

The European Added Value of EU Spending: Can the EU Help its Member States to Save Money?

Exploratory Study



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Introduction

Critical public debt levels have forced EU member states to pursue fiscal consolidation. Yet, there is a flip side to the austerity policies being administered to overcome the sovereign debt crisis. Cut backs in social transfers and public service delivery erode the social welfare architecture of the European economic model. Growing social insecurity, in turn, challenges European integration. Ever declining popular approval rates for the EU speak for themselves. In addition, the scaling back of public investments seems not to be an option either. This only further strangles what is left as potential for growth.

Given that ever less money is available, increasing the efficiency of public spending – one would think – becomes the order of the day. One possibility to achieve such efficiency gains is the appropriate allocation of spending across all levels of government. In the EU context, this would mean determining what governance level in the EU – Brussels or the member states – could do what best, and thus be in charge also in fiscal terms. The assumption is that in certain areas where, for example, economies of scale come into play a “euro spent at the EU level brings more benefits than if spent at the national or regional level,” as the European Commission puts it.

It was the Commission that featured the concept of the European added value when it released its EU budget proposal for 2014 to 2020. According to the EC, added value “is best defined as the value resulting from an EU intervention which is additional to the value that would have been otherwise created by member states alone”. The Commission’s argument for reform of the EU budget did not fell on fertile soil with member states. During the budget negotiations, the question of European added value played at best a tangential role. Instead, old-fashioned *juste retour* thinking prevailed. The fight was, once again, over the size of the budget and the way in which appropriations are distributed. It was not about how the quality of the EU budget can be improved to the benefit of Europe’s citizens.

It may not come as a surprise to hard-nosed political warhorses that even in times of fiscal crisis so little thought was given to a more rational assignment of fiscal activities between the EU and its member states. For them, politics based on empirical evidence is as such a *contradictio in adiecto*. Unfortunately, thus far political reality offers ample proof that political and economic logic simply do not pair – at least not in budget negotiations. Nevertheless, these realists fall short when it comes to answering how politicians can continue to evade these economic choices, especially at times when neither their nation state nor the EU can deliver the public goods needed to protect citizens in a globalised world.



The following explorative study was initiated by the Bertelsmann Stiftung. Our intention was to underscore the European added value argument by putting a price tag on the savings and losses incurred by EU spending. In research hitherto carried out, European added value has largely been defined on the basis of qualitative criteria. This made the concept fuzzy as it became possible to prove the added value of a European policy as well as the opposite. It was therefore our aim to operationalise the concept to be able to rigorously quantify European added value in the previously untested fields of agricultural policy, foreign affairs, and defence. In an empirical approach, we entered uncharted waters from the outset. But it seemed worth every effort to present proof for the first time that the EU indeed can save its member states' money.

The project was run in cooperation with the Centre for European Economic Research (ZEW), which worked on the conceptual framing and most of the data processing. Our case study on the added value of Common Agricultural Policy spending would never gotten as far as it did without the expertise and dedication of Stephan von Cramon-Taubadel from the University of Göttingen. Likewise, we would not have been able to calculate the potential cost savings of integrated land forces without RAND Europe joining our project team. In addition, from the beginning the project was supported by a group of experts from academia and the policy arena. Their input, be it in paper form or during our four expert group meetings held in Brussels in 2011 and 2012, was invaluable in shaping our research and ensuring that our project's output is of high quality and benefiting of policy experience.

Stefani Weiss

Executive Summary

Our research on European added value (EAV) has provided different types of insights. First of all, it demonstrates that more precision in the use and application of the highly popular term ‘European added value’ is desirable. EAV can only be a helpful concept if it is consistently applied. A second insight is that, at least for specific, well-defined policy fields, EAV quantifications are indeed possible. While difficult and technically demanding, quantifications of EAV are feasible and can provide important insight for policy debates.

This study has developed definitions and concepts that might serve as a guideline for best practices in future EAV studies. The definition of a counterfactual must be a defining element for any meaningful approach. Real quantifications of an ‘added’ value through EU involvement are only possible if the costs or the impact of EU spending can be compared to the costs or the impact of national spending (the national counterfactual, as presented in the case study on the Common Agricultural Policy). The reverse is also true: if spending is still mainly national and the potential of a stronger EU involvement has to be assessed there is the need to derive a European counterfactual with which the actual national policy could be compared (as done in the studies on international representations and defence). Our applications to three very different policy fields have demonstrated that the identification of a national or European counterfactual is challenging and that no uniform prescription is possible. Possible approaches comprise the econometric estimation of spending models or the calculation of differentiated costing models.

As for our specific policy-related insights, this study finds some evidence that ‘more Europe’ may indeed be in the interest of taxpayers in the fields of international representations and defence. For these two fields, we were able to indicate ranges of substantial potential cost savings through a European approach. However, for both we have revealed an important caveat that relates to wages. Whenever a European approach implies that today’s salary levels of EU civil servants would replace national payment schemes, the potential of cost savings declines or disappears completely.

With respect to the Common Agricultural Policy (CAP), the study was not able to substantiate one specific type of added value, namely that through centralisation of agricultural policy at the EU level, the EU contains wasteful subsidy races in the area of agriculture between member states. In particular, the study does not find that the CAP has greatly increased or reduced public expenditure on agriculture compared to the national agricultural policies that would have replaced it.



What is European added value?

From an economic point of view, public spending at the European level ideally fulfils two criteria. For one, it should entail positive net benefits, i.e. the benefits should exceed the costs of public spending. Second, it should entail European added value (EAV) of public spending, i.e. the net benefits of public spending at the European level should be larger than those at the national level. In other words, EAV essentially compares the net benefits of spending by national governments with those that arise from spending in the same category at the European level. In this sense, added value is technically the difference between the net benefits of spending at the EU level and the national level. It is important to note that the magnitude of net benefits and EAV are not conceptually connected. For instance, even if net benefits are negative, provision at the EU level may still be advantageous.

Many public services entail significant crossborder benefit spillovers that imply that individual member states underprovide them. One of the most important policy fields to which this argument applies is the support of trans-European transport networks. In addition, the EU may be better placed to exploit economies of scale that result in EAV. Economies of scale arise because public services are, at least to some extent, non-rival in consumption. Given that the EU provides public services to a larger number of beneficiaries than national governments, the per capita costs of provision decline. Not least, large-scale public projects with high fixed costs involve funding that exceeds the financial capacity of individual states. In other words, various public services are subject to threshold effects implying that only jurisdictions that exceed a certain size are able to provide them. In such a case, only the EU is able to provide them, thus resulting in EAV. These threshold effects are essentially an extreme type of economies of scale. A potential example of a public good that might be subject to such threshold effects is GALILEO, although the net benefits of this project are contested.

Other reasons why spending at the EU level may involve added value relate to causes associated with *political economy and governance*. Public spending at the European level potentially adds value by limiting wasteful competition between national governments. Subsidies paid by national governments to particular industries or sectors may result in a ‘subsidy race to the top’ where governments try to always pay more than their peers in order to attract mobile firms (in analogy to the case of tax competition). Paying subsidies exclusively at the European level thereby creates EAV because this type of competition is likely to be contained. This argument may in principle apply to agricultural policy. On top of this, national governments tend to be short-sighted because of relatively short electoral cycles. By contrast, policy-making and hence public-spending decisions at the European level are partially decoupled from national electoral cycles. This in turn allows public spending allocation and composition in certain sectors to be potentially more focused on long-run objectives, such as economic growth which creates EAV through the improved allocation of resources.

Case study 1

Does the CAP cap agricultural spending in the EU? On the EAV of agricultural policy

*One clear result emerges from the analysis. Overall we do not find that the CAP has greatly increased or reduced public expenditure on agriculture compared with the national agricultural policies that would have replaced it between 2004 and 2010, which is the period under consideration. However there is some indication that in recent years the CAP has begun to cap expenditure on agricultural policy. **National agricultural policies would have cost roughly Euro 23 billion more in 2010 than was spent on the CAP in that year.** While the common pool problem may have inflated spending on agriculture in the early decades of the CAP, budget ceilings and the growing importance of policy areas other than agriculture in the EU may be helping agricultural policy makers to resist pressures for more protection and support at the national level.*

To put these results in perspective, several additional points should be made. First, our simulations are subject to uncertainty, and the confidence intervals of our simulated EU-21 national agricultural policies (NAP) expenditures are wide, which means that these expenditures could be considerably higher or lower. Second, the model that we use to simulate NAP expenditures is subject to the weaknesses that are associated with all such models. In particular, while it is able to explain a large portion of the observed variation in agricultural policy spending over time and across non-EU OECD countries, it does not explain all of this variation. Third, the finding that the CAP may be curbing public expenditure on agricultural support in recent years does not necessarily mean that the CAP produces EAV. There is some indication that the CAP is producing one specific type of EAV that is sometimes attributed to it: policy coordination that reduces political-economic distortions and limits subsidy races. However, our findings do not generate insights into whether the CAP provides other types of EAV. Defenders of the CAP will argue that it also generates a range of public goods that national policies would not generate. However, critics can point to a variety of public bads and inefficiencies, and argue that the same money could generate much more EAV if it were spent on areas such as research and infrastructure development.

One explanation for this ongoing controversy is that it is highly complicated to prove the existence of EAV for the CAP. Whether CAP expenditure generates EAV is not just a question of the size of the benefits and costs (even if these could be quantified). In the absence of a common agricultural policy, the member states would implement NAP instead. These would also produce costs and benefits. The CAP generates EAV only if it generates net benefits above and beyond those that would result from the implementation of NAP. Hence, to determine whether the CAP generates EAV one would not only have to measure all of its costs and benefits. One would also have to predict what agricultural policies the member states would implement in the absence of the CAP, and estimate the costs and benefits that these national policies would



produce. If anything, this second task of generating what is referred to as a ‘counterfactual’ is even more daunting than the first.

Case study 2

One embassy with 27 flags – the potential benefits from European international representations

*The results indicate the existence of potentially **significant savings ranging from Euro 420 million to Euro 1.3 billion annually**, which, in relative terms, represents between 6 percent and 19 percent of current spending of all EU member states. In other words, EAV in the area of European international representations is significant. One important caveat relates, however, to the payment structure. This EAV quantification is based on the assumption that national wage levels would also persist in comprehensive EU missions. Thus, the results are invalid if for the EU missions EU salaries become relevant.*

Foreign policy is the textbook case for a typical national public good in federal countries. Therefore, it does not come as a surprise that foreign policy plays a role wherever fiscal federalism approaches are applied to the EU and its budget. It appears straightforward that Europe could realize considerable economies of scale if it assigns foreign policy-related tasks to the European level, for instance, by slashing the number of diplomatic missions abroad including the size of staff. Uncoordinated national activities are confronted with numerous spillover problems which may result in freeriding and the suboptimal provision of international activities. Smaller countries may rely on the consular services of larger countries’ representations. A national planning of geographical coverage of the missions’ network may lead to inefficient regional clusters.

Thus, a European approach would create considerable EAV. It is therefore not surprising that foreign policy is regularly emphasized as one of the priorities for future reallocations in the European budget. However, plausible textbook cases often do not stand the challenges of a practical application. And the obvious problem with the Europeanization of foreign policy is the undeniable existence of national interests in foreign affairs. The trade-off between creating EAV and limiting national sovereignty poses problems for any attempt of quantification EAV such attempts. Even if the potential cost savings from a far-reaching transfer of foreign policy competencies to the European level could be calculated, any such result would not be taken seriously in the political debate. Therefore, meaningful quantifications must take account of the fact that certain dimensions of international relations will remain a national activity for the foreseeable future. And, if possible, quantifications should provide a range of potential costs savings conditional on different options of Europeanization. In this case study, we concentrate on the provision of international representations covering embassies and consulates.

Under a naïve approach, one could now simply compare the expenditures of the current diplomatic missions of EU countries to the costs of a mutualized diplomatic service. Since the expenditures of the counterfactual situation cannot be derived directly, however, a more complex scenario has to be applied. This study's approach to quantify EAV is differentiated along two lines:

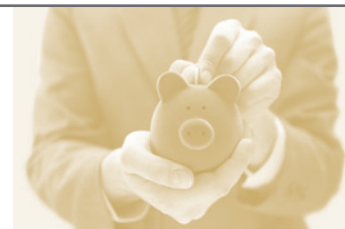
- 1) It analyses the potential EAV from a European provision both at the output and the cost side. A network of diplomatic missions could offer European citizens more complete worldwide coverage than any single member state could offer. At the same time, these benefits could be achieved at lower costs as there are substantial economies of scale.
- 2) It calculates the potential EAV for different scenarios with respect to a European provision of diplomatic services. In this calculation, we account for the fact that an EU mission would be confronted with some cost-driving elements compared to a mission of a large nation which result, inter alia, from language complications or certain special national interests. Thus we model different degrees of Europeanization across a typical mission's functions. For example, our analysis assumes that it is easy to exploit economies of scale in the consular services but less so for economic relations where special national interests are more prominent.

Case study 3

The fiscal added value of integrated European land forces

*The analysis shows that there is potential for significant added value from smaller, more coordinated European land forces. In monetary terms, the opportunity for **savings is estimated at between Euro 3 billion and Euro 9 billion a year**. Under the 'medium' scenario in this analysis, Europe's 27 would in the future have a total of 600,000 land force soldiers, compared with 890,000 land force soldiers today. This would be a significant but realistic reduction in personnel numbers – approximately one-third. This is analogous to the British Army's re-sizing of regular Manning levels, from 110,000 in 2011 to 82,000 by 2020, which amounts to a reduction in size of almost 30 percent.*

***The benefit to European member states of consolidating their land forces to 600,000 would be approximately Euro 6.5 billion a year.** However, the crucial caveat emerging from our wage-dependent simulations is that there is no convergence of wages to the top. If this were the case, the cost advantage of European land forces would quickly turn into a cost disadvantage. Assuming a continuation of today's wage structure, this is a conservative estimate of the savings potential since we have not attempted to quantify likely cost savings in other lines of development, which would follow from a smaller total of military personnel. It could be reasonably expected*



that expenditure related to basing, training and routine consumables would decline in line with personnel numbers. There would be additional savings in personnel costs from reduced pension and benefit payments that are not included in our calculations. Finally, this study only considers a consolidation of regular soldiers and does not assume any reduction in the number of gendarmerie and conscription soldiers, which together total a further 570,000 troops.

In mature nation states, defence is undisputedly provided by the central government. In federal states like the US, Canada, Switzerland and Germany, this sole responsibility for the armed forces is more than accidental historical heritage: There is a convincing efficiency argument that the sub-national provision of defence would be needlessly expensive and to the detriment of a high quality service. In addition, freerider problems would pose numerous disincentives to efficient security provision.

There is thus a straightforward case for considering the future possibility of defence policy at the EU level which would create substantial EAV by providing the same level of security at a lower cost, or even by improving the quality and (global) impact of European defence while avoiding a larger fiscal burden. Of course, national sensitivities present a substantial obstacle to a centralised European defence. For many states, autonomous command over a national army, air force and navy is still a symbol of national sovereignty. Under the current regime of imperfect European defence integration, however, this symbolism has become costly and detrimental to the global effectiveness of EU member states' defence activities.

With European member states in the grip of fiscal austerity, there is fresh impetus behind efforts to improve the efficiency of defence in Europe. Many of these efforts focus on the pooling and sharing of equipment between member states, with the aim of exploiting economies of scale and scope. By comparison, relatively little analysis has been dedicated to assessing potential benefits from reducing inefficiencies related to the number of military personnel in Europe. Our research addresses this gap, estimating the potential added value of reforming the provision of personnel in one well-defined military sector: European land forces. Specifically, this study provides a range of estimates for the savings potential and thereby the EAV associated with integrated EU land forces. This enables us to offer a quantification of the opportunity costs implied by a continuation of the current national approach.

The study is designed to offer a range of estimates for the savings potential of a more integrated approach. It proceeds in two steps:

- 1) We estimate the number of soldiers needed for Europe to achieve the Helsinki Headline Goal 2010, which establishes member states' levels of ambition to fulfill the set of military tasks delineated by the 1992 Petersberg Declaration. We compare that number to the number of soldiers that exist in Europe today. A clear challenge with this approach is that there is no

single, irrefutable ‘right size’ of land forces in Europe. A greater number of soldiers may yield higher levels of military capability, but these benefits come with associated costs. This analysis aims to quantify the cost of carrying a number of soldiers over and above the level required to attain a fixed (and politically agreed) level of ‘benefit’ – or military capability. In this first step, we also investigate possible economies of scale from a large integrated army which may arise from an improved deployability ratio (the ‘tooth-to-tail ratio’).

- 2) We cost the (smaller) number of soldiers required under a more coordinated set of European land forces. This takes account of detailed wage information of different national armies and is based on varying assumptions with respect to the wage structure in a European army, as compared to the current coexistence of national armies with their individual wage structure. Here, we were able to gather publicly available wage data for six member states in different income classes. This gives us a sound anchor for quantifying military wage levels for the remaining countries. Through this refined approach, this study takes account of countervailing forces, considering possible cost savings from a smaller number of soldiers as well as possible cost pushes through wage equalization above the current mean income.



European Added Value: A Proposal for Clarification

Friedrich Heinemann, Florian Misch, Marc-Daniel Moessinger, Steffen Osterloh, Stefani Weiss

European added value has become a key compass of EU spending. However its use and application still lack a consistent analytical base. This chapter proposes a conceptualization that could pave the way for meaningful quantifications. Key is the distinction between net benefit and the added value of EU spending. In addition, the central challenge of such an empirical study is substantiating the added value of EU spending, namely identifying suitable national comparisons as points of reference.

Judging by the number of times the term ‘European added value’ appears in official documents in the context of the EU budget, it has advanced to become a critical determinant of EU spending.¹ It is used 32 times in the Communication on the Multiannual Financial Framework (2014–2020), while the term was used only twice in the Communication on the Delors I Package (1988–1992) and only once in the Communication on the Delors II Package (1993–1999). However, at present the definitions of the term ‘added value’ and the way it is quantified differ widely (see Rubio 2011).

The European Commission (European Commission 2011:1) defines the European added value of public spending as “the value resulting from an EU intervention which is additional to the value that would have been otherwise created by member state action alone”. This is the definition we use.² However, according to Rubio (2011), there are at least three other ways of using value added. One is when value added is interpreted as the benefits that are derived from good management and implementation of EU policy programs (i.e. an ex post assessment of whether particular EU programs deliver the most possible added value). The second is when value added refers to a comparison of spending in particular policy areas (i.e. an identification of opportunity costs in line with an improved justification of EU spending). As for the third, value added can refer to the unexpected side-effects of EU interventions (i.e. the benefits in addition to the achievement of the primary program-targets).

¹ In line with other papers, the terms ‘European value added’ and ‘European added value’ are used interchangeably. Even when ‘European’ is omitted, the term refers to the benefits of public spending at the EU level relative to those incurred at the national level.

² The European Commission released a working paper accompanying the Commission’s proposals for the next Multiannual Financial Framework, A Budget for Europe 2020.



For the last case, examples are improvements in the quality of the delivery system, or as Rubio puts it: “operational added value or enhanced visibility of the EU as well as increased support for the European integration project that provides ‘political added value’” (Rubio 2011:5).³

Some examples serve to illustrate this diversity. For instance, the Committee of the Regions (2008:3) sees value added as “the opportunities it offers Europeans to develop their full potential as individuals beyond national borders”. By contrast Eurostep (2008:4), which is a network of autonomous European development-related NGOs, states that the added value of various policies with respect to the internal market, agriculture, and energy “lies in ensuring that these policies do not impact negatively on developing countries”. The Advisory Committee of the EC on Equal Opportunities for Women and Men (Aceceo 2008:11) claims that it is nearly “self-explanatory that there is a specific EU added value in implementing gender budgeting at the European level”.

Equally, approaches to identify those public spending categories are either based on qualitative criteria, or use rather crude or ad-hoc reasoning for quantification that lacks a credible statistical foundation. Yet, understanding the meaning and potential magnitude of added value of public spending at the EU level is critical. Most importantly, from an economic perspective distributing spending assignments between the national and EU levels based on a robust assessment of value added of different public spending categories potentially enhances overall economic efficiency of the European economy.

There are two ways to express an increase in efficiency: A shift of task towards the EU layer is efficiency enhancing if it either allows the same level of public service using less resources; or if higher levels of public goods and services can be supplied at the same costs as under national provision. Both cost savings and efficiency gains are crucial in the context of the European debt crisis and the prospect of low growth in the coming years. From a political point of view, this is important because this potentially helps solve conflicts between net contributing countries and net recipient countries, or among net contributors. From a legal point of view, the concept of added value is of particular importance where the EU and the national level have competing competencies (Schreyer 2011).

Conceptual framework

Definitions of net benefits and European added value

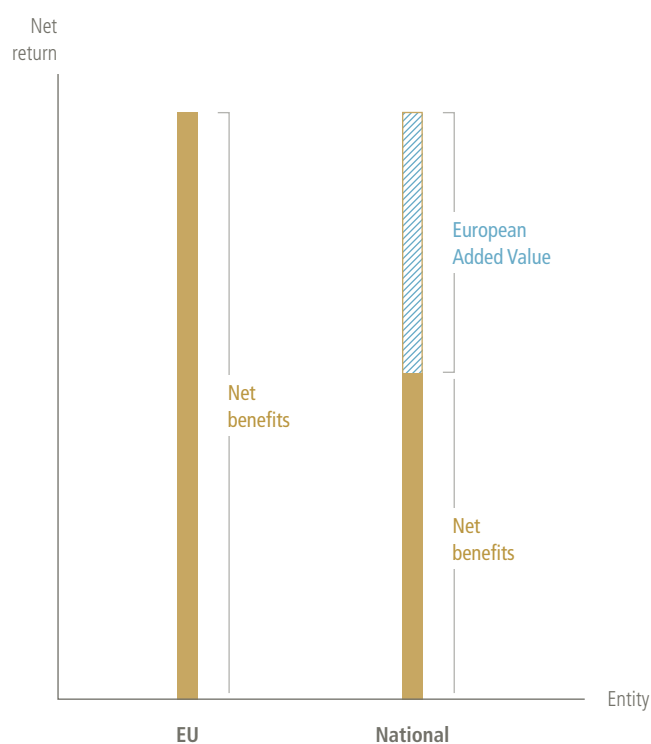
From an economic point of view, public spending at the European level ideally fulfils two types of criteria: It should entail both positive *net benefits* and *European added value* of public spending. It is important to take into account that both criteria are distinct.

³ As Zuleeg (2011) points out, added value in European policy debates fundamentally differs from economic value added in the production process.

Net benefits are the difference between the sum of direct and indirect benefits, on the one hand, and direct and indirect costs, on the other. The direct costs and benefits of any public project are usually easy to identify and typically beneficial, for instance in terms of employment generated or private investment triggered. The indirect effects are much harder to identify and quantify. Moreover, they usually relate to either opportunity costs (i.e. foregone benefits of other projects that were not financed) or financing costs (i.e. the distortionary effects of taxation that would otherwise not be necessary). Positive net benefits can usually be expected when critical public goods, which private markets would typically not supply, are provided by the government, and when these public goods provide services that enhance private-sector productivity.

European added value essentially compares the net benefits of spending by *national governments* with those that arise from spending in the same category *at the European level*. In this sense, added value is technically the difference between the net benefits of spending at the EU level and the net benefits at the national level. This is in line with the definition of the EU Commission

Figure 1: European added value vs. positive net benefits of EU spending



Source: Own illustration

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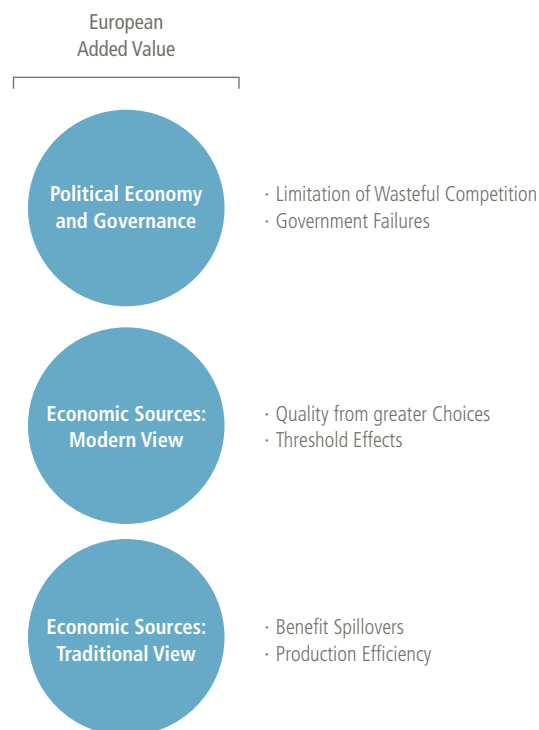
(2011:1): “the value resulting from an EU intervention which is additional to the value that would have been otherwise created by member state action alone”. Figure 1 illustrates the concepts of net benefits and added value.

Potential causes of added value

Clarifying the conceptual underpinnings of added value requires understanding its potential underlying causes, i.e. the reasons why spending at the EU level may involve added value. Broadly speaking, there are three broader potential causes of ‘added value’ of public spending at the European level vis-à-vis the national level:

- (1) economic causes that relate to traditional arguments;
- (2) economic causes that relate to more modern arguments; and
- (3) causes based on political economy and governance-related arguments.

Figure 2: Potential causes of European added value



Source: Own illustration

| BertelsmannStiftung

The traditional arguments are rooted in fiscal federalism literature (see for instance Oates 1972, 2005) whereas the modern arguments have mostly been used just recently and in the context of public spending at the European level. These sources of added value cause the differences between the net benefits of national public spending and those of EU spending (see Figure 2).

Economic causes of EU added value – traditional arguments

- Many public services entail significant *crossborder benefit spillovers* that cannot be internalized by national governments. This implies that they may not be supplied at sufficient levels. One of the most important policy fields to which this argument applies is the support of trans-European transport networks. Consequently, these types of public services are generally underprovided in the absence of international cooperation or supranational provision. It is the internalization of crossborder effects that creates European added value. The reason here is that the net benefits of public spending at the national level are lower simply because the quantities of the public services provided by national governments are lower.
- With public services being non-rival in consumption to some extent – *economies of scale* arise if the per capita cost of providing a public good decreases (see Schwager in this volume). In turn, given that the EU provides public services to a larger number of beneficiaries than national governments, the per capita costs of provision decline. Economies of scale may arise in various areas of public spending. Christoffersen (2011) suggests that under certain conditions there may be economies of scale in financial support to third countries that are operated through financial instruments at the EU level. Defence provides non-rival benefits as well; in this sense providing defence at the EU level has clearly a potential for added value. A similar expectation is warranted with respect to common consular services for EU countries, although the absolute magnitude of potential added value is smaller compared to defence spending due to the much smaller absolute size of spending.
- Every public service provided by governments or the EU needs to be produced using human, financial, and other resources. In turn, the *production efficiency* in the sense of lower costs per unit may be higher at the EU level for several reasons. First, the production may be subject to economies that result in unit costs declining with the amount produced. These types of economies of scale are different than ones that arise because of the non-rivalry of the benefits and mainly relate to fixed costs that are independent from the final amount of output. In this scenario, they simply arise if the provision for several countries is ‘bundled’ at the European level so that the quantities produced at the EU level exceed those produced at the national level. Here defence may be an important example as well.



Second, economies of scope may also contribute to higher efficiency at the EU level. Economies of scope, by contrast, refer to synergy effects that arise at the EU level but not at the national level. Reasons may include better communication with respect to problems and solutions for particular projects or common project management at the EU level (Begg et al. 1993). Finally, it is also conceivable that the EU has access to a more efficient production technology. At the EU level, it may be easier to benefit from knowledge transfers of best practices, or leakage of funds may simply be lower due to better management practices. The European Institute of Technology, for instance, ensures the dissemination of best knowledge practices within Europe and promotes partnerships of research, higher education, and innovative entrepreneurs or sectors (European Commission 2007).

Economic sources of EU added value – Modern arguments

- Public services provided at the European level may be of *higher quality*, which is related to the argument of production efficiency. The idea of this modern view is that certain public services and interventions carried out at the European level benefit from a much larger pool of potential suppliers. As a result, the best applicants for a project can be selected from a larger pool thereby increasing the overall quality. For instance, European-funded research programs can possibly add value as compared to national research programs because of the larger pool of resources, both financial and human.
- Large-scale public projects with high fixed costs involve funding requirements that exceed the financial capacity of individual member states. In other words, various public services are subject to *threshold effects* implying that only jurisdictions that exceed a certain size are able to provide them. In such a case, the EU (or some other form of international organization or cooperation) would be better suited than national jurisdictions to provide them. These threshold effects are essentially an extreme type of economies of scale. A potential example of a public good that might be subject to such threshold effects is GALILEO, although the net benefits of this project are contested.
- On a related note, Oates (1988) emphasizes the variety of public goods and services. Since there are *high fixed costs* for the provision of particular public goods, “it does not become desirable to provide the good until population reaches a certain critical size” (Oates 1988: 88). That is the size for which people’s willingness to pay equals (or exceeds) the unit costs. This is called the ‘zoo effect’ of public good provision, which was recently investigated empirically by Frère et al. (2011) for French local governments. The authors find evidence “that the variety of services provided in large inter-municipalities exceed those in smaller communities” (Frère et al. 2011: 20). As a result, the added value of EU interventions might also be created because of a larger variety of provided goods and services as compared to the national level – even if per capita costs remain nearly unchanged.

