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Divergences in the Euro Area: a Cause for Concern?

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The views expressed in the paper are those of the authors and do not necessarily represent the views of the Bank of Finland.

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Abstract

Evidence suggests that after a period of convergence in the early and mid 1990s, the euro area economies may have started diverging. As a consequence, the common monetary policy could become less well-suited for a number of countries. This paper studies the extent and severity of the recent divergences, and discusses the capacity of exposed countries to compensate for nationally suboptimal monetary conditions through other policy channels. As a step toward developing an analytical framework for monitoring intra-euro area developments, we present a “convergence barometer” to monitor divergences, and a Taylor rule based “monetary thermometer” to compare the common monetary policy to benchmark optimal policy for individual countries. A main conclusion is that policymakers at the euro area level should be concerned about divergences, since automatic stabilisers alone may not be enough to restore a healthy equilibrium to potential “outlier” countries.

Key words: Euro, EMU, divergence, Taylor rule

Tiivistelmä

Viimeaikainen kehitys euroalueella viittaa siihen, että 1990-luvun alun ja puolivälin lähentymisen jälkeen maiden taloudet ovat alkaneet jossain määrin erkaantua toisistaan. Tästä syystä yhteinen rahapolitiikka voi käydä sopimattomaksi joillekin jäsenmaille. Tässä tutkimuksessa tarkastellaan, kuinka laajaa ja vakavaa taloudellinen eriytyminen viime aikoina on ollut. Lisäksi arvioidaan, millaisia mahdollisuuksia mailla on tasapainottaa talouden kehitystä muilla politiikan välineillä.

Euroalueen sisäisen kehityksen arvioimiseksi on kehitetty ns. konvergenssi-barometri. Rahapolitiikan sopivuutta mitataan puolestaan Taylor-sääntöön perustuvalla rahapolitiikan termometrillä, joka vertaa kullekin maalle laskettua optimaalista rahapolitiikkaa koko euroalueen yhteiseen rahapolitiikkaan.

Johtopäätös on, että euroalueen vakaan kehityksen turvaamiseksi talouspolitiikan päättäjien on kiinnitettävä huomiota koko alueen kehityksen ohella myös jäsenmaiden talouksien mahdolliseen eriytymiseen. Erojen seuraaminen on ensiarvoisen tärkeää, koska automaattiset vakauttajat eivät välttämättä riitä takaamaan tasapainoista kehitystä niissä jäsenmaissa, joiden talouskehitys poikkeaa merkittävästi euroalueen keskimääräisestä kehityksestä.

Asiasanat: Talous- ja rahaliitto, eriytyminen, Taylor-sääntö

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1 Introduction

Differences in economic developments in euro area countries are making area-wide statistics difficult to interpret. In recent months, attention has focused on the divergence of business cycles between the euro core and periphery, and now even within the core. The implications of these developments are still unclear. With rapid and wide-ranging structural changes taking place, even country-specific statistics have become misleading. At the same time, there is an alarming knowledge gap regarding developments at disaggregated levels, given the difficult and ongoing process of harmonisation of statistics in Europe. Individual governments should be concerned, as the automatic adjustment mechanisms of labour and product markets are clearly being tested earlier and more severely than had initially been anticipated.

Should the European Central Bank (ECB) also be concerned? Monetary policy can no longer address imbalances that emerge within the euro area. Why, then, is it important for monetary authorities to monitor internal divergences? There are two important reasons. First, the presence of diverging internal trends can complicate decision-making. In order to prescribe an appropriate mix of policy measures, such weighted averages which underlie policy decisions could usefully be supplemented with more disaggregated statistics.

Second, as several observers have pointed out, the Economic and Monetary Union (EMU) can be brought into crisis if one individual member state starts a serious internal political debate about leaving¹. This would represent a worst-case scenario, in which a country retrospectively considers the lack of a national monetary instrument prohibitively costly and the current arrangements politically unsustainable. Euro-area member countries agreed to the structures of a common currency in part for economic reasons; these arrangements are expected to place member countries on superior growth and development paths as compared with alternative structures. In the event that this hope is not satisfactorily realised, there may be a debate about disengaging. While we do not expect this to take place, we do believe that EMU stands to perform better long term if the ECB and political authorities put careful thought into some of the ways in which it might possibly encounter crises.

The challenge is therefore to prevent unacceptable economic difficulties from arising or at least persisting in any part of the euro area. For this reason, due regard should be paid to significant regional divergences from the euro area averages; outliers do matter disproportionately, even when their weights in the euro area averages are very small. How big can member country divergences become before they present a problem? The answer is: not very big, if labour markets are rigid and fiscal policy is constrained, thus restricting the adjustment process of the national economy to monetary and other imbalances.

Euro-area **monetary policy** is not able to respond to regional imbalances without compromising its primary objective of price stability, which is out of the question for reasons that have been well-established in numerous debates. **Fiscal adjustment** is currently restricted by the stability and growth pact (SGP). Adherence to the SGP is

¹ The risks of this are played up in Buiter (1999) and Calomiris (1998), fairly neutrally presented in Calmfors et al (1996), Obstfeld (1998) and Sims (1998), and played down in Wyplosz (1999) and Eichengreen (1998b). The overall relevance of this question was recently highlighted by market reactions to public comments of former Italian Prime Minister Romano Prodi, who was interpreted as suggesting that Italy may exit the euro arrangement if economic conditions do not develop favourably.

seen as crucial in order to avoid an inflationary bias in the euro area – without the SGP, individual governments have an incentive to have an overly loose fiscal policy since the cost of monetary tightening would be shared². **Structural adjustment**, whereby imbalances are resolved over time by real sector adjustments in labour and product markets, is believed to be a very slow process. Indeed, one of the greatest concerns of economic observers has consistently been that the generally poor functioning of European labour markets will cause most economies (and especially peripheral ones) considerable suffering at one time or another under a common monetary policy. Several studies over the past decade have documented the scope for policy to improve labour market and regulatory institutions, with a view to increasing speed and flexibility of structural adjustment³. Nevertheless, progress has been and is expected to remain slower than is desirable⁴.

