II. The growth impact of structural reforms ([20])

The financial and sovereign debt crises have highlighted the need for structural reform. Unemployment rates have risen to dramatic heights in many countries and the duration and depth of the crisis weigh on long-term growth prospects. Low growth could also hamper debt sustainability and have forced more consolidation measures in vulnerable Member States, which have further reduced growth. All this has provided an impetus to carry out reforms to boost growth – country-specific recommendations in the European Semester aim to increase competition and reduce labour market rigidities in Member States.

This article presents a quantitative model-based assessment of the potential impact of structural reforms in selected core and vulnerable periphery Member States. Using structural indicators of labour and product markets, scenarios in which part of the gap vis-à-vis best performance is closed show large potential gains in output and employment, raising GDP by 1.5 % to 6 % after five years and in the case of Greece by up to 15 % after ten years. Crucially, while competitiveness gains are smaller under simultaneous reforms, higher demand effects help to support growth in trading partners. GDP spillovers are positive, with growth effects in Member States mutually bolstering each other.

This article aims to provide a quantitative assessment of the potential macroeconomic impact of jointly implemented reforms and to evaluate possible spillovers of policy actions onto the EU's partners. We focus on the four largest euro-area countries (Germany, France, Italy and Spain) and the three 'programme countries' (Greece, Portugal and Ireland). The benchmarking methodology is based on structural indicators of labour and product markets, and applies a distance-to-frontier approach to quantify the potential for reform by assuming a gradual and partial closure of the gap vis-à-vis the average of the three best EU performers. Crucially, to avoid setting unrealistic and/or unattainable targets, the scenarios involve only half of the gaps being gradually closed. Assuming the results are roughly linear, more ambitious reforms closing the full gap would double the effects, while reforms closing only part of the gap can be expected to have a proportionally lower impact.

This assessment uses the semi-endogenous growth version of the QUEST model specifically adapted for the analysis of structural reforms, which includes an R&D production sector. The model follows the QUEST3(RD) model structure of Roeger et al. (2008) in a multi-country setting (d'Auria et al., 2010), and includes the EU Member States individually and the rest of the world as a single separate region, thus allowing an analysis of spillover effects in a context of simultaneous reforms. Previous exercises using this model have shown that structural reforms can have sizeable

macroeconomic effects. ([21]) Similar conclusions have been reached in other studies which have quantified the potential gains from EU structural reforms through regression analysis and/or model simulations of exogenous productivity or aggregate mark-up shocks. ([22])

II.1. Methodology

In this exercise, reform shocks are based on a set of structural reform indicators covering a wide range of areas, including market competition and regulation, R&D expenditure, skill structure, tax structure, labour market participation, unemployment benefit 'generosity' and active labour market policies.

As mentioned above, we define the potential for reform as a closing by one-half of the gap in these indicators vis-à-vis the three best-performing countries in the EU. To allow for implementation lags, all reforms are phased in gradually. Closing half the gap implies that for almost all Member States there is potential to introduce further

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reforms, without imposing 'unrealistic' change for countries that fall far short of best performance.

It is important to note a number of caveats as to the scope of this exercise. First, the focus here is on the main macroeconomic variables, in particular GDP, employment, trade balance and government balances. However, reforms can have important distributional consequences, with some measures affecting certain household groups more than others. This may require that compensatory measures are taken to support poorer households.

Second, while this benchmarking approach shows the *potential* that reforms could deliver, it is not an assessment of measures *actually taken* in a given country. The latter would require detailed information on reform measures already partly adopted and/or planned in each Member State, and knowing how they impact on structural indicators that feed into the model. While such information may be available in the Member States' National Reform Programmes (NRPs), the results reported in the current simulation exercise, given their wider-ranging scope, could be seen as providing an upper limit for such impact assessments. The indicators used in this exercise are based on the most recent available data (see sources, Table II.11), but these may not reflect reforms that have already been adopted. In particular, some Member States (particularly some of the most vulnerable) have recently launched ambitious reform processes, the benefits of which would be included in the simulations presented here.

Third, there could be considerable time-lags before actual reforms have a measurable macroeconomic impact. Delays in implementing reform measures are likely and it will also take time before the measures have a visible impact on structural indicators (e.g. time between creating more childcare facilities and an actual rise in female participation rates). In this exercise, we assume that reforms are implemented gradually. 'Speed limits' are applied, e.g. changes in mark-ups of at most one percentage point (pp) per year. Tax reforms are phased in over a five-year period, while educational reforms lead to only very gradual changes in skill levels due to cohort effects. However, the overall results may still overestimate how quickly reforms can have an impact in the short term, in particular at the current juncture, with depressed demand and tight credit conditions due to public and private deleveraging. We

therefore focus our discussion mainly on effects over five and ten years, rather than the short term.

Another reason why the results could be considered as an upper limit is that some reforms may have considerable budgetary costs which could not always be taken into account, as they can be difficult to quantify. As regards improving childcare facilities and all-day schools, budgetary implications have been included that are based on gaps in public expenditure on pre-primary education, but in many other cases budgetary costs could not be accounted for. To the extent that reform measures have additional costs which would have to be financed through higher taxes, for example, macroeconomic impacts could be smaller than those presented here.