Political economy and governance-related sources of added value

- Public spending at the European level potentially adds value by *limiting wasteful competition* among national governments. For instance, subsidies paid by national governments to particular industries or sectors may result in a “subsidy race to the top”. In this case, governments try to pay more than their peers in order to attract foreign firms (Janeba 1998). Paying subsidies at the European level thereby can add value because this type of wasteful competition and the level of subsidies paid are likely to be contained. This type of argument may in principle apply to agricultural policy. Whether this is really the case, however, must be investigated in detail.
- Whereas national governments tend to be short-sighted because of relatively short electoral cycles, policymaking and hence public-spending decisions at the European level are partially decoupled from national electoral cycles and may therefore focus to a greater extent on the medium to long run. This implies that there is the possibility that at the European level government failures are less severe: public spending allocation and composition within certain sectors could be potentially *more focused on long-run objectives* such as economic growth, which thereby provides added value vis-à-vis the national level.
- A shift of public spending to the supra-national level in line with a *limitation of lobbying and corruption* are further potential sources of added value. However, the effects of lobbying and its impact on decision-making distortions between the different layers of governments are not that clear. Some studies state that the power of interest groups is better contained with decentralized politics (see e.g. Vaubel 1999). Others (Tabellini and Wyplosz 2004) argue that the power of lobbying under centralisation depends on the homogeneity of national interest groups. If national interest groups across Europe have identical objectives they will be able to speak with one voice and defend their interests at the European level effectively. In this case, centralized policy making will be particularly vulnerable to interest group distortions. If, on the contrary, the interests of national lobbies are heterogeneous across Europe, this will weaken their EU impact so that European centralisation has the beneficial side-effect of containing lobby power.

Positive net benefits and added value compared

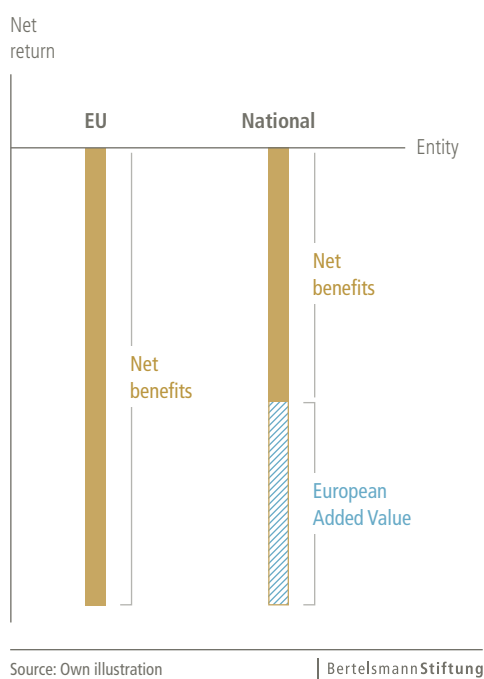
Both concepts, that of positive net benefits and that of added value, are only indirectly related to each other. Confusion of the concepts is one frequent shortcoming of current European added value applications. Evidence of positive net benefits of EU spending is neither a necessary nor a sufficient condition for the existence of European added value. Indeed, a key dimension of European added value is that the net benefits of EU spending exceed those of a national reference case irrespective of whether the net benefits are positive or not. The key insight is therefore that



European added value is a relative concept (which has also been emphasized by others, e.g. Zuleeg 2011).

Spending at the European level may entail added value. Take, for example, if the benefits exceed those that would arise if the same spending were undertaken by national governments. There would be added value even if the net benefits of this type of spending are negative (e.g. a harmful subsidy) as demonstrated in Figure 3. The first-best solution would be that no government entity finances this particular policy. If this is not feasible, due to political constraints, an EU involvement may still create added value if it limits the losses of this public spending type and furnishes a less distorting type of subsidy. In other words, spending at the European level may still be justified as a second-best approach when the first-best approach is unavailable.

Figure 3: European added value vs. negative net benefits of EU spending



Furthermore, positive net benefits of EU spending on their own are not sufficient for added value. With positive net benefits a meaningful added value test would have to demonstrate that the net benefits of EU spending exceed those of spending at the national level (Figure 1).

Given that the distinction between positive net benefits and European added value may seem subtle, it is not surprising that in practice, for simplicity, the concept of positive net benefits and added value are frequently conflated. For instance, the European Commission (2011:25) claims that “the CAP provides European added value by supplying European citizens with safe and high quality food in a competitive market”. This contrasts with the definition by the European Commission (European Commission, 2011: 1) (“the value resulting from an EU intervention which is additional to the value that would have been otherwise created by member state action alone”) which is the one we use.⁴ High quality and safe food are certainly benefits. But the costs to achieve this objective must also be considered. They are not related to added value and thereby do not justify any action by the EU. This underlines the need for a concise and transparent framework which specifies various causes of why added value arises.

⁴ The European Commission released a working paper accompanying its proposals for the next Multiannual Financial Framework, A Budget for Europe 2020.

Existing methodologies and evidence

Conceptually, it is fairly straight forward to develop the framework of added value. On the contrary, testing and evaluating in practice whether specific public spending categories entail added value is much more difficult. If it had been done at all, it was seldom based on rigorous methods.⁵ There is a range of studies that evaluate whether the EU or national governments should undertake public spending in particular categories. Broadly speaking, these studies apply mostly qualitative criteria or use various different indicators that are thought to represent value added. Consequently, existing studies give rather a crude assessment of potential benefits based on simple reasoning or anecdotal evidence. They do not provide robust quantitative evidence of the magnitude of added value.

Most qualitative assessments of added value are typically based on arguments from theories of fiscal federalism. They analyse the trade-off between the benefits and costs of centralisation. Benefits of centralisation may arise from economies of scale or benefit spillovers and costs can emerge due to preference heterogeneity across sub-central jurisdictions (see Alesina and Wacziarg 1999, for a theoretical model on the optimal allocation of prerogatives in the EU). Ederveen et al. (2008) develop a ‘subsidiarity test’ based on these arguments that require answers to the three following questions:

- Do crossborder externalities or economies of scale justify centralisation?
- Is credible voluntary cooperation possible?
- At which level can policies be designed and implemented in a cost-minimizing manner?

The most comprehensive analysis of EU spending is a study by several economic research institutes (ECORYS et al. 2008).⁶ This research uses the subsidiarity test developed by Ederveen et al. (2008) as well as political economic criteria to assess the assignment of competences between the EU level and the member states. ECORYS et al. (2008). Interestingly, the evaluations of specific spending items vary strongly within the broad expenditure category. Concerning EU cohesion policy, the evaluation of the territorial cooperation dimension (mostly trans-European networks) is entirely positive. Whereas the added value of the ‘competitiveness and employment’ objective, which mainly benefits the richer regions of the Union, is rather negative.⁷ In particular, the report highlights three broad policy areas in which an expansion of the EU expenditures could lead to

⁵ There is a related literature that compares the efficiency in public good provision for territorial units which differ in their degree of centralisation. Barankay and Lockwood (2007) show that more decentralized Swiss cantons are associated with higher educational attainment. Using a panel of OECD countries Adam et al. (2008) show that the overall public sector efficiency is increasing with fiscal decentralisation. However, this paper does not differentiate between different policy areas. Their findings thus are of limited use for our purpose.

⁶ The study was commissioned by the European Commission as part of the mid-term review 2008/2009.

⁷ The study identifies the following potential sources of European added value: economies of scale, externalities, limits to system competition (e.g. subsidy races), second-best arguments (e.g. due to lack of foresight in policymaking at the national level), complementarity between policies (i.e. positive effects for other EU policies) and lobbying (since lower level governments are more susceptible to the influences of lobby groups).



an increased added value for the citizens: climate change and energy resources, knowledge and innovation, and common security and foreign affairs.

Alesina et al. (2005) include a similar assessment of EU spending that is based on criteria from fiscal federalism theory. In particular, they focus on the trade-off between the benefits of centralisation (which arise from economies of scale or externalities) and the costs of harmonizing policies in view of the increased heterogeneity of individual preferences in a larger union. In contrast to the ECORYS study, Alesina et al. (2005) also quantify the costs of centralisation due to preference heterogeneity based on opinion survey data. Given that they only perform an ad-hoc assessment of the magnitude of the benefits relative to other public spending categories, this type of one-sided quantification seems problematic.

More recent academic contributions to the general review of the EU budget continue to criticize the EU expenditure structure as being unsuitable from an economic perspective. For instance, Gros (2008: 15) criticises that “(v)ery little is spent in areas where one would expect real ‘value added’ from Union level spending”, whereas “expenditure on agriculture, a declining industry, absorbs an inordinate budget share and re-distribution dominates the rest”. Similarly, Begg (2009: 31) argues that “most of today’s EU budget is distributive (namely the common agricultural policy and cohesion) and that true European public goods are a minor share”. Gros suggests that the provision of European public goods should be the guiding principle for the EU budget, and identifies two areas with a high potential of EU funding: R&D as well as internal and external security. This argumentation is obviously inspired by fiscal federalism theory, but does not make any reference to quantitative findings. Instead, only hints are given that “one field that typically serves the public good and whose benefits extend far beyond national boundaries is research and development (R&D)” (Gros, 2008: 5), and that “the economies of scale in the field of external security have been vividly illustrated in recent conflicts, from Kosovo to Iraq” (Gros 2008: 6). Begg (2009), in turn, agrees that many new spending priorities of the EU are easily imaginable, but he is rather critical to the political feasibility of changes based on simple economic reasoning. He claims that “concepts such as subsidiarity and proportionality, or the assertion that EU spending must be confined to policies for which there is a demonstrable added value, can sound too abstract to be operational”.

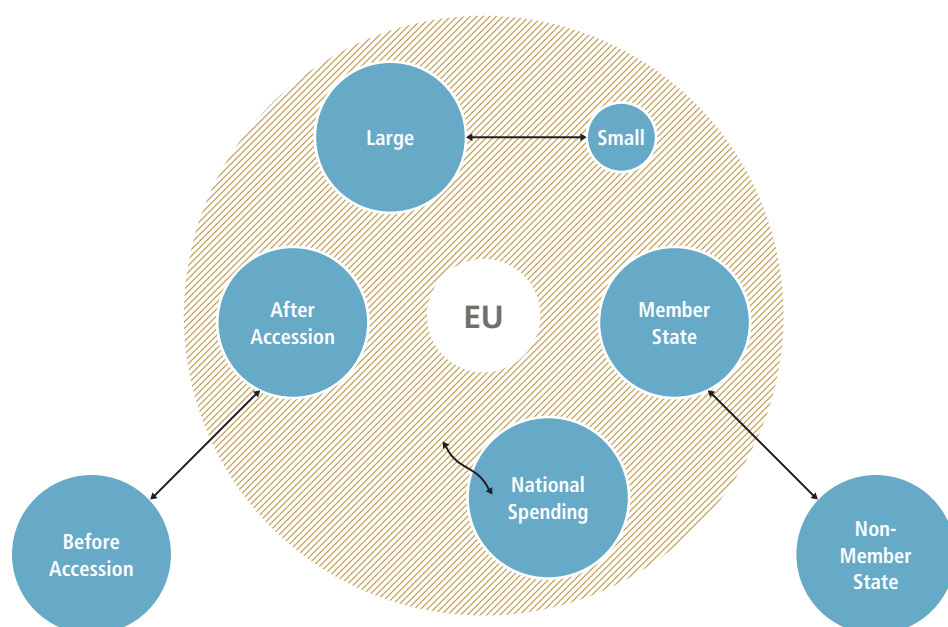
The European Commission (2011) also evaluates added value based on a mix of quantitative and qualitative approaches. Generally speaking, impact indicators are presented based on the false assumption that they reflect added value. Again, the qualitative assessment is based on fiscal federalism arguments. For instance, the European Commission (2011) implicitly stipulates that the number of jobs created and the number of firms that received various types of support are part of the evidence that cohesion policy entails value added.

With respect to other public spending categories, the reasoning of the European Commission seems more convincing but is mostly of qualitative nature. For instance, the European Commission (2011) contends that EU-funded research adds high value by facilitating researchers to engage in large scale projects that are more complex and competitive than national programs. Similarly, the European Commission (2011) suggests that EU health spending may entail added value. For example, the EU cooperation initiative on crossborder diseases that involves the joint procurement of pandemic vaccines may possibly result in lower unit costs and thereby in efficiency gains. However, given the mix of approaches and types of arguments used for various public spending categories, the European Commission (2011) provides hardly any systematic guidance about which public spending categories involve value-added and which do not.

Quantifying European added value

In order to rigorously quantify European added value, one has to proceed in two steps. The first step is to establish a counterfactual, namely to ask *what* is compared. The second step consists of choosing a suitable empirical methodology, namely to decide *how* net benefits are measured.

Figure 4: Possible comparisons to estimate European value added



Source: Own illustration

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Identifying suitable comparisons

For any quantification approach the distinction between both dimensions – net benefits and added value – is fundamental. This distinction underlines that European added value is an inherently relative concept. Thus, any empirical approach must to some extent include a comparison between the benefits of spending by different levels of government. There is an empirical counterpart to this which is essentially the identification of a counterfactual. In principle, there may be four types of counterfactuals and comparisons that are to be chosen depending on the public spending category in question. These are illustrated in Figure 4.

- 1) The net benefits of public spending in a particular category in EU member states can be compared to European countries that are not EU members. This includes Norway and Switzerland in Western Europe but also various countries in Eastern Europe and South Eastern Europe, which are fairly similar in terms of the level of development and various structural features. Alternatively, Cramon-Taubadel (2011) proposes a more sophisticated approach to predict the public spending level in agriculture in EU member countries that would prevail in the absence of EU spending, based on a function of various country-specific features and political economy-related factors. This type of function would be derived using regression-based techniques and data from non-EU members. Under this approach, a lower level of public spending in agriculture at the EU level would imply that there is European added value based on the assumption that agricultural spending is harmful or is at least less beneficial than other types of public expenditure. Where countries joined the European Union in the recent past, a before-after comparison of the net benefits is possible in the sense that net benefits of EU spending in this type of country are compared to the net benefits of national public spending of the same country before accession. Suitable countries may be those western European countries that joined most recently including Austria, Sweden, and Finland, which have not been undergoing major structural changes since their accession to the EU.
- 2) In principle it is conceivable that some types of public spending are undertaken both by the EU and by individual member states. This implies that in these cases, a comparison of the net benefits within the same country and year is possible as long as the effects of public spending by different layers of government can be disentangled. Related to this, some areas of EU spending have only been recently established. In this case, a before-after-comparison is possible (i.e. to compare the net benefits of these public spending types when they were only in the national domain with the net benefits of spending at the EU level after the policy change).
- 3) For those areas of public spending that are currently not part of EU expenditure policy, it would be possible to ‘simulate’ the effects of size by comparing large to small countries

that are either members or not members. While this type of comparison is certainly imperfect in many cases and cannot be used to quantify the effects of differences of governance or political economy on added value, it is certainly suitable to uncover economies of scale, for example.

- 4) The CAP may serve as an example to illustrate the empirical procedure given that there is limited agricultural spending at the level of the EU member states and that European law limits national spending autonomy. In order to assess the potential added value of the CAP, it is necessary to compare the effectiveness or simply the level of the CAP with agricultural spending in OECD countries that share similar features with EU member states. Alternatively, a ‘before-after’ comparison could be applied by analyzing the impact of EU membership on agricultural subsidies and protection in new member countries. This type of empirical comparison must be at the centre of any serious attempts to quantify added value.

The choice and feasibility of the comparison type chosen determine the type of policy recommendations that could be drawn. The policy recommendations emerging from (4) are strongest in the sense that they suggest efficiency gains if those areas of public spending with added value are transferred to the EU level. The same applies to (3) when public spending responsibilities are shared, although to a lesser extent.

However, there are several potential caveats. First, when comparing the net benefits of public spending between small and large countries (comparison 3), it is questionable whether and under what circumstances the results can be extrapolated to the EU level as even large countries may seem small relative to the European Union as a whole. Second, when comparing the net benefits of EU spending to the net benefits of spending in countries outside the European Union, the choice of countries might heavily affect the results and the policy recommendations that emerge. For instance, in the context of agricultural policy, subsidies are low in Australia and New Zealand but much higher in Switzerland. Third, as Zuleeg (2011) points out, the objectives of and the preferences with respect to public spending or its underlying rationale may differ across jurisdictions. When making comparisons across different countries, these differences need to be taken into account because otherwise the comparison may be misleading.

Identifying suitable empirical methodologies

Challenges: Having identified the comparative benchmark, the next step is to compare the net benefits of public spending in a particular category at the European level with those that arise when the same type of public spending is undertaken at the national level. Quantifying the net benefits of any narrowly defined public spending category even in a national context is however demanding for three reasons.



First, measuring the benefits, notably the indirect ones, may not be feasible. One problem that arises in this context is that observable economic and social outcomes, such as growth or unemployment rates, cannot be attributed to a particular public spending category because it is either difficult to establish causality or to isolate the effects of particular public spending categories from other factors that impact on these outcomes.

Second, evaluating outcomes is also difficult in another sense as this requires a judgment about whether these outcomes are desirable. While growth promotion and unemployment reduction are universally seen as beneficial, the outcomes of defence spending are not.

Third, certain taxes not only impose a direct financial burden but also cause distortions that result in additional costs. Thus, considering the full financing costs when measuring the net benefits is tricky and may not be feasible in all cases.

Overall approach: In order to address these difficulties, it is important to clearly distinguish inputs, outputs, and outcomes of public spending. In this context, the outputs are simply the goods and services that the government provides, whereas the inputs are the financial resources used by the government to produce the output and only reflect the direct costs. By contrast, the outcomes are the effects of social objectives like employment and growth that the outputs as well as the inputs together with the indirect costs presumably impact on.⁸

Given the difficulties associated with quantifying outcomes, one sensible approach rests on focusing on the evaluation of inputs, outputs, or a combination of both in order to obtain a measure of net benefits. This measure can in turn be compared across jurisdictions to obtain a measure of added value. The advantage is that this approach avoids quantifying the outcomes. Any input and output based evaluation of added value remains silent of the desirability of any specific public spending category. This is acceptable in this context as the objective of quantifying added value is not to judge *whether* specific goods and services should be publicly provided or not. Instead, the objective is to evaluate at *what level* public goods and services should be provided. An approach focusing on inputs and outputs serves this purpose. In principle, there are three types of specific evaluations:

- 1) The first comparison is simply to compare inputs, namely expenditure per capita within a narrowly defined spending category in small and large jurisdictions if public spending outputs are approximately identical. If expenditure per capita is lower in the large jurisdiction, the benefits of the public service may be non-rival which in turn results in economies of scale. However, expenditures per capita as an indicator are not useful to consider if the level of outputs differs. For instance, per capita spending increasing with size may simply reflect

⁸ These definitions are similar to those used by the OECD (2002).

differences in the level of output between the large jurisdiction and the small one. In cases where expenditure data is not available, a ‘bottom-up’ approach could instead be chosen where various public services are costed multiplying the unit costs of various items and the quantities required.

- 2) As an alternative, expenditure per output units (i.e. the ratio of inputs to outputs) may be compared. This type of indicator adjusts for differences in the level of outputs, but it ignores economies of scale that are the result of non-rival benefits. Another more sophisticated approach, which also combines input and output measures, relies on the derivation of public spending efficiency indicators.⁹ Specific actions are efficient if either the inputs to reach a given amount of outputs are minimised (input-oriented measure) or – given a certain amount of inputs – the quantity of output is maximised (output-oriented measure). To compare these efficiency indicators, the best-practice case must be identified through employing mathematical or econometric methods.¹⁰ This best-practice case shows the optimal ratio of inputs and outputs compared to the remaining jurisdictions. Subsequently, the efficiency distance between each jurisdiction and the best-practice unit can be derived. This distance yields efficiency-indicators that are comparable across the different jurisdictions: the greater the distance is, the lower is the unit’s efficiency.
- 3) The strengths of both indicators may be combined by comparing unit expenditure per capita (i.e. the ratio of inputs to outputs divided by the size of the population) which may take into account differences in output levels produced and economies of scale due to non-rival benefits.

Caveats and potential other methods: Nevertheless, there are a number of important caveats in the use of all of these indicators so that they may only be carefully used. First, the conclusions that emerge from these types of comparisons are misleading if the outputs are of different quality, and it is very difficult to account for differences in quality when solely focusing on inputs. If quality indeed differs, low spending in large jurisdictions may simply reflect poor quality rather than economies of scale.

Second, as Schwager as well as Büttner and Holm-Hadulla (2008) claim, there is a strong theoretical reason why economies of scale may actually induce per capita spending of a particular public service to be higher in large jurisdictions. The reason is that low costs induce larger jurisdictions to provide a higher level of public services, and, if demand for this public service is sufficiently price-elastic, they will incur higher overall level of spending. If this effect is indeed present, the use and comparison of input indicators may lead to false conclusions with respect to potential European added value.

⁹ For instance, von Cramon-Taubadel (2011) suggests the derivation of these efficiency indicators as one possible research strategy in the field of the CAP.

¹⁰ Methods to derive these efficiency scores are, e.g., a data envelopment analysis (DEA) or a stochastic frontier analysis (SFA).



Third, the magnitude of the net benefits depends on the perspective taken. For instance, the net benefits of transferring a specific public spending category to the EU level may be negative from the perspective of some member countries. In other words, even when there is aggregate added value of various public spending categories, it may not be evenly distributed among all member countries. We recognize this point, although we believe that economically, aggregate value added is sufficient to justify spending at the EU level.

With respect to other possible methods, meta-analyses might be applied. They provide an alternative to the direct empirical scrutiny of policy fields as they exploit the existing literature. A meta-analysis condenses a variety of empirical studies devoted to one common research question into quantitative information (Stanley 1989). In principle, such an approach could be used to compare the net benefit of national programs – as it has been detected in the literature – with that of similar EU programs.

One existing attempt to apply meta-analytical techniques to the impact analysis for the EU budget (Euréval and Rambøll Management 2008) indicates that meta-approaches for such a broad and diverse issue necessarily end up in highly qualitative insights and can miss the objective of quantification. Therefore, we are cautious about whether meta-analyses can be made operational in the context of European value added analyses.

Outlook

European added value is a potentially powerful concept to evaluate and justify public spending at the EU level which is of both economic and political significance. This chapter has developed a conceptual framework that contextualizes the notion of added value and explains the underlying causes of why it arises. It can be used as guidance for empirical exercises quantifying the added value of particular public spending categories. However, given that European added value is inherently a ‘relative’ concept and based on the comparison between the net benefits of public spending by different levels of government, the identification of counterfactuals is the main empirical challenge. It needs to be addressed by further research that attempts to quantify European added value of public spending. Overall, such quantification seems possible, at least for selected policy fields. Particularly promising for such empirical, evidence-based research are the following policies that served as case studies in the framework of this project (see subsequent chapters):

Common agricultural policies are an application for a field where a European added value could perhaps result from a limitation of waste and inefficiencies associated with national protection regimes. Even if the net benefit of the EU CAP were negative (due to distortions and hampering of structural change) it could nevertheless still be associated with a European added value if the (fictitious) national regime were even more detrimental.

Embassies and consular services are a much smaller policy field in terms of budget. But these types of services offer another field with an obvious potential for saving national money through reaping European economies of scale. Quantifications are, however, confronted with the problem that these services only partially are characterized by non-rivalry. Nevertheless, given the recent European dynamism on that field (European External Action Service) it is worthwhile to check the qualitative argument of potential savings through rigorous quantifications.

Defence is a policy field where the potential for economies of scale appears substantial and where a sufficient data base exists for exploring possible cost savings through meaningful quantifications. Of course, any step towards a truly European defence policy is confronted with political restrictions and national resistance to a loss of sovereignty. Nevertheless, it is a legitimate undertaking to calculate through appropriate quantifications the price tag that is associated with the political preference for defence autonomy.



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Does the CAP Cap Agricultural Spending in the EU?

Stephan von Cramon-Taubadel, Friedrich Heinemann, Florian Misch, Stefani Weiss

The EU spends over Euro 50 billion each year on its Common Agricultural Policy (CAP) (Figure 1). Although the CAP's share of overall EU expenditure has fallen from over 70 percent in the early 1980s to roughly 45 percent today, it remains the largest item in the EU budget.

Critics argue that expenditure on the CAP is misspent because the same money could generate much more European added value (EAV) if it were spent in other areas such as research and infrastructure development. While this argument sounds plausible, the EAV of expenditure on the CAP (or any other type of EU expenditure) is difficult to measure.¹ The CAP generates a wide variety of costs and benefits. Some of these costs and benefits (e.g. budget expenditure, increased farm incomes) can be measured with relative ease. But others, such as groundwater pollution or the maintenance of open landscapes, are non-monetary and difficult to quantify.

Furthermore, whether CAP expenditure generates EAV is not just a question of whether its benefits exceed its costs, even if these could be quantified. In the absence of a CAP, the member states would implement national agricultural policies (NAPs) instead. These NAPs would also generate costs and benefits. The CAP generates EAV only if it generates net benefits in excess of those that would result from the implementation of NAPs in the individual member states. Hence, in order to determine whether the CAP generates EAV one must not only measure all of its costs and benefits (Task 1); one must also predict what NAPs the member states would implement in the absence of the CAP, and estimate their costs and benefits (Task 2). The second task of generating a national agricultural policy counterfactual for each of the member states is even more daunting than the first.

This study attempts to reduce these tasks to a manageable size in order to generate some limited but nonetheless pertinent insights into the EAV of the CAP. To this end this study does not consider

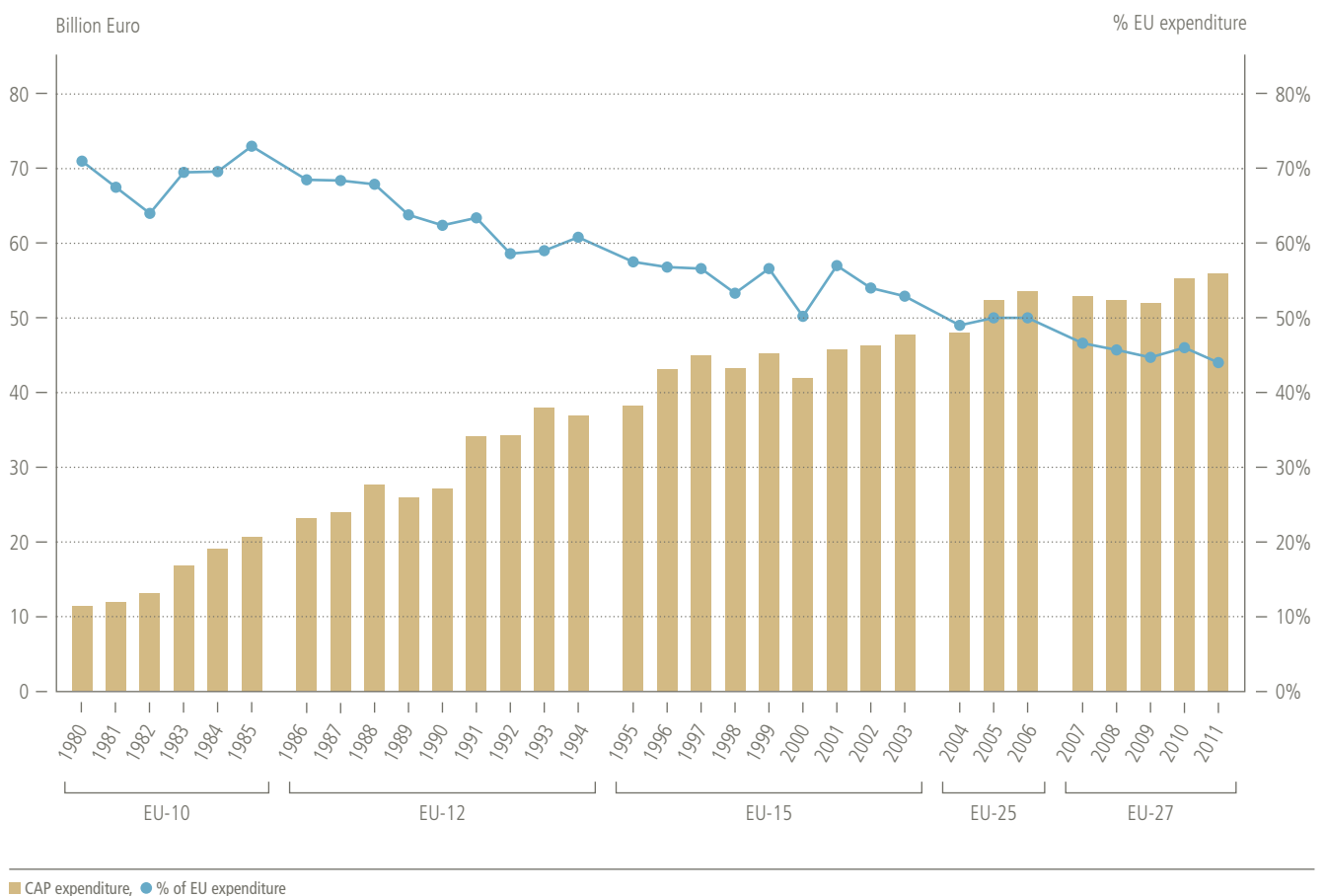
¹ For a detailed discussion of the definition and measurement of European added value see introductory chapter and the contributions of H. Pitlik and R. Schwager in this volume.



the full range of costs and benefits of the CAP. Instead, we focus on a key component of these costs and benefits – public expenditure. Specifically, we attempt to answer the question whether public expenditure on the CAP is lower or higher than the sum of the public expenditures on the NAPs that would be implemented in its absence.

To focus exclusively on public expenditure is to take a very partial view of the full range of CAP costs and benefits. Policies that require little public expenditure are not necessarily less costly from a comprehensive economic perspective than policies that require more. For example, protective import tariffs lead to misallocation of resources and can thus impose significant costs on an economy, even though they generate public revenues (i.e. negative expenditure) in the form of import duties.

Figure 1: CAP Expenditure and its share of total EU expenditure (in current prices)



Source: EU Commission, http://ec.europa.eu/agriculture/cap-post-2013/graphs/graph1_en.pdf

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Nevertheless, whether the CAP triggers more or less public expenditure than the NAPs that would replace it is an important question. Defenders of the CAP sometimes argue that agricultural policy coordination at the EU level keeps public expenditure in check because it limits the influence of local lobbies and reduces the impact of short national electoral cycles on agricultural policy making. According to this reasoning, the result is a more rational policy that is less prone to subsidy races and beggar-thy-neighbour protection than NAPs would be. If this is true, then the CAP – whether or not it generates net EAV – at least saves the member states (in aggregate) money.

