recognition of academic qualifications is particularly relevant with respect to tertiary education, as exercising the right of freedom of movement is directly connected with gaining academic recognition of qualifications obtained in European countries. However, the recognition of qualifications in case of individually organised foreign studies especially depends on national rulings and institutional practises.[145] In Germany, for instance, 16 state ministries decide on the recognition of academic qualifications depending on the state of residence of the respective German university.[146]

Although a 'Convention on the recognition of qualifications concerning higher education in the European region' (the so-called Lisbon Recognition Convention (LRC) initiated by the Council of Europe and UNESCO) was passed by several European states on 11 April 1997,[147] "recognition culture and procedures differ between countries and institutions and may involve a wide range of competent authorities" (European Area of Recognition 2016: 19). Instead of having a guarantee of automatic acknowledgment, there are still case-by-case reviews, resulting in different recognition procedures amongst European states (Kultusministerkonferenz 2011: 4). The LRC "lays down the fundamental principles of the fair recognition of qualifications and periods of study (…) and requires that each country shall recognise foreign qualifications unless it can show that there are substantial differences between the foreign qualification (…) and the corresponding qualification of the host country" (European Area of Recognition 2016: 15).[148]

144 Recognition of professional qualifications is only necessary if the profession is regulated. For seven professions, there is an automatic procedure (stipulated by Directive 2005/36/EC) which harmonises required minimum qualifications. This applies to nurses, midwives, doctors, dentists, pharmacists, architects and veterinary surgeons. However, whether a profession is regulated varies by country. If a profession is regulated, minimum standards are set by national or subnational authorities (European Commission 2011).

145 http://www.ciep.fr/en/enic-naric-france/recognition-of-qualifications-in-the-european-union.

146 https://www.daad.de/ausland/studieren/bewerbung/de/64-anerkennung-von-leistungen-und-abschluessen/.

147 https://www.anerkennung-in-deutschland.de/html/en/lisbon_convention.php.

148 A consortium of national academic recognition information centres in the European Union (NARICs), the European network of information centres in the European region (ENICs), and associations of higher education institutions have published a 'recognition manual for higher education institutions', which postulates best practices and standard solutions for the recognition of academic qualifications (see European Area of Recognition 2016).

On the whole, although some improvements have been made since the start of the Bologna Process, there is still uncertainty and sufficient leeway for national policies to pursue their own goals.[149] This also holds true for the market of academic professionals. Based on the exploration of two empirical studies for France, Germany, the UK (all conducted in 1995) and France (in 2004), Musselin (2004: 55) finds that "most post-docs conceived their foreign experience as a personal strategy and aimed at improving their chances for recruitment in their own country." In other words, although there is academic mobility in Europe, only a few top academics pursue careers abroad. This can be attributed in part to the varying requirements and informal rules in the individual national labour markets (Musselin 2004: 72).[150]

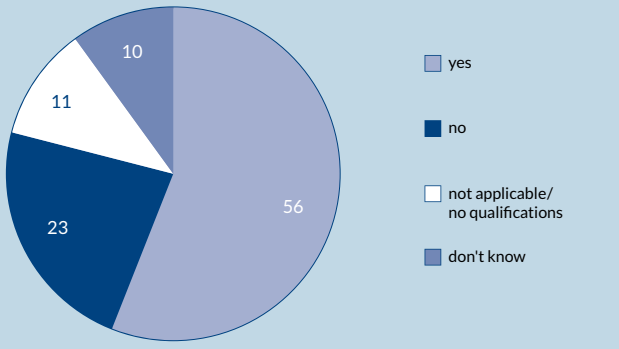
Furthermore, uncertainty is demonstrated by the special Eurobarometer questionnaire 417 on 'European Area of Skills and Qualifications', conducted in June 2014. In question QB9 respondents were asked: "Do you think that qualifications from your education or training would be recognised in other EU member states? By 'recognised', we mean that they can be used for work or further education." Possible responses were: 'Yes', 'No', 'Not applicable/ no qualifications', and 'Don't know'.

As Figure 13 shows, while 23 per cent of respondents do not think that their qualifications would be recognised, 56 per cent assume that they would be recognised. As a result, there is still room for improvement in terms of reduced uncertainty. However, if only the answers of participants who already finished higher education are taken into account, the result looks somewhat different. In this specific subgroup, while only 16 per cent of respondents do not expect recognition, 77 per cent of them do (European Commission 2014b: 44).

Figure 13:

Expectations regarding recognition of qualifications

Do you think that qualifications from your education or training would be recognised in other EU member states?



Source: European Commission (2014b).

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To conclude, although there have been some improvements towards a common recognition procedure for higher education qualifications decisions are still taken at the national level. The free movement of people with respect to education and training is accordingly not yet completed. As a result, the question arises of whether this hindrance to the completion of the internal market could be better solved by a reallocation of competences or through increased cooperation. Referring to the counterfactual situation of a competitive European higher education financing, the latter aspect seems to be sufficient. While changing the financing structure towards a European competence would also imply that standards would be harmonised, the issue could also be resolved via multilateral agreements. Or, put differently, the abovementioned obstacles to the internal market with respect to higher education do not render a

149 Another example are different national standards concerning the hours range per academic year and the hours range per credit within the European credit transfer system (ECTS) (European Communities 2009: 59f).

150 One should note that the results of this study are based on rather old information, and that a lot of progress has been made in recent years. In the end, more comprehensive and up-to-date research on this topic would be necessary.

decentralised solution infeasible (or implausible). We therefore assign an indifferent score equal to 3, pointing towards the need for increased cooperation on the basis of a national competence.

COMPETITION

The effects of competition can be divided into intra-European and international competition. Starting with the former, from a theoretical perspective, competition for students between universities and European countries can increase educational quality, lower prices and foster greater diversification of educational programmes (Thissen and Ederveen 2006). However, in contrast to the assumption that this argument also holds true for a decentralised solution, these benefits could particularly be achieved if higher education were centralised (or, at least, if there were sufficient cooperation across countries). Furthermore, students have to be mobile. As Thissen and Ederveen (2006: 26) note, "when student mobility is absent, creating a single European market for higher education may not lead to increased competition", which would impede the realisation of centralisation gains. But if there is sufficient intra-European student mobility and students use educational quality as the basis for deciding where to study, the universities' incentives to raise their quality increase.[151]

Furthermore, due to centralisation and specialisation, prices for education could fall and diversification of studies could be triggered (Thissen and Ederveen 2006). With respect to the latter arguments, however, Amaral and Magalhaes (2004) argue that particularly due to increased cooperation within the Bologna Process, diversification may decrease as a result of potentially harmonised curricula. Furthermore, using historical data for higher education in the United States, Hoxby (1997: 40) finds that a "competitive market structure (…) has caused American colleges to raise their quality, their tuitions, and their expenses" but also "to become more diverse." However, it is important to note that the US higher education system is not regulated on the national level. Instead, authority is shared among the national government, state governments, local governments and the higher education institutions themselves, with the latter two being the main bodies. Six regional associations are in charge of accreditation of higher education institutions.[152] Taken together, the experiences of the US higher education system do not provide us with information on whether higher education competition in Europe would be enhanced by centralisation.

Concerning the threat of a potential race to the bottom, there are few theoretical arguments for eroding standards, meaning that the chance that universities would reduce education standards (or spending) to attract (foreign) students is limited. Nonetheless, a critical aspect remains: While centralisation and specialisation may increase welfare for the European Union as a whole, both aspects may contribute to a spatial desolation of the European higher education area. In particular, sparsely populated areas may lose education institutions and may become even less attractive to present or potential residents.

On the whole, the advantages of competition in the area of higher

151 In this regard, centralisation (or collaboration) is needed with respect to the recognition of academic qualifications (see also the 'Internal market consistency' section above).

152 https://www.daad.de/laenderinformationen/usa/land/de/4470-hochschul-und-bildungswesen.

education outweigh the disadvantages. The question arises of whether these gains can only be achieved through centralisation and thereby a reallocation of competences. As already stated above, this is not the case. Figure 1 in the introduction already shows that student mobility has increased significantly in recent decades. Furthermore, European higher education institutions already compete for students. Finally, the described counterfactual situation underlying this study refers to a competitive allocation of financial means, which does not include a centralisation of the local allocation decisions of higher education institutions. To sum up, from this perspective, the competence of higher education can also remain at the national level and still gain competition advantages.

Concerning international competition, pro-centralisation arguments seem to outweigh anti-centralisation positions. Due to the increased collaboration (e.g. with respect to the implementation of the European credit transfer system (ECTS) and the introduction of bachelor's and master's degree programmes), the European market for higher education has increased tremendously. As a result, Europe can better compete with other higher education markets and can better export its standards to other parts of the world. For instance, the ECTS "has inspired the development of credit systems in other regions, for example in Southeast-Asia, Latin America and most recently in Africa" (European Union 2015: 14). Nonetheless, while this argument points in favour of increased centralisation, the current situation of European collaboration seems to be sufficient. Based on this argument, there is no need for a unified European competence.

We therefore assign an indifferent score equal to 3, indicating that neither a sole national nor a sole European competence is advisable.

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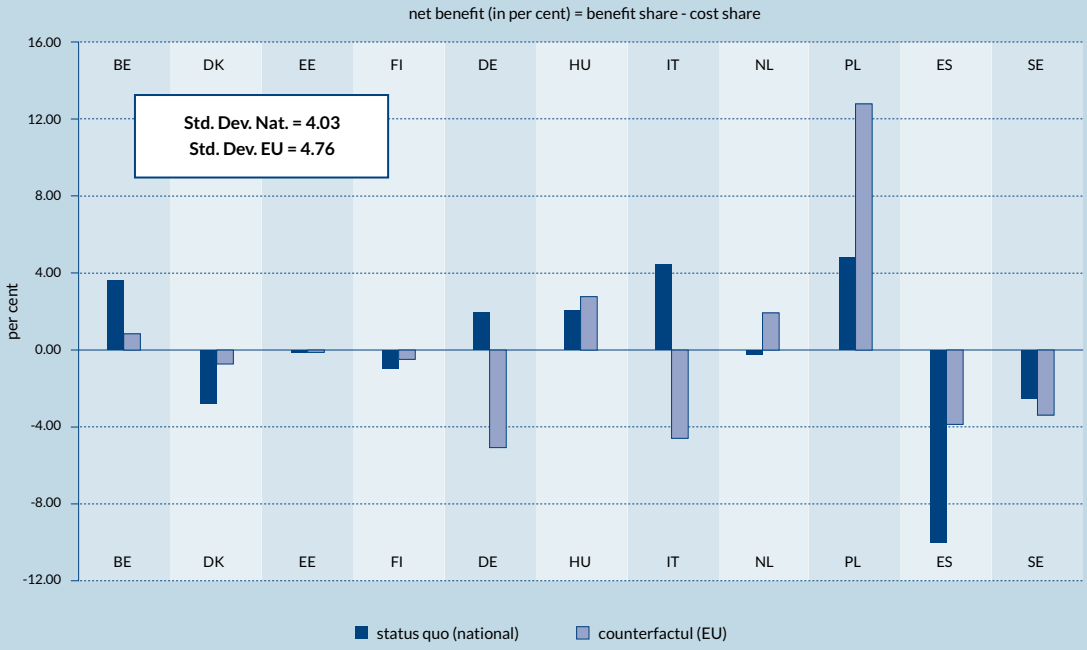
APPENDIX

Spillover effects

Figure 14:

Net benefits from tertiary education with missing values, by country (in per cent)



Source: Own calculations based on OECD and Eurostat.

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Table 1:

Benefit- and burden-sharing among EU member states (in per cent)

Country	Benefit share	Burden share	Burden share	Net benefits	Net benefits
		National	European	National	European
Austria	2.70%	2.93%	2.55%	-0.22%	0.15%
Belgium	3.46%	1.59%	3.31%	1.88%	0.15%
Denmark	1.57%	3.47%	2.20%	-1.90%	-0.63%
Estonia	0.08%	0.14%	0.16%	-0.06%	-0.08%
Finland	1.23%	1.98%	1.71%	-0.75%	-0.48%
France	14.20%	15.13%	18.43%	-0.93%	-4.23%
Germany	16.87%	17.42%	22.01%	-0.55%	-5.14%
Greece	0.76%	0.37%	1.51%	0.39%	-0.75%
Hungary	2.23%	1.19%	0.78%	1.04%	1.45%
Ireland	2.41%	1.15%	1.28%	1.27%	1.13%
Italy	9.27%	7.49%	13.27%	1.78%	-4.00%
Netherlands	4.66%	5.30%	4.00%	-0.64%	0.66%
Poland	10.03%	8.11%	3.23%	1.91%	6.80%
Portugal	2.12%	1.41%	1.41%	0.71%	0.71%
Spain	5.65%	12.40%	8.74%	-6.75%	-3.09%
Sweden	0.97%	2.67%	3.18%	-1.69%	-2.20%
UK	21.79%	17.26%	12.23%	4.53%	9.56%

Table 2:

Average regular and actual student fees for bachelor's degree students – countries where average fee is stated in the primary source (Eurydice 2015)

Countries	Code	Range of Student Fees		Per cent full-time	Av. Regular Student Fee	Students paying	Av. Actual Student Fee
		min	max				
Belgium	BE						
French	BE-F	0	836	88%	418	70% (max)	711
German	BE-G	100	600	.	450 (1)	.	450
Flemish	BE-Fl	105	890	65%	890 (1)	77% (max), 22% (min)	708
Germany	DE	40	75	86%	50 (1)	.	50
France	FR	399	399	96%	399	65%	259
Italy	IT	199	2,065	100%	1,220 (1)	88%	1,074
Croatia	HR	661	1,324	.	993	60%	596
Luxembourg	LU	400	800	83%	400 (1)	85%	340
Poland	PL	41	41	53%	41	.	41
Portugal	PT	656	1,063	95%	1,063 (1)	.	1,063
Romania	RO	558	4,688	.	977 (1)	37%	361
Spain	ES	713	2,011	69%	1,110 (1)	72%	799
Czech Rep.	CZ	18	21	97%	18 (1)	.	18
Hungary	HU	740	5,150	68%	2,945	37%	1,090
UK	GB			78%			
Wales	GB-W	5,669	12,755	.	5,669 (1)	.	5,669
N. Ireland	GB-NI	.	5,393	.	5,393 (1)	.	5,393
Scotland	GB-S	2,578	12,755	.	2,578 (1)	0%	0
Cyprus	CY	3,417	3,417	.	3,417	0%	0

Notes: The UK and Belgium are divided by regions. Figures are given in €/year. Figures refer to public educational institutions and comprise administration costs (e.g. registration, admission and certification) but no student union contributions as well as accommodation, transportation or canteen costs. It is assumed that students accomplish the predetermined workload and are enrolled in only one programme.

(1) For accuracy, the regular student fee is based on the indication of a 'most common value' (Eurydice 2015) rather than on the average value of the minimal and maximal figures.

Table 3:

Average regular and actual student fees for bachelor's degree students – countries where average fee is calculated based on the fees for and proportions of full- and part-time students

Countries	Code	Range of Student Fees				Per cent full-time	Av. Regular Student Fee	Students paying	Av. Actual Student Fee
		Part-Time		Full-Time					
		min	max	min	max				
Bulgaria	BG	59	511	153	741	.	415	.	415
Denmark	DK	268	12,000	0	0	90%	613	.	613
Estonia	EE	1,500	3,000	0	0	85%	338	.	338
Ireland	IE	1,500	1,500	3,000	3,000	88%	2,820	.	2,820
Latvia	LV	700	2,700	1,280	7,000	78%	3,603	63%	2,270
Lithuania	LT	702	7,725	1,053	11,587	.	5,899	51%	3,008
Malta	MT	900	900	0	0	.	180	.	180
Netherlands	NL	1,135	1,951	1,951	1,951	91%	1,914	.	1,914
Slovakia	SK	10	1,960	10	100	69%	343	.	343
Slovenia	SI	1,210	8,110	16	29	81%	904	.	904
UK	GB					78%			
England	GB-E	.	9,566	12,190	12,755	.	11,833	.	11,833

Notes: The UK and Belgium are divided by regions. For Poland, Wales, Northern Ireland, and Scotland possible student fees for part-time students are not rated. Figures are given in €/year. Figures refer to public educational institutions and comprise administration costs (e.g. registration, admission and certification) but no student union contributions as well as accommodation, transportation or canteen costs. It is assumed that students accomplish the predetermined workload and are enrolled in only one programme.

Table 4:

Average regular and actual student fees for master's degree students – countries where average fee is stated in the primary source (Eurydice 2015)

Countries	Code	Range of Student Fees		Per cent full-time	Av. Regular Student Fee	Students paying	Av. Actual Student Fee
		min	max				
Belgium	BE						
French	BE-F	0	836	88%	418	70% (max)	711
German	BE-G	100	600	.	450 (1)	.	450
Flemish	BE-Fl	105	890	65%	890 (1)	77% (max), 22% (min)	708
Germany	DE	40	75	86%	50 (1)	.	50
France	FR	471	471	96%	471	65%	306
Greece	GR	3,625	12,000	.	3,625 (1)	.	3,625
Ireland	IE	4,000	30,000	88%	6,000 (1)	60%	3,600
Italy	IT	195	2,065	100%	1,220 (1)	88%	1,074
Croatia	HR	661	1,324	.	993	60%	596
Luxembourg	LU	400	17,500	83%	3,820 (2)	85%	3,247
Malta	MT	400	9,666	.	400 (1)	.	400
Poland	PL	41	41	53%	41	.	41
Portugal	PT	656	6,233	95%	1,063 (1)	.	1,063
Romania	RO	1,070	7,924	.	2,024 (1)	28%	567
Spain	ES	984	3,952	69%	2,020 (1)	72%	1,454
Czech Rep.	CZ	18	21	97%	18 (1)	.	18
Hungary	HU	1,449	6,117	68%	3,783	37%	1,400
UK	GB			78%			
England	GB-E	5,743	5,743	.	5,743	.	5,743
Wales	GB-W	5,743	5,743	.	5,743	.	5,743
N. Ireland	GB-NI	5,766	5,766	.	5,766	.	5,766
Scotland	GB-S	4,818	4,818	.	4,818	.	4,818
Cyprus	CY	4,100	10,250	.	4,100 (1)	.	4,100

Notes: The UK and Belgium are divided by regions. Figures are given in €/year. Figures refer to public educational institutions and comprise administration costs (e.g. registration, admission and certification) but no student union contributions as well as accommodation, transportation or canteen costs. It is assumed that students accomplish the predetermined workload and are enrolled in only one programme.

