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The Role of Crisis and the Power
of Bureaucracy**

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REFORMING THE PUBLIC ADMINISTRATION: THE ROLE OF CRISIS AND THE POWER OF BUREAUCRACY

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Abstract

The need to balance austerity with growth policies has put government efficiency high on the economic policy agenda in Europe. Administrative reforms which boost the efficiency of the administration can alleviate the trade-off between consolidation and public service provision. Against such backdrop, this study explores the determinants of efficiency enhancing public administration reforms for a panel of EU countries using a novel reform indicator. The findings support the political-economic reasoning: An economic and fiscal crisis is a potent catalyst for reforms, but a powerful bureaucracy effectively constrains the opportunities of a crisis to promote this particular type of reform. Furthermore, there is evidence for horizontal learning from other EU countries, and for vertical learning associated with a particular type of EU transfers.

JEL codes: H83, H11, D73

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1 Introduction

The recent European crisis has put the issue of government efficiency high on the economic policy agenda. With strictly binding government budget constraints the pressure on more “bang for bucks” from public service provision has grown. Policy measures which cut back bureaucratic slack and red tape can alleviate the trade-off between consolidation and public service provision. Hence, reforms aiming at a higher productivity in public service provision, such as devolution and decentralization strategies, introducing competitive mechanisms within the public sector, revised budget practices and procedures, performance-oriented approaches to budgeting and management, and reliance on e-government, could be a substitute for cuts in spending or tax increases (Curristine et al., 2007).

The empirical public finance literature points to the role of government efficiency in several crucial respects. Inefficiencies in public administration have been identified as a bottleneck for firm performance and competitiveness (Austrian Institute of Economic Research, 2012). Based on a large country sample, Angelopoulos et al. (2008) show that the intensively debated relation between government size and economic growth is conditional on the efficiency of government spending. And Heylen et al. (2013) find evidence that attempts for budget consolidation are likely to be more successful when consolidation programs are adopted by a more efficient government apparatus. In their view, efficiency fosters consolidation through at least two channels: First, efficient governments appear to adopt consolidation programs with a more promising structure. And second, programs implemented by an efficient administration benefit from a credibility bonus.

Hence, fostering public sector efficiency is a natural candidate for any long-run growth agenda in general, and for countries in fiscal trouble in particular. And it is not surprising that approaches to improve the efficiency of public administration are part of virtually all reform programs of European governments under fiscal stress. However, it cannot be taken for granted that reform rhetoric always stands for reform substance. Slack in public service provision is deeply rooted in bureaucratic incentives, principal-agent problems and political-economic equilibria. These equilibria are co-determined by lobby influence and the existence of information advantages of bureaucrats over voters or their elected representatives. And it is not obvious at all that economic or fiscal crises change these equilibria towards a more reform friendly outcome.

On the contrary, times of fiscal austerity may exacerbate problems of supervising the bureaucracy or give bureaucrats a particular power, since politicians urgently need their support for a successful crisis management. Therefore, it is unclear to which extent times of economic and fiscal stress really push government efficiency. Moreover, there is hardly any empirical evidence on potential political or economic determinants of efficiency improving public sector reforms.

There are at least three closely related and well developed strands in the empirical literature (briefly surveyed in the next section) which, however, do not focus on efficiency inducing public sector reforms: First, there is a larger field interested in the timing and extent of reform decisions in general. Reform issues covered typically are product and labor market, welfare state and tax reforms whereas efficiency enhancing public sector reforms so far are almost totally neglected. Second, there is a growing literature which measures efficiency of public service provision in different federal contexts and looks at economic or political-economic drivers. These studies aim at understanding the given heterogeneity in jurisdictional efficiency but are hardly helpful in understanding dynamic changes and reforms. Third, a substantial literature deals with the drivers of consolidation. These studies, *inter alia*, are also interested into adjustments of administrative spending. However, those spending cuts are not directly informative on efficiency inducing reforms since these cuts may simply represent a reduction of public service provision.

Our study is an innovation to the reform literature as it addresses a neglected but important topic: the determinants of those reforms which aim at improving the efficiency of the public administration for providing public services and raising revenues. We explicitly disregard reforms changing the extensive margin of the public sector through increasing or decreasing the level of service provision. Instead, our sole interest is on reforms which potentially change the intensive margin through an improvement in the technical efficiency of administrative production (see Bonesronning, 2013, for this distinction in the context of educational reform).

Our study is also novel with respect to the database employed, the European Commission's MICREF database. This choice is guided by our focus on efficiency improving public sector reforms. For that purpose, our reform indicator has to fulfil several requirements: It should identify a procedural innovation related to public service production or tax administration. At the same time, it should not be based on these reforms' economic outcomes which may be influenced by several other factors. Typical outcome-related reform indicators like public

spending or number of staff suffer from a fundamental identification problem since exogenous factors (business cycle, expectations, financial market conditions etc.) may impact the measurable outcome so that the contribution of a preceding reform is hardly recognizable (Wiese, 2014). To some extent, this problem also holds for those reform indicators which like the World Bank Doing Business Indicators or indicators of economic freedom are based on expert surveys. These indicators are highly popular as a proxy for reform episodes (e.g., Pitlik and Wirth, 2003; Heinemann and Tanz, 2008; Rode and Gwartney, 2012; Giuliano et al., 2013; Leibrecht and Pitlik, 2015). However, expert opinions are also influenced by a country's overall economic and social performance.

The search for outcome-unrelated indicators of policy inputs has recently inspired the so called "narrative approaches" in the empirical literature on fiscal policy (e.g., Romer and Romer, 2010). This literature - through the analysis of narrative records like speeches or parliamentary debates - tries to identify those changes in fiscal policy which are not motivated by the cyclical situation and, in this respect, is exogenous. We share this literature's objective to employ a reform indicator which has largely the character of a policy input indicator unrelated to economic outcomes or to anti-cyclical strategies. We calculate our indicator from the European Commission's MICREF database limiting the measure to a subset of reform classifications which target the efficiency of the public administration. The newly created reform indicator does not solely measure a change in the level of public spending, and it is also not directly driven by fiscal outcomes such as a possible anti-cyclical spending strategy. The analysis proceeds in the following steps: First, we give a survey of the related avenues in the literature mentioned above. In the subsequent theoretical section, we analyze which factors should potentially change the political-economic equilibria that determine bureaucratic slack and, consequently, derive testable hypotheses. The empirical part starts with a description of our reform indicators taken from the MICREF database followed by econometric analyses.

Our results, based on panel estimations of all EU countries in the 2000–2013 period, confirm our theoretical reasoning: The frequent finding in the empirical reform literature that crisis induces reforms also holds for public administration reforms as a general pattern. This positive crisis effect is, however, conditional on our proxies for the power of bureaucracy: With a large bureaucracy, an economic crisis is less likely to push innovations in public service provision.

Another finding relates to learning. We observe vertical learning associated with a particular type of EU transfers, and horizontal learning from the reform examples of other EU countries.

2 Relevant strands in the literature

Over the past decade a growing literature has explored the drivers of structural reforms in industrial countries. The starting point was the observations that despite a common international environment characterized by increasing global competition countries differed considerably in their speed to adjust to these new constraints. The literature's empirical workhorse is the study of country panels. Examples are Abiad and Mody (2005), Dreher et al. (2009), Pitlik and Wirth (2003) or Pitlik (2010). Reforms which have been examined cover financial deregulation, product market opening, trade liberalization, labor market deregulation and adjustments which make the pension or benefit system more sustainable.

The existing studies focus on a rich set of potential drivers of reforms, for example, the role of the political leaders' individual characteristics (Dreher et al., 2009), the role of trust (Heinemann and Tanz, 2008) or the constraints resulting from the euro introduction (Duval and Elmeskov, 2006). Beyond these particular interests of single studies, there are, however, common patterns in the literature: First, the occurrence of reform is typically modelled to depend on the institutional starting point which, if highly inefficient, indicates a high need for reforms. Second, the study designs frequently allow for regional diffusion and learning of reforms. The argument is that reforms in neighboring countries enable learning or activate yardstick competition. Third, crisis proxies are regularly included since times of economic or social crises are seen as windows of opportunities for far reaching institutional change. The argument is that a crisis indicates voters that the status quo is no longer an available option whereas good economic times strengthen the status quo bias (see Heinemann and Grigoriadis, 2013, for a full discussion). This empirical reform literature with its key findings and empirical testing designs is a crucial starting point for us. Nevertheless it has one blank spot since it has neglected the determinants of efficiency enhancing public administration reforms which is our focus.

