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Raising Potential Growth After the Crisis: A Quantitative Assessment of the Potential Gains from Various Structural Reforms in the OECD Area and Beyond

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RAISING POTENTIAL GROWTH AFTER THE CRISIS: A QUANTITATIVE ASSESSMENT OF THE POTENTIAL GAINS FROM VARIOUS STRUCTURAL REFORMS IN THE OECD AREA AND BEYOND

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By Romain Bouis and Romain Duval

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ABSTRACT/RÉSUMÉ

Raising potential growth after the crisis: A quantitative assessment of the potential gains from various structural reforms in the OECD area and beyond

This paper provides an illustrative assessment of the impacts on potential GDP over a 5 to 10-year horizon of structural reform scenarios in the areas of product and labour markets, relying on existing OECD empirical studies. Results of simulations suggest that a gradual alignment of product market regulations to best practice in a broad range of non-manufacturing sectors could boost aggregate labour productivity levels by several per cent over the next decade in many OECD countries, and by over five per cent across most of continental Europe, as well as for the BRIICS. Relaxation of job protection legislation could also raise productivity growth for a while in many OECD and non-OECD G20 countries, although the effects are estimated to be smaller than those from product market reforms. In a scenario under which they would be phased in relatively quickly, labour market reforms in the areas of unemployment benefit systems, activation policies, labour taxes and pension systems could raise employment rates by several percentage points in a number of OECD countries over a 10-year horizon. Large continental European countries would have the largest benefits to reap from reforms. The overall potential GDP gain for the average OECD country from undertaking the full range of reforms considered here might come close to 10% at a 10-year horizon, indicating the presence of ample room for structural reforms to offset the permanent GDP losses from the recent crisis.

JEL classification codes: E27; H12; O43.
Keywords: Growth; Productivity; Employment; Structural Reforms.

Augmenter la croissance potentielle après la crise: une évaluation quantitative des gains potentiels de différentes réformes structurelles au sein de l'OCDE et au-delà

Cet article fourni une évaluation illustrative des impacts sur le PIB potentiel à des horizons de 5 et 10 ans de scénarios de réformes structurelles dans les domaines des marchés des produits et du travail, à partir de travaux empiriques de l'OCDE. Les résultats des simulations suggèrent qu'un alignement graduel des réglementations du marché des produits dans un large ensemble de secteurs non manufacturiers aux meilleurs pratiques pourrait augmenter la productivité agrégée du travail de plusieurs pour cent au cours de la prochaine décennie dans plusieurs pays de l'OCDE, et de plus de cinq pour cent au sein de la plupart des pays d'Europe continentale, ainsi que dans les BRIICS. Un relâchement de la législation sur la protection de l'emploi pourrait augmenter la croissance de la productivité d'un montant non négligeable dans plusieurs pays de l'OCDE et pays non OCDE membres du G20, bien que les effets estimés soient plus faibles que ceux attendus de réformes du marché des produits. Dans un scénario dans lequel elles seraient mises en œuvre assez rapidement, les réformes du marché du travail dans les domaines des systèmes d'indemnisation chômage, de politiques d'activation, de fiscalité du travail et de systèmes de retraite pourraient augmenter les taux d'emploi de plusieurs points de pourcentage dans plusieurs pays de l'OCDE à un horizon de 10 ans sous un scénario de mise en œuvre rapide. Le gain en PIB potentiel pour le pays moyen de l'OCDE d'une mise en œuvre de l'ensemble des réformes considérées ici pourrait approcher 10 % à un horizon de 10 ans, indiquant la présence de gains substantiels liés aux réformes structurelles susceptibles de compenser les pertes définitives en PIB consécutives à la crise récente.

Codes JEL : E27 ; H12 ; O43.
Mots clé : Croissance ; Productivité ; Emploi ; Réformes structurelles.

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RAISING POTENTIAL GROWTH AFTER THE CRISIS: A QUANTITATIVE ASSESSMENT OF THE POTENTIAL GAINS FROM VARIOUS STRUCTURAL REFORMS IN THE OECD AREA AND BEYOND

By Romain Bouis and Romain Duval[1]

1. Introduction and main findings

1. The recent crisis has left deep scars on most OECD economies. GDP fell by over 3% on average across the OECD in 2009, and fiscal deficits ballooned to an average of 8%. Available empirical evidence points to sizeable permanent GDP losses from financial crises (Cerra and Saxena, 2008; Furceri and Mourougane, 2009a), which for the recent episode might reach 3% according to recent estimates (OECD, 2009).[2] Financial crises have also been found to raise durably public debt and to increase the risk of government default, and this time may be no different (Reinhart and Rogoff, 2010). As of the end of 2010, the room for addressing any durable weakening of private demand through macroeconomic policies would be very limited in many OECD countries, as conventional monetary policy stimulus has already been exhausted and public finances are in need of gradual consolidation. Against this background, the urgency of growth-enhancing structural reforms has arguably increased, as they have the potential to both lift average living standards and help to consolidate public budgets in the medium run.

2. This paper assesses the quantitative impacts on potential GDP over a 5 to 10-year horizon of illustrative but yet plausible structural reform scenarios in the areas of product and labour markets. The analysis relies on existing (past and recent) OECD empirical studies of the links between structural policies and productivity or employment, and covers the following reform areas: *i*) product market regulation (PMR); *ii*) employment protection legislation (EPL); *iii*) unemployment benefit systems and activation policies; *iv*) labour taxes; *v*) pension systems. In each of these areas, both slow-pace and fast-pace reform scenarios are considered, typically corresponding to convergence of policy settings in each OECD country towards those prevailing in "benchmark countries" over 5-year and 10-year horizons, respectively. These simulations have been used recently by the OECD and the IMF in the context of the G20 framework for strong, sustainable and balanced growth (de Mello and Padoan, 2010; IMF, 2010a; 2010b).

3. There are a number of limitations to this simple exercise. On the analytical side, it relies on point estimates of policy effects drawn from a particular set of empirical studies, and is therefore subject to both

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1. The authors are Administrator and Head of Division at the OECD Economics Department, respectively. They would like to thank Renaud Bourlès, Gilbert Cette, Jimmy Lopez, Jacques Mairesse and Giuseppe Nicoletti for providing the product market reform simulation results derived from Bourlès *et al.* (2010a; 2010b), Andrea Bassanini for helpful discussions regarding the employment protection legislation reform simulations, Martine Levasseur for very good statistical assistance and Olivier Besson for editorial support. The authors retain full responsibility for errors and omissions.

2. Accordingly, there is wide empirical evidence of large and persistent increases in unemployment in the aftermath of major financial crises, see *e.g.* Furceri and Mourougane (2009b) for recent analysis.

model and parameter uncertainty. Also, the analysis implicitly assumes homogeneous marginal effects of reforms on GDP across different countries, time periods and magnitudes of reforms and, in some cases, draws economy-wide impacts of reforms from sector-level estimates. Another limitation is that the underlying studies do a better job at estimating the long-run effects of structural reforms than the dynamics towards this steady state. In practice, the short-term effects of reforms may vary across different types of structural policies and also depending on other structural and macroeconomic policy settings (*e.g.* Mourougane and Vogel, 2008). In the current context where there would be less room than usual in many OECD countries to "crowd in" increased aggregate supply associated with reform through accommodative macroeconomic policy responses, there might be a risk that some reforms – typically those that might have deflationary short-term effects, such as reductions in benefit entitlements – could take more time to pay off or might even be inappropriate in the short run. However, labour market reforms are assumed to be phased in only gradually in the scenarios considered in this paper, and the speed at which their benefits materialise is assumed – based on past OECD empirical work – to be quite low, implying fairly conservative estimates of the short-run gains from such reforms.

4. Bearing these caveats in mind, the main findings from this paper are:

- Some gradual alignment of product market regulations on best practice in a broad range of non-manufacturing sectors (energy, transport, communication, retail trade, professional services and banking) could boost aggregate labour productivity – and thereby potential GDP – levels by several per cent over the next decade in many OECD countries, and easily by over five per cent across most of continental Europe. Although the potential productivity gains from product market reform are harder to estimate for non-OECD G20 countries due to both data availability issues and theoretical concerns regarding the applicability of estimates derived instead for OECD countries only, they appear to be sizeable as well for the BRIICS (Brazil, Russia, India, Indonesia, China, South Africa).
- A relaxation of EPL could also raise productivity growth for a while in many OECD and non-OECD G20 countries, although the effects – typically in the order of one to two per cent over a decade where EPL is currently strictest – are estimated to be smaller than those from product market reforms.
- Labour market reform packages in the areas of unemployment benefit systems, activation policies, labour taxes and pension systems could raise employment rates by several percentage points in a number of OECD countries over a 10-year horizon under an ambitious action plan (the fast-pace scenario). Again, continental European countries – especially large ones – have the greatest potential for, and thereby the largest benefits to reap from reforms.
- Under an ambitious reform agenda, the overall potential GDP gain for the average OECD country from undertaking the full range of product and labour market reforms considered in this paper might come close to 4½ and 10% at 5 and 10-year horizons, respectively, compared with a no-reform baseline scenario. These gains would be even larger for the average EU country espescially for the larger EU countries taken together. The average GDP gain from PMR and EPL reform across the BRIICS might be in the order of 5½ and 12½ % at 5 and 10-year horizons, respectively. Therefore there seems to be ample room for structural reforms to offset the permanent GDP losses from the recent crisis, which recent analysis puts at about 3% on average across the OECD (OECD, 2009).

5. Another recent OECD paper provides some quantification of the GDP gains from various types of structural reforms (Barnes *et al.*, 2011), which differs from the present paper on several grounds. First, while the purpose of that paper is to provide a simulation framework, the present paper aims at assessing the impact of plausible reform scenarios. Second, the coverage of reform areas differs. In general, Barnes *et al.* (2011) attempt to account for the effects of a larger number of structural policies derived from a wide

range of empirical studies, but at the same time they do not cover active labour market policies which are explored here. Third, some of the empirical studies on which the two papers rely differ. The present paper relies on a smaller set of studies published in peer-reviewed journals, and in order to quantify the impact of product market reform it uses more recent industry-level OECD estimates rather than cross-country time-series growth regressions as in Barnes *et al.* (2011). Third, in order to minimise risks of double counting, the present paper does not try to incorporate all the channels through which a particular reform may affect economic performance – *e.g.* possible GDP per capita effects of product market reform via increased R&D spending or higher employment found in certain empirical studies are ignored – unlike the simulation framework in Barnes *et al.* (2011).

2. Product market reform

6. Table 1 provides summary information on the reform scenarios considered in each of the policy areas covered by this paper. The easing of restrictive anti-competitive PMRs is one way through which productivity and GDP per capita growth could be lifted in many OECD and non-OECD countries. The product market reform scenario draws on OECD indicators (for each sector in each OECD country) of the regulatory burden associated with existing PMRs in large non-manufacturing industries that produce important intermediate inputs for the rest of the economy, including energy, transport, communication, retail distribution[3] and professional services (for details, see Bourlès *et al.*, 2010a). Bourlès *et al.* (2010a; 2010b), find empirical evidence that stringent PMRs in upstream sectors – typically network industries – curb multifactor productivity (MFP) growth in downstream sectors based on a panel of OECD countries and sectors. These estimates are consistent with an endogenous growth approach under which stronger market power upstream raises the price of intermediate inputs and thereby reduces the expected innovation rents downstream, with adverse effects on innovation and technology adoption incentives. PMR may also adversely affect productivity through other channels (see *e.g.* Nicoletti *et al.*, 2006).[4]

3. Although retail distribution is not strictly speaking an upstream sector, it is considered as such here because based on input-output matrices for each sector it plays an important role in the production of final goods and services, just like energy, transport or communication services.

4. Stringent PMR has also been found to reduce employment levels both in theory and in practice, including in OECD empirical analysis (Bassanini and Duval, 2006; 2009). This channel is omitted in the simulations below, which thus provide lower-bound estimates for the overall GDP per capita impacts of product market reforms.

