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IMPLICATIONS OF STRUCTURAL  
REFORMS. EVIDENCE FROM A  
PANEL OF EU COUNTRIES**

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## **ABSTRACT**

### **The Short-Term Budgetary Implications of Structural Reforms. Evidence from a Panel of EU Countries\***

The EU fiscal framework has often been criticized for neglecting a possible trade-off between short-term budgetary objectives and the implementation of reforms that could improve public finances in the long term. This concern was reflected in the recent reform of the Stability and Growth Pact, which acknowledges that under certain conditions structural reforms can be taken into account both in the preventive and in the corrective arm of the Pact.

The aim of the paper is that of making a step forward on the understanding of the empirical relevance of the trade-off between structural reforms in EU countries. The analysis will focus on product and labour market reforms and pension reforms. The main issue investigated will be as follows: which impact do reforms have on budgets in the short term?

Results show that, in the aftermath of reforms, budgets do not worsen significantly compared with cases where no reforms occur. However, when the short-term budgetary impact of reforms is evaluated controlling for the response of fiscal authorities to the cycle and debt developments via the estimation of "fiscal reaction functions", there is evidence that product and market reforms and pension reforms are associated with a deterioration in budgets. The impact appears rather weak (a primary CAB reduced by few decimal GDP points depending on the specific reform considered) and not always statistically significant.

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## 1. Introduction

Structural reforms are at the centre of the EU agenda. Reforms in the functioning of markets and the government sector are perceived as a necessary ingredient for re-launching the growth potential for the union, in accordance with priorities set in the Lisbon agenda. In addition, growing focus is placed on the link between structural reforms and public finances in implementing the EU framework for fiscal policy. It is often claimed (e.g., Eichengreen and Wyplosz (1998)) that the Stability and Growth Pact neglects a possible trade-off between short-term budgetary objectives and the implementation of reforms that could improve public finances durably in a medium-to-long term perspective. The idea of a possible trade-off between the implementation of structural reforms and the pursuit of budgetary objectives was recently reflected in the reform of the Stability and Growth Pact, which admits that under certain conditions the budgetary impact of major structural reforms can be taken into account in the implementation of the EU fiscal framework. In future years, the evaluation of budgetary impact of reforms is likely to acquire greater relevance in the implementation of the SGP. Better knowledge on the implication of structural reforms for public finances will be required in EU fiscal surveillance.

A first reason for why there could be a trade-off between reforms and budgetary objectives is that reforms may have a temporary negative effect on budget balances. There can be direct budgetary costs associated with reforms. This is for instance the case of pension reforms introducing a funded pillar classified outside the government sector. In the case of this particular type of reforms, budgets would normally undergo a temporary deterioration (due to lost social security contributions by the government) offset by long-term improvements (associated with saved pension payments by the government). Alternatively, higher deficits could be the result of policy action aimed at overcoming resistance to reforms in the political arena via tax cuts or targeted government expenditure programmes. The budgetary deterioration could also be associated with short-term output losses stemming from corporate restructuring and temporary increases in unemployment due to higher job destruction. A second broad possible reason for a trade-off between budgetary discipline and reforms is related to the fact that reforms can be politically costly. To the extent that fiscal expansions are expected to produce a positive short-run impact on economic activity and employment, keeping an accommodating fiscal stance could help to ease to the political cost of reforms.

Some papers have analysed the trade-off between budgetary objectives and structural reforms mainly from a theoretical perspective (e.g., Razin and Sadka (2002), Beetsma and Debrun (2003, 2005)). Relatively few work exist instead attempting to estimate empirically whether fiscal consolidation has a negative impact on the probability of carrying out economic reforms.

The aim of the paper is that of making a step forward on the understanding of the empirical relevance of the trade-off between structural reforms in EU countries. The analysis will focus on product market, labour market and pension reforms. The main issue investigated will be as follows: which impact do reforms have on budgets in the short term? Due to lack of systematic data on the direct budgetary impact of the type of reforms considered, the analysis will not disentangle the direct budgetary impact of reforms from the impact arising via the payment of “compensation packages” to ease resistance to reforms. There is instead an attempt to: (i) perform a disaggregated analysis in the change in relevant government revenue and expenditure items (e.g., social security contributions, social transfers,...) in reform and non-reform years; (ii) control for other factors that may have contributed to short-term budgetary developments (e.g., output and debt stabilization objective by fiscal authorities) via the estimation of “fiscal reaction functions” (see, e.g., Gali and Perotti (2003)).

Indicators of structural reforms are constructed starting from indexes on regulatory restrictions used in IMF, World Economic Outlook, April 2004. Indicators of pension reforms are based on the information provided in the Fondazione Rodolfo De Benedetti database. While indicators on labour market and product market reforms represent sufficiently large reductions in regulatory restrictions, indicators of pension reforms refer to enacted legislative changes concerning pension systems. The dataset used in the analysis comprises observations on EU-14 for the 1970s (in the case of labour market and product market reforms), the 1980s and the 1990s. In spite of limitations related to small sample size and quality of reform indicators, a number of results of interest emerge.

On average, the evolution of the primary cyclically adjusted budget balance is not significantly different in the aftermath of reforms compared with years not following reforms. Product market reforms are associated with slower growth in government revenues – accompanied, however, by correspondingly slower growth in expenditure. After pension reforms, social benefits paid by the government grow at a significantly slower rate, but the overall impact on the budget is compensated by government revenues also growing at a slower rate. There is also evidence suggesting that the impact of reforms can be quite different

depending on the characteristics of the reform, notably whether it mainly introduces parametric changes or also allows for systemic changes in the national pensions framework. Estimating the budgetary impact of reforms after controlling for the response of fiscal authorities to the cycle and debt developments, there is evidence of a slight deterioration in budgets (in the order of few decimal of percentage points of GDP) which is however not always statistically different from zero.

The remainder of the paper is structured as follows. The next section illustrates the main arguments for the emergence of a possible trade off between budgetary discipline in the short-term versus the long-term related with numerical fiscal rules preventing the implementation of structural reforms. It also outlines the provisions concerning structural reforms that have been included in the reform of the Stability and Growth Pact. Section 3 presents the empirical analysis. The concluding remarks follow.

## **2. Structural reforms, numerical deficit rules, and the trade-off between short and long-term fiscal discipline.**

### **2.1. Structural reforms: definitions, main features, and their long-term impact on public finances**

The term reform is used with reference to rather different types of policy interventions: trade reforms, labour market reforms, tax reforms, pension reforms, health sector reforms, etc. In general, compared with other types of policies, reforms (i) have a long-lasting impact and (ii) concern the general functioning of economic (market or state) institutions rather than specific elements. The adjective “structural” often accompanies the word reform, to remark the fact that the policy concerned are aimed at affecting the economy in its structure.

Sometimes by reform it is meant a policy aimed at modifying the institutional setting shaping the interplay among private economic agents. This is typically the case of *reforms changing the functioning of markets* (product or factor markets). In other instances, reforms may be aimed at *modifying the working of government*. This is the case for instance of reforms affecting the working of the welfare state (e.g., pension or health care reforms) or the set-up of policy institutions (e.g., reforms concerning the institutional set-up of monetary authorities, or the status of authorities enforcing competition policy or regulating public utilities).

Another relevant distinction is between reforms that modify the features of existing policies and institutions (e.g., pension reforms modifying social security rates) from those that replace or complement existing policies and institutions with new ones (e.g., pension reforms introducing new pension pillars). The former are often referred to as *parametric* reforms, the latter as *systemic*. A further distinction is that between reforms that concern all agents in a given sector or only particular groups. An example is that of labour market reforms extending to all labour market participants as opposed to reforms addressed only to individuals entering the labour market for the first time.

Reforms can be seen as the outcome of a continuous effort to adapt market and government institutions to changing fundamentals: technological progress, evolving needs of individuals and the society, demography, etc. In spite of such a constant need of adapting institutions to fundamental changes, *the process of reform of a given sector of the economy is not always smooth* and gradual. Indeed, the reform process seems quite often characterized by jumps and discontinuities: substantial policy changes are concentrated in few periods of time.<sup>1</sup> Moreover, when evaluated over sufficiently long periods of time, there is evidence that *reforms in one particular sector of the economy are quite often accompanied by reforms in other sectors*. In several advanced countries labour market, product market and tax reforms occurred broadly at the same time (IMF, 2004).<sup>2</sup> Finally, the *international dimension* seems to matter: reforms in a given country are more likely if other countries have already carried out reforms in the same sector or are in the process of doing it.<sup>3</sup>

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<sup>1</sup> For instance, in most advanced countries reforms in the banking sector were concentrated in the early eighties, while the deregulation of air transportation was mostly achieved between the mid eighties and the early nineties. A common thesis is that reforms tend to *follow periods of crisis*. See, e.g., Drazen (2000) for a discussion of this thesis and for a survey on empirical evidence. The point here is not so much that reforms follows periods of unsatisfactory economic performance (“the reform should follow crisis...is no more surprising than smoke following fire” (Rodrik (1996, p. 27)). The thesis is rather that reforms are triggered only by periods of exceptionally bad economic performance.