Whereas the reform literature has paid no attention to issues of public sector efficiency there is a huge literature explicitly dealing with the measurement and comparison of efficiency in

public service provision (Afonso et al., 2005; O'Mahony and Stevens, 2006). This literature's motivation is that improved technical efficiency can be utilized for better or more productive services, or - especially in times of pressing fiscal consolidation needs - to a reduction of government resource use and overall tax burden. In line with this idea, Angelopoulos et al. (2008) find that what really matters for economic growth is not government size per se, but the country's size-efficiency mix.

Aggregate measurement of public sector performance is receiving increasing attention in certain sectors such as R&D, health and education (Afonso and St.Aubyn, 2005), but attention for the administrative bureaucratic part of government, or even for government in general is still rather limited. Adam et al. (2011) show that institutional factors and governance quality play a major role in explaining relative government efficiency at the country level; Geys et al. (2010); Asatryan and Witte (2015) provide evidence for the local level.

Reform attempts to improve efficiency of public administration cover an enormously wide range of possible measures. In fact, industrial countries' bureaucracies have undergone substantial changes over the last decades, and changes were often implemented (e.g., Pollitt and Bouckaert, 2011; Curristine et al., 2007). Innovative activities include new methods of providing services in interaction with users, a re-organization of work responsibilities, new support and logistics systems and new management systems. Though reform attempts differ significantly, most instruments have been discussed under the umbrella term of New Public Management, most prominently electronic government, human resources management, stronger performance orientation, service orientation and institutional re-organization of administration (decentralization, agencification, market-related mechanisms), aiming simultaneously at an improvement of internal public sector processes and external relationship with citizens and business.

While it is still not clear to which extent do these reforms contribute to increased public administration efficiency, this literature is nevertheless an important motivation for our approach. It emphasizes that there are indeed high potential rewards for administrative reforms. However, this literature has merely an interest into the long-run drivers of (in)efficiencies. Our focus is different: We want to find out under which conditions sudden efficiency increasing reforms can materialize.

A third related strand in the literature is concerned with the drivers and strategies of fiscal adjustment. Over the recent years, a vast number of studies have contributed to a better understanding of when, why and how fiscal consolidations occur and what are the main factors for success or failure of such policies (cf. more recent surveys by Price, 2010; Barrios et al., 2010; Molnár, 2012). Among the best established results in that field of research is that very high sovereign debt levels are supportive of initiating a budgetary stabilization. That consolidation efforts are triggered by unsustainable debt or deficits comes hardly as a surprise, as this is simply a variant of the crisis hypothesis discussed above. If mounting public debt is associated with increasing costs of borrowing, financial markets may simply “force” governments to consolidate (Mierau et al., 2007). Cahuc and Carcillo (2012) investigate in particular under which conditions the public wage bill can be reduced. In their analysis of OECD countries from 1995 to 2009 the authors differentiate between periods of fiscal drift, with simultaneous increases of government wage bill shares and budget deficits, and episodes of fiscal tightening, in which both the wage bill share of the public sector and public deficits decrease. Cahuc and Carcillo (2012) find that fiscal drift episodes occur more frequently during booms than during recessions, while fiscal tightening occurs more often during recessions. Moreover, they report that fiscal tightening during recessions and election years is less frequent when union coverage rates are high. The notion is that unions are typically opposed to wage or hiring freezes, and powerful unions can block public employment cuts in situations of negative GDP shock, thus delaying adjustment. Heylen et al. (2011, 2013) report that curbing government employment and public sector wages may contribute substantially to successful consolidation, but only when efficiency in public administration is low. Put differently, downsizing an already efficient public sector is not a good strategy to consolidate budgets.

This empirical literature on the timing and drivers of consolidation is obviously related to our interests. Reforms which boost efficiency in public service production can contribute to spending cuts and consolidation. However, this literature has the conceptual limitation that it does not pay attention whether an observable decrease of expenditure originates from a cut in services or costs savings due to a gain in efficiency.

3 The political economy of administrative reforms

Undoubtedly, reforms which make public service provision more efficient are welfare improving and beneficial to the society as a whole. It is much less obvious, whether these reforms are in the interest of all important veto players and interest groups and, in particular, of those who make their living in the public sector. With a Niskanen-perspective of budget maximizing bureaucrats (Niskanen, 1971), cost reductions in the provision of a given level of public services should meet resistance as savings may lead to budget and staff cuts. Even if lifetime civil servants are well-protected insiders without unemployment risk for themselves (which is not necessarily the case for public sector employees in general) the cuts will in turn lower bureaucrats' self-esteem, reputation, potential for patronage and the chances for promotion. This explains that even a life-time civil servant can be opposed to efficiency improvements.

In addition to this simple budget maximization argument there is a second, more subtle point why efficiency inducing innovations may meet the resistance of bureaucrats. Bureaucratic power vis-à-vis voters and their elected representatives rests on the assumption that there is an information asymmetry and a consequential monitoring problem: Public agencies often are better informed on their cost functions than parliamentarians who have the supervisory role. The larger this information asymmetry the more potential for bureaucrats to benefit from organizational slack, i.e. obtaining a budget above what is required to produce a certain output at minimum costs (Migué and Bélanger, 1974).

The problem with public management reforms from the perspective of slack-seeking bureaucrats is that reforms which have a potential for cost reductions also foster higher cost transparency and help monitoring administrative performance. This could hold, for instance, for measures promoting e-government, better evaluation and monitoring or managerial accounting systems. Hence, civil servants may not only resist efficiency enhancing reforms just because they fear for their budgets but also because they fear the resulting higher transparency and the consequential loss of discretion in their use of the budget.

Empirical evidence supports the expectation that public employees tend to be particularly skeptical on public sector reforms. For Norwegian reforms aiming at privatization and competitive tendering of public services, Rattso and Sorensen (2004) exploit survey data to show that, compared to the rest of the Norwegian population, public employees prefer less reforms.

Moreover, these employees assign larger weights to these reform issues in their vote decision and may, therefore, be effective swing voters who are able to block a reform even if it is preferred by a majority.

Overall, we would therefore expect that effective resistance against public sector reforms will increase with the size of a country's bureaucracy. Hence, our first testable hypothesis is as follows:

H1: Countries with a higher share of public sector employees are less likely to pursue efficiency enhancing administrative reforms.

As reported in the literature survey section above, the link between crisis (indicated by a recession, high unemployment and/or fiscal imbalances) and reform is one of the robust findings across very different reform contexts. A crisis is supposed to foster a sense of urgency and to overcome the status quo-bias.

Deep crises are expected to reduce political opposition to reforms by lowering payoffs of obstruction and increasing payoffs of a policy change. In the wake of a crisis, status quo preserving interest groups may be more likely to accept uncertainties associated with policy liberalization, and governments also have a higher propensity to bear the higher risks of temporary economic hardships during structural policy changes.

However, given the particular and direct role of government finances for the provision of public services, it cannot be taken for granted that a fiscal crisis (i.e. a situation of high debt and/or a high current deficit) really paves the way for cost saving administrative innovations. The following considerations even point to particularly large difficulties of boosting public sector efficiency in a situation of crisis.

A first argument is related to the budget-maximization view described above. In good fiscal times, public employees can realistically hope that a more efficient service production will not lead to future budget cuts because increasing economies may be used to expand the level of service production (in terms of quantity and/or quality). This expectation would lower their resistance against reforms. With urgent consolidation needs, by contrast, the rational expectation is that a cheaper production will be fully used to reduce bureaucratic staff and cut administrative spending. For public sector employees with imperfect employment protection this implies an increasing risk of job loss. And for life time civil servants the combination of

crisis and higher efficiency in the public sector signals a likely reduction of agency budgets, prestige and income. Hence, bureaucratic resistance against reform should be fiercer in bad than in good times.

A second argument relates to the information asymmetry between bureaucrats and politicians. Hugh-Jones (2014) points out that consolidation aggravates information problem of bureaucratic supervision because it becomes harder to detect inefficient agencies. Efficient agencies operate at the efficiency frontier so that they have to decrease service provision if budgets are cut. Inefficient agencies can simply imitate this behavior. The resulting pooling equilibrium offers no hint to distinguish between efficient and inefficient units. By contrast, a distinction is easier with growing budgets in good times: inefficient agencies separate themselves from efficient ones since the latter increase output more than the former.