Critics of the CAP argue that the opposite is true. Since the CAP is financed out of the EU budget, each member state has an incentive to push for measures that increase CAP outlays for its own farmers. This is because each member state only has to foot a portion of the bill for these measures in accordance with its share in financing the overall EU budget.² According to this reasoning, agricultural policy coordination at the EU level will lead to more and not less public expenditure than NAPs would.

This study attempts to determine which of these arguments is correct: Is the CAP more or less expensive than the NAPs that would be implemented in its stead? To answer this question, we must carry out reduced versions of the two tasks outlined above. First, we must determine the current level of CAP expenditure. This is, thanks to the OECD data on the agricultural policies of its members, a straightforward task. Second, we must generate a counterfactual: What levels of public expenditure would prevail in the individual member states if there were no CAP and each implemented its own NAP instead? This is a much more difficult and inherently speculative task because we cannot know for sure what type of national agricultural policy member states such as Germany, France, and Poland would choose if there were no CAP.

However, this task is not as hopeless as it might appear at first glance. Past research has demonstrated that the type of agricultural policy that a country chooses is systematically influenced by its economic and political-economic characteristics – for example, its comparative advantage in agriculture, the size of any income disparity between its farm and non-farm populations, and the size of its farm population.

Drawing on this research this study proceeds as follows: First we estimate the relationship between key economic and political-economic characteristics and public expenditure on NAPs in set of non-EU OECD countries such as Canada, Switzerland, and the U.S. We next use this estimated relationship to predict the levels of public expenditure on national agricultural policy that each EU member state would choose if there were no CAP. Finally, we compare these simulated national expenditures with the actual level of CAP expenditure to determine whether the CAP increases or reduces public expenditure. We find that simulated expenditure on NAPs and actual expenditure

² This so-called ‘common pool’ problem is sometimes explained using the analogy of a group of size ‘n’ that dines together in a restaurant. If the members of the group agree in advance that they will split the bill, each has an incentive to order an expensive dish, because he/she will only have to pay one-nth of the additional cost of that dish.



on the CAP have not differed greatly, but that there is some indication that the CAP has capped expenditure on agricultural policy in recent years.

Using the results of these calculations we also compare simulated levels of national public expenditure on agricultural policy with the net financial in- and outflows that the individual member states currently realise as a result of the CAP. As illustrated in Figure 2, the fiscal costs and benefits of the CAP are distributed unevenly across the individual members states, with some (most prominently Germany, Italy, and the UK) making substantial net contributions, and others (such as Greece, Spain, and Poland) benefiting from substantial net receipts. Even if expenditure on the CAP were exactly as high as expenditure on the NAPs that would be implemented in its stead, we demonstrate that the distribution of this expenditure across member states would differ considerably from the distributions depicted in Figure 2. Hence, the renationalisation of agricultural policy would lead to a significant realignment of the current net contributor / net recipient balance in the EU. For example, Germany, Italy and the UK would spend similar amounts on NAPs as they currently contribute to the CAP budget. However, while large portions of their current contributions are net contributions that benefit other member states, expenditure on NAPs would benefit their domestic farmers. Hence, these countries would see their net contributions reduced. Other member states, such as Ireland, Greece and Spain, receive net payments from the CAP that would be no longer flow in the absence of the CAP.

Explaining public expenditure on agricultural policy

A framework for explaining agricultural policies

To simulate public expenditures on the NAPs that would be implemented in the absence of the CAP we draw on extensive theoretical and empirical literature on the determinants of agricultural policies. A point of departure for much of this literature is an apparent paradox that was documented in a seminal comparative study of agricultural protection by Krueger, Schiff and Valdez (1988), namely the fact that developing countries tend to tax their agricultural sectors while industrialised countries tend to subsidise them.³ This may seem paradoxical because the relative size and importance of agriculture generally declines in the course of economic development, both economically and in terms of population. Hence, one might expect that as the size of the sector declines, so would its political weight, and with it the support that it is able to 'extract' from the rest of the economy.

Mancur Olson made an important contribution to solving this paradox with his 1965 book *Logic of Collective Action*. Olson pointed out that collective action such as lobbying is subject to freeriding

³ A study coordinated by Anderson (2009) reveals that the taxation of agriculture in many developing countries has been reduced since Krueger, Schiff and Valdez published their findings. Nevertheless, as a stylised fact there continues to be a positive relationship between economic development and the level of agricultural support.

by its potential beneficiaries. For example, since all farmers benefit from agricultural support measures once they are implemented, it makes sense for the individual farmer to abstain from lobbying for these measures. Instead, the rational farmer will let other farmers lobby, and then enjoy the resulting benefits. Of course, if all farmers reason this way, none will invest resources in lobbying, and support measures will not be implemented. This freeriding problem can be overcome if the costs of organising farmers and monitoring them to ensure that they all contribute to the lobbying effort are sufficiently small. These organisation and monitoring costs will tend to fall as the group of farmers becomes smaller and more homogeneous.

Hence farmers in developed countries, who are relatively few, will be better able to solve the free-rider problem and lobby effectively for support than their more numerous counterparts in developing countries. By the same token, as the non-farm population grows in the course of development it will become increasingly large, heterogeneous and, therefore, ineffective in lobbying against support for farmers. In addition, the benefits of agricultural support become increasingly concentrated on a small number of increasingly specialised farmers as their number falls in the course of development. Hence, each farmer has an increasingly powerful incentive to lobby for support policies. Conversely, as the costs of providing this support are diluted over an increasingly large non-farm population in the course of development, political resistance to agricultural support can be expected to fade.

Olson's theory relates the size of the farm population to the 'demand' for support that farmers are able to express on the 'market' for political support. In simplified form, this theory predicts that the amount of support that is provided to farmers in a country is a decreasing function of the number of farmers in that country:

$$(1) \text{ Support} = f(\text{Number of farmers})$$

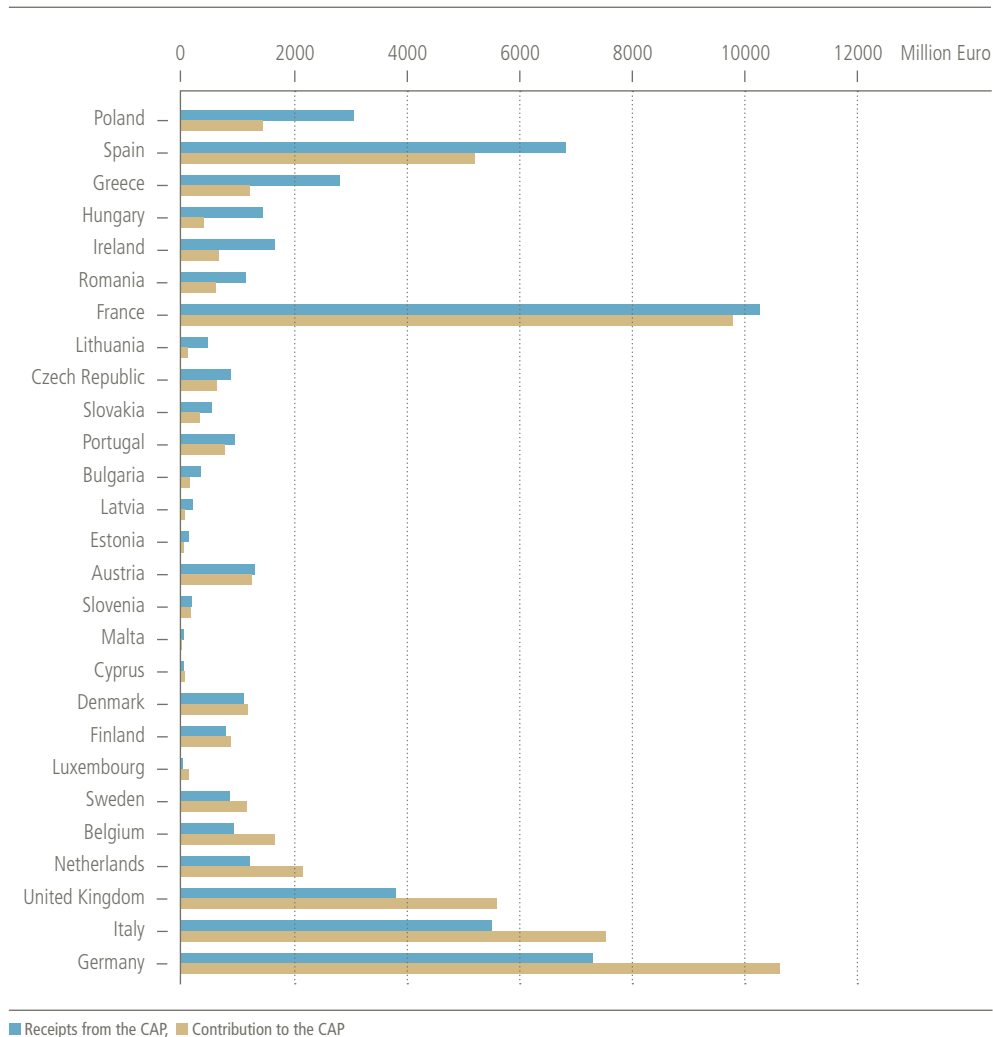
In this equation, f is a mathematical function that translates increasing numbers of farmers into decreasing levels of agricultural support. In recent decades, political-economic insights such as Olson's have been used to identify other demand-side determinants of agricultural policy. For example, all other things being equal one might expect that farmers will demand less support in countries where the climate and soil conditions are more favourable for farming. In addition, factors on the supply-side that influence a government's ability to meet farmers' demand for support have also been identified. For example, it has been hypothesised that a government's ability to pay for expensive agricultural support will decline as its level of indebtedness increases. Hence, the simple conceptual model in equation (1) above has been extended to account for a variety of demand and supply factors that can influence the amount of support provided to agriculture:

$$(2) \text{ Support} = f(\text{Demand-side determinants, Supply-side determinants})$$



Economists have estimated the shape and the strength of the functional relationship f in equation (2) in a number of studies.⁴ Not surprisingly, these studies have shown that observed agricultural policy choices are not fully predictable: because of history, culture, ideology, and path dependency, each country's agricultural policy is unique. Nevertheless, these studies show that agricultural policy choices are influenced in a predictable manner by key determinants that are able to explain much of the variation in agricultural support between countries.

Figure 2: Financial contributions to and receipts from the CAP in 2009, from the largest net contributor (Germany) to the largest net recipient (Poland)



Source: Own calculations with Bayerische Landesanstalt für Landwirtschaft (2010) and European Parliament (2010)

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⁴ Appendix Table 1 provides an overview of these studies. Most have focused on explaining not agricultural support in general but rather the level of protection that is provided to farm products, i.e. the ratio of domestic prices for farm products to the corresponding world market prices.

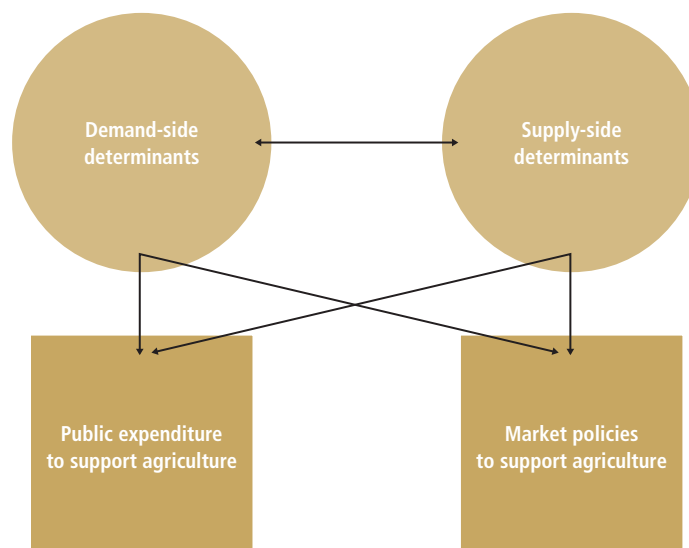
The basic model

We draw on this conceptual framework and past research to develop and estimate a model that explains public expenditure on NAPs in a set of non-EU OECD countries. We then use this estimated model to predict the levels of public expenditure on agricultural support policies that would prevail in the EU member states if there were no CAP. Hence, the model that we wish to estimate and use to simulate hypothetical public expenditures on NAPs is:

$$(3) \text{ Public expenditure} = f(\text{Demand-side determinants, Supply-side determinants})$$

Estimating the model in equation (3) is not straightforward because public expenditure only accounts for some of the support that is provided to farmers. In addition to the support that is provided directly by public expenditure (i.e. in the form of direct payments to farmers), support can also be provided indirectly by market policies (for example import tariffs) that make consumers pay higher prices for farm products. While public expenditure is ultimately financed by taxpayers, the burden of price policies is borne by consumers, who are obliged to pay more for food than they otherwise would. These two groups, consumers and taxpayers, clearly overlap, but they are not identical.

Figure 3: The basic model



Source: Own illustration

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Any desired level of support for farmers can be generated by different combinations of public expenditure and market policy. Which combination a country implements will depend on economic and political factors. From a distributional perspective, providing support via public expenditure has the advantage of being progressive if a country's tax system is such that wealthier citizens pay higher taxes. In contrast, providing support to farmers via market policy is regressive because low income consumers spend higher shares of their incomes on food. However, public expenditure to support farmers is generally more transparent than support in the form of market policy. Public expenditure to support farmers is visible as an aggregate item in the government's budget, whereas indirect support via higher prices is spread out thinly over many consumers and their many individual food purchases.⁵ All other things being equal, therefore, farmers might for strategic reasons prefer to receive a given amount of support via market policy rather than public expenditure.

The relationship between public expenditure and market policy as means of channelling support to farmers is complex. Consider a country that uses market policy to support domestic farm prices at a certain level above world market prices. In a net import situation it can apply an import tariff to boost prices. This will burden consumers and benefit farmers, but it will also generate tariff revenue for the government. This 'negative public expenditure' will benefit taxpayers. However, if domestic prices are supported above world market prices in a net export situation, then the government must either subsidize exports or purchase and destroy (or otherwise remove) produce from the market. Consumers are burdened and farmers benefit as in the net import situation, but now additional public expenditure is required to subsidise exports or otherwise remove excess production. Hence, the same market policy can either increase or reduce the level of public expenditure, depending on the specific setting in which it is implemented.

To account for the interaction between the different sources of support to farmers, we must include the level of market policy support in the equation that explains public expenditure support:

$$(4) \text{ Public exp.} = 1 (\text{Demand-side determinants, Supply-side determinants, Market policy support})$$

Estimating this equation is challenging and requires the use of appropriate econometric techniques. The challenge arises from the fact that market policy support is also determined by a set of demand-side and supply-side determinants, and both influences and is influenced by public expenditure (Figure 3). We account for this by using a method known as two-stage least squares (2SLS) that is commonly used in such settings.

⁵ Since farm products only account for a share of the final price of food, and since consumers in industrialised countries spend a relatively small share of their incomes on food, farm price support will typically add only a negligible amount to a typical food shopping bill. In 2011, food accounted for 11.5 percent of consumer expenditure in Germany, and the farm gate cost of raw agricultural products accounted for just over one-quarter of final consumer spending on bread, potatoes, sugar, meat, dairy products, and eggs (Deutscher Bauernverband, 2012).

To estimate the model in equation (4) we require data on public expenditure to support agriculture, on the market policies that support agriculture, and on the demand-side and supply-side determinants of support. The following section explains the data and variables that we employ. Appendix Table 2 provides detailed definitions and descriptive statistics.

Measuring public expenditure and market policies that support agriculture

The OECD has been publishing information on the agricultural policies of its members since the mid-1980s. A key result of this effort is the producer support estimate (PSE), which is defined as *“an indicator of the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm-gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income”* (OECD 2010: 17).

Using detailed information on the composition of the PSE that is published by the OECD, we isolate that component of the PSE that is due to public expenditure, and that component that is due to market policies. This results in two variables. One is *PublicExp*, which measures budgetary transfers to agricultural producers plus any implicit transfers that are based on public revenue foregone (i.e. due to tax concessions to farmers). The other is *MarketPolicy*, which measures all transfers from consumers to agricultural producers (referred to as TCP1 in OECD PSE database). *PublicExp* is the variable on the left-hand-side of equation (4) that we wish to explain, and *MarketPolicy* is one of the explanatory variables on the right-hand-side of equation (4) that explains *PublicExp*. We divide both *PublicExp* and *MarketPolicy* (which are expressed in million US\$ in the OECD’s PSE database) by the GDP of the country in question so that these measures of agricultural support that can be compared across countries of different sizes.

Demand-side determinants of support

In past research, many factors have been found to influence the level of farm support. As is always the case in studies such as this, the choice of factors is driven by theoretical considerations but also by data availability. Including more factors can increase the explanatory power of our model, but only if data on those factors are available for all of the countries and years that we wish to consider.

The relative size of the agricultural population: To test Olson’s logic of collective action, we include a variable that measures the *share of a country’s population that lives in agricultural households*. As this share increases, the more difficult it becomes for farmers to overcome the free-riding problem associated with lobbying and, hence, the less demand for support policies farmers are able to express.



The income gap between agriculture and non-agriculture: If farm incomes lag behind incomes in the rest of the economy, the demand for redistributive policies that benefit farmers is expected to increase. To capture this we use the *ratio of per capita GDP in agriculture to per capita GDP in the rest of the economy*.

The comparative advantage of agriculture: The more favourable the geographic and climatic conditions for agriculture in a country, the less farmers in that country will demand policies that support agriculture. We therefore include an *index of soil quality* in our estimations.

Supply-side determinants of support

Fiscal space: On the supply side, the fiscal situation in a country can be expected to influence its ability to implement policies that support agriculture. To capture this, we include the *ratio of central government debt to GDP*. We expect that higher ratios of debt to GDP will be associated with reduced support for agriculture, which is typically financed by the central government. We also test whether a country's *natural resource wealth* might affect its ability to support agriculture. Taxing the rents associated with resource wealth might expand a country's fiscal space and its ability to support agriculture. However, resource wealth has also been associated with governance problems that arise from a preoccupation with extracting resource rents rather than generating value added. In such an environment, agricultural policy might also focus on extracting rents from agriculture rather than supporting it.⁶

The relationships between some of these demand- and supply-side determinants and agricultural support might be non-linear. For example, agricultural support might increase at a decreasing rate as the number of farmers becomes smaller. To account for this we include the variables that correspond to these determinants in quadratic as well as linear form in equation (4).

The data sample

We estimate the model in equation (4) using data from a set of 20 non-EU OECD countries over 25 years from 1986 to 2010. We limit attention to OECD countries because these share similar institutions and levels of development with the EU member states for which we wish to simulate NAPs.⁷ If data were available for each of the 20 countries over all of the 25 years between 1986 and 2010, our dataset would contain 500 observations. However, some countries (e.g. Austria in

⁶ Argentina and Russia provide evidence in favour of this conjecture. Both are resource rich and both have in recent years implemented restrictions on cereal exports that extract agricultural rents.

⁷ The countries included in the sample are: Australia, Austria, Canada, Chile, the Czech Republic, Finland, Hungary, Iceland, Israel, Japan, Korea, Mexico, New Zealand, Norway, Poland, Slovakia, Sweden, Switzerland, Turkey, and the United States.

1995) leave the sample when they join the EU. Furthermore, we omit pre-1995 observations for the former centrally planned economies of Central and Eastern Europe that later joined the EU (e.g. Poland and Hungary). This is because of concerns about data quality, and because agricultural policy making in these countries prior to 1995 was presumably based on institutions and conditions that differ fundamentally from those that underlie the rest of the sample. The resulting sample contains 354 observations.

Results

The estimated model

The estimation results for our model are presented in Appendix Table 3.⁸ Overall, the model performs well econometrically and produces results that are economically plausible. The model is able to explain 80 percent of the variation in the levels of public expenditure on agricultural policy between countries and over time in the data. This is stronger than the explanatory power of most other studies in the literature that attempt to explain agricultural policies (listed in Appendix Table 1). Moreover, most of the demand-side and supply-side determinants discussed above have statistically significant and plausible effects on public expenditure to support agriculture:

- As the ratio of per capita GDP in agriculture falls relative to per capita GDP in the rest of the economy, public expenditure on agricultural support increases. This effect, which confirms our theoretical expectations, is significantly non-linear. The model predicts that farmers receive support as long as their per capita GDP does not exceed that in the rest of the economy by more than roughly 40 percent. The highest levels of support, all other things being equal, are provided when GDP per capita in agriculture is roughly 70 percent of that in the rest of the economy.
- The more highly fertile soils a country has, the less it spends on agricultural support. This effect is also expected and also significantly non-linear, with the amount of support provided increasing disproportionately as fertile soils become scarcer.
- As the share of the agricultural population grows, so does public expenditure on agricultural support. This effect runs counter to Olson's logic of collective action and is therefore unexpected. It may be due to the fact that the agricultural population is relatively small in most of the OECD countries that we consider; our sample does not cover the full spectrum from least developed to highly industrialised country. Hence, the advantages of small group size in terms of effective lobbying have perhaps been exhausted in the countries we consider, and our results may indicate that further reductions in group size merely reduce a group's political clout.
- On average, public expenditure on agricultural support is roughly 0.5 percentage points of GDP lower in countries with high levels of natural resource wealth. This supports the theory

⁸ In the course of estimation we found that the model performed poorly for two countries, New Zealand and Norway. The final model therefore includes dummy variables for these countries.



that resource wealth fosters a culture of rent-extraction that also reduces the propensity to support agriculture. Norway is one notable exception to this rule (see footnote 8).

- Higher levels of public debt lead to less public expenditure on agricultural support. All other things being equal, a country with a ratio of public debt to GDP of 150 percent will spend roughly 0.15 percent less of its GDP on support to agriculture than a country with a public debt to GDP ratio of 50 percent.
- The results indicate that market policy is weakly complementary to public expenditure. If market policy support to farmers increases by 1 percent of GDP, public expenditure support increases by roughly 0.25 percent of GDP.

Simulating expenditure on national policies by the EU member states

We next use the estimated model to simulate expenditure on NAPs in 21 EU member states.⁹ To this end, we collect data on the demand-side and supply-side determinants of agricultural policy expenditure for each of these member states, and enter these data into our estimate of equation (4). This study does this for each of the years from 2004 to 2010, and for each year it adds the simulated expenditures on NAPs across the 21 member states.

The results are summarised in Figure 4.¹⁰ The differences between CAP expenditure and simulated expenditures on NAPs for the EU 21 are relatively small in most years. The largest difference, estimated for 2010, amounts to just under 0.2 percent of GDP in the EU 21, or roughly Euro 23 billion. In most years it does not appear that the CAP has been much more or much less expensive than the NAPs that would have replaced it.

That said, these simulations provide some evidence that the CAP is capping agricultural spending in the EU in recent years. From 2004 to 2006, the CAP was more expensive than or roughly as expensive as the simulated NAPs; since 2007 the simulated NAPs have been consistently more expensive than the CAP. In the first decades of the CAP, when the EU's budget grew rapidly, the common-pool problem and the resulting propensity to adopt increasingly expensive support measures went largely unchecked. Increasingly, however, limits on the growth of the EU budget, and on the share of CAP spending in that budget, may have disciplined agricultural policy and provided a counterweight to national preferences for higher levels of agricultural protection and support. In addition, peaking prices for agricultural commodities in 2007 and from 2010 onward have weakened the case for farm support.

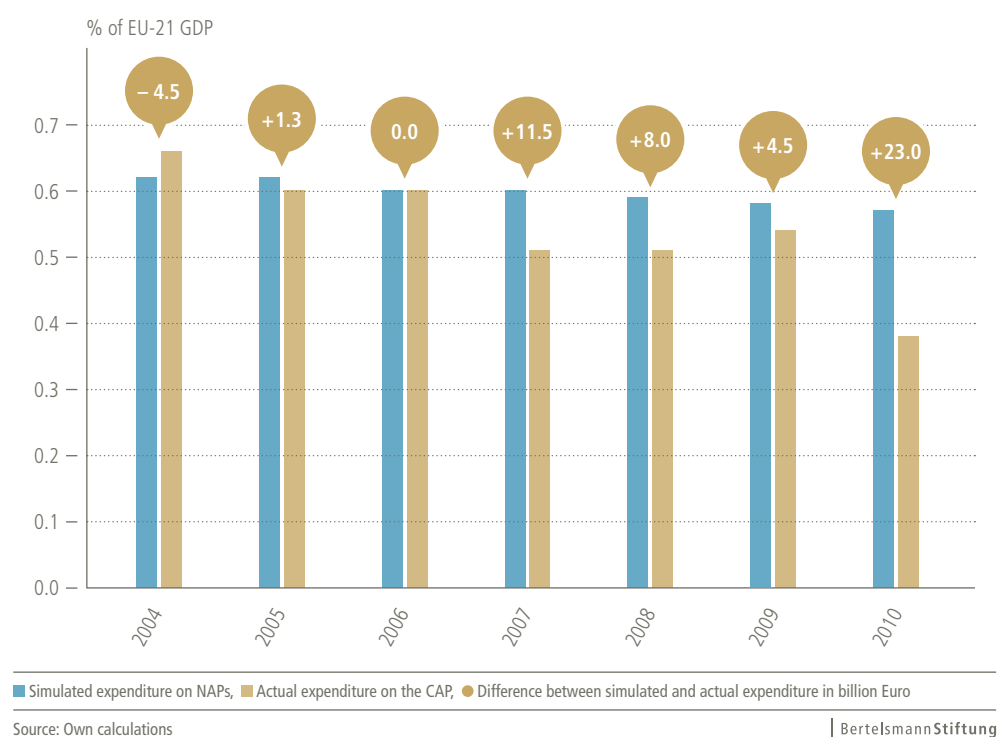
⁹ These member states are the EU 15 plus the Czech Republic, Estonia, Hungary, Poland, Slovakia, and Slovenia. Missing data preclude simulation for the remaining member states (Bulgaria, Cyprus, Latvia, Lithuania, Malta and Romania). The EU 21 accounted for over 98 percent of the EU's GDP in 2009.

¹⁰ The simulations depicted in Figure 4 are based on econometric estimates that are subject to uncertainty. The confidence intervals around our simulated EU-21 NAP expenditures are wide, which means that these expenditures could be considerably higher or lower than the most likely values presented in Figure 4. Using these confidence intervals we can determine that simulated expenditure on NAPs in 2010, for example, is higher than actual expenditure on the CAP with 74 percent probability.

In Figure 5, actual 2009 CAP contributions and receipts, and simulated 2009 NAP expenditure is compared for each of the 21 member states. The aggregated results presented in Figure 4 above show that difference between actual CAP expenditure and simulated NAP expenditures for the EU-21 amounted to Euro 4.5 billion in 2009. Hence, replacing the CAP with NAPs in 2009 would have increased expenditure in some member states and reduced it in others, with the aggregate gains and losses for the EU as a whole roughly balancing. Using 2009 as a basis for comparison therefore highlights the redistribution in public expenditure between member states that is caused by the CAP.

Two comparisons are made. First, Figure 5 compares simulated NAP expenditure in 2009 with what each member state actually contributed to CAP expenditure in 2009. This comparison shows how much the ministry of finance in each member state could save (or how much more it would spend) if the CAP were replaced by national policies. Second, simulated NAP expenditure is also compared with the receipts that each member state received due to the CAP in 2009. This comparison shows how much more (or less) farmers in each member state would receive if the CAP were replaced by national policies.¹¹

Figure 4: Actual EU-21 CAP expenditure and simulated expenditure on national agricultural policies by 21 individual member states (percent of EU-21 GDP, and difference in billion Euro)



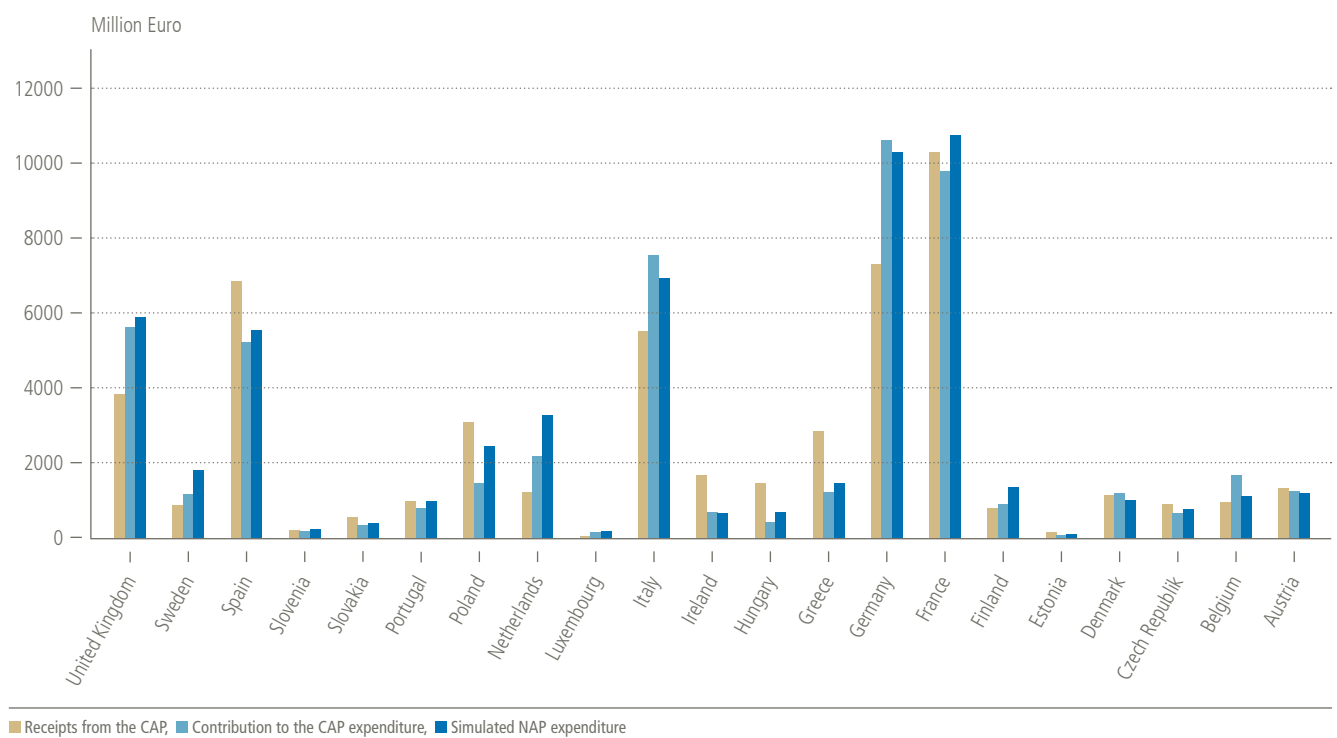
¹¹ The simulated NAP expenditures in Figure 4 are also estimates and, hence, subject to uncertainty.