<sup>2</sup> The fact that reforms in different sectors of the economy tend to occur together could be explained by *complementarity relations* that often characterises reforms. For instance, a labour market reform aimed at increasing the employment rate would be more effective if not acting exclusively on one aspect of the labour market legislation (e.g., only on legislation concerning firing practices) but rather when considering several aspects at the same time interrelated among them (e.g., both hiring and firing practices, unemployment benefits). Complementarities could also concern reforms in different sectors of the economy. For instance, product market reforms that increase the degree of contestability of sectors may trigger reforms in labour markets. The reduction in the extra-profits associated with entry-barriers and anti-competitive practices could reduce the incentives by organized labour to capture part of these rents, thereby leading to a higher probability of success for reforms aimed better aligning wages to productivity. This argument has been put forward, for instance, by Blanchard and Giavazzi (1993).

<sup>3</sup> The *relevance of the international dimension* for economic reforms could be *due to several reasons*, including international agreements on reforming sectors for which cross-border spillovers are relevant (e.g., trade and trade-related reforms as a result of WTO agreements) peer pressure within the context of regional



One of the most salient features of economic reforms, which has attracted increasing attention by academic and applied economists, is the considerable resistance that reforms could encounter in the policy-making process. Several political economy arguments have been offered in the literature to explain why even when there is quite widespread perception that carrying out reforms in a given sector would be in the general interest, action could be delayed or blocked altogether.<sup>4</sup> A common explanation for why potentially beneficial reforms could be blocked for long times there is the role of *lobbying* in the policy-making process. Such arguments have been first put forward in Olson (1971). According to this explanation, reforms, even when they can potentially benefit a majority of citizens, often produce losses to particular groups in the society. These groups, even if comprising a minority, could be highly motivated to organize resistance to reforms and may face lower costs to structure themselves into organized pressure groups, thus prevailing in the political arena over large, dispersed groups in favour of reforms. Lobbies can explain quite successfully why reforms aimed at reducing protection to given sectors of the economy (e.g., trade protection, regulation of industries,...) are blocked.<sup>5</sup> However, arguments based on lobbying are probably less suited to explain resistance to reforms with effects on all sectors of the economy (e.g., labour market reforms, tax reforms).

An alternative political economy explanation for why reforms could be blocked relies on *uncertain reform payoffs at the individual level* (Fernandez and Rodrik (1991)). When individuals are uncertain about whether they will benefit from a given reform, there could be ex-ante a majority of individuals in favour of blocking the reform even when ex-post the reform benefits a majority of citizens. Although it is quite difficult to assess the empirical relevance of this argument, it provides an explanation for the observed case of reforms that, after being blocked for long times, find gradual support among the public once, for some reason, the reform process is put in place.

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arrangements (e.g., labour market reforms within the context of the EU open method of co-ordination), pressure to reform associated with the direct spillovers from other countries' reforms (e.g., as in the case of tax competition or deregulation of particular industries) or learning spillovers occurring across the border.

<sup>4</sup> However, as stressed by several academicians and policy-makers, stalemates in the implementation of reforms could simply be related to technical uncertainty. Politicians may disagree on the need for reforms and on which type of measures are better suited to tackle the problem at stake. Such disagreement may result into substantial delays. Rodrik (1994) quotes the health care reform proposed by the Clinton presidency as an illustrative example of reform on which disagreement was related, among other things, to uncertainty on whether the proposed one was technically the best solution. See also Sachs (1994) for anecdotal evidence on the frequent disagreement within governments on how to proceed with economic reforms in countries facing macroeconomic crises.

<sup>5</sup> See Grossman and Helpman (2002) for theory and empirical evidence on the idea that lobbies can explain the presence and persistence of protection.

An explanation for reform deadlocks that has received large attention by both academic economists and policy makers is based on *uneven distribution of reform payoffs over time* coupled with short-sightedness of governments.<sup>6</sup> In the presence of short-run costs from reforms and reforms gains materialising only in the long run, politicians that base their decisions on a short time horizon (because, for instance, uncertain about being re-elected), may opt not to carry out welfare-enhancing reforms. The fact that the reform gains could be delayed in time could in turn be related either to the way reforms are designed (e.g., pension reforms that modify only gradually the retirement age) or to the fact that the economic effects of reforms need time to materialize.<sup>7</sup> Short-run costs from structural reforms could be associated to several factors: a temporary reduction in economic activity (due, e.g., to resources shifting across sectors and firm restructuring); direct negative budgetary impact from reforms (e.g., tax reforms); indirect budgetary costs associated with the compensation of reform losers.

European countries are currently focused on reforms aimed at increasing growth and employment in line with the goals of the Lisbon strategy and at making public finances sustainable.<sup>8</sup> The objective of improving the growth potential is mainly pursued through reforms strengthening the incentives for the supply of labour and human and physical capital (e.g., via reforms in product and factor markets), innovation, and the contribution of the public sector to growth (e.g., tax reforms, reforms in the education sector, R&D,...). These reforms permit indirectly to improve public finances in the medium-to-long run via a more favourable dynamics of government revenues and increased resources to pay back the outstanding stock of public debt. Concerning the goal of improving the sustainability of public finances in EU countries, there is agreement among experts and policy-makers on

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<sup>6</sup> In this vein, Alesina and Drazen (1991) show theoretically how governments may be induced to delay reforms aimed at stabilizing public finances. See also Tabellini and Alesina (1990) for a model explaining the origin of a deficit bias by governments on the basis of short-sighted politicians.

<sup>7</sup> Available evidence shows that the timing of economic reforms on growth depends quite crucially on the specific type of reform considered. Simulations based on a small scale econometric model contained in IMF (2004) show that while product and labour market reforms take time to produce positive effects on output, financial market and tax reforms have effects on output already in the short term. Kim (2003) calibrates a model of corporate sector restructuring on Japanese data and shows that product market reforms boost output in the long-term but has short-term costs. Econometric estimates in Salgado (2002) point to a U-shaped impact of labour and product market reforms on productivity growth. Mendoza, Milesi-Ferretti and Asea (1997) report that tax cuts can have significant positive effects on output already in the short term.

<sup>8</sup> See Economic Policy Committee, 2005, 'Annual Report on Structural Reforms' and European Commission, 2005, 'Working together for growth and jobs. A new start for the Lisbon Strategy', Commission Communication to the European Council.

reforms aimed at limiting the upward tendency in age-related expenditures, increasing employment rates, and favouring a reduction in public debt.<sup>9</sup> Among the reforms having a major role in containing the dynamics of age-related expenditures, *pension* reforms have a prominent role in the debate.<sup>10</sup>

## 2.2. Do numerical rules for deficits discourage structural reforms?

In the policy debate, it is sometimes claimed that carrying out economic reforms could go at the expense of the respect of budgetary objectives, and criticisms have been moved to the Stability and Growth Pact for not taking properly in consideration this trade-off (e.g., Eichengreen and Wyplosz (1998)). In particular, it has been argued that an excessive focus on short-term budgetary discipline could act as a constraint on the pursuit of reforms that could improve public finances in the long term. This could occur if reforms worsen the budgetary position in the short to medium-term while gains appear mainly after some time, so that a choice has to be made in the short-term between implementing the reform and keeping deficits unchanged.

There are several arguments that could provide a justification for the claim that structural reforms could worsen the budget in the short-run in spite of an improvement in the medium/long-term in public finances.

The first argument is that reforms *may worsen in budget balances, at least in the short/medium-term*. This may be due to the presence of direct budgetary costs associated with the reform. A notable example is that of systemic pension reforms implying that the social contributions previously collected by the government are diverted to a new pillar, which may

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<sup>9</sup> The Stockholm European Council of March 2001 agreed on a three-pronged strategy for ensuring public finance sustainability: increasing employment rates, reducing public debts, reforming pension and health care systems.