A third argument relates to the crucial role a country's public administration plays in times of far-reaching reform needs which comprise labor markets, goods markets and the welfare state. For the design of such complex and interdependent reform packages, for the related legislation and, finally, for reform implementation, the government urgently needs the full support of its bureaucracy. Hence, times of far-reaching reform needs may be exactly the time when loyal civil servants are politically most important. That's why a far-reaching crisis - especially a fiscal crisis with urgent consolidation efforts - may be exactly the wrong time to take on the interests of civil servants.

Thus, we do not have a clear sign expectation on the impact of crisis in our specific reform context, since there are counterbalancing forces at work. With respect to the traditional crisis hypothesis, serious economic and fiscal problems should equally ease reforms in the public sector as they do for labor market or welfare state reforms. However, given the particular concerns of bureaucrats the resistance of this key interest group should be particularly fierce in times of budgetary stress. In consequence, we have to develop our hypothesis in an indirect way. We can exploit the fact that the possibilities of the bureaucrats to obstruct reforms should be conditional on its political power. With a small bureaucracy, the electoral share of public sector employees is small, which should reduce its potential to block reforms. Hence, we expect that the crisis-specific resistance of public employees will be increasing with the size of the bureaucracy. This leads us to our second testable hypothesis:

H2: An economic and fiscal crisis is the more likely to increase the short-run occurrence of efficiency enhancing public administration reforms the lower the power of the bureaucracy.

Further predictions relate to learning processes which are part of any reform process. First, there might be learning related to the impact of the financial and technical assistance provided by the EU for its member countries (“vertical learning”). It is a standard assumption in the context of development economics that the inflow of development aid should also be related to an import of know-how (e.g., Dreher, 2009). Heckelman and Knack (2008) yet find that higher aid slowed liberalizing economic reform despite foreign aid being frequently granted to help developing countries in such reforms. Equal ambiguous consideration may apply in the EU context to cohesion spending which is - besides agricultural subsidies - the second priority of the EU budget. Cohesion spending through the EU structural funds claims to boost the growth prospect of lagging European regions and countries through stimulating deficient growth factors. If this policy has also recognized that an inefficient public administration is a significant growth impediment it should have been helpful to alleviate this growth bottleneck. However, cohesion spending might on the contrary also serve as a transfer which finances higher costs in the recipient country. Thus, the test of the following hypothesis on possible vertical learning will indicate to which extent the beneficial view prevails.

H3: Countries which benefit to a larger extent from EU cohesion spending should be more likely to reform their public administration.

A further learning-related reform driver might be due to the experience of neighbors (“horizontal learning”). Successful reform examples in other neighboring or similar countries will reduce ex ante reform uncertainty. In our context of public sector reforms, the resulting yardstick competition (Besley and Case, 1995) may also weaken the information asymmetries between voters/parliamentarians on the one hand and bureaucrats on the other hands.

H4: Efficiency enhancing administrative reforms in neighboring countries should make this type of reforms more likely.

A final hypothesis is one also frequently found in the literature on the political economy of economic reforms in general. The idea is to test for potential electoral cycles in the frequency

of reforms with the question of whether public administration reforms are postponed from pre-election to post-election periods when political constraints are more relaxed.

H5: Efficiency enhancing administrative reforms are less (more) likely to take place in pre- (post-) election periods.

Testing these five hypotheses is our key interest in the subsequent econometric testing for which we need an indicator for an efficiency enhancing public administration reform. We motivate and describe our choice in the next section.

4 MICREF database of reforms

We construct our main variable of interest - the frequency of public administration reforms for each country and year - using qualitative information on microeconomic reforms across EU countries from the MICREF database.¹ MICREF collects data on various reforms hierarchically classified into policy domains, policy fields, areas of policy intervention, and, at the lowest level, into reform areas. We carefully select 13 reform areas that we think have a clear and direct relation with reforming the public administration. Figure 1 plots the evolution of the average number of public administration reforms from 2000 to 2012, as well as their breakdown into the selected 13 reform areas.² Appendix 2 lists the detailed descriptions of the reform areas that we classify as being directly relevant to reforming the public administration.

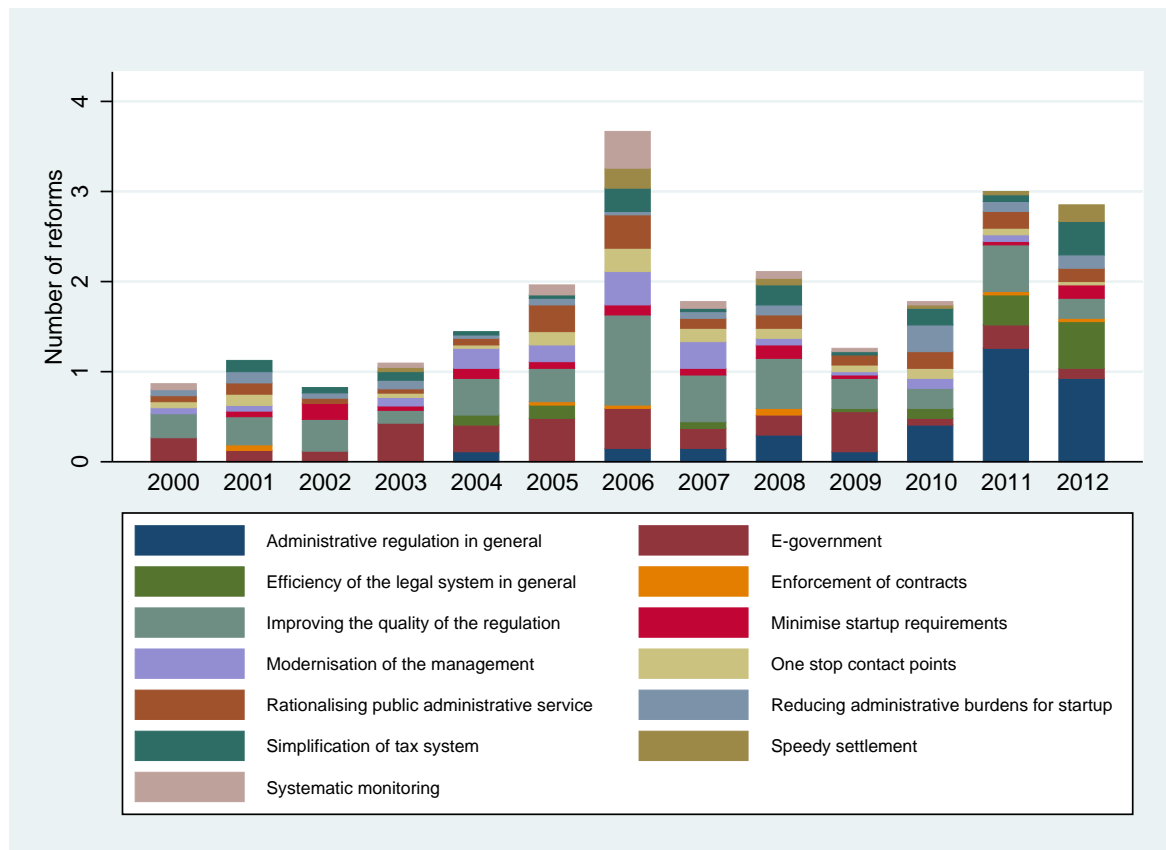
To visually illustrate the data, in Figure 2 we plot the yearly evolution of public administration and all structural reforms for each country. The sample covered is 2000-12 for EU-15 and 2004-12 for EU-27. Along the frequency of reforms we also plot the unemployment rate which, from a visual inspection, seems to be positively correlated with reform activity. This relation, however, is subject to heterogeneity across countries, which we will study more systematically in the following sections.

