One Money, One Cycle?: Making Monetary Union a Smoother Ride

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Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

16-Sep-2004
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English - Or. English

ECONOMICS DEPARTMENT

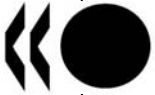**ONE MONEY, ONE CYCLE? MAKING MONETARY UNION A SMOOTHER RIDE**

ECONOMICS DEPARTMENT WORKING PAPER NO. 401

by

Peter Hoeller, Claude Giorno and Christine de la Maisonneuve

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JT00169240

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ABSTRACT

One money, one cycle? Making monetary union a smoother ride

In recent years the euro area has shown less resilience to the negative and largely OECD-wide common shocks than the English-speaking countries, but most of the smaller euro area countries have fared better than the large ones. This paper reviews policy issues that are important in fostering a speedy adjustment to shocks. We argue that the small countries are well placed to adjust swiftly to asymmetric shocks, because they are well integrated with the rest of the area. An activist fiscal policy is not needed and also not powerful enough to smooth the cycle. However, asset bubbles are a cause of concern as their limited weight means that the common monetary policy is more likely to be out of line with their cyclical position. Large countries are less well placed to cope with shocks and sluggish adjustment can be expected. Reforms should focus on raising trade linkages via the completion of the single market, on improving wage and price flexibility and on making their housing markets more responsive to changes in monetary policy. In principle, a more activist fiscal policy could help in the large countries, but the institutional framework has so far not ensured an anti-cyclical stance over the cycle.

JEL codes: E3, E6, H6, H2

Keywords: economic and monetary union, business cycles, fiscal policy, taxation

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RÉSUMÉ

Même monnaie, même cycle ? Rendre plus souple le fonctionnement de l'union monétaire

Au cours des dernières années, la zone euro a fait preuve d'une moindre résistance que les pays anglo-saxons aux chocs négatifs qui ont affecté dans une large mesure l'OCDE dans son ensemble; mais la plupart des plus petits pays de la zone ont mieux tirer leur épingle du jeux que les grands. Cet article passe en revue les questions de politique économique qui sont importantes afin de favoriser un ajustement rapide aux chocs. Nous défendons l'idée que les petits pays sont mieux armés pour s'ajuster promptement à des chocs asymétriques du fait de leur bonne intégration avec le reste de la zone. Une politique budgétaire activiste n'est pas nécessaire ni suffisamment puissante pour amortir le cycle. Néanmoins, l'apparition de bulles spéculatives est une source de préoccupation dans leur cas en raison de leur poids limité, lequel implique que la politique monétaire commune est susceptible d'être plus fréquemment incohérente avec leur position cyclique. Les grands pays sont moins bien armés pour faire face aux chocs, ce qui laisse prévoir un ajustement lent de ces économies. Des réformes devraient viser à accroître leur intégration aux échanges via l'achèvement du marché unique, à améliorer la flexibilité des salaires et des prix et à rendre les marchés du logement plus réactifs aux changements de politique monétaire. En principe, une politique budgétaire plus activiste pourrait aider les grands pays à amortir les cycles, mais le cadre institutionnel n'a jusqu'à présent pas permis d'assurer une orientation anticyclique en fonction de la conjoncture.

Classification JEL : E3, E6, H6, H2

Mots clés : union économique et monétaire, cycles économiques, politique budgétaire, fiscalité

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One money, one cycle?

1.   Monetary union fosters integration by raising price transparency and reducing transactions costs. However, membership in Economic and Monetary Union (EMU) also implies the loss of the sovereign interest rate and exchange rate instruments. This is the main potential cost of joining a monetary union since it becomes more difficult to adjust swiftly to shocks. While price and output adjustment is necessary to absorb shocks, even relatively small inflation differentials that perpetuate over time and become entrenched in expectations may eventually lead to painful adjustment. Moreover, sluggish growth for some time could reduce potential output growth due to low investment, loss of skills of the unemployed and withdrawal from the labour market. How big such costs are depends on the frequency and nature of the shocks that hit individual countries. The cost is highest if situations arise where substantially disparate monetary conditions would be called for in different countries due to economic disturbances that have uneven impacts across the area (asymmetric demand shocks). Moreover, the commitments under the Stability and Growth Pact may limit the leeway for fiscal action to smooth the cycle, while labour, product and financial market policies may hinder a speedy adjustment. In the case of demand shocks that affect all countries more or less equally (symmetric shocks), the loss of monetary autonomy implied by EMU is in principle of less concern, because the area-wide policy would tend to deliver monetary conditions that are appropriate for each country. However, this may not always be the case if the transmission mechanism operates significantly differently in the euro area, because then a uniform policy response would not yield uniform effects. Similarly, differences in trade openness and composition will lead to differences in the impact of changes across countries. Finally, in the case of supply shocks – whether country-specific or area-wide – lasting changes in relative prices and production patterns are needed. While macroeconomic policies can buffer the income effects of such shocks and buy time for the needed adjustment to take place, they cannot by themselves assure the necessary structural changes.

2.   In recent years, the euro area has shown less resilience to the negative and largely OECD-wide common shocks than Australia, Denmark, Canada, New Zealand, the United Kingdom and the United States. In these countries economic activity has remained closer to trend than in the euro area, with the average absolute output gap remaining small (Figure 1).[2] Moreover, during this downswing the largest output gaps observed were typically smaller than in the euro area countries. Despite these differences in output gaps, inflation in these countries remained close to target, allowing a strong reaction of monetary policy to the international downturn. In the euro area, on the other hand, inflation has remained relatively high, limiting the European Central Bank's (ECB) room to cut interest rates more aggressively. Within the euro area, growth performance of all small countries was above average, but protracted weakness is

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2.   This indicator shows little difference between the euro area and the United States. However, the epicentre of most shocks was in the United States and it has recovered swiftly from recession.

evident in Germany and Italy, with France faring better. In so far as policies have undermined the resilience to cyclical swings in the euro area, they are probably also at the root of slow trend growth (OECD, 2003a). The divergent performance of the small and large countries appears paradoxical as it is at odds with optimum currency area theory which suggests that in monetary union core countries should suffer less from cyclical divergence and benefit more from the common currency than the periphery. Deeper integration between the core countries should reduce their exposure to asymmetric shocks while a high propensity to trade should lead to stronger gains from lower transactions costs due to the common currency. This paper highlights the adjustment mechanisms to shocks, focusing on the differences between small and big euro area countries and areas of structural reforms that could reduce cyclical divergence across the euro area countries.

Figure 1. Magnitude of recent output gaps

As a percentage of potential GDP
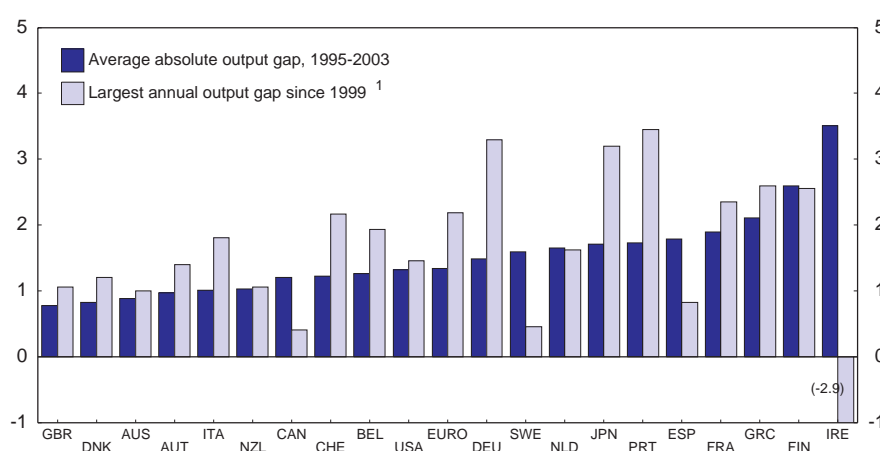
1. A positive output gap denotes output below potential output.

Source: OECD.

3.   Specifically, the paper first provides an overview of the degree of cyclical divergence, highlighting factors that limit or increase cyclical divergence. It then reviews policy issues that are important in fostering a speedy adjustment to shocks: *i)* the intensity of trade between countries and wage and price flexibility, which together provide an equilibrating mechanism via competitiveness effects; *ii)* the transmission of monetary policy via the housing market, which can be a source of resilience as well as a factor leading to prolonged divergence; and *iii)* whether fiscal policy should be used more actively to smooth the cycle.

4.   The major policy-related findings are:

- Following a negative demand shock, lower inflation leads to competitiveness gains in small countries that are sufficiently strong to close the ensuing output gap already after three years. Market-based adjustment, relying on endogenous equilibrating forces, would be much less powerful in big countries. Deeper integration, by completing the single market would boost trade linkages and especially help the big countries by raising the effectiveness of the competitiveness channel.

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- The strength of competitiveness effects would also be enhanced, if wage and price flexibility would be raised via structural reforms. However, simulations suggest that flexibility would need to rise way beyond what is currently observed to reduce cyclical divergence quickly also in large countries. Moreover, nominal wage rigidities could become more prevalent in a low-inflation environment, which could prolong the adjustment process further.

- Housing markets are important in the transmission of monetary policy and a high interest rate sensitivity is beneficial as monetary policy is more powerful in damping cyclical fluctuations overall in the euro area. However, the characteristics of housing and mortgage markets still differ widely in the euro area, thus leading to an asymmetric behaviour of individual countries. Tax incentives to stimulate house ownership are an additional factor that can exacerbate volatility in house prices and cyclical divergence. These are more prevalent in the smaller euro area countries. Moreover, in the absence of monetary policy and with fiscal policy constrained, it is important to have a system of prudential supervision in place that is robust in the face of asset bubbles. In this context, the pro-cyclicality of bank provisioning is of concern as it could lead to a credit crunch and reinforce a downturn.

- Fiscal policy can help smooth the cycle. The automatic stabilisers contribute to reducing the amplitude of the cycle to some extent and more so in big than small economies, for which import leakage is stronger. As noted above, market-based adjustment is swift in the small countries and a more activist policy is probably not needed. Given their high degree of openness strong swings in the fiscal balance would be needed to reduce the amplitude of the cycle to a considerable extent. Fiscal policy is more powerful in the large countries, the fiscal impact being bigger and more persistent. However, their track record so far in managing fiscal policy in a manner that would reduce the amplitude of the cycle is not encouraging.

Evidence on cyclical divergence across euro area countries

5.   Inflation and output developments during the 1990s were shaped by the need to achieve nominal convergence to satisfy the Maastricht criteria. Inflation dispersion across the euro area has diminished considerably in the run-up to EMU, as one of the Maastricht criteria was that countries' inflation rates should not exceed by more then 1½ percentage points the average of the three lowest-inflation countries to qualify for entry into the single currency area. Inflation dispersion picked up after 1999, but diminished again during 2003. Inflation dispersion has not been large as compared with regional inflation dispersion in the United States and Canada (Figure 2).[3] It is noteworthy, that inflation divergence since 1997 took place mainly between the small and large countries, rather than between the core and periphery countries.[4] At the same time, growth differences rose between the early and mid-1990s, but have subsided since then. Between 1999 and 2003, the faster growing smaller economies expanded at an annual rate of 3 per cent as compared with 1½ per cent for the three major economies, the growth gap between the core and periphery groupings being somewhat less marked. However, in recent years the growth difference between the fast growing and more sluggish economies has narrowed considerably, with growth coming down quickly, especially in Finland, Ireland, the Netherlands and Portugal. Growth differences across countries do also partly reflect differences in potential output growth. The output gap differences mimic inflation differences pretty well, with a trend decline until 1997 and an upward drift thereafter.