According to the simulations, Germany, for example, would have spent roughly Euro 300 million less on a NAP than it contributed to financing the CAP in 2009. In other words, renationalising agricultural policy would have saved Germany some money. In addition, all of the money that Germany would have spent on its NAP would have accrued to German agriculture, whereas under the CAP almost one-third of its contribution is transferred to other countries. Hence, replacing the CAP with a NAP would not only have reduced German agricultural policy expenditure by Euro 300 million, it would also have increased the amount of support provided to German farmers, by almost Euro 3 billion. The situation in the UK and to some extent Italy is similar. The shift to a NAP would have increased support to domestic farmers in these countries primarily by reducing the amounts that they currently contribute to support agriculture in other member states.

The situation in France differs from that in Germany, Italy, and the UK. According to the simulation, France would have spent roughly Euro 1 billion more on a NAP than it contributed to the CAP in 2009. One half of this amount would have replaced net receipts of roughly Euro 500 million that France received from the CAP in 2009, and the other half would have represented

Figure 5: Actual 2009 contributions to CAP expenditure and simulated 2009 national agricultural policy expenditure for 21 member states



Source: Own calculations

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increased support for agriculture in France. Given the freedom to determine its own agricultural policy, the simulations suggest that France would opt for, and pay for, higher levels of support.

The Netherlands and Sweden stand out as countries that, like France, would have spent considerably more on NAPs than they contributed to the CAP in 2009 (Euro 1.1 and Euro 0.6 billion more, respectively). However, like Germany, both are net contributors to the CAP, so shifting to NAPs would have greatly increased the support provided to their farmers (more than doubling it in the case of the Netherlands). Spain, Greece, Hungary, and Ireland would have spent roughly as much on NAPs as they contributed to the CAP in 2009, but since they are all major net recipients from the CAP, the shift to NAPs would lead to large reductions in agricultural support.

Poland is unique in that it would have spent considerably more on a NAP than it contributed to the CAP in 2009, but nevertheless would have provided its farmers with considerably less support than they received from the CAP. While farmers in Spain, Greece, Hungary, and Ireland would receive roughly as much support under NAPs as their governments currently contribute to the CAP, it appears that farmers in Poland would be able to persuade their government to spend much more on a NAP than it is currently contributing to the CAP.

Conclusions

This study has compared the actual level of public expenditure on agricultural support in the EU with the hypothetical level that would result if each member state were to implement its own national agricultural policy. It proceeded in two steps, first proposing a model of the determinants of public expenditure that is based on insights from the literature on the political economics of agricultural policy making, and estimating this model econometrically using data from 20 non-EU OECD members between 1986 and 2010. Second, it used the results of this estimation to simulate the levels of public expenditure on national agricultural policies that 21 EU countries would choose if there were no CAP.

One clear result emerges from the analysis. Overall we do not find that the CAP has greatly increased or reduced public expenditure on agriculture compared with the national agricultural policies that would have replaced it. However there is some indication that in recent years the CAP has begun to cap expenditure on agricultural policy. National agricultural policies would have cost roughly Euro 23 billion more in 2010 than was spent on the CAP in that year. While the common pool problem may have inflated spending on agriculture in the early decades of the CAP, budget ceilings and the growing importance of policy areas other than agriculture in the EU may be helping agricultural policy makers to resist pressures for more protection and support at the national level.



To put these results in perspective several points should be made. First, the model that we use to simulate national agricultural policy expenditures appears to be robust and plausible. However, it is subject to the weaknesses that are associated with all such models. In particular, while it is able to explain a large portion of the observed variation in agricultural policy spending over time and across non-EU OECD countries, it does not explain all of this variation. Agricultural policy choices are influenced by additional factors and by national idiosyncrasies that we have not been able to consider. Furthermore, our model generates simulations that are subject to large margins of error and must therefore be interpreted with caution.

Second, our analysis does not take international agricultural policy coordination into account. The national agricultural policies that would replace the CAP would also be subject to WTO disciplines on the types and levels of policy measures that governments are permitted to apply. National agricultural policy choices would presumably be limited by the need to maintain an EU-wide customs union, which would preclude measures such as price support at the national level. In the absence of a CAP, some member states (the Benelux countries, perhaps) might even decide to implement regional agricultural policies. All of these factors might restrict national agricultural policy choices in ways that our model is not able to capture.

Finally, the finding that the CAP may be capping public expenditure on agricultural support in recent years does not necessarily mean that the CAP produces EAV. There is some indication that the CAP is producing one specific type of EAV that is sometimes attributed to it: policy coordination that reduces political-economic distortions and limits subsidy races. However, our findings do not generate any insights into whether the CAP provides other types of EAV. Defenders of the CAP will argue that it also generates a range of public goods that national policies would not generate; critics can point to a variety of public bads and inefficiencies.

Of course, the national agricultural policies that we simulate are hypothetical. As the comparison of actual CAP expenditure and simulated national policy expenditures in 2009 shows (Figure 5), shifting to national agricultural policies would result in a significant redistribution of fiscal burdens and agricultural spending among the member states. Hence, renationalisation of the CAP would seriously disturb the delicate *juste retour* balance that has emerged from countless negotiations and compromises over the history of the EU. As the recent EU budget negotiations in February 2013 have highlighted once more, the need to maintain this balance largely defines what can and what cannot be achieved in EU policy making. For this reason, it is highly unlikely that the member states would ever agree to renationalise agricultural policy, regardless of whether this would lead to more or less European value added.

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Appendix

Table Appendix 1: A review of empirical studies of the determinants of agricultural policy

Paper	Data	Dependent Variables	Independent Variables								
	Period	Sample	Level of protection		Level of producer subsidies	Institutions & governance	Economic variables	Trade & openness	Fiscal policy	Country group dummies	Special events dummies
Beghin & Kherallah (1994)	1982 – 1987	25 industrial countries	×	×	×	×	×	×	×		
Homma & Hayami (1986)	1955 – 1980	10 industrial countries	×			×	×				
Inhwan (2008)	1986 – 2004	23 industrial countries	×			×	×		×		
Jonsson (2007)	1986 – 2003	Euro-group		×		×					
Masters and Garcia (2010)	1995 – 2007	68 industrial countries	×		×	×	×				
Olper (1998)	1975 – 1989	8 EU countries	×			×	×	×			
Olper (2001)	1982 – 1992	35 developed & developing	×		×	×	×	×			
Swinnen et al. (2000)	1972 – 1985	37 industrial countries	×		×	×					
Swinnen et al. (2001)	1977 – 1985 (PSE percent) 1990 (NPC)	Belgium	×	×		×					
Thies & Porche (2007)	1986 – 2001	30 industrial countries	×			×	×			×	

**Table Appendix 2:** Description of the variables used to model public expenditure on agricultural policy

Group	Variable	Description	Units	Min.	Max.	Mean	Std. dev.
Dependent variable	PublicExp	Public expenditure on agricultural policy (PSE-TPC1)/GDP	percent of GDP	0.02	3.31	0.79	0.62
	MarketPolicy	Transfers from consumers to producers (TCP1/GDP)	percent of GDP	−0.53	6.15	0.81	0.97
Demand-side determinant	ShareAgPop	Share of agriculture in total population	percent	1.66	36.99	10.06	8.29
	AgGDP/NonAgGDP	Ratio of GDP per capita in agriculture to GDP per capita in rest of economy	Ratio	0.16	1.24	0.55	0.25
	SoilSuitable	Share of very fertile soil in total land area	percent	1.13	26.33	12.10	7.25
Supply-side determinant	GovDept	Ratio of central government dept to GDP	percent	4.10	183.53	37.55	28.47
	ResourceWealth	Dummy = 1 if fossil fuel, mineral & forests rents > 4.36 percent of GDP (>90th percentile in sample)	Dummy (1/0)	0	1	0.21	0.41

Source: Own illustration

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Table Appendix 3: Regression results[†]

Dependent variable	PublicExp		
Independent variables	Coefficient	Standard error	Significance [†]
Constant	0.2811	0.2187	
AgGDP/NonAgGDP	1.1088	0.3897	***
(AgGDP/NonAgGDP) ²	−0.8056	0.3035	***
ShareAgPop	0.0416	0.0055	***
SoilSuitable	−0.0499	0.0147	***
(SoilSuitable) ²	0.0016	0.0005	***
ResourceWealth	−0.4854	0.0898	***
GovDebt	−0.0015	0.0004	***
Dummy (New Zealand)	−0.7528	0.1128	***
Dummy (Norway)	0.7416	0.0964	***
MarketPolicy	0.2482	0.0681	***
Number of observations	354		
R ²	0.801 (0.796 adjusted)		

[†] Estimated using 2SLS. As identifying restrictions we assume that MarketPolicy (but not PublicExp) is influenced by per capital income and by year fixed effects that account for annual variation in conditions on world markets for agricultural products.

***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. Standard errors are heteroskedasticity-robust.

Source: Own illustration

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One Embassy with 27 Flags – The Potential Benefits from European International Representations¹

Friedrich Heinemann, Marc-Daniel Moessinger, Steffen Osterloh, Stefani Weiss

Foreign policy is the classic textbook case for a typical nation-wide public good in federal countries. Therefore, it does not come as a surprise that this policy plays a role wherever fiscal federalism approaches are applied to the EU and its budget. It appears straightforward that Europe could realize considerable economies of scale if it assigns foreign policy-related tasks to the European level. Ongoing global trends like climate change, migration pressure, and globalization of markets underline the argument: Europe as a unified player should be more influential compared to the fragmented role of 27 national players in influencing these trends (ECORYS et al. 2008: ch. 18.5). Uncoordinated national activities are confronted with numerous spillover problems which may result in freeriding and the suboptimal provision of international activities. Therefore, foreign relations are regularly emphasized as one of the priorities for future reallocations in the European budget.²

However, plausible textbook cases often do not stand up to the challenges of a practical application with all its complexities. And the big and obvious problem with the Europeanisation of

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² "In contrast, there are areas in which EU involvement is probably too limited. For instance, one would think that defense and foreign relations is a policy area typically allocated to the highest level of government. Instead, the EU has a limited (although growing) role in these areas" (Alesina, Angeloni and Schuknecht 2005: 276/277). Begg (2009: 42) points out that "defence or foreign representations, for instance, exhibit many characteristics that warrant delegation to higher levels of government". Similar arguments can be found in ECORYS et al. (2008) and Gros (2008).



foreign policy is the undeniable existence of national interests. For instance, Alesina et al. (2005: 283) point out that “there are significant economies of scale and externalities to be exploited in foreign policy and defence, provided geopolitical interests are similar”. While this conclusion states the key assumption for the benefits of harmonization, i.e. the homogeneity of interests, this homogeneity of foreign policy interests will often not exist. As a heritage of the colonial era or the cold war history, European countries often have individualistic approaches towards certain countries or world regions which could never be adequately reflected by a homogeneous EU foreign policy. The trade-off between a potential European added value and sensitive limitations of national sovereignty also poses problems for quantification. Even if data would allow calculating the potential costs savings from a far-reaching transfer of foreign policy competencies to the European level, any such result would hardly be taken serious in the political debate. Therefore, meaningful quantifications must take account of the fact that certain dimensions of international relations will remain (also) a national activity for the foreseeable future. And, if possible, quantifications should provide a range of potential costs savings conditional on different options of Europeanisation.

This case study tries to meet this quantification challenge through a focused and differentiated research strategy. The approach is focused since it concentrates on a well-defined part of foreign policy activities: the provision of international representations covering embassies and consulates.

In a naïve approach, one could now simply compare the expenditures of the current diplomatic missions in Europe to the costs of a mutualized diplomatic service which could, for example, be the European External Action Service (EEAS). This approach would be naïve because an organization like the EEAS provides a very different bundle of services compared to national representations. Hence, a more complex scenario has to be applied. Our approach is differentiated along two dimensions. First, it analyses potential benefits from a European provision both at the output and the cost side. On the output side, European representatives could offer European citizens a more complete worldwide coverage. On the cost side, the provision could benefit from substantial economies of scale. The second differentiation includes the calculation of potential cost savings for different degrees of a possible European provision of the policy field under scrutiny. It is thus possible to show to which extent European money could create added value on a scale from a low to a high degree of Europeanisation in the provision of international representations.

The results indicate the existence of a non-trivial cost saving potential of Euro 420 million to Euro 1.3 billion annually. This constitutes an efficiency gain in a range between six percent and 19 percent of current national costs.

Theoretical and legal aspects of a potential European added value

Before embarking on the quantification approach, some theoretical reflections on the sources of European added value in diplomatic services and on legal aspects are important. International representations offer a whole spectrum of services, which broadly can be classified into two segments: In the *consular field*, the representations are the contact point for their nationals abroad or for foreigners willing to enter the country, e.g. through the provision of visa. For their nationals the representations also provide consular protections whenever they need help in that country. In the *embassy field*, they play a role for the political, economic, cultural or military relations to the host country. Embassies also serve as information provider both for the home and host country. While the former area of responsibilities is rather targeted at services to the citizens, the latter addresses political or economic actors.

Theoretical reasoning

In principle, several sources of European added value could be relevant if Europe would replace the national representations with EU representations.

Economies of scale: Today, EU countries have to pay for multiple structures. In many locations a large number of EU member countries are present and provide services for EU citizens in numerous facilities (see below). For example, in places like New York and Shanghai, 24 and 21 out of the total 27 EU member countries run consulates. Clearly, a pooling of facilities would cut back costs. The provision of international representations is associated with minimum fixed costs, which even small and medium countries will have: the cost for real estate, administration, minimum staff for functioning consulate services, and related support (general administration, security, information technology, etc.). For some of the related functions – e.g. provision of emergency assistance – the related public good has the function of insurance with a stochastic occurrence of related events (e.g. nationals suffer from losses or theft, fall ill, need legal protection). While an EU representation would benefit from the law of large numbers and would be able to utilize its emergency capacities to a large degree, national representations have to provide structures with under-utilized capacities.

A realistic modelling of economies of scale must, however, differentiate between different functions: The potential of cost savings is obviously larger for standardized services that are similar and homogeneous for all EU member countries and lower for highly specific services with strong national peculiarities. The provision of visas under common EU rules, for example, has a larger potential for costs savings compared to the taking care of economic relations where national specificities (industry structure, export goods) play a role. These differentiations will



be addressed in a costing model below. Today, economies of scale are far from fully realized although some structures have emerged that try to reap some of the potential cost savings (for example, the cooperation of the Scandinavian member countries in the Nordic embassies).

Underprovision: In addition to the problem of an unnecessary cost burden, underprovision of representations may occur. Under the regime of national representations, one can assume that a national perspective guides the optimization on locations. This means that, for example, a consulate in a certain peripheral US location is only established if its costs stand in some reasonable relation to the benefits which arise to the nationals who demand services in that remote location. National and EU optimization will come to different results for the optimal network of representation. For some places, the overall benefits for EU citizens will be larger than the minimum fixed costs of establishment whereas the national benefits may fall short of this cost level. Thus, the national network will end up with a density which is lower compared to the optimization outcome of a European approach. This is a special example of Oates' general insight, "It does not become desirable to provide the good until the population reaches a certain critical size" (Oates 1988: 88).

Internalization of benefit spillovers: The underprovision problem is aggravated by the existence of positive spillovers. Benefits of representation for other EU citizens are hardly important in a member state's reflection on the use of national money. However, national representations of EU member countries produce benefit spillovers to EU citizens in general, e.g. through the provision of assistance in cases of emergency. EU citizens can use other EU countries' consulates or embassies if no own representation is available (see below). The consequences are underprovision and freeriding. Small and medium-sized countries have an incentive to freeride on the consulates of larger EU countries. But even the large EU countries might fail to establish consulates in remote places. Thus, the provision of consulates can be too low since the overall benefits for all EU citizens are larger than the costs of a consulate while costs are too high for each single country. But these costs are too high for each single country. Cooperation through a common EU structure would be able to address these inefficiencies and contribute to a more efficient distribution of representations.

Better quality of diplomatic services: A common diplomatic representation of all 27 EU member countries can also improve the overall quality of diplomatic services. Examples of pooling and sharing, for instance with respect to the US, show that the information network can be enhanced. Based on a European division of labour, an EU ambassador has thus much better information capacities as compared to national agents. This will improve the overall quality of diplomatic missions, for example concerning intelligence or best practise examples.

These theoretical considerations point to two distinct dimensions for the consequences of EU missions: First, there is a cost saving element through the possible cheaper European production of the same level of services as before under the national structures. And there is a cost increasing element through a higher density of European representations compared to the national

optimization. Although both effects can be regarded as efficiency enhancing they counteract with respect to the budgetary consequences. Our quantitative analysis below will take up this differentiation. The detailed costing of the economies of scale argument will be complemented by a case study on EU representation density in the US.

Legal preconditions

Before embarking on the quantification of the described effects, some hints to the legal preconditions for the model of an “EU embassy with 27 flags” are helpful. Models of regional cooperation of member countries that are already practiced indicate that there are no severe legal constraints that could prevent member states from establishing representations combining services for up to 27 member countries. According to the German law on external actions (Article 4, Gesetz über den auswärtigen Dienst), for instance, the minister of foreign affairs is empowered to conclude agreements on the foundation of common diplomatic missions with other countries, especially EU member states. Furthermore, some member states already cooperate in Common Visa Application Centres, for instance in Chisinau, Moldova; Ljubljana, Slovenia; or in Istanbul, Turkey. The networks of Nordic countries as well as those of the Benelux states are further examples for such shared visa services (Hobolth 2011).

Moreover, the Lisbon Treaty has created provisions that explicitly open the door for more intense cooperation in the provision of diplomatic services. Article 20 of the Treaty on the Functioning of the European Union (TFEU) stipulates the rights of citizens of the Union to “enjoy, in the territory of a third country in which the Member State of which they are nationals is not represented, the protection of the diplomatic and consular authorities of any Member State on the same conditions as the national of that State.” According to Article 23 TFEU, member states are obliged to adopt the necessary provisions so that this highest level of mutual protection of EU nationals is achieved. Another legal development clearly pointing into the direction of a harmonized European production of diplomatic services is the Common Consular Instructions (CCI) for Schengen countries. These instructions have not only led to harmonized quality standards for this kind of service but also put an end to non-professional visa provisions through honorary consulates.

Finally, a distinction of the model of an “EU embassy with 27 flags” and the already existing EEAS is necessary. The latter was established through the Treaty of Lisbon (Article 27,3 of the Treaty on the European Union, TEU) as a “functionally autonomous body of the Union under the High Representative” (Council Decision 2010, Article 1). According to this, the EEAS especially supports the Union’s High Representative for Foreign Affairs and Security Policy by conducting his tasks laid out in articles 18 and 27 TEU (e.g. fulfilling the mandate on the Union’s common foreign and security policy). Furthermore, the EEAS shall assist the European Council



as well as the European Commission in the area of external relations. Diplomatic services of the member states shall cooperate with the EEAS, especially in delegations in third countries or international organizations. In accordance with the High Representative of the European Union it is further possible to open delegations that then represent the European Union. The delegations are further obliged to share information with member states' diplomatic services and, if it is wanted, "support the Member States in their diplomatic relations and in their role of providing consular protection to citizens of the Union in third countries on a resource-neutral basis" (Council Decision 2010: Article 5). As an independent provision of visa or similar diplomatic services is not planned, however, the focus is primarily on EU interests. That is, the EEAS is rather a service for a broader common policy and representation of the EU in third countries than a substitute for national diplomatic services or delegations. In spite of the existence of the EEAS, all EU member countries possess a worldwide network of embassies and consulates. Thus, the EEAS with its current objectives and construction does not yet promise substantial realization of European economies of scale.

Summing up, there are good theoretical arguments that substantial resources could be saved (and/or the provision of representations be improved) if a unified European network of international representations replaces the uncoordinated national networks. However, even if analytically sound cost arguments point towards a European provision of public services, political fundamentals can potentially counteract the implementation. Foreign and defence policies enable a nation to define what it stands for and represent the values and preferences of the nation's citizens. The EU thus "cannot expect to intrude in these areas just because economies of scale might make it more effective in delivering policy" (Begg 2009: 42). The quantification of the potential added value, however, is an important contribution for a better informed optimization decision on the trade-off between potential cost savings and national autonomy.

Potential for centralisation

Tasks and services of embassies and consulates

The main tasks of consulates and the consular section of embassies are to represent the home country and its citizens, to protect their interests, and to foster the various relationships between the sending and the receiving country. Besides visa and passport authority, the consulates and embassies inform their sending country about current developments and have several administrative tasks. A trade and economic section aims at enhancing trade and supports national enterprises in their activities in the receiving country whereas cultural services should develop exchange and inform the receiving country about the sending country. The main difference between consulates and embassies is in the different sphere of action: While consulates have a rather regional focus, embassies are broadly aligned and additionally

foster political relations to their host country. A full list of tasks is stipulated in Article 5 of the Vienna Convention on Diplomatic Relations (completed 24 April 1963, see WÜK 1963):

- Protection of the home country's interests (and citizens abroad);
- Development and cultivation of economic, cultural, and scientific relations between the home country and the receiving country;
- Information on the development of the receiving country;
- Support and help for citizens of the home country in the receiving country;
- Passports, etc., for citizens of the home country and visa (or other required documents) for citizens of the receiving country who want to enter the home country;
- Administration and notarial tasks according to laws in the receiving country;
- Protection of citizens' interests in inheritance cases;
- Legal support;
- Help by submitting documents;
- Control of ships and aircraft of home country in receiving country;
- Other tasks determined by national law.

A differentiated view of the communitarisation potential

Based on the aforementioned arguments concerning economies of scale, in a naive approach one could argue that saving potentials are the same for every task conducted by a diplomatic mission. Such a methodology, however, suffers from various drawbacks since both the aims of the several diplomatic tasks as well as the underlying costs differ between and within EU member states. The question thus is which tasks or sections of a diplomatic mission are best suited for communitarisation and which are not?

According to an expert survey that has been accomplished with various current and former ambassadors, an exemplary structure of an exemplary representation (see Table 1) has been derived. Based on this survey, the main functions of diplomatic missions are assigned to the sections consular services, political relations, economic relations and trade promotion, official development aid, military mission, cultural relations, administration, security services, press, management, and other services.

Obviously, these functions differ with respect to their likely feasibility of full communitarisation. Political relations as well as the conduct of economic and trade promotion can have many aspects that are specific for each EU country. Thus, even in the case of an EU embassy with 27 flags, especially countries with high ambitions for an independent foreign policy or specific interests in economic relations might like to draw on their own separate and additional staff to fulfil the related tasks. The same holds true, albeit to a lesser extent, for development aid and



cultural missions. Country-specific issues are less relevant for administration, consular services like the visa application procedure, or the mission's security services. For these functions, fewer obstacles exist for reaping economies of scale.

Information on the division of personnel on the different sections of an exemplary EU representation is shown in Table 1.³ All figures are based on expert assessments of both current and former ambassadors for an exemplary EU diplomatic mission of a large, medium, and a small EU country. There are obviously enormous differences concerning the overall staff and its division, both between and within different EU member countries. Nevertheless, this assessment can provide important insights in the different weights of functions in the diplomatic area. As can be seen from the table, the proportionally largest share is administration which accounts for approximately one-third to 40 percent of a diplomatic mission's staff. According to the second and the third expert, security services only account for approximately one percent of the total staff, whereas the first expert assesses security services as a part of administration.

Table 1: Average distribution of staff in an exemplary representation

Functions	Expert 1*	Expert 2	Expert 3
Consular services	10	15	13
Political relations to host country	10	6	18
Economic relations, trade promotion	10	12	17
Official development aid	5	8	18
Military mission	15	4	1
Cultural relations	10	4	1
Administration	30	42	31
Intelligence	—	1	—
Security services	—	1	1
Press	10	—	—
Management	—	5	—
Other	—	2	—

Notes: Expert 1 refers to a large, Expert 2 refers to a medium and Expert 3 refers to a small EU country. * Security is part of administration.

Source: Own illustration

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³ In case of a one-man diplomatic mission, we assume that the division of personnel of different sections is equivalent to the apportionment of time the consular spends on the different tasks.

However, although there are some remarkable differences concerning the different expert assessments of several sections, such as military missions or cultural relations, some important similarities emerge. Both the assessed shares of personnel working in the sections consular services or administration are comparable across the different expert assessments. Taken together, these sections account for 40 percent to approximately 55 percent of an exemplary mission's overall staff.⁴ The results thus underline that a substantial share of an exemplary diplomatic mission's staff is working in sections for which there is a strong case that communitarisation is feasible. These weights will be used in subsequent quantification. A further caveat must be stressed from the beginning: Wage levels and an employees' remuneration differ across different functions and between different nations. In most Eastern European and Asian missions, for instance, the consulate section is by far the largest section of a representation. Most of the employees, however, are regional staff and are remunerated according to the wage levels of the local market. In a developing country it is thus possible that the mission's consul alone is more expensive than the total regional staff employed. The same also holds true for the remaining administrative tasks.

In addition, one has to account for wage differentials on the national and the supranational level. If, for instance, most of the employees of a common EU diplomatic mission are paid with EU-wages, the saving potential shrinks as compared to a situation with national wages to the extent EU wages exceed the average wages of national staff across EU member countries. For instance, EU officials who have to leave their home country to fulfil their specified tasks in the European Commission earn a 16 percent expatriation allowance (Regulation No 31 (EEC), 11 (EAEC), Art 69). Additionally, Gräble (2013) has shown that there is a huge difference in net earnings between national and EU officials. That is, to end up with the net income of a European official, the gross income of a national public servant must increase by additional Euro 6,337.92.⁵ We will come back to this problem in our conclusions.

⁴ This also holds if one includes security services to administration, which is done by Expert 1.

⁵ This difference stems from both differences in taxes and special allowances. The figure refers to grade 16, age bracket three and compares European and German public servants with two children (Gräble 2013).



Quantification of European added value of a common EU diplomacy

Based on the aforementioned deliberations on cost saving potentials, it is now possible to calculate the potential European added value of a common EU representation. One starts with a focus on the cost saving potentials through replacing the multitude of national representations by joint EU 27 missions. Here, there are several steps. A first 'naïve' approach is based on a simple counting of missions. A second more refined approach applies a costing model which takes account of the functional differentiation of a mission's services introduced above. Thus it is possible to quantify a range of possible cost savings: from an optimistic counting scenario to a rather cautious costing model.

Finally there is a case study scenario for EU representations in the US to shed light on the other side of the coin. In this approach, it can be seen that the services for European citizens can be improved with an EU planning of locations as compared to the current situation in which each EU member state decides on its own.

Cost-saving potential of EU missions

For the quantification of cost-saving potentials there is a unique dataset which comprises all embassies and consulates of all EU 27 member states in 2011 (see Table 2). The data reveal that the number of embassies and consulates increases with population size. In other words, smaller countries are less well represented as compared to larger EU member states. This indicates that political and economic needs to be represented by an embassy do not in all cases compensate for the high fixed costs of having a representation. This especially holds true for the smaller EU member states.

A simple accounting exercise already points towards economies of scale which larger countries might achieve in that field. Clearly, the number of missions does not increase in proportion with the size of the population. The larger a country's population, the more taxpayers can contribute to finance each single diplomatic mission. For example, the ratio between the number of population and the number of embassies in 2011 amounts to 17,955 for Malta, 80,026 for Ireland, 368,653 for Spain and 537,515 for Germany (Table 2).

Of course, these comparisons may disguise high differences in the costs of a mission with a larger country's mission being more costly. Some simple calculations reveal, however, that a cost advantage of large countries seems to persist. The unit costs per diplomatic mission amount, for example, to Euro 0.8 million for Malta and to Euro 3.9 million for Germany (Emerson et al. 2011). The factor 30 in the population-embassy-ratio differential is, for this case, only confronted with

Table 2: Embassies and consulates per EU member state

EU Member State	Embassies	Citizens/Embassy	Consulates	Citizens/Consulate
Luxembourg	20	25,292	5	101,166
Malta	23	17,955	4	103,240
Estonia	32	41,864	2	669,823
Latvia	35	64,083	3	747,639
Slovenia	41	50,069	8	256,603
Lithuania	42	79,063	7	474,379
Cyprus	46	23,992	4	275,912
Ireland	56	80,026	8	560,179
Slovakia	57	95,324	0	—
Finland	75	71,515	8	670,453
Hungary	75	133,449	16	625,544
Portugal	77	138,219	44	241,883
Bulgaria	78	96,709	16	471,458
Czech Republic	82	128,355	16	657,818
Austria	84	99,818	11	762,250
Greece	85	133,165	44	257,251
Poland	90	424,305	37	1,032,094
Romania	92	233,065	37	579,514
Sweden	93	100,851	14	669,937
Belgium	95	114,517	28	388,541
Denmark	104	53,309	31	178,843
Netherlands	115	144,454	25	664,489
Italy	123	491,736	78	775,430
Spain	125	368,653	63	731,454
UK	149	417,576	68	914,982
Germany	152	537,515	61	1,339,382
France	160	405,479	70	926,809
EU	183	2,737,705	227	2,207,048
Total (excluding EU)	2,206		708	
Total (including EU)	2,389		935	

Source: Own illustration

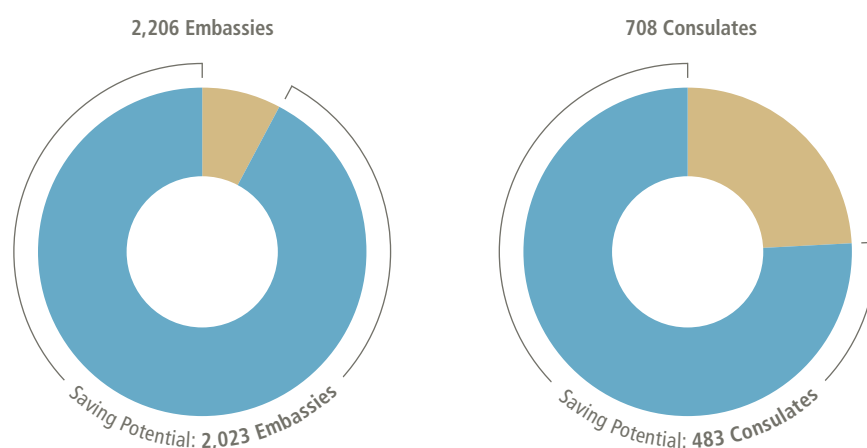
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a factor five cost-mission-differential. Taken together, these data indicate the presence of economies of scale in the provision of diplomatic services, even if one takes into account that larger member states hold more diplomatic missions available.