Table 1. Summary description of the policy reform scenarios

Policy reform	Scenario simulated	Countries affected	Variable impacted	Timing of implementation	Source
Product market reform	Product market regulation in each upstream sector converges to average of 3 most pro-competitive stances observed across the OECD	Most OECD countries and BRIICS	Multifactor productivity growth	Two scenarios: 1) phased in over 2011-15 (5 years) ; 2) phased in over 2011-20 (10 years)	Bourlès *et al.* (2010b)
Employment protection legislation reform	Employment protection legislation converges to average of 3 most liberal stances observed across the OECD	Most OECD countries and BRIICS	Labour productivity growth	Two scenarios: 1) phased in over 2011-15 (5 years); 2) phased in over 2011-20 (10 years)	Bassanini *et al.* (2009)
Unemployment benefit reform	Cut in average replacement rate to the average level prevailing in the "low benefit replacement rate, low ALMP spending" group of OECD countries	Most OECD countries except those six with the lowest unemployment replacement rate, lowest ALMP spending and those six with the highest unemployment replacement rate, highest ALMP spending	Unemployment rate	Two scenarios: 1) phased in over 2011-15 (5 years); 2) phased in over 2011-20 (10 years)	Bassanini and Duval (2006; 2009)
ALMP spending reform	Increase in the ratio of ALMP spending per unemployed over GDP per capita to the average level prevailing in the "high benefit replacement rate, high ALMP spending" group of OECD countries	Most OECD countries except those six with the lowest unemployment replacement rate, lowest ALMP spending and those six with the highest unemployment replacement rate, highest ALMP spending	Unemployment rate	Two scenarios: 1) implementation in 2011; 2) phasing-in over 2011-15 (5 years)	Bassanini and Duval (2006; 2009)
Labour tax cut	Cut in average labour tax wedge to average level that prevails in six OECD countries with the highest employment rate	Most OECD countries except those six with highest employment rates	Employment rate	Two scenarios: 1) phasing-in over 2013-17 (5 years); 2) phasing – in over 2013-22 (10 years)	Bassanini and Duval (2006; 2009)
Pension reform	Pension systems move to actuarial neutrality and the standard retirement age is raised by two years.	Most OECD countries	Employment rate	Two scenarios: 1) move to actuarial neutrality in 2011 and phasing-in of increase in standard retirement age over 2011-15 (5 years); 2) move to actuarial neutrality phased in over 2011-15 (5 years) and increase in standard retirement age over 2011-20 (10 years).	Bassanini and Duval (2006; 2009)

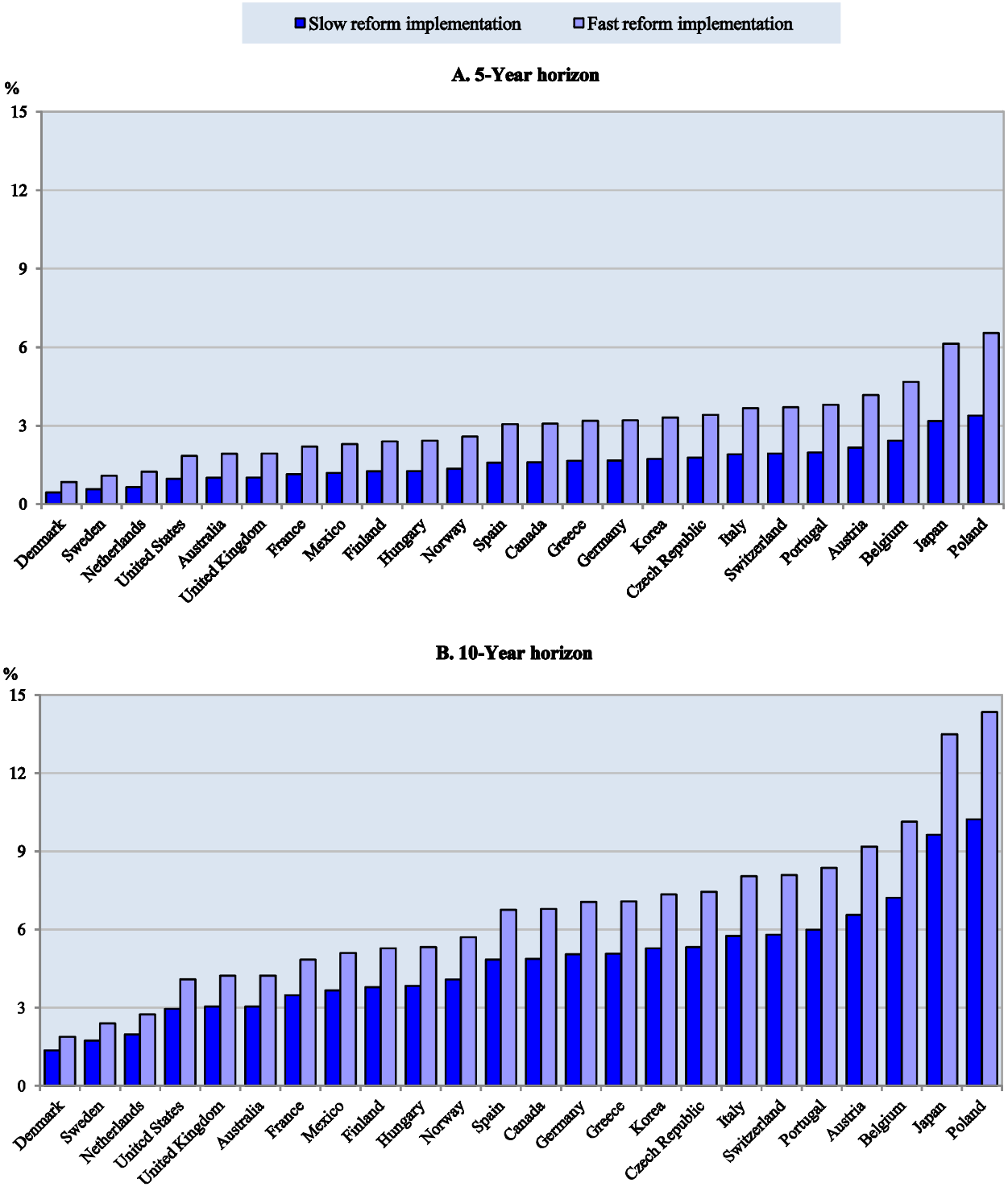
7. Based on the preferred specification of Bourlès *et al.* (2010a; 2010b), aligning PMR in upstream sectors gradually on best practice is estimated to have the potential to deliver sizeable productivity gains in most OECD countries over the coming decade (Figure 1). Under a fairly gradual "slow" implementation scenario, MFP levels could be raised by ½ to 3 ½% over the next 5 years, and by 1½ to 10% over the next

10 years depending on the countries considered (Figure 1, Panel A). The wide variance in the estimated gains across countries reflects cross-country differences in: *i*) the stringency of current regulations in upstream sectors (Figure 2); *ii*) the intensity of downstream intermediate consumption of products from the upstream regulated sectors; *iii*) the current MFP level gaps in the different country-sector pairs, reflecting a larger adverse impact of anti-competitive regulations where MFP levels are already closer to the technology frontier, so-called "distance-to-frontier" effects (for details, see Bourlès *et al.*, 2010b); *iv*) a composition effect due to the different sector shares of value added in the different countries. Under faster reform implementation, the MFP gains would be significantly larger over the horizon considered, even doubling in some cases at a 5-year horizon (Figure 1, Panel B). Labour productivity gains would be expected to be even larger than MFP gains under all scenarios, as the pick-up in MFP growth would raise marginal returns to capital at existing levels of capital and therefore boost investment. Finally, although the BRIICS were not covered in the empirical analysis that provided estimates of the effects from reform, a crude extrapolation of the results based on their current PMR settings points to large MFP gains in the order of 2 to 3% and 7 to 9% depending on the countries at 5 and 10-year horizons, respectively, under the slow reform implementation scenario.[5]

5. Under fast implementation of reforms, these estimates reach 4½ to 6% and 10 to 13% depending on the countries at 5 and 10-year horizons, respectively.

Figure 1. Estimated multifactor productivity gains from product market reform

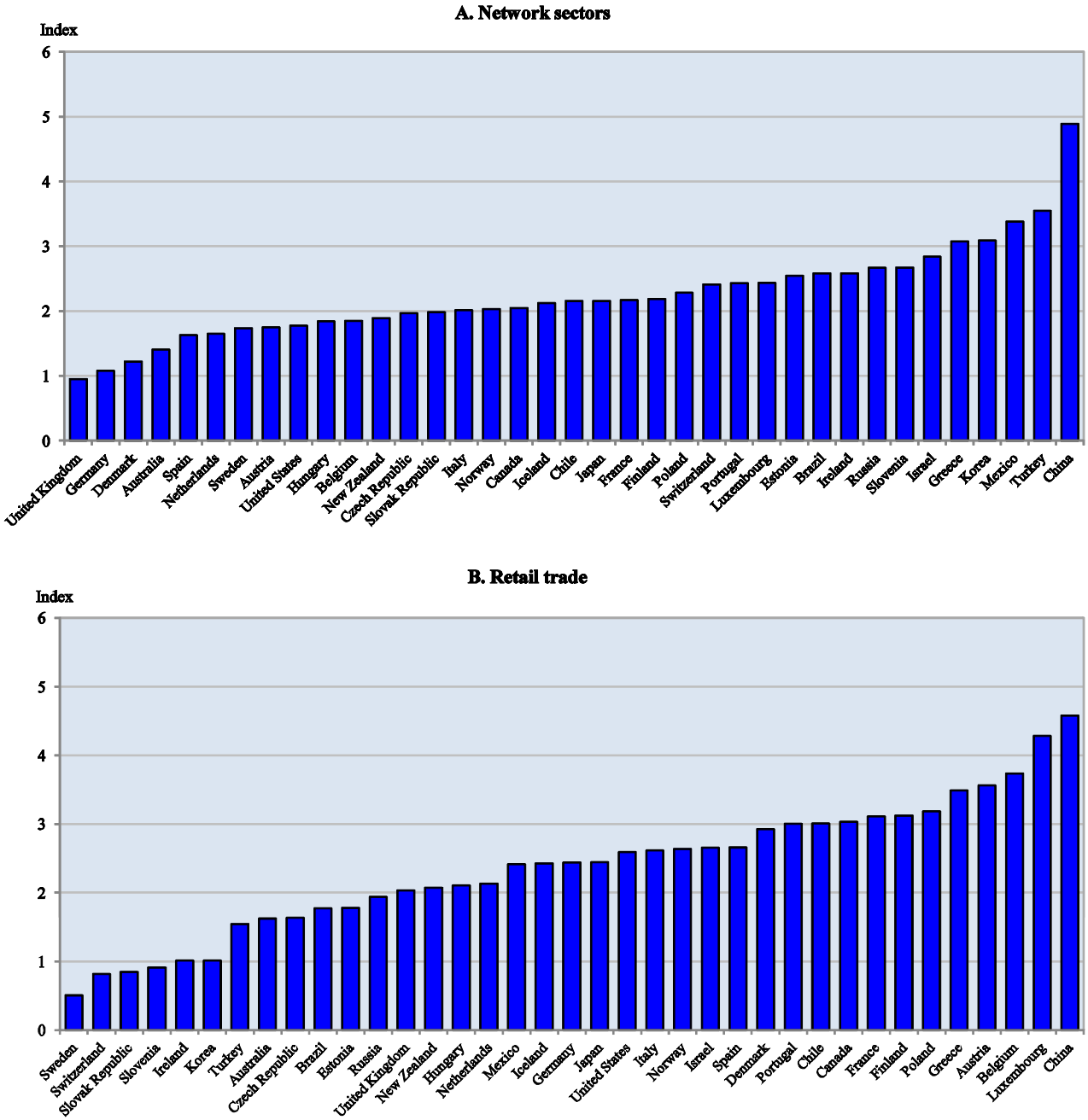
Levels, in per cent



Note: Slow reform implementation refers to phasing-in over 10 years, while fast reform implementation refers to phasing-in over 5 years. In both cases, product market regulation in each upstream sector ultimately converges to the average of the three most pro-competitive stances observed across the OECD. See Annex 1 for details.
Source: OECD calculations based on OECD *Product Market Regulation Database*.

Figure 2. Product market regulation in upstream sectors, 2008

Index scale of 0-6 from least to most restrictive



Source: OECD, *Product Market Regulation Database*.