Spillovers

In general, the following types of spillover can be examined:

1. **Demand spillovers** whereby policy action in one country (e.g. growth-enhancing structural reforms) influences import and/or export flows with partner economies. As we can expect structural reforms to boost growth and domestic demand, reforms in one country could have a positive demand spillover effect on others.

2. **Competitiveness effects**, e.g. resulting from measures that reduce labour costs or mark-ups in one country and improve its competitiveness, but mean that other countries are relatively less competitive; this could reduce the positive demand spillover effect.

3. **International financial flows** caused by reforms in one country can have effects on others. For example, reforms which increase the rate of return on capital can lead to capital inflows until rates of return are equalised internationally. Exchange rate changes associated with international capital flows can induce further trade flows.

4. **Knowledge spillovers** resulting from the international diffusion of innovations will generally lead to a positive transmission of reforms that foster intangible capital formation. While these spillovers are less important in the short term, they play a longer-term role in the model for reforms that promote R&D. Based on empirical studies, we model domestic knowledge production (intangible

capital) as resulting from domestic R&D efforts plus knowledge gained in the rest of the world.

These four types of spillover are captured endogenously in model simulations of reform measures. Overall *net* macroeconomic spillovers are typically found to be relatively small, though not negligible, due to counterbalancing demand and competitiveness effects.

A possible additional spillover that is not endogenously captured in the simulations relates to the contagion of risk premia. If structural reforms are successful in raising potential growth rates, this could change financial markets' perception of long-term debt sustainability and lead to a gradual reduction of sovereign risk premia. [23] While this is captured in the model, the sovereign risk premium depends on each country's own debt-to-GDP ratio and the model includes no additional cross-correlations of risk premia. Improving fiscal positions in other countries could reduce fears of defaults or debt restructuring and/or reduce liabilities through joint institutions such as the European Stability Mechanism, and may lead to an additional decline in risk premia. However, it should be recognised that these risk spillovers can also be negatively correlated (e.g. a reversal of earlier 'flight to safety' could raise bond yields again in AAA-rated countries). All in all, the model may underestimate the impact on risk premia and disregards possible cross-country spillovers relating to this.

II.2. Structural reforms

Market competition and regulation

We distinguish between service-sector reforms and manufacturing reforms. The stylised facts from mark-up estimates indicate that mark-ups in services are larger than in manufacturing and vary more across countries. This finding is explained by high international competition in manufacturing, which limits the ability of manufacturing firms to reap large economic rents. While mark-up estimates indicate that there is scope for reducing profit margins in services, there also remains some

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[23] In the model, government bond yields depend on the current debt-to-GDP ratio. To the extent that structural reforms improve fiscal positions and reduce debt-to-GDP ratios, risk premia decline by three basis points for a one percentage point decline in the government debt-to-GDP ratio. While this is within the range of empirical estimates over longer horizons, in recent years there have been much larger swings in sovereign spreads.

room for reforms in manufacturing. In the simulations, we also consider administrative entry barriers in the form of the costs of setting up a business, for which country-specific indicators exist.

Negative mark-up shocks in services:

Reforms which increase competition force firms to reduce prices by lowering mark-ups. Depending on demand elasticity, this raises output and increases demand for all factors of production (tangible capital, intangible capital and labour) in the medium term. The combination of price declines and increased factor demand yields comprehensive benefits. In particular, wage income rises due to higher employment and real wages. Real wages also benefit from higher investment rates. Because of higher labour-supply elasticities for low-skilled workers, the positive employment effects will be greater for the low-skilled. Mark-up reductions also reduce export prices. In the short to medium term, the trade balance improves, largely due to a decline of private consumption in the short term due to a fall in economic rents. In turn, workers' consumption rises more gradually. With higher consumption, the trade balance returns to baseline values. Since competition-enhancing reforms are likely to be difficult to implement and it may take time before potential competitors enter the market, speed limits are introduced in the simulations which restrict a reduction of mark-ups to 1 pp per year until the target is reached.

Reducing entry barriers for start-ups in manufacturing:

By lowering profit requirements to cover initial costs, reducing administrative entry barriers increases the entry of new firms in manufacturing and the search for new business ideas. This is captured in the model as increased demand for patents, which comes from high-skilled workers. It is important to note that a reduction of entry barriers lowers fixed costs for firms and does not translate into price declines and productivity improvements at firm level, but to a wider variety of goods produced in the country in question (product innovation). Nevertheless, domestic firms can benefit indirectly from the use of more innovative intermediate and investment goods. The aggregate real wage increases because there is a higher proportion of high-skilled workers, but their wage also rises because of short-to-medium-term high-skilled labour supply constraints. These wage increases partly offset the gains from wider variety.

In the short term, the effects on GDP can actually be slightly negative, since increased demand for R&D leads to a reallocation of workers from the production of goods and services into research. However, the innovation resulting from R&D activities (as measured by the number of patents) yields marketable benefits in the medium term. Because of persistent growth effects generated by reduced entry barriers and increased demand for labour resulting in higher wage income early on, this policy already increases important tax bases and generates beneficial budgetary effects in the short term.