This paper examines more closely the current status of economic divergences within the euro area, concluding that they are significant and do not appear to be diminishing. The remainder of this paper is structured as follows. Section 2 presents the evidence so far on diverging trends, and develops a “divergence barometer” as a tool to monitor imbalances within the euro area. Section 3 evaluates the appropriateness of monetary policy, using Taylor rule evidence. A “monetary thermometer” is developed as a tool to compare monetary-related strains on member economies. Section 4 assesses the flexibility of labour markets and the constraints imposed by the stability and growth pact. Section 5 concludes and proposes directions for further work.

2 Diverging trends: the evidence

Does the empirical evidence on economic convergence so far give reason for optimism? Between 1992 and 1997, economic policy in most EU states was geared toward convergence and closer integration, with the benchmark being to satisfy the Maastricht requirements for EMU entry. Subsequent evidence suggests that after 1997, however, convergence has stopped and may be reversing⁵.

Figure 1 plots inflation developments in the Euro area in the two years since mid-1997. While the weighted average of harmonised headline inflation rates has gradually declined, the spread has grown between the maximum and minimum inflation rates observed in individual member countries. The same trend also exists in the variance in inflation rates (not shown), which has grown considerably during the same period.

Figure 2 plots GDP growth statistics, also since mid-1997. The overall decline in growth masks the extremely strong performances of Ireland, which throughout the time period has by far grown much faster than all other euro area countries, and

² There are other good reasons for the Pact as well, such as the desire to avoid public defaults that would spill into contagious debt crises (see Eichengreen and Wyplosz 1998).

³ See e.g. CEPR (1991), OECD (1994), Coe and Snower (1997), Sims (1998) and Cecchetti (1999).

⁴ See e.g. IMF (1999), European Commission (1999), OECD (1998, 1999a,b).

⁵ Wyplosz (1999) argues that the Maastricht targets focus too much on convergence towards a 1980s style culture of monetary stability anyway, and are not enough to ensure a successful currency union in a world of unexpected shocks and high unemployment.

Finland, which has likewise outperformed all others but Ireland. With or without these two outliers, it is not clear that any convergence has been taking place across the euro area in the GDP growth patterns of individual member countries⁶.

Figure 1. **HICP inflation rates in the euro area**

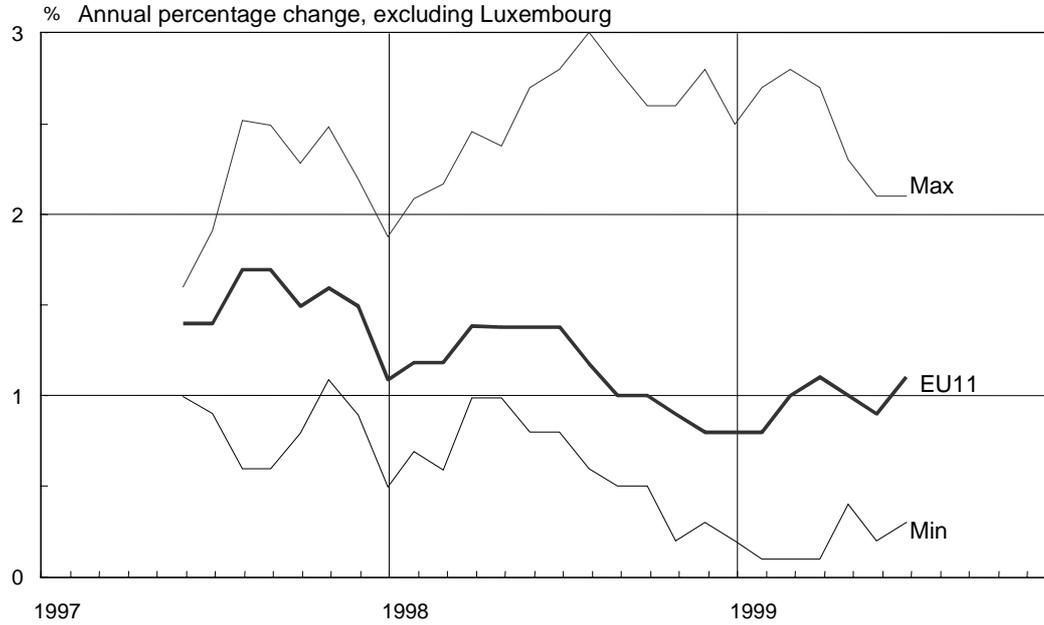
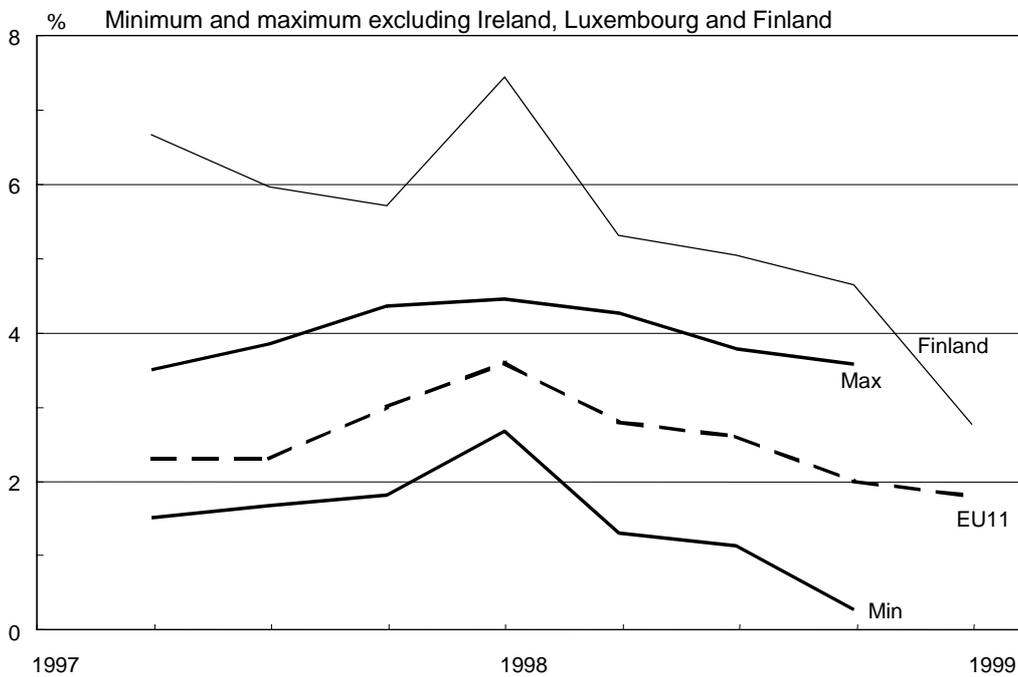