3. Employment protection legislation (EPL) reform

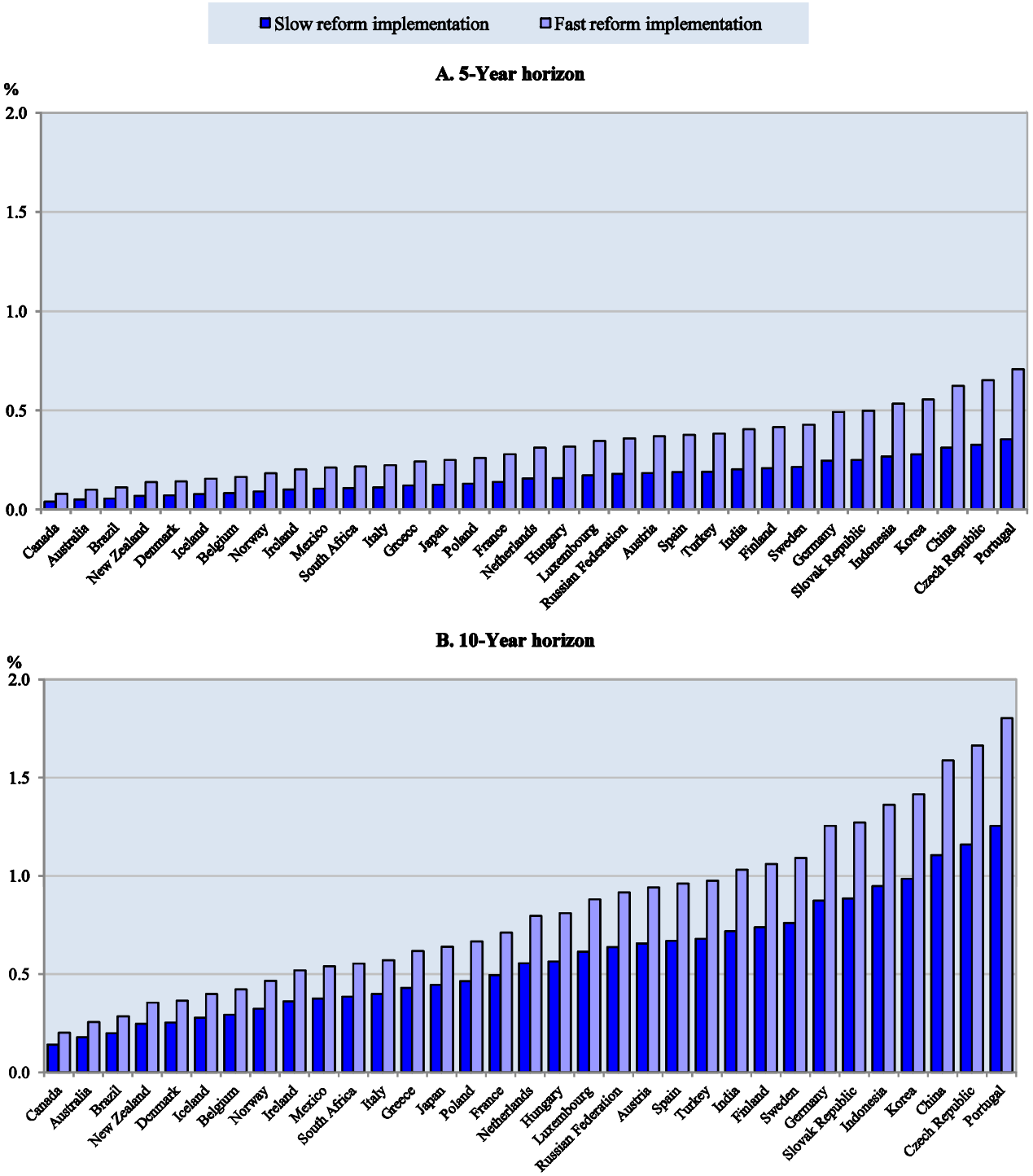
8. The EPL reform scenario draws on the OECD summary indicator of the stringency of existing provisions in this area (for details, see Venn, 2009), which is used in Bassanini *et al.* (2009) who in a difference-in-difference framework find evidence that overly stringent EPL weakens productivity in sectors where labour turnover is "naturally" high. These findings are consistent with the view that strict

EPL makes it more difficult for firms to respond quickly to changes in technology or product demand that require reallocation of staff or downsizing, thereby inducing them to use their resources less efficiently (for some discussion, see Bassanini *et al.*, 2009). These estimates are used here to simulate the potential gains from EPL reforms in OECD countries and the BRIICS. It should be stressed that such an exercise is likely to provide lower-bound estimates of the potential GDP per capita effects of EPL reforms for three reasons: *i*) they rely on the assumption that EPL reform would have no impact on productivity growth in those industries where EPL was considered as "non-binding" in the identification strategy followed by Bassanini *et al.*; *ii*) they ignore any possible impact of EPL on reallocation of resources from lower to higher-productivity growth sectors; *iii*) finally, possible positive effects on employment are omitted, although these are not straightforward in theory and have received little empirical support in practice.

9. Relaxing EPL gradually towards the stances observed in the three OECD countries where it is currently most liberal could yield significant productivity gains over the coming decade, although these are estimated here to be much smaller than those from product market reform (Figure 3). Under a slow reform implementation scenario, labour productivity levels could be raised by over 0.25% and 0.75% in several (OECD and BRIICS) countries over the next 5 and 10 years, respectively (Panel A). Under fast reform implementation, these gains would reach over 0.5% and 1% at 5 and 10-year horizons, respectively (Panel B). In all these scenarios, the steady-state effects of EPL reforms would be significantly larger, as a sizeable share of the gains would be reaped beyond the 10-year horizon considered here due to the slow speed at which such reforms are estimated to pay off in Bassanini *et al.* (2009). Estimated gains vary across countries depending in particular on the different degrees of stringency of their EPLs (Figure 4).

Figure 3. Estimated labour productivity gains from employment protection legislation reform

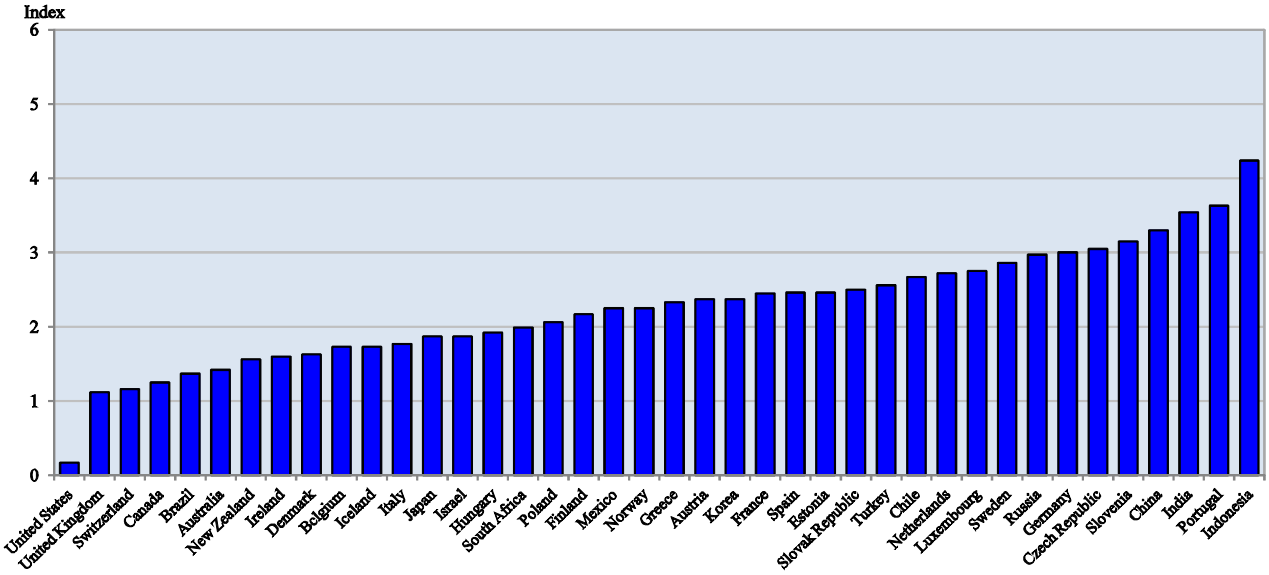
Levels, in per cent



Note: Slow reform implementation refers to phasing-in over 10 years, while fast reform implementation refers to phasing-in over 5 years. In both cases, employment protection legislation ultimately converges to the average of the three lowest stances observed across the OECD. See Annex 1 for details.
Source: OECD calculations based on OECD *Employment Outlook Database*

Figure 4. Employment protection legislation, 2008[1]

Index scale of 0-6 from least to most restrictive



1. EPL for regular contracts. 2009 for France and Portugal.

Source: OECD, *Employment Outlook Database*.

4. Reforms of benefit, tax and retirement systems

10. The benefit, tax and pension reform scenarios build on previous work carried out as part of the reassessed *OECD Jobs Strategy* (OECD, 2006a; 2006b) and in particular on Bassanini and Duval (2006; 2009). These simulations are discussed in turn below. In all cases, reforms increase steady-state employment levels, but their effects tend to materialise only gradually and remain incomplete even at a 10-year horizon for two reasons: *i*) most of them are assumed to be phased in progressively, in line with the product market and job protection reform scenarios discussed above; *ii*) more importantly, the speed of convergence of employment to its steady state is calibrated to be low, in line with the evidence from cross-country time-series dynamic employment regressions presented in Bassanini and Duval (2006). The assumed dynamics of employment implies that it takes over 6 years for actual unemployment to decline by half a percentage point in the wake of a reform that cuts structural unemployment – and therefore the level of actual unemployment in the long run – by one percentage point.

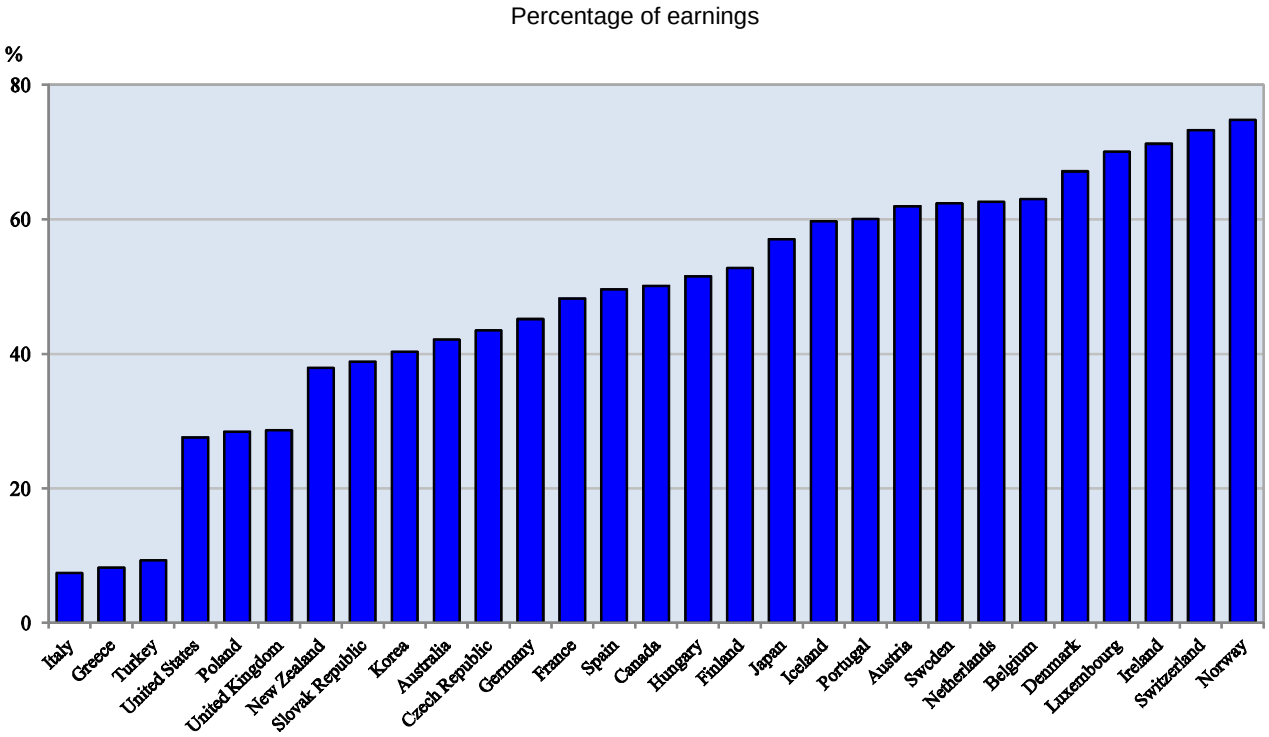
4.1. Reforms of unemployment benefit systems and active labour market policies

11. There is a wide body of theoretical and empirical evidence to suggest that high and long-lasting unemployment benefits can raise structural unemployment through adverse affects on job-search incentives and by pushing wages above market-clearing levels (see *e.g.* OECD 2006a; 2006b). At the same time, there is also growing evidence that well-designed activation policies can offset the detrimental employment effects of high and long-lasting benefits on job-search incentives and also reduce unemployment directly by improving the job-matching process. Activation includes, but goes beyond – *e.g.* the strength and degree of enforcement of job-search requirements and associated sanctions also matters – public spending on various active labour market policies (ALMPs) such as providing public employment services with adequate resources to cope with existing caseloads, financing (re)training programmes or subsidising jobs. This hints at two broad alternative ways to design an unemployment benefit system in a way that is

consistent with achieving low structural unemployment, namely either by keeping benefits relatively low and/or short-lived or by combining high benefits with strong activation strategies.

