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## Fiscal Consolidation in the Euro Area: How Much Can Structural Reforms Ease the Pain?

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**IMF Working Paper**

Research Department

**Fiscal Consolidation in the Euro Area: How Much Pain Can Structural Reforms Ease?**

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**Abstract**

The IMF's Global Integrated Monetary and Fiscal model (GIMF) is used to examine the scope for structural reforms in the euro area to offset the negative impact of fiscal consolidation required to put public debt back on a sustainable path. The results suggest that structural reforms in core countries could quite reasonably be expected to offset the near-term negative impact on activity arising from the required fiscal consolidation that uses a plausible mix of instruments to achieve the permanent improvement in the deficit. However, for the periphery, where the required consolidation is roughly twice as large as that required in the core, the results suggest that it would take several years before structural reforms could return the level of output back to its pre-consolidation path.

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## I. INTRODUCTION

Several euro area countries must implement substantial fiscal consolidation to put public finances back on a sustainable path. Although this required consolidation will improve long-run output prospects, in the short run, the impact on activity is likely to be negative. Simultaneously implementing structural reforms to raise growth could be one way to help mitigate the short-run negative impact on GDP. This paper uses the IMF's Global Integrated Monetary and Fiscal Model (GIMF) to provide some estimates of how effective structural reforms might be in softening the near-term contractionary effects of euro area fiscal consolidation.

For the analysis, the euro area is divided into two regions, one with acute fiscal sustainability issues, referred to as the periphery, and one with less acute sustainability issues, referred to as the core.<sup>2</sup> The magnitudes and the timing of the required consolidation are stylized, but loosely based on the consolidations contained in the April 2013 *World Economic Outlook*. It is assumed that periphery countries must improve structural fiscal balances by roughly 4 percent of GDP over the 2013 to 2018 period, with core countries improving by roughly 2 percent of GDP. Depending on the measures used to improve structural balances, GIMF simulations suggest that if the consolidation could be done in the most growth friendly fashion by simply reducing transfers, the level of real GDP could actually return to baseline by 2018 in the periphery and increase by 0.3 percent in the core. However, if the consolidation is done with a more plausible mix of instrument such as public absorption spending and taxes on consumption and labor and capital income, the level of real GDP in 2018 would be lower than the pre-consolidation path by 1.2 percent in the periphery and 0.6 percent in the core.

Using OECD estimates of the impact of a range of structural reforms on productivity and employment in euro area countries, GIMF simulations suggest that structural reforms could contribute substantially to raising real GDP in both the periphery and the core and help offset some of the negative impact on activity of the required consolidations. In the euro area core, the estimates of the GDP impact of structural reforms suggest that it is quite plausible that the negative implications of consolidation could be completely offset and in fact the core could see a sizable cumulative net gain in output over the 2014 to 2018 period. However, for periphery countries the estimates suggest that it will likely take several years before structural reforms would offset the negative implications of the required consolidation on

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<sup>2</sup> Those countries with acute fiscal sustainability issues (called periphery) include Greece, Ireland, Italy, Portugal, and Spain, while the remaining euro area countries are included in the region with less acute sustainability issues (called the core).

activity. Further, only under the more optimistic cases about the scope for implementing structural reforms would there be a net cumulative gain in output by 2018 for the periphery.

Looking beyond 2018, the estimates suggest that structural reforms could contribute substantially to raising the level of real GDP in both the euro area core and periphery. For the core, the estimates suggest that after ten years real GDP could be higher by between 3 and 8 percent, even after accounting for the impact of the permanent changes in spending and taxes that would be required under the more plausible consolidation package. For the periphery, because of the much greater distance of policies from best practice, the potential gains are even larger, between 4½ and 11 percent after ten years. These gains occur despite the fact that the magnitude of the consolidation in the periphery implies cuts in spending and increases in taxes that are double those required in the core.

The remainder of the paper is structured as follows. In section II, a brief overview of GIMF is provided. Section III contains the GIMF estimates of the impact on activity of a range of fiscal plans that achieve the desired improvement in structural fiscal balances in the euro area. A detailed analysis of the impact on activity of the range of structural reforms recommended by the OECD in their Going for Growth initiative is presented in Section IV. Section V considers the fiscal consolidations and structural reforms simultaneously and Section VI concludes.

## **II. THE GLOBAL INTEGRATED MONETARY AND FISCAL MODEL**

GIMF is a multicountry Dynamic Stochastic General Equilibrium (DSGE) model<sup>3</sup> with optimizing behavior by households and firms, and full intertemporal stock-flow accounting. Frictions in the form of sticky prices and wages, real adjustment costs, liquidity constrained households, along with finite planning horizons of households, imply an important role for monetary and fiscal policy in economic stabilization.

The assumption of finite horizons separates GIMF from standard monetary DSGE models and allows it to have well-defined steady states where countries can be long-run debtors or creditors. This allows users to study the transition from one steady state to another where fiscal policy and private saving behavior play a critical role in both the dynamic adjustment to and characteristics of the new steady state.<sup>4</sup>

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<sup>3</sup> The theoretical micro-foundations of the model are described in detail in Kumhof and others (2010) and a detailed examination of the GIMF properties can be found in Anderson and others (2013).

<sup>4</sup> See Blanchard (1985) for the basic theoretical building blocks and Kumhof and Laxton (2007, 2009b) for an examination of the fiscal policy implications.

The non-Ricardian features of the model provide non-neutrality in both spending-based and revenue-based fiscal measures, which makes the model particularly suitable to analyze fiscal policy questions. In particular, contractionary fiscal policy can reduce the level of economic activity in the short run, but a sustained improvement in government fiscal balances crowd in private investment and net foreign assets in the long run.<sup>5</sup> Sustained improvements in fiscal balances in large economies can also lead to a lower world real interest rate, which is endogenous.

Asset markets are incomplete in the model. Government debt is only held domestically, as nominal, non-contingent, one-period bonds denominated in domestic currency. The only assets traded internationally are nominal, non-contingent, one-period bonds denominated in U.S. dollars, that can be issued by the U.S. government and by private agents in any region. Firms are owned domestically. Equity is not traded in domestic financial markets; instead, households receive lump-sum dividend payments.

Firms employ capital and labor to produce tradable and nontradable intermediate goods. There is a financial sector *à la* Bernanke and others (1999), that incorporates a procyclical financial accelerator, with the cost of external finance facing firms rising with their leverage.

GIMF is multi-region, encompassing the entire world economy, explicitly modeling all the bilateral trade flows and their relative prices for each region, including exchange rates. The version used in this paper comprises 6 regions: the United States, the euro area core, the euro area periphery, Japan, emerging Asia, and, as a single entity, the remaining countries. The international linkages in the model allow the analysis of policy spillovers at the regional and global level.

### **A. Household Sector**

There are two types of households, both of which consume goods and supply labor. First, there are overlapping-generation households (OLG) that optimize their borrowing and saving decisions over a 20-year planning horizon. Second, there are liquidity-constrained households (LIQ), who do not save and have no access to credit. Both types of households pay direct taxes on labor income, indirect taxes on consumption spending, and a lump-sum tax.

OLG households save by acquiring domestic government bonds, international U.S. dollar bonds, and through fixed-term deposits. They maximize their utility subject to their budget

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<sup>5</sup> GIMF's fiscal multipliers for temporary fiscal shocks are very similar to standard monetary DSGE models—see Coenen and others (2010).

constraint. Aggregate consumption for these households is a function of financial wealth, and the present discounted value of after-tax wage and investment income. The consumption of LIQ households is equal to their current net income, so by construction their marginal propensity to consume out of current income is unity.<sup>6</sup> A high proportion of LIQ households in the population would imply large short-term fiscal multipliers from changes to taxes and transfer payments.

For OLG households with finite-planning horizons, a tax increase has a short-run negative effect on output. When the increases are matched with tax cuts in the future, so as to leave government debt unchanged in the long run, the short-run impact remains negative, as the change will tilt the time profile of consumption toward the future. In effect, OLG households discount future tax cuts at a higher rate than the market rate of interest. Thus, a decrease in government debt today represents a reduction in their wealth, because a share of the resulting lower taxes in the future is payable beyond their planning horizon. If the decrease in government debt is permanent (tax rates are assumed to decline sufficiently in the long run to stabilize the debt-to-GDP ratio by returning the lower debt-service costs to households) this will crowd in real private capital by reducing real interest rates.<sup>7</sup>

Reductions in the interest rate have a positive effect on consumption, mainly through the impact on the value of wealth. The intertemporal substitution effect from interest rate changes has been calibrated in the roughly the middle of the range provided by the empirical evidence. The higher the intertemporal elasticity of substitution the lower will be the long-run crowding-in effects of reductions in government debt since it implies that real interest rates decline less in response to lower levels of government debt.