Figure 2. **GDP growth**



Data sources: OECD, Eurostat

⁶ The recent GDP growth data for Ireland has been spotty and unreliable, which is probably a consequence of the very rapid growth that has taken place over several years. This was one reason for omitting Ireland from the calculation of the euro area maximum.

Looking ahead, relative growth forecasts in the euro area show some interesting patterns. Table 1 compares realised and forecast member country per capita GDP levels and growth rates across the euro area for the years 1998-2000. These comparisons are easy to make, since the countries now share a common currency. The benchmark point of reference is the EU-11 as a whole, which has been defined as 100 for each year. Thus, numbers that are higher than 100 indicate countries that are wealthier than the euro area average. Numbers that grow larger each year indicate forecast growth levels that are faster than the euro area average.

Table 1. **Index of euro area per capita GDP**

	1998	1999	2000
EU11	100,0	100,0	100,0
Austria	118,2	118,9	119,6
Belgium	110,6	110,2	109,8
Finland	110,6	111,7	112,6
France	110,1	109,2	108,9
Germany	117,7	116,5	116,4
Ireland	99,5	107,3	115,9
Italy	89,9	89,8	89,7
Luxembourg	183,8	184,0	185,5
Netherlands	108,6	109,2	109,3
Portugal	48,5	50,0	50,9
Spain	63,6	64,6	65,4

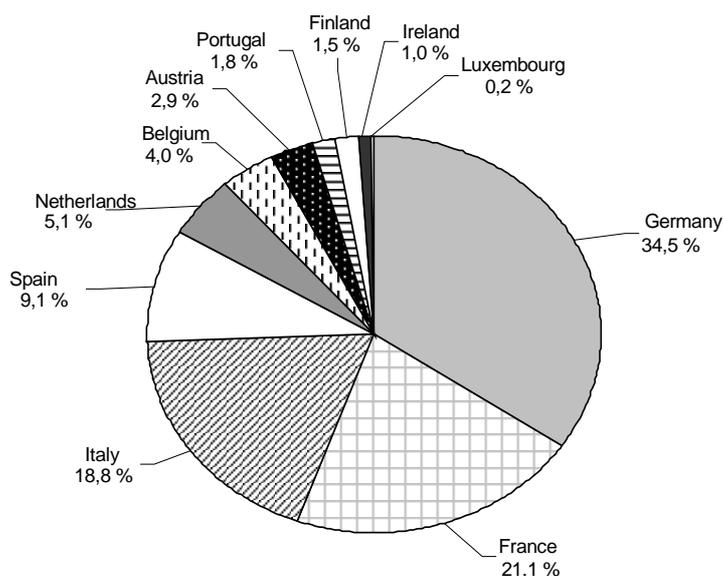
Data source: Eurostat, NewCronos

By and large, the relative gainers are mostly small and on the euro area periphery, whereas the relative losers are mostly larger and closer to the core. While this may be coincidental due to the short time span of observation, a plausible explanation is that small and peripheral countries have benefited the most from increased price stability and lower perceived susceptibility to shocks, which has thus increased confidence to consume and invest. If so, this can be regarded as a one-off effect that illustrates a direct benefit of having become a part of the euro area.

Box 1: Weights used in calculating euro area averages

Euro area averages are calculated using different weights for different countries – large countries are given greater weight than small ones. These relative country weights, which are calculated by the ECB and Eurostat, also vary slightly depending on the variable in question, but this variation is in practice not significant.