12. In this spirit, two alternative scenarios are considered, based on a categorisation in two groups of the twelve OECD countries with the highest employment rates in 2007 – which are also estimated to be those with the lowest levels of structural unemployment in 2010, see OECD (2009): *i*) those with relatively low benefit replacement rates and/or duration and low ALMP spending (Australia, Canada, Japan, New Zealand, United Kingdom, United States, see Figures 5 and 6); *ii*) those with relatively high benefit replacement rates and/or duration and high ALMP spending (Austria, Denmark, Netherlands, Norway, Sweden, Switzerland). In the first scenario, other OECD countries are assumed to reduce the replacement rate and/or the duration of unemployment benefits – both of which were found to influence structural unemployment in Bassanini and Duval (2006, 2009) and are indistinctly captured by the OECD's average replacement rate indicator – to the average level in the former group of six countries, while in the second scenario they are assumed to raise public expenditures on ALMPs to the levels prevailing in the latter group of six countries. In both types of simulations, the twelve "benchmark" countries are excluded, meaning that any potential reforms of benefit systems and activation policies are ignored for them. As a result, the simulations essentially cover continental European countries, which are most in need of reform in the areas of unemployment benefit systems and ALMPs. It should be stressed that the underlying estimates in Bassanini and Duval (2006) provide only a rough and arguably incomplete assessment of the potential employment gains from activation, as they focus narrowly on ALMP spending and ignore the crucial role of the design of activation strategies.

Figure 5. Average net unemployment benefits replacement rates, 2007[1]

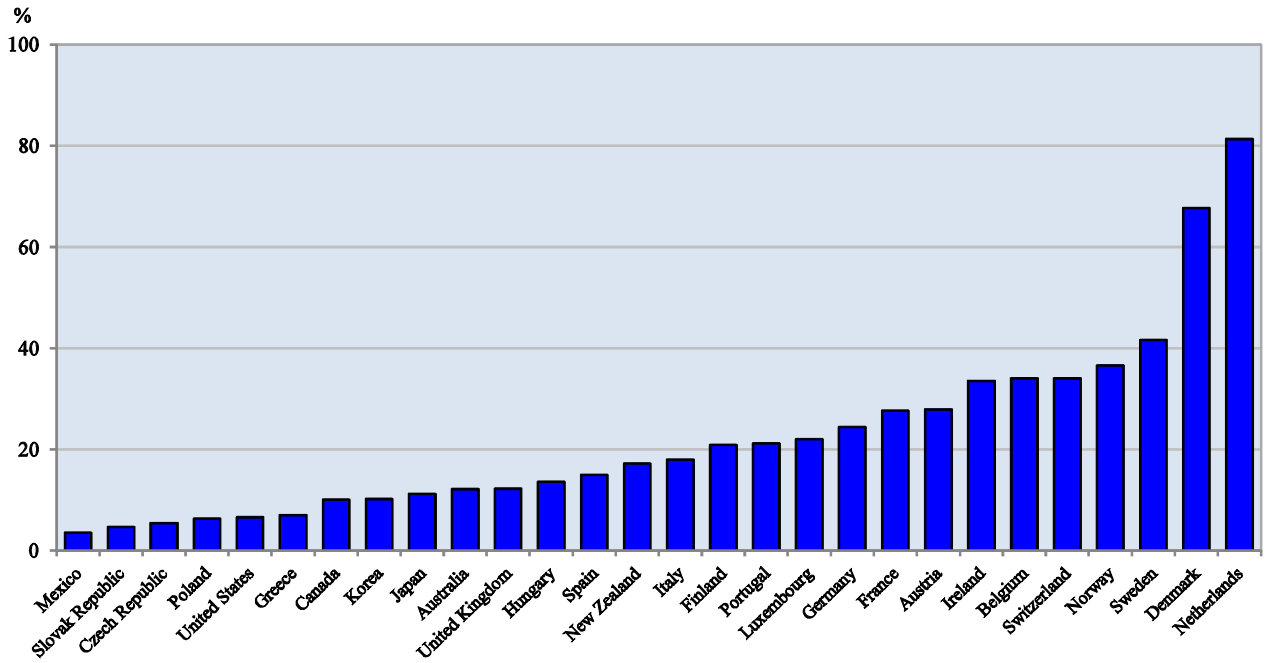


1. Average of the net replacement rate in the first five years of unemployment for four different family types (single and one-earner couples, with and without children) and two earning levels (67% and 100% of average full-time wages). Unemployment benefits plus cash social assistance.

Source: OECD, *Benefits and Wages Database*.

Figure 6. Average public spending on ALMPs, average 1997-2007

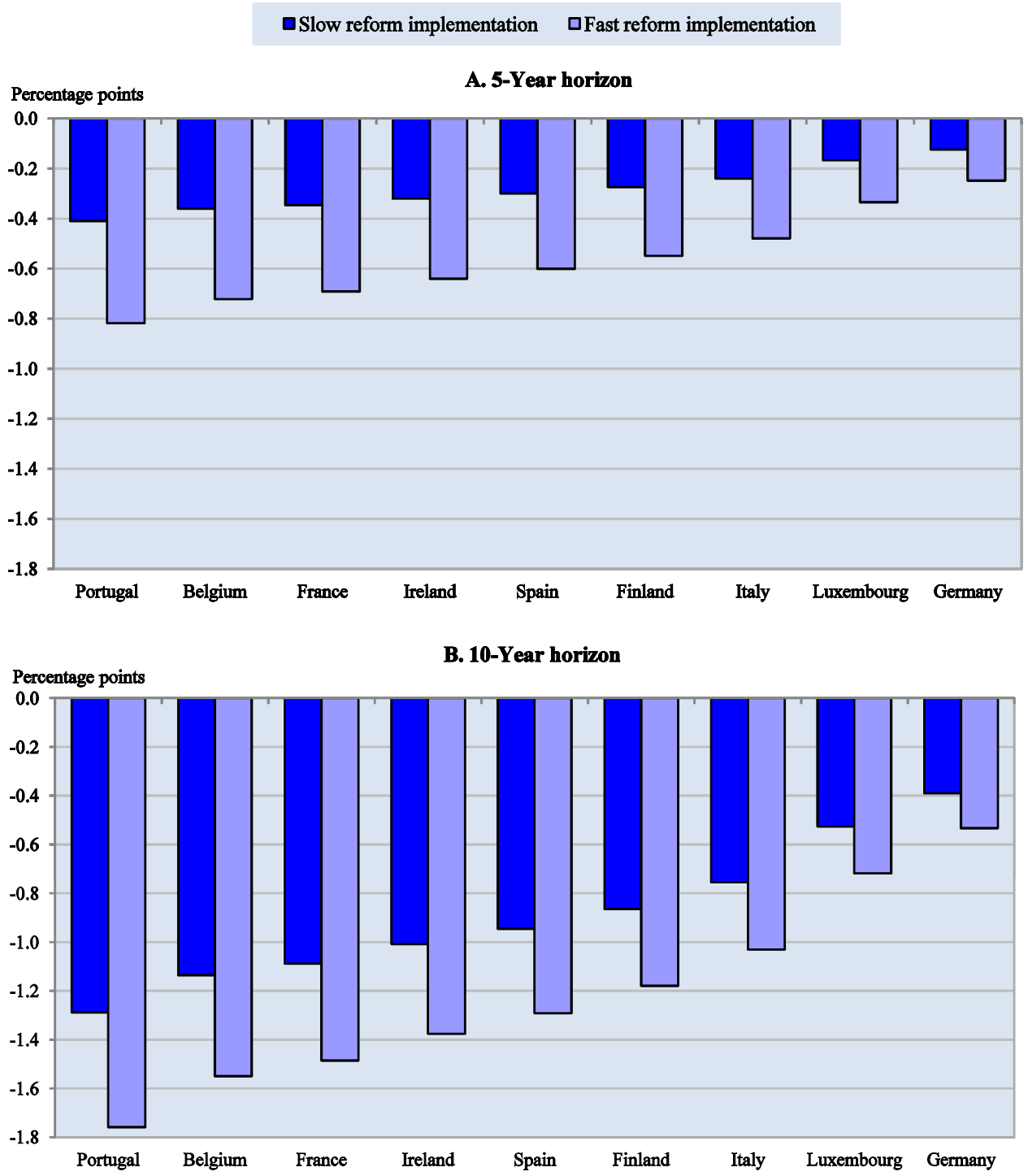
ALMPs per unemployed as a percentage of GDP per capita



Source: OECD, *Employment Policies/ALMP Database*.