(1) For accuracy, the regular student fee is based on the indication of a 'most common value' (Eurydice 2015) rather than on the average value of the minimal and maximal figures.

(2) The regular student fee is based on a weighted mean from the minimal and maximal figures, as only 20 per cent of students are registered in the course with the maximal student fee.

Table 5:

Average regular and actual student fees for master's degree students – countries where average fee is calculated based on the fees for and proportions of full- and part-time students

Countries	Code	Range of Student Fees				Per cent full-time	Av. Regular Student Fee	Students paying	Av. Actual Student Fee
		Part-Time		Full-Time					
		min	max	min	max				
Bulgaria	BG	59	511	153	792	.	435	.	435
Denmark	DK	20,101	53,000	0	0	90%	3,655	.	3,655
Estonia	EE	1,500	3,000	0	0	85%	338	.	338
Latvia	LV	880	12,500	1,080	8,626	78%	5,257	49%	2,576
Lithuania	LT	1,495	8,387	2,242	12,581	.	6,917	51%	3,528
Netherlands	NL	1,135	1,951	1,951	1,951	91%	1,914	.	1,914
Slovakia	SK	10	2,940	10	100	69%	495	.	495
Slovenia	SI	2,068	15,831	16	29	81%	1,719	.	1,719

Notes: The UK and Belgium are divided by regions. Figures are given in €/year. Figures refer to public educational institutions and comprise administration costs (e.g. registration, admission and certification) but no student union contributions as well as accommodation, transportation or canteen costs. It is assumed that students accomplish the predetermined workload and are enrolled in only one programme.

XIII. *Case Study 7:*

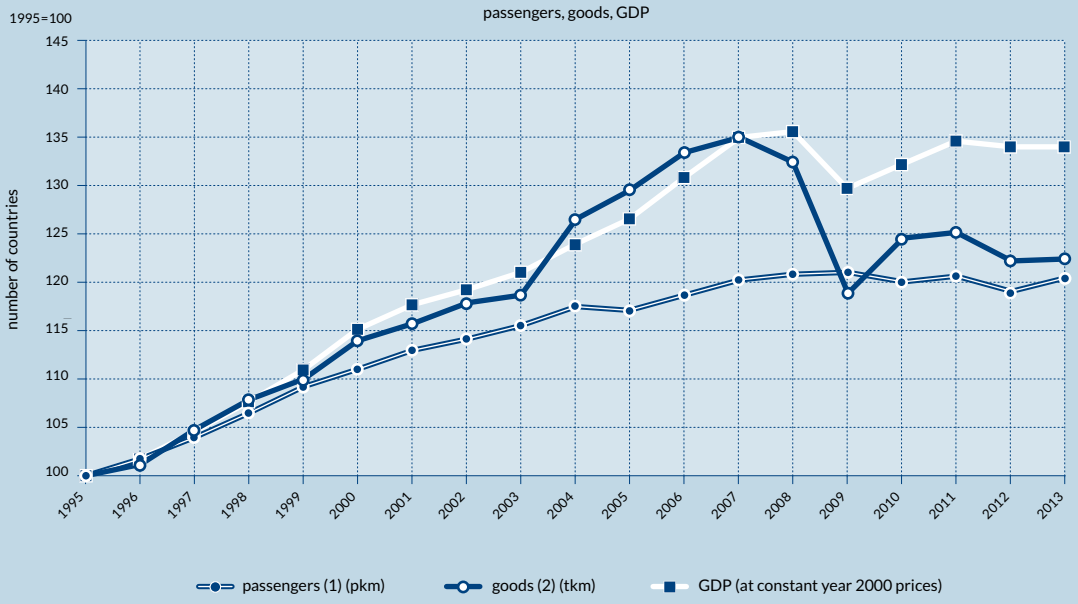
Railway freight transport

Current and future challenges

Since the mid-1990s, with the exception of the recession during the economic and financial crisis in 2009, total freight transport in the European Union has been constantly increasing (see Figure 1).

Figure 1:

Development of passenger and goods transport in the EU (1995–2013)



Source: European Commission 2015.
Notes: (1) passenger cars, powered two-wheelers, buses & coaches, tram & metro, railways, intra-EU air, intra-EU sea; (2) road, rail, inland waterways, oil pipelines, intra-EU air, intra-EU sea.

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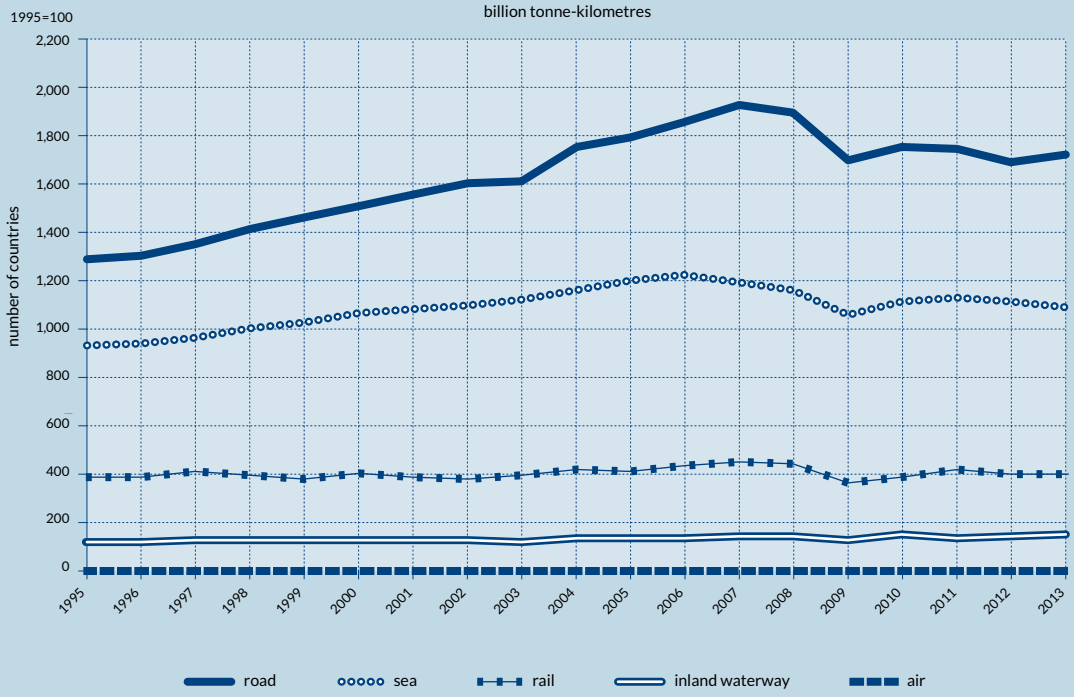
The increase in freight transport, however, is particularly driven by road and sea transport, whereas the amount of goods transported on railways remains more or less constant, at 400 billion tonne-kilometres (see Figure 2). The corresponding market share of railway freight transport in 2013 is equal to 11.7 per cent of total freight transport.

Figure 2:

EU-28 transport performance by mode for freight transport (1995–2013)



Source: European Commission 2015.

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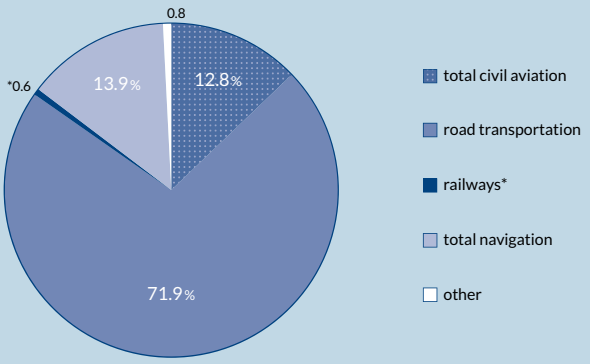
This relatively low market share stands in contrast to the various merits of freight transport on railways. For instance, freight transport on railways uses six times less energy than road transport, and emits just one-fifth the amount of carbon dioxide (Ivaldi 2007; Di Pietrantonio and Pelkmans 2004). Taking passenger and freight transport together, the relative CO_2 emissions of railways compared to other transport modes are even more negligible (see Figure 3).

Figure 3:

Share of total transport greenhouse gas emissions by mode in EU-28 (2012)



Source: European Commission 2015.
Notes: Excluding international bunkers (international traffic departing from the EU). *Excluding indirect emissions from electricity consumption.

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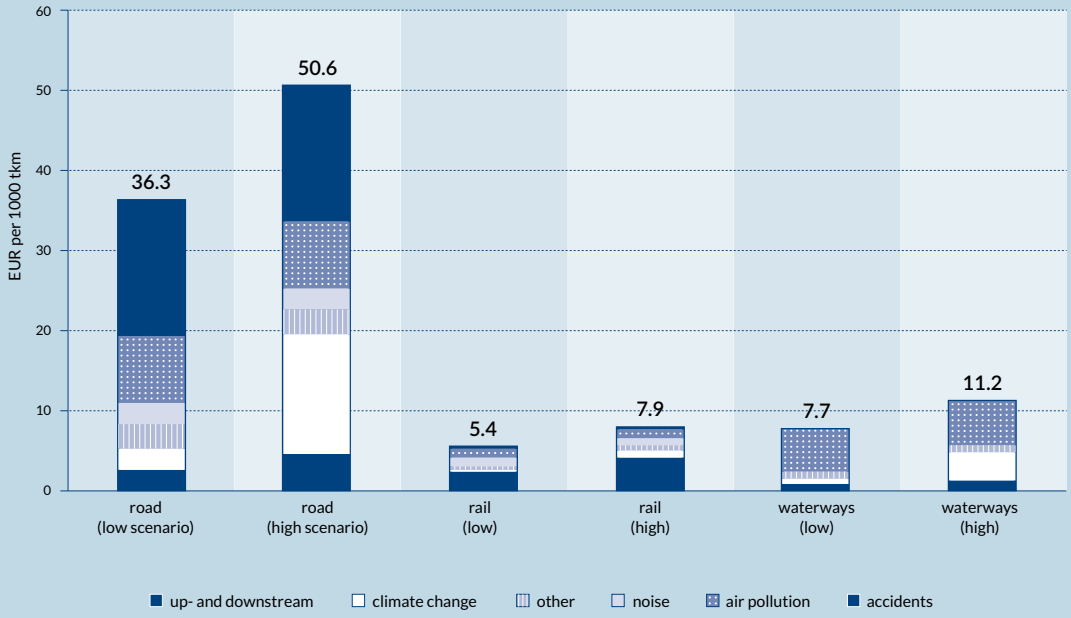
A similar pattern is found when the total external costs per transport mode are taken into account. These external costs include, for example, costs of air pollution and climate change, noise, congestion and accidents. Again, railways have the lowest costs, which are six times lower than the average external costs for road transport (see Figure 4).

Taken together, the comparatively low market share in rail freight transport contravenes the comparatively low (external) costs of this transport mode. This contrast becomes even more striking with respect to Europe's major challenges concerning transport policy as defined by the European Commission (see European Commission 2014a: 18 and http://europa.eu/pol/trans/index_en.htm):

Figure 4:

Average external costs by transport mode in 2008 for EU-27, distinguished between a high- and low-cost scenario



Notes: Low and high scenarios refer to two different CO2 prices (25 €/t CO2 vs. 146€/t CO2) for up- and downstream and climate change. Other cost categories comprise costs for nature and landscape, biodiversity losses (due to air pollution), soil and water pollution costs, and additional costs in urban areas. Congestion costs are excluded. Data refer to 2008 and include the EU-27 with the exemption of Malta and Cyprus, but including Norway and Switzerland. For more information regarding the computation of figures, see CE Delft, INFRAS and Fraunhofer ISI 2011: 29ff. Source: CE Delft, INFRAS and Fraunhofer ISI 2011: 9.

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- Congestion affects both road and air traffic. It costs Europe around 1 per cent of annual GDP.
- Oil dependency: Despite improvements in energy efficiency, transport still depends on oil for 96 per cent of its energy needs. Oil will become scarcer in future, increasingly sourced from unstable parts of the world.
- Greenhouse gas emissions: By 2050, the EU must cut transport emissions by 60 per cent compared with 1990 levels if we are to limit global warming to an increase of just 2° C.
- Infrastructure quality is uneven across the EU.
- Competition: The EU's transport sector faces growing competition from fast-developing transport markets in other regions.

Most of these challenges directly point towards a reallocation of freight transport from road and air traffic to railways. Accordingly, we investigate whether the competence for railway freight transport policies should be allocated primarily to the national or the European level.

Status quo

According to Article 4 TFEU, transport policy belongs to the field of shared competences between the EU and its member states. In other words, both the EU and the member states have the competence to pass binding legal acts.

With respect to rail transport, "national considerations have historically prevailed over international ones. Even today, some 200 years after the invention of the train, many member states still own the national rail operator and organise rail transport on a national basis" (European Commission 2014a: 10). As a result, the European railway system is highly fragmented, and various standards and procedures are used (e.g. different signalling and electrification systems as well as track gauges; see in greater detail below), which hinders smooth cross-border rail operations.

So far, four railway packages have been initiated with the aim of increasing liberalisation and creating a Single European Railway area. These packages include, for instance, the separation of infrastructure managers who run the network and railway companies using the network for transportation[153], a competitive tendering for public service rail contracts, and common safety and regulatory standards.[154]

However, when investigating the question of whether railway freight transport policies should be fully reallocated to the European level, the caveat applies that railway transport cannot be treated entirely as a public good (this is a distinct feature compared to, e.g., the area of defence policy). Both characteristics of public goods are not completely fulfilled: First, there is at least a certain degree of rivalry consumption, meaning that the use of railways by one operator affects railway use by another operator. Second, there is excludability, as users can be excluded from consumption via the price mechanism, meaning that only those who pay for the use of railways can actually use it. As a result, in addition to being public competences located at the national or the supranational level, railway transportation could also be handled via private markets (and, indeed, already is handled via regulated markets). We will take this caveat into account when interpreting the results, such as with respect to spillover effects.

Counterfactual situation

For the counterfactual situation, we assume a single EU-financed railway system without technical or operational barriers. This includes, for example, technical standardisation and non-discriminatory, European-wide access to infrastructure as well as no missing links at borders.

Overview

Score	Description
	Spillover effects
2	We **compute the member states' net benefits** of domestic freight transport for both the status quo and the counterfactual situation of an integrated European railway. The cost share of national railway provision is adjusted, with a cost coverage ratio capturing private vs. public good provision of railways. **Free riding would increase** if the competence is reallocated from the national to the European level. Our indicator of free riding rises by approximately 41%, which points to the merits of national provision.

153 Criticism of this approach is presented in Drew and Nash (2011) and Laabsch and Sanner (2012).

154 For more detailed information on various steps in rail legislation, see, e.g., Steer Davies Gleave (2014) and Dehousse and Marsicola (2015).

	Economies of scale
4	We refer to both **cost savings based on fixed cost degression** in rail maintenance **and cost savings due to the harmonisation of technical standards**. For the former, we use information on maintenance expenditures and total rail kilometres from the OECD and Eurostat, and depict a country's maintenance expenditures per rail kilometre in relation to total rail kilometres. The results point to the presence of a marginal cost advantage for larger entities, i.e., **per kilometre maintenance expenditures decrease with an increasing rail network**. Concerning cost savings due to the harmonisation of technical standards, the various **different standards currently in use act as barriers** hindering cross-border transport and causing additional costs for providers.
	Preference heterogeneity
4	We use **Eurostat information on modal split** in freight transport between EU countries and information from the **Eurobarometer questionnaire no. 388** on rail competition to measure preference heterogeneity. In case of **Eurobarometer** questions, the corresponding **heterogeneity ranges from 16.4% to 29.2%**, which would result in a score equal to 5. For **modal split, heterogeneity is equal to 41%**, suggesting a score equal to 4. Given the caveats for revealed preferences, we assign a score equal to 4.
	Internal market consistency
4	There are **several examples of exceptions from internal market standards** as well as national standards hindering the completion of the internal market. For instance, **domestic transport is not subject to competition** in many member states, and **heavy rail transport is exempted from public tendering**. Different technical standards (e.g. different track gauges and electrification systems) and **nationally organised vehicle authorisation act as barriers for cross-border railway undertakings**. While the EU aims at resolving these problems, the negotiation process between the EU and its member states casts doubts on the efficiency of this procedure.
	Competition
3	We compare potential merits from policy innovations ('yardstick competition') with the threat of eroding standards ('race to the bottom') to assess the effects of competition. While there might be some examples of **policy innovations** between different systems (e.g. concerning the liberalisation of the rail market), **examples within systems are rather scarce** and in most cases limited by enormous sunk costs. Furthermore, these innovations would particularly hinder the completion of the internal market. There are also **limited arguments for a 'race to the bottom'**, i.e., the threat of eroding standards seems to be less severe.

Further information

SPILLOVER EFFECTS

Methodology and data source

We calculate member states' net benefits for both the status quo and the counterfactual to assess the extent of free riding in the cases of a national and a European provision of freight transport on railways.