When using euro area average statistics, it is important to keep in mind the approximate weights that are accorded to different countries. To illustrate, the country weights in Eurostat's EU-11 average harmonised index of consumer prices are distributed as follows:



The three largest countries (Germany, France and Italy) represent close to three quarters of the weighted average. By contrast, the weight of the remaining eight countries together is only about one quarter, and are easily outweighed by Germany alone, which has a 34,5 per cent weighting.

By comparison, when calculating labour force statistics, the weights of Germany, France and Italy are 30.9, 19.2 and 17.9, respectively, totalling 68 per cent.

Temporary vs. persistent divergences

Explaining divergences in growth and inflation is difficult to do with precision. Some may be cyclical, as economies grow rapidly and approach a danger zone for overheating. Some may also be due to an economic development catching-up process following closer integration. In the latter case, differences may be of a longer-term structural nature, and will require a different type of policy attention. It is therefore important to separate between the two effects.

Recent work by the ECB to separate long-term trend differences from cyclical fluctuations has yielded mixed results⁷. Movements of several variables have been analysed with a view to making this distinction. Changes over time were “detrended”, to separate out long term trends from purely cyclical effects. Variables studied included consumer prices, real GDP, total employment, and industrial production. The detrending method chosen was to use a Hodrick-Prescott filter, which has a number of known shortcomings but is probably no worse for this purpose than alternative detrending techniques. A main conclusion was that trend differences were both historically commonplace and shifting, since they often resulted from discrete shocks rather than merely a catching-up process in low-productivity countries.

At the end of the day, how do we then interpret the inflation and GDP growth statistics shown in Figures 1 and 2? Recent divergences in growth are likely due mostly to desynchronised business cycles (Italy and Germany slowing down, Ireland, Spain and Portugal accelerating, and Finland continuing its return to trend growth following an exceptionally severe recession). Inflation differences are also likely to have a substantial cyclical component (as well as a structural component discussed in more detail in Box 2). Business cycles are considered to be inevitable, regardless of currency arrangement specifics.

It has been debated whether a common business cycle is even desirable in the euro area. Business cycle divergences are in theory temporary and self-reversing, so that a euro area wide monetary policy will not systematically be either too tight or too loose for any individual country. By this argument, as long as the cyclical swings can be contained within acceptable bounds, the problem will eventually disappear.

In practice, however, hysteresis can result in even temporary downturns having persistent negative effects. Temporary downturns in individual euro area countries can be prolonged if monetary policy that is set according to area wide criteria reflect a very different environment. With inflexible economic structures, hysteresis can become magnified. Therefore, careful attention is warranted not only to extraordinary cyclical swings, but even to more mundane ones, if automatic stabilisers are slow to respond.

⁷ See ECB Monthly Bulletin, July 1999. This work studies historical convergence in business cycles across the euro area, 1970-1998. Because of the regime change that took place upon adoption of a common currency, the historical patterns of cyclical convergence provide limited insight into future developments. However, longer-term trend developments of individual countries are also identified, and are of greater analytical value.

Box 2: The catching-up hypothesis of structural inflation

Some part of observed inflation may be explained by structural factors, including shocks and trend developments. While discrete shocks are hard to predict, some trend developments should certainly be foreseeable and thereby incorporated into appropriate policy measures. The issue of “catching-up” related inflation differentials in the euro area is one such predictable development, and has been studied by Alberola and Tyrväinen (1998) and Tyrväinen (1998). The theoretical argument for structurally related (albeit temporary) inflation differences within the euro area involves three steps. First, it is observed that labour productivity grows faster in the tradeables sector than in the non-traded (services) sector. Second, it is presumed that following closer economic integration, all lower-productivity countries in the euro area should catch up to higher-productivity countries within the foreseeable future. Finally, one draws on the (Balassa-Samuelson⁸) hypothesis that higher sectoral differences in productivity growth generate higher sectoral inflation differentials, which in turn induce higher inflation. It follows that until the catching-up process is complete, the lower-productivity countries will experience higher inflation.

Alberola’s and Tyrväinen’s empirical estimation and simulation of these effects suggest that “catching-up” related inflation differentials between high- and low productivity countries may reach 2 percentage points. Euro area internal inflation differentials have already slightly exceeded this, which again underlines the fact that inflation differentials can derive from many other factors as well. Moreover, from Table 1 we observe that the fastest growing, highest inflation country (Ireland) is wealthier than the EU average while Italy is poorer, slower growing and has lower inflation. The Balassa-Samuelson effects can therefore be at most a partial explanation of current inflation differentials in the euro area.

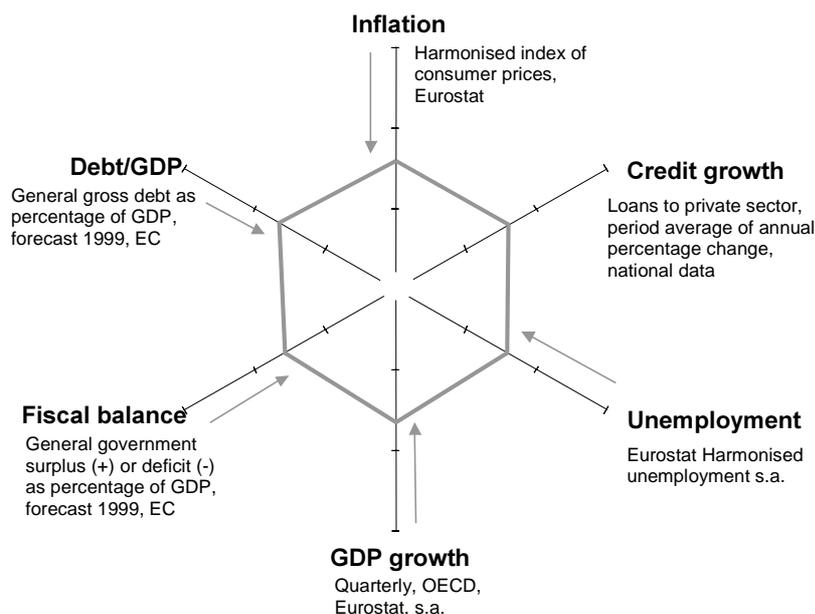
Virtually regardless of the cause for inflation differentials, however, the policy recommendations are the same: adjustment mechanisms in the real economy, i.e. labour and product markets, should be made more flexible.