<sup>10</sup> See, e.g., Economic Policy Committee (2002) for an assessment of the impact of alternative hypothetical parametric pension reforms in EU countries (concerning the calculation of pension benefits and the effective retirement age) using simulations based on the national non-behavioural models used in EU countries' national administrations. Results indicate that a reduction in the indexation of pensions by 1/2 percentage point would contribute to reduce pension expenditures projected for 2050 by a range between 0.5 and 2 % of GDP in systems where pension benefits are earnings-related, and by a 0.6-3 GDP points in systems where pensions are paid on a flat rate. Moreover, increasing by one year the effective retirement rate would lead to a reduction of pension expenditures in 2050 in the order of 0.6 to 1 % of GDP. Estimates of the long-term budgetary impact of various types of pension reforms have also been provided by EU countries in their updated stability and convergence programmes submitted to the European Commission. All programmes report long-term budgetary improvements associated with the reforms, which range between 0.6 to almost 2 % of GDP (stability and convergence programmes are available at: [http://europa.eu.int/comm/economy\\_finance/about/activities/sgp/scplist\\_en.htm](http://europa.eu.int/comm/economy_finance/about/activities/sgp/scplist_en.htm)).

be privately run or classified outside the government. This type of reforms help to contain the impact of ageing on the dynamics of government expenditure related to the payment of pensions. However, they will also normally entail a reduction of government revenues not immediately compensated by reduced pension payments.

The above argument has been formalized in several recent theoretical papers. Razin and Sadka (2002) develop a political economy model providing a rationalisation of the trade-off between the budgetary objectives of the Stability Pact and the implementation of social security reforms. In this model, an ageing population has a double effect on the political balance of interest for what concerns the implementation of pension system reforms from PAYG to funding. On the one hand, it reduces the expected returns from PAYG schemes, thus raising the incentive to reform the system for the young cohorts. On the other hand, the size of old cohorts increases, and this tend to reduce the likelihood of pension reforms. In such a framework, feasible reforms worsen a budgetary impact since the income of living retirees need to be maintained. Beetsma and Debrun (2004) analyse the trade-off between short-term budgetary discipline and growth-friendly reforms with up-front budgetary costs in a model comprising inefficiencies related to deficit bias in governments' behaviour which justify the need for deficit rules. The authors show that in such a context there may be a case for designing numerical deficit rules in such a way to account for the budgetary impact of growth-enhancing structural reforms.

In the present context of European policy-making, the argument related to systemic pension reforms introducing funded schemes recorded outside the government sector are of particular relevance. Following a Eurostat decision of March 2004, all mandatory, fully-funded, defined-contribution pension schemes need to be classified outside the government sector, even if the pension fund is organized and managed by the government. This implies the reclassification of pension schemes in countries that implemented reforms creating funded pillars in recent years (Denmark, Estonia, Latvia, Lithuania, Hungary, Poland, Slovakia) or that plan to carry out such type of reforms in the future.<sup>11</sup> The negative impact on budgets of

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<sup>11</sup> The decision by Eurostat of 2 March 2004 on the classification of pension schemes implies that funded defined contribution pension schemes should be classified outside the government sector. The rationale underlying the decision is that these schemes, even when run by the government, should be considered as owned by the pension beneficiaries, who are those bearing most of the risk of the scheme. EU countries are required to implement the Eurostat decision, by classifying funded, defined-benefits schemes outside the government sector, by March 2007 at the latest. See Eurostat News Release 30/2004, 2.3.2004, available at: [http://epp.eurostat.cec.eu.int/cache/ITY\\_PUBLIC/2-02032004-BP/EN/2-02032004-BP-EN.HTML](http://epp.eurostat.cec.eu.int/cache/ITY_PUBLIC/2-02032004-BP/EN/2-02032004-BP-EN.HTML)

systemic pension reforms implying the classification outside the government of funded schemes can be quite substantial, amounting up to more than one percentage point of GDP in some cases.<sup>12</sup> Moreover, although being transitory, the negative budgetary impact could be quite long-lasting. Simulations for the EU-15 aggregate based on the QUEST ageing model of the European Commission show that the budgetary deterioration associated with a partial replacement of a government-run PAYG scheme with a funded scheme classified outside government would cause an increase in the debt/GDP ratio lasting about 25 years, followed by a substantial reduction afterwards (European Commission (2005)).<sup>13</sup>

A somehow related argument rationalizing short-term budgetary losses associated with reforms is the possibility that economic reforms have a temporary effect on output, and therefore on the cyclical component of budgets.<sup>14</sup>

A further reason for why reforms that could be beneficial in the long run may imply budgetary deteriorations at least in the short term is that the resistance to reforms coming from reform-losers can be overcome by means of *compensation packages having a cost on the budget*. This could either mainly take the form of increased expenditures (government transfers and subsidies) or that of reduced revenues. A significant example of increase government transfers related to the implementation of structural reforms is that of several Eastern European countries during the transition process. The liberalization and privatisation of economic activities was often followed by the temporary provision of government subsidies to permit the restructuring of firms. On the revenue side, economic reforms were

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<sup>12</sup> In the case of Sweden, the re-classification of the funded DC pension scheme introduced with the reform of 1998 will result in a reduction of the general government budget balance estimated in the order of 1% of GDP per year. An overview of the Swedish pension system is provided in “The Swedish National Pension System”, Ministry of Health and Social Affairs and National Social Insurance Board, September 2003 and can be found at <http://regeringen.se/content/1/c4/05/07/aa589a7c.pdf>. Hungary has reported in its March 2004 Excessive Deficit Procedure fiscal notifications a negative budgetary impact from the reclassification of its funded scheme of 0.9% of GDP in 2003 and 2004. Poland in its fiscal notifications reported a negative impact of, respectively, 1.7 and 2% of GDP in 2003 and 2004 (European Commission (2005)).

<sup>13</sup> The ‘QUEST ageing model’ is a variant of the European Commission macro model, allowing for an overlapping generations structure (see McMorro and Roeger (2004) for a description). Demographic parameters are calibrated to the main features of the Eurostat projections until 2050. The model distinguished between various tax and expenditure categories and the government is constrained by an intertemporal budget constraint. The simulation considers a pension reform that: i) shifts pension contributions into a non-government funded scheme so that the amount of contributions received by government fall from 16% to 11% of the net wage; ii) reduces the pension benefits paid by the government, guaranteeing accrued rights to PAYG pensions. Workers retiring at the time of the reform are assumed to receive pension benefits from the government equal to 75% of the gross wage, as before the reform. The cohorts in between receive pension benefits from the government between 50% and 75% of their gross wage in proportion to their age, i.e., to the length of the period during which they have been contributing to the PAYG system.

quite often implemented together with tax cuts; this seems especially the case for product and labour market reforms (IMF, 2004).

A different argument is based on a trade-off between budgetary adjustment and economic reforms associated with *political costs*. Carrying out reforms could be costly to governments in terms of lost consensus (due to resistance by pressure groups, voters being adverse to uncertain effects of reforms, temporary losses in output and jobs, ...). Fiscal consolidations could in fact be politically costly due to possible losses of output and jobs in the short term. Given that governments dispose of “political capital” in limited supply, whenever part of this political capital is allocated in carrying out economic reforms, few could be left for adjusting budgets. By the same token, expanding budgets could compensate for using up political capital in carrying out reforms.

Though there could be some foundation for the above arguments under given circumstances, generalizations are difficult. In fact, there is also a series of reasons that point rather to a positive relation between economic reforms and short-term government budgets.

First, there are reforms with a *direct positive impact* on budgets. This is for instance the case of many parametric pension reforms or of labour market reforms (e.g., labour market reforms reducing the generosity of unemployment subsidies). Moreover, compensation packages to ease resistance to reforms, if appropriately designed, are not necessarily costly to the budget. Schemes could be found such that the groups that lose from reforms are compensated via transfers paid by the groups benefiting from reforms. There are anecdotal cases which seem consistent with this possibility. The Dutch labour market reform started in 1982 and aimed at supporting wage moderation was accompanied by cuts in labour taxes and social security contributions paid by employees. This permitted to reduce labour costs to businesses without losses in net wages. Employment growth followed from 1984 onward. At the same time, government expenditure was cut substantially, so that, in spite of the tax cut, the government budget balance improved.

Second, a *credible commitment by the government towards medium-term budgetary discipline* could help to win the resistance of groups opposing reforms. Once governments are credibly committed to sound public finances, the adoption of reforms that permit structural

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<sup>14</sup> Hughes Hallet, Hougaard Jensen and Richter (2004) analyse the budgetary implications of a rising short-term unemployment rate associated with labour market reforms in the Oxford Economic Forecasting model.

improvements in public finances in the medium/long term may become easier. Since voters and interest groups anticipate that know that governments will not loosen budgetary policy to ease the resistance to reforms, there will be less resistance to reforms in the first place. would be weaker in the first place. The credibility of government commitment to budgetary discipline is enhanced when there is a wide perception of the need to take action to reverse unsustainable trends in public finances. The credibility of government commitment is also strengthened when taken at the international level. The experience with the pension reforms in several EU countries in the run up to EMU (Spain, Italy, Portugal) seems consistent with this argument.