The relative benefit of railway freight transport is approximated by a member state's share of domestic railway traffic in total European domestic railway traffic (measured in tonnes).[155] Since an assessment of how benefits would change in the case of European provision of freight transport is highly speculative, we assume that the benefit distribution across member states will remain unchanged (at least in the short run) if the competence is reallocated to the European level.

In contrast, we distinguish between the member states' individual costs of railway freight transport in the case of national and European responsibility. For the counterfactual situation of a European responsibility, we assume that the single European railways are financed out of the EU budget and use the member states' share of the EU budget as an indicator for the cost distribution. The costs for the member states in the case of national provision are

155 Domestic railway traffic is equal to a member state's total railway traffic minus transit traffic, i.e., it comprises intrastate traffic as well as interstate traffic with start or end in the member state.

approximated by each member state's share of total European rail tracks (measured in kilometres). A member state provides rail tracks and has to bear these costs by itself. To measure these costs, however, we cannot rely on maintenance or investment figures, as these costs are rather arbitrary and depend on the discretionary decisions of each member state. For instance, there might be some member states that spend too little on maintenance compared to what would be needed (and vice versa). We therefore compute a member state's share of national rail kilometres in Europe's total rail kilometres to derive a member state's cost share in the case of national provision of railway tracks. The procedure relies on the assumption that the costs for providing railway tracks are comparable across member states.[156]

Since benefits and costs are both expressed in percentage shares, we can directly infer the extent of free riding. For instance, if a member state's relative benefit from domestic traffic is equal to 20 per cent and the member state bears 20 per cent of Europe's total railway costs, the cost–benefit ratio is balanced and no free riding is occurring.

However, as noted above, the caveat applies that railways cannot be fully characterised as a public good, as non-rivalry in consumption and non-excludability are both not fulfilled.[157] If a national railway company charges track access fees that cover the total costs of railway provision, spillover effects are completely internalised and railway services can be treated entirely as a private good. We therefore adjust the cost share of national railway provision with a cost coverage ratio capturing the share of private vs. public good provision in railways. The ratio compares a member state's actual track access charges for freight transport on railways with the total external costs induced by the provision of railway services (see the formula below).[158]

$$Cost\ coverage_{\ i} = \frac{track\ access\ charge\ railway\ freight\ transport_{\ i}}{total\ external\ costs\ railway\ freight\ transport_{\ i}}$$

Both measures are expressed in average access charges for a 1,000-tonne train kilometre. Total external costs include, for example, the usage of railways, air pollution and climate change, noise and accidents. The data stem from an update study of a research consortium comprising the research and consultancy organisation CE Delft, the business management consultancy INFRAS and the Fraunhofer Institute for Systems and Innovation Research (see CE Delft, INFRAS and Fraunhofer ISI 2011).[159] Figures for actual track access charges are based on the fourth report of the European Commission on monitoring development of the rail market (European Commission 2014b).[160]

156 Data refer to 2012 and are downloaded from Eurostat. Missing figures are replaced with information from national websites (e.g. for Austria, Denmark and the Netherlands) or figures from previous years (e.g. for Belgium, Lithuania and the UK). In some countries, high-speed trains operate on specific tracks (e.g. TGV tracks in France); however, we cannot distinguish between passenger-only tracks and combined passenger-and-freight tracks. As a result, benefit shares in these countries might be overestimated.

157 Due to the price mechanism in private markets, excludability is possible and rivalry in consumption may be prevalent if too many users transport goods at the same time.

158 Cost coverage ratios are capped at 100 per cent.

159 Dings, Sevenster and Davidson (2003) present a comparison of various study results for measuring external costs.

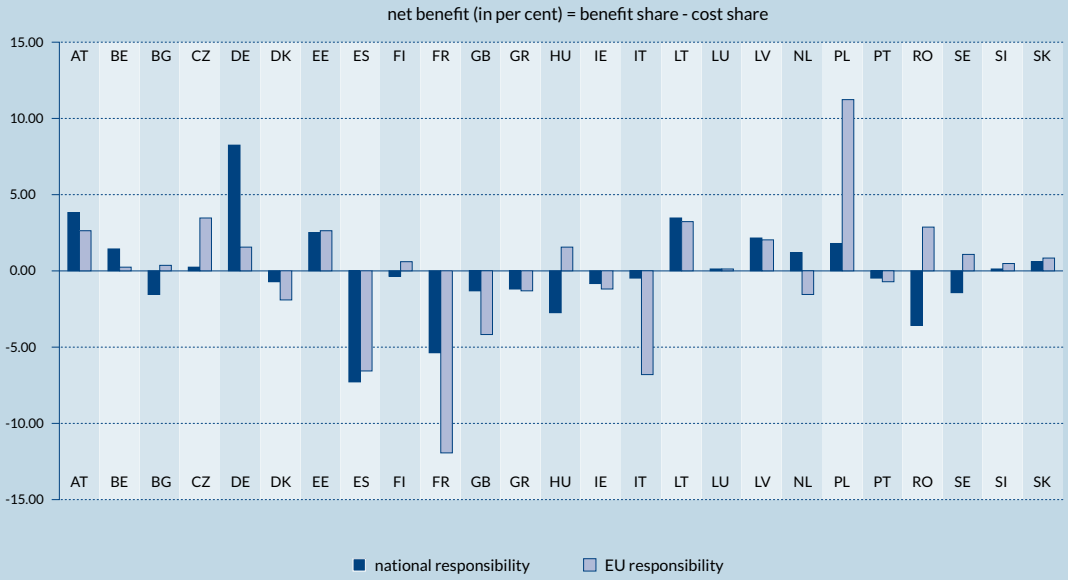
160 Data for external costs refer to 2008, and data for current track access charges refer to 2014. However, instead of comparing exact euro figures, we use the relative distribution across countries. There are no more recent data for external costs available. For details on applied railway access charge systems in Europe, see Vidaud and de Tilière (2010).

We then use the cost coverage ratio as a scaling factor to calculate the private and public parts of national railways. For instance, if a member state's complete external railway costs are covered by track access charges, railway is treated as a pure private good. If this is not the case (e.g. if only 80 per cent of external costs are covered), the part not covered has the character of a public good. In a final step, the adjusted cost ratios are rescaled to sum up to 100 per cent.[161] The figures are presented in Table 1 in the Appendix.

We then calculate the cost-benefit ratios in the cases of national and supranational responsibility by subtracting the national/European cost share from the benefit share. The results are presented in Figure 5.

Figure 5:

Distribution of net benefits from railway freight transport



Source: Own computations based on CE Delft, INFRAS and Fraunhofer ISI 2011; Eurostat; and European Commission 2014b.

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Positive figures indicate potential free riding, meaning that national benefits exceed national costs, with the opposite being true for negative figures. In the case of a national provision, Germany particularly benefits from comparably low costs for railway provision. Free riding would be reduced if the competence were reallocated to the European level. However, this is not true for each member state. Taken together, spillover effects would increase if the competence were reallocated. This can be seen, for instance, in the large amplitudes of France, Italy and Poland. The increase is also reflected in an increased standard deviation: The measure of dispersion rises from 3.08 to 4.33, resulting in an increase of 40.58 per cent. We therefore assign a score equal to 2, indicating that a European competence would not reduce problems of spillover effects and free riding.

161 This procedure is necessary because we compare percentage shares, which – by definition – sum up to 100 per cent. Otherwise, we could not subtract cost and benefit shares and compare changes in the standard deviation.

ECONOMIES OF SCALE

Data source and methodology

To detect economies of scale in freight transport policy, we refer to both cost savings based on fixed cost degression in rail maintenance and cost savings due to the harmonisation of technical aspects.[162] For the former, we use information on maintenance expenditures and total rail kilometres for 2011 from the OECD and Eurostat.[163] We then depict a member state's maintenance expenditures per rail kilometre in relation to total rail kilometres per country. If economies of scale due to fixed cost degression are present, there should be a disproportional decrease in the cost per kilometre, as countries with larger rail networks might use maintenance vehicles more productively, for example, and could thereby achieve a higher degree of utilisation.

For the latter, we refer to information from a recent study on the cost of non-Europe in the single market in transport and tourism (Steer Davies Gleave 2014). The authors present various examples of potential cost savings resulting from a harmonisation of technical barriers (explained below).

Results

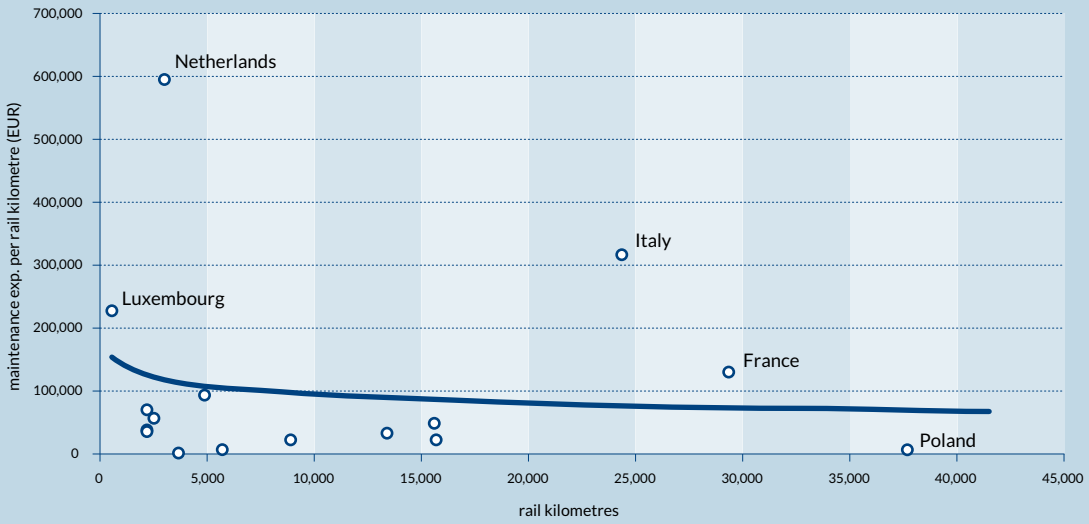
Results for potential economies of scale in rail maintenance expenditure are presented in Figure 6. We plot a member state's total maintenance expenditure per rail kilometre in relation to a member state's total rail kilometres. Furthermore, we include a logarithmic line of best fit. The results point to the presence of a cost advantage of larger entities (i.e. per kilometre maintenance expenditures decrease with an increasing rail network). However, the cost advantage is rather marginal. There are many countries facing low per kilometre maintenance expenditures even if rail networks are rather small. Furthermore, the investigation suffers from several caveats that should be stressed. First, we only use observations for 2011. As already mentioned before, maintenance decisions are rather arbitrary, meaning that it could be the case that our results are flawed because some countries invested too little (or more than necessary) in this particular year. To resolve this problem, we have plotted the relationship using average maintenance figures for the 2008–2011 period. The results are presented in the Appendix (see Figure 15) and remain unaffected by this modification. Second, various – and, in particular, large – countries are missing, as we were unable to collect information on maintenance expenditures for Germany, Spain and the UK, for example. We therefore interpret the results with caution and refer to the second part of the investigation: the detection of potential cost savings resulting from improved harmonisation.

162 In a narrow sense, only cost savings due to fixed cost degression in rail maintenance indicate pure economies of scale. However, as we will show below, there are enormous potential cost savings with respect to technical aspects, which could be more easily achieved if the competence were reallocated to the European level.

163 Another possibility would have been to use investment expenditures. However, it is not clear why there should be a cost advantage in the creation of rail tracks by larger entities. Furthermore, investment decisions are rather discretionary, as some countries invest more than they should while others invest less. While this is also true in principle for maintenance, we assume that biases are larger for investment decisions than for maintenance decisions.

Figure 6:

Maintenance expenditure per rail kilometre in EUR in relation to total rail kilometres (2011)



Source: Own computation based on OECD and Eurostat. Missing information for Belgium, Cyprus, Denmark, Estonia, Germany, Greece, Ireland, Malta, Romania, Spain and the UK. A logarithmic function is calculated to detect the best fit.

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While some improvements regarding a single European railway market have been achieved, there still remain substantial gaps which hinder the realisation of the full potential of a European railway system. Interoperability of European railways suffers from a lack of harmonisation of technical standards. These comprise, inter alia, different signalling systems, track gauges (distance between rails on the track) and electrification systems (Steer Davies Gleave 2014). These technical constraints act as barriers, as they hinder cross-border transport and cause additional costs for providers.

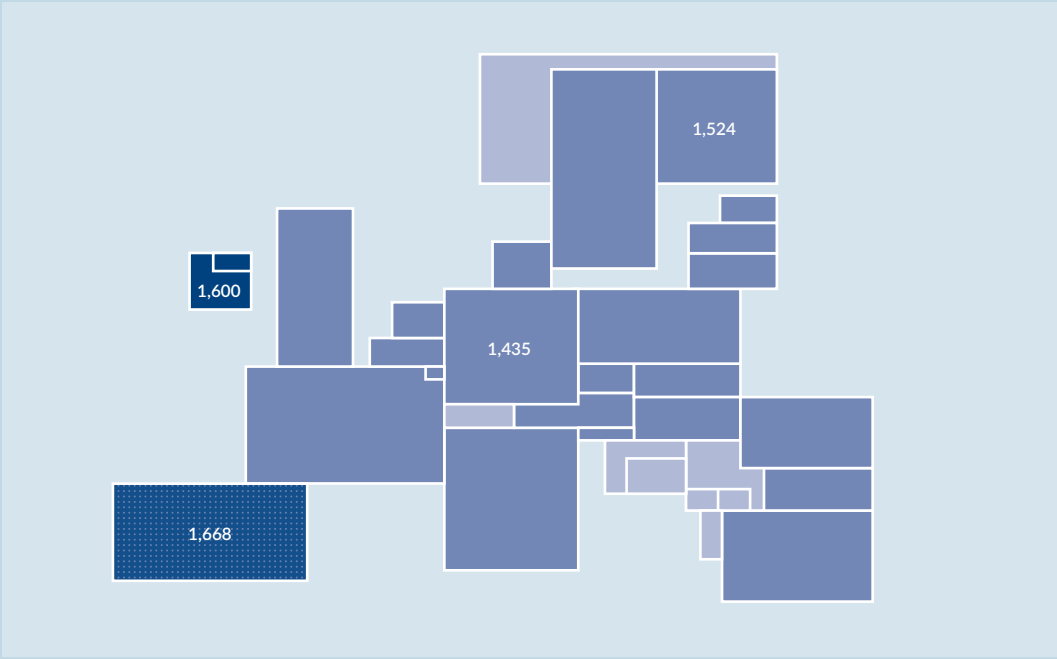
Different signalling systems

If, for instance, a train travels from one member state to another, the signalling system changes. There are currently more than 20 different signalling systems used across the EU, implying that operators must implement various systems per train or have to change engines – both being time-consuming and costly (ibid.).[164]

164 The EU has started moving towards standardisation, as three memorandums of understanding have been signed since 2005. The realisation, however, is far behind schedule (Steer Davies Gleave 2014).

Figure 7:

Different track gauges across Europe (in mm)



Source: Steer Davies Gleave 2014: 41.

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Different track gauges

An overview of different track gauges across Europe is presented in Figure 7. The standard track gauge is 1,435 mm, while there are differences in Spain and Portugal (both 1,668 mm), Finland (1,524 mm), and Ireland (1,600 mm) (ibid.).

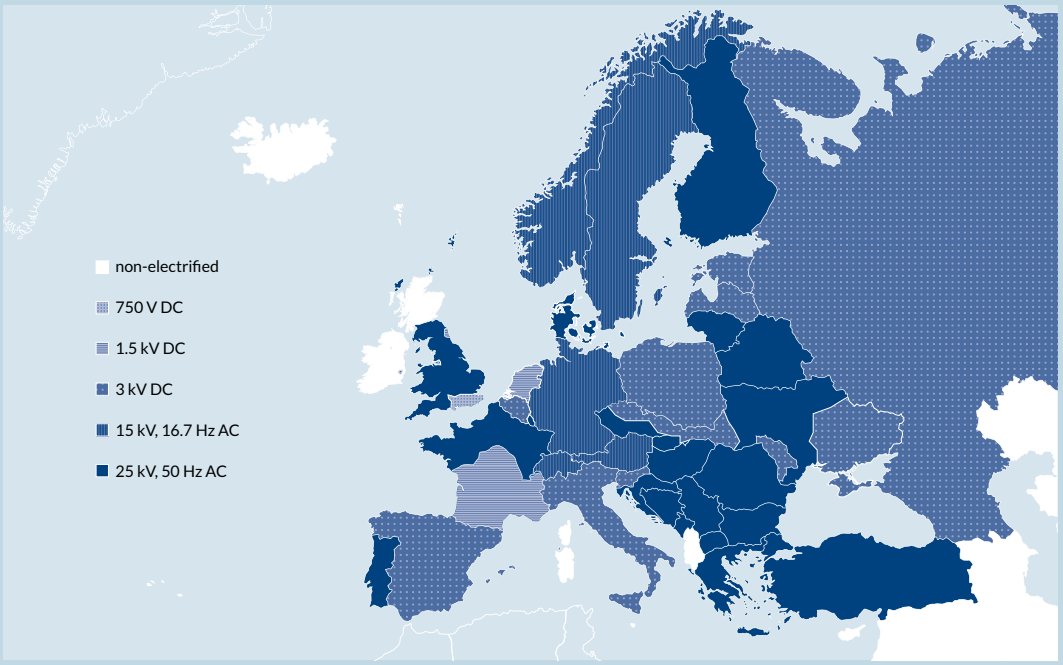
Different electrification systems

An even more disturbing example of different standards can be seen in the overview of national electrification systems provided in Figure 8. While most member states' railway tracks are now electrified, there are still five different electrification systems with a quite heterogeneous distribution across countries. Furthermore – and even more astonishingly – France applies two different standards, which requires that all electrical equipment ordered by the national railway provider can use both standards.[165]

165 Although there are obvious efficiency gains from moving to only one standard, the application of different standards (even within a country) already points to enormous and potentially even prohibitive changeover costs. We will discuss this matter in the summary of our study.