Convergence barometer

When discussing economic divergences within a currency area, merely monitoring inflation and growth figures is not enough to obtain a comprehensive understanding of the overall macroeconomic situation and thereby also the resulting priorities for economic policy locally. In order to better present the individual situation of various euro area countries *vis-à-vis* the euro area average, we construct a “convergence barometer”. The barometer is so named because it condenses into one diagram a large amount of information by which to assess both the current status, and the likely future direction of economic developments. The barometer in Figure 3 displays in one diagram the current relative state of any euro area member economy in six key dimensions: inflation, unemployment, GDP growth, expansion of domestic credit, fiscal balance, and debt to GDP.

⁸ The classic articles relating real exchange rates to productivity trends are Balassa (1964) and Samuelson (1964), who cast their respective discussions in terms of developing countries.

Figure 3. **Convergence barometer**



The arrows show the more desirable direction of deviations from the euro area average, which is to fall within the hexagon of euro area averages. In the graphical presentation, the scales have been reversed for GDP growth and fiscal balance, in order to simplify the visual intuition. As regards credit growth, the appropriateness of above-average or below-average levels needs to be assessed in conjunction with inflation and other statistics. As always in common currency areas, it should be kept in mind that very large deviations even in positive directions can be a source of concern.

Data in the barometer (see Figure 4) corresponds to the single most recent observation that was available at the time of writing. For inflation, we use the 07/99 observation of Eurostat's harmonised index of consumer prices. For unemployment, we use the seasonally adjusted monthly Eurostat defined harmonised unemployment figure⁹, as reported in both OECD's Main Economic Indicators and the OECD Hot File, Key Economic Indicators¹⁰. Debt figures refer to forecast 1999 general gross debt as a per cent of GDP, as reported by the European Commission on 19 March 1999 -- figures were originally received from member states and adjusted for comparability by Eurostat. Fiscal balances refer to March 1999 forecasts by the EC of the general government surplus (+) or deficit (-). Credit growth refers to the 05/99 year on year increase in credit to the private sector, as reported by national sources.

⁹ Eurostat has developed a benchmark unemployment series which merges 6 quarterly labour force surveys, three annual labour force surveys, three national accounts series, one registration data series and one microcensus. Eventually, it is hoped that this monster can be replaced by a well-designed quarterly labour force survey that is run in all member states.

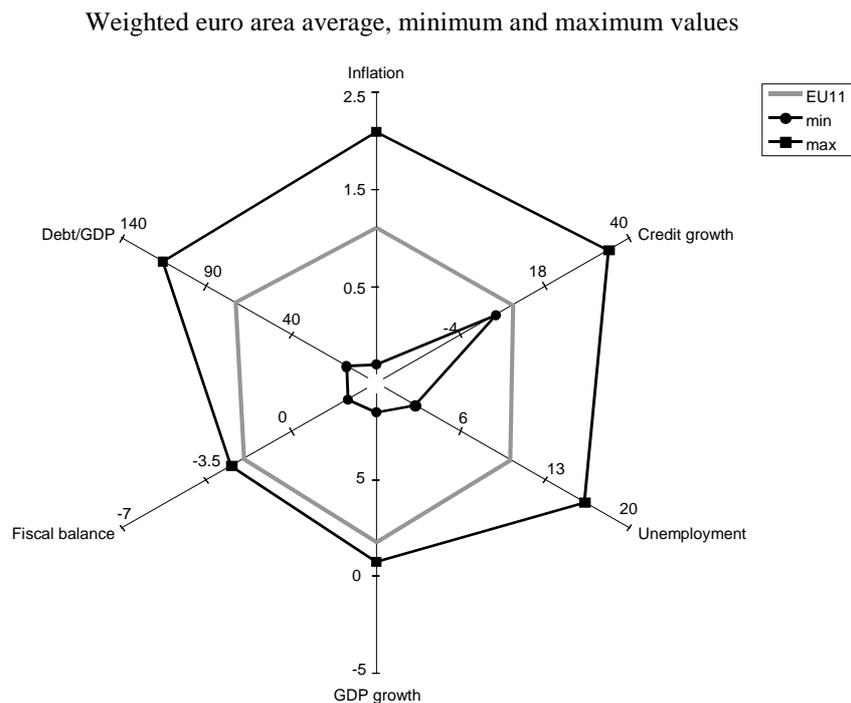
¹⁰ The standardised unemployment rates for the EU countries are the Comparable unemployment rates produced by the Statistical Office of the European Communities (Eurostat). The standardised unemployment rates give the numbers of unemployed persons as a percentage of the civilian labour force. The definition of unemployment conforms with the definition adopted by the 13th Conference of Labour Statisticians (generally referred as the ILO guidelines). The same is true for the definition of labour force, with the exception that Eurostat uses estimates which are based only on labour force surveys covering private households.