As discussed in the introduction one novelty of this paper is to adopt count data on reforms rather than indicator based variables capturing the stringency of regulation and institutions. On the downside, the latter measures may perform better when making cross-time and -country

¹MICREF is made publicly available by the European Commission at: http://ec.europa.eu/economy_finance/indicators/economic_reforms/micref/

²Details of the dataset are available at MICREF's user guide: http://ec.europa.eu/economy_finance/db_indicators/micref/documents/user_guide_en.pdf

Figure 1: Per-country average number of public administration reforms by year and reform area



comparisons since the level and change of such indicators can have a similar economic interpretation. With count data the researcher is left to assume that, on average, two reforms are always better than one without much consideration on the weight attributed to reforms of different size and significance. Although MICREF aims to build a systematic dataset of reforms collected and coded in a unified framework - a second drawback that is usually also typical to qualitative datasets - is that it cannot be ruled out that the reporting standards of the member states may differ.

Figure 2: Unemployment and the frequency of public administration and other reforms by year and country



Table 1: Reform-level descriptive statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Days between decision and implementation	Share of regional measures	Share of temporary measures	Share of EU-imposed regulation	Share with EU funding	Co-financing rate of national gov.	Share of pilot measures	Share being part of reform-package	Share being monitored	Share of being evaluated
PA reform <i>N=621</i>	174.3 <i>353</i>	0.046 <i>12</i>	0.097 <i>25</i>	0.138 <i>35</i>	0.049 <i>12</i>	0.915 <i>39</i>	0.089 <i>23</i>	0.545 <i>164</i>	0.240 <i>117</i>	0.111 <i>69</i>
Other reform <i>N=3620</i>	197.8 <i>1714</i>	0.181 <i>150</i>	0.305 <i>235</i>	0.090 <i>67</i>	0.191 <i>135</i>	0.782 <i>159</i>	0.133 <i>95</i>	0.506 <i>560</i>	0.151 <i>492</i>	0.077 <i>278</i>

However, despite these limitations, MICREF’s data on the frequency of reforms offer a number of attractive features. First, these are policy-oriented variables measuring real changes in policy. The indicator based reform variables, on the other hand, are only indirect measures of reforms as they are usually derived by time-differencing the stock variables on the stringency of regulation and institutions. Second, compared to survey based indicators like the World Bank’s Doing Business, by construction, it is less susceptible to fluctuations in the subjective assessment of countries. Expert assessments from outside are likely to be heavily influenced by a country’s current economic performance or political events (like, for example, changes in government). Moreover, there appears to be a relatively rigid pre-selection process by the Commission as to which reforms are listed in the database. Therefore, our reform indicator is less output-distorted. Third, indicator based variables often take into account a subset of regulatory or institutional aspects, where public administration may not be distinguishable from the rest or may even not be part of the data. MICREF allows setting a clear and transparent distinction between public administration and other reform areas. Since we are especially interested in analyzing the reform process, a third advantage of MICREF is that it gives detailed reform-level information on specific policy measures.

Some of these reform-level information is summarized in Table 1 separately for public administration (PA) and all other reforms. For example, column 1 shows that on average it takes 174 days to implement a public administration reforms counting from the day when the decisions was made, which is somewhat faster than in the case of other reforms. It can be seen that public administration reforms are seldom being implemented as temporary or pilot measures compared to other reforms (columns: 3 and 7), they are also usually national in scope rather than being regional measures (column: 2). The implementation of such reforms are also twice

more likely to be subject to monitoring and evaluation, mostly done so by independent bodies (column: 9-10). About every 7th reform in the public administration is a transposition of EU regulation which is somewhat higher than in other reform areas, however the funding source of these reforms primarily comes from national sources (column: 4-6)

Table 2: Budgetary impact of reforms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Revenue impact of reforms				Expenditure impact of reforms			
	Neutral	Increasing	Decreasing	Amount (EUR)	Neutral	Increasing	Decreasing	Amount (EUR)
PA reform	0.889	0.058	0.053	10,786	0.534	0.356	0.111	572,892
<i>N=</i>	<i>152</i>	<i>10</i>	<i>9</i>	<i>165</i>	<i>111</i>	<i>74</i>	<i>23</i>	<i>178</i>
Other reform	0.664	0.114	0.222	26,571	0.284	0.670	0.046	436,915
<i>N=</i>	<i>466</i>	<i>80</i>	<i>156</i>	<i>589</i>	<i>283</i>	<i>667</i>	<i>46</i>	<i>771</i>

It is also of interest to look at the (estimated) direct budgetary impact of these reforms. Table 2 shows that public administration reforms are more often cost-neutral for the budget both on its revenue and expenditure sides (columns: 1 and 5). The average expenditure impact of public administration reforms, however, are not negligible in cases when these are not cost-neutral and amount to about 570 thousand EUR on average versus 435 thousand EUR for other types of reforms (column: 8).

Before proceeding to our main analysis, that is the determinants of public administration reforms, in the remainder of this section we run so-called first-stage regressions to test the possible impact of our newly created reform measures. As our independent variable we take two country level indices provided by the World Bank, namely the ease of doing business indicator and the government effectiveness index from the World Governance Indicators. We then explain these two indicators by the number of reforms in different policy fields defined by MICREF conditional on several macro-economic controls. This test substantiates to which extent administrative reforms covered by MICREF constitute indeed significant changes to public administration efficiency so that these reforms induce changes of the established proxies of the quality of public administration. Table 3 collects the estimates. The significant and positive correlations between the number of public administration reforms on one side, and both the doing business and the government effectiveness indicators on the other side (columns: 1 and 2), show that our main variable indeed has substantial effects on outcome indicators. By

Table 3: The effects of public administration vis-a-vis other structural reforms on the ease of doing business and government effectiveness

VARIABLES	Reforms in year $t+1$ and $t+2$ in sector:																	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Public administration	All reforms	Competition	Education	Business environment	Integration	R&D	Sectoral	Start-ups									
<i>Dependent variable: Doing business index (harder-to-easier)</i>																		
Reform	0.002 (0.003)	0.007* (0.004)	0.001 (0.001)	0.001 (0.002)	-0.001 (0.010)	0.009 (0.016)	0.002 (0.004)	0.000 (0.004)	0.001 (0.002)	0.004 (0.003)	0.003 (0.007)	0.016* (0.009)	-0.002 (0.002)	-0.004 (0.004)	0.009 (0.006)	0.002 (0.004)	-0.008 (0.006)	0.002 (0.006)
Observations	269	257	269	257	269	257	269	257	269	257	269	257	269	257	269	257	269	257
R-squared	0.354	0.418	0.356	0.415	0.354	0.416	0.354	0.413	0.354	0.416	0.354	0.423	0.355	0.417	0.368	0.414	0.357	0.413
Number of country	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
<i>Dependent variable: Government effectiveness index (low-to-high)</i>																		
Reform	0.166* (0.098)	0.122 (0.107)	-0.020 (0.030)	0.031 (0.031)	-0.073 (0.275)	-0.345* (0.181)	-0.079 (0.071)	0.105 (0.079)	0.065 (0.043)	0.121*** (0.041)	0.203 (0.177)	0.366** (0.160)	-0.085* (0.048)	-0.033 (0.054)	-0.165 (0.121)	-0.040 (0.103)	0.063 (0.222)	0.156 (0.127)
Observations	227	221	227	221	227	221	227	221	227	221	227	221	227	221	227	221	227	221
R-squared	0.444	0.415	0.438	0.415	0.437	0.419	0.439	0.416	0.440	0.420	0.439	0.422	0.440	0.413	0.445	0.413	0.437	0.414
Number of country	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25

*** p<0.01, ** p<0.05, * p<0.1

Notes: All regressions include country and time fixed effects (not reported) and control for GDP growth, inflation, log population, and share of working age population (not reported). Standard errors are robust to heteroscedasticity and are clustered at the level of countries.

running similar regression with reforms in different policy fields we are also able to show that public administration reforms are actually one of the most important and effective policies in improving both indicators. This justifies our confidence that MICREF reforms are significant and of particular information value to assess efficiency enhancing reform activity in European public administrations.