Figure 8:

Different electrification systems across Europe



Source: Steer Davies Gleave 2014: 42.

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The estimated potential cost savings from dissolving these barriers, as net present values for the 2015–2035 period, range from €6.5 billion (lower bound) to €13.6 billion (upper bound) (Steer Davies Gleave 2014: 70f).[166] To see these figures in perspective, the annual savings equal less than 1 per cent of the EU's annual budget (calculated for the upper-bound scenario) and are thus comparatively low.[167] Nonetheless, the figures point to financial benefits from increased harmonisation.

Finally, there is the caveat that these savings could potentially also be achieved with a decentralised solution and increased cooperation. Experiences from the recent past, however, cast some doubt on the practicability of this suggestion (see also the description in the 'Internal market consistency' section below).

166 The figures consist of: (A) €4 billion (standardisation of rolling stock) + €0.2 billion (common signalling system) + €1.6 billion (reduced maintenance of parallel signalling systems (10% of total maintenance costs equal to €16 billion)) + €0.7 billion (increased capacity due to single signalling system) = €6.5 billion (lower bound); and (B) €9 billion (standardisation of rolling stock) + €1.3 billion (common signalling system) + €2.4 billion (reduced maintenance of parallel signalling systems (15% of total maintenance costs equal to €16 billion)) + €0.9 billion (increased capacity due to single signalling system) = €13.6 billion (upper bound) (see Steer Davies Gleave 2014: 70f).

167 Figures are underestimated because the potential cost savings based on reduced maintenance of parallel signalling systems is given in per cent of total maintenance costs. As can be seen from Figure 6, however, we do not have information for various large member states and therefore use the lower bound of €16 billion for maintenance costs.

Taken together, we detect potential cost savings from reallocating railway transport policy from the national to the European level. Both results, however, must be viewed with reservations. We therefore only assign a slightly pro-centralisation score equal to 4.

PREFERENCE HETEROGENEITY

Data source

For determining preference heterogeneity of EU citizens regarding transport policy, we use Eurostat information on the modal split in freight transport between EU countries (revealed preferences analysis) and information from a Eurobarometer questionnaire. For the latter, we refer to the 2012 Special Eurobarometer questionnaire no. 388 on rail competition (European Commission 2012), and investigate the following four questions:

- QC7a.1: "Do you think that more competition in the rail market will be good or bad for passengers?"
- QC7a.2: "Do you think that more competition in the rail market will be good or bad for private rail operators?"
- QC7a.3 "Do you think that more competition in the rail market will be good or bad for employees of rail transport operators?"
- QC5: "In general, do you support or oppose opening the national and regional rail system in (OUR COUNTRY) to competition provided that all operators must meet the same safety standards?"

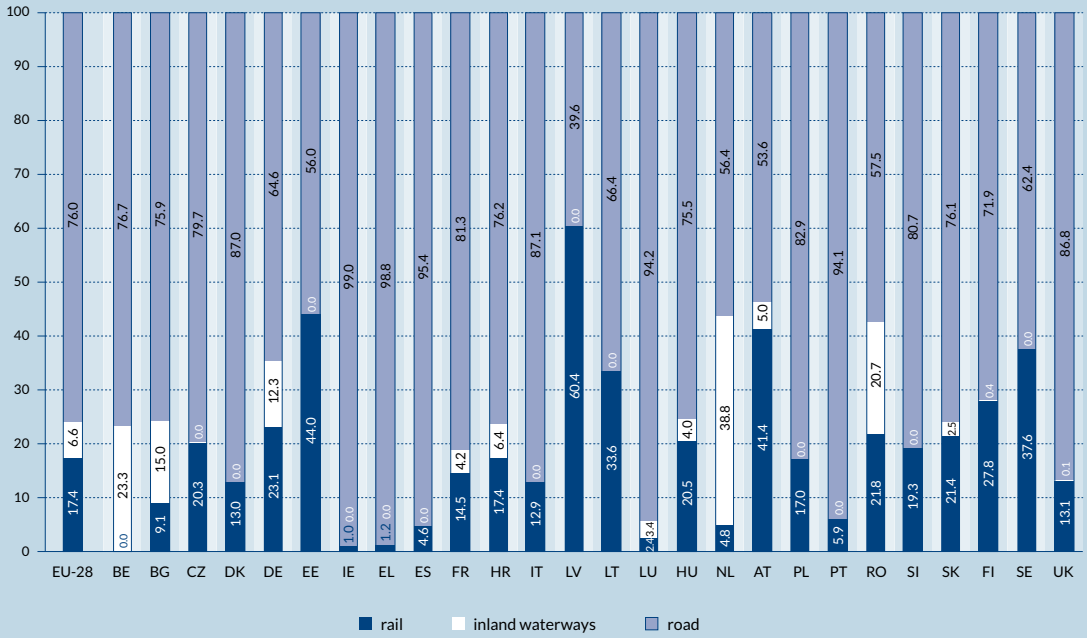
For the first three questions, answers were given on a four-level scale comprising 'bad', 'fairly bad', 'fairly good' to 'very good'. For the last question, answer categories comprised 'totally support', 'tend to support', 'tend to oppose' and 'totally oppose'.[168]

With respect to revealed preferences based on information on modal split in freight transport, we use Eurostat data from 2013 on the share of inland rail transport in total transport (measured in per cent of total tonne-kilometres; see Figure 9).

168 Note that Cyprus and Malta were excluded because they do not have a railway system. Croatia did not participate in the 2012 survey because it only joined the EU in 2013. Furthermore, citizens of the United Kingdom were not asked questions QC7.1 to 3.

Figure 9:

Modal split of inland freight transport in 2013 (per cent of total tonne-kilometres)



Source: Own computation based on Eurostat.
Note: Information is missing for rail transport in Belgium and for waterway transport in Italy.

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Methodology

For Eurobarometer questions, we reduce the scale from four to two levels by merging the answer levels ‘very good’ and ‘fairly good’ as well as ‘fairly bad’ and ‘bad’. The same is done for the answer levels ‘totally support’ and ‘tend to support’ as well as ‘tend to oppose’ and ‘totally oppose’. We then calculate the share of answers with either ‘very good’ or ‘fairly good’ per country and measure the dispersion of preferences on the European level.

In the case of modal split information, we directly use the share of national inland freight rail transport to measure citizens’ preferences. The procedure is based on the assumption that rather equal shares of national rail transport imply similar preferences, while rather diverse shares suggest the opposite. However, the share of national rail transport might also reveal special national circumstances, such as geographic conditions. For instance, there are no railways in Malta and Cyprus, and railways are used less often in the Netherlands due to the large number of inland waterways. We will come back to this caveat when interpreting the results.

Results

The results are presented in Figure 10 to Figure 13 (Eurobarometer questions) and Figure 14 (modal split). For the Eurobarometer questions, the corresponding heterogeneity ranges from 16.4 to 29.2 per cent, which results in scores equal to 7 and 8, respectively. For the modal split analysis, the heterogeneity measure is equal to 41 per cent, resulting in a score equal to 6. However, as already

mentioned, the rather low score for the latter result might not only reflect revealed preferences, but can also result from specific national geographic conditions. Furthermore, there might be the problem that responses to Eurobarometer questions are influenced by the current provision of national railway systems, meaning that respondents in countries with a rather high share of freight transport on railways might respond differently to respondents in countries with a comparatively low share (and vice versa). However, the direction of this influence is not clear.

Taken together, the results point to rather aligned preferences. Considering potential caveats, however, we do not assign the maximum score, but instead allocate a score equal to 4.

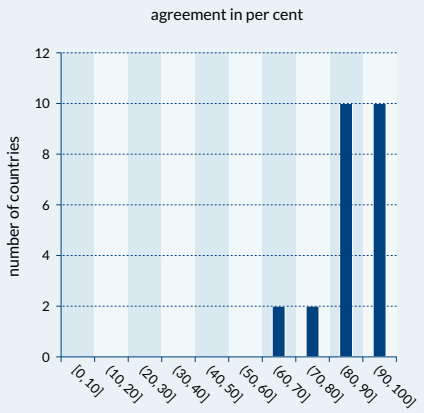
Figure 10:

Preferences regarding rail competition (passengers)

Transport

Eurobarometer question EB77.2 QC7a.1: "Do you think that more competition in the rail market will be good or bad for passengers?"

Mean (μ)	0.862
Median	0.887
IQR	0.111
Std. Dev. (σ)	**0.086**
Heterogeneity	**17.2 %**



Notes: The X-axis denotes the share of answers with 'very good' and 'fairly good' in a country. The answer choice 'very good' is merged with 'fairly good', and 'fairly bad' is merged with 'bad'. Respondents with no opinion about this question are not considered. If we use the country population size in 2014 as weights, the standard deviation = 0.072, resulting in a heterogeneity of 14.4 per cent.

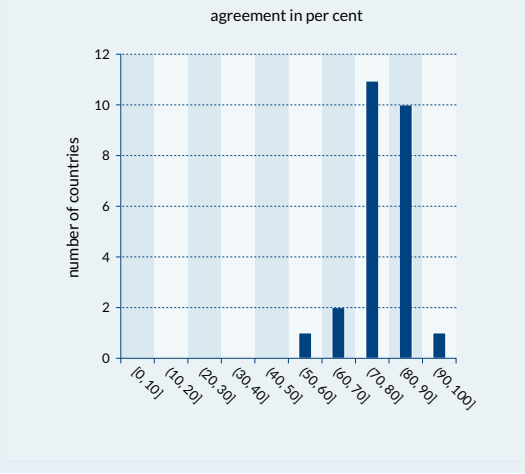
Figure 11:

Preferences regarding rail competition (private rail operators)

Transport

Eurobarometer question EB77.2 QC7a.2: "Do you think that more competition in the rail market will be good or bad for private rail operators?"

Mean (μ)	0.784
Median	0.793
IQR	0.110
Std. Dev. (σ)	**0.082**
Heterogeneity	**16.4 %**



Notes: The X-axis denotes the share of answers with 'very good' and 'fairly good' in a country. The answer choice 'very good' is merged with 'fairly good', and 'fairly bad' is merged with 'bad'. Respondents with no opinion about this question are not considered. If we use the country population size in 2014 as weights, the standard deviation = 0.068, resulting in a heterogeneity of 13.6 per cent.

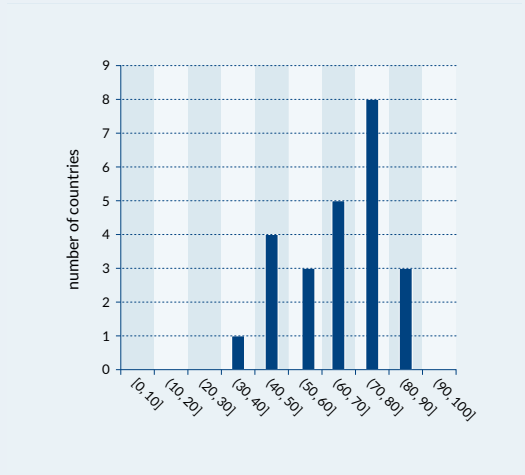
Figure 12:

Preferences regarding rail competition (employees)

Transport

Eurobarometer question EB77.2 QC7a.3: "Do you think that more competition in the rail market will be good or bad for employees of rail transport operators?"

Mean (μ)	0.655
Median	0.687
IQR	0.250
Std. Dev. (σ)	**0.146**
Heterogeneity	**29.2 %**



Notes: The X-axis denotes the share of answers with 'very good' and 'fairly good' in a country. The answer choice 'very good' is merged with 'fairly good', and 'fairly bad' is merged with 'bad'. Respondents with no opinion about this question are not considered. If we use the country population size in 2014 as weights, the standard deviation = 0.156, resulting in a heterogeneity of 31.3 per cent.

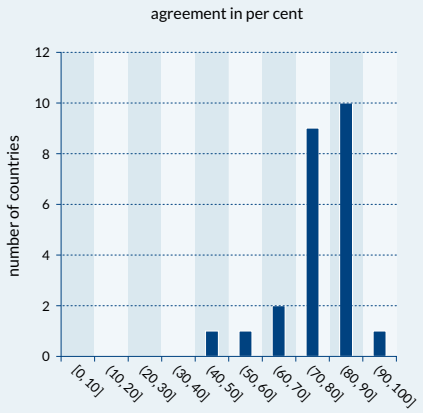
Figure 13:

Preferences regarding rail competition (opening the rail system)

Transport

Eurobarometer question EB77.2 QC5: "In general, do you support or oppose opening the national and regional rail system in (OUR COUNTRY) to competition provided that all operators must meet the same safety standards?"

Mean (μ)	0.773
Median	0.791
IQR	0.122
Std. Dev. (σ)	**0.104**
Heterogeneity	**20.8 %**



Notes: The X-axis denotes the share of answers with 'totally support' and 'tend to support' in a country. The answer choice 'totally support' is merged with 'tend to support', and 'tend to oppose' is merged with 'totally oppose'. Respondents with no opinion about this question are not considered. If we use the country population size in 2014 as weights, the standard deviation = 0.094, resulting in a heterogeneity of 18.8 per cent.

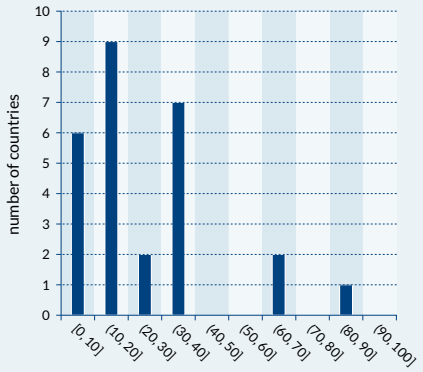
Figure 14:

Revealed preferences in transportation based on modal split

Transport

Railway inland freight transport in per cent of total tonne-kilometres

Mean (μ)	0.230
Median	0.178
IQR	0.225
Std. Dev. (σ)	**0.205**
Heterogeneity	**41.0%**



Notes: The X-axis denotes the share of railway inland freight transport in per cent of total tonne-kilometres of all inland freight transport. If we use the country population size in 2014 as weights, the standard deviation = 0.106, resulting in a heterogeneity of 21.3 per cent.

The primary principles of the internal market comprise basic freedoms and the guarantee of identical rules. If these principles are hurt (e.g. due to exceptions based on national standards) and the competence is allocated primarily to the national level, the competence should be reallocated to the European level. However, the caveat applies that this is only true if a national provision with identical rules cannot ensure consistency with the principles of the internal market.

The EU has launched numerous initiatives to strengthen the free movement of goods and persons with respect to transportation (see above). However, several gaps concerning the completion of the internal market still persist (Steer Davies Gleave 2014).[169]

First, market liberalisation is far from completed. For instance, domestic passenger services are closed to competition in the majority of member states. There is a continuum ranging from very liberal states (e.g. the UK has a highly competitive system for franchised services and has installed a fully independent infrastructure manager) to completely closed states (e.g. the Republic of Ireland has not separated infrastructure managers and railway undertakings). While the 4th railway package aims at opening market access (for details, see, e.g., Dehousse and Marsicola 2015), the implementation is far from complete.

Second, heavy rail is excluded from public tendering. While approximately two-thirds of domestic rail services are operating under public service contracts, Art. 5.6 of Regulation (EC) 1370/2007 allows for direct awards if national law permits it. As a consequence, the vast majority of heavy rail undertakings are directly awarded without competitive tendering.

Third, various bidding procedures based on national standards hinder an efficient competitive tendering procedure in the EU. As Steer Davies Gleave (2014: 34) notes, "competitive tendering is fully or partially used in eleven member states, and a further five only reverted to direct awards after the competitive tendering process failed." A consistent European approach with uniform business conditions is not yet existent, but it could help to encourage new players to enter the transport market.

Fourth, the different technical standards discussed above (e.g. different track gauges and electrification systems) hinder the free movement of goods and passengers. This becomes particularly true for missing cross-border links. For instance, Steer Davies Gleave (2014: 67) cite the example of how "freight trains travelling on the Rotterdam to Genoa corridor can travel for 90 per cent of the corridor with maximum lengths exceeding 700 meters. The maximum length allowed in the Italian section is below 600 meters, meaning that a train that needs to go as far as Italy needs to be shorter than what is allowed for most other networks along the corridor."

Fifth, national standards are applied for vehicle authorisation. In other words, the current system requires the applicant to comply with diverse national technical standards, which leads to high costs for multiple certificates in various countries.[170]

169 If not indicated otherwise, all examples refer to Steer Davies Gleave (2014: 33ff) (in particular, Gap 1, Gap 2, Gap 3, Gap 8 and Gap 12).

170 For further examples on different standards, see Steer Davies Gleave 2014.

Again, the 4th railway package aims at resolving these barriers, but the "provisions have been substantially watered down" and the package "is substantially below what the market needs to ensure a single market in the rail sector" (ibid.: 32). As Dehousse and Marsicola (2015: 56) point out, the 4th railway package "will certainly be an important stop in this long regulatory journey, but not the last one." Taken together, enormous doubts can be raised about whether the current competence distribution can effectively remove internal market barriers.[171] In contrast, a competence allocation to the European level could support the removal of both important obstacles and exceptions, as national views and interests may be put into the background.[172]

However, since removing these obstacles is also possible using a decentralised solution (although the expectations for a successful implementation remain admittedly limited) and railway transport cannot be treated as pure public good, we do not assign the maximum score, but instead assign a score equal to 4.