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3.   Inflation dispersion is measured by the standard deviation of inflation rates, the harmonised index of consumer prices in the case of the 12 euro area countries. Consumer price inflation for 22 Bureau of Labour Statistics regions is used for the United States and 10 Canadian provinces are covered.

4.   The core group includes Germany, France, Austria, Belgium, Luxembourg and the Netherlands and the three major euro area countries form the large country group.

Figure 2. Inflation and output dispersion
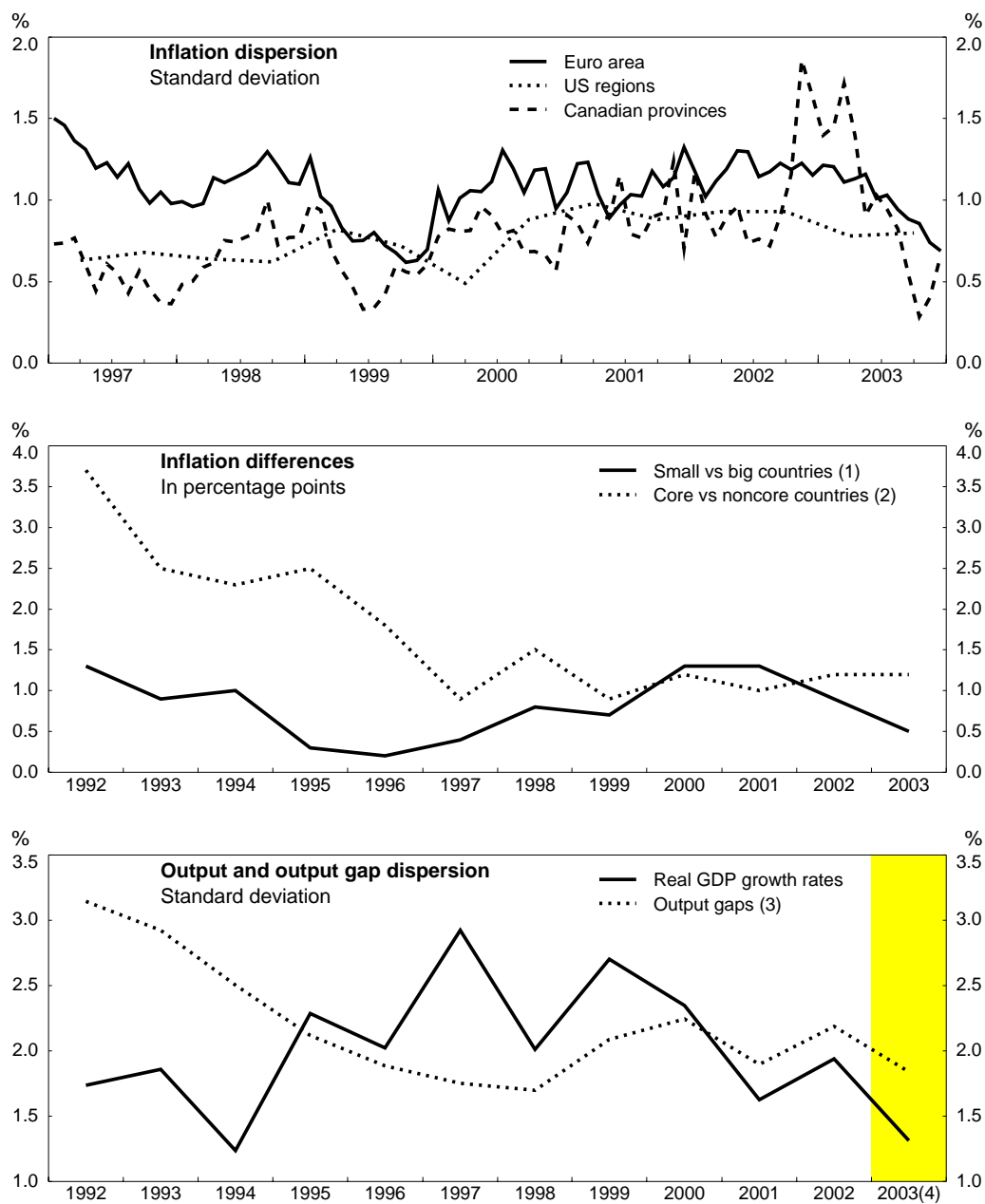
1. The three major euro area countries form the big-country group.
2. The core group includes Germany, France, Austria, Belgium, Luxembourg and the Netherlands.
3. Excluding Luxembourg.
4. OECD projections.
Source: US Bureau of Labour Statistics, CANSIM-Statistics Canada and OECD.

6. Since the start of monetary union, inflation and demand developments were partly shaped by the different economic conditions that the countries were facing at the start of EMU.[5] Due to inflation differentials, for instance, real interest rates have differed a lot across countries (Figure 3). During 2001-03, for instance, short-term interest rates were below the equilibrium rate consistent with a Taylor rule in the majority of euro area countries, and substantially so in Ireland, Greece, the Netherlands, Spain, Portugal and Italy, but exceeded it in Germany and Belgium (Figure 4). This Taylor rule calculation assumes the same neutral rate across euro area countries. If the neutral rate were higher in the fast growing countries, and lower in the more sluggish ones, the dispersion in the required rate would be even more pronounced. Most smaller economies experienced a positive interest rate shock, often compounded by a steep rise in house prices, while the entry exchange rate may also have boosted demand in some countries, and restrained it in others.[6] Research by the European Commission (2002 and 2003) and European Central Bank (2003) suggests that about half of the observed inflation dispersion in recent years in the euro area is due to differences in cyclical positions and the Balassa-Samuelson effect, with the remainder due to differences in the pass-through of the string of adverse price shocks.

7. Equilibrating forces coming through external demand have helped to some extent, with fast growing countries loosing competitiveness against the other euro area countries (the indicator in Figure 3 is based on developments in unit labour cost of a euro area country against the average of the other euro area countries). While most fast growing countries have been prone to stronger cost increases, thus damping export demand, this was not true for Ireland and Finland, because of sizeable productivity gains. On the other hand, the competitiveness gains in the slow-growing bigger countries were too small to make a difference and Italy did not gain competitiveness at all. Fiscal policy has not helped much in reducing divergence either. Little fiscal restraint is visible in the faster-growing countries and the fiscal stance even eased sharply in Ireland. On the other hand, the fiscal stance was mildly expansionary in Germany, France and Italy, but the overall growth effects have probably been minor.

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5. Deroose *et al.* (2004) model such differences for Germany, Ireland and Portugal.

6. The common currency itself has shielded countries from exchange rate crises and the associated spikes in interest rates.

Figure 3. Real interest rates, competitiveness and the fiscal stance
1999-2003
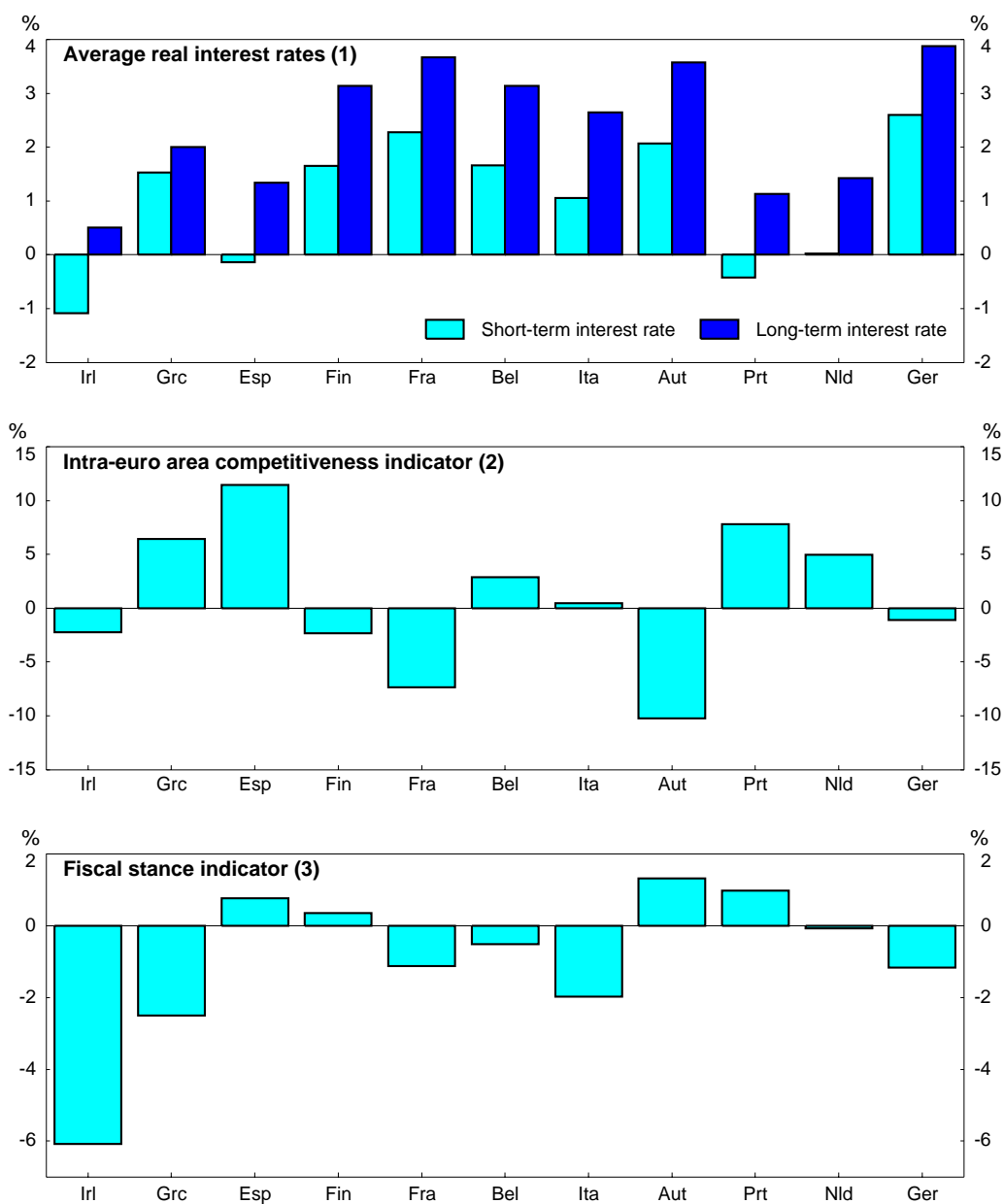
1. Deflated by the GDP price index.
2. Cumulated deviation of unit labour cost in manufacturing from the GDP weighted average
   of the other euro area countries.
3. Cumulated change in the cyclically-adjusted primary balance.
Source: OECD, Analytical database.