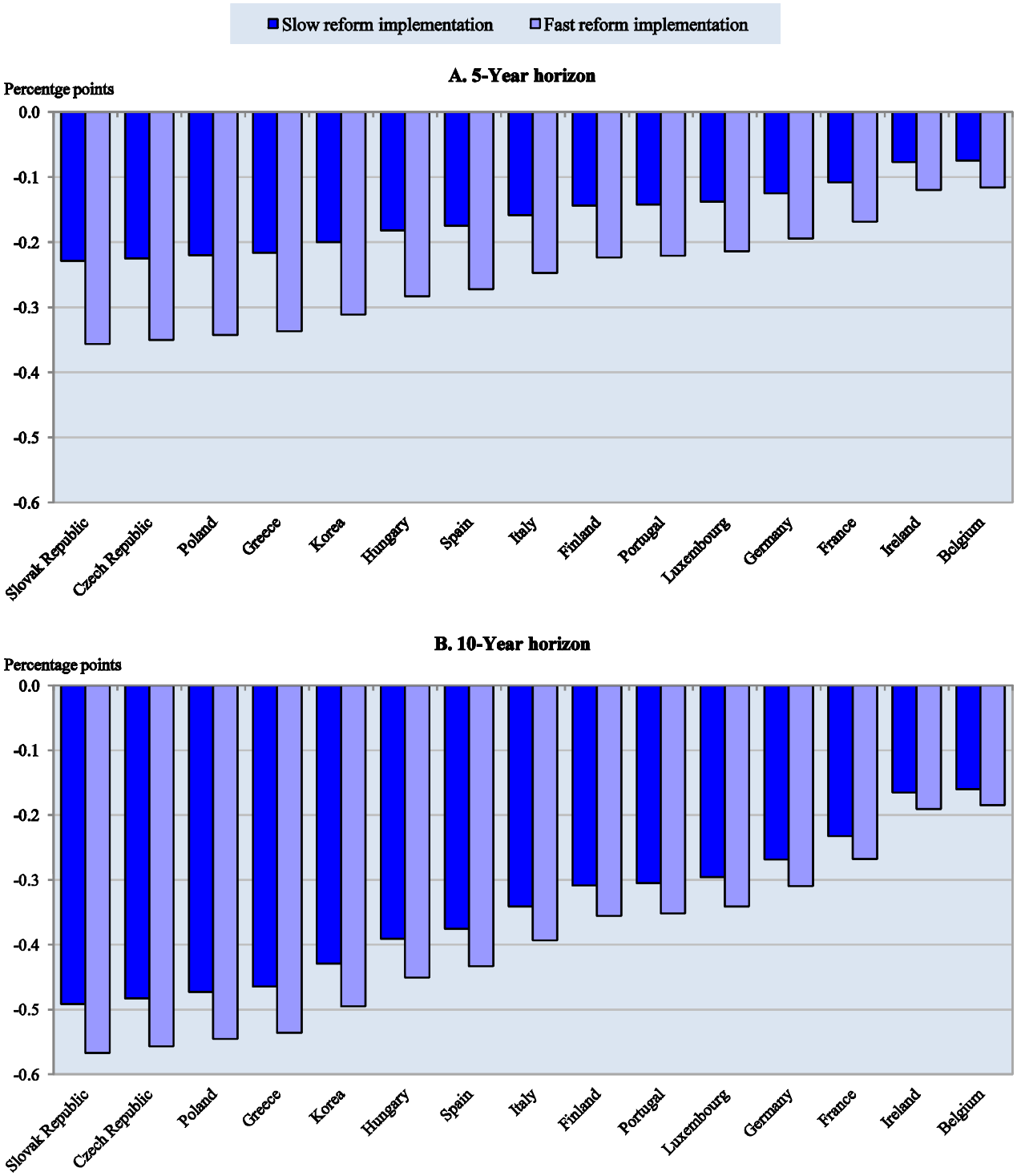
13. Continental European countries are estimated to have the potential to reduce structural unemployment significantly through gradual unemployment benefit reforms or – to a lesser extent – by raising public spending on ALMPs. Unemployment could decline by over 1 per cent in several countries over a 10-year horizon under slow unemployment benefit reform implementation, and by over 1.5 % under a faster reform pace (Figure 7). A permanent increase in ALMP spending would yield a smaller estimated decline in unemployment of up to 0.5 % over the coming decade (Figure 8). Over the longer run, the benefits from both types of reforms would be significantly larger (Figure 9), reflecting the slow assumed adjustment speed of unemployment to its (lower) new structural level in the aftermath of reforms.

Figure 7. Estimated reduction in unemployment from unemployment benefit reform



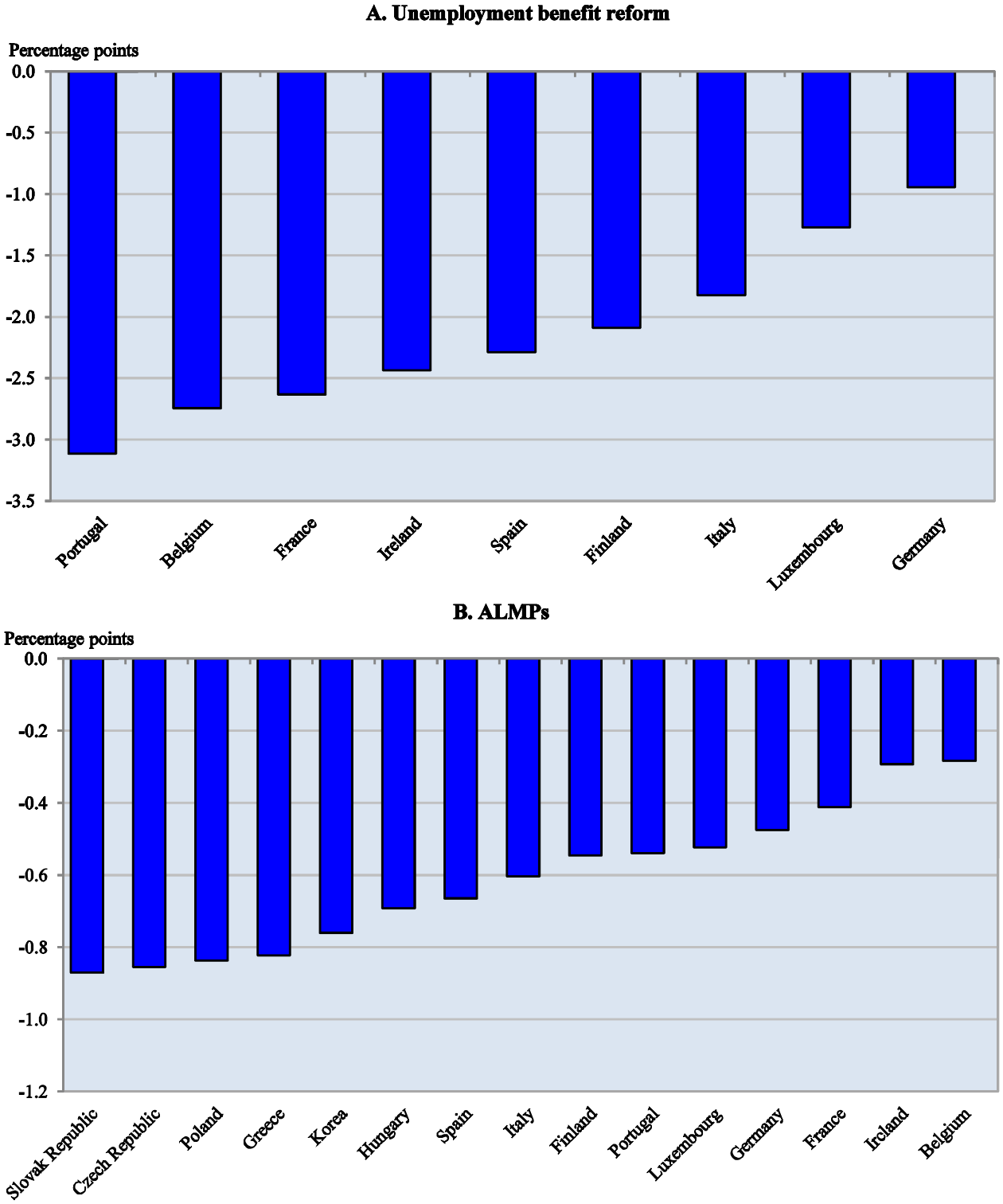
Note: Slow reform implementation refers to phasing-in over 10 years, while fast reform implementation refers to phasing-in over 5 years. In both cases, the average benefit replacement rate ultimately converges to the average level prevailing in the "low benefit replacement rate, low ALMP spending" group of OECD countries. See Annex 1 for details.
Source: OECD calculations based on OECD *Benefits and Wages Database*.

Figure 8. Estimated reduction in unemployment from increasing public spending on ALMPs



Note: Slow reform implementation refers to phasing-in over 5 years, while fast reform implementation refers to phasing-in over 1 year. In both cases, the ratio of ALMP spending per unemployed over GDP per capita ultimately converges to the average level prevailing in the "high benefit replacement rate, high ALMP spending" group of OECD countries. See Annex 1 for details.
Source: OECD calculations based on OECD *Employment Policies/ALMP Database*.

Figure 9. Estimated steady state reduction in structural unemployment from unemployment benefit reform and increases in public spending on ALMPs



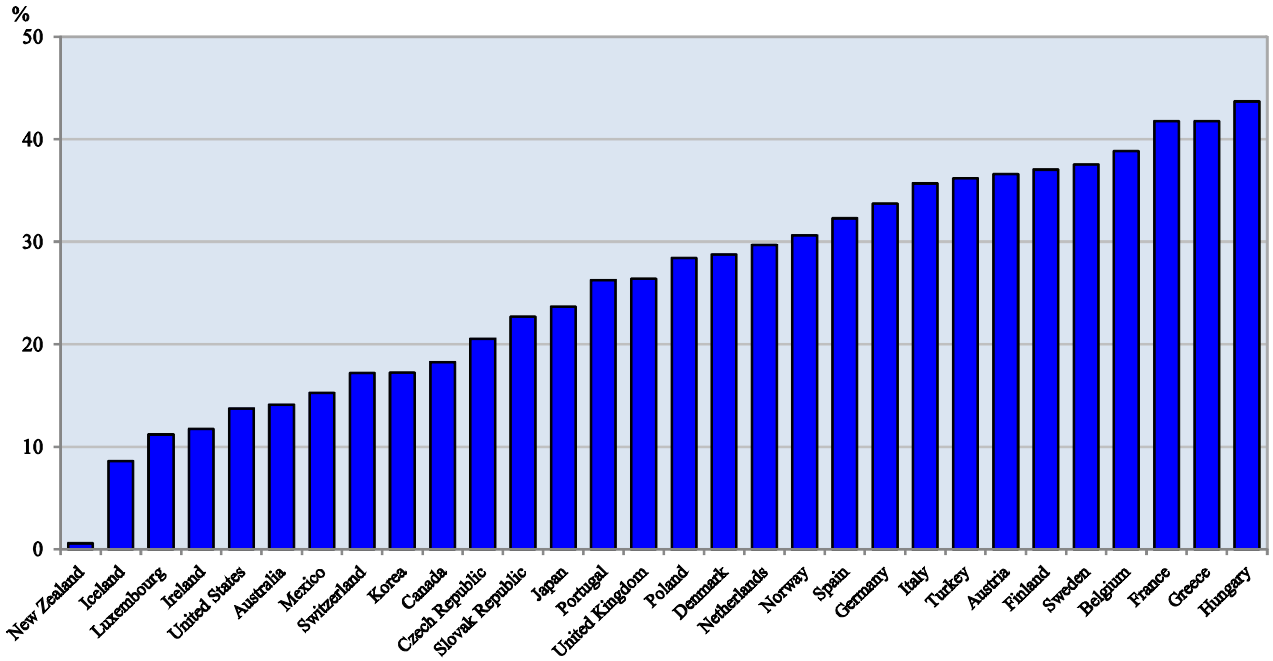
Note: Unemployment benefit reform refers to a gradual reduction in the average benefit replacement rate to the average level prevailing in the "low benefit replacement rate, low ALMP spending" group of OECD countries. ALMP spending reform refers to a gradual increase in the ratio of ALMP spending per unemployed over GDP per capita to the average level prevailing in the "high benefit replacement rate, high ALMP spending" group of OECD countries. See Annex 1 for details.
Source: OECD calculations based on OECD *Employment Policies Database*.

4.2. Reductions in labour tax wedges

14. Although their impact is not straightforward in theory, empirical work by the OECD and others has found high labour tax wedges to reduce employment levels, reflecting their impact on labour costs in imperfect labour markets. This may especially be the case where high legal minimum wages prevent labour taxes from being shifted onto (low-skilled) workers. In light of currently unsustainable public budgets across most of the OECD, labour tax cuts may be difficult to implement in the near term. Gradually, however, such cuts could be envisaged to boost employment rates, provided they are financed by broadening tax bases, cutting public expenditures especially where there is room for efficiency gains (*e.g.* in education and health in many OECD countries, see Chapter 1 in OECD, 2011) and/or by shifting some of the tax burden to other less distortive taxes (*e.g.* property taxes). Against this background, a simple scenario is considered here under which OECD countries are assumed to start cutting their labour tax wedges from 2013 onwards towards the average level observed in those six OECD countries with the highest employment rate in 2007, namely Denmark, Iceland, the Netherlands, Norway, Sweden, and Switzerland. Indeed there is currently wide variation in tax wedges across OECD countries (Figure 10).