COMPETITION

We compare potential merits from policy innovations ('yardstick competition') with the threat of eroding standards ('race to the bottom') to assess the effects of competition. Starting with the argument of a possible yardstick competition, some case studies suggest that member states can indeed learn from each other. For instance, the opening of the rail sector in the UK and Sweden, which were among the first countries implementing liberalisation, serves as an example for other member states – concerning both benefits and drawbacks (Di Pietrantonio and Pelkmans 2004). Likewise, Italy and the Czech Republic have shown that opening the rail sector increases rolling stock and creates more jobs, which may induce other member states to implement similar reforms (Steer Davies Gleave 2014). However, instead of pointing towards policy innovations within an existing system, these examples refer to best practises in the case of complete regime changes (which were likewise not initiated by the member states alone, but requested by the EU).

Examples of yardstick competition within existing systems, in contrast, are rather scarce and in most cases limited by enormous sunk costs. Assume, for example, that one country 'invents' superior rail tracks or installs an improved electrification system. The costs for other countries to apply these innovations – given the enormous investments in the existing stock – are prohibitively high. Furthermore, the innovation would particularly hinder the completion of the internal market, as the application would increase barriers. Additionally, one could argue that most of the competition takes place in the private market. What would be needed, in contrast, is more coordination and harmonised European procedures instead of national solutions.

171 For instance, some member states have voiced scepticism about a European competence for railway passenger markets (Austrian Federal Economic Chamber 2013; Belgium Ministry of Foreign Affairs 2013). However, they only pick up specific items and do not refer to freight transport.

172 While this argument could in principle be raised for all policy fields, the specific circumstances of railway transportation lead us to the following conclusion: Of course, there is the chance for standards to be recognised, and member states may negotiate on a best practise solution. In fact, however, a central standard must be decided on, which also implies defining a path towards the implementation of this standard. Given the amount of transition costs, member states will maintain their current positions. A European competence could set standards and compensation more easily while focusing on the overall picture.

Concerning the risk of a race to the bottom, safety and environmental standards, in particular, could erode if a purely national competence were assigned. However, since these standards are already strongly regulated, it is questionable whether a reallocation to the national level would imply that standards would erode.

Taken together, there are only limited arguments for potential merits from 'yardstick competition', meaning that a European solution does not seem to hamper important policy innovations. Similar arguments can be made regarding a possible 'race to the bottom', meaning that the threat of eroding standards seems to be less severe than it is with other policy fields. We therefore assign an indifferent score equal to 3.

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APPENDIX

Spillover Effects

Table 1:

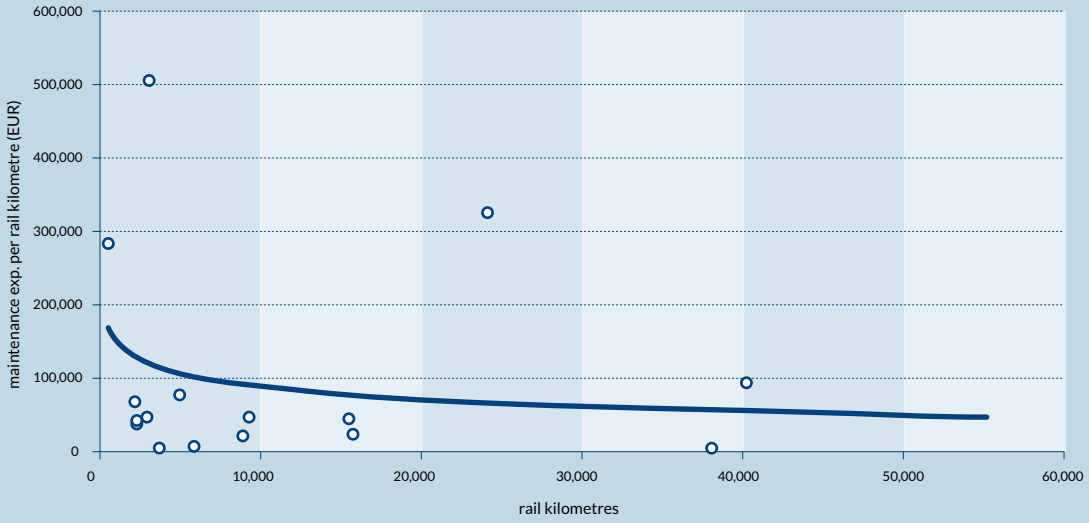
Cost and benefit shares for the computation of spillover effects in transport policy

	(1)	(2)	(3)	(4) = (2) / (3)	(5) = (1) * ((100 – (4)) / 100)	(6) Costs (national)	(7) Costs (EU)	(8) Benefits
Country	Rail KM	Track access charge	External costs	Cost coverage ratio	Costs railway provision	Adj. costs railway provision	Financing of EU budget	Domestic traffic (in tonnes)
	(share %)	(€)	(€)	(share %)	(share %)	(share %)	(share %)	(share %)
Austria	1.6	3.26	6.4	50.94	0.80	1.14	2.43	5.15
Belgium	2.1	2.37	6.7	35.37	1.39	1.99	3.16	3.51
Bulgaria	1.9	2.36	16.3	14.48	1.61	2.31	0.34	0.73
Croatia	-	-	-	-	-	-	0.18	0.54
Cyprus	-	-	-	-	-	-	0.14	-
Czech Rep.	5.2	3.39	8.5	39.88	3.14	4.49	1.16	4.83
Denmark	0.7	0.5	7.2	6.94	0.61	0.87	2.10	0.12
Estonia	0.7	4.63	6.1	75.90	0.17	0.25	0.15	2.88
Finland	3.0	1.85	4.6	40.22	1.77	2.54	1.63	2.27
France	9.8	1.6	7.1	22.54	7.57	10.83	17.59	5.35
Germany	13.8	2.68	9.3	28.82	9.84	14.08	21.00	22.61
Greece	1.0	1.11	13.4	8.28	0.94	1.34	1.44	0.15
Hungary	4.5	2.12	10.9	19.45	3.60	5.15	0.74	2.42
Ireland	0.8	9.8	32.1	30.53	0.56	0.80	1.22	0.04
Italy	8.1	2.45	5.2	47.12	4.28	6.13	12.66	5.71
Latvia	0.7	9.97	6.8	100.00	0.00	0.00	0.20	3.61
Lituania	0.7	7.14	8.2	87.07	0.09	0.13	0.28	2.40
Luxembourg	0.2	0.86	19.3	4.46	0.18	0.25	0.25	0.35
Malta	-	-	-	-	-	-	0.06	-
Netherlands	1.0	2.46	7.9	31.14	0.69	0.99	3.81	2.31
Poland	12.6	3	10.4	28.85	8.94	12.79	3.08	14.69
Portugal	0.8	1.19	12.6	9.44	0.77	1.10	1.35	0.63
Romania	6.7	3.32	13.1	25.34	5.00	7.16	0.57	3.57
Slovak. Rep.	1.2	2.75	14	19.64	0.97	1.39	1.10	2.02
Slovenia	0.7	1	6.4	15.63	0.61	0.88	0.30	0.88
Spain	6.4	0.13	8.2	1.59	6.33	9.06	8.34	1.60
Sweden	5.2	0.63	2.6	24.23	3.95	5.65	3.03	4.20
UK	10.5	1.93	4.6	41.96	6.07	8.68	11.67	7.43

Economies of scale

Figure 15:

Maintenance expenditures per rail kilometre in relation to total rail kilometres (mean figures 2008–2011)



Source: Own computation based on OECD and Eurostat. Missing information for Belgium, Cyprus, Denmark, Estonia, Germany, Greece, Ireland, Malta, Romania, Spain and the UK. A logarithmic function is calculated to detect the best fit.

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XIV. *Case Study 8:*

Unemployment insurance

Introduction

It is a classical prescription of fiscal federalism that the responsibility for macroeconomic stabilisation should be assigned to a federation's central level (Musgrave 1959; Oates 1972). The basic argument is that stimulating macroeconomic measures leak out into neighbouring jurisdictions, which renders sub-central stabilisation measures ineffective. These problems are particularly severe if sub-central jurisdictions are open and do not have an independent monetary policy and a flexible exchange-rate system at their disposal.

Discussions about the need for a common stabilisation system for Europe date back to the 1970s, starting with the Marjolin Report (Commission of the European Communities 1975) and the MacDougall Reports (European Commission 1977a, 1977b). These reports argued that, with intensified integration, countries become more open and must work together more closely for macroeconomic stabilisation. Furthermore, it is not surprising that ideas for European stabilisation schemes have become even more prominent for the EU with the introduction of the euro. With the monetary union, the classical fiscal federalism case for central stabilisation schemes has been reinforced. Proponents of European stabilisation schemes also point out that countries' leeway in terms of expenditures is restricted by rules on the European level, such as the Maastricht Treaty, the Stability and Growth Pact and, recently, the Fiscal Compact. Moreover, numerous euro area countries have experienced severe limits in their access to capital markets in the crisis years following 2010. Thus, the use of fiscal counter-cyclical measures, such as raising expenditures or cutting taxes, may be limited or even impossible (see, e.g., Meyer 2014; Dullien 2014; Del Monte and Zandstra 2014; De Grauwe and Ji 2013; ECORYS, CPB and IFO 2008).[173]

Of course, the case for a more developed European stabilisation system is not as clear-cut as it may seem at first glance, even under the conditions of the EMU. The Theory of Optimum Currency Areas has always stressed that flexible labour markets, adjustable prices and wages, and enhanced labour mobility can and should compensate for a fixed exchange rate. Thus, it should be an economic policy priority to improve the effectiveness of these alternative adjustment instruments, which, like labour mobility, have functioned well so far for the US, but not for the EU (Allard et al. 2013). Moreover, there might be a trade-off between European stabilisation and structural reforms if stabilisation schemes induce a moral hazard problem, that is, if it reduces the need to address rigidities at the national level.

Against this ambivalent perspective on European stabilisation schemes, we analyse the possible suitability of a European Unemployment Insurance (EUI) as a potential new task for the European level. An EUI would shift some of the responsibility for providing the unemployed with income protection

173 The best response to the economic cycle, especially to downturns, is highly debated among economists. There is no consensus on whether to implement pro-cyclical or anti-cyclical measures. For our analysis, we assume that anti-cyclical measures are needed to achieve stabilisation. For pro-cyclical arguments, the interested reader is referred to, e.g., Lucas (1987 and 2003) as well as Asdrubali, Sorensen and Yosha (1996); for anti-cyclical arguments, to, e.g., Aghion and Howitt (2006) and Aghion, Hemous and Kharroubi (2014). A good review of the link between the type of intervention and fiscal policy can be found in Manasse (2006) and Alesina, Campate and Tabellini (2008).

to the European level, and has become prominent in the debate on more European stabilisation (see, e.g., Dullien and Fichtner 2012; Dullien 2014; Dolls et al. 2015).

The rising amount of attention being paid to an EUI can also be attributed to the severe labour market problems seen since the outbreak of the financial and euro area debt crises. Since 2008, the euro area has experienced an overall rise in unemployment. As is depicted in Figure 1, the overall unemployment rate rose between 2008 and 2013 by about 5 percentage points. The increase is even more dramatic when looking at youth unemployment, which has increased by about 9 percentage points in this same period.

Figure 1:

Average unemployment rates in the euro area (EA) over time

Source: Eurostat.

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An increase in unemployment results in lower or unstable household incomes and, in addition, to a higher financial burden for governments due to an increase in the expenditures for unemployment insurances. This may further accelerate a vicious circle of deteriorating government finances, falling real economic activities and a destabilising financial system. The establishment and activation of automatic stabilisers, such as through an EUI, might help to stem the negative effects from an exogenous shock which might hit countries asymmetrically.[174] Hence, an EUI is scrutinised as a potential new European task.

174 Automatic stabilisers are instruments in fiscal policy that automatically come into play to mitigate fluctuations in the output due to economic shocks. The most important measures are, for example, progressive income tax schedules with high marginal tax rates or unemployment insurance systems (Auerbach and Feenberg 2000). Furthermore, besides the considered example of the EUI, different new concepts with a focus on the euro area have evolved recently, such as a smoothing of cyclical shocks (Enderlein, Guttenberg and Spiess 2013) or a European reinsurance system for national unemployment insurances (Beblavý, Gros and Maselli 2015). In general, automatic stabilisers should buffer both economic downturns and boom phases. Their implementation should be timely, targeted and temporary to unfold the advantages over standard fiscal policies (Elmendorf and Furman 2008). Discretionary actions are inherently slower and often too late due to political decision-making processes (Auerbach and Feenberg 2000).

Status quo

An unemployment insurance, which stabilises income during times of unemployment, is a typical and essential passive labour market instrument. It is largely assigned to the national level of EU countries at present. Systems across member states are diverse while sharing some common features (Del Monte and Zandstra 2014; Esser et al. 2013). Member states are currently free to choose how to design their system and define its elements (e.g. contribution rates and paid benefits). The EU has legislated regulations to ensure minimum standards within national systems. For example, an early regulation (EEC 1408/71) had set rules for social security schemes for persons and their families moving within the community. Furthermore, a more recent regulation (EC 883/2004) has defined rules for the coordination of social security systems, with a particular focus on the free movement across member states. It is important to note that these European rules have so far primarily served to protect the interests of workers who are mobile within the internal market, and that these rules do not transfer significant unemployment insurance competences from the national to the European level. In particular, these European rules do not interfere with national rules on, for example, the level or duration of benefits (European Commission 2013). In the context of the intensified policy coordination through the European Semester, member states increasingly also receive advice on their employment policies and welfare state systems, with the focus being on fostering smart and inclusive sustainable growth in line with the Europe 2020 strategy. However, these recommendations are a non-binding element of soft coordination, and they do respect the national sovereignty over these policy fields.

To conclude, there has hardly been any significant evolution so far towards a unitary EUI, and member states have kept a large degree of autonomy to define and reform their national systems, which have large systematic differences among themselves. However, the EU sets certain general rules which are supposed to ensure minimum standards and mostly deal with cross-border issues.[175]

Counterfactual situation

The counterfactual situation is defined as an EUI which serves as an automatic stabiliser and covers a certain group of unemployed. We concentrate on an EUI for euro area countries, as the case for a European stabilisation system is strongest for the members of the monetary union.

Over time, several proposals have been made on EUI variants, but no such system has been introduced so far.[176] For example, in 1993, the European Commission discussed a shock absorber which was supposed to be based on an unemployment insurance system. In 2012, the European Commission, the European Council and the European Parliament released separate reports calling for an updated architecture of the monetary union which also included a stabilisation measure (Del Monte and Zandstra 2014). In 2013, the European Commission (2013) proposed a common system with a coverage rate of 75 per

175 The Dutch subsidiarity assessment concludes that there is no need for further centralisation or harmonisation, and that the current system of generally independent national insurances should be maintained (see Ministry of Foreign Affairs 2013).

176 For an overview, see Beblavý and Maselli (2014).

cent and a replacement rate of 50 per cent for one year of unemployment. Eligibility rules would be the same across all countries.

In what follows, we will outline the most important features of an EUI for the euro area, which we chose as our counterfactual. Our starting point is the model by Dullien (2014), which we enhance with additional components.

The EUI:

- insures only short-term unemployment up to a certain threshold (e.g. up to one year);
- should not replace national unemployment schemes, but guarantees a basic insurance for short-term unemployment only;
- should set a trigger which is only activated when the number of short-term unemployed exceeds the normal/average level to prevent the coverage of, e.g., regular seasonal unemployment (see Fernandes and Maslauskaite 2013; Beblavý and Maselli 2014);
- should not lower the overall level or generosity of transfers in the European Union;
- should not lead to permanent transfers between economically/financially stronger and weaker states;
- buffers asymmetric shocks, but should not ensure equal living standards in all participating countries;
- does not need to be balanced in each year but over a longer time horizon; over time, each country's expected net benefits should be zero;
- stabilises across space (member states) and time (years);
- provides payments to the unemployed in crisis countries while boom countries, in turn, would pay into the system (Meyer 2014);
- respects that national systems will continue to insure the long-term unemployed; and
- respects that national systems can top up the basic system introduced on the European level.

Overview

Score	Description
	Spillover effects
5	In a world with open and entangled economies, countries may be tempted to rely on the stabilisation efforts of others as they will benefit partially without bearing the costs. We test whether these possibilities are stronger under the current national system or with an EUI. By comparing the costs and benefits of each country, we find that free riding is reduced with the introduction of an EUI.
	Economies of scale
3	Economies of scale could appear in the administrative part of the EUI, as a bigger entity might be able to save costs in supplying the same service. Unfortunately, there is no data available to compute economies of scale. Thus, we must rely on anecdotal evidence. The literature suggests hardly any economies of scale. As our counterfactual situation implies a mixed system with existing national insurances and an additional European part, there seems to be no scope for realising economies of scale.
	Preference heterogeneity
4	We analyse whether national unemployment insurance systems are similar across member states using the revealed preferences approach. The analysis indicates that, according to our four measures, the schemes are pretty similar in some characteristics and less homogeneous in others. Taken together, our analyses show that preferences are homogeneous enough that a European competence could generally enhance the national unemployment systems.

	Internal market consistency
3	Our analysis reveals potential impediments to the internal market in cases when national systems would hamper the free movement of persons and thereby labour. We find that this potential threat to the internal market is already resolved by several regulations imposed by the European Union, although some flaws still exist. Thus, shifting the current division of competences more towards the European Union would not add considerably to a better functioning internal market.
	Competition
4	Both yardstick competition and the race to the bottom are analysed. Existing evidence suggests that the threat of a race to the bottom is unlikely in the case of a European system, while it is more likely in the case of national competences. However, empirical evidence points to the merits of system competition when member states are responsible. While accounting for this limitations, our results slightly point to benefits from a more centralised solution on the euro area level.