Tax reform

Shifting the burden of taxation from labour incomes to consumption in a budget-neutral way makes returns to labour income more attractive and hence boosts employment, particularly at the lower end of the wage scale. Labour supply (and therefore wages) depends on total tax burden, but shifting the burden away from wage income can reduce total distortions on employment decisions and leads to an increase in employment and output. It also improves competitiveness and mimics the effects of a currency devaluation on the terms of trade ('fiscal devaluation').

Real wage costs fall only temporarily in these simulations. Nevertheless, there is a positive effect on employment and GDP. A temporary increase in employment leads to an increase in the capital stock in the medium term, until the pre-existing capital-labour ratio is re-established. At this point, however, the marginal product of labour returns to its initial level and therefore real wages that firms are willing to pay return to the baseline level at a higher level of employment and capital.

In our benchmarking approach, we define the benchmark in terms of the proportion of indirect taxes. Rather than moving Member States towards the lowest labour tax rates in the EU, the reforms are designed to move them towards the highest indirect tax rates (still only closing half the gap), using the ex-ante fiscal space to reduce personal income tax rates accordingly (i.e. ex-ante budgetary neutrality). It should be stressed that the effects of a switch from labour to consumption taxation will depend on how different income groups are compensated for the consumption tax increase. In particular, if unemployment benefits and other transfers are indexed to consumer prices, the output and employment effects will be smaller. [24]

Unemployment benefit reform

A reduction in the benefit replacement rate acts in the model like a reduction in the reservation wage, which puts downward pressure on wages and so boosts labour supply. [25] The calibration of the wage elasticity to unemployment benefits is based on information from regression studies on the link between the unemployment rate and the benefit replacement rate. [26]

As the employment rate is lowest for the low-skilled group, the same increase in employment means a proportionally smaller reduction in leisure for this group and this puts less upward pressure on their wages. As a result, the decline in wages for the low-skilled is larger than that for other skill groups, and the increase in their employment is also greater.

As regards the impact on other variables, the effects of lowering benefit transfers are similar to those of reducing wages. Lower benefits would reduce consumption by liquidity-constrained households, but this is more than offset by an increase in consumption by non-constrained households due to higher permanent income. The benefit reduction acts like a negative shock to wages, which increases the demand for labour and reduces labour productivity initially. Wages and productivity increase over time and return to their baseline values as investment picks up. Unlike in a model with exogenous technical progress, there is a small positive long-term productivity effect due to higher employment of high-skilled workers in the R&D sector and increased demand for new patents

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[24] The long-term output effect is greater than the increase in employment and capital accumulation, due to an endogenous R&D increase. Employment in the R&D sector is higher and the increase in output ('ideas/patents') leads to an increase in total productivity.

[25] The target is defined as the EU average replacement rate; this scenario is not included for Member States below the average.

[26] For example, results from Bassanini and Duval (2006) and Orlandi (2012) point to an average effect for a panel of OECD/EU countries of somewhat less than 0.2% from a 1 pp reduction in the unemployment benefit replacement rate. We obtain results at a similar order of magnitude, but somewhat differentiated across countries. Bassanini, A. and R. Duval (2006), "Employment patterns in OECD countries: reassessing the roles of policies and institutions", *OECD Economics Department Working Paper*, No. 486; Orlandi, F. (2012), "Structural unemployment and its determinants in the EU countries", *European Economy Economic Papers*, No. 455.

Table II.1: **Structural indicators**

		Germany	France	Italy	Spain	Ireland	Portugal	Greece	Average 3 best EU performers
Market competition	Service sector markups	14.00	16.00	14.00	23.00	12.00	23.00	34.00	13.33
Market regulation	Entry costs	4.60	0.90	18.20	4.70	0.40	2.30	20.10	0.13
Tax reform	Implicit consumption tax rate	20.10	19.90	17.40	14.00	22.10	18.00	16.30	28.63
	Implicit labour tax rate	37.05	38.58	42.32	33.17	27.96	25.48	30.94	n.a.
Skill enhancing reforms	Share of high-skilled	7.91	7.12	3.40	8.95	7.88	3.33	6.00	9.65
	Tertiary education expenditure (% of GDP)	1.34	1.34	0.86	1.14	1.54	1.07	1.22	2.21
	Share of low-skilled	14.77	27.12	42.19	45.53	25.32	62.33	34.00	8.00
	Secondary education expenditure (% of GDP)	2.48	2.69	2.18	1.88	2.58	2.60	2.39	3.09
Labour market reforms	Female non-participation (25-59ys):								
	- low-skilled	29.03	22.14	46.40	34.77	40.04	26.18	42.32	24.99
	- medium-skilled	14.73	13.49	25.21	19.34	25.27	10.20	30.48	12.05
	- high-skilled	9.06	8.49	15.71	11.16	12.73	8.34	13.87	6.36
	Preschool expenditure (% of GDP)	0.55	0.68	0.48	0.72	0.05	0.55	0.55	1.05
	Low-skilled male non-participation (25-59ys)	16.66	13.75	17.96	14.35	22.44	12.82	10.40	11.27
	Pension related non-participation (60-64ys):								
	- low-skilled	5.21	15.79	6.94	2.05	6.16	3.46	7.08	2.58
	- medium-skilled	3.45	8.91	2.75	0.72	1.96	1.11	2.91	0.97
	- high-skilled	2.23	4.62	2.09	0.67	1.32	1.27	2.66	0.72
	ALMP (% of GDP)	0.93	1.13	0.38	0.80	0.92	0.69	0.23	1.53
	Benefit replacement rate	61.50	58.40	9.10	47.70	82.50	58.80	24.70	55.7[1]
R&D measure	R&D tax-credit rates	-0.02	0.43	0.12	0.35	0.11	0.28	0.01	0.35