Overall, whether a trade-off exists between budgetary discipline in the short run and the adoption of reforms is mainly an empirical question.

### **2.3. Structural reforms in the 2005 SGP reform package**

On 22 March 2005 the EU head of states and governments endorsed a 20 March ECOFIN Council report reporting agreed lines for reforming the Stability and Growth Pact (SGP). The ECOFIN Council adopted regulations amending the original SGP on 27 June 2005.<sup>15</sup> The 2005 SGP reform is the outcome of several months of discussions within the Eurogroup, the Council and the Commission with a view of improving the EU rules-based framework for fiscal discipline.<sup>16</sup> The main objectives of the 2005 SGP reform package are as follows: (i) strengthening the preventive part of the Stability and Growth Pact, mainly via country-specific medium-term objectives (MTOs) and the definition of minimum annual budgetary adjustment for countries not having reached yet their MTO; (ii) enriching the economic rationale of the corrective arm of the Pact through a more comprehensive assessment of the case for launching the excessive deficit procedure (EDP) and the possibility of extending deadlines for correcting the deficits and repeating steps in the EDP; (iii) complementing the EU rules with improved fiscal governance both at the EU and national level, notably strengthened statistical institutions.

The amended Stability and Growth Pact includes provisions reflecting the view that numerical targets and ceilings for deficits may clash with the implementation of structural reforms. Such

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<sup>15</sup> Council Regulations 1055/2005 and 1056/2005, Official Journal of the European Union L 174, Volume 48.

<sup>16</sup> For an assessment by the European Commission of the performance of the EU fiscal framework see European Commission (2004). For an illustration of the approach of the European Commission to the reform

provisions are found both in the new text of the regulations disciplining the preventive (CR 1055/2005) and the corrective arm of the SGP (CR 1056/2005). In particular, regarding the preventive arm of the SGP,

- “major structural reforms” will be a possible reason for revising countries’ medium-term budgetary objectives (Art. 1.1 CR 1055/2005);
- “...major structural reforms which have a direct long-term cost saving effects, including by raising potential growth, and therefore a quantifiable impact on the sustainability of public finances...” could justify temporary deviations from the medium-term objective and the adjustment path towards. Structural reforms will be taken into considerations provided “...an appropriate safety margin with respect to the deficit reference value is preserved...” and that “...the budgetary position is expected to return to the MTO within the [stability or convergence] programme period...” (Art. 1.3 CR 1055/2005).
- Special attention should be given to pension reforms introducing “a multi-pillar system that includes a mandatory fully funded pillar” (Art. 1.5 CR 1055/2005).

For what concerns the corrective part of the Stability and Growth Pact, i.e., the implementation of the Excessive Deficit Procedure,

- structural reforms enter the broad definition of “policies in the context of the Lisbon agenda” and are therefore among the elements considered in the evaluation of “all relevant factors” in the implementation of the EDP (Art. 1.1.3 CR 1056/2005);<sup>17</sup>
- pension reforms introducing “a multi-pillar system that includes a mandatory fully funded pillar” shall be considered by the Commission and the Council in the application of the EDP (Art. 1.1.5 and Art. 1.1.7 CR 1055/2005);
- for countries with excessive deficits close to the reference value reflecting the implementation of pension reforms introducing a multi-pillar system, the “cost of the

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of the SGP, see, e.g., Deroose and Langedijk (2005). For a description of the contents of the March 2005 ECOFIN report see European Commission (2005).



reform to the publicly managed pillar” will be considered when assessing developments in EDP deficit figures and (Art. 1.1.7 CR 1055/2005).

The new SGP also recognizes the need of adequate information concerning the implementation of structural reforms to implement the EU fiscal framework, and consistently states that “a detailed cost-benefit analysis of major structural reforms which have direct long-term cost-saving effects, including by raising potential growth” should be included in Member States’ stability and convergence programmes (Art. 1.2. and 1.4. CR 1055/2005).

Overall, the reformed SGP comprises provisions that in principle would allow help to avoid a possible clash between budgetary discipline and the implementation of structural reforms. The extent to which such provisions could lead to an effective improvement in the conduct of budgetary policy in Europe will depend to a large extent on the actual implementation of the framework. In this respect, a number of issues stand out: Which reforms could be considered for the definition of the adjustment path and the granting of temporary deviations from countries’ medium-term objectives? How to define the size of the granted deviation from the MTO? How to assess the adjustment path towards the MTO in light of implemented reforms? A better understanding of the short-term link between structural reforms and budget balances is key for addressing the above questions.

### **3. The short-term link between structural reforms and budget deficits: evidence from EU panel data**

#### **3.1. Data**

A first necessary step for the analysis is the measurement of economic reforms. Such measurement involves the major difficulty of having to quantify the degree of intensity of policies of very different types. Several attempts have been made in recent times by the academia and policy institutions to collect data on economic reforms and to develop indicators for the measurement of the effectiveness of such reforms.

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<sup>17</sup> In addition, Art 1.1.3. CR 1056/2005 mentions that the Commission analysis shall reflect “...developments in the medium-term budgetary position (in particular, fiscal consolidation efforts in “good times”, debt sustainability, public investment, and the overall quality of public finances).”

A first approach to measure reforms consists of constructing indicators based on information on actual policies that have been implemented in given sectors, periods, and countries. Information is generally provided on the number of policy measures of certain types, possibly accompanied by an evaluation of such policies according to pre-defined criteria. This approach permits to obtain information on the action taken by governments with the purpose of reforming the functioning of markets or state institutions.<sup>18</sup> A second approach consists of constructing indicators measuring the extent of existing distortions associated with government policies, for instance, the distortions associated with taxation or with the presence regulations in particular markets.<sup>19</sup> The impact of reforms is measured in this case by the change in the level of the indicator measuring the degree of distortions. This second approach does not account directly for government reform initiatives, but permits to gauge the impact of such initiatives on the structural conditions of the different sectors considered. This approach also permits to assess the extent to which reforms are needed. Whenever the indicator reveals a high degree of distortions in particular sectors (as compared with other countries or periods) there is indication of a stronger need to carry out reforms.<sup>20</sup>

In the following analysis, indicators for labour and product market reforms are constructed on the basis of structural indexes measuring the degree of policy-induced distortions used in IMF (2004), while pension reform indicators are built on information collected and processed by the Rodolfo de Benedetti Foundation (FRDB) reporting the year of adoption and the main characteristics of reforms.

Table 1 describes the sources of the original data and the methodology followed for constructing the reform indicators used in the analysis that follows. The indicators take value 1 in countries and years in which reforms took place and zero otherwise. Indicators constructed in this way permit to better compare results across different types of reforms starting from data representing different type of information (indexes summarizing the degree

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<sup>18</sup> Databases on policy measures of different types are constructed and maintained by national and international policy institutions and by independent research centres (e.g., Rodolfo de Benedetti Foundation (FRDB) for what concerns labour market policies).

<sup>19</sup> Abundant work in this area has been done by the OECD. See, for instance, Nicoletti and Prior (2001) and Nicoletti and Scarpetta (2003). For international data on various types of government regulations in the economic field see also Fraser Institute, Economic Freedom of the World Annual Report, Vancouver, various issues.

<sup>20</sup> A further method for measuring reforms is the use of structural indicators providing information on the functioning of the economy. For instance, in the case of the measurement of the functioning of the labour market, this approach would imply using a number of indicators concerning the magnitude and the characteristics of unemployment, job creation and job destruction flows, etc. This approach has been followed at the EU level to measure the progress towards the goals of the Lisbon strategy. Progress is benchmarked against indicators measuring outcomes achieved in specific sectors of the economy in EU Member States.

of distortions in the economy for labour and product market and tax reforms, and dicotomic variables reporting when and where reforms took place, and with which characteristics, for pension reforms).<sup>21</sup> These indicators also account for the discrete character of reforms, i.e., the fact that reforms are generally not evenly spread across time and space.<sup>22</sup> The indicators constructed cover EU-14 countries (except Greece for what concerns labour and product market reforms). Data are available starting from the '70s and up to late '90s or early 2000 for product and labour market reforms and for the 1985-2001 period for pension reforms.