5 Empirical strategy

Our baseline specification takes the following form:

$$\begin{aligned}
 PublicAdminReforms_{it} = & \alpha_1 + \alpha_2 * Crisis_{it} + \alpha_3 * AdminSize_{it} + \\
 & + \alpha_4 * Crisis_{it} * AdminSize_{it} + \alpha_5 * Controls_{it} + \mu_i + \eta_t + \epsilon_{it}
 \end{aligned}
 \tag{1}$$

where the dependent variable is the number of public administration reforms in country i at time t . $Crisis$ are a number of crisis-variables of interest entering the equation one-by-one, these are: GDP growth rate, unemployment rate, general government gross debt, and general government primary budget balances. $AdminSize$ captures the size of the public administration, which in the baseline specifications we measure as the compensation share of employees in the core sectors of government administration. We prefer the compensation figures to data on public employment, as internationally comparable data on government employment are not readily available due to substantial differences in counting and collection methods. For the purpose of robustness test we use, alternatively, the compensation share of employees in the general government (rather than the core administration which is a narrower definition of the bureaucracy). $Controls$ is a vector of independent variables with α_5 a vector of parameters of the same dimension. μ_i represents a full set of country fixed effects to account for unobserved heterogeneity across countries, η_t are time fixed effects to capture time-specific shocks affecting all countries similarly, and ϵ_{it} is the error-term. The summary statistics along with short descriptions and sources of the employed variables are presented in Table A1 of the Appendix.

We apply a panel OLS with two-way fixed effects to estimate our baseline equation. Although our independent variable is categorical (and not continuous) such that non-linear models may better fit the data, in the baseline estimations we refrain from applying count data models.

The main reason is that within estimators for ordered categorical variables require applying a recoding strategy to reduce the independent variable to a binary variable.³ Since we find it crucial to control for individual unobserved heterogeneity we simply specify a fixed effects linear model, therefore avoiding the latter simplification of the reform variable. We are also mainly interested in the relative effects (rather than absolute size of parameter estimates) so that a linear approximation of the (possibly non-linear) underlying true model does not seem to be too restrictive. In this way, we also follow the practical approaches taken, for example, by Di Tella et al. (2001), Scheve and Slaughter (2004) and Senik (2004). Nevertheless, as a robustness test we also estimate the baseline equation with a conditional fixed-effects Poisson model.

6 Results

6.1 Main results

The baseline results are collected in Table 4, where we find strong support for our two central propositions. First, in line with the hypothesis *H1* we find that the size of the bureaucracy in year t is significantly negatively correlated with the number of public administration reforms in year $t+1$. This result holds for both of the measures of bureaucracy, which are the compensation share of employees in the core public administration (columns: 1-8) and in the general government (columns: 9-16).

Second, we also have evidence that economic and financial crises induce more reforms. This relation holds consistently for two of our crisis measure – unemployment rate (columns: 3-4 & 11-12) and general government gross debt (columns: 5-6 & 13-14) – but not for GDP growth rate and general government budget balance.

Third, in line with the hypothesis *H2* we see that a crisis is more effective in inducing reforms the smaller the size of the public administration. The marginal effects of interaction variables are plotted in Figure 3. GDP growth and budget balances do not seem to have an effect on reform activity that is significantly different from zero conditional on size of the

³For a review, see, Geishecker and Riedl (2014), and for a recently developed such method, see, Baetschmann et al. (2014).

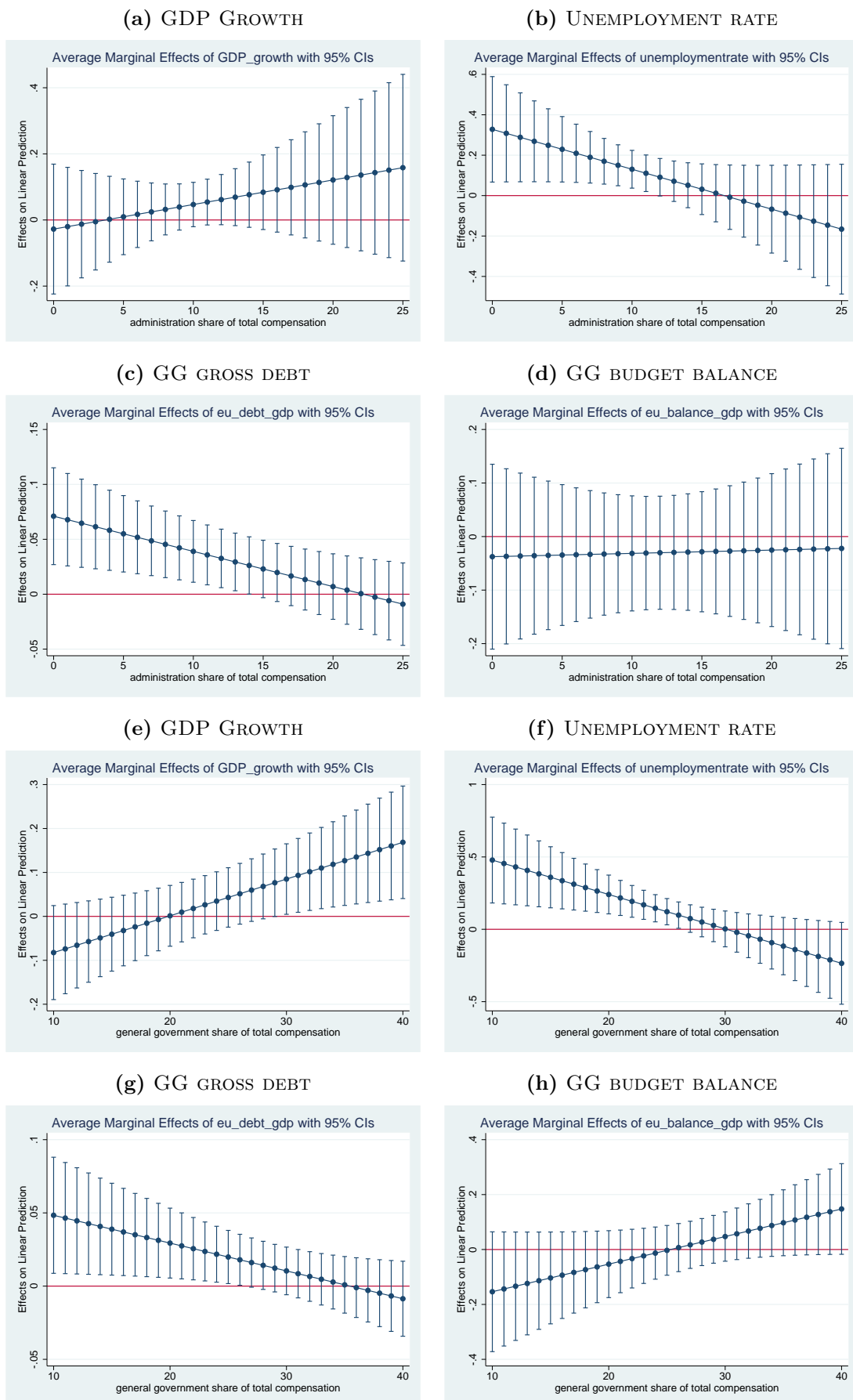
Table 4: Baseline results - The role of economic crisis and special interests in determining public administration reforms

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Bureaucracy = Compensation share of employees in the administration								Bureaucracy = Compensation share of employees in the government							
	Number of public administration reforms in year $t+1$															
GDP growth	0.044 (0.033)	-0.028 (0.095)							0.041 (0.035)	-0.166** (0.079)						
x Size of bureaucracy		0.007 (0.009)								0.008*** (0.003)						
Unemployment rate			0.126*** (0.044)	0.328*** (0.127)							0.123*** (0.044)	0.716*** (0.231)				
x Size of bureaucracy				-0.020* (0.011)								-0.024*** (0.009)				
GG gross debt					0.033** (0.015)	0.071*** (0.021)							0.019** (0.009)	0.067** (0.028)		
x Size of bureaucracy						-0.003*** (0.001)								-0.002** (0.001)		
GG budget balance							-0.032 (0.052)	-0.038 (0.084)							0.007 (0.045)	-0.254 (0.159)
x Size of bureaucracy								0.001 (0.006)								0.010* (0.006)
Size of bureaucracy	-0.328* (0.191)	-0.307 (0.200)	-0.442** (0.192)	-0.203 (0.244)	-0.399** (0.186)	-0.205 (0.218)	-0.403** (0.165)	-0.397** (0.179)	-0.118 (0.102)	-0.117 (0.102)	-0.192** (0.095)	0.025 (0.133)	-0.154* (0.093)	-0.033 (0.118)	-0.133* (0.080)	-0.085 (0.085)
Log population	-3.949 (4.828)	-4.454 (4.930)	-4.107 (3.818)	-3.900 (3.776)	-1.983 (3.765)	-2.269 (3.591)	-3.833 (4.432)	-3.868 (4.449)	-2.755 (5.752)	-3.798 (5.967)	-2.984 (4.006)	-2.705 (3.782)	-2.581 (4.560)	-3.101 (4.658)	-2.044 (5.463)	-2.998 (5.538)
Working age population	0.024 (0.295)	0.043 (0.298)	0.066 (0.322)	0.077 (0.326)	0.099 (0.299)	0.134 (0.297)	0.005 (0.302)	0.005 (0.302)	0.034 (0.278)	0.037 (0.280)	0.102 (0.292)	0.059 (0.292)	0.093 (0.284)	0.110 (0.289)	0.018 (0.285)	-0.021 (0.283)
Observations	292	292	292	292	292	292	292	292	308	308	308	308	308	308	308	308
R-squared	0.214	0.215	0.229	0.233	0.224	0.228	0.213	0.213	0.210	0.214	0.225	0.236	0.215	0.219	0.208	0.213
Number of country	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
F	9.871	9.003	8.437	9.620	15.61	16.32	10.45	9.760	8.808	9.015	8.382	7.582	8.632	7.170	8.441	7.535