(1) For benefit replacement rate: EU average.
Source: Final goods markups, 1996-2007: Commission services. Entry costs: starting business costs in % of income per capita, 2012: Doing business database. www.doingbusiness.org. Implicit consumption tax rate, 2011: European Commission, Taxation trends in the European Union, 2013 edition, Luxembourg, 2013.Skill-shares, non-participation rates and education expenditure statistics, 2011 or latest available: EUROSTAT. Benefit replacement rates, 2010: OECD, Benefits and Wages Statistics. www.oecd.org/els/benefitsandwagesstatistics.htm. R&D tax-credit rates, 2008: Warda, J. (2009). An Update of R&D Tax Treatment in OECD Countries and Selected Emerging Economies, 2008-2009, mimeo

from the entry of new firms in the intermediate sector.

The government balance improves directly as a result of the reduction in benefits and additionally as a result of indirect effects as the economy improves (i.e. higher GDP, consumption and employment).

Other labour market reforms

Rising participation rates for women, low-skilled male workers and 60-64 year-olds increase the labour force. Such reforms form an important part of our simulated packages and yield significant improvements in GDP. They have different budgetary implications: improving childcare facilities to raise female participation rates has budgetary costs, while raising the retirement age reduces pension payments and provides budgetary savings.

Active labour market policies (ALMPs) affect labour market outcomes by improving the matching process, thus favourably affecting employment. Firms can perceive ALMPs as a reduction in non-wage costs, e.g. training costs borne by government (employment subsidy). ALMPs have direct negative fiscal effects on the government budget balance. However, as the positive effects of better training for the unemployed gradually translate into improved matching, such policies can rely on a certain amount of self-financing, though the net effect on the budget balance remains negative as ALMPs are modelled as intensifying over the simulation horizon to reach their target gradually. [27]

Human capital investment

Human capital investment is modelled as changing the relative weights of the different skill categories (or participation rates within categories). Changes in the quality of education and their effects on the quality of the labour force are also modelled as changes in the skill composition. The increase of the average skill level in the economy (e.g. reducing the proportion of low-skilled) is modelled as a gradual change, accounting for the substantial lags in achieving that objective, including lags in reforming the education system and the gradual passing through of new cohorts onto the labour market. The reform cost is modelled as an increase in education-related expenditure.

As regards the impact of such a measure, the results of the model are in line with empirical

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[27] Note that EPL reforms are not included in this exercise.

estimates. [28] Other effects in the model imply that, given imperfect substitutability between worker types, an increase in the share of medium-skilled workers would have positive wage effects on other types, especially low-skilled workers.

Policies aimed specifically at increasing the share of high-skilled workers (engaged in R&D activities) are also modelled. Initially, a fraction of the additional high-skilled labour will be employed in the production of final goods (replacing less efficient medium-skilled workers). Over time, however, there is a dynamic increase in employment in the R&D sector because of a decline in the wage of high-skilled workers. This reduces the price of patents and stimulates the entry of new firms. In the medium and long term, increasing the high-skilled share results in a strong 'real' R&D effect in terms of R&D employment and patent growth, yielding the highest output effect as compared with other human capital investment scenarios.

R&D investment

Firms undertake tangible and intangible (or R&D) investment. Policy can affect R&D investment; e.g. R&D tax credits reduce the capital costs of intangibles and increase R&D activities, resulting in the production of more patents, which can be used to open up new product lines. On the labour side, this is accompanied by reallocating high-skilled workers from production to research activities and by increasing the demand for high-skilled workers. The size of the output effect will therefore depend crucially on high-skilled labour supply elasticity. Because of reallocation of high-skilled workers, the effects on GDP are small in the short term and positive output effects will materialise only in the longer term, once the R&D activities have been successfully transformed into marketable products. For countries with limited high-skilled labour and limited scope for substituting high-skilled for medium-skilled workers in production, the crowding-out effect of R&D subsidies will be greater. It is also important to note that R&D tax credits are not self-financing, but lead to a

deterioration of the government balance in the short and medium term.

The model can simulate only the effect of public subsidies to private R&D, e.g. in the form of tax incentives. Subsidies to R&D in public research institutes or universities could have different transmission channels and less of a crowding-out effect because business-financed R&D programmes typically focus on applied research, while public institutes and universities typically concentrate on basic research programmes which are too costly or less profitable for private R&D firms.