Our first calculation step is informative but naïve, since it only compares the number of diplomatic missions but does not account for differences in the scope and scale of diplomatic services provided per mission. Given the data at hand, one could now calculate the number of embassies and consulates that are redundant if there is one common EU representation fulfilling all functions of the former national representations. One applies a simple algorithm to define the optimal network of EU representations in such a way that an EU representation would be present in each country (embassy) and city (consulate) where today at least one national representation exists. Then one can compare the number of national representations today with this 'optimal' EU network. The results reveal enormous redundancies (see Figure 1). While all EU member states together had 2,206 embassies worldwide in 2011 (see also Table 2), exactly 2,023 embassies could be saved. As for consulates, 483 of the existing consulates can be identified as redundant. However, as pointed out before, this calculation is naïve due to two limitations: First, it does not yet imply any information on the cost comparison between a fictitious EU representation and an existing national representation. Second, it does not account for the fact that from an EU perspective a larger network with better spatial coverage could be optimal.

Figure 1: Saving Potentials: Number of embassies and consulates



Source: Own illustration

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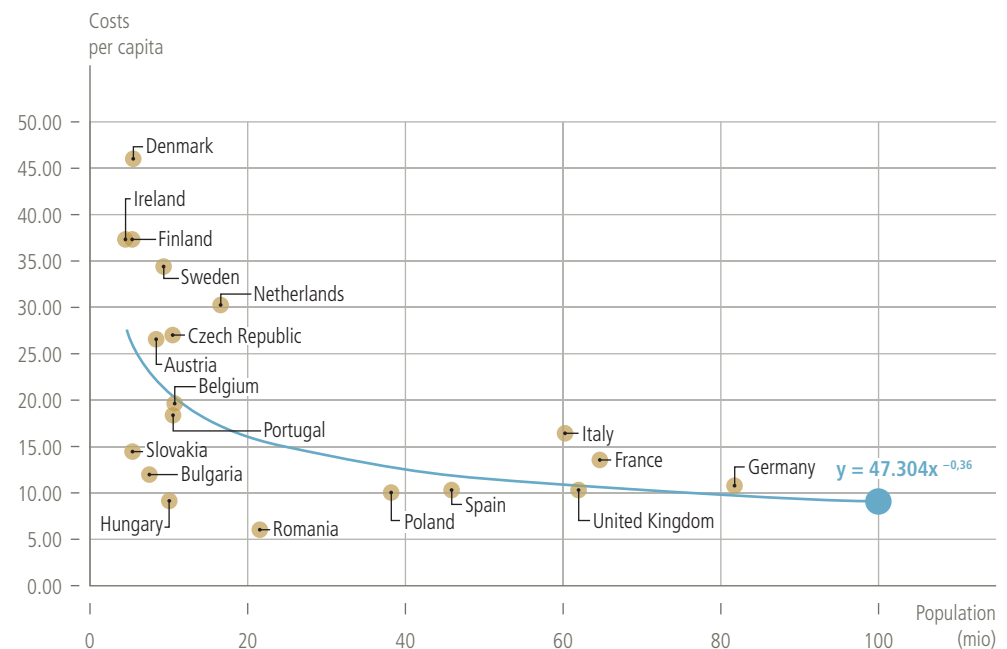
The next step, therefore, requires a more precise costing of these saving potentials and includes the costing of the counterfactual, which is a hypothetical common EU representation. Based on the aforementioned arguments concerning the existence of economies of scale, one can now

calculate the cost of the counterfactual on the assumption that the EU can provide missions with the same cost conditions as a fictitious single member state with 501 million citizens.

The diplomacy costs per capita depending on a country's population size are shown in Figure 2. Although the overall diplomacy costs per country increase with population size, e.g. Euro 73 million in Slovenia vs. Euro 320 million in Sweden vs. Euro 873 million in Germany (Emerson et al. 2011), a clear pattern concerning the per capita costs emerge. The larger a country's population is, the lower are the per capita diplomacy costs.⁶

Now it is possible to derive the hypothetical costs per capita: if not of the single member states then for the EU as a single actor providing diplomacy services. Since the relation between the different EU member states is not linear, i.e. the decrease in per capita costs slows down the larger the population is, one employs a power function to estimate the fitted line of the different data points. Based on this function, it is possible to derive the hypothetical diplomacy costs per capita of a common EU representation.

Figure 2: Diplomacy costs for missions per capita in relation to population



Source: Own illustration

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⁶ Since countries that are very small with respect to population size might bias the estimation of the power function, the following countries are excluded: Cyprus, Estonia, Luxembourg, Latvia, Lithuania, Malta, and Slovenia. We thank Robert Schwager for this comment. Furthermore, data for Greece are not available.

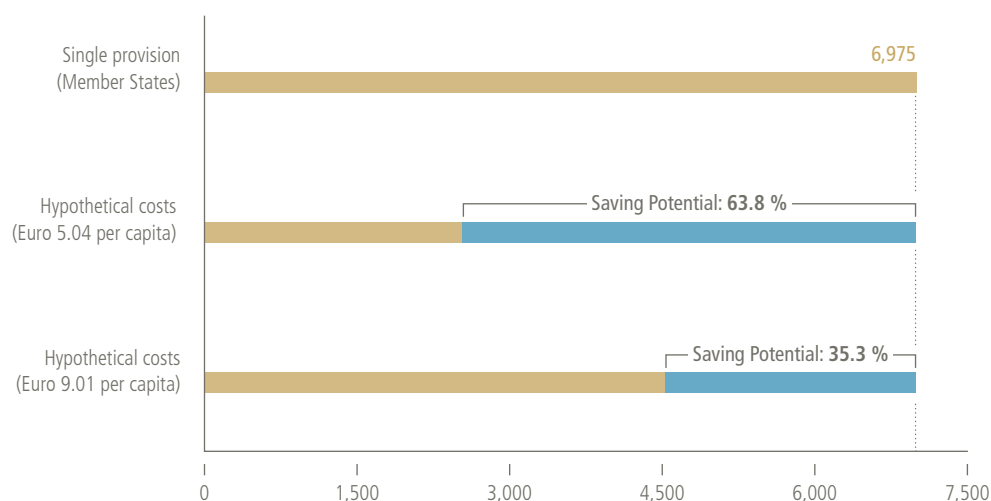


Plugging in the EU population of 501 million people, the diplomacy costs per capita is Euro 5.04. However, extrapolating the trend line from the German population, which is the largest value with around 82 million inhabitants, to the EU's population of around 501 million may be questionable. There is no cost information for countries larger than Germany and thus it is not possible to prove that economies of scale would continue far above the German population size. One may therefore also employ a more conservative scenario and use the hypothetical value of diplomacy cost per capita which emerges for a population of 100 million inhabitants (= Euro 9.01 diplomacy costs per capita). While the costs saving potentials are presented for both per capita cost values, we argue in favour of the conservative estimation to prevent overoptimistic results.

As a next step, we now calculate the overall costs of a hypothetical European diplomacy. Therefore, we multiply the per capita costs derived before with the EU population. These values are then compared with the actual costs of the sum of all different national diplomacies based on data from Emerson et al. (2011).⁷

The results reveal saving potentials of a common EU representation compared to single member state representation which range from 4,448 million euro (optimistic scenario) to Euro 2,461 million (conservative scenario). This amounts to 63.8 percent of total current cost for the optimistic scenario and 35.3 percent for the conservative scenario.

Figure 3: Comparison of saving potentials for diplomacy services (costs in million Euro)



Source: Own illustration

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⁷ To avoid a biased comparison we again exclude Cyprus, Estonia, Greece, Luxembourg, Latvia, Lithuania, Malta and Slovenia. The overall sum of diplomacy costs of all single member states, however, changes only slightly from 6,975 to 7,239 if the excluded countries are incorporated.

However, a further caveat remains, one that has to be accounted for in order to arrive at a realistic quantification. It is reasonable to assume that the full saving potentials (even in the conservative scenario) cannot be realized. Not all services or duties of the former single member state representatives are suitable for full communitarisation. Hence, based on the expert survey on the staffing of diplomatic missions (see above 3.2), it is possible to calculate different ranges of saving potentials for three distinct scenarios.⁸ In the cautious scenario it is assumed that saving potentials can only be realized in the section's consular services and administration, and account for 50 percent (consular services) and 40 percent (administration) of the respective section's hypothetical savings potential.⁹

In the confident scenario, by contrast, saving potentials can additionally be realized in the fields of development aid, cultural relations, military missions, and press. Furthermore, the respective shares of consular services and administration increase. The same holds true for the optimistic scenario, where all shares with exception of military missions increase. However, while it is assumed that in the area of consular services the full saving potentials can be realized, one cannot account for potential additional costs in administration and therefore we only assume a communitarisation share of 80 percent in the optimistic scenario. This is due to the fact that, for instance, additional costs for text translations or language skills of the missions' staff may arise which would not have been necessary without communitarisation.

Table 3: Ranges for communitarisation: Hypothetical mission large-size member state

Functions	(1) Division	(2) Ranges for communitarisation			(3)=(1)×(2) Saving Potential (%)		
	of staff (%)	cautious	confident	optimistic	cautious	confident	optimistic
Consular services	10	0.5	0.7	1	5	7	10
Political relations	10	0	0.2	0.4	0	2	4
Economic relations	10	0	0	0	0	0	0
Development aid	5	0	0.2	0.4	0	1	2
Military mission	15	0	0.2	0.4	0	3	6
Cultural relations	10	0	0.2	0.4	0	2	4
Administration	30	0.4	0.6	0.8	12	18	24
Press	10	0	0.2	0.4	0	2	4
					17 %	35 %	54 %

Source: Own illustration

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⁸ We use the staffing numbers for a representative foreign embassy/consulate provided by Expert 1 (large EU member state) and Expert 2 (medium-sized EU member state). Note, however, that we also provide ranges for a representative mission of Expert 3 (small EU member state) in the appendix. The overall ranges for communitarisation of Expert 1 and Expert 3, however, differ only slightly.

⁹ Security services are again part of administration.

**Table 4:** Ranges for communitarisation: Hypothetical mission of a medium-size member state

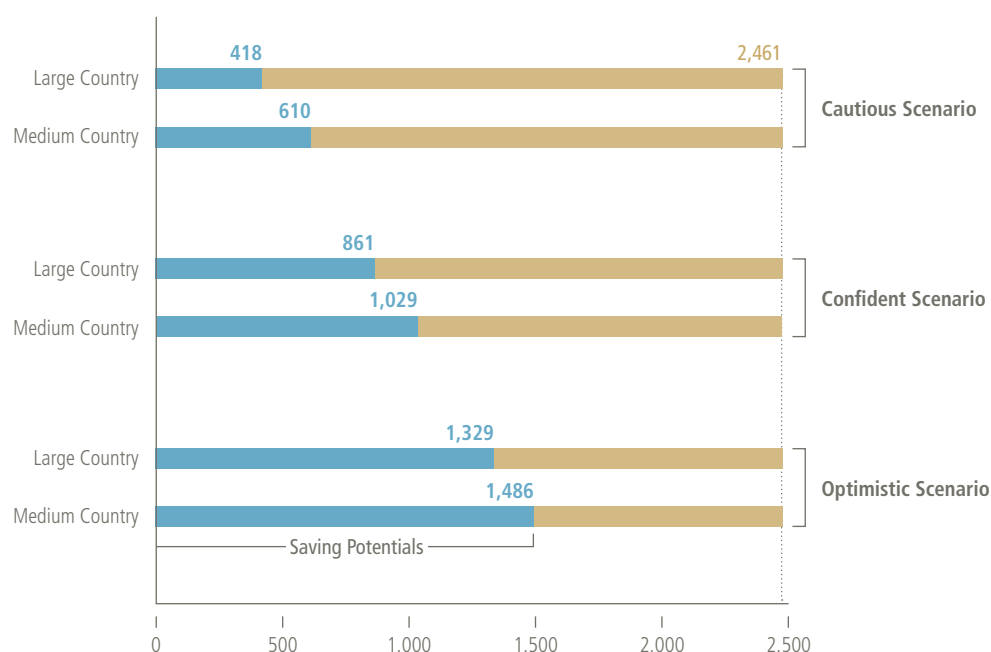
Functions	(1) Division	(2) Ranges for communitarisation			(3)=(1)×(2) Saving Potential (%)		
	of staff (%)	cautious	confident	optimistic	cautious	confident	optimistic
Consular services	15	15	0.7	1	7.5	10.5	15
Political relations	6	6	0.2	0.4	0	1.2	2.4
Economic relations	12	12	0	0	0	0	0
Development aid	8	8	0.2	0.4	0	1.6	3.2
Military mission	4	4	0.2	0.4	0	0.8	1.6
Cultural relations	4	4	0.2	0.4	0	0.8	1.6
Administration	42	42	0.6	0.8	16.8	25.2	33.6
Press	0	0	0.2	0.4	0	0	0
Intelligence	1	1	0	0	0	0	0
Security services	1	1	0.7	1	0.5	0.7	1
Management	5	5	0.2	0.4	0	1	2
Other	2	2	0	0	0	0	0
					24.8 %	41.8 %	60.4 %

Source: Own illustration

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These ranges are then multiplied with a section's proportion of staff. The sum of all saving potentials across the different sections then reveals the overall range for communitarisation. According to the cautious scenario, only 17 percent of the previously calculated saving potentials can be realized. The share increases to 35 percent in the confident scenario and reaches 54 percent in the optimistic scenario.

To offer an interpretation for this calculation, the sum of the overall savings potential can be regarded as an indicator to which extent there is a cost disadvantage of an EU representation compared to a fictitious representation of a homogeneous nation state with 501 million inhabitants. The cost disadvantage can result from political or language constraints and forces EU representations to produce at larger costs compared to this fictitious counterpart. Thus, a saving potential of zero percent (100 percent) from this calculation indicates that none (all) of the economies of scale identified before can be exploited. The zero-percent-case would stand for a situation where EU diplomacy requires the same resources as before under national representations.

Figure 4: Realized shares of saving potentials for the conservative scenario (in million Euro)

Source: Own illustration

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In a next step, it is possible to multiply these different ranges with the result for the conservative scenario from the previous quantification of saving potentials. Compared to the scenario based on the assumption that the full, conservative savings potential of Euro 2,461 million can be reached, the more realistic saving potentials now range from Euro 418 million (cautious scenario) to Euro 1,329 million (optimistic scenario, see also Figure 4). This amounts to a range of six percent up to 19.1 percent of the total current costs for EU diplomatic services (Euro 6,975 million, Emerson et al., 2011).¹⁰

If one uses the ranges for communitarisation of a medium-size member state's diplomatic mission, a slightly different picture emerges. The ranges for saving potentials for such a mission are shown in Table 4. Applying the same approach as before, the saving potentials now reach from 24.8 percent in the cautious scenario up to approximately 60.4 percent in the optimistic scenario. Multiplied by the full conservative saving potential of Euro 2,461 million, the realistic saving potentials now reach from Euro 610 million (cautious scenario) to Euro 1,486 million (optimistic scenario). A graphical summary of the results is shown in Figure 4.

¹⁰ Again, Cyprus, Estonia, Greece, Luxembourg, Latvia, Lithuania, Malta, and Slovenia are excluded.



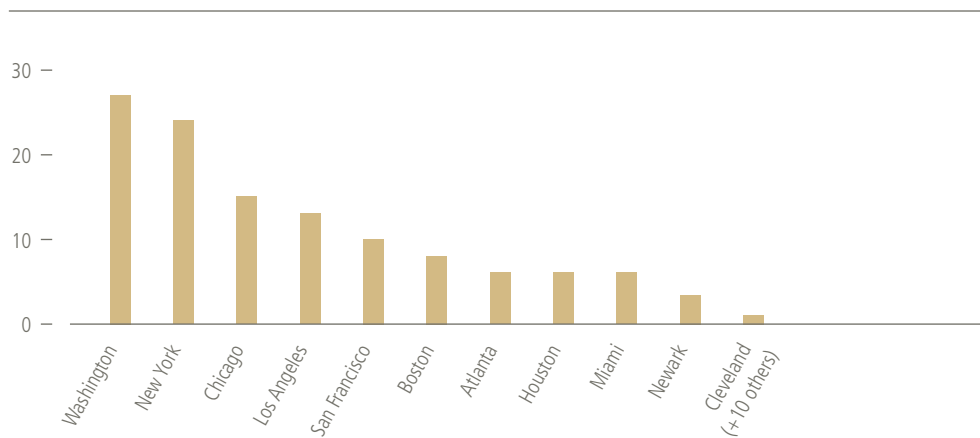
However, a final drawback remains: The analysis so far persists on the assumption that a common EU representation still pays national wages, i.e. the different wage levels in the different countries as well as the differences in remuneration remain under a common regime. It is, however, questionable whether this will be the case. Here emerges a clear quantitative hint: If the establishment of EU missions as a replacement of national structure would be associated with a wage increase of diplomats by more than six percent (the lower bound of the savings potential), there is a large likelihood that the European solution will not save money.

However, some arguments point to the fact that the problem of wage increases should be less severe than in other fields. For instance, most of the saving potentials refer to tasks such as administration and consular services. Here it is reasonable to assume that EU representations would continue to hire clerks and administrative staff from their host country so that these services are still paid with national wages. Furthermore, in the current situation national diplomats can benefit from tax advantages as well as EU staff. This reduces the incentives to move towards an EU payment regime.

Added value through improved service quality

If economies of scale in the production of public goods can be realized, this may increase the demand for the same public goods since they become cheaper for the taxpayer. From a budgetary perspective, this would be a countervailing effect to the expenditure savings of economies of scale. However, the welfare interpretation is very different, since both effects are welfare enhancing.

Figure 5: Number of consulates in major US cities



Source: Own illustration

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It is beyond the scope of this paper to quantify demand effects. However, a case study approach for EU consulates in the US is doable. Here it is plausible that some of the savings from European representations could be invested to arrive at a more even spatial distribution. Figure 5 reveals that there are large differences between different regions of the US. While all European countries are represented in Washington, DC, 24 member states deliver further diplomatic services for their citizens in New York, for example. This number further shrinks from 15 nations (Chicago) to six nations (Atlanta, Houston, Miami).

This leads to a highly uneven geographical distribution of the diplomatic services which is shown in Figure 6. It reveals that in some regions of the US, European diplomatic services are almost completely missing (north and northwest) whereas in other regions (southwest, northeast) several European nations deliver diplomatic services for their own (and the Union's) citizens.

This implies potential drawbacks, for instance, for all EU member-state citizens who rely on diplomatic services and are located in the middle-north or northwest of the US. From the perspective of a European citizen, the resulting extra effort and expense based on this unbalanced distribution is hardly justified – even if the relative attractiveness of the regions is taken into account.

Figure 6: Geographical distribution of European diplomatic services in the US



Source: Own illustration

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If one now assumes that not the member states by themselves but the EU would optimise on the geographical distribution of the diplomatic missions, it is straightforward to argue that a more balanced pattern would emerge. This means that redundant missions in overrepresented areas could be closed down whereas missions in underrepresented areas could be opened. This argument comes closest to Oates' 'zoo-effect' (Oates 1988). Threshold effects based on high fixed costs which have to be defrayed by little potential "consumers" may prevent a single EU member state from opening a consulate in the region of Seattle (which is located in the northwest of the US), for example. If, by contrast, the EU decides to open a consulate in this area, for instance, the number of potential consumers increases while the amount of fixed costs remains the same. Opening a consulate thus becomes more attractive and also increases the benefits for all EU citizens. The higher costs for the additional missions might then be saved by closing redundancies in overrepresented areas. Nevertheless, from a budgetary perspective one would have to expect a certain expenditure increasing effect compared to the calculations above.

Conclusions

This analysis backs the hypothesis that Europe could help the member states to save money in the field of diplomatic services. The cost structure in the provision of these services by member states clearly supports the existence of economies of scale. Larger countries are able to provide these services at lower costs than the smaller countries. The differentiated insights have, however, clarified that the extent of savings from an "EU embassy with 27 flags" depends on the ability and willingness of member countries to accept a European spirit within these missions. The more functions an international representation takes up that have national elements – and would therefore need national experts – the lower are the potential cost savings. In this respect, our differentiated calculations are also able to provide a price tag for the luxury of special national positions and approaches in European diplomatic services. Distinct national approaches within an EU mission may drive costs up by Euro 900 million annually, which is the difference between a cautious and optimistic scenario for communitarisation.

The potential of relative cost savings is not trivial, although absolute amounts are moderate (Euro 420 million to Euro 1.3 billion annually for figures based on large member-state assessments). In relative terms, this amounts to a range between six percent and 19 percent of current national costs if a realistic scenario is applied. Such an efficiency gain is significant and most likely far beyond the levels that could be reaped by other efficiency enhancing measures in the public sector within a short time span.

However, two caveats should be stressed. First, European civil servants tend to be better paid than their national colleagues. The calculations presented here are based on the assumption that the wage structure in a European mission would not be different from the average of the existing

national missions. This assumption is invalid if for the EU missions EU salaries become relevant. Already a wage premium of EU diplomats of five percent compared to their national colleagues could neutralize any cost saving effects of European missions and leave the European way even the more expensive one. This insight raises delicate questions as to whether the EEAS with its EU civil servants would really be the right starting point for reaping economies of scale in this field.

This issue is, of course, of a more general nature: Whenever an EU provision of public goods and services is associated with replacing (cheaper) national staff by (more expensive) EU staff it becomes less likely that European tax payers will really benefit. However, as pointed out before, for the case of diplomatic missions, most of the calculated saving potentials refer to administrative tasks and consular services where national staff in line with national wages should stay in place in the case of communitarisation.

Second, there might be (dis)incentive descending from the financing system of a common EU diplomatic mission. Since the missions are paid from a common EU pool of resources, cost awareness may decrease with new incentives of overprovision. However, in the current situation there exist reversed inefficiencies: Today smaller member states can freeride on the services of the diplomatic missions of larger member states which may lead to the underprovision of missions. Thus there are countervailing forces with an unpredictable outcome.

In spite of all these caveats, the refined and detailed simulations clearly indicate that EU embassies with 27 flags have cost savings potential.



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Appendix

Table Appendix 1: Ranges for communitarisation: Hypothetical mission small-size member state

	Division	Ranges for communitarisation			Saving Potential (%)		
Functions	of staff (%)	cautious	confident	optimistic	cautious	confident	optimistic
Consular services	10	0.5	0.7	1	5	7	10
Political relations	10	0	0.2	0.4	0	2	4
Economic relations	10	0	0	0	0	0	0
Development aid	5	0	0.2	0.4	0	1	2
Military mission	15	0	0.2	0.4	0	3	6
Cultural relations	10	0	0.2	0.4	0	2	4
Administration	30	0.4	0.6	0.8	12	18	24
Security services							
Press	10	0	0.2	0.4	0	2	4
Overall ranges for communitarisation					17 %	35 %	54 %



The Fiscal Added Value of Integrated European Land Forces¹

Matthew Bassford, Sophie-Charlotte Brune, James Gilbert, Friedrich Heinemann, Marc-Daniel Moessinger, Stefani Weiss

In mature nation states, defence is a public good that is undisputedly provided by the central government. In federal states like the US, Canada, Switzerland, and Germany, this sole central responsibility for the armed forces is more than accidental historical heritage. There is a convincing efficiency argument that the sub-national provision of defence would be needlessly expensive and to the detriment of a high-quality service. In addition, freerider problems would pose numerous disincentives to efficient security provision.

There is thus a straightforward case for considering the future possibility of defence policy at the EU level. This centralisation could offer substantial potential for European added value by providing the same security at a lower cost. It could improve the quality and impact of European defence while avoiding a larger fiscal burden.

Of course, national sensitivities present a substantial obstacle for a centralised European defence solution. For many states, autonomous command over national army, air force, and navy is still a symbol of national sovereignty. Under the current regime of imperfect European defence integration, however, this symbolism has become costly and detrimental to the effectiveness of EU member states' defence activities. Moreover, in times of a common European currency and common market a national defence seems a bit anachronistic.

With European member states in the grip of fiscal austerity, there is fresh impetus behind efforts to improve the efficiency of defence in Europe. Many of these efforts focus on the pooling and sharing of equipment between member states with the aim of exploiting economies

¹ We are grateful for helpful comments and suggestions by Maciej Bukowski, Axel Butenschoen, Vasco Cal, Poul Skytte Christoffersen, Stephan von Cramon-Taubadel, Tom De Bruijn, Hilmar Linnenkamp, Hans Pitlik, Wilhelm Schönfelder, Michael Schreyer, Robert Schwager, and Fabian Zuleeg. Valuable research assistance by Pierrick Picard, Ben Baruch, Poornima Bhagwat, Laura Renner, and Christian Simon also is gratefully acknowledged.



of scale and scope.² By comparison, relatively little analysis has been dedicated to assessing the potential benefits of reducing inefficiencies related to both the number and organisation of military personnel in Europe. This research addresses this gap, providing high-level analysis to estimate the potential added value of reforming the provision of personnel in one, well-defined military sector: European land forces. Specifically, we provide a range of estimates for the savings potential associated with integrated EU land forces. This enables us to quantify the opportunity costs inherent in a continuation of the current national approach.

Over the past decade, there has been significant consolidation in European land forces: total troop numbers have fallen from 2.5 million in 2000 to less than one million today. Nevertheless, interoperability among the 27 armies of Europe remains low, with differences in doctrine, logistics, command and control, and other crucial lines of development hindering the deployment of joint forces. In addition, the capability of a modern army depends not just on its size but also on its equipment, and the quality and timeliness of its battlefield information. Equipment standards vary dramatically across the 27 member states, and the mean level of equipment provision falls short of the benchmark set by expeditionary forces in Europe – such as France and the UK – and other comparators, most notably the US. This suggests that in land forces, Europe's punch is well below its weight.

The approach in this study is to offer a range of estimates for the savings potential of a more integrated approach. We proceed in two steps:

- First, this study estimates the number of soldiers needed for Europe to achieve the Helsinki Headline Goal 2010, which establishes member states' levels of ambition to fulfil the set of military tasks delineated by the 1992 Petersberg Declaration.³ We compare that number to the number of soldiers that exist in Europe today. A clear challenge with this approach is that there is no single, irrefutable "right size" of land forces in Europe. A greater number of soldiers may yield higher levels of military capability, but these benefits come with associated costs. This analysis aims to quantify the cost of carrying a number of soldiers over and above the level required to attain a fixed (and politically agreed) level of "benefit" – or military capability. In this first step, we also investigate possible economies of scale from a large integrated army which may arise from an improved deployability ratio.
- Second, this study costs the (smaller) number of soldiers required under a more coordinated set of European land forces. This takes account of detailed wage information of different national

² A number of authors have discussed pooling and sharing in this context. These include: Brune, S.-C., Cameron, A., Maulny, J.-P., Terlikowski, M., "Re-structuring Europe's Armed Forces in Times of Austerity: Challenges and Opportunities for Governments and Industry," *SWP-Comment C/28* (November), Berlin, 2010; Maulny, J.-P. and Liberti, F., "Pooling of EU member states Assets in the Implementation of ESDP," Institut de relations internationales et strategiques, 2008; Valasek, T., "Surviving Austerity: The case for a new approach to EU military collaboration," Centre for European Reform, 2011; and Witney, N., "Re-energising Europe's Security and Defence Policy," European Council on Foreign Relations policy paper, 2008.

³ Agreed by the Western European Council of Ministers in June 1992 and available at <http://www.weu.int/documents/920619peten.pdf>

armies and is based on varying assumptions with respect to the wage structure in a European army, as compared to the current coexistence of national armies with their individual wage structure. Here, there is publicly available wage data for six of the 27 member states in different income classes. This provides a sound anchor for quantifying military-wage levels for the remaining countries. Through this refined approach, we take account of countervailing forces, considering possible cost savings from a smaller number of soldiers, as well as possible cost pushes through wage equalisation above the current mean income.

The goal was to conduct an opportunity analysis to assess the potential for European added value through consolidation and harmonisation of land forces personnel. Put simply: Can money be saved by reducing army personnel without endangering the EU's defence capacity?

The analysis is high level and inevitably rests on a number of assumptions that are highlighted throughout the paper. We do not explore details which would be important for turning a high-level analysis into a detailed plan. The force numbers are counted in aggregate without considering force mix, military rank or specialist disciplines. The specific equipment which soldiers need to generate a given capability is not examined. This well-defined approach allows us to conduct a focussed study of one central factor of production in the provision of defence services: personnel. This focus enables quantifications of potential cost savings at a level of precision which would not be possible in an integrated study of staff and equipment.

This study is organised into four sections. The first briefly summarises the status quo of land forces in Europe. This is followed by an estimate of the number of soldiers Europe needs to meet the Headline Goal 2010. The third section quantifies the potential added value of more coordinated and consolidated European land forces, and the chapter finishes with a number of conclusions.

What is the status quo of European land forces?