Figure 4. The Taylor rule for individual euro area countries[1]
Per cent, 2002
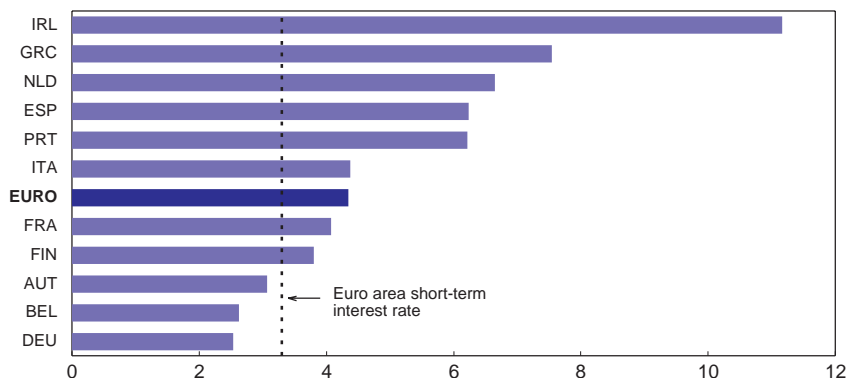
1. The Taylor rule computes the amount whereby interest rates should be raised above (reduced below) their equilibrium level if either inflation rises above (falls below) its target or the output gap turns positive (negative) in order to maintain a neutral policy stance. The weights attached to inflation and the gap are 1.5 and 0.5, respectively. The assumed inflation target is 1.5 per cent and the assumed equilibrium interest rate is 3.5 per cent.

Source: OECD Secretariat.

Factors limiting or increasing cyclical divergence

8.   Short-run (benign) price and output adjustment is necessary to absorb shocks. Inflation differentials should be allowed to rectify misalignments in real exchange rates, and the faster they unwind, the lower will be the sacrifice ratio, *i.e.* the amount of cyclical slack necessary to restore equilibrium in product and labour markets. Although the degree of structural flexibility is likely to be influenced by deeply-rooted social norms and institutional factors, it is also likely to be closely linked to structural policy settings. Drew *et al.* (2004) have highlighted various channels through which alternative structural policy settings may affect macroeconomic adjustment around a given long-run growth path for stylised OECD economies. Hoeller *et al.* (2002) provide a simple analytical framework to better understand the factors that hinder or help smooth adjustment in monetary union or that are likely to become more prominent with further integration in the European Union:[7]

- Cross-country differences in demand pressures will lead to differences in inflation and labour cost developments, with real interest rates and competitiveness working in opposite directions. In this context it is critical whether real interest rate effects are strong relative to competitiveness effects. A relatively strong competitiveness effect implies rapid adjustment, while a relatively strong real interest rate effect implies a drawn-out adjustment. In a sluggish economy with lower inflation, for instance, rapid gains in competitiveness will boost foreign demand (crowding-in effect), while a strong effect of the higher real interest rate will hold back domestic demand (crowding-out effect).

- Deep integration helps, as demand shocks are partly transmitted to other countries, via high imports. At the same time, the effect of changes in competitiveness is bigger with a higher share of exports and imports.

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7.   It follows closely a two country-model exposition by van Aarle and Garretsen (2000). Also Deroose *et al.* (2004) use a similar framework to simulate discretionary budgetary policy, greater labour and product market flexibility and stronger trade integration.

- Wealth effects could exacerbate cyclical divergence as housing cycles will respond to interest rate differences. At the same time, the greater ability of households to smooth consumption by changing asset positions implies that private consumption should hold up better in a downturn in countries where households have better access to credit. Despite reforms, the mortgage market still differs significantly across countries. In the United States, the United Kingdom and Australia, for instance, the ease and low cost at which housing equity can be withdrawn and mortgage loans refinanced at a lower interest rate has certainly played a role in the resilience of these economies to the negative shocks in recent years.

- Wage indexation and inflation expectations also shape the adjustment process. When wages are tightly linked to past inflation, this will lead to inflation inertia. Moreover, if inflation reacts strongly to the output gap, this will result in greater inflation and output variability, but adjustment will be faster.

- A fairly flat supply curve implies that supply changes will match changes in demand. Luxembourg is a case in point, with a large pool of cross-border workers and ample opportunities for cross-border shopping. However, Luxembourg is an exception and labour mobility is unlikely to become an important factor in smoothing adjustment in the foreseeable future in the euro area countries. An inelastic supply curve, on the other hand, would imply a rapid build-up of inflationary pressures following a positive demand shock.

9.   In the following, various simulations with the OECD's global Interlink model as well as empirical exercises are used to highlight the differences between large and small euro area countries and to identify policy areas that could make adjustment smoother.

The policy issues

Boosting trade integration would especially help the big countries

10.   As a first step, a reference scenario is presented in which the adjustment process to an asymmetric demand shock is simulated (Figure 5). The level of private consumption was cut on an ex-ante basis by 1 per cent of gross domestic product (GDP) in the first year of the simulation period and then maintained for nine years. This reduces GDP by about ½ per cent and total domestic demand by nearly 1½ per cent initially both in the small country (Ireland) and the big country (France). The initial weakening of demand is reinforced by the effect of higher real interest rates due to lower inflation. However, lower inflation also leads to gains in competitiveness that, over time, become stronger than the effect of the higher real interest rates. For the small, much more open country the endogenous equilibrating forces via competitiveness effects are much stronger and the output gap is closed after three years and inflation reverts to baseline after five years.[8] However, the adjustment process is much longer for the big euro area country, largely because less trade integration implies a much more muted competitiveness effect, despite a much larger change in price competitiveness. The different responses are not due to model differences as shown in Annex A, but it is indeed the difference in the propensity to trade that matters. The simulations suggest that market-based adjustment, *i.e.* in the absence of an activist fiscal policy, would be pretty powerful in a small economy, but much less so in a big one. To the extent that slow adjustment depresses business investment for a prolonged period, potential output as well would be weakened.[9]

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8.   Based on estimated equations that explain growth differential across US states, Arnold and Kool (2002) find that following a sustained 1 per cent shock to growth, the competitiveness effect starts to outweigh the interest rate and wealth channels after two to three years, which is somewhat less rapid than in this simulation.

9.   A sustained decline in business investment by 3 per cent would reduce the level of potential output by ½ per cent after 10 years.
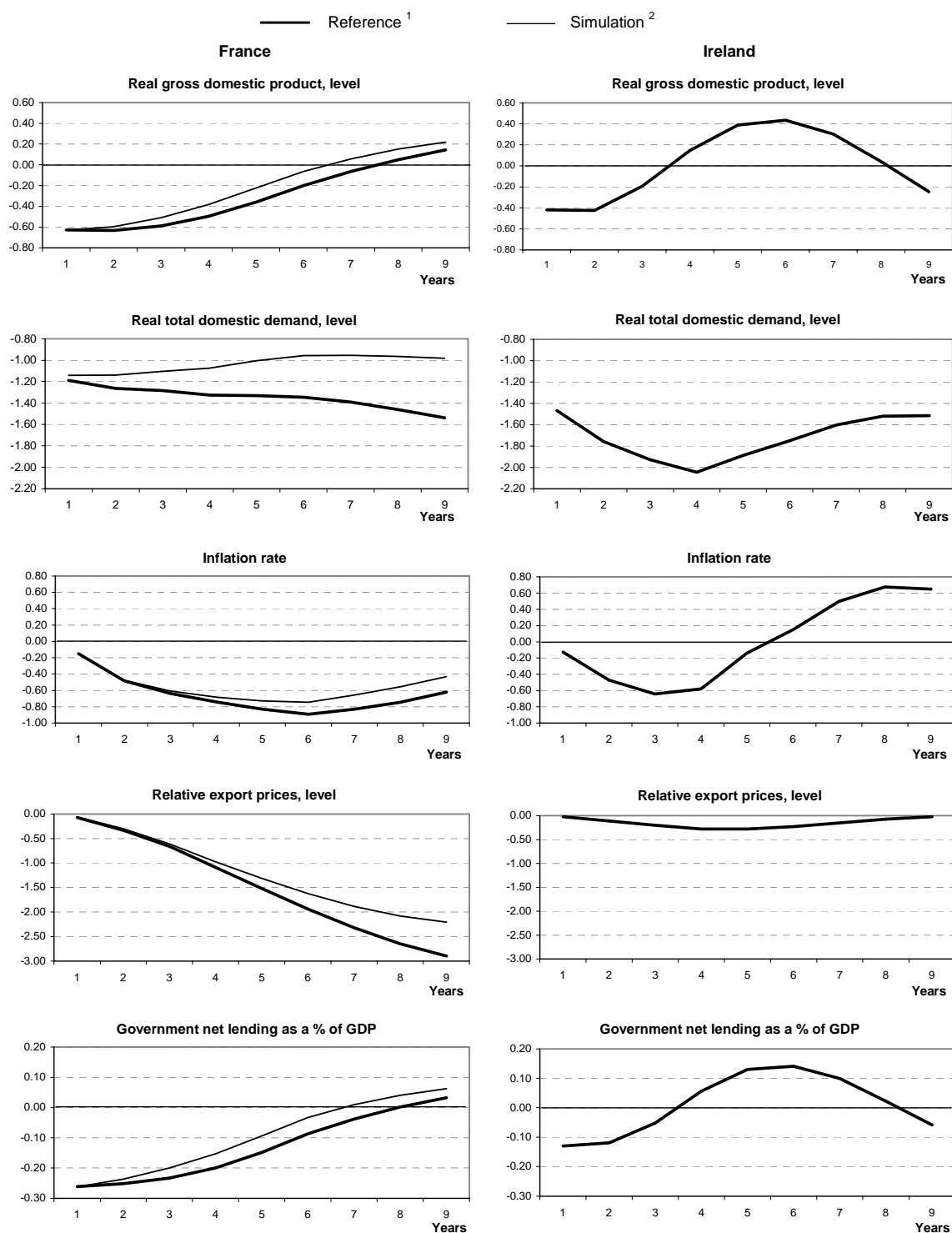
11.	In the large-country case spill-over effects to area-wide inflation may not be trivial and could induce a monetary policy easing. However, a decline in inflation by 1 percentage point as in this simulation would reduce area-wide inflation by only ¼ percentage point, which would be unlikely to trigger a strong monetary policy response.

12.	Going forward, deeper integration in the European Union should boost trade integration. Trade intensity tends to be much larger among regions in a country than across countries. Data on US regional or inter-state trade are sparse. However, data on manufacturing exports for 1997 exist, which have been aggregated to the eight Bureau of Economic Analysis regions in HM Treasury's EMU study (HMT, 2003a). These regions tend to be large even compared with the large euro area countries. As a per cent of gross state product, manufacturing exports alone varied from around 30 per cent in the Mideast region to 70 per cent in the Great Lakes region. As a comparison, total exports of goods and services are close to 30 per cent of GDP for Germany and 25 per cent of GDP for France and Italy. Indirect evidence also suggests that mature federations show strong trade integration. McCallum (1995), for instance, found that Canadian provinces traded around twenty times more among each other as compared with their trade with US states of similar size and after controlling for distance. Later studies have refined McCalllum's approach and estimates of this so-called border effect have shrunk (see for instance Anderson and van Wincoop, 2003), but they are still surprisingly high.

13.	The European Union has, of course, aimed at deep integration via the single market, thus boosting trade linkages within the Union. So far, it has been fairly successful in implementing the single market for goods. Integration in other sectors has, on the other hand, still quite some way to go. The service sectors are not yet well integrated and substantial barriers remain. In this respect, the Commission has recently put forward a proposal for a Directive on Services in the Internal Market that establishes a framework for eliminating the obstacles to the freedom of establishment for service providers and the free movement of services between member states. Concerning financial services, which were further liberalised by the Financial Services Action Plan in recent years, progress towards better integration has been uneven across market segments. And network industries, while having been largely liberalised, still suffer from cross-border market segmentation. While market segmentation within the euro area is likely to be smaller than across the countries outside the Union, deep integration has still not been achieved across a variety of important market segments. A hard push to lower market segmentation would especially benefit the large euro area countries, both by reducing cyclical divergence, as it would raise the effectiveness of the competitiveness channel, and by improving economic performance. Unfortunately, they are not always the countries that push hardest in this respect.