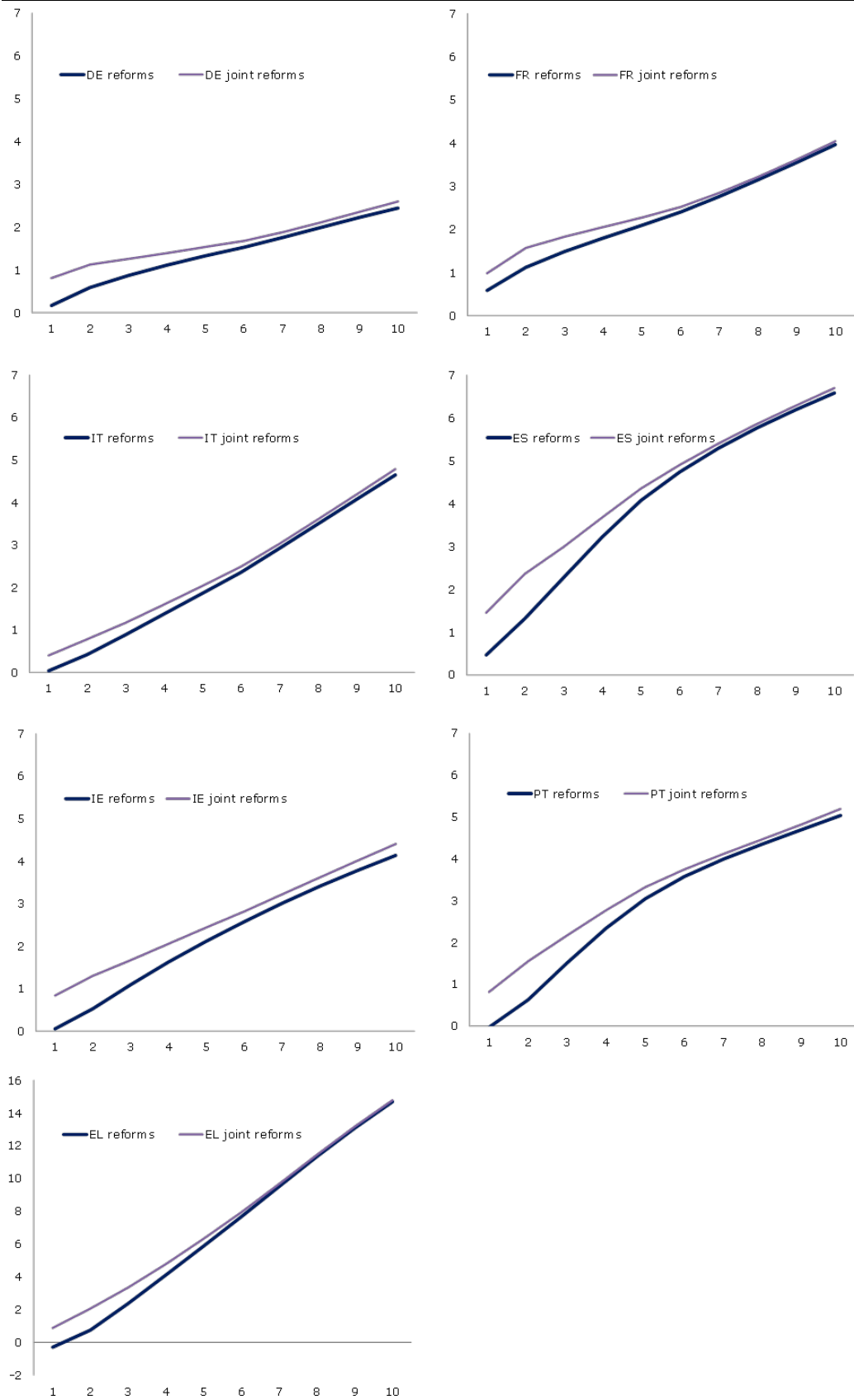## II.3. Macroeconomic impact of structural reforms — model-based results

Model simulations of structural reforms that close only half the gap with best performers show that even such not overambitious reforms can have significant macroeconomic effects. In order to quantify the spillover effects, the sets of reform shocks are first run through the model for each country separately, keeping all variables in other countries constant. This yields the impact of reforms for each country acting alone, without spillover effects. In a second stage, spillover effects are taken into account by simulating the shocks for all countries simultaneously. Estimated in this way, growth impact per Member State will be composed of growth spurred both by domestic reform and by a 'spillover' component resulting from other Member States reforming at the same time.

Graph II.1 shows the impact of structural reforms on GDP for Member States acting alone and in the event of simultaneous reform. Graphs II.2 and II.3 show results for employment, trade and public finances after five and ten years. Results are presented in the standard format as deviations from a 'no-reform' baseline. [29] The simulated reform shocks boost GDP levels by between 1.5 % (Germany) and 6.3 % (Greece) after five years, and between 2.6 % (Germany) and 14.8 % (Greece) after ten years. Similarly, employment rises by 3 % (Germany) to 10 % (Greece) after ten years.