With regard to the choice of indicators, inflation, growth, unemployment, fiscal balance and debt figures all correspond to direct and indirect objectives of economic policymakers. Expansion of domestic credit can, in conjunction with inflation and growth figures, also provide insight into the direction of economic developments and eventually the sustainability of policy.

The choice of indicators also reflects our current use of the barometer, which is to present a general overview of divergences in broad areas that are of central concern to policymakers. If we wanted to investigate related questions in more detail, the appropriate dimensions would be different. For example, if we consider the question of cyclical vs. trend divergences, our choice of indicators would reflect dimensions where cyclical and structural components of unemployment, inflation and GDP growth were more clearly delineated¹¹. Fiscal balance would be retained as a primarily cyclically influenced variable and debt/GDP as a primarily structural variable. Likewise, if we were to seek a more detailed understanding of divergences in inflation, we would use multiple subcategories of inflation instead of only HICP.

Figure 4 shows the point-in-time maximum and minimum divergences within the euro area which correspond to the latest observations for the barometer's variables. Barometer pictures for each of the eleven member countries are given in Annex 1.

Figure 4. **Euro area convergence barometer**



Several interesting patterns emerge from this exercise. First, it seems clear that several countries with high unemployment also have high gross debt/GDP ratios and/or weak fiscal balances, effectively limiting room for fiscal policy measures. Likewise, high local inflation (and thus lower real interest rates on euro markets) correlate with higher growth of credit aggregates, suggesting at least the potential for

¹¹ This would be an important subject for study in order to advise on specific policy measures to address imbalances, since temporary and persistent problems should be matched with temporary and permanent solutions, respectively.

the formation of an economic bubble if lending standards are not kept tight enough. The correlation matrix of all of the barometer variables, across all of the euro area countries, is given in Table 2.

Table 2. **Correlation matrix of barometer variables**

	Inflation	Unemp	Credit	GDP	Fiscal	Debt
Inflation	1					
Unemployment	0,33	1				
Credit growth	0,72*	-0,42	1			
GDP growth	0,14	-0,28	0,82	1		
Fiscal balance	-0,01	-0,20	0,57	0,73	1	
Debt/GDP	0,29	0,43	-0,59	-0,64	-0,54	1

*excluding Luxembourg

In conclusion, there are plenty of divergences within the euro area. We developed the barometer as a tool to keep track of several interrelated variables in a compact form, and to compare them with euro area averages. Given the differences that exist, it would be surprising if the same monetary policy suited all individual member countries equally well. A closer examination of this issue is the subject of Section 3.

3 Assessing the relative appropriateness of monetary policy

On the face of it, one might expect that a common monetary policy would cause economic strains in those member countries that deviate the most from the averages on which monetary policy is based. The seriousness of those strains depend on two things: (i) how big the deviations are and (ii) the flexibility of other economic adjustment mechanisms besides monetary policy, such as fiscal policy and labour/product markets. These strains would be in addition to already existing imbalances caused by shocks or other factors.

The existence of divergences within the euro area, documented above, therefore begs the following question: does the common monetary policy of the ECB lead to or compound difficulties in some parts of the common currency area? Might any of those difficulties become severe enough to warrant euro area wide attention¹²?

Monetary thermometer

One way to answer these questions is to look at a benchmark for monetary policy, which makes possible comparisons between “ideal” policy stances for the euro area average versus individual member countries. Below, we have incorporated one such benchmark into an indicator which we call the “monetary thermometer”, because it tries to determine whether the economy is too “hot” or too “cold” for the current euro

¹² This is a narrower version of the more general question: “can economic imbalances become large enough to warrant euro area wide policymaker attention, regardless of the appropriateness or inappropriateness of monetary conditions?”

area monetary policy stance. An economy that is too hot risks overheating because monetary policy is too loose for local conditions, while the reverse is true for an economy that is too cold.

The particular benchmark that we use is based on the work of John B. Taylor, who has proposed a simple monetary rule that has received a great deal of attention¹³. While it is widely acknowledged that neither the European Central Bank nor the United States Federal Reserve could consider giving up discretionary authority over monetary policy given the ongoing turbulence and uncertainty of global macroeconomic developments¹⁴, the so-called Taylor rule constitutes a widely accepted benchmark for monetary policy. As such, it has value as one of several tools for analysis.

A Taylor rule is a very simple formulation by which monetary authorities adjust the short term interest rate in response to two factors only: inflation deviations from a target level, and the size of the output gap. A constant term indicates what level of the short-term interest rate is consistent with full employment.

Taylor's original formulation was

$$r = p + 0.5y + 0.5(p-2) + 2$$

where

r is the short interest rate controlled by monetary authorities,

p is the rate of inflation over the previous four quarters,

y is the per cent deviation of real GDP from a target.

From the formulation above, it can be seen that Taylor assumed the target level of inflation to be 2 per cent, and the economy's equilibrium long run real rate of interest to also be 2 per cent. Thus, when inflation is stable at 2 per cent and the economy is operating at its potential, nominal interest rates should be 4 per cent. In empirical tests, the Taylor rule has been found to track actual monetary policy surprisingly well from the late 1980s until the present, both in the United States and in several large European countries.

While Taylor rules have been calculated for some individual countries in the euro area, the history of EMU is too short for a meaningful policy comparison to be made between benchmark and actual policy. Nonetheless, it is a straightforward exercise to calculate a benchmark "optimal" monetary policy for a euro area under a variety of different macroeconomic characteristics. Euro area monetary policy is a function of the developments in each of the individual member countries, weighted by country size. Therefore, by adjusting the weights of various countries in the euro area average, benchmark "optimal" policy can be calculated for each of the individual euro area countries.