## **B. Production Sector**

Firms, which produce tradable and nontradable intermediate goods, are managed in accordance with the preferences of their owners, finitely-lived households. Therefore, firms also have finite planning horizons. The main substantive implication of this assumption is the presence of a substantial equity premium driven by impatience.<sup>8</sup> Firms are subject to nominal rigidities in price setting as well as real adjustment costs in labor hiring and investment. They pay capital income taxes to governments and wages and dividends to households.

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<sup>6</sup> The liquidity-constrained consumers could also be interpreted more generally as rule-of-thumb consumers, which in other models are assumed to consume all of their income.

<sup>7</sup> For a more detailed description of fiscal implications in GIMF see Kumhof and Laxton (2007, 2009a, 2009b).

<sup>8</sup> This feature would disappear if equity was assumed to be traded in financial markets. We find the assumption of myopic firm behavior, and the resulting equity premium, to be more plausible.

Retained earnings are insufficient to fully finance investment, so firms must borrow from financial intermediaries. If earnings fall below the minimum required to make the contracted interest payments, the financial intermediaries take over the firm's capital stock, less any auditing and bankruptcy costs, and redistribute it back to their depositors (households). Firms operate in monopolistically competitive markets and thus goods' prices contain a markup over marginal cost. Exports are priced to the local destination market and imports are subject to quantity adjustment costs. There are also price adjustment costs which lead to sticky prices. Firms use public infrastructure (which is the government capital stock) as an input, in combination with tradable and nontradable intermediate goods. Therefore, government capital adds to the productivity of the economy.

### **C. Financial Sector**

The current version of GIMF contains a limited menu of financial assets. Government debt consists of one-period bonds denominated in domestic currency. Banks offer households one-period fixed-term deposits, their source of funds for loans to firms. These financial assets, as well as ownership of firms, are not tradable across borders. OLG households may, however, issue or purchase tradable U.S.-dollar denominated obligations.

Banks pay a market rate of return on deposits, and charge a risk premium on loans. Because of the costs of bankruptcy (capital can only be liquidated at a discount), the lending rate includes an external financing premium, which varies directly with the debt-to-equity (leverage) ratio—the financial accelerator effect. Non-linearities imply steep increases in the risk premium for large negative shocks to net worth.

Uncovered interest parity does not hold, due to the presence of country risk premiums. The premiums create deviations, both in the short run and the long run, between interest rates in different regions, even after adjustment for expected exchange rate changes.

### **D. International Dimensions and Spillovers**

GIMF is multi-region model, encompassing the global economy. Thus all bilateral trade flows are explicitly modeled, as are the relative prices for each region, including exchange rates. These flows include the export and import of intermediate and final goods. They are calibrated in the steady state to match the flows observed in the recent data. International linkages are driven by the global saving and investment decisions, a by-product of consumers' finite horizons. This leads to uniquely defined current account balances and net foreign asset positions for each region. Since asset markets are incomplete, net foreign asset positions are represented by nominal non-contingent one-period bonds denominated in U.S. dollars.



Along with uncovered interest parity, and long-term movements in the world real interest rate, the magnitude of the international trade linkages is the main determinant of spillover effects from shocks in one region onto other regions in the world.

### **E. Fiscal and Monetary Policy**

Fiscal policy is conducted using a variety of fiscal instruments related to spending and taxation. Government spending may take the form of consumption or investment expenditure or lump-sum transfers, to either all households, or targeted towards LIQ households. Revenue accrues from the taxes on labor and corporate income, consumption taxes, and lump-sum taxes. The model also allows for tariffs on imported goods to be a potential source of public revenue. Government investment spending augments public infrastructure, which depreciates at a constant rate over time.

There is a fiscal policy rule which ensures long-run sustainability, while allowing for short-run counter-cyclical policies. Any tax, transfer or spending instrument can be used in the rule. The fiscal rule ensures that in the long run, the ratio of the government debt-to-GDP—and hence the deficit-to-GDP ratio—remains stable. This excludes the possibility of sovereign default, as well as the risk that out-of-control financing requirements of the government will override monetary policy. The rule also allows for countercyclical fiscal policy as it embodies automatic stabilizers.

When conducting monetary policy, the central bank uses an inflation-forecast-based interest rate rule. The central bank varies the gap between the actual policy rate and the long-run equilibrium rate to achieve a stable target rate of inflation over time.

## **III. THE IMPLICATIONS OF FISCAL CONSOLIDATION**

The impact of the consolidation will vary notably depending on which fiscal instruments are used. Hence, this section considers two alternative fiscal consolidations in the euro area that achieve the stylized consolidations. The first consolidation relies totally on transfers to households, the most growth friendly of all fiscal instruments. Although transfers fall initially by the full amount of the improvement in the overall fiscal balance, as the consolidation reduces the level of debt and debt-service costs decline, transfers are partially restored. This is possible because with falling debt-service costs, the improvement in the primary balance no longer needs to be as large to maintain the targeted improvement in the overall fiscal balance. The second consolidation uses a combination of instruments including public absorption as well as consumption, labor and capital taxes. Once debt-service costs start to decline, the changes in these instruments are also gradually unwound while maintaining the desired improvement in the overall fiscal balance.

The stylized improvement in the overall fiscal balance relative to GDP in the periphery, at 4 percent, is twice the size of the stylized consolidation assumed for the core and is more front-loaded. The peak improvement in the fiscal balance in the periphery is achieved by 2017 and in the core by 2016. In the scenarios it is assumed that the monetary policy interest rate is unable to be reduced in 2014 and 2015 because of the zero interest rates floor (ZIF).

### A. Consolidation via Transfers

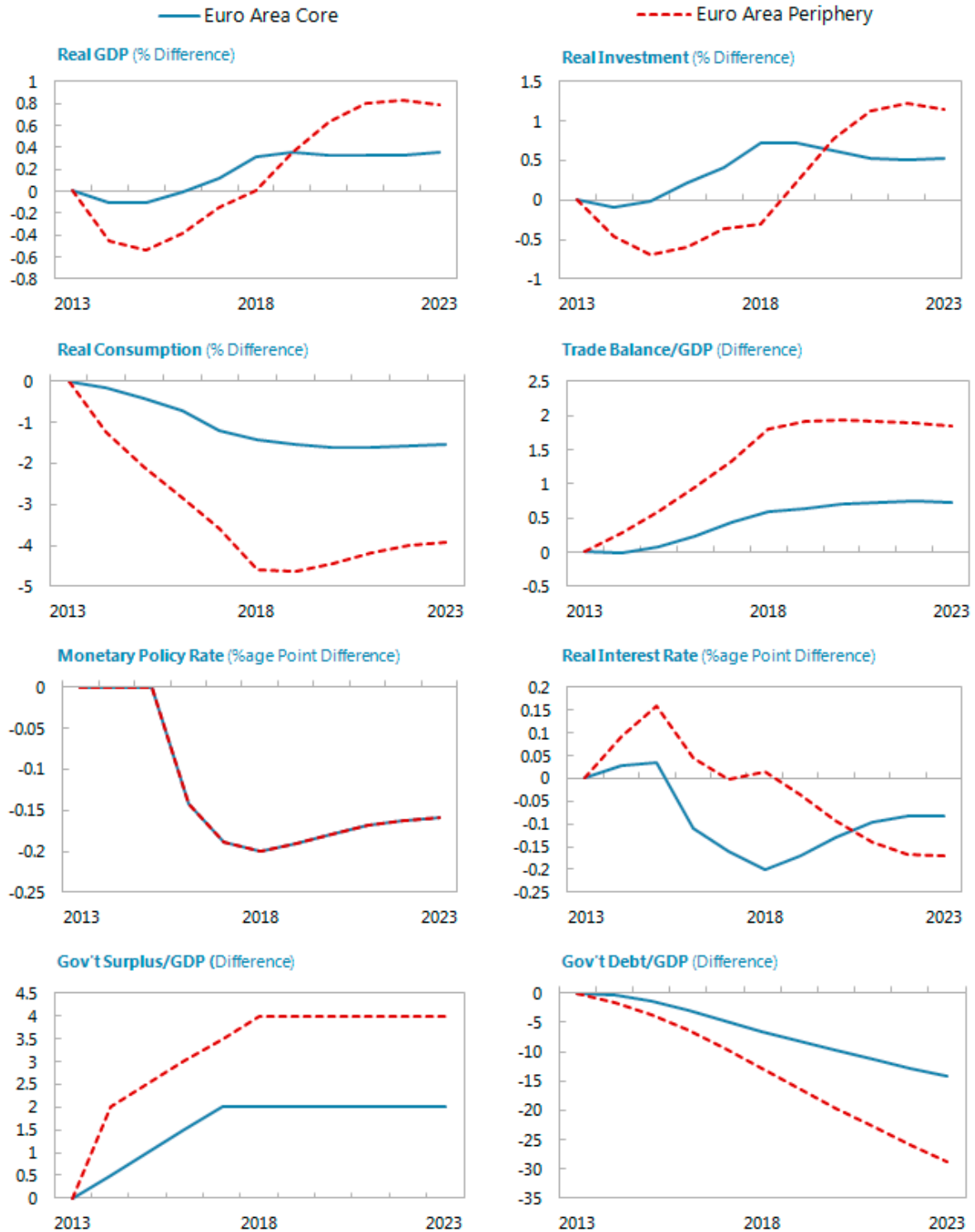
Figure 1 presents the simulated macroeconomic impact of the consolidation done by reducing transfers. When transfers are used in the two euro area regions to accomplish the consolidations, the short-term impact on GDP, while negative, is quite mild.<sup>9</sup> Household consumption declines notable as lower transfer income reduces purchasing power. Investment also declines slightly as weaker household demand reduces the return to investment. However, the income effect of lower transfers eventually induces households to increase their labor supply, exerting downward pressure on real wages. Lower real wages increase firms' return to capital, eventually stimulating investment and capital accumulation. In addition, forward-looking firms recognize that the global real interest rate will decline owing to the lower demand for global savings resulting from the reduction in public debt in the euro area. The resulting lower cost of capital also leads to an increase in firms' desired level of capital and prompts them to raise investment expenditure. Together these effects eventually raise investment above the previous baseline level.