Figure 5. The reference scenario and the importance of trade
Deviations from baseline in per cent or percentage points

——— Reference [1]   ——— Simulation [2]

France

Ireland

Real gross domestic product, level

Real gross domestic product, level

Real total domestic demand, level

Real total domestic demand, level

Inflation rate

Inflation rate

Relative export prices, level

Relative export prices, level

Government net lending as a % of GDP

Government net lending as a % of GDP

1. The reference scenario illustrates the impact of an asymmetric demand shock corresponding to a sustained *ex ante* fall of
   private consumption by 1 per cent of GDP. In this simulation, the nominal exchange rate and interest rates, as well as structural fiscal
   balances, are kept unchanged relative to the baseline, which implies small fluctuations of actual fiscal balances for cyclical reasons.
2. Same shock as in the reference scenario. In the case of the shock in the large country, it is however assumed that nominal interest
   rates fall by ¼ percentage point in line with the reduction of area-wide inflation.
Source: OECD.

The importance of wage and price flexibility

Wage setting

14.	The strength of competitiveness effects does not only depend on the depth of trade integration, but also on the extent to which wages and mark-ups react to demand pressures and changes in supply conditions. Wage setting systems that prevent wages from reflecting differences in qualifications or in labour market conditions across occupations, regions or sectors hinder the market-clearing role of wages and contributes to labour market mismatches. The concentration of problems in certain regions and for some groups of workers suggests that such adverse mechanisms are at work in the euro area. There is evidence that unions reduce wage inequality and that wage compression is strongest in countries where union membership and bargaining coverage are high, and bargaining is centralised and/or co-ordinated. This is typically the case in the euro area countries and contrasts with the decentralised bargaining systems typical in English-speaking countries that show higher skill differentials and a greater responsiveness of relative wages to local conditions. Moreover, implicit mechanisms of wage indexation are still important in the euro area and a significant proportion of total employees is covered by backward indexation to national inflation or include catch-up clauses if inflation exceeds a threshold (Table 1). This leads to wage cost inertia and is one of the reasons, why inflation has remained stubbornly above the ECB's 2 per cent upper limit for so long in a context where the negative output gap kept widening.

Table 1. Wage indexation and minimum wages in the euro area

Wage indexation		Minimum wages	
Systematic	Belgium, Luxembourg	Statutory	Belgium, Spain, France, Portugal, Ireland, Netherlands, Luxembourg, Greece
Conditional indexation (adjustment possible when inflation exceeds a threshold)	Greece, Finland	Set in collective agreements	Germany, Italy, Finland, Austria
Indexation clauses common in collective agreements	Spain, Netherlands		
Other	France (indexation of minimum wage) Portugal (ex-post adjustment to surprise inflation in 2000) Italy (ex-post adjustment to surprise inflation in wage negotiations)		

Source:	European Commission and OECD.

15.	Also wage minima create problems. Eight euro area countries have a legal minimum wage with a wide variation in level as a per cent of the median wage across countries (Figure 6). Minimum wages have significantly increased over the last decade in real terms although relative to the median wage they have declined in most small euro area countries, while rising in one big one a little. While in Greece the minimum wage is set by binding national-level collective agreements, in the other countries (Belgium, France, Ireland, Luxembourg, the Netherlands, Portugal and Spain) the minimum wage is set by law. Few countries have a differentiation for young workers, but some have implemented targeted measures to reduce labour cost for those earning the minimum wage. Countries with no legal minimum wage tend to have bargaining systems that put a wage floor for less productive workers.

Figure 6. Ratio of the minimum wage to full-time median earnings

Per cent, 2000
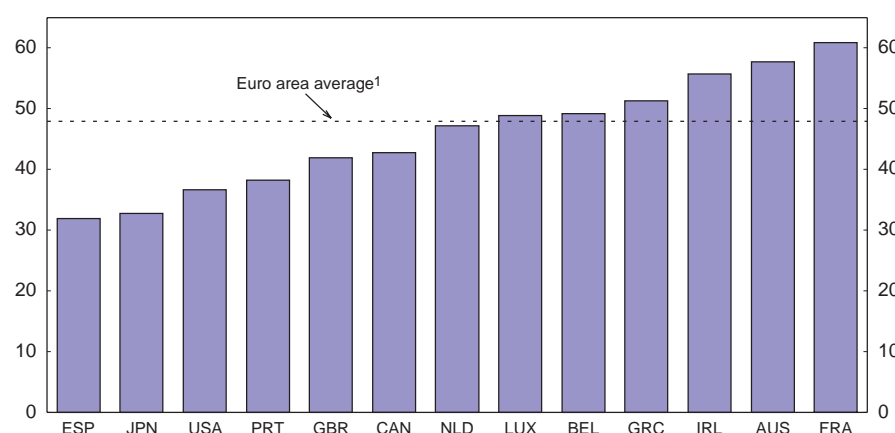
1.   Unweighted average of countries shown.
Source: OECD Secretariat.

16.   To illustrate the benefits of enhanced wage flexibility, a simulation was carried out in which it is assumed that structural reforms strengthen the reaction of wages to demand pressure,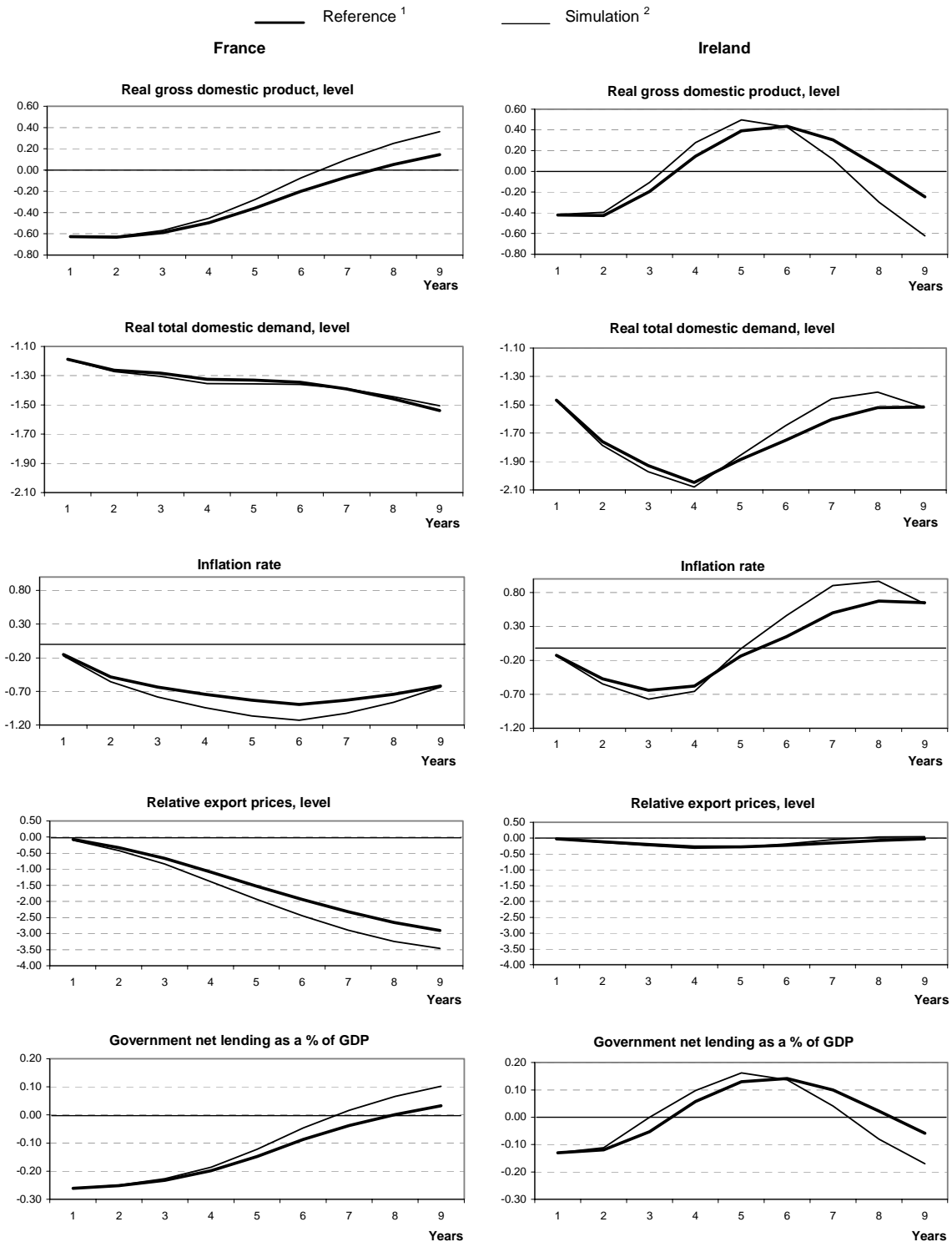 while the importance of nominal rigidities – particularly wage indexation - was reduced, with the short-term impact of inflation on real wages being halved relative to the reference case. Overall, in the simulation reported in Figure 7, the sacrifice ratio (defined as the unemployment rate necessary to lower inflation by 1 percentage point) was halved relative to the reference scenario. As expected, this simulation shows a stronger reaction of inflation to weakening demand and a speedier adjustment of production after the shock. However, the benefits of enhanced wage flexibility appear quite moderate, even though they are more pronounced in the large than in the small country: the competitiveness gains induced by the additional fall in inflation play a stronger role in the bigger economy that is more likely to be a "price maker" rather than a "price taker" on export markets.

17.   In the OECD's Interlink model, the Phillips curve is linear. This implies that a positive and negative output gap have the same, but opposite, effect on inflation. A non-linear relationship between inflation and the output gap would worsen the short-term trade-off between the inflation and the output gap. If a positive output gap has a stronger effect on inflation than a negative output gap of the same size, a high dispersion of excess demand and supply gaps across countries will lead to inflationary pressures even if they all cancelled out at the area level. Several questions arise in this context: do non-linearities arise at the aggregate level; are big differences between demand and supply gaps typical and if so, to what extent would raising the ECB's inflation target help address this problem. Moreover, raising the inflation target might itself lead to inefficiencies, so that assessing the net benefit is important.

Figure 7. Halving the sacrifice ratio

——— Reference [1]   ——— Simulation [2]

France

Real gross domestic product, level

Ireland

Real gross domestic product, level

Real total domestic demand, level

Real total domestic demand, level

Inflation rate

Inflation rate

Relative export prices, level

Relative export prices, level

Government net lending as a % of GDP

Government net lending as a % of GDP

1. Same as Figure 5.
2. Same shock as in the reference scenario. In this case however, it is assumed that structural reforms strengthen the reaction of wages to demand pressures, while the importance of wage indexation is reduced, with the short-term impact of price inflation on real wages being halved relative to the reference case. Overall, these changes are calibrated to halve the sacrifice ratio relative to the baseline.

Source: OECD.