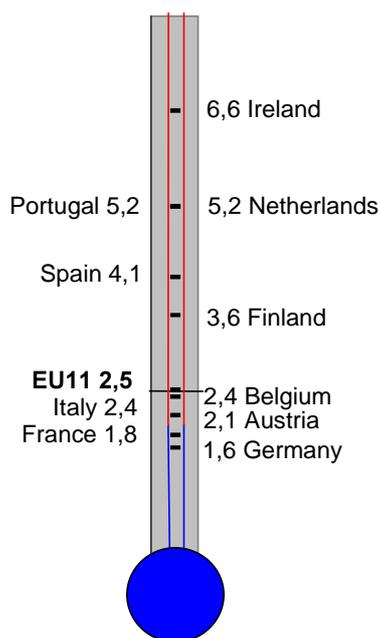
¹³ See Taylor (1993). A literature review of the Taylor rule is contained in Peura (1999).

¹⁴ Since the Taylor rule is reactive in nature (as opposed to proactive), its effective use is sensitive to the reliability of data that is available at the time that decisions need to be made. This currently implies serious data difficulties, especially in Europe, as preliminary statistics often undergo significant revision after they are first released. It is still too early to accurately assess the susceptibility to revision of the new European System of Accounting (ESA 95) national accounts data. A. Orphanides of the United States Federal Reserve has pointed out that under such circumstances, one might expect the Taylor rule to perform better with ex post data analysis than with actual policymaking.

We have done this, using the original form of Taylor's rule with the sole change being that the target inflation rate was assumed to be 1 per cent¹⁵. Data for inflation averages the past 12 months' observations of Eurostat's harmonised index of consumer prices (HICP), the last observation being 6/99. Estimated output gaps are from OECD's Economic Outlook 65, June 1999. The results show the extent to which current euro area policy deviates from what the benchmark optimal policy would be, were the entire euro area to look like Germany, or Italy, or Ireland, etc. This information is useful in illustrating the relative strain on fiscal and structural policy in different countries as they compensate for the burden of a common monetary policy that is not fully geared to local conditions. Thus, the larger the difference between actual (euro 11) and benchmark monetary policy in Ireland, for example, the greater the strains will be on fiscal and structural adjustment mechanisms of the Irish economy to restore the economy to a long-term sustainable growth path.

Using the OECD figure for the euro area aggregate output gap, the thermometer (see Figure 5) suggests that optimal euro area short interest rates should be 2.5, which is exactly the current setting. The divergences are in some cases quite large, with Ireland, Portugal and the Netherlands apparently at greatest risk for overheating and Germany at the greatest risk for enduring a downturn.

Figure 5. **Monetary thermometer**



Data sources: Eurostat, OECD

¹⁵ The ECB has the stated intermediate objective of keeping inflation "below two per cent". While a specific target figure has not been stated, it seemed logical that for the purposes of a benchmark Taylor rule, we should use a rate lower than 2 per cent. We chose 1 per cent because this is the mid-point of the implicit 0-2 target range for inflation, and is a level that current inflation seems to be converging to (see Figure 1). Changing the inflation target causes only a linear shift in the thermometer, so the dispersion remains the same; thus, a target inflation rate of 1.5 per cent instead of the currently assumed 1 per cent would lower the entire scale by exactly 0.25 percentage points.

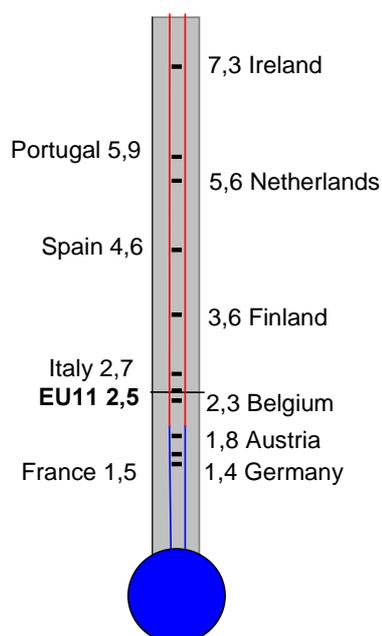
It should be emphasised that differences are always to be expected within a common currency area, and need not cause serious discomfort so long as effective mechanisms exist to compensate for the imbalances. Any balanced assessment of the desirability of a common monetary policy must also take due account of the benefits, which are outside the scope of this paper but have been clearly established elsewhere.

How useful and robust is this tool for analysis? The Taylor rule has been critically reviewed on several counts, which are surveyed below:

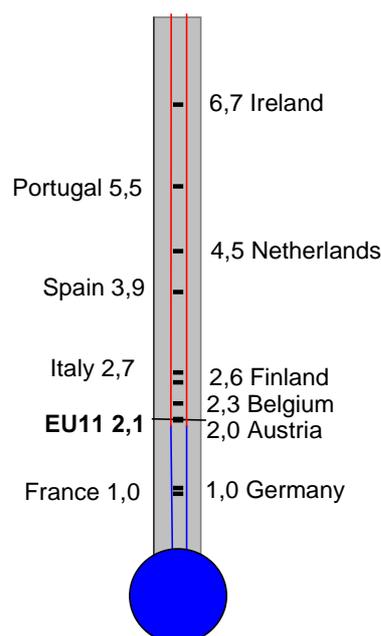
- Are the policy response parameters the right size? Taylor's original formulation weights policy response at 1.5 to inflation and 0.5 to output gaps. Simulations by economists using a variety of models have suggested that these parameters are too low; a more efficient rule would have higher parameters for both inflation and output gaps¹⁶. If this is true, then the divergences within the euro area become even more worrying; see for example Figure 5A Panel A. Nonetheless, it has also been counter-argued (Smets, 1998) that when there is serious uncertainty about the values of the deviations, responses should probably be more muted¹⁷. This would apply more strongly to the output gap variable, since its measurement is more controversial than inflation.