The net export position also improves quite quickly. Owing to the overlapping-generations structure, government bonds represents net wealth to households. With the quantity of domestic government bonds falling, to maintain their desired stock of wealth domestic household need to replace government bonds with foreign assets. To facilitate this accumulation of foreign assets, the currency depreciates in the short run, improving the trade balance. Together the increase in investment combined with an improving net export portion more than offset the decline in household consumption and quickly lift GDP above the previous baseline. Further, as debt-service costs start to decline owing to both a lower stock of outstanding debt and the decline in real interest rates, the initial cut in transfers can start to be unwound. This helps repair the decline in household income and private consumption expenditure starts to recover. The final effect is that when transfers are used to improve the fiscal balance, the benefits from the consolidation materialize quite quickly.

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<sup>9</sup> Consolidation via transfers has only a mild effect on output for two main reasons. First, because OLG households have access to capital markets they can smooth the impact of lower income on their consumption and thus it is primarily the reduction in LIQ household incomes that flows through to consumption and LIQ households are a relatively small share of the population in the euro area. Second, unlike increases in labor and capital taxes, reductions in transfer do not reduce the incentive to work and invest and thereby undermine the economy's supply potential.

**Figure 1: Consolidation Achieved with Lower Household Transfers**



Source: Staff Estimates and GIMF Simulations

## **B. Consolidation via Public Absorption, and Consumption, Labor and Capital Taxes**

In these consolidations, 30 percent of the improvement in the fiscal balance is achieved through cuts in public absorption, 30 percent comes from higher value added taxes (VAT), with an additional 30 percent coming from higher labor income taxes, and the final 10 percent coming from an increase in capital taxes. The macroeconomic implications are present in Figure 2.

When the consolidation is achieved using a mix of fiscal instruments that includes both direct expenditure and tax measures, the negative impact on GDP is much larger and longer lived.<sup>10</sup> While the reduction in public absorption expenditure directly reduces GDP, the tax measures, particularly the labor and capital taxes, notably amplify the magnitude and duration of the impact. Raising corporate taxes lowers the return to capital and firms respond by cutting investment expenditure. Higher labor taxes and the increase in the VAT reduce the returns households receive from working and this is compounded by the decline in the real wage. With the capital stock falling owing to less investment, firms' labor demand also declines reducing the real wage. In the short run, the lower return to labor effort results in a reduction in labor supply. The resulting decline in household income from all these factors leads to lower private consumption expenditure.

The only offsetting impact on GDP in the short run is coming from net exports with the mechanism being identical to the case where the consolidation is achieved via transfers. Government bonds represent net wealth to households and with the quantity of domestic government bonds falling, domestic households need to replace government bonds with foreign assets to maintain their desired wealth position. To facilitate this accumulation of foreign assets, the currency depreciates in the short run, improving the trade balance.

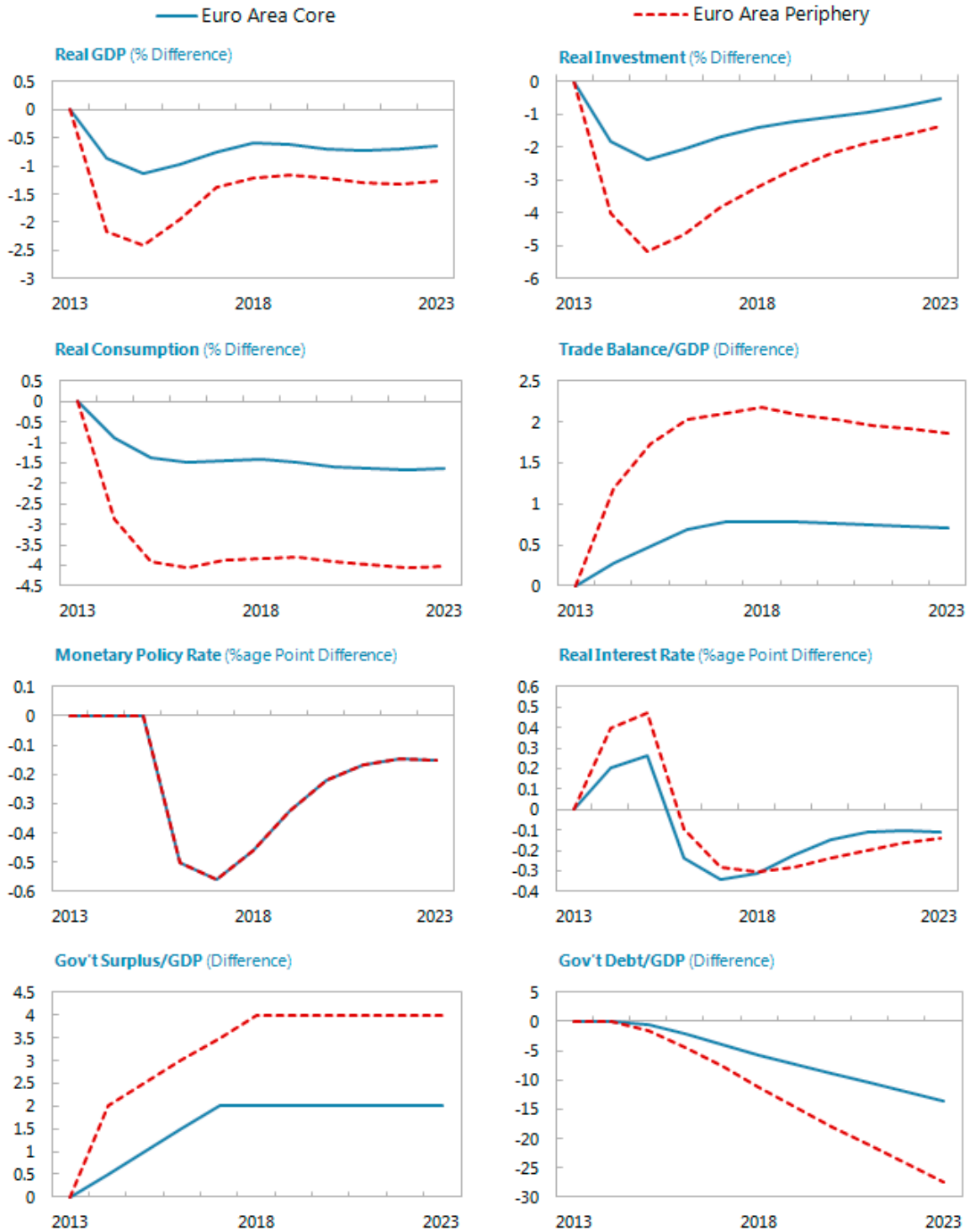
The easing in monetary policy in 2015 along with the decline in global real interest rates owing to less demand for global savings from euro area sovereigns, reduces the cost of capital and prompts a gradual recovery in investment. This helps bring GDP back toward the initial baseline level. Private consumption, however, takes much longer to start recovering back toward baseline. As public debt-service costs start to decline, the increase in taxes and cuts in public absorption can start to be unwound, helping GDP to recover.<sup>11</sup>

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<sup>10</sup> The fiscal multiplier in both regions in the first year is a little larger than 1. This reflects both the range of instruments used and the fact that monetary policy is unable to ease for the first two years given the constraint imposed by the zero lower bound. Once policy can ease, and the benefits from the consolidation start to flow through, the fiscal multiplier falls. For a more detailed discussion of GIMF's fiscal-multiplier properties see Anderson and others (2013) and Coenen and others (2012).