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18.   Empirically, there is some evidence for non-linear Phillips curves, although the quantitative importance is difficult to assess as there are no empirical tests that would allow one to show that the non-linear form is superior to a linear representation (Laxton *et al.*, 1999; Turner, 1995). The non-linearity matters, because inflationary pressures generated by an excess demand gap will not be fully compensated by an equivalent excess supply gap in a country with a negative output gap. To illustrate the importance of the effect of non-linearities a linear and a non-linear Phillips curve were estimated. Following Turner (1995), asymmetric gap effects are investigated by allowing differences between the effects of positive and negative output gaps.[10] Indeed, a non-linear effect can be estimated, the positive gap effect being 0.89 and the negative one 0.40. To illustrate the overall effects of such a non-linearity it is assumed that it carries over to the individual countries. The output gap effects on inflation in the individual countries are summed up to an area-wide aggregate using GDP weights and the difference between the linear and non-linear output gap effects provide a gauge for the overall difference between the two. The non-linearity apparently does not have a strong area-wide effect, pushing inflation up by only about 0.2 percentage points on average between 1980 and 2003. But the reason for this small effect is that this was a period of disinflation, with relatively few positive output gap spells in most countries.

19.   A limiting case would be a considerable flattening of the Phillips curve in countries with very low inflation, with nominal wage rigidities further undermining their performance. The long-standing debate on the empirical relevance of nominal downward rigidities that started with Tobin (1972) has gained momentum again in the context of low inflation in most OECD countries. A literature review by Camba-Mendez *et al.* (2003) suggests that there is evidence for downward rigidities in EU countries, the United States and Canada; that empirical findings differ considerably, even for the same country; and that the prevalence of rigidities depends on institutional features and characteristics of workers. Finally, the macroeconomic effects of rigidities appear to be limited, despite the fact that they seem to exist at the micro level, which creates a micro-macro puzzle. Nominal rigidities would argue for aiming for higher inflation and in May 2003 the ECB has indeed redefined price stability as inflation of close to 2 per cent over the medium term, rather than the original 0 to 2 per cent, in part to address the implications of inflation differentials within the euro area. But it remains to be seen whether this move will really help. Wage inflation has been close to 2 per cent in Germany and to 2½ per cent in Italy during the recent downswing, without any deceleration. On the other hand, it has decelerated in most small countries.

Profit margins

20.   Product market reforms should also help overcome rigidities. Several OECD Economic Surveys have noted that persistent positive inflation differentials would erode competitiveness progressively, which could lead to a period of slower growth. In the case of Spain (OECD, 2003b), for instance, it was noted that not only were labour market reforms necessary, but competition needed to be strengthened in certain sectors to restrain inflation. The issue for the sluggish economies is the same: if inflation reacts little to differences in demand pressures across countries, then the crowding-in of foreign demand via competitiveness gains will be slow. In the case of Italy (OECD, 2003c), both inflation rates and unit labour costs have been running faster than the euro area average, with Italian exporters loosing market share,

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10.   The following equations were estimated:

$$Cpi = 0.82 + 0.68 Cpi_{-2} + 0.15 Pmgs + 0.36 Gap \qquad R^2 = 0.84$$

$$\qquad (2.1) \quad (7.2) \qquad (4.0) \qquad (2.7)$$

$$Cpi = 0.50 + 0.74 Cpi_{-2} + 0.14 Pmgs + 0.89 Gappos + 0.40 Gapneg_{-1} \qquad R^2 = 0.91$$

$$\qquad (1.4) \quad (9.9) \qquad (4.8) \qquad (3.3) \qquad (2.4)$$

Cpi is inflation as measured by the harmonised consumer price index. Pmgs is import price inflation. Gap is the output gap. Gappos is a positive output gap. Gapneg is a negative output gap.

while competition, though having intensified, could still be raised considerably by dismantling remaining distortions and impediments.

21.   These observations are based on analysis in various sectors and sound plausible. On the other hand, economic theory does not provide a compelling case for demand effects on profit margins. The price mark-up on wages depends on the price mark-up on marginal cost and on marginal cost itself (Layard *et al.*, 1991). Marginal costs are clearly rising with demand in some sectors. Electricity supply, for instance, is typically ranked by the efficiency of plants. And if firms operate close to full capacity, and are thus not able to respond to additional demand anymore, mark-ups are likely to be pro-cyclical. But there are also sectoral studies, which come to the conclusion that marginal costs are falling in a number of sectors. Oliveira Martins and Scarpetta (1999), for instance, find strong support for the hypothesis of counter-cyclical variations in price margins in most US manufacturing industries and, to a lesser extent, in other G-5 countries. The mark-up on wages will shift with demand, if the elasticity does so and in the opposite direction. For instance, in a world where customers become attached to firms, it is during booms that firms have a stronger incentive to attract customers, thus reducing prices when demand it high. In addition, entry of firms is likely to be easier when demand is high, thereby raising competition. It seems therefore plausible that marginal costs are flat or even falling with rising demand up to some point, beyond which they are rising as full capacity is approached. However, there is fairly general agreement that demand effects on prices tend to be weaker if firms operate in a less competitive environment, while it is also likely that marginal costs will rise once a firm gets close to full capacity.

22.   There is some macroeconomic evidence that profit margins react less strongly in the euro area to changes in activity. In a correlogram between the deviation of the profit share from its (HP-filtered) trend and the output gap, correlations are stronger for the United States and the United Kingdom than for Germany and Italy (Table 2), while the correlation for France is similar. Moreover, the price equations embedded in the OECD's Interlink model show a considerably higher estimated effect of the output gap on prices for the United States than for the large continental European countries (Turner *et al.*, 1996).

Table 2. Profit margins and the output gap

	Canada	Germany	France	Italy	United Kingdom	United States
Profit margin	0.32	-0.05	0.44	0.07	0.36	0.28
Profit margin, 1 year lag	0.35	0.37	0.53	0.09	0.57	0.57
Profit margin, 1 year lead	-0.06	-0.57	0.02	-0.36	-0.24	-0.30
Profit margin, 2 years lag	0.18	0.53	0.47	0.13	0.42	0.38
Profit margin, 2 years lead	-0.48	-0.71	-0.41	-0.59	-0.71	-0.37

Source: OECD.

23.   To conclude, in a large country considerably stronger wage and price flexibility would be needed to appreciably speed up adjustment to an asymmetric demand shock. Greater flexibility in terms of a lower sacrifice ratio at the aggregate level, even if it were to surpass that observed for any other G7 country, would only partly offset the more limited extent of trade integration, lack of mobility and the absence of a monetary policy reaction adapted to a country's need. A scenario was run including a reduction in wage and price rigidities involving a cut of the sacrifice ratio by 80 per cent in the large country.[11] It shows that the latter would still remain more exposed than the small country to the risks of long-lasting cyclical divergences (Figure 8).

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11.   In the simulation, the sacrifice ratio of the large country is reduced to 0.2, well below the value in the other G7 countries, where it is typically close to 1.

Figure 8. The benefits of increased wage and price flexibility
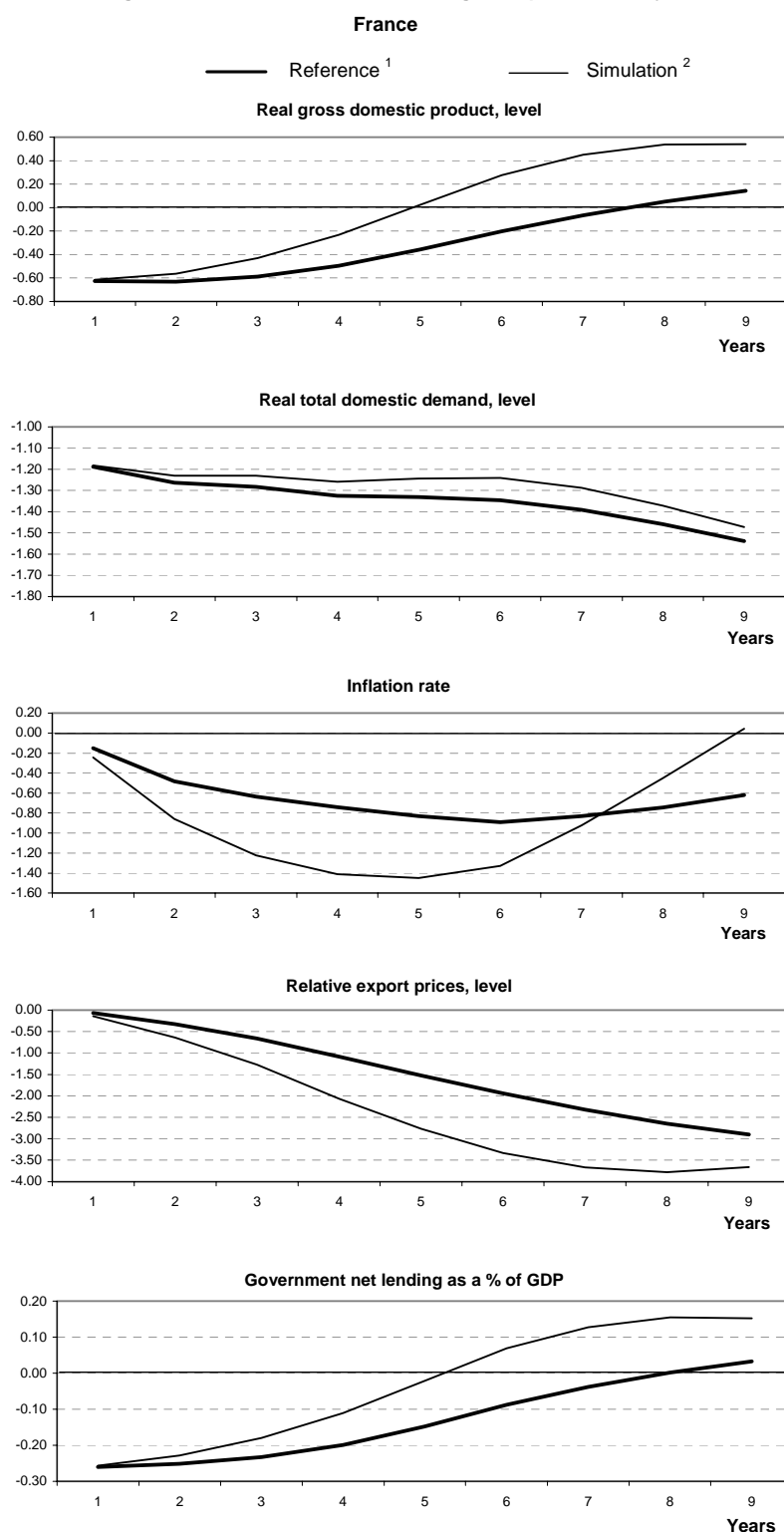
France

———— Reference [1]   ——— Simulation [2]

Real gross domestic product, level

Real total domestic demand, level

Inflation rate

Relative export prices, level

Government net lending as a % of GDP

1. Same as Figure 5.
2. Same shock as in the reference scenario. In this case however, it is assumed that structural reforms increase both nominal and real wage and price flexibility, implying a reduction of the sacrifice ratio by 80 per cent in the large country.
Source: OECD.