*** p<0.01, ** p<0.05, * p<0.1

Notes: Table presents estimations of Equation 1. All regressions include country and time fixed effects (not reported). Standard errors are robust to heteroscedasticity and are clustered at the level of countries.

Figure 3: Marginal effects of crisis variables on reform activity conditional on the compensation share of employees in the administration (a-d) or the government (e-h)



Figures (a), (b), (c), (d), (e), (f), (g) and (h) plot the marginal effects of interaction terms estimated, respectively, in columns 2, 4, 6, 8, 10, 12, 14 and 16 of table 4.

public administration.⁴ On the other hand, unemployment and debt do have a significantly positive conditional effect on public administration reforms when the administration’s share of total compensation is below-average (Figures 3 b & c). This also holds when using the general government’s share of total compensation as an alternative proxy for the size of the bureaucracy (Figures 3 f & g).

6.2 Robustness tests

The robustness of our baseline results are tested in Table 5. In columns (1)-(8) we estimate a non-linear version of the baseline equation using a conditional fixed-effects Poisson model. The previous results – related to the positive association of crisis variables with the frequency of public administration reforms and the conditionality of this relation on the size of the bureaucracy – are confirmed. In columns (9)-(16), as a placebo we take all reforms from MICREF – not just public administration reforms – as the dependent variable. While we observe that higher unemployment and debt are significantly associated with more reforms in other policy areas (columns: 11 & 13), the size of the public administration is not a significant driver of reforms anymore. The evidence hints to the direction that this special interest group opposes only to those reforms that clearly fall under the subject matter of its own self-interest.

The issue of reverse causality between reforms and the size of the bureaucracy maybe of further concern. That is compensation share of employees in the administration may decrease if the efficiency-increasing public administration reforms involve government wage bill cuts. Our data allows to directly test this proposition. As described in Table 2 reforms can be distinguished according to whether they are expected to result in positive, negative, or neutral costs for the budget. In Table 6 we regress these three types of reforms one-by-one on our main variable capturing the size of the bureaucracy. As expected, public administration reforms with positive budgetary costs have a positive sign in the first two years (columns: 4-6) while reforms that imply positive savings for the budget have a negative sign (columns: 7-10). However, only the latter correlation is statistically significant and only so for a simultaneous relation (column: 7). We do not find evidence that either cost-neutral reforms which consist the majority of

⁴The average effect of the interaction between growth and government’s share of total compensation is significant (column: 10), however Figure 3(e) shows that this relation holds only for very high values of government’s share of compensation (i.e. over 35%), which in fact lies outside of our sample (Table A1).

Table 5: Robustness of baseline results to non-linear estimation and to placebo reforms

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
			Conditional fixed-effects Poisson model				Linear fixed-effects model									
			Public administration reforms in year $t+i$				Placebo: All reforms in year $t+i$									
GDP growth	0.027 (0.019)	-0.039 (0.053)							0.112 (0.123)	0.214 (0.366)						
x Comp admin employess		0.007 (0.005)														
Unemployment rate			0.056*** (0.016)	0.230*** (0.086)							0.264** (0.131)	0.517 (0.424)				
x Comp admin employess				-0.017** (0.008)								-0.025 (0.033)				
GG gross debt					0.019** (0.009)	0.050*** (0.016)							0.114*** (0.044)	0.057 (0.095)		
x Comp admin employess						-0.003** (0.001)							0.005 (0.006)			
GG budget balance							-0.010 (0.029)	-0.025 (0.058)							0.022 (0.155)	0.304 (0.364)
x Comp admin employess								0.002 (0.005)								-0.029 (0.030)
Comp admin employess	-0.181** (0.091)	-0.182** (0.091)	-0.225** (0.089)	-0.021 (0.129)	-0.231** (0.090)	-0.099 (0.097)	-0.224*** (0.083)	-0.212** (0.084)	-0.515 (0.659)	-0.544 (0.664)	-0.770 (0.686)	-0.472 (0.693)	-0.729 (0.634)	-1.021 (0.739)	-0.579 (0.649)	-0.859 (0.662)
Log population	-3.169 (3.149)	-3.485 (3.080)	-2.356 (2.155)	-1.981 (2.144)	-1.229 (2.491)	-1.049 (2.169)	-2.685 (2.686)	-2.732 (2.656)	-29.069 (18.641)	-28.352 (19.195)	-29.187 (18.291)	-28.927 (18.392)	-22.768 (16.507)	-22.337 (16.854)	-27.557 (18.789)	-25.957 (19.413)
Working age population	0.069 (0.135)	0.077 (0.136)	0.110 (0.145)	0.084 (0.152)	0.140 (0.141)	0.159 (0.139)	0.062 (0.133)	0.064 (0.133)	0.835 (0.977)	0.807 (0.999)	0.916 (1.060)	0.929 (1.050)	1.113 (1.003)	1.061 (1.013)	0.782 (0.995)	0.736 (1.002)
Observations	292	292	292	292	292	292	292	292	292	292	292	292	292	292	292	292
Number of country	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
R-squared									0.364	0.364	0.368	0.369	0.374	0.375	0.362	0.364
F									37.91	60.65	31.22	35.22	24.17	40.49	36.08	108.3

*** p<0.01, ** p<0.05, * p<0.1

Notes: Table presents estimations of Equation 1. All regressions include country and time fixed effects (not reported). Standard errors are robust to heteroscedasticity and are clustered at the level of countries.

reforms (columns: 10-12) or all public administration reforms taken together (columns: 1-3) effect the size of the administration.

While in Table 6 we find some evidence that public administration reforms which imply positive savings for the budget may actually target at reducing the size of the administration, this effect takes place immediately in the same year the reform was implemented and does not carry on to the proceeding years. Also taking into account that such reforms consist the minority of public administration reforms, we conclude that, in general, reverse causality is not the driver of the main results presented in Section 6.1.

Table 6: Test for reverse causality

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	<i>t</i>	<i>t+1</i>	<i>t+2</i>	<i>t</i>	<i>t+1</i>	<i>t+2</i>	<i>t</i>	<i>t+1</i>	<i>t+2</i>	<i>t</i>	<i>t+1</i>	<i>t+2</i>
	Compensation share of employees in the administration in year:											
All PA reforms	-0.008 (0.017)	-0.006 (0.015)	0.017 (0.018)									
Positive-cost PA reforms				0.048 (0.054)	0.010 (0.074)	-0.100 (0.075)						
Negative-cost PA reforms							-0.132* (0.075)	-0.043 (0.031)	0.043 (0.050)			
Neutral-cost PA reforms										0.000 (0.014)	-0.022 (0.014)	0.014 (0.029)
Unemployment rate	0.037 (0.028)	0.014 (0.027)	-0.005 (0.021)	0.037 (0.028)	0.014 (0.027)	-0.006 (0.022)	0.036 (0.028)	0.014 (0.027)	-0.005 (0.022)	0.037 (0.028)	0.014 (0.027)	-0.005 (0.022)
GG gross debt	0.005 (0.009)	0.001 (0.010)	-0.000 (0.010)	0.005 (0.009)	0.001 (0.011)	0.000 (0.010)	0.005 (0.009)	0.000 (0.010)	0.000 (0.010)	0.005 (0.009)	0.001 (0.011)	0.000 (0.010)
Log population	5.252 (3.680)	6.806** (2.944)	8.744*** (2.303)	5.317 (3.638)	6.857** (2.922)	8.700*** (2.300)	5.371 (3.571)	6.881** (2.894)	8.724*** (2.322)	5.310 (3.651)	6.807** (2.929)	8.772*** (2.288)
Working age population	-0.102 (0.162)	-0.149 (0.145)	-0.212* (0.113)	-0.103 (0.161)	-0.150 (0.144)	-0.207* (0.113)	-0.122 (0.161)	-0.158 (0.144)	-0.197* (0.109)	-0.103 (0.161)	-0.156 (0.145)	-0.205* (0.115)
Observations	313	286	258	313	286	258	313	286	258	313	286	258
R-squared	0.259	0.278	0.359	0.258	0.277	0.359	0.270	0.279	0.359	0.258	0.279	0.358
Number of country	27	27	26	27	27	26	27	27	26	27	27	26
F	39.82	55.63	72.54	42.52	59.33	73.83	52.57	38.84	81.24	42.83	71.92	83.70