<sup>11</sup> In the very long run, the reduction in debt-service cost allows for government absorption to be above its initial level and the VAT, labor and capital taxes to all fall below their initial rates.

**Figure 2: Consolidation Achieved with Lower Public Absorption and Higher Consumption, Labor, and Capital Taxes**



Source: Staff Estimates and GIMF Simulations

Although it takes roughly 40 years before public expenditure and taxes return to their initial levels, GDP is back to its baseline level after roughly twenty years (horizons not shown in the Figure). The impact of stronger private investment owing to the decline in the global real interest rate more than offsets the negative impact of the tighter fiscal policy by that horizon, driving GDP back above baseline.

One point worth noting is that the benefits from consolidation, particularly in the periphery, could be larger and materialize sooner if sovereign risk premium were also to decline as it became evident that the consolidation plan was being achieved. In the analysis presented here, no decline in sovereign risk premiums is included.

#### IV. STRUCTURAL REFORMS

This section provides estimates of the GDP impact of product and labor market reforms that the OECD has recommended for euro area countries as part of their “Going for Growth” initiative. Product market reforms aim at reducing anti-competitive product market regulations. Labor market reforms are more varied, and include reducing barriers to entry into professions, reducing employment protection legislation, reducing unemployment benefits, increasing the standard retirement age, reducing the opportunity cost of continued employment between the ages of 60 and 65, increasing childcare support, and implementing active labor market programs.

As part of the G20 Mutual Assessment Process (G20MAP), the OECD has provided the IMF with estimates of the impacts on productivity and employment of euro area countries implementing labor and product market reforms that would put them in line with best practice within the OECD membership.<sup>12</sup> These estimates are used as exogenous shocks to productivity and labor supply in GIMF to generate estimates of the impact on GDP of euro area countries implementing these reforms. Because there is uncertainty about how much of these recommended reforms have already been implemented and are thus already embodied in growth prospects, the simulations attempt to put a range on the magnitude of the possible gains from moving to best practice.<sup>13</sup> The lower bound is generated assuming that the country has only 25 percent of the gap remaining to be closed, while the upper bound assumes that 75 percent of the gap remains to be closed. Further, because there is also considerable uncertainty about how fast the gains will materialize, to be conservative, the simulations assume a more delayed response of outcomes to reform than suggested by the OECD estimates.

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<sup>12</sup> For details on the underlying empirical analysis see Bouis and Duval (2011), and Bouis and others (2012).

<sup>13</sup> For example, France has already undertaken measures to increase the standard retirement age.

## A. Product Market Reforms

Structural reforms of product market sectors that reduce the regulatory burden and increase competition raise productivity. Reforms of this type have been recommended for euro area countries since they tend to have higher markups than other OECD countries, suggesting regulatory constraints that curtail competition (Allard and Everaert, 2010; Bouis and Duval, 2011; OECD, 2012). Empirical evidence suggests that if European countries reduced the regulatory burden, there would be significant increases in total factor productivity (Berger and Danninger, 2007; Bourlès and others, 2010). The gains from product market reforms increase output primarily in the countries implementing the reforms (Cacciatore and others, 2012), but can result in sizable gains from trade and productivity spillovers to regions outside the euro area (Everaert and Schule, 2006; Bayoumi, et al, 2004) and especially to smaller trading partner countries within the euro area (Gomes and others, 2011).

The regulatory and anti-competitive burdens in the manufacturing and non-manufacturing sectors are estimated using the OECD's survey-based product market regulation index (see Boylaud and Nicoletti, 2003). The impact on productivity of reforms to reduce these burdens are estimated in Bourlès and others (2010), and Bouis and others (2012).<sup>14</sup> It is these estimates of the impacts on productivity that are in turn used here to estimate the impact of reform on final output. However, since the last data available for the distance from best practice is from 2007, there is considerable uncertainty about how much scope for further reform currently exists. Here a plausible range for the distance from best practice is used to estimate the scale of the potential benefits from reform. The lower bound is generated assuming that only 25 percent of the gap from best practice remains to be closed and the upper bound is estimated assuming that 75 percent of the gap remains to be closed. Further it is assumed that alignment with best practice occurs over a five-year period.

The non-manufacturing sector reforms focus on anti-competitive regulations in the upstream sectors, being retail trade, professional, and network services. For retail trade they cover barriers to entry, operational restrictions, and price controls. The professional services cover barriers to entry and conduct regulation in the legal, accounting, engineering, and architectural professions. Finally, reforms in the network sectors primarily cover barriers to entry and public ownership in the energy, transport, and communications sectors. Manufacturing sector reforms focus on anti-competitive product market regulations, including the state control of business enterprises, legal and administrative barriers to

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<sup>14</sup> The product market reforms from Bouis and others (2012) are assumed to be implemented in all euro area countries excluding Cyprus, Estonia, Ireland, Luxembourg, Malta, Slovenia, and the Slovak Republic due to data constraints.

entrepreneurship, and barriers to international trade and investment. The estimates take into account the spillovers from the removal of regulations in one sector on other sectors.

In the simulations, it is assumed that the move to best practice takes place over five years starting in 2014 and increases the multi-factor productivity of each sector and reduces the wage markup in the non-tradable sector. It is assumed that over the five years while reforms are being implemented, households and firms only gradually learn about the future gains that the reforms will deliver. In the first year for example, in addition to the increase in productivity that occurs that year, households and firms expect only 20 percent of the future improvement that the reforms will deliver. This knowledge of the future gains increases each year until the fifth year, when firms and households correctly perceive 100 percent of the future gains from reforms. In the simulations it is assumed that the fiscal authorities in both regions use the additional revenue accruing from the higher level of activity to further reduce the level of outstanding public debt during the period when reforms are increasing productivity. Beyond that horizon, the resulting lower level of public debt implies reduced debt-service costs and these saving are returned to households in the form of higher transfers, the least distorting of all fiscal measures.<sup>15</sup>

Figure 3 shows the impact of these reforms.<sup>16</sup> For euro area core countries (left hand column), the range of improvement in economy-wide productivity is roughly 2½ to 7 percent after ten years. In periphery countries (right hand column) the range of improvement is larger, from 6 to 17 percent after ten years. The range of reduction in the wage markup in the non-tradable sectors is 5 to 15 percent in core countries and 7½ to 25 percent in the periphery. Higher productivity and lower markups increase the marginal product of labor and capital, leading to higher investment and employment. Real output in core countries rises by between 1½ and 4½ percent after 10 years. Increases in both capital and labor utilization drive the higher level of activity. Real investment in the core increase by between 2½ and 7 percent, with the range of increases in employment of between ¼ and ½ percent. In the periphery, the increase in real GDP ranges between 2½ and 6½ percent after ten years, driven by increases in investment of between 3½ and 11 percent and in employment of between ¼ and 1 percent.