Ensuring a smooth functioning of housing and mortgage markets

The housing market can be a source of resilience

24.   Housing markets differ considerably across euro area countries, largely reflecting the extent of liberalisation of the mortgage market, tax regimes and the extent to which house price changes feed through into residential construction. The feed-through can be small if planning restrictions are tight, even though higher house prices could strongly affect consumption via wealth effects. Housing markets are important in the transmission of monetary policy and a high interest rate sensitivity is beneficial as it implies that monetary policy is more powerful in boosting or damping cyclical fluctuations overall in the euro area.

25.   The strong transmission of monetary policy via the housing market channel is one of the major mechanisms that have helped in the United Kingdom to keep growth close to potential during the recent downswing (OECD, 2004a). It has one of the most liberalised mortgage markets. Loan-to-value ratios are typically lower in continental Europe and transactions costs are higher. The latter are about 2 per cent of the purchase price in the United Kingdom, but much higher in Germany, Italy and in France. In continental Europe, the lower degree of liberalisation and lower level of transactions due to the higher transactions costs usually implies less mortgage equity withdrawal and fewer opportunities for consumption smoothing for liquidity-constrained households.

26.   Further liberalisation and better integration of mortgage markets and lower transactions costs across the euro area countries would be beneficial as is would strengthen the effectiveness of monetary policy, while at the same time reducing asymmetries in the transmission channel between countries. However, cycles in owner-occupied housing markets can also produce swings in household wealth that in turn exacerbate the cross-country variation in economic activity. To the extent that housing cycles are asymmetric, *i.e.* are not synchronised and/or very different in intensity across the monetary union, they also tend to intensify cyclical swings. And house price developments have diverged markedly during this cycle, with, for example, a house price boom and bust in the Netherlands, continuing strong increases in Spain and a decline in prices in Germany. The house price cycle stems from the relatively inelastic supply of housing which, to the extent housing demand varies due to changes in economic (income expectations, real interest rates) or other (demographic, preferences) conditions, may result in strong movements in prices.

But tax incentives reinforce the cycle

27.   The tax incentives governments provide to stimulate house ownership are an additional factor that can exacerbate volatility in house prices. A tax system that contains generous incentives for house ownership not only results in a higher steady-state level of house prices (and an associated misallocation of resources), but may result also in greater volatility of house prices, as the tax incentive can increase the slope of the demand curve. The tax breaks for owner-occupied housing could act as a destabilising force, to some extent offsetting the automatic stabilising properties that are normally attributed to income taxation.

28.   Van den Noord (2003) estimates the real financing cost of housing and the tax wedge between the market interest rate and the financing cost of housing investment, to the extent these are affected by the personal income tax system. This study considers the case where housing investment is entirely financed by borrowing. The basic features of personal income tax systems that affect the borrowing cost of housing investment are:

- Whether the interest payments on mortgages are deductible from taxable income, and if so, whether there are limits on the deductible period or the deductible amount.
- Whether tax credits are available.
- Whether the imputed income from owner-occupied housing is taxed.

A related question is whether a modest increase in inflation will lead to negative real financing costs, and hence make housing an extremely attractive investment in some countries, but not in others. If so, this may help explain why inflation divergence among euro area countries will tend to result in divergences in housing demand and property prices and, in turn, in divergent trends in housing wealth.

29.   The results are summarised in Table 3. The real cost of financing is generally lowest in the smaller euro area economies with the tax wedge being clearly negative (*i.e.* the tax system subsidises housing) in the Netherlands, Luxembourg, Ireland, Spain, Finland, Austria and Italy but close to or zero in Belgium, France, Germany and Portugal. Only in Greece is housing heavily taxed. These tax incentives had been introduced to boost home ownership and to offset the high real cost of financing prior to the introduction of the common currency.

Table 3. The tax wedge for housing

	AUT	BEL	FIN	FRA	DEU	GRC	IRL	ITA	LUX	NLD	PRT	ESP
Deduction limit (thousands)												
First period	20	..	20	..	5	..	5	1 330	240	..	100	..
Second period	..	..	..	..	..	..	5	..	180	..	..	..
Third period	..	..	..	..	..	..	..	..	120	..	..	..
Imputed rent (% of value)	..	1.25	..	..	..	3.50	..	..	..	1.25	..	..
Interest rate	4.68	4.71	4.72	4.62	4.49	6.31	4.77	4.73	4.67	4.63	4.78	4.73
Marginal tax or credit rate	0.50	0.58	0.30	..	0.53	0.45	0.24	0.19	0.46	0.60	0.30	0.25
Cost of financing	4.12	4.71	3.82	4.62	4.49	7.88	3.83	4.20	3.71	2.60	4.55	3.79
First period	4.12	4.71	3.82	4.62	4.48	7.88	3.62	4.20	3.11	2.60	4.55	3.59
Second period	..	..	..	..	4.49	..	3.85	..	3.50	..	..	3.80
Third period	..	..	..	..	..	..	..	..	3.89	..	..	..
Inflation	0.51	1.13	1.31	0.56	0.64	2.14	2.46	1.65	1.02	2.03	2.17	2.23
Real cost of financing	3.60	3.58	2.52	4.05	3.85	5.74	1.37	2.55	2.69	0.57	2.38	1.56
Tax wedge	-0.56	0.00	-0.90	0.00	0.00	1.58	-0.94	-0.53	-0.96	-2.03	-0.23	-0.93

Source: Van den Noord (2003).

30.   Theory suggests that price variability of owner-occupied homes would be largest in countries where the tax breaks for owner-occupied housing are largest. Regressing the marginal effective tax wedges on owner-occupied housing in euro area countries on the variability of house prices (gauged by the standard deviation of the house price index) confirms this (Figure 9). More than half of the variation in the standard deviation across euro area countries is explained by the tax wedge on housing. The most striking example is the Netherlands, which combines the largest tax breaks with the second largest price variability. There is a middle range containing Ireland, Spain and Finland, and the least prone to price variability with the smallest tax breaks are Austria, Italy, Portugal, Belgium, France and Germany.

Figure 9. Correlation between the tax wedge and variability of house prices

Per cent

Variability of real house prices [1]
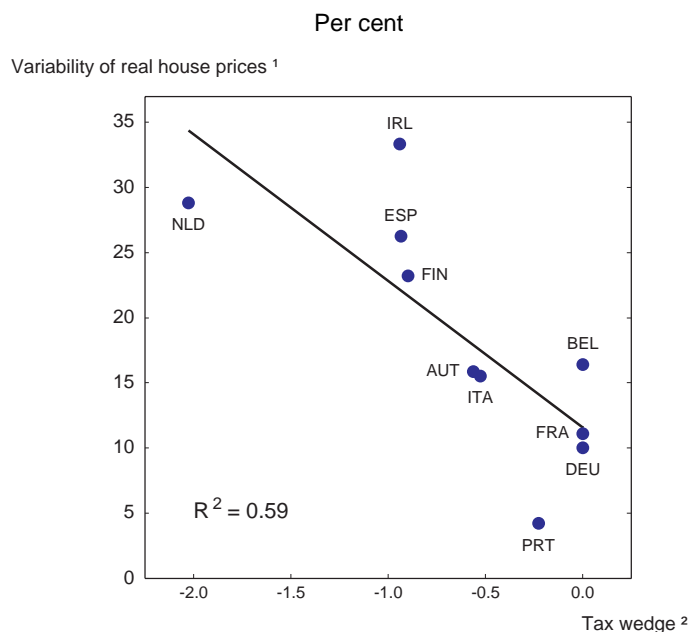
1. Standard deviation, 1970-2001.
2. Difference between after-tax and pre-tax real interest rate on mortgage loans; 1999 tax rules, interest rates and inflation.
Source: Van den Noord (2003).

Bank provisioning tends to be pro-cyclical

31.   The bursting of asset bubbles, including in housing markets had large effects on the banking sector and public finances and overall economic performance in the past, for instance, in Finland and Sweden (Eschenbach and Schuknecht, 2002). In the absence of a monetary policy and with fiscal policy constrained, it is important to have a financial system in place that is robust in the face of asset market bubbles. If banks mis-assess risks during the business cycle, underestimating them in good times and overestimating them in bad times, the potential for credit and asset booms and busts is increased, thereby destabilising the economy.

32.   Over recent years, significant advances have been made in the measurement of credit risks. However, macroeconomic considerations still play only a small role in most approaches (Lowe, 2002). And there is a risk that changes to the Basle II Capital Accord may lead to an even greater financial amplification of the business cycle.[12] Under the current Basle Accord, minimum capital requirements on a given portfolio are fixed and they typically become binding through a fall in a bank's capital following credit losses. Under the proposed system of risk-based capital, requirements would become binding through an increase in minimum requirements as loans migrate to higher risk classes. Just when banks are most likely to record losses, the minimum capital requirements could themselves increase. From a macro-prudential perspective, the time dimension and the endogeneity of risk is important. Cushions should be built up in upswings to be relied upon in rough times. This would enhance an institution's ability

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12.   The procyclicality could also diminish, as the awareness about the implications of an unduly procyclical risk assessment has risen both among market participants and supervisors. Moreover, greater disclosure may become less tolerant and suspicious about risk assessments that change a lot over time and lead to substantial upgrades in good times.

to weather deteriorating economic conditions when access to external financing becomes more costly and constrained. Moreover, by leaning against the wind, it would reduce the amplitude of the financial cycle, limiting the risk of financial distress in the first place (Borio, 2003).

33.   Figure 10, which shows inverted GDP growth and bank provisioning, highlights a pronounced pro-cyclical pattern in virtually all countries. Dobson and Hufbauer (2001) observe the following on forward loss provisioning: "Banks are often reluctant to make adequate provision for their loan losses, and bank regulators are often hesitant about pushing banks to recognize losses before it becomes plain that borrowers are in trouble. No bank loan officer wants to admit she made a mistake, and few supervisors want to cry "fire" when there is only smoke. As a consequence, published loan-loss provisions usually lag the eruption of a financial crisis. Hence, when the crisis strikes, banks typically have inadequate cushions of equity plus reserves to absorb the loss." They also observe that forward provisioning will require a change in tax laws so that loan-loss deductions can be taken in excess of historical experience. Current practice tends to permit deductions only for recognised problem loans.

34.   In this respect, Spain has adopted a novel approach, by issuing a new loan-loss regulation in 2000. It obliges all deposit institutions to determine provisions based on default rates over the business cycle, rather than at a point in time. This forces banks to provide for bad loans during economic expansions by more than in the past, and thus avoids increased provisioning during recessions. While the new rule does not increase the overall level of provisions over the whole business cycle, it makes risk assessment more complex and requires a major effort of risk management by credit institutions. These have established their own risk management mechanisms to adapt to the new rule, while a standard management framework has been approved for those banks that do not have the technical capability to develop their own model (Fernández de Lis *et al.*, 2001).