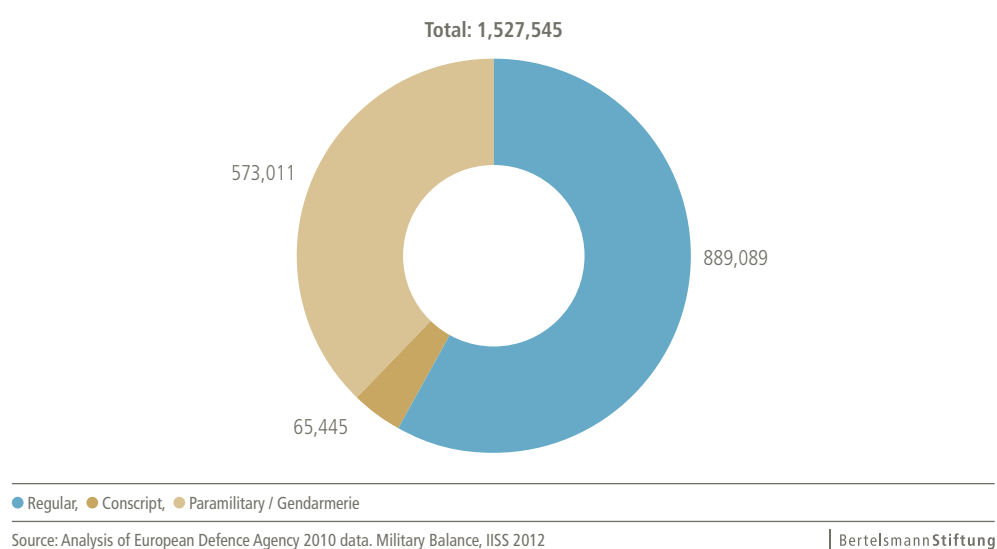
In aggregate, Europe has a large number of land forces

The size and structure of land forces vary dramatically across member states. Some countries operate with regular forces supplemented by reserves. Others operate relatively small standing armies but maintain large paramilitary organisations for homeland defence, often a legacy of the Cold War. Applying a broad definition of land forces, Europe has more than 1.5 million soldiers (see Figure 1).

For this analysis a consistent definition of 'land forces' is required. The category of 'regular soldier' provides the most common definition across member states, capturing those army soldiers



Figure 1: Composition of Europe's Land Forces



capable of deploying on EU or other international missions.⁴ We exclude paramilitary and gendarmerie forces from the analysis, but acknowledge that these soldiers – greater than 570,000 in number – play an important role in homeland defence, policing, coast guarding, and other functions. Also excluded are those amphibious forces which are part of European navies.

The number of regular soldiers in the army of each member state is shown in Figure 2. The total is 889,000 soldiers.

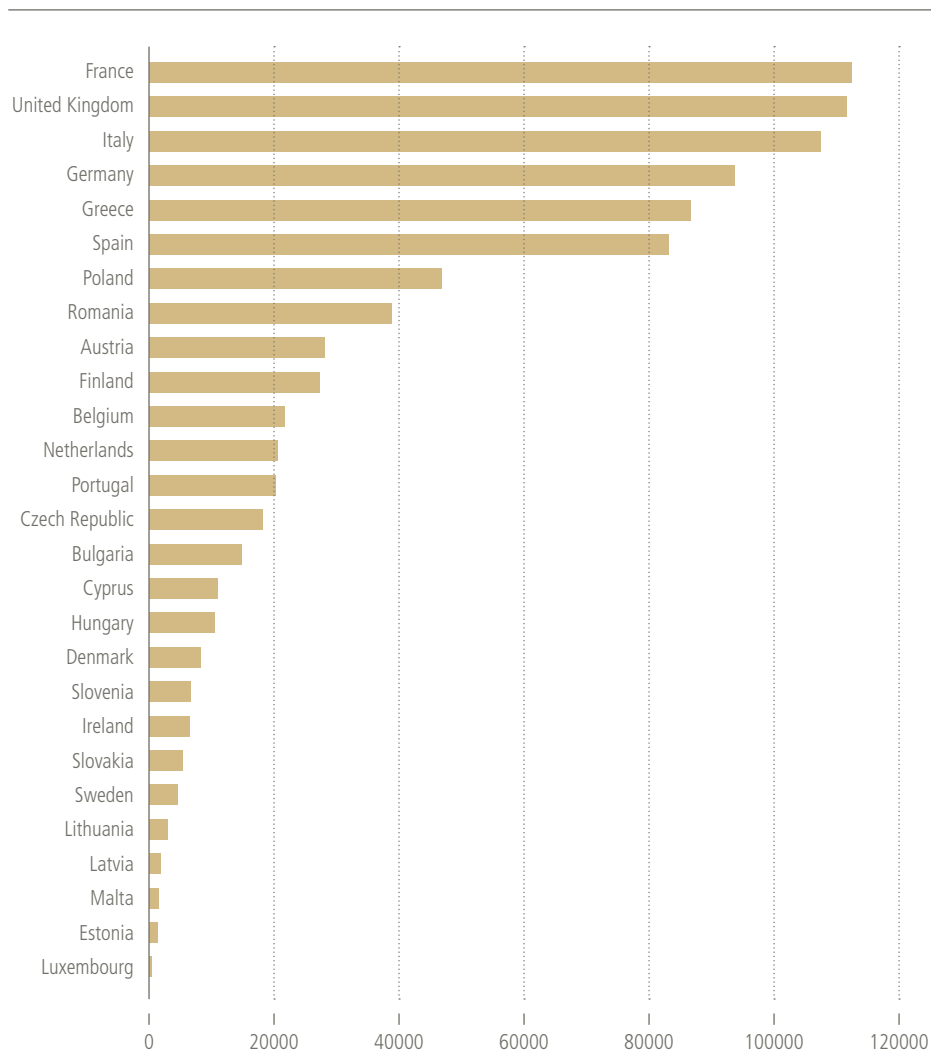
Europe's land forces need to modernise for the 21st century

The need for the modernisation of Europe's armies has long been acknowledged.⁵ Europe boasts a large number of regular soldiers. However the quality of equipment, investment in training, and deployability varies significantly between states.⁶ A key determinant of capability is the quality of equipment available to land forces. As the character of conflict changes, soldiers need more high-tech equipment such as communications and battlefield information tools. Modern warfare also requires precision attack capabilities and force protection to reduce the number of allied casualties and collateral damage to civilian populations.

⁴ There are, of course, significant differences between land forces of member states in terms of level of training and expertise.

⁵ "La défense européenne doit entrer dans une nouvelle ère", *Le Figaro*, 6 October 2004. As of 24 October 2012: <http://static.euractiv.com/fr/la-defense-europeenne-doit-entre-news-230522/>

⁶ The UK is notable for investing significantly more for each member of its service personnel than the EU average.

Figure 2: Number of 'regular' land forces personnel in EU27

Source: European Defence Agency 2010 data, Military Balance 2012

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Europe's shortage of strategic airlift and intelligence, surveillance, target acquisition, and reconnaissance (ISTAR) assets is also well documented. In the past, Europe's deficiencies in key equipment areas have been largely masked by the general readiness of the US to provide assistance to European forces, for example by providing reconnaissance aircraft and satellite support during the Kosovo conflict (Shepherd 2000: 27). Even in the recent Libya campaign, hailed by some as a success of European leadership (Knowlton 2011), the US was required to provide the bulk of air-to-air refuelling and ISTAR support (House of Commons Defence Committee 2012). Without this assistance, the operations in Libya would not have been possible.

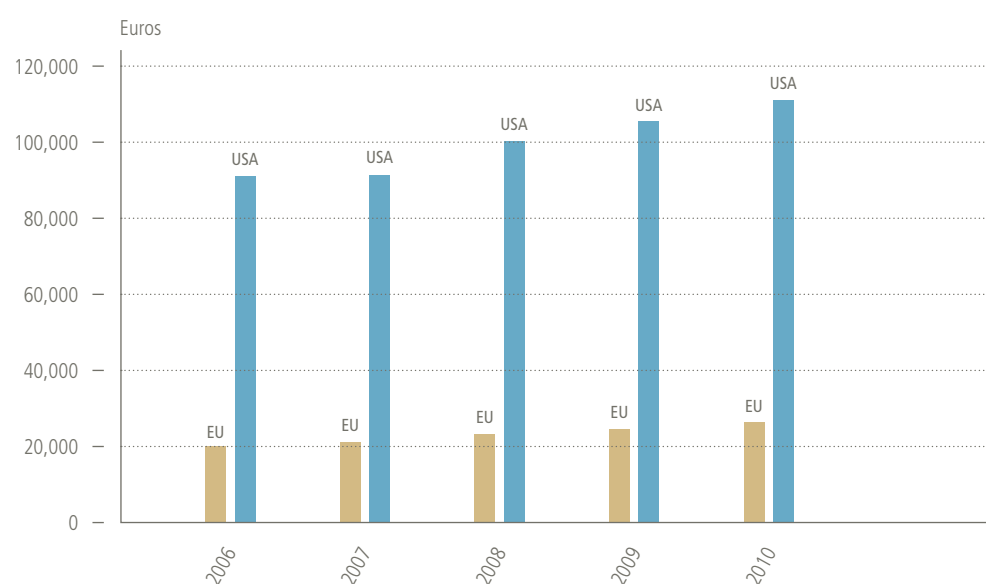


The difference in equipment standards between European military personnel and their US counterparts is indicated by equipment spending per member of the armed forces (see Figure 3). Europe spends an average of Euro 26,500 per member of its armed forces, compared with more than Euro 110,000 in the US (Pires 2012). This is not to suggest that Europe should increase total defence spending or aspire to match the spending of the US. But it may be that the current ratio of spending on equipment compared to personnel costs is not adequate to properly equip Europe's soldiers for today's conflicts. Those European national armies that have traditionally been less oriented towards expeditionary warfare and with a long conscription history due to the predominance of territorial defence challenges are, in general, particularly poorly equipped and require significant investment.

The US is reducing its military commitments in Europe

Looking ahead, it is likely that Europe will act autonomously on security missions in its own neighbourhood, particularly as the US draws down its military presence in Europe. In the past, a reliance on US military support was, to some extent, built into NATO planning assumptions and there was both tacit and explicit recognition that the US would play a leading role in NATO operations.

Figure 3: Equipment spending per armed forces personnel



Source: EDA, 2010

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However, since 2006 the US has been shrinking its European footprint, closing approximately 100 bases. In February 2012, the US Department of Defence announced a further 25 percent reduction in the number of troops stationed in Europe. This “pivot” towards the Asia Pacific region marks a turning point in US activity in Europe, and makes it more likely that European nations will be required to act without US support, implying a requirement for more capable and deployable European forces (Clinton 2011).

In summary, Europe’s aggregate land forces, while large in number, fall far behind forces of comparable size when judged on military capability. This matters now, more than at any time in recent history, as the likelihood increases of Europe being required to act militarily with only minimal support from the US.

How many soldiers does Europe need?

The implication of the assessment presented in Chapter 2 is that taken in aggregate, European land forces are ill-suited to today’s strategic security context. The military ambition for expeditionary operations requires well-trained, well-equipped and deployable joint forces that are integrated and interoperable. This is true for land, maritime and air forces. However, European national armies have not seen the level of integration that is present in the structures of allied air forces and navies.⁷ This section attempts to quantify the number of soldiers that a more integrated and interoperable set of national land forces would comprise to meet the military ambition of Europe’s states.

The exercise of estimating the ‘optimal’ size of an army is fraught with difficulty. Such an estimate depends on the level of military ambition of governments and the capabilities of potential adversaries, as well as the level of provision and quality of other enabling functions such as intelligence, logistics and literal manoeuvre capability, etc. The number of soldiers also depends on the level of certainty of success required by governments.

Rather than trying to estimate the ‘optimum’ number of soldiers, we ask two separate questions to arrive at an estimate of demand for soldiers in Europe:

1. How many soldiers does Europe need to meet the Headline Goal 2010?
2. How many soldiers has Europe needed to meet its military obligations over the last fifteen years?

⁷ Which have developed integrated air defence, common logistical assets and procedures, multinational Standing Naval Forces, to provide a few examples.



Europe's demand for land forces is articulated in the Helsinki Headline Goals

Europe's demand for land forces was outlined as part of the Requirements Catalogue 2005, which defined the level of military resources to meet the Headline Goal 2010. The Requirements Catalogue is not available to the public. Therefore this study estimates the number of land forces required to meet the Headline Goals based on interviews with European military experts. The estimates mirror the scenario-based framework used in the Requirements Catalogue.

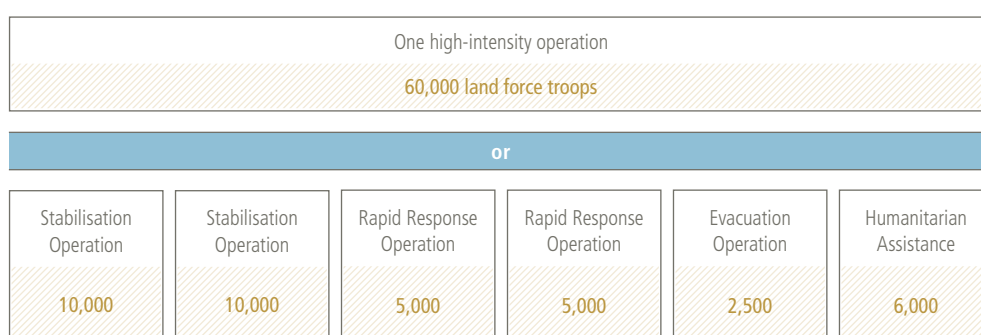
According to the Headline Goals, the EU's level of ambition is either:

- To launch a major operation with up to 60,000 troops within 60 days and be able to sustain it for at least one year.

Or to launch and concurrently uphold:⁸

- Two major stabilisation and reconstruction operations supported by up to 10,000 troops for at least two years;
- Two rapid response operations of limited duration using two EU battlegroups of approximately 5,000 soldiers per battlegroup;
- One emergency operation for the evacuation of European nationals. (Here the major tasks would be conducted by Air and Naval forces, with minimal involvement of land forces up to one battlegroup);
- One civil-military humanitarian assistance operation lasting up to 90 days and involving also a minimum of land forces.

Figure 4: Number of land force troops required under EU Headline Goals



Source: Own illustration

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⁸ The decision to establish this equivalence was adopted by the European Council of 12 December 2008 under the French Presidency on the basis of a Council declaration on the reinforcement of capabilities for the European Security and Defence Policy (ESDP). See: Council of the European Union, *Declaration on Strengthening Capabilities*, 16840/08, Brussels, 11 December 2008. As of 25 October 2012: http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/esdp/104676.pdf

Finally, the EU's ambition also includes the following tasks:

- A maritime or air interdiction operation;
- Around 12 ESDP civilian missions of varying formats together with a major mission involving up to 3,000 experts and lasting for several years.

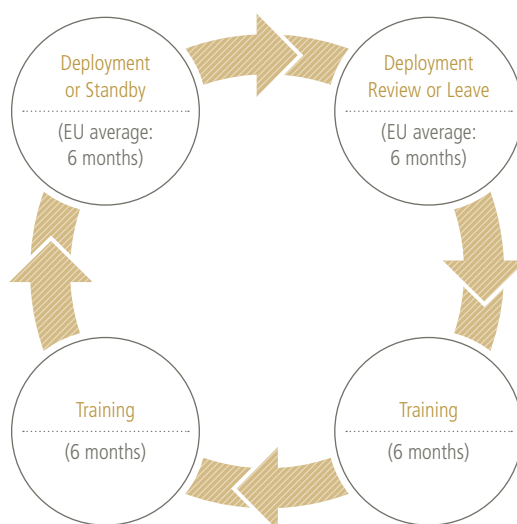
These final two mission types were not included in the calculations as they do not require significant contributions from land forces. The Headline Goals and the respective estimates of land forces personnel required for each mission are summarised in Figure 4.

The estimates show that the maximum number of combat soldiers required in theatre in a given year is 60,000 for a major operation, compared to 38,500 for a series of concurrent minor operations.

The number of combat soldiers must be sufficient to sustain operations over time

The force numbers presented above reflect the number of troops needed in theatre to conduct the hypothetical missions. Some operations need to be sustained for a prolonged period, meaning

Figure 5: EU land forces deployment cycle



Source: Own illustration

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**Table 1:** Estimate of sustainable force numbers

Type of Operation	Base Number of Soldiers for Mission	Required number of Land forces to meet EU Sustainability requirements	
		Base number x4	Base number x5
One major operation (1 year)	60,000	240,000	300,000
or			
Two major stabilisation and reconstruction operations (2 years)	20,000	80,000	100,000
Two rapid response operations of limited duration	10,000 (maximum)	10,000	10,000
One evacuation operation	2,500	2,500	2,500
One civil-military humanitarian assistance operation (up to 90 days)	6,000	6,000	6,000
Total for alternative missions		98,500	118,500

Source: Own illustration

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that the estimate of the required number of soldiers must be increased to allow for tour lengths and include those soldiers who will be both preparing for and recovering from deployment.⁹

Tour lengths and the interval between deployments vary from one European army to another. For the purpose of calculating the size of a sustainable force, this analysis assumes an EU average four-phased cycle in which a tour of duty lasts for six months, with 18 months between deployments (see Figure 5). This implies that the estimate of combat soldiers must be multiplied by four.

Interviews with EU military staff, along with examples from the British Army, suggest that the interval between deployments can be as great as 24 months. In this case, the multiple of in-theatre soldiers would be five. Table 1 summarises the estimates of the total number of combat troops required to prosecute different operations. The number of European troops needed to prosecute a major operation over a sustained period is estimated between 240,000 and 300,000.¹⁰ The number of troops required to conduct the range of concurrent small-scale missions is between 98,500 and 118,500. To ensure that the number of soldiers required is not underestimated, the higher number is used in later calculations.

⁹ Note that the ability to sustain the deployment of troops continuously in mid- to long-term operations (i.e. sustainability) is different from the ability to rapidly deploy troops (i.e. deployability). Deployability is calculated by the EDA and NATO as the average of total armed forces deployed throughout a year for crisis management operations compared to forces troops structured, prepared and equipped for deployed operations (NATO postulates a 50% usability target). Sustainable forces are a subset of deployable forces.

¹⁰ This number was validated through interviews with experts, who estimated that two divisions of land forces, each composed of three brigades (46 battalions of 700 soldiers), are necessary to sustainably implement the stated EU level of ambition. In total, the alternative estimate provided by experts amounted to approximately 250,000 soldiers.

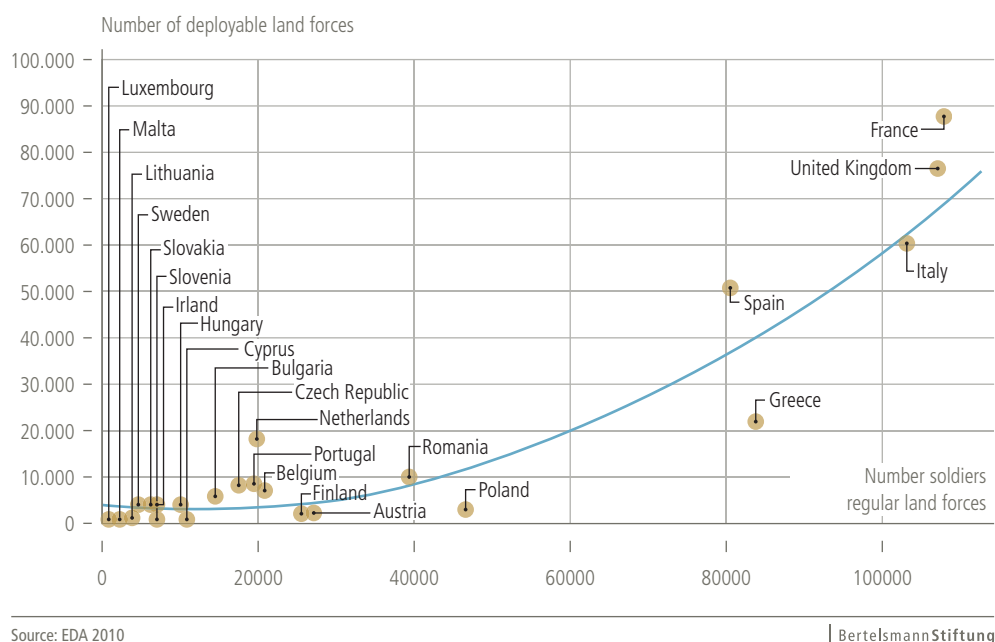
Additional soldiers are required to provide support to combat forces

The estimates so far focus only on the number of combat troops deployed or preparing to deploy to the front line.¹¹ Additional personnel are required to complete other essential non-combat tasks including:

- Maintenance
- Procurement
- Facilities management
- Accounting and other back-office functions

Figure 6 shows the number of deployable soldiers compared to the total size of land forces for each member state (detailed figures per country are given in the appendix, see Table A1). The fitted line shows the number of deployable soldiers increasing disproportionately to the total size of land forces, which suggests economies of scale in land forces. This implies that larger armies are able to use resources more efficiently compared to smaller armies, in areas such as staff workload and personnel administration as well as in training capacities.

Figure 6: Number of deployable land forces to total number of land forces



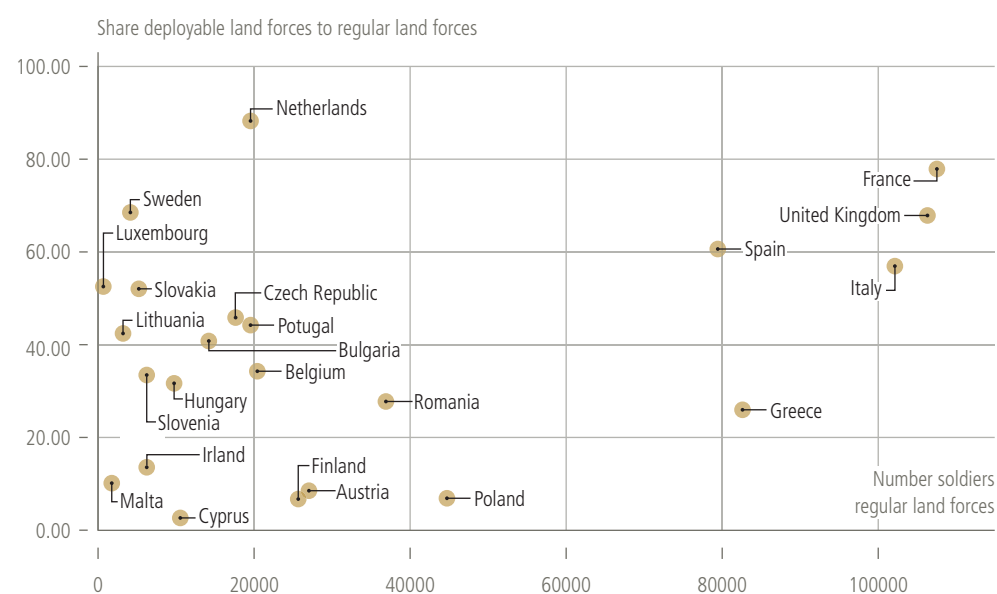
¹¹ Including armour, infantry, artillery, reconnaissance, engineers and signals.



With most of the armies clustered around the bottom left corner of the chart, we also plot the proportion of soldiers that can be deployed on operations against the total number of regular soldiers (Figure 7).¹² In aggregate, the mean deployability ratio across the EU member states is 50 percent, when weighted according to the number of soldiers in each national army (European Defence Agency 2010).¹³

The figure reveals the large variation in deployability across member states: the largest three land forces in Europe report deployability ratios over 50 percent, but a number of member states have deployability ratios between two and 30 percent. As a caveat, one should bear in mind that smaller armies are often not aligned to fight at the front line, which might imply lower deployability shares that impact the ratios. On the other hand, an integrated European army is even more able to operate international military interventions and should thus be able to reach a higher deployability level. More coordination and harmonisation of European forces could help to improve the deployability of land forces. Combined with the aforementioned arguments concerning the presence of economies of scale, the results thus suggest that a European army should achieve a deployability level of at least 50 percent.

Figure 7: Deployability ratios of EU 27 land forces



Source: EDA 2010

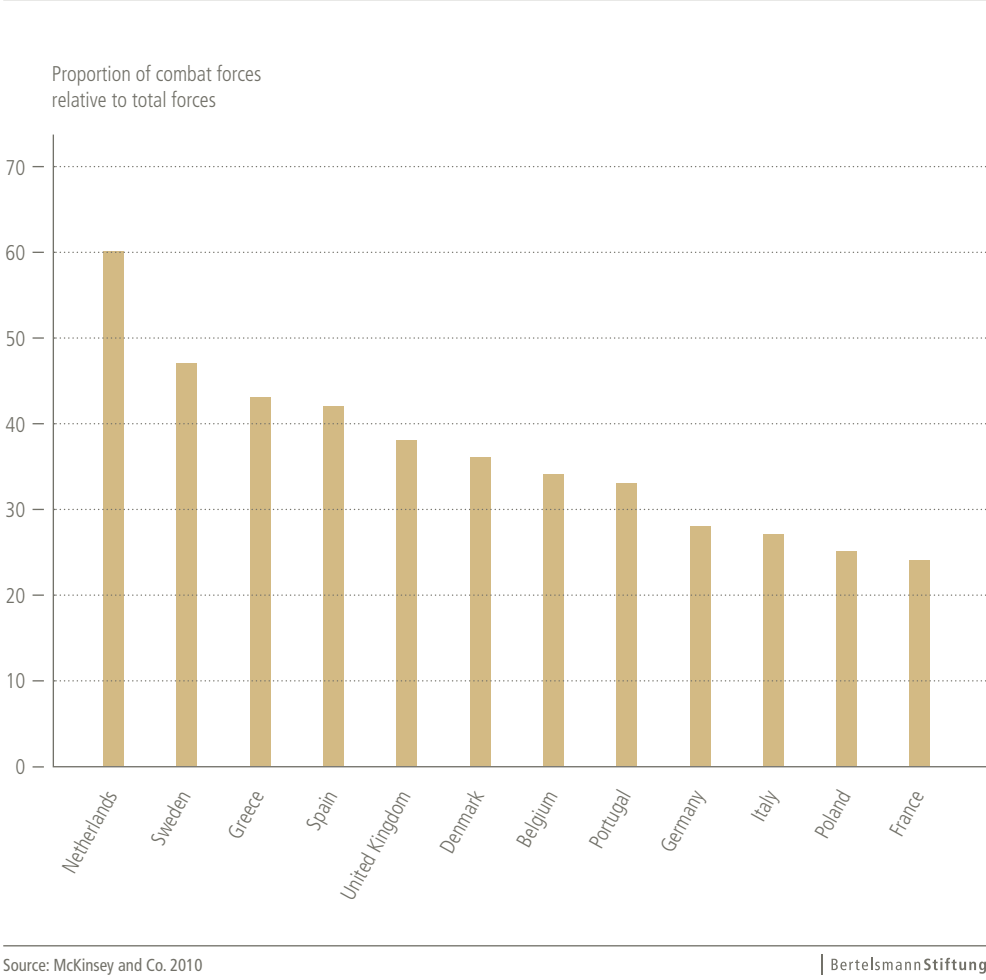
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¹² Note that, as opposed to usually reported deployability shares which are calculated in relation to the number of total forces, we have plotted deployability shares in relation to regular land forces. This is because the investigation here is solely focused on land force soldiers but does not include further soldier categories. Additionally, the share's numerator is based on land force soldiers only.

¹³ Due to missing data, Denmark, Estonia, Germany, and Latvia could not be included.

As a rough calibration to provide an additional triangulation point for this argument, this study compares deployability data with an alternative estimate of “tooth-to-tail” ratios for the armed forces of selected European member states (Figure 8). In this sense, the “tooth” corresponds to combat and combat-support forces and the “tail” to general non-combat roles (like logistics, medical and communications) (Gebicke, Scott, and Magid 2010: 14–21). The range of alternative estimates was 24 percent (France) to 60 percent (Netherlands), with a simple mean of 36 percent. This alternative estimate only provides a very approximate calibration, since it reflects personnel numbers for all of the armed forces (rather than focusing exclusively on land forces). Nevertheless, it suggests that when back-office functions are fully taken into account, the real “tooth-to-tail” ratio may be less than the 50 percent reported by member states. In other words, a functioning army may contain more non-combat personnel than combat personnel.

Figure 8: Tooth-to-tail ratios





The total required size of European land forces is between 480,000 and 750,000

Taking the combat force requirements for individual missions as fixed, this study adjusts the two variables (deployability multiple and tooth-to-tail ratio) to establish a range of total force size needed to prosecute the missions under the Petersberg tasks. Based on these variables, the low-point of the range is 480,000, and the high is 750,000 (Table 2).