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[28] In particular, de la Fuente (2003) estimates the impact of an extra year's schooling in the EU on long-term productivity at 9.3 %, which is close to the result yielded in our model. De la Fuente (2003), "Human capital in a global and knowledge-based economy, part II: assessment at the EU country level", *Barcelona Graduate School of Economics Working Papers*, No. 98.

[29] The model baseline is calibrated on the most recent available data. For most structural indicators, data are available up to 2012, but for some indicators the most recent observations are older. See Table II.1.
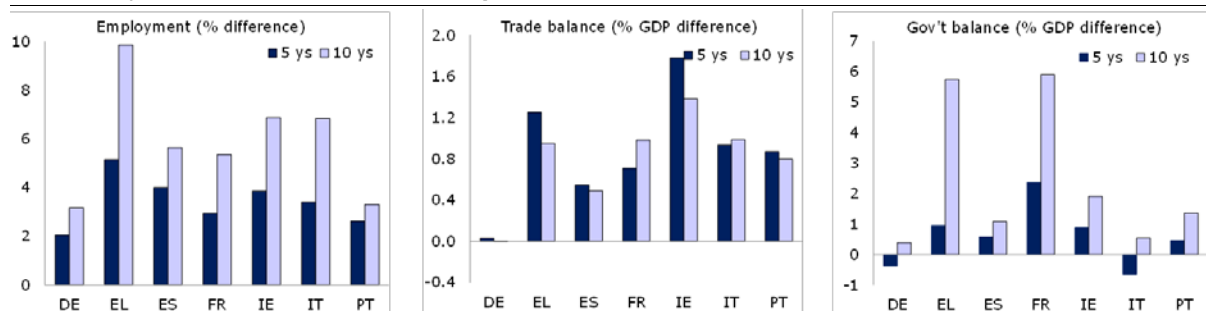
Graph II.1: **GDP effects structural reforms : acting alone vs. simultaneous reforms (1)**

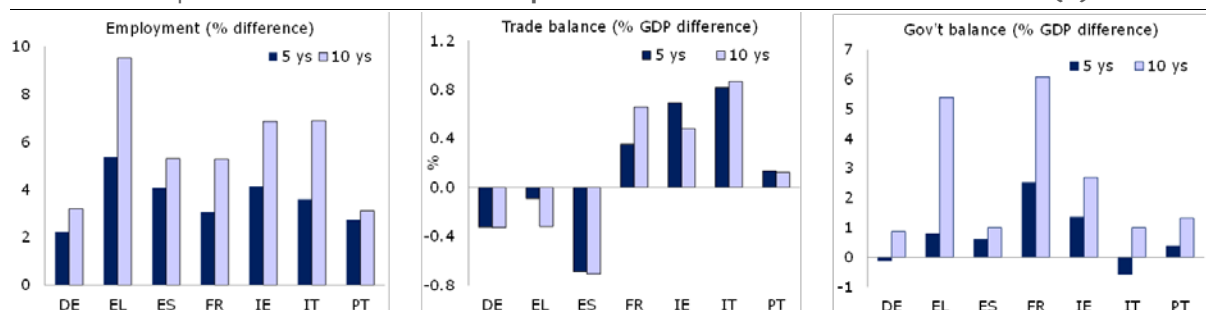(1) Percentage difference from baseline.
Source: QUEST simulations.

Graph II.2: **Macroeconomic impact structural reforms: Stand-alone reforms (1)**

(1) Percentage point difference from baseline.
Source: QUEST simulations.

Graph II.3: **Macroeconomic impact structural reforms: Joint reforms (1)**

(1) Percentage point difference from baseline.
Source: QUEST simulations.

Output and employment differences across countries closely reflect the size of the reform gaps as compared with best practice. In particular for Greece, the benchmarking methodology shows large potential for reforms. To some extent, however, differences also reflect the degree to which the simulated reforms are biased towards measures which have a faster short-term impact on growth. Education reforms improving skill distribution and participation rates yield positive results only in the longer term, with smaller GDP effects in the first five to ten years, but up-front budgetary costs. Other reforms, such as shifting the tax burden from labour to consumption, can yield faster growth effects. However, as emphasised above, these scenarios may underestimate the timescale over which reforms can be expected to deliver positive growth effects, and more weight should be given to the medium/long-term effects. The effects after ten years indicate that significant GDP and employment improvements can be realised in all countries if reforms are implemented.

The simulations show the largest gains for **Greece**, due to the considerable scope for reforms identified in all areas by the distance-to-frontier approach, even when only half the gap is closed (see Table II.1). Reforms improving competition and reducing entry costs, increasing labour-force participation, improving labour-force skills and boosting R&D spending can raise GDP by 6 % after five years and almost 15 % after ten years. Higher growth means more tax revenue and lower transfer payments, improving the government's budget balance significantly – by more than 5 % of GDP after ten years. This indicates the degree to which structural reforms can supplement consolidation measures to restore long-term debt sustainability.