*** p<0.01, ** p<0.05, * p<0.1

Notes: All regressions include country and time fixed effects (not reported). Standard errors are robust to heteroscedasticity and are clustered at the level of countries.

6.3 Extensions

In Table 7 we look at vertical and horizontal learning to test our hypotheses $H3$ and $H4$. In columns (1)-(10) we study vertical learning and test whether EU-transfers increase reform activity. Here we differentiate between four different aggregates of EU cohesion spending: first,

the total amounts of structural spending, second, the expenditure of structural funds only, third, the more limited spending on the convergence objective benefiting only the poor regions and, fourth, a tiny single spending item concentrated on technical assistance to member states. Interestingly, only for the latter small item (i.e., on average less than 0.15% of GDP) there is a highly significant effect. By contrast, a receipt of higher amounts of cohesion spending in total is not associated with a measurable higher public administration reform activity.

Next to this effective vertical policy we also find some evidence for horizontal learning. We calculate spatial indicators of reform activity in other EU countries weighted by distance and per capita GDP (columns 10-14) and, alternatively, by distance and the public sector efficiency (columns 15-16) measure developed by Afonso et al. (2005). The evidence hints towards significant positive spatial spillovers from other EU countries for reform activity in general, and even more so for public administration reforms in particular.⁵

There may be further potentially intervening political factors that impact reform decisions. The next Table 8 tests for electoral cycles in the frequency of both public administration and other structural reforms, a hypothesis formulated in *H5*. We extend the typical results of the literature on political economy of reforms to public administration reforms (columns: 1-5) by observing less (not more) public administration reforms in pre-election (election) years. Symmetrically, we find evidence that public administration reforms are significantly more likely to take place after elections. Such post-electoral “honeymoon-effect” also holds for other types of structural reforms classified in MICREF (columns: 6-10).

⁵This evidence is also robust to other weighting schemes, such as population size. Note that in these models of horizontal learning we leave out the time fixed effects as they are likely to be correlated with the spatial reform variables.

Table 7: EU-transfers and spatial determinants of public administration reforms

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	$t+1$	$t+2$	$t+1$	$t+2$	$t+1$	$t+2$	$t+1$	$t+2$	$t+1$	$t+2$	t	$t+1$	t	$t+1$	t	$t+1$
	Number of public administration reforms in years:															
	Vertical learning															
	Horizontal learning															
Total structural actions	-0.171 (0.289)	-0.370 (0.278)														
Structural funds			0.331 (0.349)	-0.284 (0.345)												
Str. funds convergence obj.			0.292 (0.376)	-0.389 (0.353)												
Cohesion funds			0.020 (1.159)	1.674 (1.391)												
Str. funds technical assistance			46.209*** (13.549)	5.502 (18.456)												
Spatial reforms (<i>weighted by distance & p.c. GDP</i>)											0.122*** (0.022)	-0.047 (0.029)				
Spatial PA-reforms (<i>weighted by distance & p.c. GDP</i>)											0.676*** (0.133)	0.406*** (0.155)				
Spatial PA-reforms (<i>weighted by distance & efficiency</i>)															0.706*** (0.134)	0.165 (0.127)
Compensation gov-employees	-0.141 (0.106)	-0.102 (0.133)	-0.190* (0.115)	-0.191 (0.130)	-0.189* (0.115)	-0.190 (0.132)	-0.185* (0.112)	-0.195 (0.128)	-0.162 (0.110)	-0.193 (0.130)	-0.327*** (0.088)	-0.093 (0.088)	-0.322*** (0.096)	-0.028 (0.084)	-0.271*** (0.094)	-0.041 (0.090)
Log population	-5.023 (7.674)	-5.682 (8.526)	6.822 (4.863)	-2.894 (7.876)	6.896 (5.188)	-3.594 (8.008)	5.659 (5.126)	2.469 (7.265)	3.777 (4.119)	-2.015 (7.684)	2.998 (4.004)	4.394 (5.039)	2.650 (4.143)	-1.419 (4.803)	1.586 (4.104)	0.475 (4.828)
Working age population	0.078 (0.356)	-0.115 (0.473)	-0.005 (0.368)	0.026 (0.501)	0.007 (0.376)	0.043 (0.511)	0.066 (0.366)	-0.159 (0.479)	-0.017 (0.341)	-0.044 (0.489)	-0.113 (0.234)	0.021 (0.337)	-0.011 (0.229)	0.102 (0.311)	0.021 (0.223)	0.068 (0.323)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	294	267	258	257	258	257	258	257	258	257	334	308	334	308	334	308
R-squared	0.198	0.198	0.218	0.176	0.218	0.177	0.216	0.178	0.222	0.175	0.120	0.009	0.138	0.026	0.164	0.007
Number of country	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27

*** p<0.01, ** p<0.05, * p<0.1

Notes: Table presents estimations of Equation 1. All regressions include country fixed effects (not reported). Standard errors are robust to heteroscedasticity and are clustered at the level of countries.

Table 8: Electoral cycles in public administration vis-a-vis other structural reforms

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Public administration reforms in year:					All reforms in year:				
	<i>t-2</i>	<i>t-1</i>	<i>t</i>	<i>t+1</i>	<i>t+2</i>	<i>t-2</i>	<i>t-1</i>	<i>t</i>	<i>t+1</i>	<i>t+2</i>
Election year dummy	-0.040 (0.210)	-0.418** (0.188)	-0.101 (0.206)	0.083 (0.160)	0.376* (0.195)	0.028 (0.817)	-0.282 (0.664)	-1.095 (0.756)	0.424 (0.702)	1.311* (0.708)
Comp admin employess	0.192 (0.184)	-0.206 (0.226)	-0.364 (0.252)	-0.420 (0.337)	-1.061*** (0.409)	-0.768 (0.604)	-1.375 (0.989)	-1.088 (0.919)	-0.826 (1.142)	-1.469 (1.439)
GDP growth	0.002 (0.037)	0.019 (0.037)	0.068 (0.051)	0.095** (0.038)	0.008 (0.045)	-0.067 (0.075)	-0.057 (0.148)	-0.111 (0.120)	0.201 (0.147)	0.219 (0.156)
Unemployment rate	-0.069 (0.050)	-0.014 (0.045)	0.054 (0.047)	0.167*** (0.048)	0.233*** (0.060)	-0.153 (0.184)	-0.008 (0.190)	0.040 (0.161)	0.343** (0.159)	0.452* (0.249)
Log population	-0.298 (2.427)	-1.733 (3.891)	-8.644** (4.234)	-7.256* (3.850)	-6.026 (3.994)	-34.485** (14.488)	-32.356 (19.688)	-42.160** (17.310)	-34.264** (15.900)	-27.313* (16.053)
Working age population	0.043 (0.182)	0.130 (0.255)	0.211 (0.252)	0.260 (0.252)	0.312 (0.329)	0.528 (0.854)	0.463 (1.183)	1.071 (1.046)	1.255 (0.999)	1.168 (1.068)
Observations	256	283	310	307	281	256	283	310	307	281
R-squared	0.265	0.256	0.225	0.238	0.280	0.408	0.366	0.349	0.357	0.358
Number of country	27	27	27	27	27	27	27	27	27	27
F	6.039	6.947	5.281	12.57	6.846	36.21	28.32	27.91	18.96	23.31

*** p<0.01, ** p<0.05, * p<0.1

Notes: All regressions include country and time fixed effects (not reported). Standard errors are robust to heteroscedasticity and are clustered at the level of countries.