Figure 10. Loan loss provision ratios and GDP growth
Per cent
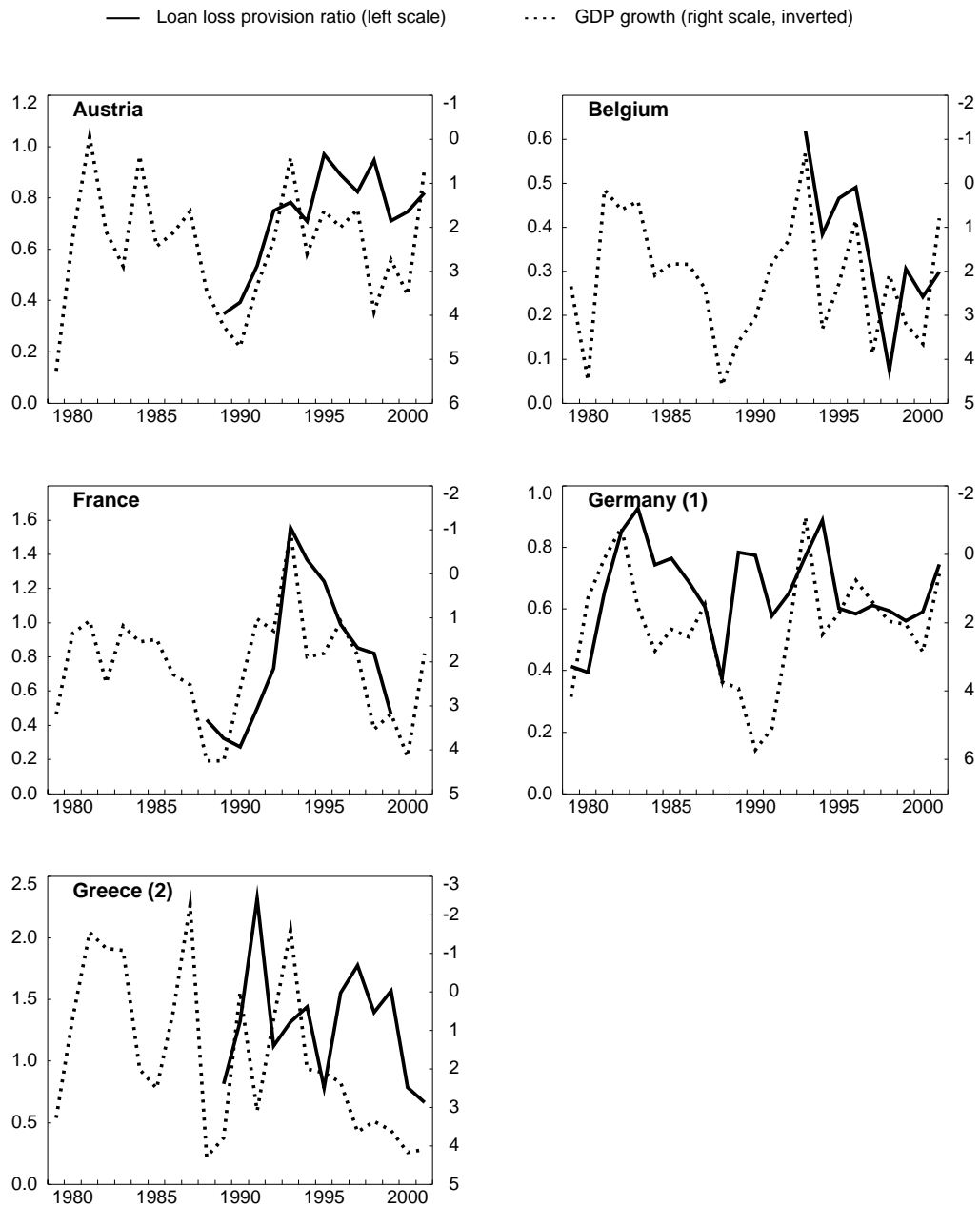
—— Loan loss provision ratio (left scale)   ···· GDP growth (right scale, inverted)

1. West Germany prior to 1993.
2. Commercial banks.
Source: OECD, Bank Profitability 2002 and Economic Outlook No.73 database.

Figure 10. Loan loss provision ratios and GDP growth (cont.)
Per cent

—— Loan loss provision ratio (left scale)   · · · · GDP growth (right scale, inverted)

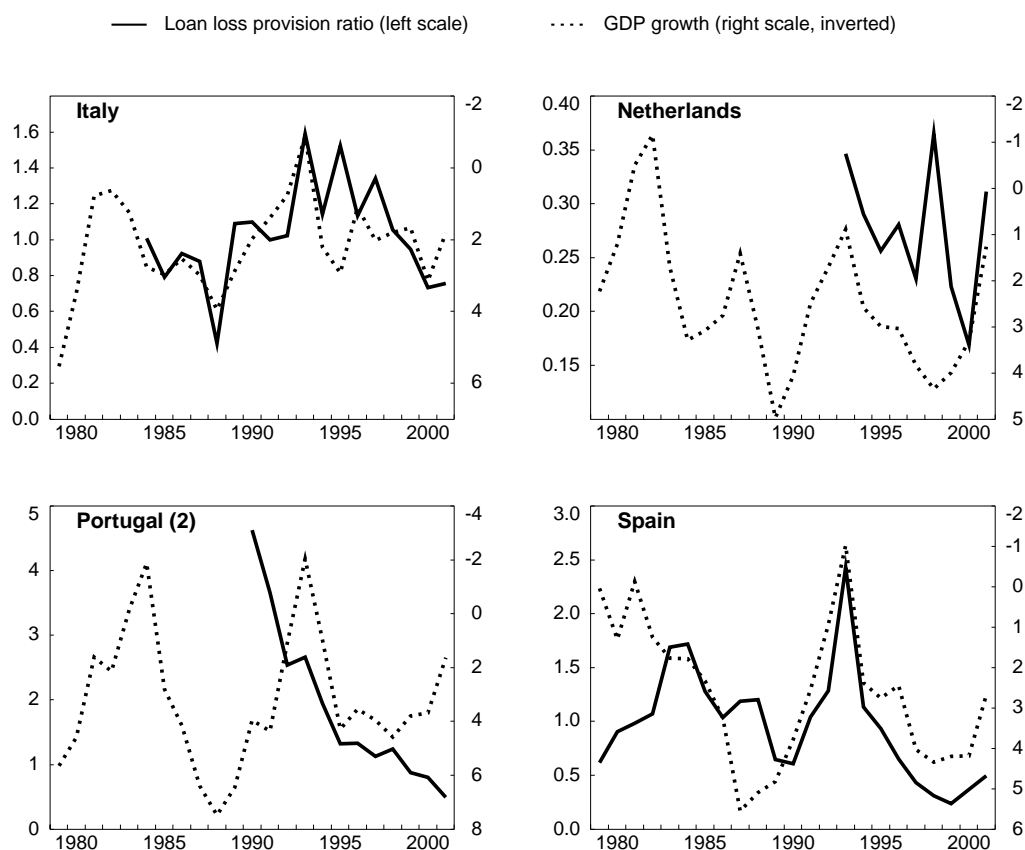
1. West Germany prior to 1993.
2. Commercial banks.
Source: OECD, Bank Profitability 2002 and Economic Outlook No.73 database.

*Should fiscal policy aim at reducing cyclical divergence?*

35.   While fiscal policy is not well suited to respond to supply shocks, it can help to reduce cyclical divergence, whether it results from asymmetric demand shocks or differences in monetary policy transmission. Indeed the Stability and Growth Pact foresees an important role for the automatic fiscal stabilisers to smooth adjustment. The most important factors that determine the cyclical sensitivity of the fiscal position are the size of government, the tax structure, the progressivity of taxes and the generosity of the unemployment benefit system (Van den Noord, 2001). Not surprisingly, they are typically higher in Europe than in the United States and Japan, as the government sector is bigger, the progressivity of taxes is often steep and the unemployment benefit system generous. The effect of the automatic stabilisers on the cycle can be illustrated by switching them off in the reference scenario that was outlined above. The simulations reported in Figure 11 suggest that they help in reducing the amplitude of the cycle and in speeding up adjustment, more so in the big than in the small economies, for which import leakages are stronger. The amount of stabilisation is however relatively limited even in the case of a large country, for which the output contraction is initially reduced by no more than 25 per cent.

36.   While the Stability and Growth Pact puts considerable weight on the automatic stabilisers in smoothing the cycle, it does not put much faith in discretionary action. The "close-to-balance or surplus" rule is now applying in cyclically-adjusted terms each year, even though the conformity of the Stability and Convergence programmes with the "close-to-balance or surplus" requirement will be assessed taking into account the long-term sustainability of public finances, safety margins *vis-à-vis* the 3 per cent threshold, and the quality of public finances. This implies some room for discretionary policy, at least for countries in surplus. Caution with regard to discretionary policy reflects the recognition, decision and implementation lags in implementing policy changes and the fact that discretionary fiscal policy was actually mildly pro-cyclical over the last two decades, rather then smoothing the cycle. Moreover, ad-hoc adjustments in taxation and spending programmes can have potentially counterproductive effects on income distribution and allocative efficiency.[13] Finally, discretionary fiscal policy may loose effectiveness or even have perverse effects when deficits become large and debt rises quickly, as in Japan. Experience across 21 OECD countries suggests that there is a partial, but substantial, offset between private and public saving, which depends on the level of public indebtedness and the size of discretionary impulses (OECD, 2004b). Hence, discretionary fiscal action appears to have diminishing returns.

37.   In recent years, there has been a stark contrast between the large amount of fiscal easing that has occurred in the United States and the United Kingdom against the background of slowing growth and the fiscal policy pursued in the euro area. Policy was eased – as measured by the cyclically-adjusted balance – by 4½ per cent of GDP in the United States between 1999 and 2003 and close to 3½ per cent in the United Kingdom. In the euro area, the fiscal easing amounted to only ¾ per cent of GDP. It is noteworthy, that the easing took largely place in the three largest economies, which grew at a much more subdued pace than the smaller countries, where fiscal policy was overall neutral.

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13.   Solow (2002) makes the point very nicely: "Maybe prolonged imbalances between aggregate supply and demand so occur in market economies, and maybe appropriately tuned fiscal policy could help to relieve them. But maybe also democratic politics is simply incapable of making the appropriate fiscal-policy adjustments in time to do much good. (…) Whenever discretionary fiscal policy rises to the top of the political agenda, special interests come out of the woodwork. Every tax change, every increase or decrease in public spending is caught over by the potential winners and losers, their lobbyists and elected representatives. The final outcome may often be distributionally and allocationally, and even macroeconomically, perverse. (…) Note that this is not some kind of minor flaw in the system; it is the system."