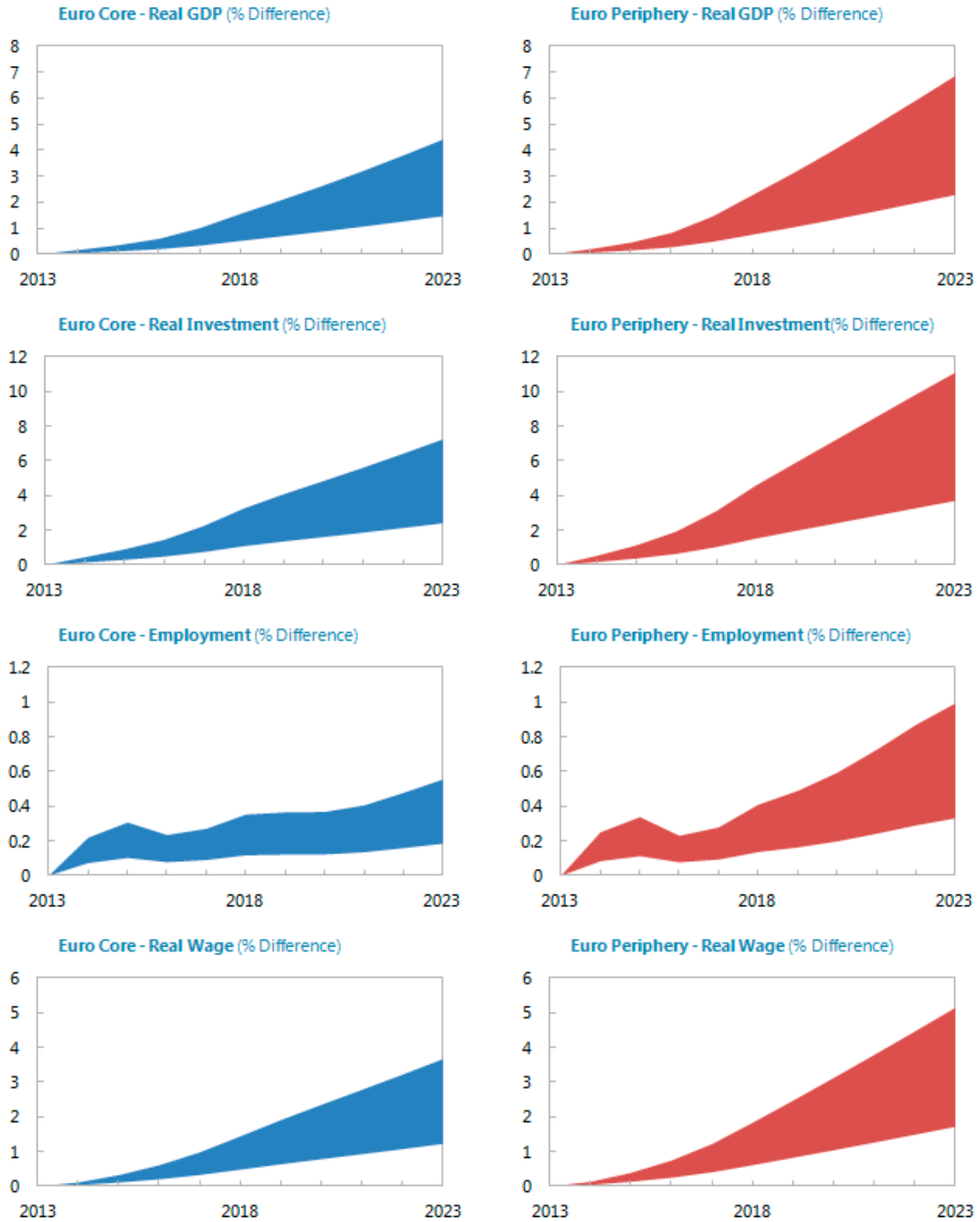
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<sup>15</sup> If the reform dividend was used to reduce distorting taxes rather than reduce debt and then eventually raise transfers, the reform impact on GDP would be even larger than estimated here.

<sup>16</sup> It is assumed that 30 percent of the non-tradables product market reforms is due to reduction in barriers to professional services, which reduce wage mark-ups. The manufacturing and non-manufacturing sector reforms are implemented in the tradable and non-tradable sector in GIMF, respectively.



**Figure 3: Impact of Product Market Reforms**



Source: OECD Estimates and GIMF Simulations

It is worth noting that these benefits arrive in a back-loaded fashion. Only about one third of the benefits that accrue after ten years have been realized by the fifth year. Three factors drive this result. First, the simulation inputs are based on the assumption that it takes five years to move to best practice. This means that the pace of the increase in productivity is gradually rising and the pace of decline in markups is gradually increasing for the first five years. Second, during the five-year period of moving to the best-practice frontier, households and firms only gradually come to believe that future reforms will be implemented. Consequently, their expectation of the future productivity growth that the reforms will deliver only rises gradually, limiting their current period responses. Finally, the third factor is adjustment costs, which mean that both investment and labor supply respond only gradually to current and expected future increases in productivity and real wages. If reforms that moved these economies to best practice could be implemented at a faster pace than assumed here, some of the benefits could be realized sooner as the first two effects would be moderated. However, costly adjustment is still likely to result in some back-loading of the realization of benefits.

## **B. Labor Market Reforms**

Labor market reforms are targeted primarily toward increasing labor supply and focus on five key areas: active labor market policies; public childcare services; unemployment benefits replacement rates; public pensions; and employment protection legislation.<sup>17</sup>

Active labor market policies (ALMP) are public programs that ease the job search process for unemployed workers, provide training programs for the unemployed, and supply public subsidies for firms and public projects that create jobs specifically for unemployed individuals. The estimates of the impact on labor supply used here come from Bassanini and Duval (2006) and take into account the short-run dynamics as found in Bouis and others (2012). It is assumed that countries increase ALMP spending as a share of GDP to the average within a set of countries with high ALMP spending. To account for the fiscal implications, public absorption spending is increased along with the increase in labor supply.

An increase in public childcare services provides incentives for mothers to enter the labor force, which is particularly relevant for euro area countries due to their low female labor force participation rates. The estimates used here of the potential impact of implementing childcare programs come from Jaumotte (2003). Countries increase the ratio of public

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<sup>17</sup> The simulation results presented in this section examines the macroeconomic consequences of pursuing all five of these reforms together. For a decomposition of the contribution of each of the five components see Appendix I.

childcare spending over GDP per capita to the average of countries with high public childcare-services spending.

A reduction in unemployment benefit replacement rates (ARR) increases the incentive to search for employment or possibly leave the labor force, reducing the equilibrium level of unemployment (Bassanini and Duval, 2006; 2009). However, weak demand and excess capacity conditions could limit the short-term output response to this reform, or even turn it temporarily negative (Bouis and others, 2012; Cacciatore and others, 2012). Reducing unemployment insurance replacement rates lowers disposable income and if the unemployed do not find jobs, their high marginal propensities to consume out of income implies household consumption could decline immediately. The estimates of the potential impact of ARR reforms on labor supply in the euro area used here are taken from Bassanini and Duval (2006) and take into account the short-run dynamics as found in Bouis and others (2012). Specifically, countries reduce the average replacement rate to the average within a set of countries with low replacement rates.