Table 2 reports the frequency across the sample of the type of reforms considered distinguishing between different decades. It shows that labour and product market reforms have been more frequent in the '90s than they were in the '80s and especially in the '70s. As for pension reforms, they were considerably more frequent in the '90s than in the '80s (information on the '70s is not included in the dataset used). Table 3 reports the rank correlation coefficients among the reform indicators across the sample. The coefficients indicate that while the correlation appears very low among labour market reforms and product market reforms and among labour market reform and pension reforms, the correlation is quite high (0.14) between product market reforms and pension reforms, denoting a greater tendency for these two type of reforms to occur at the same time, in the same country.

Prima-facie evidence on whether the adoption of reforms were negatively associated with fiscal consolidations can be obtained by comparing across the EU countries included in the sample the frequency of reforms in years during which there was an improvement in primary cyclically-adjusted budgets (primary CAB) with that in years in which primary CABs deteriorated. Graph 1 reports such information. The difference is negligible in case of labour market reforms, it is slightly higher in consolidation years for product market reforms, while in the case of pension reforms there is a quite substantially higher frequency of reforms in

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<sup>21</sup> Reforms in labour and product markets correspond to changes in the structural indexes indicating a sufficiently big reduction in the degree of policy distortions. A similar approach is followed, for instance, in Heinemann (2004). By convention, it is assumed that reforms need to induce a reduction in the degree of distortion greater than the median reduction observed across the sample. The choice of the median value as a benchmark allows an easy interpretation (reforms are events leading to a reduction in the degree of distortion belonging to the top 50%) and implies a frequency of events classified as reforms in the order of 20-to-30% of the total, which permits using statistical inference in the analysis of the links between reforms and fiscal variables across the sample.

<sup>22</sup> However, the use of discrete reform indicators has the drawback of not permitting to take into account the different intensity of the impact of policies in different countries and periods, while this can be captured by using directly indexes summarizing the extent of policy-induced distortions.

years in which primary CABs improved (31% of the cases as compared with 22% when a reduction in the primary CAB was recorded). *Overall, prima-facie evidence does not support the view that reforms were less frequent in year were fiscal consolidations took place.* Additional useful prima-facie information on the link fiscal consolidation and the implementation of reforms is obtained by comparing the frequency of reforms across the sample before and after the introduction of the EU fiscal framework. This permits to have a first check on the presumption that the EU framework for fiscal discipline acts as a constraint on the implementation of reforms. Graph 2 reports data on the frequency of reforms in the 1990s, separately for the period before and after the start of phase II of EMU (i.e., 1994). The data suggest that *while labour market reforms became less frequent in the EU countries covered by the sample, after the introduction of the EU fiscal framework, the opposite holds for product market and pension reforms.*

Looking simply at the difference between reform frequencies in years with and without budgetary consolidation does not permit to take into account the impact that factors different from budgetary policy had on the timing of the adoption of economic reforms. There are very few attempts to estimate empirically whether fiscal consolidation has a negative impact on the probability of carrying out economic reforms controlling for other factors. In IMF (2004), regression analysis on a panel of advanced countries is performed to assess the impact of alternative determinants of various reforms, including budget balances.<sup>23</sup> Results indicate that fiscal consolidation could be negatively associated with tax reforms and labour and product market reforms, while there is no significant relation with financial market reforms and trade reforms. Conversely, the level of the cyclically-adjusted budget balance is generally significantly and positively related to structural reform indicators.<sup>24</sup>

The strategy of the present paper is that of focusing the analysis on a particular reason for why there could be a trade-off between budgetary discipline and reforms, namely the presence of

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<sup>23</sup> The analysis concerns several types of reforms: labour product and financial market reforms, tax reforms and trade reforms. The following set of explanatory factors are considered: initial structural conditions, variables relating to international factors and openness, macroeconomic variables, and factors affecting the policy-making process. The initial structural conditions are captured by lagged variables of the structural indicators used as dependent variables and by demographic variables. International factors are captured by the share of trade on GDP (trade openness) and by a dummy variable for EU membership. The macroeconomic variables used include cyclically-adjusted primary budget balances, both levels and year-to-year changes and dummy variables denoting years with very low growth (bad years) and how many of the previous 3 years were bad years. Factors affecting the policy-making process were captured by a list of dummies capturing political variables (e.g., whether in the year were there elections, electoral rule followed,...).

<sup>24</sup> Analogous analysis to that contained in IMF (2004) has been carried out in Debrun and Annett (2004) separately on a sample of EU countries only. It is shown that when the analysis is restricted to EU countries, the impact of fiscal consolidation on the implementation of reforms becomes significantly weaker.

short-term costs to the budget associated with the implementation of reforms. The next section analyses whether the changes that occurred in different categories of government expenditures and revenues in the aftermath of reforms were significantly different compared with those when reforms were not implemented. In section 3.3. there is an attempt to measure the impact of reforms on budgets controlling for the response of fiscal authorities to the cycle and debt levels.

### **3.2. Developments in budgetary items in the aftermath of reforms**

The purpose of this section is to provide evidence on the short-term budgetary impact of structural reforms by tracking the developments occurred in various budgetary items after reforms took place and comparing such developments with what happened instead when no reforms were implemented. A negative budgetary impact of reforms could be due either to direct effects associated with the reform (e.g., losses of pension contributions in case of systemic pension reforms) or to costs associated with the need to win resistance to reforms out via increased budgets (e.g., via subsidies or tax cuts). Due to the absence of systematic evidence on the budgetary impact of reforms that can be attributed exclusively to direct effects, in the following analysis no distinction will be made between the direct component and the component associated with the implementation of compensation schemes.

There is no obvious way in which labour market and product market reforms could impact directly budgets in the short term. Depending on the particular reforms considered, the effect could be either negative or positive. For instance, labour market reforms could either contribute to contain government expenditure if including reductions in unemployment subsidies or raise expenditure if comprising active labour market policies to promote employability (e.g., training programmes). As for product market reforms, they can for instance have a direct effect on budgets by altering the size of government subsidies and transfers to the corporate sector. Although the direct budgetary impact of labour and product market reforms is likely to be quite limited in the short-run, one needs to take into account the impact on public budgets that could be associated with the implementation of compensation schemes.

A first approach to assess the short-term budgetary impact of reforms is to look at the change in various budgetary items in years immediately following reforms and to compare them with that in years where no reforms took place. Table 4 reports average changes in primary

cyclically-adjusted primary budgets (primary CABs) and selected components distinguishing between years immediately following the adoption of reforms and remaining years. T tests are performed to check whether differences in reform and “non-reform” years are statistically significant.

Results indicate that *neither in the case of labour market reforms nor in that of product market reforms the variation in primary CABs is significantly different in reforms or non-reform years*. In the case of labour market reforms it is observed a weaker reduction in government investment on average. In the case of product market reforms, the growth in cyclically-adjusted revenues is significantly lower in reform years, but the effect on budgets is compensated by lower growth in primary expenditures.

Turning to pension reforms, their short-term direct budgetary impact depends crucially on the elements touched upon by the reform and on how the reform is designed. Parametric reforms in government pension schemes that reduce the generosity of the system are likely to exert a direct positive impact on budgets. This is generally the case of reforms increasing pension contributions, revising the criteria for the determination of pension benefits (e.g., modifying the indexation criterion of pensions), tightening the entitlement criteria for pensions, or increasing the statutory retirement age. As illustrated previously, systemic reforms may have instead a temporary negative impact on budgets even when having a possible long-term impact on public finances if they imply the shifting of social contributions into pension schemes privately run or classified outside the government. It should also be taken into account that the short-term budgetary impact of pension reforms could be affected to a relevant extent by the fact that reforms are quite often designed in such a way to take effect gradually. Table 5 compares average changes in primary CABs and selected budgetary items in periods with and without reforms. Results show that, *in spite of a non-significant difference in the changes in the primary CAB between periods with and without reforms, there is a statistically significant difference in the short term dynamics of social benefits, which on average rise in periods without reforms, while falling immediately after the implementation of reforms.*<sup>25</sup> The difference in the change in social contributions in reform and “non-reform” years appears instead negligible.

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<sup>25</sup> The ESA95 item social benefits other than in kind (D.62), comprises 4 sub-items: social security benefits in cash (D.621), private funded social benefits (D.622), unfunded employee social benefits (D.623), social assistance benefits in cash (D.624). Pension reforms are likely to affect especially the first two categories, that

Since the short-term budgetary impact of pension reforms could be quite different depending on the specific reforms considered, it could be helpful a close look at budgetary variables of interest in the years before during and after each one of selected structural pension reforms. Of course, such an analysis would not be very informative on the impact of reforms on budgets (since there is no counterfactual for judge what would have been the evolution of budgetary variables without the reform) but could help to shed light on whether there are systematic differences in the evolution of reforms depending upon the type of reforms considered. The reforms included in the analysis are all those reducing overall the generosity of the system and classified as structural in the FRDB database, i.e., reforms applying to the whole population and not only to particular categories.