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Figure 11. The effect of the automatic stabilisers
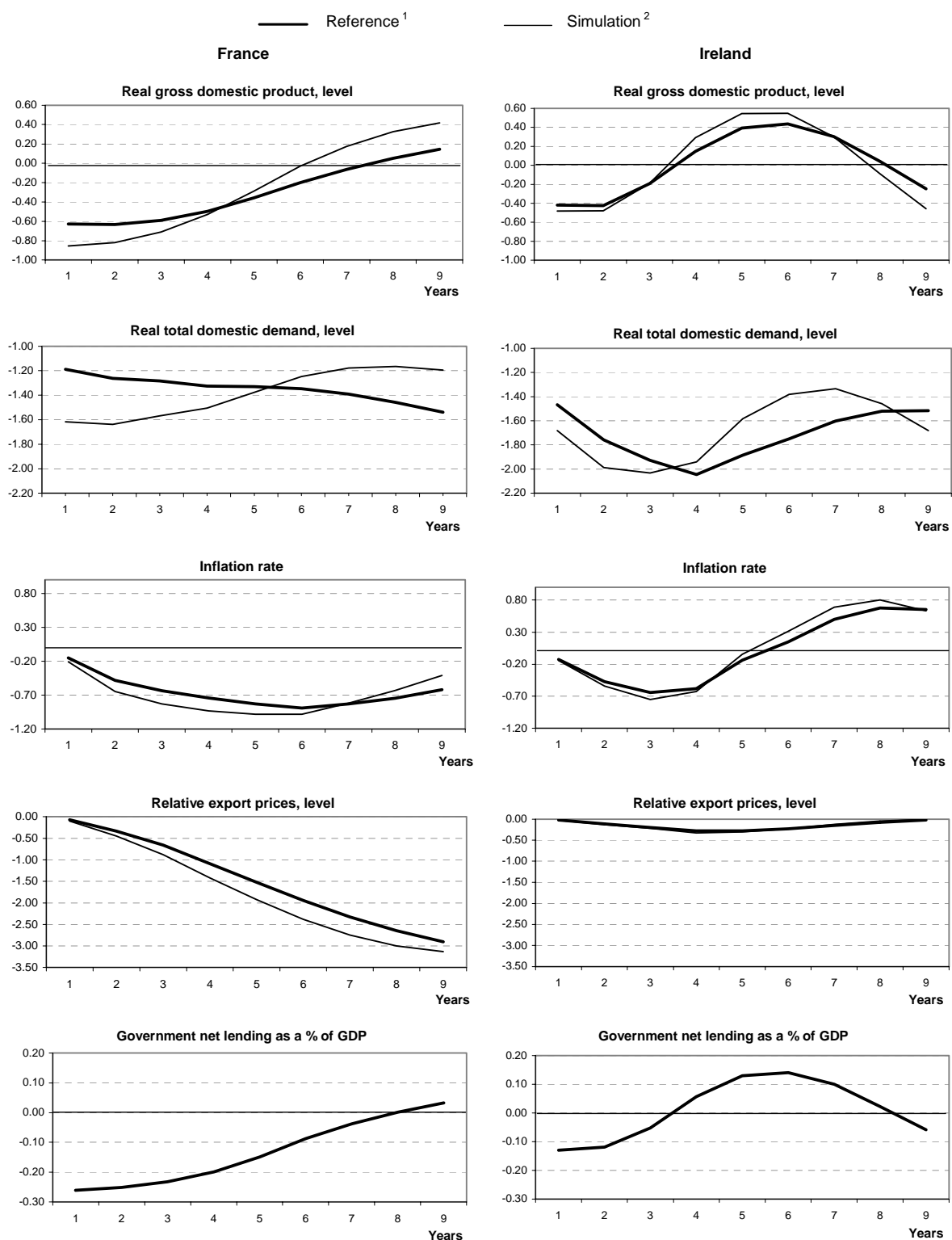
1. Same as Figure 5.
2. Same shock as in the reference scenario. In this case however, it is assumed that automatic stabilisers are not allowed to play, which implies that the actual fiscal balances remain unchanged relative to the baseline.
Source: OECD.

38.   Simulations of a sustained change in government spending (fiscal multipliers) provide a gauge as to the effectiveness of an activist fiscal policy in smoothing the cycle. A sustained positive government spending shock of 1 per cent of GDP would raise output by about ½ per cent initially in a small euro area country. The effect of fiscal policy is typically larger in the big euro area country as import leakage is smaller. In this case, output would rise by about 1 per cent or even more in the NiGEM and OECD models, with a considerably smaller effect shown by the Quest model. Moreover, fiscal action on the expenditure side is more effective, because it feeds directly into demand, while on the tax side, part is saved or dis-saved (Table 4). Simulations with the EC's Quest model, NiGEM and the OECD's Interlink model highlight some uncertainty as to the size of the multipliers, which is model dependent (EC, 2001; Barrell and Pina, 2000).

Table 4. Fiscal revenue and expenditure multipliers

	QUEST		NIGEM	OECD
	Revenue	Expenditure	Expenditure	Expenditure
Austria	0.1	0.5	0.6	0.4
Belgium	0.1	0.5	0.5	0.5
Finland	0.3	0.4	0.7	0.9
France	0.1	0.5	1.1	0.6
Germany	0.2	0.4	1.6	1.2
Greece	0.1	0.5	--	--
Ireland	0.1	0.4	0.5	0.3
Italy	0.1	0.5	0.8	0.9
Netherlands	0.1	0.4	0.9	0.6
Portugal	0.0	0.7	0.6	0.6
Spain	0.1	0.5	1.1	0.4

Source: EC (2001) and Barrel and Pina (2000).

39.   The fiscal multipliers can provide a rough guide to infer the amount of discretionary fiscal action needed to close an output gap. For a small country with a large output gap fiscal action would need to be sizeable. For Ireland, for instance, at the peak of the boom the output gap was very large, implying a need to raise the government surplus by more than 10 per cent of GDP. Also Finland grew very rapidly until 2000. Just to bring actual growth down to potential output growth would have implied a severe fiscal tightening. The rapid change in the economic fortunes of Ireland and Finland, growing still very fast in 2000, but with activity slowing rapidly thereafter, shows vividly how difficult it can be to get the timing of a more pro-active fiscal policy right. The case for using fiscal policy more actively is stronger for the large euro area countries as the fiscal impact is bigger. A discussion paper by HM Treasury (HMT, 2003b), for instance, argued that should the UK join the monetary union, a more active fiscal policy might be required, but that reforms would be needed to ensure that such a policy operated in a transparent, credible, symmetric and timely manner.

Wrapping-up

40.   Small countries seem to be well placed to adjust swiftly to asymmetric shocks, largely because trade integration with the rest of the area is high. Counter-cyclical fiscal measures are probably not needed and also not powerful enough to smooth the cycle. However, asset bubbles are a cause of concern in their case as their limited overall weight means that the monetary stance is more likely to be out of line with their cyclical position. Large countries are less well placed to cope with shocks and sluggish adjustment can be expected. Reforms should focus on raising trade linkages via the completion of the single market, on improving wage and price flexibility and on making their housing markets more responsive to changes in monetary policy. In principle, fiscal policy could help in the large countries, but the institutional framework has so far not ensured an anti-cyclical stance over the cycle.

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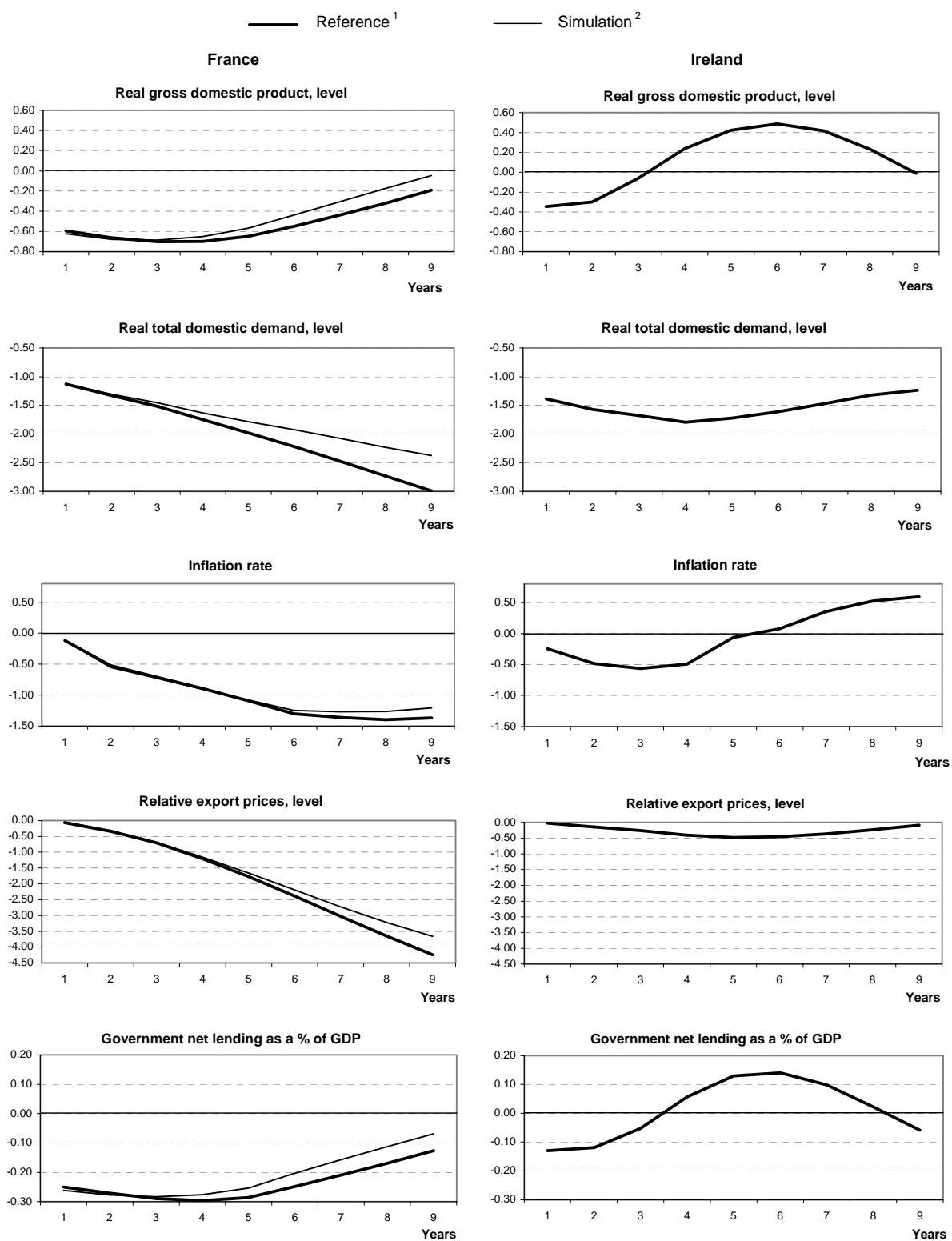European Commission (2003), "Inflation Report", November, ECFIN/444/03-EN.

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ANNEX A. DO MODEL DIFFERENCES MATTER?

The reference scenario presented in Figure 5 of the main text illustrates the important difference in the speed of adjustment between a big (French) and small (Irish) economy following an asymmetric demand shock. Several factors can explain this difference, including the effect of different propensities to trade. It is much higher for the small than the large country. However, the degree of wage and price flexibility, investment or labour demand behaviour are also likely to influence the endogenous response of these economies. In order to isolate the effect of the degree of trade openness on the overall reaction of the economy, an experiment was undertaken that aims at isolating the effect of the differing degrees of international trade integration and foreign trade behaviour. Specifically, the reference scenario was re-run with both the French and Irish Interlink models having an identical supply block (wage, price and factor demand equations), an identical demand block (consumption, housing and stock-building) and the same fiscal block. The equations and parameters are the same or close to those of the French Interlink model.[14] As a result, the major remaining differences between the two models stem only from the trade block equations, which are linked to the difference of foreign exposure of the two countries. As shown in Figure A1, the simulation results are very close to those reported in Figure 5, which confirms our main conclusions: Trade integration appears to be the most important factor behind the different behaviour of the two economies.

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14. Mainly because the two models are of different size, with less equations in the small country model, some compromises had to be made. This explains why the simulation results are somewhat different from those reported in Figure 5 of the main text.

Figure A1. The reference scenario and the importance of trade: the implications of changes to the model

—— Reference [1]   —— Simulation [2]

France

Real gross domestic product, level

Ireland

Real gross domestic product, level

Real total domestic demand, level

Real total domestic demand, level

Inflation rate

Inflation rate

Relative export prices, level

Relative export prices, level

Government net lending as a % of GDP

Government net lending as a % of GDP

1. Same as Figure 5.
2. See text.
Source: OECD.

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