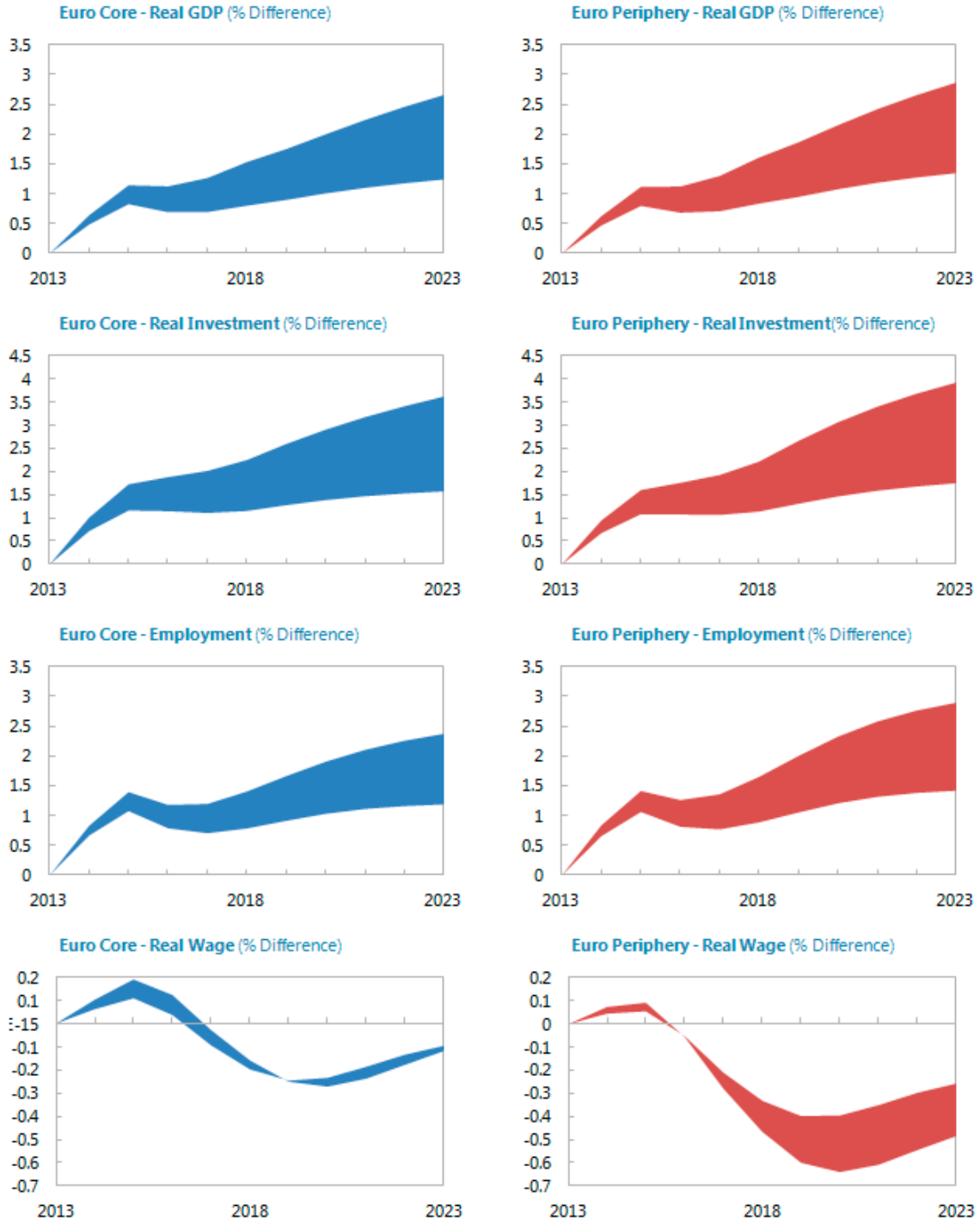
Pension reforms that raise the retirement age and move to actuarial neutrality have been found to increase the labor force participation rate in Duval (2006), Bassanini and Duval (2006 and 2009), and Bouis and others (2012). The impact of these reforms has been found to occur gradually, with participation rates taking over 10 years to converge to the new equilibrium. The reforms consist of a two-year increase in the standard retirement age and a move to actuarial neutrality that reduces the implicit tax rate on continued employment to zero for workers between the ages 60-65. The estimates of the impact on labor supply that are used here are taken from Bouis and others (2012) and are assumed to be implemented in 2014.

A reduction in employment protection legislation (EPL) eases restrictions on the hiring and firing of employees. This increases the incentive to search for employment and hire, and is empirically found to increase the level of labor productivity (Bassanini and Duval, 2006, 2009; Bassanini and others, 2009). However, weak demand conditions could limit the short-term output response of EPL reforms and possibly even generate a temporary reduction in output (Bouis and others, 2012; Cacciatore and others, 2012), due to a possible increase in firings as restrictions are reduced. The estimates of the impact of EPL on labor productivity used here are taken from Bassanini and others (2009) and take into account the short-run dynamics as found in Bouis and others (2012). The reforms assume that countries reduce their EPL to the average level in the three OECD countries with the lowest regulations. The estimates do not capture a fall in employment in the short run, but a gradual, albeit small, increase in labor productivity.

The macroeconomic implications of implementing reforms in the five labor market areas are presented in Figure 4. Unlike the case with product market reforms, the assumption used with labor market reforms is that they are all fully implemented in 2014. However, the empirical estimates still imply that the labor supply response occurs gradually and builds over time. As was the case with the product market reform simulations, it is assumed that the fiscal authorities use the increased revenue resulting from the higher level of activity to reduce outstanding debt. In core euro area countries (left hand column), the range of increases in real GDP after ten years is between 1¼ and 2½ percent. Part of this reflects increases in productivity of between 0.3 and 0.9 percent after ten years from reforms to employment protection legislation. Another part reflects the increases in labor supply from the other four reforms. With productivity higher and the increase in labor supply reducing real wages, firms increase investment expenditure by between 1½ and 3½ percent after ten years. The higher capital stock and increase in productivity raise labor productivity putting upward pressure on real wages which in turn encourages even more labor supply. The net result is a total increase in labor supply that ranges between 1¼ and 2½ percent. The results for periphery countries (right hand column) are just slightly larger on output and investment because reforms increase labor supply by a little more in that region. Consequently, the reduction in real wages is also a little larger in periphery countries.

Relative to what occurs under product market reforms, the benefits from labor market reforms are only slightly back loaded. This reflects two key factors. First, when labor market reforms are implemented in 2014, it is assumed that households and firms fully understand their future implications, there is no gradual learning. Second, capital accumulation plays a much smaller role under labor market reforms and thus the impact of the more gradual capital formation process is not as apparent. However, if the reforms are implemented when there are weak demand conditions and the increase in the labor supply initiated by the reforms is not absorbed as quickly as it is in the simulations, the benefits could be much more back loaded than suggested here. The range of impacts from product market reforms presented earlier are notable larger than those from labor market reforms. For core countries, product market reforms yield GDP outcomes roughly twice as large, while for periphery countries, product market reforms impact on GDP is roughly 5 times larger.

**Figure 4: Impact of Labor Market Reforms**



Source: OECD Estimates and GIMF Simulations

## V. COMBINED IMPLICATIONS OF FISCAL CONSOLIDATION AND STRUCTURAL REFORMS

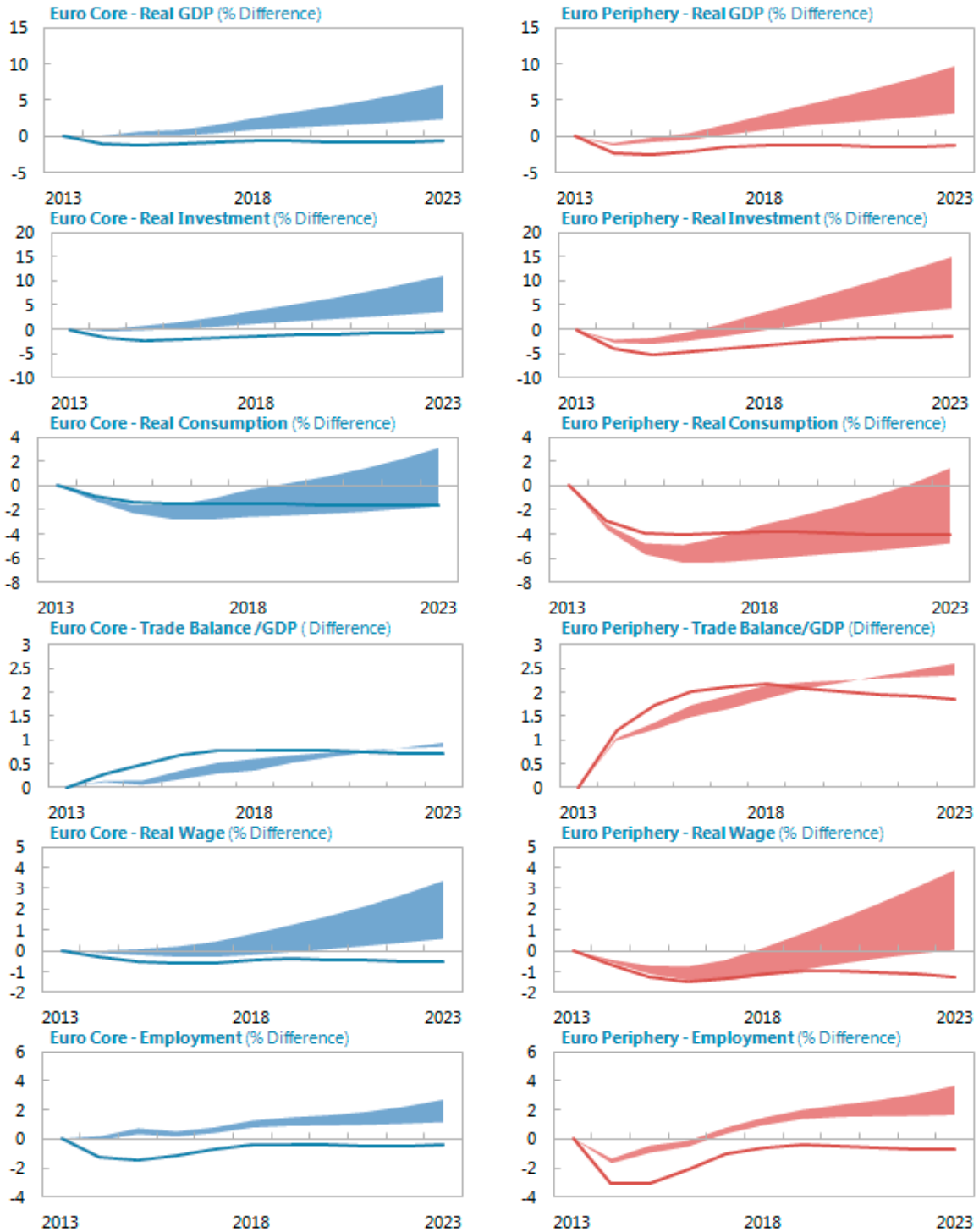
In this section the structural reform simulations are overlaid on the fiscal consolidations to illustrate the potential scope for reforms to offset the negative near-term implications of the required tightening in fiscal policy. Here results are presented only for the more plausible consolidation that relies on a range of instruments, public absorption expenditure and taxes on consumption, labor, and capital (results under the consolidation via transfers are presented in Appendix II).