The scope for reforms in **Portugal** is also considerable, in particular when it comes to improving competition and reducing entry barriers, shifting the tax burden from labour to consumption and improving the skill structure. Taking steps in all reform areas can raise GDP by more than 3 % in five years and over 5 % in ten years.

Box II.1: **Breakdown of effects of reform on GDP: Germany and Italy**

A detailed breakdown of the simulated reform shocks for Germany and Italy (based on the distance-to-frontier approach) is shown below.

The table shows the contribution of each reform to total GDP after five and after ten years and in the long term. The largest contribution comes from labour market reforms to raise the participation rate of the inactive population (women and low-skilled and older workers). The shift from taxes on labour towards consumption taxes and active labour market policies also have considerable effects on GDP. Skill-enhancing measures and entry cost reductions have a major impact on GDP in the long term, accounting for almost half of the long-term GDP effects for Italy. Further contributions stem from product market reforms (mark-up reduction), while R&D-promoting policies have small negative effects in the short term but more significant positive GDP effects in the long term, especially for Germany.

Breakdown of potential GDP effects for Germany and Italy
(% difference from baseline)

	Germany			Italy		
	GDP 5 YS	GDP 10 YS	GDP 50 YS	GDP 5 YS	GDP 10 YS	GDP 50 YS
Benefit Replacement Rate	0.1	0.1	0.3	0.0	0.0	0.0
ALMP	0.1	0.4	0.5	0.2	0.6	0.7
Entry Costs	0.0	0.0	0.2	0.1	0.3	1.8
High-Sk. Share	0.0	0.1	0.6	0.0	0.1	1.9
Medium-Sk. Share	0.0	0.1	0.8	-0.1	0.2	6.1
Markup	0.1	0.2	0.3	0.2	0.3	0.6
Female Part. Rate	0.5	0.6	0.8	0.7	1.6	5.1
Low-Sk. Part. Rate	0.0	0.1	0.1	0.2	0.3	0.6
Pension Reform	0.3	0.6	2.1	0.2	0.6	2.9
R&D Tax-Credit	-0.1	0.0	1.0	0.0	0.0	0.5
Taxshift	0.2	0.3	0.3	0.4	0.5	0.5
Total	1.3	2.4	7.0	1.9	4.6	20.8

Source: QUEST simulations

In **Ireland**, reforms such as skill-enhancing changes, reducing benefit generosity and increasing labour-force participation boost GDP by 4.5 % after ten years and have an even greater effect on employment, which rises by 6.8 %.

The benchmarking approach also identifies significant room for reforms in **Spain,** in particular to improve market competition, enhance skills and shift the burden further from labour taxation to less distortionary taxes (e.g. on consumption). All reforms combined raise GDP by 4.4 % after five years and 6.7 % after ten years.

There is also considerable scope for a tax shift away from labour in **France**. This, combined with pension reform to increase the participation rate among older workers, are the two areas which can deliver large benefits as compared with the current situation. All in all, the whole package of reforms can raise GDP by 4 % after ten years, but raising the effective retirement age stands out as potentially having a significant impact on the

government's budget balance. [30] This improves by 6 % of GDP after ten years, thanks to a large extent to a higher participation rate in the 60-64 age group and sharply reduced total transfer payments.

For Germany and Italy, a detailed breakdown of GDP impacts is given in the box showing the effects of individual reforms. According to our indicators, in **Italy** there is considerable scope to reduce entry costs for new firms, shift the tax burden from labour towards less distortionary taxes and increase the participation rate of the inactive population. Closing only half the gap vis-à-vis the best performers can raise GDP by 4.8 % after ten years. In the long term, the gains are much larger as the benefits of addressing human capital gaps take longer to have an effect (see Box II.1). For **Germany**, reforms include labour market reforms raising the participation rate of the inactive

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[30] Note that this analysis is based on the current situation and excludes the impact of measures adopted in recent years but only taking effect in the future.

population, tax shifts and policies promoting R&D. After ten years, GDP can be 2.6 % higher. Germany's trade surplus deteriorates following the reforms as the income effect dominates the competitiveness effect, but the net change is small. This suggests that these types of structural reform can boost growth and help rebalance Germany's growth pattern in the direction of higher domestic demand. At the same time, if these reforms are undertaken by Germany alone, they are unlikely to make a major contribution to reducing its current-account surplus, while joint reforms could lead to some reduction.

In all countries, structural reforms lead to higher growth and this boosts tax revenues and leads to an improvement in public finances. The impact differs significantly across countries, however. In Germany and Italy, there is an initial deterioration in government balances as the costs of reforms outweigh the benefits from higher tax revenues in the short term. To some extent, this reflects the way labour market reforms are implemented in the model. For instance, the increase in female participation rates and improved skill structures are assumed to be accompanied by increased spending on childcare facilities and education, both measures involving frontloaded costs and yielding sizeable benefits only in the medium/long term. In practice, however, alternative policy tools and financing strategies could be used to enact these reforms, thereby limiting the budgetary impact even in the short term. In any case, after ten years government balances improve in all countries, and quite significantly in some (around 6 % of GDP in Greece and France). The relatively big improvement in France is largely the result of the increase in the retirement age. As indicated above, while these scenarios may overestimate the short-term benefits to public balances, the simulated improvements in budget balances in the longer term show the role structural reforms could play in restoring fiscal positions and reducing public indebtedness.