7 Conclusion

This is the first study which explores the determinants of efficiency enhancing public sector reforms. The experience in the European crisis countries has pointed to an ineffective public sector as one of the crucial impediments to economic recovery. Accordingly, a better understanding for the constraints of administrative reforms is highly desirable. Our results indicate that unlike the case in other reform contexts it cannot be taken for granted that a deep crisis prepares the ground for overcoming institutional deficiencies. At least if the bureaucracy is large and powerful, the crisis-reform-link is absent in the context of public administration reforms. The result for the role of EU cohesion spending is revealing: It is less the high spending volumes from structural funds which appears to increase the frequency of efficiency enhancing reforms in the public administration. This supports the view that EU structural funds, with their preoccupation with physical infrastructure, may have neglected the bottleneck of deficient administrative capacities in the recipient countries. Instead, a tiny but better targeted item of cohesion spending is associated with measurable reforms.

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Table A.1: Summary statistics

Variable	Description	Obs	Mean	Std.Dev.	Min	Max	Source
<i>Reform variables:</i>							
Public administration reforms	Number of PA reforms per year-country	336	1.848	2.007	0	15	MICREF
Reforms	Number of reforms per year-country	336	12.62	7.409	1	51	MICREF
Reforms on competition	per year-country reforms in policy field competition	336	0.494	0.799	0	5	MICREF
Reforms on education	per year-country reforms in policy field education	336	2.214	2.343	0	13	MICREF
Reforms on business environment	per year-country reforms in policy field business environment	336	3.408	3.213	0	25	MICREF
Reforms on integration	per year-country reforms in policy field integration	336	0.637	0.877	0	6	MICREF
Reforms on R&D	per year-country reforms in policy field R & D	336	3.003	2.823	0	17	MICREF
Sectoral reforms	per year-country reforms in policy field sector-specific regulation	336	2.107	2.582	0	18	MICREF
Reforms on start-ups	per year-country reforms in policy field start-up conditions	336	0.759	1.001	0	5	MICREF
<i>Crisis variables:</i>							
GDP growth	GDP growth	336	2.027	3.775	-17.95	12.23	WDI
Unemployment rate	Unemployment rate	336	8.264	3.748	1.9	26.1	WDI
GG gross gross debt	Government consolidated gross debt in % of GDP	336	55.15	29.83	3.7	170.3	QOQ data (Gothenburg U)
GG budget balance	Net lending / borrowing	336	-2.677	3.932	-30.6	7	QOQ data (Gothenburg U)
<i>Power of bureaucracy variables:</i>							
Compensation administration employees	Compensation share of employees in the administration in total compensation	313	10.07	2.87	5.8	20.6	OECD
Compensation government employees	Compensation share of employees in the general government in total compensation	335	24.29	4.891	14.73	36.81	OECD
Share of employees in administration	Share of administration employment in total employment	335	7.123	1.582	4.6	12.4	OECD
<i>EU-transfers:</i>							
Total structural actions	Total annual structural funds as share of GDP	321	0.447	0.572	0.000106	2.516	EU budget financial reports 2007-2013
Structural funds	Total annual structural funds except "cohesion funds" as share of GDP	258	0.286	0.4	0	2.296	
Str. funds convergence obj.	Total annual str. funds convergence objective as share of GDP	258	0.238	0.389	0	2.236	
Cohesion funds	Total annual cohesion funds as share of GDP	258	0.0727	0.13	0	0.721	
Str. funds technical assistance	Total annual str. funds technical assistance as share of GDP	258	0.00143	0.00403	0	0.0441	
<i>Spatial reform variables:</i>							
Spatial reforms	Spatial lag reforms in other EU countries, weighted by distance and p.c. GDP	336	12.7	4.06	3.37	21.5	MICREF, own cal.
Spatial public. admin reforms	Spatial lag PA reforms in EU countries, weighted by distance and p.c. GDP	336	1.76	0.82	0.33	4.42	
Spatial public. admin reforms	Spatial lag PA reforms in EU countries, weighted by distance and public sector efficiency	336	1.82	0.91	0.43	4.53	
<i>Other variables:</i>							
Government effectiveness	Government effectiveness estimate	296	1.241	0.623	-0.356	2.357	WGI
DB-Overall	Doing Business overall distance to frontier	232	71.03	8.852	46.91	87.12	WB Doing Business
Inflation rate	Inflation rate	336	2.766	2.741	-3.827	20.3	WDI
Ln population	Natural logarithm of population size	336	15.95	1.415	12.9	18.23	WDI
Working age population	Working age population (share of 15-64 in total)	336	67.67	1.871	63.76	72.57	WDI
Election year	Presidential or Legislative election held	312	0.317	0.466	0	1	DPI

Appendix A2: Classification of public administration reforms

1. *Reducing administrative and financial burdens for start-ups in general:* Measures not specifically addressing 'One-stop contact points', 'Costs for setting up a business', 'Minimise start-up requirements' or 'Capital requirements'.
2. *One-stop contact points:* Measures aimed at creating / improving one-stop contact points. One-stop points are expected to reduce the number of walks to public institutions to set up a business ("shoeleather costs" for entrepreneurs) and / or to deliver documents related to the start-up of a business, e.g. the electronic delivery of documents.
3. *Minimise start-up requirements:* Measures related to changes or simplification of mandatory procedures during the pre-registration and registration phase of an enterprise or a public limited company. Examples are requirements to obtain specific certificates, registration of domicile of a business, founding deeds, approval by authorities (tax agencies, commercial court), notification of tax offices, VAT offices, statistical offices, local authorities of registration, registration with trade association / chamber of commerce, legal announcement. These factors usually determine the days needed to set-up a business.
4. *Efficiency of the legal system in general:* Measures not specifically addressing 'Enforcement of contracts' or 'Speedy settlement'.
5. *Enforcement of contracts:* Measures that: (i) clarify responsibilities between different federal levels of legislation; (ii) simplify and strengthen enforcement procedures (such as improvement of the prosecution system and legal aid); (iii) clarify existing legislation; (iv) combat late payments in commercial transactions; (v) ease the access to courts (e.g. reduction of court fees and reimbursements, compensation procedures).
6. *Speedy settlement:* Measures aimed at increasing the speed of settlements such as acts on accelerating legal procedures. Measures to increase the capacities of the legal system (more effective organisation of courts, introduction of e-Government tools in the judicial system) are also recorded here.
7. *Administrative regulation in general:* Measures not specifically addressing 'Measuring and/or reducing administrative costs', 'Improving the quality of regulations', 'E-Government' or 'Rationalising public administrative services'.

8. *Improving the quality of regulations*: Concrete measures aimed at simplifying and clarifying the existing legislation or making it more efficient (e.g. “Better regulation programmes”). Preliminary steps, such as an undertaking of a regulatory impact assessment, could also be registered here.

9. *E-Government*: Measures aimed at expanding the government’s use of ICT (information and communication technologies) to exchange information and services with enterprises (e.g. establishment of platforms for the submission of electronic documents); also named Government-to-Business (G2B) e-Government. The most important anticipated benefits of e-Government applied to the administration include improved efficiency, convenience and better accessibility. A number of e-Government measures are not to be recorded under this category.

10. *Rationalising public administrative services*: Measures directed towards achieving economies of scale within the public administration such as reforms of the size / number of municipalities and regions, and clarifying responsibilities between different governmental levels. Moreover, measures aimed at expanding the government’s use of ICT to exchange information and services with other arms of government (i.e. Government-to-Government (G2G) initiatives such as common information exchange networks for several institutions).

11. *Simplification of tax system*: Measures aiming to reduce the time and cost of complying with fiscal obligations. These can be measures reducing the administrative burden related to taxation procedures such as delivering tax documents by electronic means (e-taxation).

12. *Systematic monitoring*: Establishment of monitoring institutions, monitoring procedures or evaluation methods for R&D activities.

13. *Modernisation of the management*: These are measures that (a) modernise the public R&D agencies, (b) establish or reform advisory bodies on R&D, (c) modernise the management of research institutions and universities.