Figure 10. Average tax wedge on labour, 2009[1]

Percentage of total labour compensation

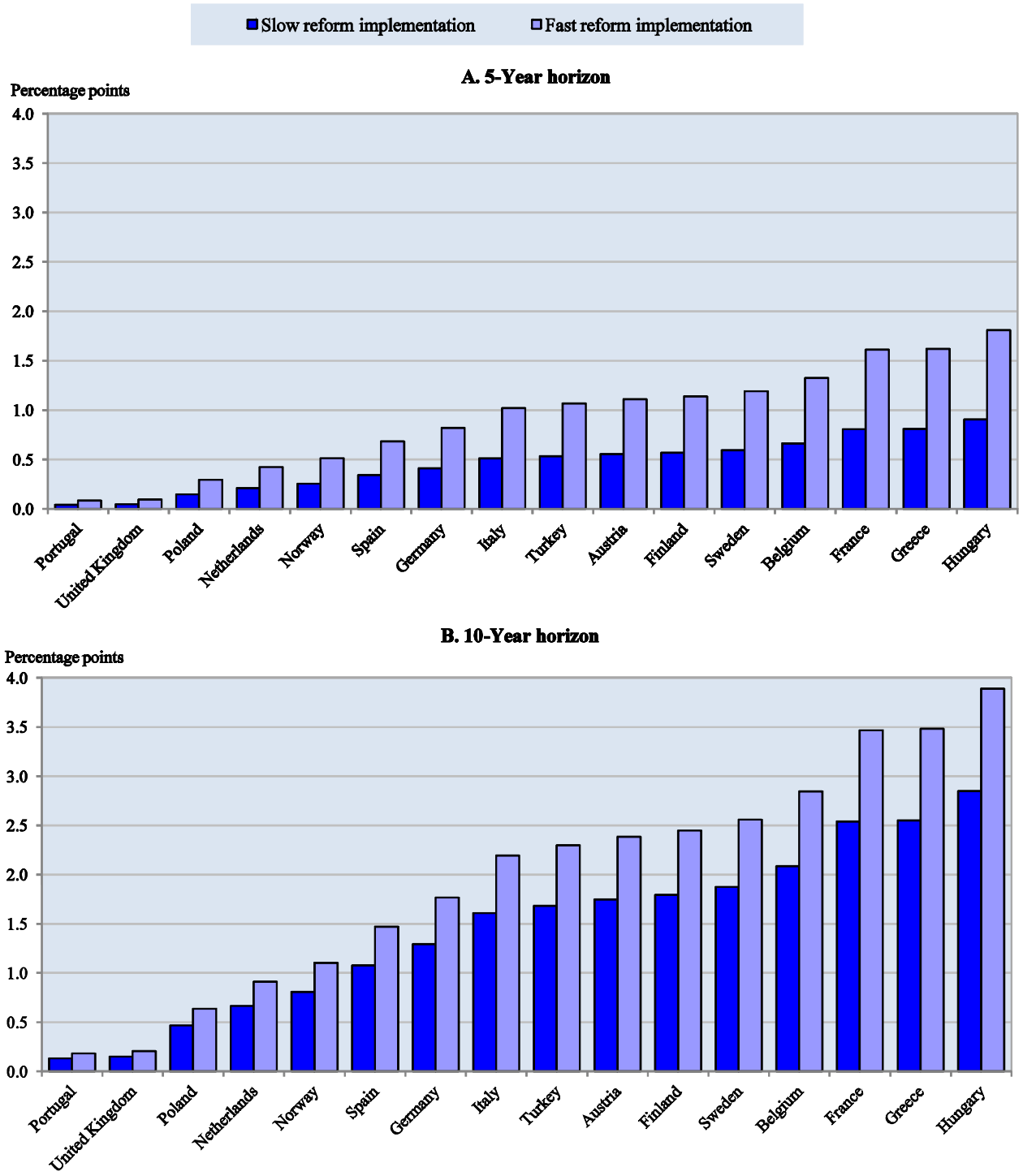


1. At 100% of average worker earnings for one-earner married couple with two children.

Source: OECD, *Taxing wages Database*.

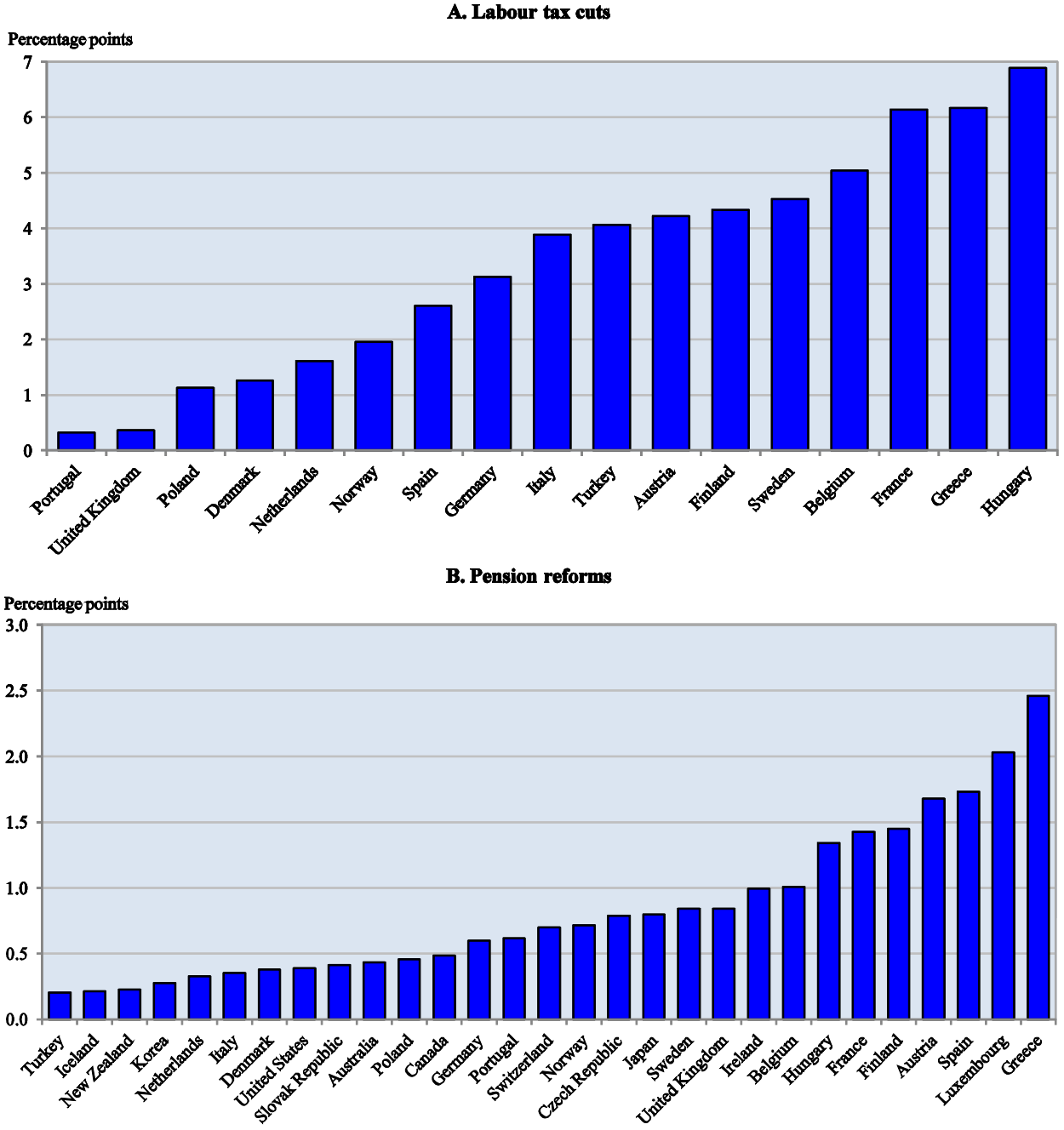
15. Reducing labour tax wedges has the potential to deliver sizeable employment gains in many OECD countries – notably in continental European ones – over the medium term, reflecting their large estimated impact in OECD empirical work (Figure 11). Under a slow reform implementation scenario, employment levels could be raised by over 0.75 and 2 % in several countries after 5 and 10 years, respectively (Panel A). Under fast reform implementation, these gains would reach over 1½ and 3 % over 5 and 10-year horizons, respectively (Panel B). Again, the employment gains from labour tax wedge cuts would be significantly larger in the longer run, reflecting slow adjustment speed (Figure 12, Panel A).

Figure 11. Estimated increase in employment rates from labour tax wedge cuts



Note: Slow reform implementation refers to phasing-in over 10 years, while fast reform implementation refers to phasing-in over 5 years. In both cases, the average labour tax wedge is ultimately reduced to the average level that prevails in the six OECD countries with the highest employment rate. See Annex 1 for details.
Source: OECD calculations based on OECD *Taxing wages Database*.

Figure 12. Estimated steady-state increase in employment rates from labour tax cuts and pension reforms



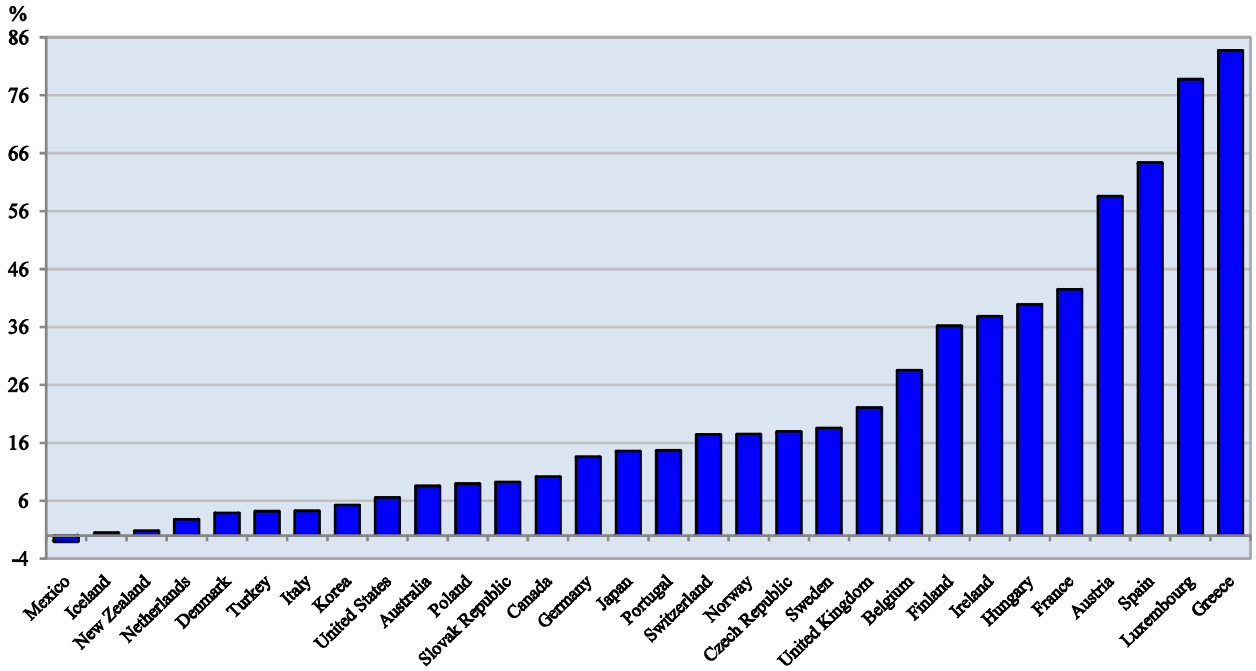
Note: Labour tax cuts refer to a gradual reduction in the average labour tax wedge to the average level prevailing in the six OECD countries with the highest employment rate. Pension reforms refer to a gradual move to actuarial neutrality and an increase in the standard retirement age by two years. See Annex 1 for details.
Source: OECD calculations based on OECD Taxing wages Database and Duval, R. (2003), "The Retirement Effects of Old-Age Pension and Early Retirement Schemes in OECD Countries", *OECD Economics Department Working Papers*, No. 370.

4.3. Reforms of retirement schemes

16. Empirical studies, including OECD work (*e.g.* Duval, 2003), have found two features of retirement schemes to affect the retirement decision and thereby the participation and employment of older workers: *i*) the existence and magnitude of implicit taxes on continued work at older ages embedded in old-age pension systems and other social transfer programmes that have been used as *de facto* early retirement schemes, which arise when the financial cost of continuing to work (in terms of foregone benefits and contributions paid) is not fully offset by higher future benefits; *ii*) minimum and standard retirement ages, which appear to influence retirement behaviour over and above their impact through the implicit tax on continued work, possibly reflecting the impact of social norms or credit constraints. Therefore, labour force participation of older workers could be raised gradually by reducing implicit taxes through a phasing-out of early retirement schemes and a move towards actuarial neutrality of pension systems (*e.g. via* appropriate pension level adjustments for anticipated and deferred retirement), as well as by raising minimum and standard retirement ages. In particular, there remains wide scope for reducing implicit tax rates on continued work in a number of continental European countries (Figure 13).