The estimated ranges for the impact of structural reforms are overlaid on the fiscal consolidation paths and presented in Figure 5 for a range of key macro variables.<sup>18</sup> The results suggest that for the core euro area, structural reforms could quite plausibly eliminate the negative near-term implications for output of the required fiscal consolidation (left-hand column). However, for the periphery, even under the upper bound estimate for the impact of structural reforms on activity, it would be several years before reforms would be able to offset the negative near-term impact of consolidation (right-hand column). It is worth noting however, that some of the near-term increase in GDP comes from increased public expenditures on labor market reforms such as active labor market policies and child care. If this spending had to be financed by reducing other public expenditures, it could take much longer for the structural reforms to offset the negative impact of consolidation than presented here. Although reforms quickly offset the impact of fiscal consolidation on investment in core countries and after roughly 5 years in periphery countries, reforms take much longer to restore private consumption to its pre-consolidation level in both regions. In the core, structural reforms more than offset the impact of consolidation on employment, but real wages, even under the more optimistic assumptions about scope for reform, take time to recover to their pre-consolidation level. Further the increased tax burden on households is further reducing real disposable income which keeps household consumption subdued for an extended period. The restoration in employment and real wages takes even longer in the periphery and the impact of higher taxes on disposable income is larger, leading to more delay in returning household consumption to its pre-consolidation level. Relative to the consolidation, reforms also reduce the contribution of net exports. This reflects increased imports due to the stimulus to investment, which is import intensive.

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<sup>18</sup> It is worth noting that the results presented here for the impact of combined labor and product market reforms are slightly smaller than those presented in Barkbu and others (2012) because of slightly more conservative assumptions about how long it takes to close the best-practice gap.

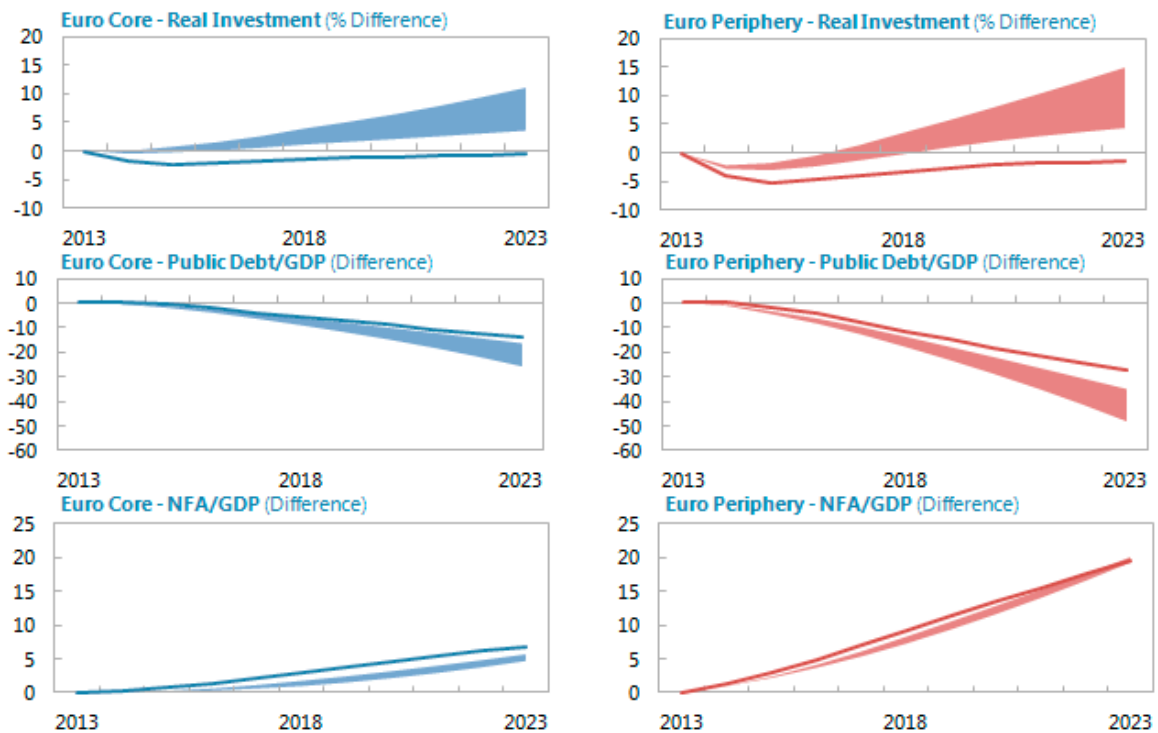
**Figure 5: The Net Impact of Fiscal Consolidation and Structural Reforms**



Source: Staff Estimates, OECD Estimates, and GIMF Simulations

Turning to public debt and net foreign liabilities, presented in Figure 6, two important points are worth noting. First, although initially implementing structural reforms marginally raises the ratio of public debt to GDP owing to increased spending on active labor market policies and childcare, successfully implementing reforms results in further substantial reductions in the debt-to-GDP ratio on top of the reductions achieved via consolidation. Reforms generate improvements through two channels, by raising the level of nominal GDP and by increasing the tax base. While reforms lead to further improvements in public savings, they do not increase national savings in the euro area. The ratio of net foreign liabilities to GDP declines below the ratio achieved under just the consolidation in the core while it remains broadly similar in the periphery. Despite the increase in public savings, private savings are not sufficient to fully fund the increase in investment resulting from the reforms.

**Figure 6: The Net Impact of Fiscal Consolidation and Structural Reforms on Savings**



Source: Staff Estimates, OECD Estimates, and GIMF Simulations

## VI. CONCLUSIONS

Euro area countries need to consolidate public finances to put public debt back on a sustainable path. The magnitudes of the required consolidations vary notable across euro area countries. Here the euro area countries have been grouped into two regions, those with acute consolidation needs, called the periphery, and those with less acute consolidation needs, called the core. The IMF's Global Economy Model (GIMF) is used to estimate the impact on



activity of implementing stylized consolidations that are broadly consistent with those contained in the IMF's World Economic Outlook (WEO) forecast in each region. Although the macroeconomic impacts of consolidations in the two regions that are achieved by reducing transfers are presented, it is highly unlikely that the consolidations can be achieved in such a growth-friendly fashion. Therefore, results are also presented for consolidations of identical magnitudes that are achieved by using a mix of public absorption expenditure (30 percent), consumption taxes (30 percent), labor income taxes (30 percent) and capital income taxes (10 percent). This more plausible mix of fiscal instruments reduces GDP below its pre-consolidation level in both the periphery and core for an extended period.

GIMF is then used to estimate the scope for offsetting that impact on activity through implementing wide-ranging structural reforms. The GIMF analysis relies on OECD estimates of the distance from best practice in product and labor market policies in each euro area country along with estimates of the impact on productivity and employment of closing those gaps. The impact on output is estimated under two alternative assumptions about how much of the best-practice gap is closed, a lower bound of 25 percent and an upper bound of 75 percent. The results suggest that for the core, it is quite feasible that structural reforms can offset even the near-term negative impact of consolidation on activity. However, for the periphery, even under the case where 75 percent of the best-practice gap is closed, it takes several years before GDP is restored to its pre-consolidation level. In the medium and longer term, however, the estimates suggest that structural reforms can make a substantial contribution to raising output in both the core and periphery.