Table 6 reports the value (as a percent of GDP) of the primary CAB, social security contribution and social benefits other than in kind in the year before, during and in the two years after each reform. Almost all the reforms considered were mainly of the parametric type, aimed at modifying the functioning of PAYG government pension schemes. The only exceptions are the 1996 reform in the Netherlands, the 1998 reform in Sweden, and the 1987 reform in the UK.

The 1996 Dutch reform consisted in the privatization of the pension fun for civil servants. The reform carried out in Sweden in 1998 was a broad reform, that implied, inter-alia, revising the functioning of the government PAYG pension scheme (from defined benefit to notional defined contribution) and the gradual introduction of gradually an additional funded, defined-contribution pillar. The 1987 UK reform introduced the possibility of opting out from the government PAYG for joining individual private funded schemes.<sup>26</sup> In almost all the parametric reforms considered in Table 6, elements aimed at reducing pension benefits and increasing pension contributions were present, together with revisions in the statutory retirement age.<sup>27</sup> The following points emerge from the data reported in Table 6. First, the evolution of the primary CAB in correspondence with reform years were to a considerable

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on average constitute about 2/3 of the aggregate social benefits other than in kind in the EU-15 in the past 10 years.

<sup>26</sup>See [http://www.frdb.org/documentazione/scheda.php?id=-55&doc\\_pk=9027](http://www.frdb.org/documentazione/scheda.php?id=-55&doc_pk=9027)).

<sup>27</sup> FRDB reports as uncertain the impact of the German reform of 1992 on pension benefits, while in all other cases reforms are indicated as reducing benefits and increasing contributions. As for revisions in the retirement age, all reforms include an increase in the statutory retirement age, generally introduced gradually, except for the 1995 Italian reform where the retirement age was made more flexible compared with the regime introduced in 1992. Moreover, the Italian reforms of 1992 and 1995 were not purely parametric in that they also introduced fiscal incentives for the accumulation of individual private pension schemes

extent driven by changes in cyclically adjusted revenues and primary expenditures not directly related to changes in pension contributions and social benefits. Second, the pension contributions as a share of GDP moved quite little after the reform in almost all cases (never more than 1 GDP point between the year of the reform and the two consecutive years). There is some indication that the evolution of social contributions differed depending on whether reforms were mainly parametric or systemic. After all parametric reforms (except Italy 1992), social contributions increased, while in the case of the Dutch, and UK reform there was a slight reduction in pension contributions. Third, social benefits changed quite substantially after reforms. They fell after systemic reforms. The case of parametric reforms is instead mixed: an increase is observed after the German reform, the two Italian reforms and the Portuguese reform, while after the Spanish and the Finnish reform a reduction in benefits is observed. Overall, the evidence broadly supports the expectation that the impact of reforms is likely to be quite different depending on the specificities of the reforms considered, in particular whether they are mainly parametric or systemic reforms.

### **3.3. Estimating the impact of reforms on budgets through the estimation of fiscal reaction functions**

From the prima-facie evidence reported in the previous section there is not strong support to the view that labour market, product market, or pension reforms were associated with short-term budgetary costs. However, the analysis so far did not control for other factors that may have affected government budgets.

A common way to perform such control is to estimate “fiscal rules”, describing the reaction of fiscal authorities (in terms of chosen levels of budget balances) to key macroeconomic developments, such as those related to the cycle and the level of debt.<sup>28</sup> The strategy followed in the following analysis is therefore that of augmenting fiscal rules with variables relating to the implementation of reforms.<sup>29</sup> The budgetary impact of reforms can be gauged by looking at the regression coefficient of the reform variables.

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<sup>28</sup> The basic idea is that fiscal authorities are motivated by an objective of output stabilization (so that chosen budget balances should respond positively to expected output gaps) and by a debt stabilization motive (so that a positive response of budget balances to the existing stock of debt is expected). For the estimation of fiscal rules for EU countries see, e.g., Von Hagen, Hugues-Hallet and Strauch (2001), Gali and Perotti (2003), European Commission (2004), Ballabriga and Martinez-Mongay (2004).

<sup>29</sup> An alternative analytical strategy is followed in Pirttila (2001) in analysing the impact of reforms in transition countries (privatisation, price liberalization, trade liberalization) on fiscal adjustment. In that



Table 7 reports the results for panel data estimation of fiscal rules. The dependent variable is the primary CAB, the explanatory variables are the output gap, the debt/GDP ratio and a dummy variable taking value 1 if reforms were implemented in the current or previous year. Estimates have been performed separately for the case of labour and product market reforms. In accordance with existing estimates of fiscal rules for EU countries, results indicate a non-significant response of fiscal authorities to output gaps and a significant positive response to debt.<sup>30</sup> *The coefficient of reform dummies is negative but barely significant in both the case of labour and product market reforms.*

The size of the coefficients is also similar, indicating that in correspondence with both labour and product market reforms budgets are loosened by about 0.3 GDP points. The analysis does not permit to distinguish whether this budgetary effect is a direct one or whether it is related to the objective of policy authorities of winning resistance to reforms by relaxing the budget. It should be stressed that these results must be interpreted with care. In particular, they are likely to be affected significantly by the chosen method for measuring structural reforms.

An issue of robustness arises: to what extent are the results concerning the budgetary impact of labour and product market reforms driven by the specific way chosen to construct the reform indicators? Results do not seem to crucially depend upon the chosen benchmark for the change in structural indexes to define when structural reforms occur, i.e., the median value of positive changes. In fact, by using the mean value instead, one obtains reform indicators that are still correlated with those based on the median (with rank correlations equal to 0.85 in the case of labour market reforms and 0.88 for product market reforms). The estimation of fiscal reaction functions using reform indicators based on the mean of positive changes in the structural index yields results similar to those presented in table 7.<sup>31</sup> We have also performed a further robustness check on the labour market reform indicator used in our analysis. We have constructed two alternative indicators based on policies actually implemented. Using the FRDB database on reforms concerning employment protection legislation and unemployment subsidies, two indicators have been constructed. One indicator takes value 1 in years/countries

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analysis, the change in the budget balance is regressed against reform variables and on measures of growth, unemployment, private firms' entry and initial conditions (number of transition years). Results indicate that while privatisation has a significantly negative impact on the fiscal balance, the impact of price liberalization was significant and positive.

<sup>30</sup> However, it has been shown that the coefficients of output gaps and debt of fiscal rules have not been constant over time (e.g., Gali and Perotti (2003), European Commission (2004), Ballabriga and Martinez-Mongay (2004)).

<sup>31</sup> The regression coefficient for the labour market reform dummy is -0.45, with t test equal to -2.13. In the case of product market reforms, the coefficient is -0.35 with t test of -1.84.

where reforms in employment legislation which overall reduce firing costs have been introduced. The other indicator takes value 1 in case of reforms in unemployment subsidies that improve incentives to labour market participation. In spite of the fact that the correlation of these new labour market indicators with the one used in our analysis is low, the employment protection reform indicator so obtained performs in a quite similar way in the estimation of fiscal reaction functions as compared with our benchmark indicator for labour market reforms.<sup>32</sup>

Table 8 presents the results from the estimations of fiscal reaction functions in the case of pension reforms. This time, fiscal reaction functions are augmented by a pension reform dummy that takes value 1 if a pension reform was implemented in the current or previous year. The analysis in this case refers separately to the determinants of the primary CAB, cyclically-adjusted revenues and primary expenditures. Results show that *the pension reform dummy has a negative but non-significant impact on primary CABs*. The coefficient indicates that a reform implemented in the current or previous year reduced the value of the primary CAB by about 0.2 GDP points. However, given the high uncertainty surrounding this estimate (a high standard error of the regression coefficient) it cannot be judged to be significantly different from zero. By carrying out the same analysis using a dependent variable the cyclically-adjusted government revenues and primary expenditures one notices that most of the deterioration of the primary CAB in the aftermath of pension reforms is associated with a reduction in revenues rather than with increased expenditures. Again, the impact on revenues is however not statistically significant. Moreover, the analysis does not permit to distinguish whether the budgetary impact of pension reforms is a direct one or whether it is related to a budgetary relaxation to ease resistance to the implementation of the reform.