Figure 13. Average implicit tax on continued work at older ages, 2009[1]

Percentage of average worker earnings



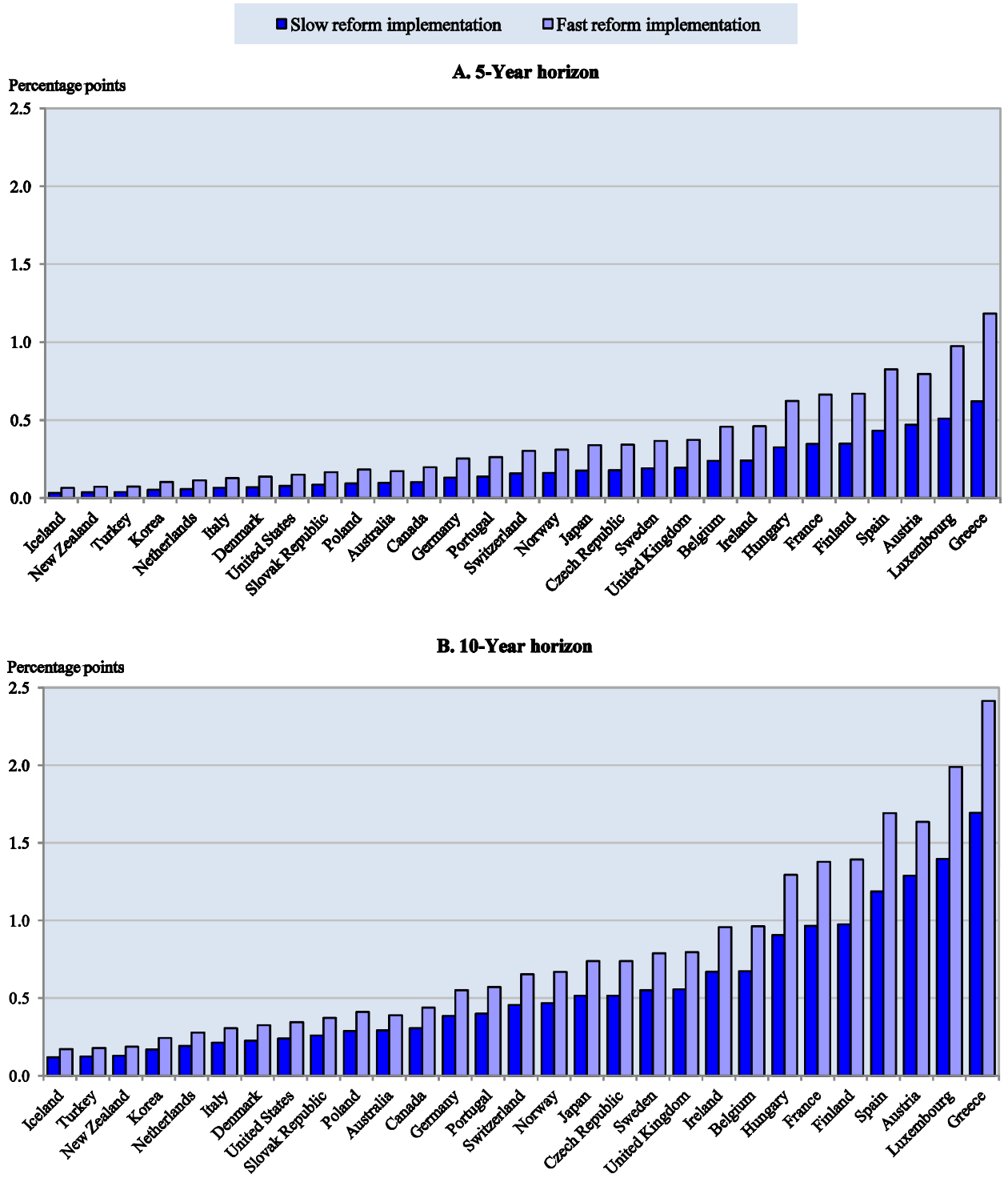
1. Implicit tax on continued work in early retirement route, average for 55 and 60-year-old workers.

Source: OECD calculations based on Duval, R. (2003), "The Retirement Effects of Old-Age Pension and Early Retirement Schemes in OECD Countries", *OECD Economics Department Working Papers*, No. 370.

17. Bringing implicit tax rates on continued work down to zero and raising legal retirement ages by two years could very significantly raise employment rates of older workers, although the overall employment effect of the scenarios considered here would be smaller than the impact of the labour tax cut scenarios discussed above (Figure 14). The bulk of employment gains would come from phasing out early pathways into retirement and moving towards actuarially-neutral pension systems, especially across continental Europe. Under a slow reform implementation scenario, overall employment rates could rise by 0.5 and by over 1 percentage point in several countries after 5 and 10 years, respectively (Panel A). Under

fast reform implementation, these gains would reach over 0.75 and 1.5 % at 5 and 10-year horizons, respectively (Panel B). Steady-state gains would be even larger (Figure 12, Panel B).

Figure 14. Estimated increase in employment rates from reforms of retirement schemes



Note: Under both slow and fast reform implementation, pension systems are assumed to move to actuarial neutrality and the standard retirement age is raised by two years. Slow reform implementation refers to phasing-in of both types of reforms over 5 and 10 years, respectively, while fast reform implementation refers to phasing-in over 1 and 5 years, respectively. See Annex 1 for details.
Source: OECD calculations based on Duval, R. (2003), "The Retirement Effects of Old-Age Pension and Early Retirement Schemes in OECD Countries", *OECD Economics Department Working Papers*, No. 370.

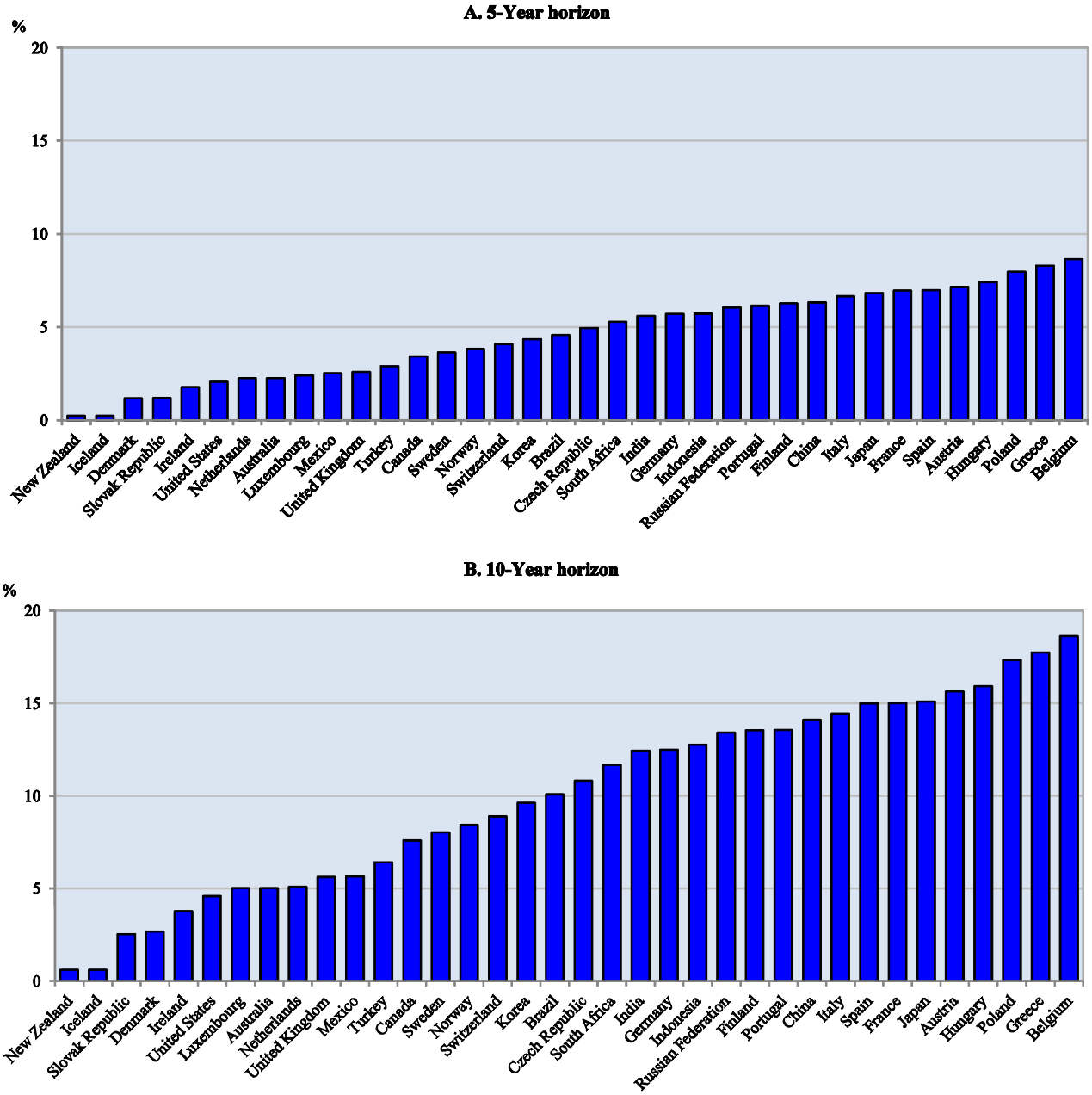
5. Overall effects of reforms and concluding remarks

18. The various reform scenarios presented in this paper can be combined to gauge the GDP gains from a wide agenda of possible reforms in OECD and non-OECD countries. To this end, important simplifying assumptions are made which need to be borne in mind when interpreting the results. In particular, any employment gain (in per cent) from reforms of benefit, tax and retirement systems is simply assumed to translate into a GDP gain of similar magnitude (in per cent), *i.e.* labour productivity is assumed to remain unaffected. While mostly correct in the long run, this assumption may be overly optimistic in the short run, as it implies that the capital stock responds immediately to the increase in marginal productivity associated with higher employment, and also that the marginal workers who fill in the newly-created jobs are not inherently less productive than existing workers (for some evidence that the latter may not hold, see Bourlès and Cette, 2005). By contrast, the GDP gains from product market reform are arguably lower-bound estimates, as they factor in the induced pick-up in MFP growth but not the possible increase in capital accumulation. Another reason why the computation of the overall GDP impact of multiple reforms should be considered as illustrative is that no account is made for possible interactions across reforms, the role of the macroeconomic policy response in "crowding in" the effects of those reforms, or general equilibrium effects more broadly.

19. Overall, an ambitious reform agenda under which OECD countries and the BRIICS would undertake all the reforms discussed in this paper could have large effects on potential output over the next decade, compared with a no-reform baseline scenario (Figure 15). These gains could reach 5 and close to 11% for the average EU country under relatively quick reform implementation at 5 and 10-year horizons, respectively, and the benefits would be even bigger on average for the larger EU countries. The average GDP gain from PMR and EPL reform across the BRIICS might be in the order of 5½ and 12½% at 5 and 10-year horizons, respectively. For the average OECD country, the overall GDP gain from undertaking the full range of reforms considered here may come close to 10 % over the next decade. Therefore, there seems to be ample room for structural reform to offset the permanent GDP losses from the recent crisis, which are typically estimated to be lower than the potential gains from reforms shown here. Several of these reforms could also help consolidate public finances going forward. This holds at least for those that would not only stimulate growth and tax receipts, but also reduce public spending both directly in the short run and indirectly in the medium run through increased employment, such as reforms of unemployment benefit and retirement systems (including social transfer programmes that may be used as *de facto* early retirement pathways). By contrast, in the absence of accompanying measures – such as spending cuts elsewhere or shifts in the tax structure – increased public ALMP expenditures or labour tax cuts would weigh on public finances, although this direct negative effect would be partly offset by indirect gains over the medium run.

Figure 15. Estimated overall GDP per capita gains from broad reforms of product and labour market regulations as well as benefit, tax and retirement systems

Levels, in per cent



Note: The chart shows the estimated cumulative GDP impact from all the reforms described in Table 1 above, under a quick phasing-in scenario – which combines the fast reform implementation scenarios in Table 1. See also Annex 1 for details.
Source: OECD calculations.