Spillovers

In the 'acting alone' scenario (Graph II.2), the impact on trade balances is positive, as the competitiveness effects more than outweigh the absorption effect of higher domestic demand

raising imports. [31] In the 'simultaneous reform' scenario, however, the impact is considerably less positive, and in some cases reverts to a negative overall effect (Graph II.3).

While simultaneous reforms lead to larger demand spillovers, improvements in competitiveness, by definition, have opposing effects across countries. The trade balance deteriorates for Germany, Greece and Spain, while the improvement for each other country is smaller than in a scenario where it carries out reforms in isolation.

GDP effects from structural reforms are greater when all countries implement reforms, as the difference between the two lines in Graph II.1 shows. Employment and budgetary effects are also somewhat larger, at least in the short term (Graph II.3). The positive GDP spillover is particularly strong over the first years of implementation, when demand effects dominate. Output gains are between 5 % and 10 % greater after five years, although the spillover effects become smaller in the long term. As seen above, the net spillover effect is the outcome of different channels partly offsetting each other. Demand spillovers can boost exports in other countries and raise GDP, but competitiveness-improving reforms can have a negative impact. Lower net exports are partly compensated by higher consumption growth with simultaneous reforms, due to a shallower decline in the terms of trade.

The positive short-term GDP spillovers show the benefits from coordination. Undertaking reforms in all countries together can boost GDP more than in a situation where each country acts alone.

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[31] The direction of the impact of structural reforms on the current account is ambiguous from a theoretical point of view (see, for example, Vogel, 2011, Fournier and Koske, 2010). Empirical evidence is also mixed. Jaumotte and Sodsriwiboon (2010) report a positive effect of labour productivity on current accounts, while the empirical results in Kerdrain et al. (2010) imply that such reforms have a negative impact on the current account position. Vogel, L. (2011), "Structural reforms and external rebalancing in the euro area: a model-based analysis", *European Economy Economic Paper*, No. 443; Fournier, J. and I. Koske (2010), "A simple model of the relationship between productivity, saving and the current account", *OECD Economics Department Working Papers*, No. 816; Jaumotte, F. and P. Sodsriwiboon (2010), "Current account imbalances in the southern euro area", *IMF Working paper*, No. WP/10/139. Kerdrain, C., I. Koske and I. Wanner (2010), "The impact of structural policies on saving, investment and current accounts", *OECD Economics Department Working Papers*, No. 815.

II.4. Concluding remarks

The model simulations reported here show that large potential gains could be reaped from structural reforms. Euro-area GDP could be up to 6 % higher after ten years if Member States adopt measures to halve the gap vis-à-vis the average of the three best-performing Member States in each of the reform areas considered. As it is based on only half the gap being closed, the simulated reform package should be seen as not overly ambitious nor unrealistic for Member States. A further closure of the gap would have proportionally larger impacts.

While the positive effects on growth and employment are large, it should be borne in mind that this exercise shows the *potential* effects of structural reforms. It should be noted that this analysis is based on the most recent available indicators and may exclude the impact of measures adopted in recent years but only taking effect in the future. Although some phasing-in is allowed for, a successful introduction of structural reform measures may take longer than assumed here and delays in implementation would lead to smaller effects in the first few years. In the current environment, with private and public deleveraging, and tight credit conditions in many countries, the short-term impact could be lower, as financing constraints are more binding. However, while large output gains can probably not be expected in the short term, growth effects are significant and could help boost the nascent recovery. The output and employment effects in the medium/long term are sizeable.

Of the reforms simulated in this exercise, those relating to product markets, stimulating competition in certain sectors, can lead to large

output gains, but such effects are likely to emerge only gradually. R&D subsidies may crowd out final goods production in the short term, but can have significant long-term effects. Labour market reforms are equally important. Many of these can also be expected to yield results only in the medium to long term (this applies in particular to incentives to raise participation among women and/or older people, and improve the skills structure), while involving sometimes significant frontloading of budgetary costs (education, training). In contrast, reforms that increase the participation rate of older workers can yield significant budgetary savings. Structural fiscal reforms that shift the tax burden away from labour towards less distortionary taxes could be implemented relatively rapidly and boost employment and growth.

Spillovers of structural reforms are positive for output and employment. The demand effect boosts imports and supports trading partners' growth, though this is partly offset by the competitiveness effect. Trade balance effects are relatively small and can be negative where the demand effect dominates the competitiveness effect. Reforms lead to significant improvements in fiscal positions and yield sizeable reductions in debt-to-GDP ratios in the medium/long term, alleviating the need for further consolidation measures and contributing to long-term debt sustainability. The positive spillover and budgetary effects provide a strong rationale for the impetus to reform given by the country-specific recommendations in the European Semester. They also highlight the potential benefits of policy coordination and how much Member States have to gain from carrying out reform processes jointly.