Further information

SPILLOVER EFFECTS

Methodology and data source

Spillover effects might arise when the costs and benefits of a policy diverge, and when countries face low incentives to invest in a European public good because they can join it freely. An unemployment system provides the public good of macroeconomic stabilisation, as it stabilises the income of private households affected by unemployment. This, in turn, stabilises aggregate domestic consumption with positive cross-border spillover effects through trade channels. The smaller and more open an economy is, the lower the incentives are to engage in stabilisation efforts as a large fraction might result in higher imports, which benefits trading partners most.[177] At the same time, the costs of the fiscal intervention must not be borne by the national government alone. Thus, stabilisation can be seen as a public good which generates external effects. The standard prediction is an under-provision of the public good 'stabilisation' when governments rationally trade off (national) costs against (national) benefits and disregard pan-European effects. With increasing European integration, this problem might even be aggravated, as countries will rely more heavily on trade with other countries, which makes them even more open (Dullien 2014). In addition, Von Hagen and Pisani-Ferry (2002) argue that, with enhanced market integration (e.g. the European internal market), spillover effects arise and may hold states back from introducing fiscal policies to ensure stability as some part of the stabilisation effect crosses borders. In addition, Maselli and Beblavý (2015) also give reasons for the existence of spillover effects in the presence of economic integration, arguing, for example, that national policies are less effective at stabilisation since some part of it crosses the borders due to increased imports. Weyerstrass et al. (2006) emphasise that the existing interdependence coming from the common currency and the shared monetary policy calls for more coordinated economic policy.

Nevertheless, an EUI may also encourage a specific type of free riding. States will have fewer incentives to invest in structural reforms to bring down unemployment when a large share of the unemployed is paid by the Union.

177 For example, European Commission (2009) argues that Austria relied heavily on the stabilisation efforts of other countries in 2009.

Exactly this mechanism needs to be taken into account when setting up a European solution by restricting the redistribution component and establishing the possibility to take loans. Thus, this kind of free riding might be avoided by designing an appropriate mechanism. One good example is the US unemployment scheme, which is located at both the national and the subnational levels. In this system, every state can borrow from the federal fund to stabilise incomes without free riding on the contributions of others. The loans need to be repaid. In addition, contribution rates are automatically raised whenever a state does not repay the loans (European Commission 2013).

Subsequently, we test the possibilities that euro area countries could free ride on the stabilisation effort of others in both the national and the European case. The idea is to analyse which country profits most from an overall increase in spending for stabilisation and compare it to the financial efforts that were taken. We exploit the fact that the EU launched the European Economic Recovery Plan in 2009 to fight the financial and economic crisis by initiating coordinated fiscal actions. The total sum amounted to about €200 billion (1.5% of the EU's GDP), with 15 per cent coming from the EU and the bigger part (ca. 85%) being provided by the member states. In addition, measures were taken to promote smart investments, such as ones to promote green technologies (European Commission 2008). In general, member states were responsible for planning, implementing and financing appropriate measures. Then the question is whether and how much a single country benefits from its own additional effort and from those of all the others.

National costs are approximated by using information on national fiscal packages implemented in 2009 in the course of the European Economic Recovery Plan. The OECD provides data on the size of the packages for the years 2008 to 2010 as a percentage of 2008 GDP (OECD 2009). In addition, the distribution of the measures over the three years is given in per cent. Thus, by multiplying the numbers with the 2008 GDP level, we obtain the level of each country's investment in 2009 in absolute figures (in euros). We then sum up the values of all the packages and compute each country's share of the euro area total. Unfortunately, we lack some information, especially for non-OECD countries.

For the counterfactual situation of a common EUI, the national contributions are taken from EUI simulations conducted by Dolls et al. (2015).[178] To approximate a country's contribution level, we take the average between 2000 and 2013 to account for the fact that the contribution is sensitive to the chosen year and the current economic situation in every country. By definition, every country needs to contribute to this fund depending on its current economic situation.

The benefit shares for both cases are measured as a country's share of all intra-euro-area exports in 2014. Data on trade between all euro area member states is provided by the World Bank and was aggregated by us.[179] To obtain values in euros instead of US dollars, all numbers are converted using the average exchange rate from 2014 supplied by the ECB.[180] Since we do not have information for Cyprus and Lithuania, we exclude these countries from our analysis. We assume that this export share is a reasonable indicator for the

178 We refer to the basic scenario. For detailed information on the exact setup, see Dolls et al. (2015).

179 http://wits.worldbank.org/CountryProfile/en/Country/NLD/Year/2014/TradeFlow/Export/Partner/ESP/Product/all-groups.

180 www.ecb.europa.eu/stats/exchange/eurofxref/html/eurofxref-graph-usd.en.html.

benefits from euro area stabilisation efforts, as it shows how much a euro area member country benefits from an increase in euro area trade following a stabilisation measure.

We subtract the costs of the fiscal packages from the realised benefits to detect potential free riding. We then calculate standard errors for both scenarios and compare changes in the standard deviation to measure changes in spillover effects.

$$National\ Responsibility_i = \frac{Eurozone\ Exports_i}{\sum_{i=1}^{19}(Eurozone\ Exports_i)} - \frac{Fiscal\ Package\ Contribution_i}{\sum_{i=1}^{19}(Fiscal\ Package\ Contribution_i)}$$

$$Eurozone\ Responsibility_i = \frac{Eurozone\ Exports_i}{\sum_{i=1}^{19}(Eurozone\ Exports_i)} - \frac{Average\ EUI\ Contribution_i}{\sum_{i=1}^{19}(Average\ EUI\ Contribution_i)}$$

Results

The results from our spillover analysis are shown in Figure 2. The blue bars represent the national scenario, while the red bars represent the euro area scenario. In general, a negative value indicates that a country has higher expenses compared to the realised benefits. However, this does not mean that their stabilisation effort did not have any positive effect, as one could conclude from the German case. Even though the indicator is negative, it is undisputable that Germany benefitted strongly from its own stabilisation investments.[181] In fact, the focus is on the comparison between the invested share of money and the realised gains, always compared to all other euro area countries. In the national case, this is especially true for Germany and Spain. Even though Germany has the largest share of euro area exports, it also bears the biggest part of stabilisation efforts, which exceeds the benefits. In contrast, Belgium, Ireland, Italy, the Netherlands and, to a smaller degree, Greece have realised higher benefits compared to their stabilisation costs. The results reflect that countries which suffered the most during the crisis more often realised net benefits. This is due to the small volume of fiscal packages in these countries compared to others since financial capacities are low.

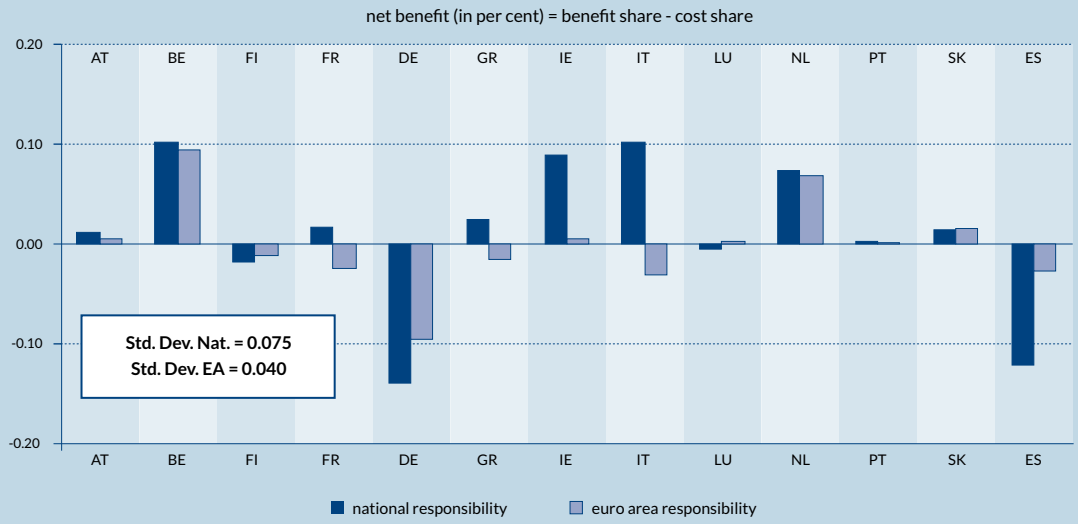
When an EUI is introduced, in many cases, costs and benefits seem to be more in line than before. The crisis-struck countries Greece, Ireland and Italy have experienced much smaller net benefits owing to a more equal distribution of the financial burden. The net burden of Germany and Spain went down moderately or to a high degree. Some countries (e.g. Belgium, the Netherlands and Slovakia) have not experienced any change in result. However, we can prove that introducing an EUI could have reduced the free riding of euro area countries.

The standard deviation is reduced by 47 per cent, indicating that the costs and benefits would be more aligned in the case of euro area competence than in that of national competence. Therefore, we assign a score of 5, which underlines the merits of shifting competences for an EUI to the euro area level.

181 Detailed information on all indicators is given in Table 1 in the Appendix.

Figure 2:

Free riding on others' stabilisation efforts (in per cent)



Sources: World Bank, ECB, OECD, Dolls et al. 2015. Own calculation and representation. Data missing for Estonia, Latvia, Malta and Slovenia.

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Economies of scale

Economies of scale arise when a greater entity can supply the same output at lower cost or a higher output at the same cost. Applied to employment policy, the unemployment insurance would be provided more efficiently by a centralised European solution than by the national systems.

Regarding potential cost savings in the administration or distribution of benefits to the unemployed, there seems to be consensus that there is no scope for economies of scale (see, e.g., ECORYS, CPB and IFO 2008). The authors find some economies of scale for monetary policy due to economic integration, though this isn't the focus of the present study. Dekker et al. (2003) argue that potential cost savings may arise due to enhanced risk-sharing and the removal of institutional barriers. However, there is no quantitative analysis to approximate the level of cost savings.

Dullien (2014) reasons that no additional institutions should be built on the European level as this would undermine their acceptance. Furthermore, there are already-functioning administrations in member states which should be used. Thus, one would need to establish a system which heavily relies on the existing structures with minimal additional EU institutions. This is in line with our counterfactual situation, which combines existing national unemployment insurances with an EUI on top. However, establishing a new, albeit small unit on the European level would imply additional costs. But compared to the high number of beneficiaries across Europe, these additional costs per capita seem to be negligible.

To sum up, our counterfactual implies that under a mixed system – of continuing national unemployment insurance and a supplementing EUI – no economies of scale would materialise. All administrative costs associated with the national system would continue to exist. Thus, we assign a score of 3 to indicate that there would be no economics of scale with a EUI, and that costs could even increase.

PREFERENCE HETEROGENEITY

To determine the potential heterogeneity of preferences of euro area citizens concerning unemployment insurance programmes, we rely on a system analysis of specific key variables of the national unemployment insurances, including the duration, eligibility, coverage rate and replacement rate.[182] To detect revealed preferences, this analysis assumes that voters elect the politician or party which offers the most preferable bundle of policies to the voters – in our case, the design of the unemployment insurance. Thus, by studying realised policies, we may indirectly infer the preferences of national voters. In the end, national outcomes will be compared to key findings from other member states.

Data source

Our research is based on the following three databases: We consulted the EU's Mutual Information System on Social Protection, which offers a database called MISSOC. We use information on the eligibility criteria and the duration of the payment of unemployment benefits.[183] The information is updated twice a year by officials in the national ministries or institutions; we were able to use information from the latest update (July 2015). The Social Insurance Entitlements Dataset (SIED), which is part of the Social Policy Indicators database (SPIN) of the University of Stockholm, provides us with information about the national coverage rates.[184] Although the data was recently updated (in December 2015), the latest data refers to the year 2010. However, throughout the last three decades, the coverage rate has proved to be stable, with only minimal fluctuations over time. The net replacement rate is drawn from a database called 'Benefits and Wages: Statistics' from 2014, which is published by the OECD.[185]

Methodology

For a standardised analysis, we always refer to a single average worker (aged 50 years or younger) with no children to guarantee comparability throughout the countries. In addition, this avoids potential conflicts with family policy and early retirement programmes. Furthermore, we focus on short-term unemployment benefits; in particular, we merely consider the period before the first reduction in payments kicks in. This is our approximation for short-term unemployment benefits when there is no clear distinction in the national system. The technical details are explained in the Appendix.

The analysis is restricted to the euro area countries which would be part of a common unemployment insurance system. Nevertheless, including all EU member states gives similar results.

182 Information on the definition of the four criteria is given in the Appendix.
183 http://ec.europa.eu/social/main.jsp?langId=en&catId=815.
184 http://spin.su.se/datasets/sied.
185 http://www.oecd.org/els/benefits-and-wages-statistics.htm.

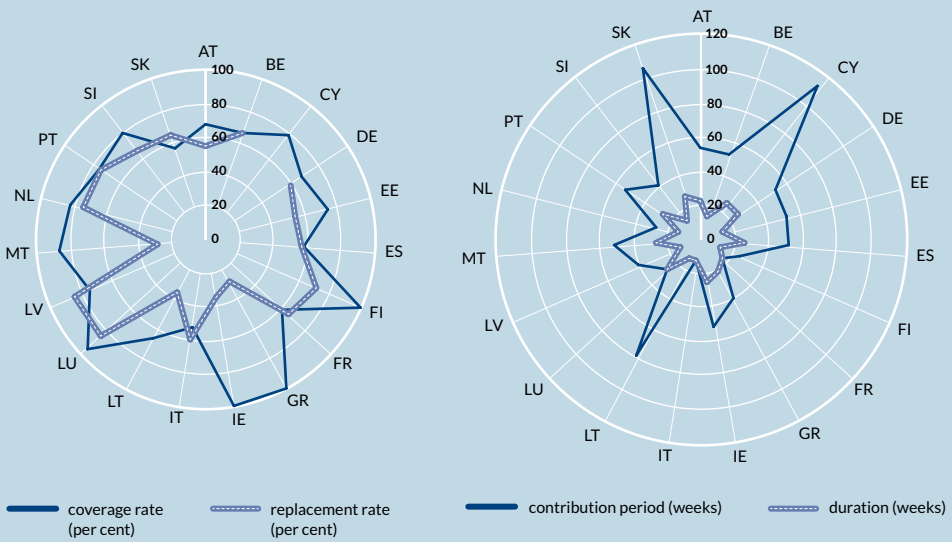
Results

The results of our system analysis are illustrated in two different ways: First, we look at network graphics to judge the level of homogeneity across countries. Second, we underpin the results with a more formal analysis using box-and-whisker plots.

The network graphics display our four indicator variables in a clear way, which makes it easy to compare the levels across countries. Each member state is alphabetically arranged around the circle. In Figure 3, the inner circles represent either 0 to 100 per cent (left figure) or 0 to 120 weeks (right figure). Small numbers are located near the circle's middle, while greater numbers are located at the outer edges. If the design of national unemployment insurances would be similar in the single indicators, the graphs would display smooth lines without many spikes. This is independent of the ordering of the countries and the exact level of the variables. The most homogeneous indicator seems to be the duration of benefit payments, which generally hovers at around 20 weeks. The coverage rate is similar across countries, too. The sole exceptions are Ireland and Greece, the outliers at the top. Thus, preferences seem to be similar when it comes to these two indicators. The net replacement rate fluctuates more between countries, including outliers at the bottom. The most heterogeneous characteristic is the contribution period required to be eligible to receive unemployment benefits. Here, countries do not seem to have coinciding preferences.

Figure 3:

Network graphic on unemployment insurance characteristics



Sources: European Commission (2015), The Swedish Institute for Social Research (2010), OECD (2014).
Data missing for Cyprus (replacement rate). Own calculation and representation.

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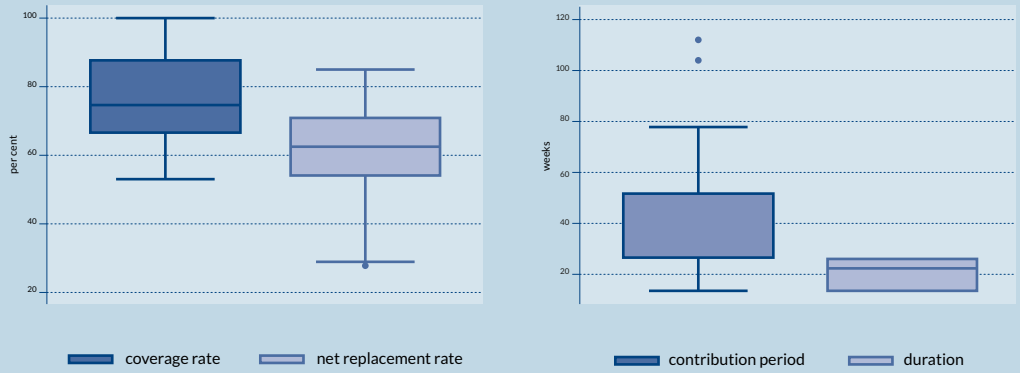
A box-and-whisker plot consists of several parts indicating specific statistical information. The coloured box represents the data between the first and third quartiles, which is 50 per cent of all data points. In addition, the line inside the box depicts the median. The lines (whiskers) outside the box represent data points which deviate from the data inside the box, though only slightly.

Remarkable outliers are represented by single dots. Figure 4 shows the box-and-whisker plots for all four indicators of the unemployment system. The duration of benefits (right figure) is by far the most homogenous across countries as the box is fairly small, meaning that 50 per cent of the data is concentrated within a small range. The boxes for the coverage rate (left figure), the net replacement rate (left figure) and the contribution rate (right figure) are broader, indicating that data points are less close together. The displayed outliers support our findings from the previous graphical analysis. The whiskers are fairly large for three indicators (coverage, replacement, contribution) and non-existent for the duration period. To conclude, our analysis reveals that about half of the euro area countries exhibit similar levels of the indicators, which speaks in favour of homogeneity. Nevertheless, some outliers or at least deviations from the average are observed, as well. This reveals some level of homogeneity across the unemployment systems of euro area countries.