Table 2: Range of estimates of demand for land forces under different assumptions

		Sustainability multiple	
		x4	x5
Deployability	50:50	480,000	600,000
	40:60	600,000	750,000

Source: Own illustration

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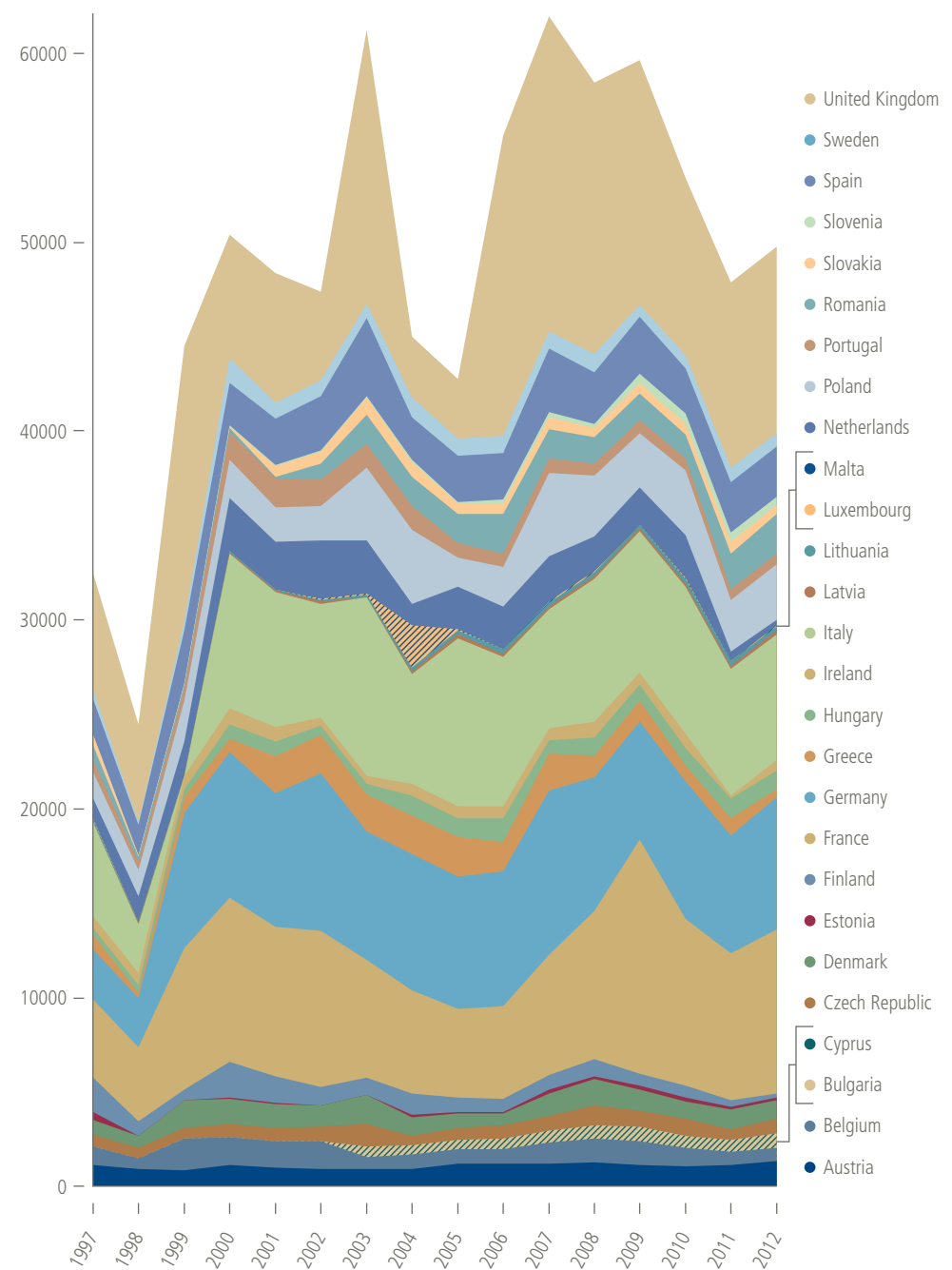
The analysis suggests three levels of demand to be used in the calculations of European added value:

- Low – 480,000
- Medium – 600,000
- High – 750,000

The requirement for territorial defence is also delivered through these combat forces

Historically, the rationale for sustaining large, non-deployable European land forces has been underpinned by a requirement for territorial defence against a large-scale land invasion from a global superpower adversary (i.e. the Soviet Union during the Cold War period). This was achieved largely through national conscription. However, in the context of the current security environment this requirement is no longer tenable and almost any conceivable conventional (i.e. non-nuclear) threat against European states in the foreseeable future would require modern, professional, well-equipped forces.

In other words, the nature of territorial defence is now much like expeditionary combat war. In the event of a major crisis – a threat to the very survival of European states – our assumption is

Figure 9: Deployment of EU Member State land forces 1997–2012

Source: IISS, Military Balance 1997–2012

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that civilians would be mobilised to help defend their homeland.¹⁴ In addition, the overarching collective security guarantee provided by NATO means that the majority of European states have their territorial defence effectively ‘underwritten’ by the US.

The size of recent European military deployments support our estimates

To validate and provide context for the estimates of required size of land forces, we reviewed military engagements over the last 15 years (since 1997) to establish the number of soldiers actually deployed on missions by EU member states over that time period. As would be expected, different member states contribute different numbers of soldiers to international missions. In aggregate the range of soldiers deployed by EU member states was between 25,000 and 60,000 (Figure 9).

This analysis shows that the years of highest deployment saw sustained deployment of 60,000 soldiers. This closely matches this study’s estimate of the maximum number of combat soldiers required in-theatre to meet a high-intensity operation under the Headline Goal. These peak deployments correspond to military surges in Iraq and Afghanistan.

Analysis of mission types over the last 15 years shows European forces engaged in a variety of missions, mandates, and regions of operation. Member states have contributed soldiers to a number of global and EU stabilisation missions (e.g. Afghanistan, DRC, Somalia, South Sudan, the Balkans). Some have also contributed to missions led by a single or small group of nations (e.g. Iraq, Cote d’Ivoire, Lebanon). Overall, the 15-year historic deployment data provides some empirical, top-down assurance of our bottom-up, mission-based estimates.

What is the potential European added value?

The first part of this analysis established that the supply of regular soldiers in Europe today is approximately 900,000. Based on mission scenarios articulated under the Petersberg Tasks, we then estimated that the required size of European land forces is between 480,000 and 750,000. The surplus of land forces personnel in Europe is therefore estimated to be between 150,000 and 420,000. To quantify the potential monetary value of that surplus, or the potential savings to Europe, this research identified average wages for land forces in different member states in order to cost the status quo and potential, future force sizes.

¹⁴ This assumption was validated through interviews with military experts.

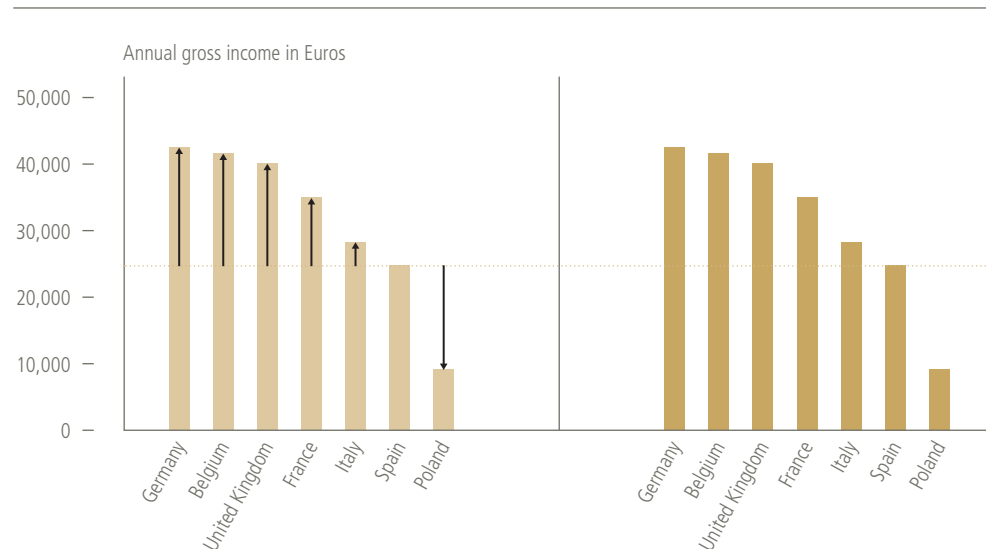
We were required to estimate average wages for European land forces

Wage data was gathered for soldiers in six countries: Belgium, France, Germany, Italy, Poland, and the United Kingdom. The data for France, Germany, and the UK show wage level by army rank (e.g. brigadier, colonel, major) whereas data for Belgium, Italy and Poland are aggregated by category of soldier (e.g. general officers, non-commissioned officers and privates). With this data, we calculated a weighted average wage of land forces for each of the six countries, based on the number of soldiers at each rank and their corresponding wage levels (detailed figures are given in Tables A2–A5 in the Appendix).

These six average wage levels are used to estimate the wages of land forces in the remaining countries. Based on Eurostat data on annual gross earnings,¹⁵ each member state is assigned to one of the six countries based on the nearest comparable gross earnings.¹⁶ Figure 10 shows the example of Spain, whose nearest comparator country is Italy (for more information see Table A5 in the Appendix).

Finally, the average wage for each member state is derived by taking the land forces' wage of the comparator country and adjusting it according to the relative difference in annual gross earnings. This approach assumes a similar relationship between military wage levels and general

Figure 10: Assigning member states to comparator countries



Source: Own illustration

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¹⁵ Annual gross earnings of a single parent without children, 100% of AW in Euro.

¹⁶ We calculate the distance in annual gross earnings of all EU member states to all six member states for which we have average wages of land forces and assign countries according to their minimal distance to one of our reference countries.



Figure 11: Estimation of land force wages



wage levels between two countries. For example Spain, whose annual gross earnings are 87.8 percent of those of its comparator (Italy), has an estimated land forces wage of Euro 13,670 (Figure 11). The same approach is applied to all countries in the different matching groups (Belgium, France, Germany, Italy, Poland, UK, see Table A5).¹⁷

There appears to be significant potential for European added value in land forces

Having derived the average wages for land force soldiers in each EU member state, we calculate the potential costs of two hypothetical future organisational structures:

1. 27 EU member state armies, with greater coordination and interoperability
In this case it is assumed that each member state would contribute a proportion of soldiers equal to the status quo in Europe. For example, German soldiers account for 10.5 percent of all soldiers in Europe today. This study assumes that Germany would continue to provide 10.5 percent of a smaller aggregate number of European soldiers.
2. Integrated European Petersberg Army
In this situation it is assumed that all soldiers in a single army would be paid the same wage, equal to the current highest land forces' wage rate in Europe.

¹⁷ It is important to stress that the Eurostat data on gross income are only used to assign countries to a suitable counterpart and to adjust the land force average wages according to the relative proportion of gross income. We are, however, not interested in the actual size of the figures and do not use these figures for any quantification of land force wages.

The second assumption accounts for a possible cost driver which could counteract the advantage from a lower number of soldiers: A tendency to pay EU soldiers' wages above the average of today's national armies could (over)compensate the cost advantages from a more integrated army. This refinement is crucial for a non-naïve approach to the potential added value of European service provision in general and has also been applied for other potential European services (see case study on European international representations).

We consider these structures against the low, medium and high estimates of the size of European land forces and apply two different wage scenarios. In a rather optimistic wage-scenario, we assume the payments are decentralised, i.e. the soldiers are paid according to their countries of origin. In a rather cautious (more realistic) wage-scenario, we instead assume that in a centralised army the soldier's remuneration is also centralised, i.e. land force soldiers are paid a common European wage. In the first round of calculations, we have decided to use the highest average wage for land force soldiers (the UK average wage). In the following rounds, however, we will also present thresholds of centralised wages.

The results are presented in Table 3. If Europe had a smaller aggregate number of soldiers with greater coordination and interoperability between the armies of the 27 member states, the potential European added value is estimated at between Euro 3.1 billion and Euro 9.2 billion. In the case of a single European Petersberg Army, in which wages for all soldiers align with the upper bound of current national wage schemes (Euro 40,000), the estimate of European added value is approximately Euro 1 billion in the 'low' scenario, and negative in the 'medium' and 'high' scenarios (for more information see Table A6 in the Appendix).

The latter results, however, are driven by the very extreme assumption of a centralised European remuneration which aligns with the highest national wages in the current payment scheme.

Table 3: Estimate of European added value

Size of future European land forces	Assumed wage levels	European added value (Euro)
Low (480,000)	National	9,233,850,000
	European	868,285,000
Medium (600,000)	National	6,525,240,000
	European	–3,931,715,000
High (750,000)	National	3,139,480,000
	European	–9,931,715,000

Source: ZEW and RAND Europe analysis

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This study therefore also presents threshold wages for each scenario and compares these threshold wages with median wages of the status quo. In case of the medium counterfactual scenario, the threshold wage for land force soldiers to derive positive European added value is Euro 33,500. This threshold wage further decreases with the size of the counterfactual: Euro 25,730 in the high counterfactual scenario. However, even these figures exceed the estimated status quo wage level of land forces in Europe, which range from Euro 18,480 (median wage) to Euro 22,570 (weighted average).

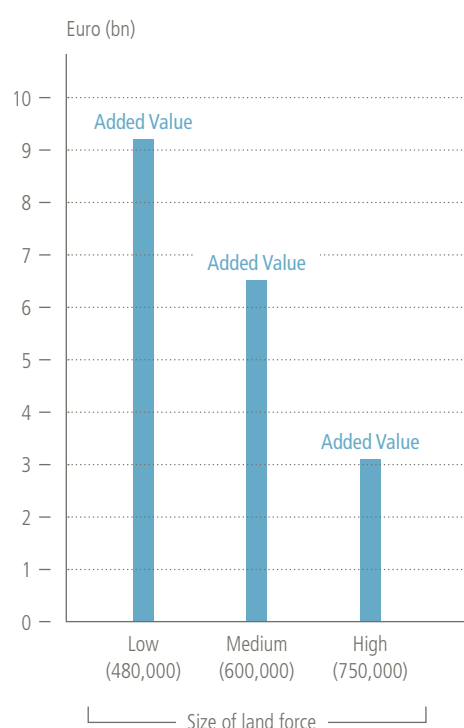
Taken together, the results point towards the presence of European added value unless centralised remuneration reaches a critical threshold, in which case the benefits of centralisation shrink to potentially negative levels. This means that to fully benefit from centralisation, centralised European wages for land force soldiers should not exceed 83 percent of the current maximum national wage for land force soldiers.

Conclusions

The analysis shows that there is potential for significant added value from smaller, more coordinated European land forces. In monetary terms, the opportunity for savings is estimated at between Euro 3 and Euro 9 billion per annum (Figure 12). Under the 'medium' scenario used in the analysis, Europe's 27 would in the future have a total of 600,000 land forces soldiers, compared with 890,000 soldiers today. This would be a significant but realistic reduction in personnel numbers – approximately one-third. The British Army's re-sizing of regular manning levels, from 110,000 in 2011 to 82,000 by 2020, amounts to a reduction in size of almost 30 percent (British Army 2012).

The benefit to European member states of consolidating their land forces to 600,000 would be approximately Euro 6.5 billion a year. However, the crucial caveat emerging from our wage-dependent simulations is that there is no convergence of wages to the top. If this were the case, the cost advantage of European land forces would translate into a cost disadvantage.

Figure 12: European added value for different sizes of land forces



Source: Own illustration

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Assuming a continuation of today's wage structure, this is a conservative estimate of the savings potential since this study has not attempted to quantify likely cost savings in other lines of development which would follow from a smaller Manning total. It could be reasonably expected that expenditure related to basing, training and routine consumables would decline in line with personnel numbers. There would be additional savings in personnel costs from reduced pension and benefit payments which are not included in these calculations. Finally, this study only considered a consolidation of regular soldiers and does not assume any reduction in the number of gendarmerie and conscription soldiers, which together total a further 570,000.

Simply cutting Manning levels without improving European interoperability would reduce Europe's aggregate military capability. The only way for Europe to be able to conduct high-intensity operations over a sustained period is by working together. To capture the potential European added value, any reduction in total personnel numbers should be accompanied by greater cooperation and coordination between member states' land forces. This could be achieved through European agreements on common standards, more integrated training, and specialisation across European forces.

European regular land forces of 600,000 would be similar in size to the US Army (570,000). With Europe's aggregate spending on military equipment per soldier so far below that of other advanced armies, savings from a reduction in manpower could be used to invest in the equipment required to modernise Europe's armed forces. This could include investment in helicopters, munitions, modern communications, and electronic countermeasures to provide soldiers with the most up-to-date and effective equipment. Based on our estimates, this investment could be up to Euro 10,800 per soldier in Europe, an increase of almost 40 percent compared with current spending.

The primary purpose of this study was to estimate a range of potential financial savings that could be realised should European land forces be configured to meet the stated military ambition of European member states. Our analysis was necessarily top down and contains a number of broad assumptions.

The potential savings estimated are substantial and – we believe – achievable. There would be practical and political challenges in effecting both the reductions and the required coordination between national defence ministries. But Europe's defence forces are facing new security challenges while lacking the financial headroom to make necessary investments. At Euro 6.5 billion a year the potential added value of greater European cooperation should be compelling.



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Appendix

Table Appendix 1: Deployability shares

	Regular land force soldiers	Deployable land forces	Deployable land forces to regular land forces
Country	Number	Number	Share
Austria	28,053	2,050	7.31
Belgium	21,586	7,344	34.02
Bulgaria	14,747	6,103	41.38
Cyprus	10,954	237	2.16
Czech Republic	18,128	8,441	46.56
Denmark*	8,155		
Estonia	1,393	697	50.04
Finland	27,119	1,800	6.64
France	112,000	88,000	78.57
Germany*	93,358		
Greece	86,300	22,182	25.70
Hungary	10,438	3,300	31.62
Ireland	6,401	850	13.28
Italy	107,020	61,000	57.00
Latvia*	1,772		
Lithuania	2,982	1,270	42.59
Luxembourg	464	241	51.94
Malta	1,578	159	10.08
Netherlands	20,503	18,475	90.11
Poland	46,560	3,130	6.72
Portugal	20,236	8,963	44.29
Romania	38,711	10,633	27.47
Slovakia	5,391	2,827	52.44
Slovenia	6,621	2,221	33.54
Spain	82,853	51,027	61.59
Sweden	4,476	3,122	69.75
UK	111,290	76,400	68.65
Sum	889,089		

* Information on deployable land forces is not available

Source: Defence Data: Maria Leonor Pires: EDA participating member states in 2010,
http://www.eda.europa.eu/docs/documents/National_Defence_Data_2010_4.pdf

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Table Appendix 2: Calculation of average wage: UK

	Annual wages	Army personnel	Weight		Average wage	
	in £ (2011/12)	number of soldiers	Soldiers	Category	Soldiers	Category
General Officers		2,588		2.44		2,220 £
General	177,993 £	58	0.05		97 £	
Brigadier	100,964 £	170	0.16		162 £	
Colonel	81,310 £	580	0.55		444 £	
Lieutenant Colonel	77,617 £	1,780	1.68		1,300 £	
Officers		12,180		11.46		4,076 £
Major	57,199 £	4,700	4.42		2,531 £	
Captain	39,959 £	5,040	4.74		1,896 £	
Lieutenant	31,147 £	2,440	1.15		358 £	
2nd Lieutenant	24,615 £		1.15		283 £	
Non-commissioned Officers		22,160		20.86		8,501 £
Warrant Officer I	46,753 £	1,620	1.52		713 £	
Warrant Officer II	43,252 £	4,500	4.24		1,832 £	
Staff Sergeant	38,256 £	5,950	5.60		2,143 £	
Sergeant	36,929 £	10,090	9.50		3,507 £	
Privates		69,310		65.24		18,881 £
Corporal	33,182 £	15,340	14.44		4,791 £	
Lance Corporal	28,940 £	16,200	15.25		4,413 £	
Private	17,736 £	37,770	35.55		6,306 £	
Total number of soldiers		106,238				
Average wage UK (£)					30,774 £	33,678 £
Average wage UK (€)					38,816 €	42,478 €



Table Appendix 3: Calculation of average wage: Germany

	Annual wages	Army personnel	Weight		Average wage	
	in € (2011/12)	number of soldiers	Soldiers	Category	Soldiers	Category
General Officers		210		0.10		107.49 €
General	127,368 €	3	0.00		1.91 €	
Generalleutnant	108,204 €	29	0.01		15.65 €	
Generalmajor	97,056 €	48	0.02		23.24 €	
Brigadegeneral	92,280 €	130	0.06		59.83 €	
Officers		38,162		19.03		7,867.14 €
Oberst	70,388 €	1,230	0.61		431.81 €	
Oberstleutnant	52,501 €	9,240	4.61		2,419.54 €	
Stabshauptmann, Major	44,483 €	3,581	1.79		794.49 €	
Hauptmann	38,182 €	10,470	5.22		1,993.89 €	
Oberleutnant	32,173 €	8,058	4.02		1,293.05 €	
Leutnant	29,099 €	5,583	2.78		810.28 €	
Non-Commissioned Officers		119,164		59.43		15,660.78 €
Stabsfeldwebel, Oberstabsfeldwebel	29,099 €	13,420	6.69		1,947.70 €	
Hauptfeldwebel Oberfähnrich	27,367 €	22,299	11.12		3,043.76 €	
Stabsunteroffizier, Feldwebel, Fähnrich, Oberfeldwebel	25,332 €	73,058	36.44		9,230.63 €	
Stabsunteroffizier	23,728 €	10,387	5.18		1,229.27 €	
Privates		42,960		21.43		4,781.01 €
(Ober-)Stabsgefreiter, Unteroffizier	22,893 €	12,165	6.07		1,389.02 €	
Obergefreiter, Hauptgefreiter	22,313 €	25,701	12.82		2,860.26 €	
Schütze, Gefreiter	21,614 €	5,094	2.54		549.14 €	
Total number of soldiers		200,496				
Average wage Germany (€)					28,093.47 €	28,416.42 €

Table Appendix 4: Calculation of average wage: France

		Annual wages	Army personnel	Weight		Average wage	
		in € (2011)	number of soldiers	Soldiers	Category	Soldiers	Category
Officers				13.20		8,395 €	
General	General Officers	83,820 €					
Group III	Colonel	73,752 €					
Group II	Commandant, Lieutenant-colonel	53,442 €					
Group I	Lieutenant, Capitaine	38,556 €					
Non-Commissioned Officers				35.00		10,156 €	
Group III	Major	33,096 €					
Group II	Adjutant, Adjundants-chefs	29,016 €					
Group I	Sergent, Sergent-chef	20,232 €					
Privates				51.80		8,684 €	
Caporal-chef		18,768 €					
Caporal		16,764 €					
Soldat		16,620 €					
Total number of soldiers							
Average wage France (€)						27,234 €	

Notes: The calculation of military average wages for land forces in the remaining countries Belgium, Italy, Poland follows the same procedure. There is, however, no detailed information on the number of soldiers per category. As for France, for these countries we have used average shares per category of Germany and the UK instead.

Source: <http://www.defense.gouv.fr/sga>

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**Table Appendix 5:** Calculation of military average wage for land forces based on minimal distances

	Gross salary (2010, €)	Difference to						Matching country*	Wage relation**	Average wage***
		Poland	Germany	Italy	Belgium	UK	France		(%)	(per soldier)
Austria	38,504 €	29,462 €	3,896 €	10,280 €	2,995 €	1,477 €	3,654 €	UK	96.31 %	40,908 €
Belgium	41,499 €	32,456 €	901 €	13,275 €	0 €	1,518 €	6,649 €	Belgium		18,476 €
Bulgaria	3,883 €	5,159 €	38,517 €	24,341 €	37,615 €	36,097 €	30,966 €	Poland	42.95 %	4,298 €
Cyprus	25,699 €	16,657 €	16,701 €	2,525 €	15,799 €	14,281 €	9,150 €	Italy	91.06 %	14,173 €
Czech Rep.	11,364 €	2,321 €	31,036 €	16,860 €	30,135 €	28,617 €	23,486 €	Poland	125.67 %	12,578 €
Denmark	50,498 €	41,456 €	8,098 €	22,274 €	8,999 €	10,517 €	15,649 €	Germany	119.10 %	33,844 €
Estonia	9,580 €	538 €	32,820 €	18,644 €	31,918 €	30,400 €	25,269 €	Poland	105.95 %	10,604 €
Finland	39,982 €	30,940 €	2,418 €	11,758 €	1,516 €	2 €	5,133 €	UK	100.00 %	42,479 €
France	34,849 €	25,807 €	7,551 €	6,625 €	6,649 €	5,131 €	0 €	France		27,234 €
Germany	42,400 €	33,358 €	0 €	14,176 €	901 €	2,419 €	7,551 €	Germany		28,416 €
Greece	20,457 €	11,415 €	21,943 €	7,767 €	21,042 €	19,524 €	14,392 €	Italy	72.48 %	11,282 €
Hungary	9,118 €	76 €	33,282 €	19,106 €	32,380 €	30,863 €	25,731 €	Poland	100.84 %	10,092 €
Ireland	32,308 €	23,266 €	10,092 €	4,084 €	9,191 €	7,673 €	2,541 €	France	92.71 %	25,248 €
Italy	28,224 €	19,182 €	14,176 €	0 €	13,275 €	11,757 €	6,625 €	Italy		15,566 €
Latvia	8,213 €	829 €	34,187 €	20,011 €	33,286 €	31,768 €	26,637 €	Poland	90.83 %	9,090 €
Lithuania	6,767 €	2,275 €	35,633 €	21,457 €	34,732 €	33,214 €	28,082 €	Poland	74.84 %	7,490 €
Luxembourg	49,317 €	40,275 €	6,917 €	21,093 €	7,818 €	9,336 €	14,468 €	Germany	116.31 %	33,052 €
Malta	17,947 €	8,905 €	24,453 €	10,277 €	23,552 €	22,034 €	16,902 €	Poland	198.48 %	19,865 €
Netherlands	45,215 €	36,173 €	2,815 €	16,991 €	3,716 €	5,234 €	10,366 €	Germany	106.64 %	30,303 €
Poland	9,042 €	0 €	33,358 €	19,182 €	32,456 €	30,938 €	25,807 €	Poland		10,008 €
Portugal	17,352 €	8,310 €	25,048 €	10,872 €	24,147 €	22,629 €	17,497 €	Poland	191.90 %	19,206 €
Romania	5,572 €	3,470 €	36,828 €	22,652 €	35,926 €	34,408 €	29,277 €	Poland	61.63 %	6,168 €
Slovakia	9,325 €	283 €	33,075 €	18,899 €	32,174 €	30,656 €	25,525 €	Poland	103.12 %	10,321 €
Slovenia	16,915 €	7,872 €	25,485 €	11,309 €	24,584 €	23,066 €	17,935 €	Poland	187.06 %	18,722 €
Spain	24,786 €	15,744 €	17,614 €	3,438 €	16,713 €	15,195 €	10,064 €	Italy	87.82 %	13,669 €
Sweden	38,607 €	29,565 €	3,793 €	10,383 €	2,891 €	1,374 €	3,758 €	UK	96.56 %	41,018 €
UK	39,981 €	30,938 €	2,419 €	11,757 €	1,518 €	0 €	5,131 €	UK		42,478 €

* According to minimum difference. ** Wage relation of gross salary according to matching country.

*** Average wage of matching country multiplied with wage relation.

Source: Eurostat

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Table Appendix 6: Calculation of European added value for land force soldiers (Example: European land forces = 600,000 soldiers)

	Land force soldiers			Average wage		Land force expenditures		
				National	Centralized	Status quo	National wages	Centralized wages
	(1) Number	(2) Share	(3) Number per country	(4) Euro	(5) Euro	= (1) × (4) Euro	= (3) × (4) Euro	= (3) × (5) Euro
Austria	28,053	0.03	18,932	40,908 €	40,000 €	1,147,603,632 €	774,458,102 €	757,260,522 €
Belgium	21,586	0.02	14,567	18,476 €	40,000 €	398,829,170 €	269,149,098 €	582,690,822 €
Bulgaria	14,747	0.02	9,952	4,298 €	40,000 €	63,386,121 €	42,776,002 €	398,079,382 €
Cyprus	10,954	0.01	7,392	14,173 €	40,000 €	155,253,188 €	104,772,315 €	295,691,432 €
Czech Rep.	18,128	0.02	12,234	12,578 €	40,000 €	228,011,815 €	153,873,334 €	489,345,836 €
Denmark	8,155	0.01	5,503	33,844 €	40,000 €	275,995,324 €	186,254,913 €	220,135,442 €
Estonia	1,393	0.00	940	10,604 €	40,000 €	14,771,352 €	9,968,419 €	37,602,535 €
Finland	27,119	0.03	18,301	42,479 €	40,000 €	1,151,994,085 €	777,420,991 €	732,048,198 €
France	112,000	0.13	75,583	27,234 €	40,000 €	3,050,225,472 €	2,058,438,788 €	3,023,319,375 €
Germany	93,358	0.11	63,002	28,416 €	40,000 €	2,652,900,591 €	1,790,304,857 €	2,520,098,663 €
Greece	86,300	0.10	58,239	11,282 €	40,000 €	973,637,412 €	657,057,333 €	2,329,575,554 €
Hungary	10,438	0.01	7,044	10,092 €	40,000 €	105,343,680 €	71,090,979 €	281,762,568 €
Ireland	6,401	0.01	4,320	25,248 €	40,000 €	161,613,084 €	109,064,278 €	172,788,101 €
Italy	107,020	0.12	72,222	15,566 €	40,000 €	1,665,819,810 €	1,124,175,292 €	2,888,889,639 €
Latvia	1,772	0.00	1,196	9,090 €	40,000 €	16,108,221 €	10,870,602 €	47,833,232 €
Lithuania	2,982	0.00	2,012	7,490 €	40,000 €	22,335,167 €	15,072,845 €	80,495,878 €
Luxembourg	464	0.00	313	33,052 €	40,000 €	15,336,216 €	10,349,616 €	12,525,180 €
Malta	1,578	0.00	1,065	19,865 €	40,000 €	31,346,292 €	21,153,985 €	42,596,410 €
Netherlands	20,503	0.02	13,836	30,303 €	40,000 €	621,303,110 €	419,285,208 €	553,456,403 €
Poland	46,560	0.05	31,421	10,008 €	40,000 €	465,989,186 €	314,471,905 €	1,256,837,055 €
Portugal	20,236	0.02	13,656	19,206 €	40,000 €	388,651,435 €	262,280,672 €	546,249,026 €
Romania	38,711	0.04	26,124	6,168 €	40,000 €	238,760,474 €	161,127,046 €	1,044,961,753 €
Slovakia	5,391	0.01	3,638	10,321 €	40,000 €	55,641,041 €	37,549,249 €	145,524,239 €
Slovenia	6,621	0.01	4,468	18,722 €	40,000 €	123,958,330 €	83,653,041 €	178,726,764 €
Spain	82,853	0.09	55,913	13,669 €	40,000 €	1,132,549,241 €	764,298,675 €	2,236,527,502 €
Sweden	4,476	0.01	3,021	41,018 €	40,000 €	183,597,671 €	123,900,535 €	120,824,799 €
UK	111,290	0.13	75,104	42,478 €	40,000 €	4,727,323,694 €	3,190,225,294 €	3,004,153,690 €
Sum	889,089	1.00	600,000			20,068,284,814 €	13,543,043,372 €	24,000,000,000 €



Measuring European Added Value: The Problem of Preference Heterogeneity

Hans Pitlik

Despite the substantial progress in economic and political integration over the past 60 years, the EU still has only limited fiscal responsibilities. The Union's overall budget amounts to about one percent of member states' GDP, which is just a small fraction of average national budgets with government expenditure-to-GDP ratios often far higher than 50 percent. An explanation is that the policy competencies currently allocated to the European level are largely of a regulatory character and thus do not carry significant expenditure needs. Only in the fields of regional (structural) and agricultural policies are financial resources of notable size (at least from a macroeconomic perspective) spent by the EU.