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ANNEX 1. FURTHER DETAILS ON THE REFORM SCENARIOS

A1. Effects on multifactor productivity growth of product market reform (PMR) reforms

Framework: Bourlès *et al.* (2010a), column (4), Table 1:

Multifactor productivity (MFP) is assumed to follow an error correction model (ECM) of the form:

$$\Delta \ln MFP_{i,j,t} = a_0 \Delta \ln MFP_{F,j,t} + a_1 gap_{i,j,t-1} + a_2 REG_{i,j,t-1} + a_3 REG_{i,j,t-1} \times gap_{i,j,t-1} + f_i + f_{j,t},$$

where $MFP_{i,j,t}$ is the MFP level of a non-frontier country-sector pair i,j in year t, $MFP_{F,j,t}$ is the MFP level at the technological frontier F for sector i in year t, $REG_{i,j,t}$ is the OECD's regulatory impact indicator – which measures regulatory burdens stemming from anti-competitive product market regulations in upstream sectors – in each country/sector/year triad,[6] and $gap_{i,j,t}$ is the country-sector distance from the sector frontier in year t, defined as:

$$gap_{ij,t} = \ln\left(\frac{MFP_{Fj,t}}{MFP_{ij,t}}\right).$$

f_i and $f_{j,t}$ denote respectively sector and country-year fixed effects. Estimates (over the 1995-2007 period for 24 OECD countries) indicate that the leader country's MFP growth in a particular sector has a positive impact on MFP growth in that same sector in less productive countries (technological pass-through effect), with a_0 = 0.122, while the gap variable also has a significant and positive effect on MFP growth (technology catch-up effect), with a_1 = 0.032. Importantly, the indicator of regulatory burden has a negative influence on MFP growth (a_2 = -0.124). This effect is found to be even more negative for country/sector/period triads close to the technological frontier, as suggested by the positive coefficient on the interaction term (a_3 = 0.132).

Scenario simulated: The level of anti-competitive regulation in non-manufacturing upstream sectors converges to the average of the three lowest values observed in 2007 across countries. Anti-competitive regulations in non-manufacturing sectors are assumed to be reduced gradually over either 5 years (2017-15) or 10 years (2011-20). This yields positive effects on MFP growth starting from the second year,

6. This indicator is calculated for each country by using total input-output coefficients as follows:

$$REG_{j,t} = \sum_k NMR_{k,t} \times w_{k,j},$$

where $NMR_{k,t}$ is the OECD indicator of anti-competitive regulation in non-manufacturing sector k in year t and the weight $w_{k,j}$ (comprised between 0 and 1) is the total input requirement of sector j for intermediate inputs from non-manufacturing sector k.

as a result of a one-year lag between MFP growth and anti-competitive regulation in the ECM specification. It is further assumed that the distance to the technological frontier for each country-sector and the level of anti-competitive regulations in upstream sectors are the same in the year of the reform (here 2010) as those observed in 2007 (which is the final year of the dataset used in the empirical analysis). Estimates for the BRIICS are derived from a simple extrapolation of the cross-country relationship between the level of the PMR indicator and the productivity gains simulated for each OECD country.

A2. Effects on labour productivity growth of employment protection legislation (EPL) reforms

Framework: Bassanini *et al.* (2009), equation (2) in Table 6 and equation (5) p. 384:

The dynamics of labour productivity is given by the following equation (an error-correction framework in which the long-term gap between labour productivity in the country considered and the leading country depends on the stringency of EPL for regular workers and other constant unobserved factors, see Bassanini *et al.* 2009 for details):

$$\log \Pi_t = (1-\phi)\log \Pi_{t-1} + \beta\lambda EPLR_{t-1} + \phi \log \Pi^* + c,$$

where Π is the aggregate labour productivity level in the country considered, *EPLR* is the OECD EPL index for regular employment, Π^* is the aggregate labour productivity level in the productivity leader, *ø* = 0.02 and β = -0.174 as estimated by Bassanini *et al.* (2009), and

$$\lambda = \sum_j \theta_{bj} \times (Layoff_j^{US} - 4)$$

is a measure of the extent to which EPL puts effective constraints on labour turnover across the economy, with θ_{bj} the value added share of the "EPL-binding" industry *j* and $Layoff_j^{US}$ the average layoff rate of industry *j* in the United States over 2001-03. An industry is said to be "EPL-binding" if its layoff rate (defined as the ratio between annual recorded layoffs in a particular year and wage and salary employment of that year) was greater than 4% in the United States over 2001-03.[7, 8] Data on value added at the industry level comes from the OECD STAN database (Structural Analysis Database) for OECD countries (except for Mexico and Turkey) and from UNIDO for other G20 countries.[9]

7. Such a criterion is needed because the analysis carried out in Bassanini *et al.* (2009) is a differences-in-differences approach that only identifies the impact of EPL on the productivity growth *gap* between binding and non-binding industries, while the effect on non-binding industries is not identified. The assumption made here that EPL has no impact on productivity growth in non-binding industries – as well as the omission of any possible impact of EPL on reallocation of resources from lower to higher-productivity growth sectors – means that the simulated effects of EPL reform on productivity growth presented below should be seen as lower-bound estimates.

8. EPL-binding industries identified using this criterion are Textiles, wearing apparels and leather; Wood and wood products; Paper, printing and publishing; Coke, refined petroleum, nuclear fuel; Rubber and plastics; Non-metallic mineral products; Basic metals and fabricated metals; Machinery n.e.c.; Electrical and optical equipment; Transport equipment; Manufacturing, n.e.c. and recycling; Construction; Transport and storage; Post and telecommunication.

9. Data for Construction, Transport and storage, and Post and telecommunications are missing in the UNIDO database. For the purpose of the simulations the value added shares in GDP of these sectors are assumed to be the same as the average shares observed across the five lowest-income OECD countries (Czech Republic, Hungary, Slovak Republic, Poland, and Portugal). Likewise data for a few sectors in Ireland and for Electrical and optical equipment in China are missing and for the purpose of the simulations the shares

Scenario simulated: The degree of stringency of EPL for regular employment converges to the average of the three lowest stances observed across the OECD, namely the United States, the United Kingdom, and Switzerland.

EPL is assumed to be eased gradually over either 5 years (2011-15) or 10 years (2011-20). Results are presented both for aggregate labour productivity growth in the business sector (excluding agriculture) and for aggregate labour productivity in the whole economy.[10] Note that of EPL reforms, the results featured in the table correspond to the non-cumulative annual gain in labour productivity growth (similar to the PMR reform results), while the gains from other labour market reforms (unemployment benefits, ALMPs, tax wedges and pension systems) are expressed in cumulative form (*i.e.* as a gap between the *level* of employment or unemployment relative to baseline).

A3. Effects on unemployment of unemployment benefit and Active Labour Market Policies (ALMP) spending reforms

Framework: Bassanini and Duval (2006), equation (2),Table 1.8 (see also Bassanini and Duval, 2009):

$$\Delta UNPR = -0.11 \times \Delta ARR_C - 0.02 \times \Delta ALMPU_C,$$

where $UNPR$ is the unemployment rate (in %), ARR_C is the average gross unemployment benefit replacement rate (in %) centered over its mean value in 20 OECD countries, and $ALMPU_C$ is the average ratio over 1997-2007 of active labour market policies spending per unemployed over GDP per capita (in %), centered over its mean value in 20 OECD countries.[11]

The dynamics of unemployment over time is given by $\Delta UNPR = 0.1 \times (UNPR^* - UNPR)$, based on estimates from Bassanini and Duval (2006),Table 1.12.

The twelve OECD countries with the highest employment rates – as observed in 2007, which are also those OECD countries which the OECD estimates have low structural unemployment in 2010, see OECD (2009) – can be split in two groups: the "low ARR low ALMP" group, including the English-speaking countries (Australia, Canada, New Zealand, United kingdom, United States) and Japan; the "high ARR high ALMP" group, including the Northern European countries (Denmark, Netherlands, Norway, Sweden), Austria and Switzerland. The simulations below are based on the observation that all other OECD countries could cut unemployment by: i) cutting the replacement rate and/or the duration of unemployment benefits to the average level in the "low ARR low ALMP" group (scenario A3.1); ii) or by raising ALMP spending to the average level in the "high ARR high ALMP" group (scenario A3.2). The simulations quantify the potential employment gains from both choices.

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in GDP of these sectors are assumed to be the same as the averages observed respectively in other OECD countries and in other non-OECD countries.

10. In those non-OECD countries for which value added data for the business sector are not available in the UNIDO database the business sector (excluding Agriculture) is assumed to account for about two thirds of total GDP, which is the average share observed across Brazil and India.

11. *ARR* is more precisely the average of the gross unemployment benefit replacement rates for two earnings levels, three family situations and three durations of unemployment. It is therefore a summary measure of the level and duration of unemployment benefits.

A3.1 Unemployment benefit reform

Scenario simulated: cut in average replacement rate to the average level prevailing in the "low ARR low ALMP spending" group of OECD countries (Australia, Canada, Japan, New-Zealand, United Kingdom, and United States).

The reform is implemented either over 5 years (2011-15) or over 10 years (2011-20).

A3.2 ALMP spending reform

Scenario simulated: increase in the ratio of ALMP spending per unemployed over GDP per capita to the average level prevailing in the "high ARR high ALMP spending" group of OECD countries (Denmark, Austria, Netherlands, Norway, Sweden, and Switzerland).

The reform is implemented either in 2011 or over five years (2011-15).

A4. Effects on employment of labour tax cut and pension reforms

Framework: Bassanini and Duval (2006), Tables 2.1, 2.2, and 2.3:

$$\Delta EMPR^*_{1524} = -0.34 \times \Delta TW,$$

$$\Delta EMPR^*_{2554,M} = -0.3 \times \Delta TW,$$

$$\Delta EMPR^*_{2554,F} = -0.5 \times \Delta TW,$$

$$\Delta EMPR^*_{5564} = -0.33 \times \Delta TW - 0.15 \times \Delta IMPLICIT + 0.65 \times \Delta SRET,$$

$$\Delta EMPR^* = \sum_{j=1}^{4} \frac{POP_j}{POP_{1564}} \Delta EMPR^*_j,$$

where $EMPR_{i,S}$ is the employment rate of agents from age group *j* and of sex *S* (in %), *SRET* is the standard retirement age (in years), and *POP* is the population.

TW is the labour tax wedge (in %), *i.e.* the wedge between the labour cost to the employer and the corresponding net take-home pay of the employee for a single-earner couple with two children earning 100% of average worker earnings. The tax wedge expresses the sum of personal income tax and all social security contributions as a percentage of total labour cost.

IMPLICIT is the implicit tax rate on continued work (in %, as defined in Duval, 2003; 2006), calculated here as the weighted average of: *i*) implicit tax rates on continued work between age 55 and 60 in early retirement pathways (50%); *ii*) implicit tax rates on continued work between age 60 and 65 in both early retirement pathways (25%) and old age pension schemes (25%). This summary variable can be interpreted as a summary measure of the non-actuarial neutrality and pension systems and other social transfer programmes that can be used as *de facto* retirement devices, and it is therefore a summary measure of the retirement incentives facing the age group 55-64.

The dynamics of the employment rate over time is given by $\Delta EMPR = 0.1 \times (EMPR^* - EMPR)$, except in the case of a pension reform where the rate of employment is assumed to fully adjust to its long-run level in ten years.

A4.1 Labour Tax cut

Scenario simulated: cut in the labour tax wedge to the average level observed in those six countries with the highest employment rate, namely Denmark, Iceland, the Netherlands, Norway, Sweden, and Switzerland.

The reform is implemented either over 5 years (2013-17) or over 10 years (2013-22).

A4.2 Pension Reform

Scenario simulated: move to actuarial neutrality (the implicit tax rate is set to zero) and increase the standard retirement age.

Actuarial neutrality is implemented in 2011 and the standard retirement age increases progressively over 5 years (2011-15), or alternatively actuarial neutrality is phased-in over 2011-15 (5 years) and the standard retirement age increases over 10 years (2011-20).

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