There are a number of reasons that the estimates presented here may overstate the positive impact of reforms in the short-run. First, labor market reforms are focused on increasing labor supply, if such reforms are implemented during a period of cyclical weakness, it may be that the additional labor supply is absorbed only slowly. Labor demand in practice may be less responsive than implied by the model to the decline in real wages that results from the increased labor supply. Second, some of the short-run GDP benefits come from additional public spending on active labor market programs and childcare. If this additional spending is financed by cutting other public spending, then the benefits of the reform would be slower to materialize. Finally, implementing product market reforms at a time of cyclical weakness could also temporarily reduce output and employment as inefficient firms are forced out of the market before new entrants or more efficient firms can ramp up production.

It is worth noting that there is also scope for reforms to have a larger and faster positive impact on activity. Here it was not assumed that either the fiscal consolidation or the structural reforms have any impact on country-specific risk premium. However, it is possible that as consolidations are implemented in the periphery in particular, country-specific risk premium could decline. In addition, as progress is made on the structural reform front and

markets come to understand the positive implications for fiscal sustainability, risk premium could decline further. This would lead to larger and possibly faster improvements in real activity. In addition, if the reforms could be implemented faster, and households and firms convinced quickly that there would be no unwinding of reforms in the future, the benefits of the reforms would materialize sooner than estimated here.

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## **Appendix I: Decomposition of the Impact of Labor Market Reforms**

### ***Active Labor Market Policies***

Active labor market policies (ALMP) have an immediate positive impact on output and reduce the level of unemployment. ALMP's are public programs that ease the job search process for unemployed workers, provide training programs for the unemployed, and supply public subsidies for firms and public projects that create jobs specifically for unemployed individuals.

### ***Public Childcare Services***

An increase in public childcare services has an immediate positive impact on output and increases the level of female participation in the labor force. This is particularly relevant for euro area countries, due to their low female labor force participation rates.

### ***Reduction in Unemployment Benefit Replacement Rates***

A reduction in unemployment-benefit replacement rates (ARR) increases the incentive to search for employment or leave the labor force, reducing the equilibrium level of unemployment). In the medium term, fiscal gains arise from lower unemployment outlays and higher labor income tax revenue.

### ***Pension Reform***

Two types of pension reform are considered. The first is a two-year increase in the standard retirement age. The second is a move to actuarial neutrality, where the implicit tax rate on continued employment is set to zero for workers between the ages 60-65. These reforms are intended to increase labor force participation and create fiscal savings from delaying pension outlays. These reforms are highly desirable, since many pension systems are unsustainable and the reforms could generate significant fiscal savings.

### ***Reduction in Employment Protection Legislation***

A reduction in employment protection legislation (EPL) would ease restrictions on the hiring and firing of employees. This increases the incentive to search for employment and hire.

### ***Contributions of the Individual Reforms to the Long-Run Impact of Labor Market Reforms***

Figure A1 illustrates the contributions that each of the five individual labor market policies makes to the long-run increase in GDP in the periphery owing to the implementation of labor market reforms. The largest contributions come from reductions in unemployment benefits average replacement rates and the increased provision of public childcare, each contributing roughly 30 percent of the increase. The next most important is employment protection legislation, contributing almost 20 percent. Pension reforms contribute about 15 percent with the remainder coming from active labor market policies.

**Figure A1: The Contribution of the Individual Labor Market Policies to the Long-Run Impact on GDP of Labor Market Reforms in the Periphery**



Figure A2 illustrates the contributions that each of the five individual labor market policies makes to the long-run increase in GDP in the core owing to the implementation of labor market reforms. The largest contribution comes from the increased provision of childcare services at almost 30 percent, followed closely by employment protection legislation and pension reform each contributing just over 20 percent. The next most important is reductions in unemployment benefits average replacement rates at roughly 15 percent with the remainder coming from active labor market policies.

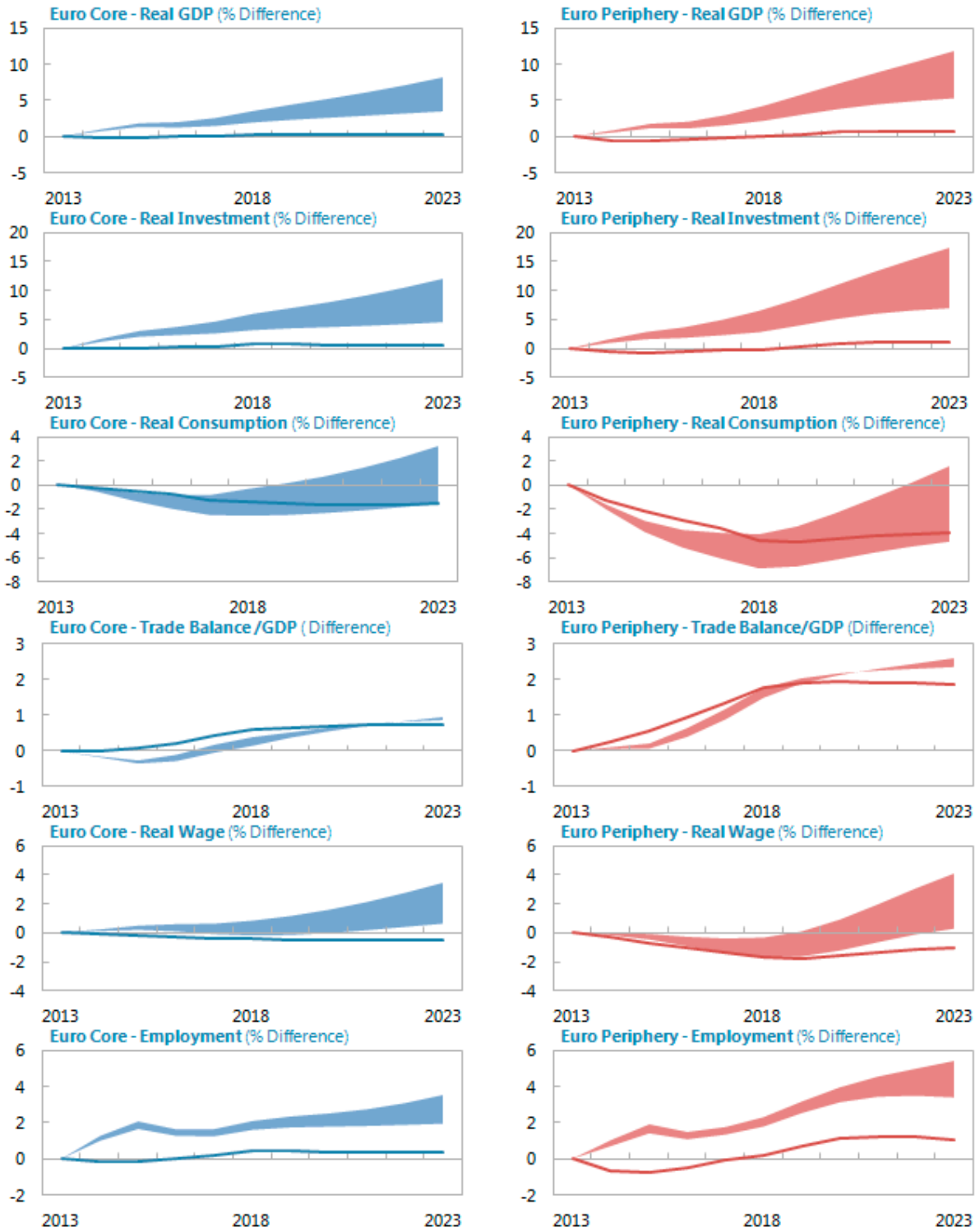
**Figure A2: The Contribution of the Individual Labor Market Policies to the Long-Run Impact on GDP of Labor Market Reforms in the Core**



## **Appendix II: The Net Impact of Growth-Friendly Fiscal Consolidation and Structural Reforms**

In Figure A3 the estimated ranges for the impact of structural reforms are overlaid on the fiscal consolidation that is achieved solely with cuts in transfers. The main take away from this is that if the required consolidations could be achieved simply by cutting transfers, then structural reforms would more than offset the very mild negative near-term impact of the consolidation on activity. This appears to be the case even in the periphery under the least optimistic assumption about the size of the best-practice gap that can be closed. It is also appears to be the case if the additional fiscal spending associated with active labor market policies and childcare services was funded by cutting other public spending. However, should firms respond more slowly than implicit in the model to the decline in the real wage resulting from the increase in the labor-market-reform induced increase in labor supply, it could still take several years for reforms to restore activity back to its pre-consolidation level in the periphery.

**Figure A3: Net Impact of Growth-Friendly Fiscal consolidation and Structural Reforms**



Source: Staff Estimates, OECD Estimates, and GIMF Simulations