Although of comparably small volume, the Union's budget often comes in for heavy criticism (see Mueller 1997; Sapir et al. 2004; Alesina, Angeloni, Schuknecht 2005). A major strand of critique focuses on the tasks for which the Union spends its money. More specifically, it is argued that, on the one hand, the EU spends resources on policies which could and should be better dealt with by the national governments, such as on many agricultural issues. On the other hand, the EU budget does not devote any, or only very little, resources to issues for which the Union, according to many economists, should have more responsibilities (e.g. border controls).

Against this background, a fundamental question concerning the future development of the EU budget will be for which policy functions the European level should have responsibility. In this respect, European added value (EAV) plays a central role. According to the Commission, "an indispensable litmus test for any EU system of finances is its ability to demonstrate that spending at the European level offers extra advantages compared to what can be achieved through national programmes, or, in other words, brings with it a 'European value added'" (European Commission 2011:8).



Crucial questions are how EAV can be shown, measured, and calculated. This analysis looks at this problem from a narrow and simple fiscal federalism perspective.

Fiscal federalism, European public goods, and EAV

A notion of a possible ‘added value of the European budget’ relates to the idea that financial resources that are spent at the EU level in total deliver higher benefits compared to the same amount of resources spent at national or regional level. From a traditional fiscal federalism perspective, this corresponds to the problem of an identification of those policies that are performed best by assigning responsibilities to the highest level of centralisation, i.e. at the European level.¹

Economic research on EAV has regularly used fiscal federalism as a guiding principle to derive an optimal allocation of policy competences among different tiers of government in a federation. The theory of fiscal federalism does not necessarily assume the existence of a federation in a political sense.² In the context of this approach, which is based on pioneering work by Musgrave (1959) and Oates (1972), the optimal political-decision level for each policy area can be identified by cost-benefit considerations. The notion is that centralisation and decentralisation have specific advantages and drawbacks that differ from policy to policy. Setting relative benefits and costs of (de)centralisation of responsibilities against each other will yield an appropriate allocation of responsibilities to the different territorial authorities along the lines of the principle of subsidiarity. The normative choice between European, national, regional, and local level responsibilities is essentially a trade-off between costs and benefits of centralisation.

The approach is based on the fundamental notion of ‘fiscal equivalence’ (Olson, 1969). According to this basic principle, state structures should be designed such that for each public good provided by government authorities, the group of beneficiaries, decision-makers, and taxpayers coincides. If responsibilities for public goods provision are assigned accordingly (‘perfect matching’), cross-border externalities are absent and public goods will be provided efficiently.

Several authors thus conclude that the EU level should be responsible for the provision of ‘European public goods’, that are available jointly and non-rival for all EU-residents (but not outside the EU) (e.g. ECORYS et al. 2008; Collignon 2011). A number of goods/policies that appear to have European-wide benefits clearly come to mind. Among them are, to name but a few (ECORYS et al. 2008; Collignon 2011):

¹ At least if we rule out or neglect the possibility that for some policies global solutions might be even more preferable.

² I shall not discuss here whether the theory of fiscal federalism is adequate for an analysis of EU topics. See e.g. *Begg* (2009).

- border control;
- defence policies;
- internal security;
- market regulation and guarantees of fundamental economic freedoms;
- trade and competition policies;
- environmental issues, climate protection and energy policy;
- (fundamental) R&D and education policies;
- macroeconomic stabilisation policies.

It seems that European integration itself has created new European public goods that can only be provided efficiently at the European level. Reducing barriers to trade and migration, increased international mobility of physical, financial and human capital creates cross-border effects for example of national (sub-national) fiscal or education policies and, according to this approach, should be handled at the EU-level.

In most of these cases, it might well be demonstrated that assigning expenditure responsibilities to the EU-level can help member states save money. EAV can be generated if cost savings in national budgets exceed additional spending at the EU-level and the quality of the provided services is not reduced (Heinemann 2011).

I do not want to elaborate on the fundamental problems when measuring the quality (or quantity) of public service provision in general. Outputs and – even more important – outcomes from certain policy actions depend on numerous external factors, including the governance structures, other policies and other countries' efforts. However, I will argue that this simplified line of reasoning, i.e. assigning policies to the European level just because their transnational benefits causes EAV, neglects some central aspects of fiscal federalism.

European-wide benefits and scale economies are not enough

In 1969, Gordon Tullock emphasised that the existence of cross-border spillovers does not necessarily lead to optimal centralised solutions. Acknowledging that a 100-percent internalisation of external effects would require a world government even for road cleaning, Tullock (1969) asks to which extent interregional spillovers should be internalized? Fifty percent, 80 percent, or 99 percent? A formal calculus of optimal federal structures (Tullock 1969, Oates 1972 and 1999 on federalism in general; Eller, Breuss 2004; Pitlik 2007; Heinemann, Mohl, Osterloh 2010) takes into account:

- (1) factors that point towards centralisation of policy responsibilities, especially
 - economies of scale (economies of scope);
 - interregional (cross-border) spillovers.

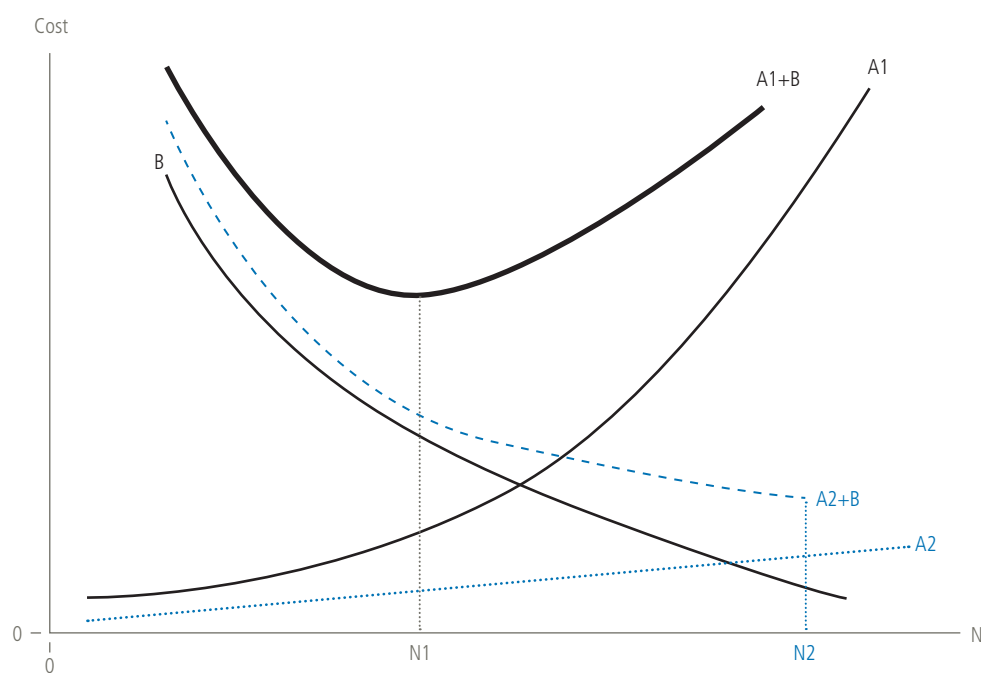


(2) factors that point towards decentralisation of responsibilities, in particular

- interregional preference heterogeneity and cost of information;
- interregional competition both as a driver of innovation and as a constraint; on national Leviathan governments.

The idea of the approach is illustrated in Figure 1. The horizontal axis depicts population size N of a geographical area. N_2 is the total population of the area (say Europe). The curve B illustrates welfare losses in the population that arise because of non-internalised cross-border spillovers and unexploited scale economies in the provision of public goods. With an increasing number of individuals involved through a centralisation of responsibilities welfare losses are reduced. This however also comes at a cost. The solid (black) curve A_1 shows welfare losses from centralisation due to a violation of preferences. The notion is that public outputs cannot be provided according to the demands of the local population because of higher costs of acquiring the information or lack of competitive political pressure in a more centralised system. Put differently, these are the countervailing effects against centralisation. The theoretically optimal level of provision (jurisdiction size) is N_1 , where the sum of welfare losses (A_1+B) is minimised.

Figure 1: Optimal degree of (de)centralisation



Source: Own illustration

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Centralisation of responsibilities is an optimal solution if the welfare losses are minimised at N2. This is the case if the benefits from centralisation are substantial and/or the welfare losses from a centralisation are comparably small, as depicted by the dotted *blue* line A2 and the corresponding added A2+B-curve.

Only if the benefits of centralisation outweigh its cost, allocation of certain policy tasks towards a higher governmental level is justified (centralisation). And the allocation of competences to the European level requires that the expected benefits of centralisation are far higher than expected costs.

This simple consideration highlights an often neglected point in the debate about EAV and the proper role of the EU. From an economic point of view, it is *not enough to simply identify policies that have the characteristics of a European public good* with a benefit region that is corresponding to the entire Union area and substantial economies of scale in consumption. Only if we additionally assume that potential welfare losses due to preference violation from centralised supply are comparably small (or even negligible) an added value from EU responsibility can reasonably be expected.

Calculating European added value requires a measure for preference violation at the national level

In an ever-enlarging Union, preference heterogeneity among European citizens is probably not to be neglected. Eurobarometer surveys and opinion polls constantly show considerable differences in policy preferences among citizens of different nations, even with respect to many policies for which the term European public goods appears to suit best (e.g. common defence policies). Alesina and Wacziarg (1999) argue that the EU already has ‘gone too far’ in centralisation given the existing preference heterogeneities among European taxpayers and consumers.

Mueller (2008) lists a number of potential sources of preference heterogeneities with respect to the desired level and quality of public goods provision:

- simple taste differences
- income differences
- ideology
- geography
- religion
- ethnics
- culture
- language.



Begg (2009), for example, finds that defence or foreign policies show the classic characteristics of European public goods which make them candidates for EU-responsibilities. Nevertheless, both policy areas are at the core of what member states usually stand for (as do social policies). Hence, “the EU cannot expect to intrude in these areas just because economies of scale might make it more effective in delivering policy”.

All of these factors probably impact the utility individuals derive from different levels of public goods provision. As Mueller states: “If the continual expansion of the EU leads to continually greater degrees of heterogeneity across the EU in citizen preferences (tastes) for EU-wide public goods, expansion is likely to erode the perceived benefits from the EU of citizens in member countries, unless these costs are offset by other benefits from expansion”.

The central problem is then how to measure disutility from preference violations if public goods are provided to a different than desired level, as many of the welfare losses incurred due to preference heterogeneity are not ‘real’, but psychological costs.

EU economic governance of public goods provision has an effect on EAV

A further aspect that should be emphasised with respect to the measurement of EAV is that the benefits and cost of policies depend on the institutional structures of provision. This can easily be seen for the heterogeneity issue discussed above. The implicit assumption of preference violation through centralised provision is that of a ‘rigid union’, with an externally imposed restriction for the central level to provide uniform policy across countries (Alesina, Angeloni, Etro 2005). Several institutional arrangements in more flexible unions may offer an opportunity to deliver regionally differentiated policies which are better adapted to local preferences as alternatives to full delegation (see also the subsidiarity test by Pelkmans 2006):³

- shared responsibilities;
- matching grants (e.g. supplementary EU spending alongside national spending);
- enhanced cooperation.

In many cases, it is possible to decide centrally on geographically differentiated levels of public goods in line with the diverse regional preferences and cultures. These arrangements might be suitable to reduce the welfare losses from preference violations. Note, however, that more complex forms of organisation of a fiscal federalism do not come without additional costs, which impact the added value of European provision. For example, regional differentiation opens up

³ Indeed, in many cases the EU appears to be simply an agent for the member states, rather than an autonomous tier of government (Begg 2009).

the political realm to redistribution games among nations to obtain a larger share of EU spending (Dur, Roelfsmaa 2005). To make things even more complicated, the effects of certain EU policies (e.g. structural funds) seem to depend strongly on institutional quality at the national (recipient) level.

Hence, making EAV an operational concept would also require taking into account the effects of different types of EU governance, ranging from delegation and coordination to national autonomy. This not a novel point. Fiscal federalism implicitly assumes frictions of central level governments when trying to gather correct information on regional preferences (Pitlik 1997). Political economics has shown that these frictions are the result of institutional arrangements of collective decision making.

Preliminary conclusion

The concept of value added is of utmost importance in determining the future proper role of the EU. An attempt to estimate and gauge the EAV and to provide a quantitative framework for measurement will be a substantial step in the right direction. Such an attempt can be based on fiscal federalism.

The theory of fiscal federalism yet sometimes appears to be at best a heuristic and inexact method of calculating the suitable assignment of policies and the proper governmental level of provision. But, if we take the concept of EAV seriously, it is important not to overlook the well-being effects on the national level stemming from preference violations. Unfortunately, these appear to be much more difficult to account for than the calculation of pure budgetary effects.



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Economies of Scale in the Public Sector: Concept and Measurement of EAV

Robert Schwager

Negotiations on the multiannual financial framework 2014-2020 once again sparked debate about the adequacy of the European budget: Is spending by the European Union (EU) too small, too large, or just right? In addition to the general amount of fiscal resources transferred from the member states to the EU, European leaders had to decide which policy fields should obtain higher, and which fields should obtain lower funds in the EU budget. The research project of the Bertelsmann Stiftung conducted together with the ZEW tackles this issue under the label 'European added value'. This input addresses two basic questions related to this concept:

1. What is European added value?
2. How can European added value be measured?

In economic terms, European added value refers to the optimal degree of centralisation in Europe, a topic which is addressed by the theory of fiscal federalism. Among the various considerations put forward by this strand of research, the concept of economies of scale traditionally takes a prominent role. For this reason, this essay aims at clarifying this concept and its empirical content. Specifically, it relates economies of scale to the theory of public goods, and points out a fundamental problem arising in any attempt to quantify economies of scale in the public sector. It will then discuss three possible solutions to this problem, and conclude by comparing the merits of these solutions.



Economies of scale and European public goods

In the public sector, economies of scale arise when larger jurisdictions can provide a public good at lower cost than smaller jurisdictions. To define the concept formally, let g be the quality provided by some public service such as roads or higher education. Furthermore, denote by n_1 and n_2 the numbers of inhabitants of two jurisdictions 1 and 2, say member states of the EU, and by $C(g, n)$ the cost of providing g units of the public good to n users. With this notation, economies of scale are present if $C(g, n_1 + n_2) < C(g, n_1) + C(g, n_2)$. Thus, if the two jurisdictions provide the public service jointly, say by transferring responsibility for it to the EU, the total cost is reduced compared to a separate provision. The European added value of European spending then is quantified by the cost saved compared to spending by the member states: $C(g, n_1) + C(g, n_2) - C(g, n_1 + n_2)$.

In the language of the theory of public goods, this cost saving by centralisation arises from a partial or complete lack of rivalness in the consumption of the public good. Given that the public service is provided to the n_1 inhabitants of the first member state, adding the n_2 additional users from the second member state requires a less than proportional increase in expenditures, even if the service quality g available for all users is kept constant. Equivalently, the per-capita cost of providing a public good $c(g, n) = C(g, n)/n$ decrease in the number of users. If a public good satisfies this property at population numbers n corresponding roughly to the number of inhabitants of the larger member states, it satisfies the criterion of (partial) non-rivalness at the European level, and thus one may call it a European public good.

This simple formulation is the basis of empirical research aiming at detecting and quantifying economies of scale in the public sector. Using data on the expenditures on some public function, or the public budget as a whole, for jurisdictions of variable population size, one can regress per-capita spending on the number of inhabitants. The regression coefficient then describes $\partial c / \partial n$, the partial derivative of per capita cost with respect to population size. If the coefficient is negative, then economies of scale are present and a centralisation of this task induces cost savings.

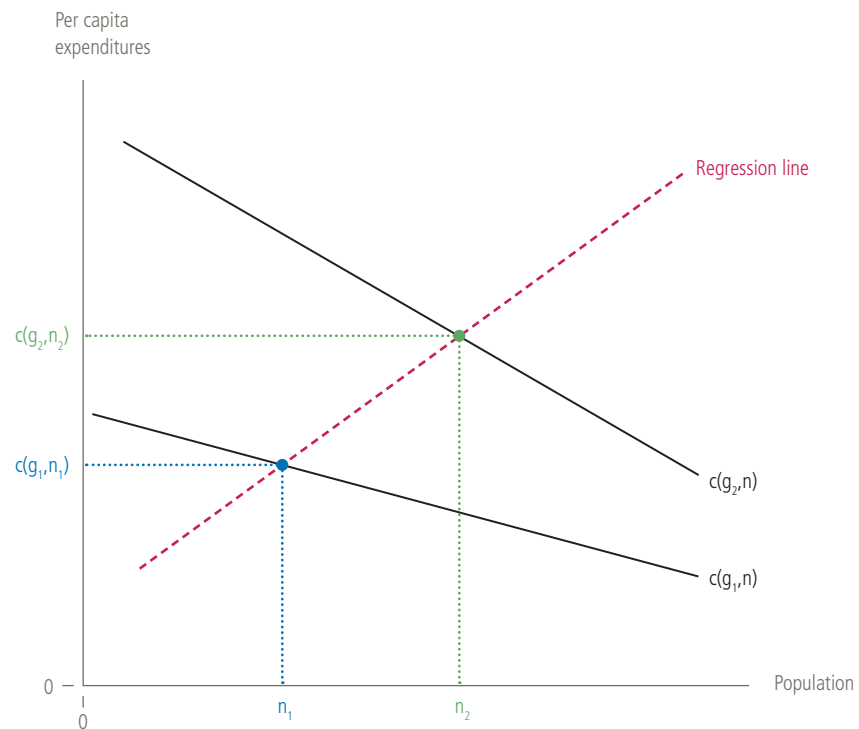
Quite obviously, however, this immediate conclusion is only justified if the service quality provided is identical across the jurisdictions in the sample. Otherwise, low expenditures in, say, large states may simply reflect a poor level of public goods rather than genuine cost savings. Conversely, high expenditures in large jurisdictions may not necessarily contradict the presence of economies of scale. Rather, such expenditures may simply be the consequence of high fiscal revenues per capita, which in turn may be caused by a strong tax base or by favourable treatment of large jurisdictions in a fiscal equalization scheme.

Figure 1 illustrates this. There, population size and per capita expenditures of two jurisdictions are displayed. It is assumed that the larger jurisdiction provides a higher service level than

the smaller one ($n_2 > n_1$ and $g_2 > g_1$). The true per capita cost functions are given by the solid black lines. These slope downwards, so that there are indeed economies of scale. Since jurisdiction 2 provides a better service level, its curve, labelled $c(g_2, n)$, is located above the curve for jurisdiction 1, labelled $c(g_1, n)$. As shown in the figure, it is therefore well possible that, in spite of its larger population, jurisdiction 2 spends more per capita than the smaller jurisdiction 1 ($c(g_2, n_2) > c(g_1, n_1)$). If one now ignores the difference in service levels provided, one derives from this observation that the relationship between size and per capita cost is increasing, as illustrated by the dashed red regression line.

There is a strong theoretical reason why the presence of economies of scale may actually induce per-capita expenditures to *rise* rather than decrease in population size. Economies of scale mean that the tax per capita required to finance a public good is decreasing with increasing population size. Rationally, then, larger jurisdictions will provide a higher quality of the public good than smaller ones, and, if demand for this public service is sufficiently price-elastic, they will incur

Figure 1: Population size and expenditures for public goods. $g_1 < g_2$.



Source: Own illustration

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higher expenditures than smaller jurisdictions (see Büttner and Holm-Hadulla 2013). In the most extreme case, some public goods may not be provided at all by smaller jurisdictions because they are too costly (Oates 1989), yielding zero expenditures in small, but potentially very high expenditures in large jurisdictions.

Formally, the effect of population size on the level of public good demanded can be integrated in the cost function by assuming a demand function $g(n)$ which depends on population size. Then, per capita cost is $c(g(n), n)$, and an increase in population changes the per capita cost according to the total derivative $(\partial c / \partial g) (\partial g / \partial n) + \partial c / \partial n$. In a regression that does not take the service level into account, the coefficient of population thus gives the combined effect that population exerts directly on the per capita cost (the second term) and indirectly via a change in demand (the first term). Specifically, if the demand reaction is strong, one will find a positive effect of population on per capita expenditures, as illustrated in Figure 1, falsely concluding that there are diseconomies of scale.

Empirical approaches

Identical service quality across jurisdictions: In order to deal with this issue, three solutions come to mind. The first consists of essentially ignoring the problem by assuming that the service level g is identical across jurisdictions. While this assumption of course seems odd after what was argued above, for some public activities, it might actually not be too far off the mark. Specifically, spending on agricultural policy is likely to be a pure rent flowing to farmers, and so probably does not provide much of a benefit to citizens; that is, $g \approx 0$ in all countries. Hence, the interesting issue is simply to find out whether a decentralized or a centralized responsibility minimizes expenditures, and comparing expenditure levels across nations of different sizes may be perfectly sufficient to assess a potential value added of European responsibility in this policy area.

Indicators: A second solution aims at controlling for the service level provided by the various jurisdictions by adding a measure of g as an additional explanatory variable. Taking transportation, security, and education as examples, such indicators could be the length of the roads, the number of policemen, or the number of pupils in a jurisdiction (see Büttner, Schwager, and Stegarescu 2004). The benefit of using such variables, which mostly measure the quantity of some input used to provide the public good in question, is that data are usually easily available. On the downside, such input indicators are clearly very rough measures of what the government delivers. Specifically, the quality of the public service is not taken into account: The length of the roads does not say anything about their state of maintenance; policemen in different jurisdictions may have different qualifications; and schooling many children is of little use if the teaching is mediocre.

Preferably, one therefore should look for indicators that more directly try to measure the output of the production of public services. As mentioned by Hanushek (2002: 2046), education is a rare field of public spending where such an output indicator is available – in the form of the results of standardized ability tests such as the PISA study administered by the OECD. In many other fields, however, such output measures are difficult to conceive, let alone collect. For example, a low crime rate may be due to the quality of policing, or to a socially favoured environment, or even to the fact that policing is so bad that people do not bother to report crimes. Emphasizing the quality dimension, another kind of indicators is based on surveys asking citizens how satisfied they are with some public service in their jurisdiction. Answers to this question certainly give helpful feedback to local politicians and administrators. They are likely, however, to be as much determined by region-specific levels of expectations as by the objective quality of the public service provided. Thus, in many policy fields it seems extremely difficult to find suitable indicators of the quality of public goods provided.

One might think that these difficulties are just another example of the lack of good data which pervasively plagues empirical research in economics. Although more data are always helpful, this view stops short of recognizing that the difficulty in measuring the output of a public good is of a conceptual nature (see Büttner, Enß, and Schwager 2009). Public service levels are unobservable because of the very nature of public, or publicly provided, goods. A defining characteristic of public goods is non-excludability, that is, it is technically impossible or too costly to prevent individuals who do not contribute to the financing of the good from using it. Conceptually distinct from, but similar to, public goods are publicly provided private goods such as schools or health care. Excluding non-contributors from using these goods would be technically and economically feasible, but is not practised for political reasons.

For the issue at hand, however, the distinction between public and publicly provided goods is not important, since both categories share the key feature preventing a measurement of the quality of the good supplied. In both cases, no price is levied from citizens for using the good, and thus no information is revealed about the willingness to pay for it. Hence, an objective measure of the value produced by the public sector is not available. This stands in marked contrast to the output of a private firm whose quality is measured by the price it fetches on the market. Thus the value of the firm's overall output is readily quantified by the revenues earned.

Taking this argument to the extreme, one cannot even know whether the kind of public service offered is at all beneficial for the citizens, since no individual purchase decision is ever taken. Thus, even where seemingly objective output indicators are available, it is not clear whether they really describe what is important to citizens. For example, it is not obvious that standardized tests in reading and mathematics measure everything that parents expect from schools. Rather, parents might be more concerned, say, with enhancing the social competencies, the self-esteem, or even the leisure, of their children.



Modelling the demand for public goods: Given these difficulties, the third approach to estimate economies of scale does not try to observe public service levels themselves. Instead, one constructs a model which explains the level of public goods provided in a jurisdiction, and uses the implications from this model to isolate the cost saving effect of larger populations (see Borchering and Deacon 1972). Formally, if one has information on $(\partial c/\partial g) \cdot (\partial g/\partial n)$, one can subtract this quantity from the population coefficient estimated in a regression without controlling for the level of public good g so as to recover the direct cost effect. Obviously, given that no data on g are available, one cannot simply estimate the effects $\partial c/\partial g$ and $\partial g/\partial n$. Rather, one has to add information about some determinant of cost or demand from a source which is independent of the estimation of the cost function.

In order to illustrate this procedure, consider a simple example with the cost function $C(g, n) = gn^\gamma$, so that per capita cost is $c(g, n) = gn^{\gamma-1}$. Here, the interesting parameter is $\gamma-1$, the elasticity of per capita cost with respect to population. If $\gamma-1 < 0$ ($\gamma-1 > 0$), then there are economies (diseconomies) of scale in providing g to larger communities. The per capita tax price of a unit of g is denoted by p , and an iso-elastic demand function $g = p^{-\epsilon}$ for the public good is assumed, where $\epsilon > 0$ is the (absolute value of the) constant price elasticity of demand. Efficient provision requires $p = \partial c/\partial g$, hence $p = n^{\gamma-1}$, and inserting this in the demand function $g = p^{-\epsilon}$ yields demand as a function of population size, $g(n) = n^{\epsilon(1-\gamma)}$. This allows us to eliminate g from the cost function, leading to $c(g(n), n) = n^{(\gamma-1)(1-\epsilon)}$, or, taking logarithms, $\ln c = (\gamma-1)(1-\epsilon) \ln n$. Thus, a logarithmic regression of per capita cost on population yields the coefficient $(\gamma-1)(1-\epsilon)$.

This coefficient incorporates both the cost ($\gamma-1$) and the demand (ϵ) effects of population on expenditures. However, if one makes an assumption on ϵ , one can calculate the scale parameter $\gamma-1$. For example, assuming $\epsilon=0$ implies that demand g is constant such that omitting the variable g does not bias the estimated coefficient. (This corresponds to the first approach for estimating economies of scale mentioned above.) Also, if one has good reason to believe that demand is very price-elastic, i.e., $\epsilon > 1$, then the estimated coefficient will have a different sign than the scale parameter $\gamma-1$. In this case, there is value added in centralizing the public function in question if larger jurisdictions have *higher* rather than lower expenditures compared to smaller ones. Finally, if one has a numerical value for ϵ , one can put a precise figure on $\gamma-1$. In such a case one can even simulate the quantitative benefit from centralizing the provision of a public good at the European level.

Where can information on ϵ be obtained, if one wants to substantiate it with observed data? Here, no general answer can be provided, but it is worth noting that the price elasticity of demand for public goods is but one example for this procedure. In general, any parameter that describes the impact of some variable on cost or demand may be used. Thus, the precise model at hand, and the nature of the public service studied, must be examined so as to come up with creative ideas. For example, in the case of publicly provided private goods, there may be close substitutes sold on

private markets where demand can be observed. Thus, a model estimating the revenues of private schools may give indication on the price elasticity of the demand for education. As a second example, in the pioneering work of Borchering and Deacon (1972), the identifying parameter is the production elasticity of labour in the technology producing the public good, which is calibrated to be the share of personnel expenditures in total government outlays.

Comparison of the approaches

Since there is no revealed preference for public goods, and therefore no theoretically convincing measure of the quality of public goods, all attempts at quantifying economies of scale in the public sector must necessarily remain imperfect. Nevertheless, all three approaches already discussed have their merit. First of all, it may well be that for some public goods, quality differences are minor. Also, from a purely fiscal perspective, saving money by transferring functions to the European level might be the main goal, even if that goes in hand with a decrease in the quality of public services. Thus, in some cases, a pure comparison of expenditures across jurisdictions of different size will be informative, and the conclusion that larger jurisdictions spend less per capita may give a valid hint of a potential European added value.

Nevertheless, an estimate of cost savings that controls, however imperfectly, for the level of public goods provided would generally be more convincing. Thus, while it is impossible to find theoretically ideal indicators of the quality of public services, it seems obvious that using some indicator can improve the quality of the estimation substantially. Specifically, one should strive for variables that are as close as possible to the output of the public service studied, rather than relying on purely quantitative measures of the number of staff deployed or the number of individuals served. Returning to the example of standardized ability tests as an indicator of a school system's output, one has to acknowledge that the reservations formulated above are somewhat hyperbolic. If one were to show empirically that large (small) jurisdictions spend less on education than small (large) ones while scoring at least as good in PISA tests, one would no doubt have gone a long way towards establishing a value added of centralizing (decentralizing) education.

The third approach, which consists of modelling the demand for public goods together with the cost of provision, appears to be more subtle than the use of indicators since it seems to circumvent the problem caused by the lack of an observable measure of public output. In essence, however, this approach just replaces information on the level of public service by information on some parameter determining this service level. Hence, whether such an approach is more convincing than using indicators to control directly for the level of public goods provided depends strongly on the plausibility of the underlying model, and the availability of reasonable conjectures about the identifying parameter. If such a convincing model can be formulated, it may yield results that are highly valuable both from a theoretical and a political perspective.



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