Figure 4:

Box-and-whisker plots for unemployment insurance characteristics



Source: European Commission (2015), The Swedish Institute for Social Research (2010), OECD (2014).
Data missing for Cyprus (replacement rate). Own calculation and representation.

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The different figures show that there is quite some variation across countries when analysing key characteristics of the national unemployment insurance systems. But looking into the graphs in more detail reveals that, in many cases, the characteristics of a majority of countries seem to be similar, while there are some outliers which drive the results. Interestingly, some indicators are more homogenous (the duration of benefit payments and the coverage rate), while others are fairly heterogeneous (the contribution period and replacement rate). The findings from our system analysis are partially in line with what other studies have found for all EU countries (see, e.g., Esser et al. 2013; Del Monte and Zandstra 2014; European Commission 2013; and a study by the European Commission cited in ECORYS, CPB and IFO 2008). In addition, Dekker et al. (2003) find that the spread in expenditures for social security systems decreased between 1981 and 1998.

Overall results

The revealed preferences from our system analysis show that there is still heterogeneity in the design of national unemployment insurances. However, if countries agree on a common basic insurance which can be nationally expanded, greater homogeneity in basic coverage could be achieved (Dullien and Fichtner 2012). The supranational insurance would then only cover the most basic needs and periods of short-term unemployment. One may also note that the basic design of insurances is often similar with regard to the dual character, means of funding, or active labour market policies (Del Monte and Zandstra 2014).

To sum up, we assign a score of 4 obtained from the system analysis. Thus, we assume that the preferences of euro area citizens are sufficiently homogeneous for a European solution to be supported by a majority of them.

INTERNAL MARKET CONSISTENCY

The internal market should ensure a free flow of goods, persons, services and capital. Concerning unemployment insurance, it is important to investigate whether the current distribution of competences is an impediment to this guideline. In general, the internal market may foster labour mobility and increase well-being due to the removal of institutional barriers (Dekker et al. 2003). However, one may think of a reduced mobility among workers when their social security contributions cannot be transferred across borders, which would make them worse off in times of unemployment. This would prevent an efficient allocation of workers across Europe. Having identified this potential threat to the internal market, one must investigate whether it can be resolved through national coordination or whether it is already fixed by, for example, a European regulation.

In 2004, Regulation (EC) 883/2004 was legislated for the purpose of coordinating social security systems. The regulation explicitly states that these "rules for coordination of national security systems fall within the framework of free movement of persons" (European Parliament 2004: 2). It is an updated and an enlarged version of Regulation (EEC) 1408/71 from 1972, which was introduced "to ensure equivalent treatment and protection of social security benefits of all EU workers, irrespective of current residence in the EU and the employment" (European Commission 2013: 8). The regulation states that all periods of employment in one member state must be taken into account when a person moves to any other EU member state. Thus, when a person becomes unemployed, the current state of residence needs to treat all periods under the other insurance system equally as if it were completed in the system of the current state. Moving to another member state is facilitated by ensuring that previously paid contributions and times of employment are credited and do not get lost. Additionally, persons are encouraged to move to another member state to search for a job since they will receive their unemployment benefits from the previous state of residence for another three months (and it may even be extended for up to six months). Furthermore, the regulation determines several organisational issues, such as the institution responsible for claims (European Commission 2013; European Parliament 2004). In general, it is oriented to both the 'equal treatment principle' and the 'principle of aggregation of periods' (European Parliament 2004). However, one must note that the application of these rules is more

complicated in practice, as unemployed individuals need to ask for permission to transfer their benefits to another country. Moreover, the permission is only valid for one country, so moving to yet another European country requires another new form and application. Thus, even though hurdles to mobility have been reduced theoretically, there are still some impediments in the practical application (European Commission 2016).

To sum up, from a regulatory point of view, there seems to be no impediment to the mobility of labour anymore. Moreover, enhanced mobility may secure incomes and contributes to more stabilisation in times of economic struggles. Thus, the current distribution of competences (national with basic EU guidelines) seems to be sufficient to ensure the functioning of the internal market (see, e.g., Del Monte and Zandstra 2014). Following the results of our analysis, we assign a score of 3 to this criterion, as the status quo is already highly consistent with the free mobility of workers.

COMPETITION

The competition criterion analyses whether there is the threat of a race to the bottom or gains induced by yardstick competition. Both aspects are discussed below.

Concerning the threat of a race to the bottom, in the case of a uniform European unemployment scheme, some commentators worry that countries with previously high standards and generous systems might cut back to the supposedly lower European level. If this were to happen, the European system would not help to stabilise incomes and the economy, but would rather contribute to destabilisation (Dullien 2014). However, the working hours directive from 1993 might actually lead to the opposite scenario. It introduced a guideline for the maximum number of working hours per week and a minimum level of paid vacation. An inspection of the average weekly hours worked shows that the amount fell by about 1.6 per cent between 2000 and 2006 (Morley et al. 2010). In addition, analysing the development of more recent data shows that the average number of weekly hours worked (including paid and unpaid extra hours for full-time workers) was about 41.7 in 2008 and slightly lower in 2015 (41.4 hours). The maximum is always around 45 hours per week, which is below the legal maximum of 48 hours per week (Eurostat 2016). Thus, there is no evidence that the maximum amount has led to an increase in the hours worked due to the regulation. As Dullien (2014) argues, a European system is assumed to be a support for social security in Europe instead of being the reason for a race to the bottom between countries.

In addition, there is also the fear of a race to the bottom in the case of national responsibilities, as countries might try to cut back unemployment benefits to be less attractive to unemployed persons or those with a high risk of becoming unemployed. This could result in social dumping (Fernandes and Maslauskaite 2013). In addition, a race to the bottom may occur inadvertently, as states are more eager to cut back social security expenses in times of economic struggles, which would contribute to destabilisation (Del Monte and Zandstra 2014). Other instruments are often not available, as members of the euro area cannot, for example, adjust their exchange rate to be more competitive. Thus, cutting back social security expenses is often

an on-hand instrument with few alternatives.[186] Furthermore, critics argue that states might refuse to implement necessary structural reforms to fight unemployment. But this argument is weak, as only short-term unemployment would be insured on the European level, while structural and long-term unemployment would still be up to the individual state. Thus, it should be in their own interest to implement reforms (Dullien 2014).

A positive effect could be triggered by yardstick competition, meaning that states experiment with different systems and learn from each other in the case of national competences. A fruitful competition among countries for the best unemployment benefit system would speak in favour of national competences and against a centralised organisation. Anecdotal evidence on yardstick competition on labour market policies in general and unemployment systems in particular is rich. The history of labour market reform in Europe is full of examples in which certain member states have acted as reform pioneers (e.g. the United Kingdom in the 1980s, the Scandinavian countries and the Netherlands in the 1990s, or Germany in the 2000s, with the so-called Hartz reforms). These reform examples have been highly controversial, but they have clearly influenced the reform discussions and decisions of other countries. Right now, for example, efforts to introduce modest labour market liberalisation in countries like France and Italy have clearly been influenced by the strong performance of the German labour market following the labour and unemployment-benefits reforms implemented since 2003. Thus, we conclude that yardstick competition has a particularly high potential for labour market policies.

After having revised both effects, it seems that a race to the bottom is more likely to occur in the case of national competences than in the European scenario. However, there is also rich evidence for system competition among member states, which would speak in favour of national competences. Introducing an EUI which respects national independence seems to be best in terms of competition. Consequently, we assign a score of 4 to acknowledge the merits of a European competence.

186 Evidence on how states have adjusted their unemployment benefit systems since 2007 can be found in Del Monte and Zandstra (2014).

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APPENDIX

Spillover Effects

Table 1:

Indices for costs and benefits (in per cent)

Country	ISO	Benefits Nat. and Euro Area (Share of Euro Area Exports)	Costs National (Share of Fiscal Packages)	Costs Euro Area (Share of Average Projected Costs)	Benefit-Cost-Difference National	Benefit-Cost-Difference Euro Area
Austria	AT	0.0410	0.0290	0.0359	0.0120	0.0051
Belgium	BE	0.1290	0.0260	0.0345	0.1030	0.0945
Estonia	EE	0.0040		0.0014		0.0026
Finland	FI	0.0120	0.0300	0.0238	-0.0180	-0.0118
France	FR	0.1290	0.1120	0.1534	0.0170	-0.0244
Germany	DE	0.2670	0.4060	0.3623	-0.1390	-0.0953
Greece	GR	0.0050	-0.0200	0.0207	0.0250	-0.0157
Ireland	IE	0.0200	-0.0690	0.0141	0.0890	0.0059
Italy	IT	0.1030	0.0000	0.1331	0.1030	-0.0301
Latvia	LV	0.0030		0.0012		0.0018
Luxembourg	LU	0.0050	0.0100	0.0025	-0.0050	0.0025
Malta	MT	0.0010		0.0007		0.0003
Netherlands	NL	0.1550	0.0810	0.0861	0.0740	0.0689
Portugal	PT	0.0180	0.0150	0.0177	0.0030	0.0003
Slovak Rep.	SK	0.0190	0.0040	0.0031	0.0150	0.0159
Slovenia	SI	0.0080		0.0036		0.0044
Spain	ES	0.0770	0.1980	0.1041	-0.1210	-0.0271

Source: World Bank, ECB, OECD, Dolls et al. (2015). Own calculation and representation. Data missing for Estonia, Latvia, Malta and Slovenia.

PREFERENCE HETEROGENEITY

Definition of key variables

Coverage rate

The coverage rate is defined as the number of insured persons as a percentage rate of the labour force (15- to 64-years-olds). This definition is in line with the literature (e.g. Esser et al. 2013). There is no data available for Croatia.

Net replacement rate

In most countries, unemployment benefits are paid as a percentage of the last average net salary. However, some member states (including Greece, Poland and the UK) use a flat-rate based system independent of the last income. To achieve comparability with the rest of the EU, the OECD set off this flat-rate amount against the average worker's salary. Furthermore, for reasons of simplicity, we ignore the aspect of income ceilings, which generally play an important role in calculating the amount of benefits. The data contains no information on Cyprus.

Duration

The duration denotes the number of weeks during which recipients have a right to the payments. In most of the countries, total duration equals about

five or six months, including periods with reduced benefits. Here, we concentrated mostly on the first-tier benefits (before cuts in payments kicks in) to focus on short-term unemployment measures. We are aware of the fact that this gives a downward pressure tendency to this variable, since the majority of programmes continue for many weeks after the first reduction kicks in. Nevertheless, we decided on this method to achieve a higher comparability, considering that some countries do not have distinct programmes for short- and long-term unemployment. In Belgium, for example, it is theoretically possible to receive basic benefits for an indefinite period of time.

Eligibility

In many countries, eligibility for benefits is connected to a specific qualifying period, such as a minimal number of contributing weeks to the insurance, called the 'contribution period' (Esser et al. 2013). According to Palme et al. (2009), this is a reasonable approximation for the programme's eligibility conditions. For the sake of simplicity, we refrain from comparing the time period in which the countries allow the payments to happen (the so-called 'reference period'). Cyprus reported no information on eligibility.

XV. Results

In this section, we present an overview of the scoring results for the individual indicators and of the final results of the weighted scoring method based on various indicator weightings.

Starting with the individual scoring results for the various indicators, in particular the analysis of the preference heterogeneity indicator reveals that the preferences of European citizens regarding different policies are highly aligned. With the exception of the result for agricultural policy, which is indifferent towards a national or a European competence, all scores point towards a European competence allocation. In other words, the preferences of European citizens are sufficiently homogenous to consider a reallocation of competences (see Figure 6).

Figure 6:

Summary of scoring results for all indicators

		Spillover effects	Economies of scale	Preference heterogeneity	Internal market consistency	Competition		
	Weight	0.2	0.2	0.2	0.2	0.2	score	Decision
Policies	Agricultural policy	1	1	3	3	2	**2.00**	*weakly national*
	Asylum & refugee policy	5	4	5	5	4	**4.60**	*clearly EU*
	Corporate taxation	4	4	4	5	4	**4.20**	*weakly EU*
	Defence policy	4	4	5	5	5	**4.60**	*clearly EU*
	Development aid	4	5	5	3	4	**4.20**	*weakly EU*
	Post-secondary & tertiary education	2	1	4	3	3	**2.60**	*weakly national*
	Railway freight transport policy	2	4	4	4	3	**3.40**	*indifferent*
	Unemployment insurance	5	3	4	3	4	**3.80**	*weakly EU*

A similar, albeit weaker result is found for the 'internal market consistency' and 'competition' indicators. None of the 'internal market consistency' indicator scores points towards a national competence allocation.[187] We assign an indifferent score of 3 in four cases (agricultural policy, development aid, post-secondary and tertiary education policy, and unemployment insurance), which implies that we do not find obstacles to the internal market which need to be resolved via a competence reallocation. This stands in contrast to the analyses of asylum and refugee policy, corporate taxation and defence policy, which all reveal internal market deficiencies that strongly point towards a European competence.

187 We are aware of the inherent pro-European bias of this indicator. Nonetheless, we assume that a study on the division of competences between the EU and its member states should include the status quo of the internal market and the possible implications of a competence reallocation. Note, however, that our results are not affected by this indicator. That is, if we exclude the 'internal market consistency' indicator from our analyses, the decision on whether a specific policy should be located at the European or the national level does not change.

Concerning the 'competition' indicator, only the case study for agricultural policy points towards a weakly national competence. The opposite holds true for defence policy, which would tremendously benefit from less intra-European competition.

In contrast, the results for the 'spillover effects' and 'economies of scale' indicators are rather heterogeneous. For both indictors, the scores vary between a clearly national competence (e.g. in the case of agricultural policy for both indicators, or of post-secondary and tertiary education in the case of economies of scale) and a clearly European competence, such as in the case of asylum and refugee policy and unemployment insurance ('spillover effects' indicator) or development aid ('economies of scale' indicator).

Concerning an initial tendency towards a reallocation of competences, in particular the case studies for asylum and refugee policy, corporate taxation and defence policy point towards a European competence. In all these case studies, no indicator score is smaller than 4, meaning that each individual indicator points towards a weakly or even clearly European competence for all of these policies.

The application of the weighted scoring method allows the calculation of a single score per investigated policy. Using these scores, we take the final decision on the allocation of competences according to the scale presented in Figure 7:

Figure 7:

Overview of final scoring decisions for the optimal competence allocation

Decision score is in the interval:				
[1, 1.8]	[1.8, 2.6]	[2.6, 3.4]	[3.4, 4.2]	[4.2, 5]
clearly national	*weakly national*	*indifferent*	*weakly European*	*clearly European*

Note: If a score lies on the threshold between two decisions, we assign the lower level.

As both the scores and the threshold values are to some extent arbitrary, we stress that we are not primarily interested in exact scoring figures. That is, whether a policy is assessed with a score equal to 4.21 (which would result in a clearly European competence) or with a score equal to 4.19 (which points to a weakly European competence) is of secondary interest for the overall policy conclusion. However, the indicator scoring allows us to compare the results for various policies and to get deeper insights into which policies should be on top of the European agenda for a competence reallocation. Furthermore, the thresholds allow for insights on how the suggested competence allocation depends on the applied weighting scheme.

In the baseline scenario, we apply an equal weighting scheme for all indicators (i.e. all indicators are weighted with 20 per cent). The results of this analysis are presented in Figure 8 (with the policies arranged in alphabetical order).

Figure 8:

Baseline results (equal weights)

		Spillover effects	Economies of scale	Preference heterogeneity	Internal market consistency	Competition		
	Weight	0.2	0.2	0.2	0.2	0.2	score	Decision
Policies	Agricultural policy	1	1	3	3	2	**2.00**	*weakly national*
	Asylum & refugee policy	5	4	5	5	4	**4.60**	*clearly EU*
	Corporate taxation	4	4	4	5	4	**4.20**	*weakly EU*
	Defence policy	4	4	5	5	5	**4.60**	*clearly EU*
	Development aid	4	5	5	3	4	**4.20**	*weakly EU*
	Post-secondary & tertiary education	2	1	4	3	3	**2.60**	*weakly national*
	Railway freight transport policy	2	4	4	4	3	**3.40**	*indifferent*
	Unemployment insurance	5	3	4	3	4	**3.80**	*weakly EU*

According to the final decision score, in particular asylum and refugee policy as well as defence policy should be allocated to the European level. Furthermore, the policies of corporate taxation, development aid and unemployment insurance reveal a weakly European tendency. The opposite holds true for agricultural policy and post-secondary and tertiary education, where the indicators rather support an allocation of these policies to the national level. In the case of railway freight transport policy, the results are indifferent towards a clearly national or a clearly European competence.

Robustness tests with larger weights on the quantitative indicators are shown in Figure 9 and Figure 10. The former puts a stronger emphasis on the quantitative indicators 'spillover effects', 'economies of scale' and 'preference heterogeneity', which are equally weighted with 25 per cent. The remaining indicators, 'internal market consistency' and 'competition', are equally weighted with 12.5 per cent. In contrast to the baseline scenario, the decision only changes for development aid, where a European competence is now clearly favourable (see Figure 9).