Finally, alternative specifications of fiscal reaction functions have been estimated with the purpose of analysing the impact on budget deficits arising from the interaction between different types of reforms. In Table 9, specifications (1) – (3) include each one of the reform dummies in isolation but impose a sample size such that there are no missing observations for

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<sup>32</sup> The rank correlation between the labour market indicator used in our analysis and that based on reforms in employment protection is 0.02, while the correlation with that with the indicator based on reforms in unemployment benefits is -0.01. In the estimation of fiscal reaction functions, the regression coefficient of the employment protection indicator is -0.27, (with t test of -1.36), while the coefficient of the unemployment benefits indicator is 0.03 (t test 0.019).

any of the reform dummies. This permits to compare these results with those in specification (4), which include all reform dummies simultaneously, and with those in specifications (5) – (8) which instead include dummies taking value 1 when, respectively, are carried out: labour market and product market reforms; labour market and pension reforms; product market and pension reforms; all three type of reforms. Results show that when the sample is restricted to year/country combinations for which there are no missing observations for any reform dummy the impact of labour market and product market reforms taken in isolation appears less negative (and less statistically significant) while that of pension reforms more negative and statistically different from zero (compare Table 9 with Tables 7 and 8). By including all reform dummies in the specification, the dummy for product market reforms turns slightly positive, becoming largely statistically insignificant, whereas the coefficient for labour market reforms and pension reforms becomes more negative compared with the case in which they are included separately in the regressions (specifications (1) and (3) in Table 9). The lack of robustness of reforms regression coefficients signals a possible problem of multicollinearity which affects especially the coefficient of the product market reform dummy. This seems consistent with the evidence from correlation analysis, which reveal a quite significant correlation across the sample between product market reforms and pension reforms. Does it matter if different types of reforms occur at the same time? Comparing results from specifications (5) – (8) with those in specification (4) in Table 9 could help answering this question. In all cases, the coefficient of the dummy for the simultaneous presence of different types of reforms is negative (and significant only when pension reforms are concerned) but lower in absolute value compared with the sum of the coefficients for the corresponding type of reforms in specification (4). This suggests that, on average, the simultaneous implementation of different types of reforms is associated with a budgetary deterioration that is lower compared with the cumulated budgetary deterioration that would result by implementing the same reforms sequentially.

#### **4. Concluding remarks**

The main messages from the previous analysis can be summarised in the following way. Looking at average changes in budget balances in years with and without reforms, no significant differences emerge for what concern the evolution of the primary CAB in the short-term, irrespective of the type of reform considered. Product market reforms are associated with slower growth in government revenues accompanied by corresponding slower

growth in expenditure. In the aftermath of pension reforms, social benefits paid by the government grow at a significantly slower rate, but the overall impact on the budget is compensated by government revenues also growing at a slower rate. The analysis of the evolution of budgetary variables during the implementation of selected structural pension reforms suggests that the impact of reforms can be quite different depending on the characteristics of the reform, mainly on whether the reforms mainly introduce parametric changes or also allow for systemic changes in the national framework for pensions. When the short-term budgetary impact of reforms is evaluated after controlling for the response of fiscal authorities to the cycle and debt developments, there is evidence that product and market reforms and pension reforms are associated with a deterioration in budgets (due either to a direct budgetary impact of reforms or to other reasons, like tax cuts or expenditure increases aimed at easing resistance to reforms). The impact appears rather weak (a primary CAB reduced by few decimal GDP points depending on the specific reform considered) and statistically significant only in the case of labour market reforms. Moreover, the simultaneous implementation of different type of reforms seems to imply a slighter budgetary deterioration compared with the cumulated budgetary deterioration arising from the sequential implementation of the same types of reforms.

It is important to stress that the results from the empirical analysis suffer from the fact that the dataset is of limited size and because any measurement of reforms involve to a certain degree arbitrary choices which may however matter for results. Caution is needed also in comparing results across different type of reforms, given that the reform indicators used in the analysis represent somehow different phenomena, (improvements in indexes of labour market and product market restrictions, data on pension reforms implemented). Finally, our empirical analysis of structural reforms suffers from an inevitable problem of self-selection bias: the reforms observed are only those that have not been blocked in the political process. However, many reforms project may have been blocked exactly because of their budgetary impact, but the analysis does not take into account of that.

Overall, there is a strong indication that generalizations are not easy to make for what concerns the link between structural reforms and budgets in the short-run. Results differ depending on the specific type of reforms considered. Also within a given type of reforms (e.g., pension reforms) the fiscal implications are likely to differ considerably depending on the main elements of the reform and on how reforms are designed. Furthermore, the weak

statistical significance of results reveals in general a high degree of dispersion in results across the sample, i.e., each reform case cannot be easily assimilated to the average.

These results point to some lessons for policy. In the implementation of the EU fiscal framework there are reasons for taking better into account the role of economic reforms, especially when there is a strong ex-ante expectations that reforms may have a positive impact on public finances in the long run coupled with budgetary costs in the short term. However, a mechanistic, one-size-fits-all approach whereby all reforms or all reforms belonging to some broad categories are judged the same way should be avoided. Judgement should be used on a case-by-case basis, on the ground of information on the relevant specificities of the various reforms at stake.

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**Table 1: Source and coverage of data on structural reforms**

	Source	Description of data from which reform indicators have been constructed	Country coverage	Year coverage	Reform indicator
Labour market reform	IMF	Labour market index consisting of the unweighted average of indicators of employment restriction, unemployment benefit replacement rate and benefit duration. The index is normalized in such a way to be between 0 and 1 and to increase as labour market restrictions are reduced. Original data source: Nickell and Nunziata (2001), Labour Market Institutions Database and data used in OECD data.	EU-14 except EL	1970-1998*	The yearly change in the labour market index is positive and bigger than the median positive change
Product market reform	IMF	Index measuring entry barriers, public ownership, market structure, vertical integration and price controls in public utilities and transport services. The index is normalized in such a way to be between 0 and 1 and to increase as product market restrictions are reduced. Original data source: Nicoletti and Scarpetta (2003).	EU-14 except EL	1975-1998	The yearly change in the product market index is positive and bigger than the median positive change
Pension reforms	FRDB	Data reporting the years in which reforms in the pension systems were approved by the parliament and the main characteristics of reforms.	EU-14	1985-2001	A pension reform making the system less generous took place in the year

Notes: \*Except AT (1973-1998), PT (1975-1998) and FI (1971-1998).

**Table 2: Frequency of different types of reforms in different time periods (EU-14)**

	Before 1980	Between 1980 and 1990	After 1990
Labour market reforms	0.1	0.24	0.38
Product market reforms	0	0.16	0.62
Pension reforms	n.a.	0.16	0.31

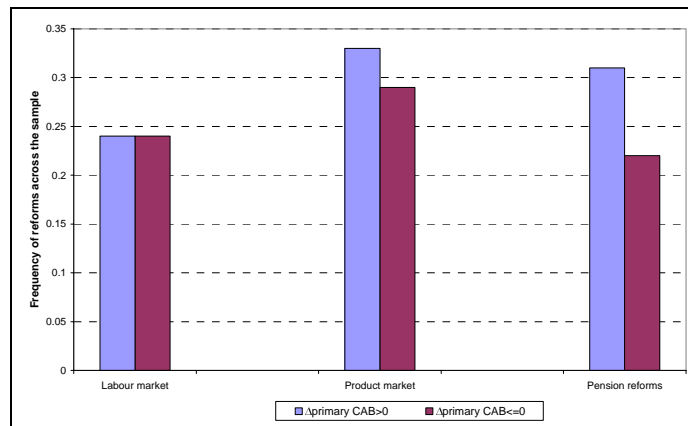
Figures represent the ratio between the total number of cases in which reforms occurred over the total number of years for which information is available on reform indicators. See Table 1 for the definition of reform indicators and for country/year availability.

**Table 3: Rank correlation between indicators of labour market, product market and pension reforms across the sample (EU-14, 1985-2001)**

	Labour market reforms	Labour market reforms	Labour market reforms
Labour market reforms	1	..	..
Product market reforms	-0.01	1	..
Pension reforms	0.02	0.14	1

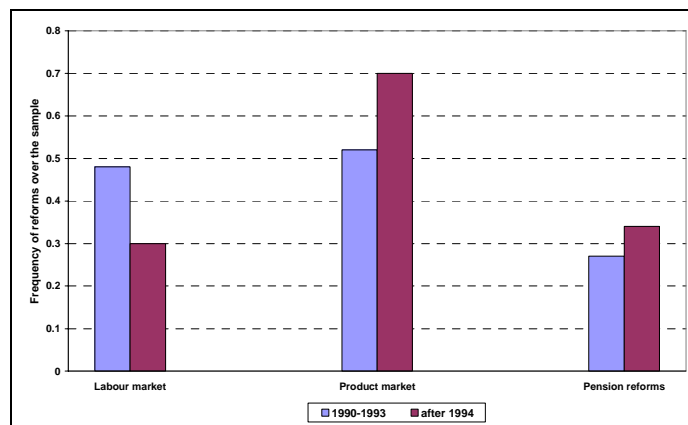
Source: Authors' calculation on data described in table 1

**Graph 1: Frequency of reforms during years of consolidations and years where primary cyclically-adjusted budget balances worsened**



Source: Authors' calculation on data described in table 1

**Graph 2: Frequency of reforms before and after phase II of EMU**



Source: Authors' calculation on data described in table 1

**Table 4: Average changes in budgetary variables during reform periods and periods where no reform took place: labour and product market reforms (EU-14 except EL, 1972-1998)**

Year-to-year change in fiscal variables (% GDP), simple average	Labour market reforms			Product market reforms		
	No reforms (1)	A reform took place in the current or previous year (2)	t test for (1)≠(2)	No reforms (1)	A reform took place in the current or previous year (2)	t test for (1)≠(2)
Primary CAB	0.06	0.08	-0.14	0.15	0.15	-0.0
Cyclically-adjusted revenues	0.43	0.3	0.65	0.54	0.01	2.89***
Social security contributions	0.17	0.08	1.3	0.12	0.017	1.7*
Primary expenditure	0.38	0.19	0.93	0.36	-0.11	2.44**
Social benefits other than in kind	0.2	0.05	1.6	0.17	-0.005	1.97**
Government subsidies	-0.003	-0.048	0.85	-0.033	-0.072	0.79
N. obs.	238	114		153	141	

Source: Authors' calculation on data described in table 1 and DG ECFIN AMECO database.

**Table 5: Average changes in budgetary variables during reform periods and periods where no reform took place: pension reforms (EU-14, 1986-2001)**

Year-to-year change in fiscal variables (% GDP), simple average	Pension reforms		t test for (1)≠(2)
	No reforms (1)	A reform took place in the current or previous year (2)	
Primary CAB	0.012	0.18	-0.87
Cyclically-adjusted revenues	0.16	-0.04	1.06
Social security contributions	0.02	-0.015	0.6
Primary expenditure	0.11	-0.23	1.54
Social benefits other than in kind	0.06	-0.11	1.85*
Government subsidies	-0.08	-0.09	0.11
N. obs.	123	101	

Source: Authors' calculation on data described in table 1 and DG ECFIN AMECO database.

**Table 6: Evolution of selected budgetary during structural pension reforms in the EU, 1986-1999**

<b>Pension reform</b>	<b>Change in primary CAB between t+2 and t (% GDP)</b>	<b>Change in social contributions between t+2 and t (% GDP)</b>	<b>Change in social benefits between t+2 and t (% GDP)</b>
<b>Germany 1992</b>	1.7	1	1.4
<b>Spain 1997</b>	-0.1	0	-0.9
<b>Italy 1992</b>	1.1	-0.1	0.8
<b>Italy 1995</b>	3.1	0.5	0.6
<b>Netherlands 1996</b>	-1.4	-0.2	-1.8
<b>Portugal 1993</b>	1.3	0.3	0.6
<b>Finland 1997</b>	0.8	-0.2	-1.7
<b>Sweden 1998</b>	-0.5	0.6	-1.2
<b>UK 1987</b>	0.4	-0.4	-1.8

Note: Including only structural reforms decreasing the generosity of the pension system as reported in the FRDB database. Social benefit figures refer to the "social benefits other than in kind" category in the ESA95 government accounts. Source: authors' computations on FRDB and AMECO databases

**Table 7: Budget balances, labour and product market reforms: estimating fiscal rules (EU-14 except EL, 1972-1998)**

Dependent variable: primary CAB	(1)	(2)
Explanatory variables		
Constant	-1.35*** (-5.49)	-1.58*** (-5.15)
Lagged dependent variable	0.75*** (23.74)	0.76*** (23.71)
Output gap	-0.21 (-0.48)	-0.06 (-1.43)
Lagged debt/GDP ratio	0.032*** (6.78)	0.036*** (6.21)
Dummy for labour market reforms	-0.306* (-1.65)	
Dummy for product market reforms		-0.29 (-1.53)
N. obs.	342	293
R sq.	0.73	0.76
Chi sq	1121	1171

Notes: Estimations method: fixed effects, instrumental variables regression. The output gap is instrumented with its own lag and the US lagged output gap. All fiscal variables are expressed as shares on potential output.

Z statistics are reported in parentheses. \*, \*\*, and \*\*\* denote, respectively, significance at the 10, 5 and 1 per cent level.

Coefficients for country fixed effects are not reported.

Source: Authors' calculation on data described in table 1 and DG ECFIN AMECO database.

**Table 8: Budget balances and pension reforms: results from the estimation of fiscal rules (EU-14, 1986-2001)**

Dependent variables	Primary CAB	Cyclically-adjusted government revenues	Primary government expenditure
Explanatory variables			
Constant	-2.48*** (-4.40)	8.14*** (5.54)	4.99*** (2.85)
Lagged dependent variable	0.71*** (17.57)	0.78*** (21.89)	0.91*** (22.76)
Output gap	-0.003 (-0.08)	0.14*** (3.65)	0.14*** (2.86)
Lagged debt/GDP ratio	0.048*** (5.5)	0.034*** (4.21)	-0.018** (-2.18)
Dummy for pension reform	-0.24 (-1.18)	-0.22 (-1.3)	-0.05 (-0.24)
N. obs.	224	224	224
R sq.	0.69	0.79	0.73
Chi sq	1128	405731	255782

Notes: Estimations method: fixed effects, instrumental variables regression. The output gap is instrumented with its own lag and the US lagged output gap. All fiscal variables are expressed as shares on potential output.

Z statistics are reported in parentheses. \*, \*\*, and \*\*\* denote, respectively, significance at the 10, 5 and 1 per cent level. Coefficients for country fixed effects are not reported.

The pension reform dummy is constructed as an indicator taking value 1 if a pension reform was carried out in the current or previous year and zero otherwise.

Source: Authors' calculation on data described in table 1 and DG ECFIN AMECO database.



**Table 9: Budget balances and structural reforms:  
results from the estimation of fiscal rules (EU-14, 1972-2001)**

Dependent variable: primary CAB	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Explanatory variables</b>								
Constant	-2.2*** (-3.65)	-2.2*** (-3.65)	-2.58*** (-4.14)	-2.67*** (-4.26)	-2.35*** (-3.78)	-2.39*** (-4.01)	-2.62*** (-4.12)	-2.57*** (-4.14)
Lagged dependent variable	0.75*** (16.26)	0.76*** (16.58)	0.75*** (16.66)	0.74*** (16.02)	0.76*** (16.6)	0.75*** (16.79)	0.77*** (16.99)	0.75*** (16.68)
Output gap	0.019 (0.42)	0.006 (0.14)	0.018 (0.41)	0.034 (0.73)	0.012 (0.28)	0.022 (0.5)	0.005 (0.13)	0.016 (0.36)
Lagged debt/GDP ratio	0.044*** (4.73)	0.043*** (4.6)	0.051*** (5.18)	0.055*** (5.33)	0.04*** (4.71)	0.047*** (5.19)	0.05*** (5.04)	0.049*** (5.16)
Dummy labour market reforms	-0.26 (-1.18)			-0.34 (-1.55)				
Dummy product market reforms		-0.12 (-0.56)		0.01 (0.05)				
Dummy pension reforms			-0.49** (-2.26)	-0.54** (-2.39)				
Interaction labour market/product market reforms					-0.24 (-1.1)			
Interaction labour market/pension reforms						-0.68*** (-2.74)		
Interaction product market/pension market reforms							-0.37* (-1.68)	
Interaction labour market/product market/pension reforms								-0.65** (-2.38)
N. obs.	188	188	188	188	188	188	188	188
R sq.	0.65	0.65	0.65	0.66	0.65	0.66	0.66	0.66
Chi sq	853	848	875	878	853	941	908	879

Notes: Estimations method: fixed effects, instrumental variables regression. The output gap is instrumented with its own lag and the US lagged output gap. All fiscal variables are expressed as shares on potential output.

Z statistics are reported in parentheses. \*, \*\*, and \*\*\* denote, respectively, significance at the 10, 5 and 1 per cent level. Coefficients for country fixed effects are not reported.

The pension reform dummy is constructed as an indicator taking value 1 if a pension reform was carried out in the current or previous year and zero otherwise.

Source: Authors' calculation on data described in table 1 and DG ECFIN AMECO database.