Figure 9:

Robustness test (emphasis on quantitative indicators)

		Spillover effects	Economies of scale	Preference heterogeneity	Internal market consistency	Competition		
	Weight	0.25	0.25	0.25	0.125	0.125	score	Decision
Policies	Agricultural policy	1	1	3	3	2	**1.88**	*weakly national*
	Asylum & refugee policy	5	4	5	5	4	**4.63**	*clearly EU*
	Corporate taxation	4	4	4	5	4	**4.13**	*weakly EU*
	Defence policy	4	4	5	5	5	**4.50**	*clearly EU*
	Development aid	4	5	5	3	4	**4.38**	*clearly EU*
	Post-secondary & tertiary education	2	1	4	3	3	**2.50**	*weakly national*
	Railway freight transport policy	2	4	4	4	3	**3.38**	*indifferent*
	Unemployment insurance	5	3	4	3	4	**3.88**	*weakly EU*

An Figure 10, we present results based on equal weights for the quantitative indicators only. The ‘spillover effects’, ‘economies of scale’ and ‘preference heterogeneity’ indicators are equally weighted with 33 per cent. Again, there are only minor changes compared to the previous results. In particular, agricultural policy changes from a weakly national to a clearly national competence.

Figure 10:

Robustness test (only quantitative indicators)

		Spillover effects	Economies of scale	Preference heterogeneity	Internal market consistency	Competition		
	Weight	0.33	0.33	0.33	0	0	score	Decision
Policies	Agricultural policy	1	1	3	3	2	**1.65**	*clearly national*
	Asylum & refugee policy	5	4	5	5	4	**4.62**	*clearly EU*
	Corporate taxation	4	4	4	5	4	**3.96**	*weakly EU*
	Defence policy	4	4	5	5	5	**4.29**	*clearly EU*
	Development aid	4	5	5	3	4	**4.62**	*clearly EU*
	Post-secondary & tertiary education	2	1	4	3	3	**2.31**	*weakly national*
	Railway freight transport policy	2	4	4	4	3	**3.30**	*indifferent*
	Unemployment insurance	5	3	4	3	4	**3.96**	*weakly EU*

XVI. Conclusions

In this section, we summarise the main findings of our study and present brief synopses of the investigated policies. The detailed case studies are then presented in the following section.

Taken together, the analysis has shown that, in particular, the competences for defence policy, asylum and refugee policy, and development aid should be located on the European level. In all these case studies, and irrespective of the applied weighting procedure, the final decision score is larger than 4. Similar, albeit weaker conclusions can be drawn for the corporate taxation and unemployment insurance policies. While the policy score of the former is larger than 4 (with exception of the robustness test based on only quantitative criteria), the policy score of the latter is smaller than 4 but larger than 3.2, which is the threshold value for a European competence. Accordingly, these policies should not be at the top of the European agenda for a competence reallocation, but nonetheless should be considered once a package for competence reallocations towards the EU level is put together.

In contrast, our analysis indicates that agricultural policy as well as post-secondary and tertiary education should be allocated to the national level. In particular, the absence of economies of scale and worse spillover effects in the case of a European competence render this result.

Finally, the analysis of railway freight transport policy is indifferent towards a national or a European competence. In other words, we cannot recommend a clear competence allocation to either the national or the supranational level.

A summary of these conclusions is presented in Figure 11.

Figure 11:

Summary optimal allocation of policies

Policies	Optimal allocation
Asylum & refugee policy	*EU*
Defence policy (European army)	*EU*
Corporate taxation (harmonised tax base)	*EU*
Development aid	*EU*
Unemployment insurance	*EU*
Railway freight transport	*indifferent*
Agricultural policy (income protection)	*national*
Post-secondary & tertiary education	*national*

Agricultural policy

The Common Agricultural Policy (CAP) is one of the few purely European policy fields. In our analysis, we focus on the first pillar of the CAP: direct payments. Direct payments aim to compensate farmers for low incomes realised on the market. We contrast the current situation of a European competence with a hypothetical situation of integrating direct payments into existing national welfare systems. The results of our analysis show that direct payments should be located on the national level.

In particular, all indicators either point to a national provision or are indifferent. We find significant spillover effects, implying that national contributions are poorly aligned with the benefit that member states receive from the CAP. Our analysis shows that spillover effects can be limited substantially in the scenario with national competences for direct payments. When looking at the targeting of direct payments, we find significant inaccuracies leading to diseconomies of scale. National competences for agricultural policy can help to adjust direct payments to socially optimal levels, which vary across member states. Furthermore, the preferences of citizens exhibit modest variation in opinions among member states, implying no inclination regarding the location of the policy field. However, when looking at competition, locating agricultural policy on the national level would enable positive yardstick competition between member states as well as foster more efficient policy mixes on the level of the member states.

Asylum & refugee policy

The handling of the increasing number of asylum-seekers and refugees in recent years has revealed the shortcomings of the European system. Within the EU, member states are responsible for the reception and accommodation of asylum-seekers and refugees. There are many regulations and directives that determine baseline principles which should ensure comparable standards. However, there are huge disparities among member states in all fields of reception and accommodation. We contrast a new system of European asylum policy with the status quo.

Our analysis comes to the conclusion that this policy field should be located on the EU level. In particular, it reveals that a common European policy would reduce incentives to free ride on other member states by refusing to accept any person in need, as they will be hosted by others. The comparison of costs that occur in receiving and hosting a refugee differ considerably among member states even when taking into account price differences. This would speak in favour of a European solution to realise potential cost savings which would occur if services were provided centrally. Moreover, such a central solution would be supported by a majority of voters, as Europeans seem to agree when it comes to migration-related issues. In addition, the internal market can only be supported and maintained if member states agree on a single system; otherwise, the threat of closed borders would be high under the status quo. Lastly, the analysis shows that, in the absence of effective sanctions and binding standards, competition might lead to a race to the bottom in the quality standards of refugee-hosting efforts instead of to positive effects from yardstick competition. This supports our conclusion that this policy field should be located on the EU level.

Corporate taxation

Unlike indirect taxation, direct taxation – including corporate taxation – is almost entirely a matter of national concern and one with a low degree of harmonisation at the EU level. We compare the current scenario with a counterfactual scenario involving a harmonised tax-base definition and the apportionment of corporate profits among member states according to a formula. The competence of tax-rate setting would remain at the national level.

The overall result of our analysis strongly points to the merits of partially

locating corporate taxation on the EU level. In particular, all indicators for this policy field point to the EU level. Existing spillover effects among member states under the status quo can be significantly reduced by relocating corporate tax policy to a higher federal level. We detect economies of scale for companies, which would benefit from lower tax compliance costs in the counterfactual scenario. In contrast, however, we detect no economies of scale for fiscal authorities administering a higher number of taxpayers when assessing per-unit administration costs.

The analysis of preference heterogeneity reveals that public opinion on taxation is highly aligned across member states, which is a prerequisite for harmonising corporate-taxation agendas. Locating corporate taxation on the EU level would also abolish potential obstacles which currently interfere with the internal market. In particular, the different tax treatments for purely domestic and multinational companies are inherently at odds with the principle of the internal market. Finally, concerning tax competition, although we do not expect it to vanish as a result of centralising corporate taxation among member states, we do think it can be reframed in a fairer setting for both member states and companies.

Defence policy

We contrast the status quo of 28 national armies with the counterfactual situation of a fully integrated European army with unified decision-making and a centralised provision of military equipment. Our analysis indicates that the competence of defence policy should clearly be located on the EU level.

Defence policy is the typical example of a public good, which consequently implies the presence of spillover effects and chances for member states to free ride on military protection provided by other member states. And, indeed, the quantitative analysis of benefit- and burden-sharing between member states shows that a European competence would better align benefits and costs for member states and thereby decrease the extent of free riding. Besides the 'spillover effects' indicator, the other indicators also point to a European solution. We are able to detect economies of scale in the provision of military services that could be achieved if defence were provided on the EU level. The preferences of European citizens regarding the role of the army are highly homogeneous, which also supports a European competence. As the market for defence goods is currently exempted from the internal market, there are 28 national markets with national regulations intended to protect national defence industries. As a result, internal market consistency could be improved if the competence were shifted to the EU level. Concerning the role of competition, undersized markets for the armament sector and decreasing military expenditures counteract yardstick competition. Limited funding does not allow for the adoption of best practice defence goods from other countries. Accordingly, there is a strong case for an integrated European army to enable real competition and thereby higher quality in the armament sector.

Development aid

Although the EU and its member states share responsibility for development aid under the status quo, a large fraction of aid is still managed on the national level. We contrast this situation with a counterfactual in which

we assume that national development aid is terminated, and that all European development aid is instead solely financed and managed by the EU. If such a situation were true, the EU would benefit tremendously in various respects, as our analysis clearly points towards the benefits of having a European competence for this policy.

Spillover effects are present if a member state does not pay for development aid in foreign countries but receives benefits stemming from development aid paid by other countries. According to our analysis, such free riding could be reduced by shifting from a national to a European competence for development aid. Furthermore, there is a tremendous potential to achieve economies of scale, as our analysis suggests that aid concentration increases with donor size while relative administration costs decrease disproportionally with an increasing size of the donor. The results from the 'preference heterogeneity' indicator are also in favour of a European competence, as the preferences of European citizens regarding the need to help people and regarding the willingness to financially assist people in developing countries are highly homogeneous. Concerning competition, national solutions are also disadvantageous because yardstick competition increases aid fragmentation. In contrast to these pro-European findings, the national competences do not hinder the internal market, as both the member states and their implementing organisations adhere to the EU's public procurement rules, which block the preferred selection of national contractors.

Post-secondary & tertiary education

The analysis of post-secondary and tertiary education focuses on the financing of higher education. While both decision-making and budgets are located on the national (or even the subnational) level under the status quo, our counterfactual of a European competence assumes a modern competition model that is centrally financed but decentrally implemented ('money follows students'). According to this model, the EU would finance higher education in a competitive way out of the EU budget, but each individual institution providing higher education would be responsible for the strategic focus of the fields of study and the number of student places provided. The result of the analysis points towards a national competence. In other words, based on our indicators, we cannot recommend a competence reallocation from the national to the EU level.

In particular, the 'spillover effects' and 'economies of scale' indicators point towards a national competence allocation. The free-riding index increases when moving from a national to a European competence. Furthermore, we find neither evidence of nor compelling theoretical arguments for the presence of economies of scale in the provision of post-secondary and tertiary education by the higher federal level. In contrast to these pro-national results, the preference heterogeneity analysis reveals that the preferences of European citizens regarding the admission and selection of students by universities as well as regarding the role of student fees are sufficiently homogeneous to enable an allocation of this policy to the EU level. Finally, the 'internal market consistency' and 'competition' indicators are indifferent towards a national or a European competence. While the continued absence of harmonised procedures for recognising academic qualifications is a hindrance to the completion of the internal market, such obstacles do not render a decentralised solution infeasible. In other words,

the internal market could be achieved by increasing cooperation among member states, as well. A similar conclusion is drawn for competition, as current or increased collaboration seems sufficient to gain advantages from competition.

Railway freight transport

Transport policy – and therefore policy regarding railway freight transport – belongs to the field of competences shared between the EU and its member states. However, national considerations have historically prevailed over international ones, and many member states still own the national rail operator and organise rail transport on a national basis. We therefore contrast the status quo of national rail transport with the counterfactual situation of a single EU-financed railway system without technical or operational barriers. The result of the analysis is indifferent towards a clearly national or a clearly European competence. That is, based on our indicators, we cannot recommend a competence reallocation from the national to the EU level.

In particular, the analysis of the 'spillover effects' indicator renders this result. As railway transport cannot be treated entirely as a public good, railway transportation could also be handled via private markets. Taking this caveat into account and comparing the status quo with the counterfactual, we find that free riding would increase if the competence were reallocated from the national to the European level. In contrast to this result, the 'economies of scale', 'preference heterogeneity' and 'internal market consistency' indicators weakly point to a European competence. There are enormous potential cost savings based on fixed cost degression and the harmonisation of technical standards. Furthermore, both the analysis of Eurobarometer questions regarding competition in the rail market and an analysis of revealed preferences for various transport modes point to rather homogenous preferences among European citizens. Finally, the internal market could benefit from a competence allocation to the EU level, as domestic transport is currently not subject to competition in many member states and heavy rail transport is exempted from public tendering. While these obstacles could also be resolved via bilateral negations between member states, the negotiation process between the EU and its member states to date casts doubts on the efficiency of this procedure. The 'competition' indicator is indifferent towards a national or a European competence. While there might be some examples of policy innovations between different systems (e.g. concerning the liberalisation of the rail market), examples of yardstick competition within systems are rather scarce and in most cases limited by enormous sunk costs.

Unemployment insurance

We analyse whether a common European unemployment scheme offers a reasonable complement to the current system of independent national systems. The analysis is executed for the euro area countries only, as the advantages of such a scheme are strongest for members of the monetary union. Considering different indicators, our results point towards the merits of a European solution.

Concerning spillovers, one assumes that macroeconomic stabilisation should be carried out by the central level, as every intervention spills over to other jurisdictions. This is especially true in the case of open economies

with permeable borders. In addition, a common monetary policy eliminates adjustment tools available for countries with an independent currency (i.e. monetary policy and exchange rates). However, to a certain extent, a system of flexible labour markets and adjustable prices and wages can offer some adjustments even when there is a fixed exchange rate. Furthermore, a central stabilisation scheme might foster moral hazard and lower investments in reforms. The analysis shows that incentives to free ride on the stabilisation efforts of others are reduced in the case of a European system equally financed by all states. Potential cost savings from economies of scale are not detectable. The comparison of national systems reveals that these are relatively homogeneous in their design, so – based on a revealed preference argument – the preferences of citizens are assumed to be quite homogeneous. Transactions on the internal market are hardly directly affected by the existence or non-existence of a European unemployment scheme. Nevertheless, labour mobility could improve. A race to the bottom in national systems is more likely compared to the European case, as countries might try to cut back unemployment benefits so as to be less attractive to unemployed persons or those with a high risk of becoming unemployed. However, one should not ignore the potential benefits resulting from yardstick competition of national systems, which have been proven in the past.

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Professor; University of Hohenheim, Stuttgart; Member, Academic Advisory Board, Institute for European Politics, Berlin

Michael Dauderstädt
Former Director, Division for Economic and Social Policy, Friedrich Ebert Foundation, Bonn/Berlin

Christian Deubner
Member, Academic Board, Foundation for European Progressive Studies; former Head, Research Division EU/Europe, German Institute for International and Security Affairs, Berlin

Catherine De Vries
Professor; Department of Politics and International Relations (DPIR), Oxford University

Isabell Hoffmann
Project Manager, Bertelsmann Stiftung, Gütersloh

Kai Konrad
Professor; Director, Max Planck Institute for Tax Law and Public Finance

Rolf Langhammer
Professor; former Vice-President, Institute for the World Economy, Kiel

Hilmar Linnenkamp
Non-Resident Senior Fellow, German Institute for International and Security Affairs, Berlin; former Deputy Chief Executive, European Defence Agency, Brussels

Jan Schnellenbach
Professor; Chair for Economics, Brandenburg University of Technology Cottbus-Senftenberg

Bruno Schoch
Associate Fellow, Leibniz-Institute – Peace Research Institute Frankfurt

Roland Sturm
Professor; Chair, Department of Political Science, University of Erlangen-Nuremberg

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Stephan von Cramon-Taubadel
Chair, Department of Agricultural Economics and Rural Development, University of Göttingen

Mathias Dolls
Senior Researcher and Deputy, Research Group "International Distribution and Redistribution", Centre for European Economic Research, Mannheim

Axel Dreher
Professor; Head, Department of Economics and Chair of International and Development Politics, University of Heidelberg

Sebastian Dullien
Professor of International Economics, University of Applied Sciences, Berlin; Senior Policy Fellow, European Council on Foreign Relations, London

Maria Theresia Evers
Member, Research Department "Corporate Taxation and Public Finance", Centre for European Economic Research, Mannheim

Martin Kesternich
Researcher and Deputy, Research Department "Environmental and Resource Economics, Environmental Management", Centre for European Economic Research; Mannheim

Stephan Klingebiel
Professor; Head, Department Bi- and Multilateral Development Cooperation, German Development Institute, Bonn

Orkan Kösemen
Senior Project Manager, Bertelsmann Stiftung, Gütersloh

Oliver Lerbs
Deputy Head, Department International Finance and Financial Management, Centre for European Economic Research, Mannheim

Katharina Nicolay
Professor; Deputy, Research Department "Corporate Taxation and Public Finance", Centre for European Economic Research, Mannheim

Roderick Parkes
Senior Analyst, EUIIS – European Union Institute for Security Studies, Paris

Frank Ziegele
Professor; Executive Director, CHE Centre for Higher Education, Gütersloh

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Bertelsmann Stiftung, Gütersloh

Project Team:

Stefani Weiss
Director, Brussels Office, Bertelsmann Stiftung

Friedrich Heinemann
Head, Research Department, "Corporate Taxation and Public Finance", Centre for European Economic Research (ZEW), Mannheim; adjunct professor of economics, University of Heidelberg

Melissa Berger
Member, Research Department, "Corporate Taxation and Public Finance", Centre for European Economic Research (ZEW), Mannheim

Christoph Harendt
Member, Research Department, "Corporate Taxation and Public Finance", Centre for European Economic Research (ZEW), Mannheim

Marc-Daniel Moessinger
Member, Research Department, "Corporate Taxation and Public Finance", Centre for European Economic Research (ZEW), Mannheim

Thomas Schwab
Member, Research Department, "Corporate Taxation and Public Finance", Centre for European Economic Research (ZEW), Mannheim

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Address/Contact

Bertelsmann Stiftung
Carl-Bertelsmann-Strasse 256
33311 Gütersloh
Germany

Stefani Weiss
Director, Brussels Office
Phone: +32 (2) 233-3891
Email: stefani.weiss@bertelsmann-stiftung.de

www.bertelsmann-stiftung.de

BertelsmannStiftung