Figure 5A. **Robustness checks on the monetary thermometer**

Panel A: Inflation coefficient 2
[OECD output gaps]



Panel B: IMF output gaps
[Inflation coefficient 1.5]



- How reliable are the estimates of potential GDP and the long-run equilibrium real

¹⁶ A good review of these tests is contained in Taylor (1998), who acknowledges uncertainty about the appropriate size of coefficients and proposes that the benchmark rule be supplemented with a portfolio of other rules, including Taylor rules with higher and lower coefficients.

¹⁷ One implication is that in the limit, if there is no confidence at all in the measured size of the output gap, the policy response to measured output gap changes should be zero.

interest rate? Three points are worth noting in this regard. First, estimates of output gaps and equilibrium “neutral” interest rates are essential to formulating monetary policy under any circumstance; if these are incorrectly estimated to begin with, monetary policy is unlikely to be further misled by looking at a Taylor rule benchmark. Second, the efficiency of the Taylor rule is reduced when the variables are poorly estimated, but the rule itself remains inherently stable; under a Taylor rule, monetary policy cannot spiral out of control even under the most extreme conditions.

Finally, the monetary thermometer constructed in this paper is concerned with the differences between countries’ benchmark interest rates, not their actual levels. Using different estimates of output gaps tends to shift the thermometer’s scale by a slight amount, but the differences persist. Figure 5A Panel B shows the thermometer with all the same baseline assumptions, but using the IMF estimates for the output gap. Compared with the OECD, the IMF is more pessimistic about output gaps, implying that on average the euro area countries are further below their level of potential output, with this holding particularly true for the large countries France and Germany. As a consequence, using the IMF figures in the Taylor rule gives us a lower benchmark optimal level of interest rates for the euro area as a whole: 2.1 per cent as opposed to 2.5¹⁸. The range of benchmark optimal interest rates is greater, indicating that using IMF figures, the euro area divergences are even more worrying.

- How robust is the Taylor rule to different models of the economy? Simulations have shown that the simplest form of the Taylor rule is surprisingly robust to a variety of different models of the economy, more so than the more complex versions of the rule (see Taylor 1998). Robustness to model/regime changes is a highly desirable property under the circumstances we now face in Europe. This was an important reason why we chose to construct the monetary thermometer using the simplest version of the rule.
- Why not use forecast inflation instead of current and past values? Setting aside the question of how to choose between competing forecasts, we observe that in the end, all forecasts are still based on current and past data. Along with Taylor, we justify the explicit use of already observed values for reasons of clarity/transparency. Taking an average of inflation over several periods is also useful because it smoothes short-term fluctuations.

Exchange rate fluctuations

The Taylor rule still leaves out movements in exchange rates and in monetary aggregates. In view of the public attention that has surrounded the recent exchange rate developments of the Euro, the impact of such fluctuations may be worth examining more closely. While it has been pointed out that the euro area as a whole is not enormously dependent on external trade, individual member countries are. Table 3 below examines the importance to individual member countries of trade with countries external to the euro area. The first data column shows the total exposure

¹⁸ Unlike the OECD, the IMF does not calculate an output gap figure for the euro area as a whole. The figure we used was derived by weighting the individual country output gaps using the same weights that Eurostat uses in calculating euro area aggregate inflation.

of each country (imports and exports to/from countries outside of the euro area) as a proportion of GDP. The second data column shows the proportion of exports + imports which each country had with the non euro area in 1998.

The impact of exchange rate fluctuations on the real economies of individual member countries varies widely depending on the exposures of the economies to trade outside the euro area. A country for which trade constitutes a small part of GDP, and which trades mostly with other countries within the euro area, is unlikely to be affected by large swings in the dollar-euro exchange rate. Nonetheless, from Table 3, we can see that the fast-growing economies of Finland and Ireland are highly exposed to currency movements, since both engage in a great deal of trade with countries that are not in the euro area. A sustained depreciation of the euro may therefore dramatically increase domestic competitiveness in these countries as well as import some inflation from abroad. Belgium/Luxembourg and the Netherlands also figure prominently, although their vulnerability to exchange rate fluctuations may be overstated since the proportion of transit trade is substantially greater.

Table 3. **Non euro area (NEA) trade 1998**

	NEA trade / GDP %	NEA trade / Total trade %
Ireland	85	64
Bel/Lux	50	39
Netherlands	48	45
Finland	39	65
Germany	26	55
Austria	22	37
Italy	20	52
France	20	47
Portugal	19	33
Spain	17	41

Data source: Eurostat, NewCronos

If Ireland and Finland are already in danger of overheating, as suggested by the monetary thermometer, then sustained weakness of the Euro would surely be an unwelcome development. This would serve to further increase the pressures on labour markets and other adjustment mechanisms to compensate for a monetary policy that is too loose for local conditions.

In conclusion, many differences exist within the euro area, which are in turn reflected in different “benchmark optimal” monetary conditions. Are these differences large enough to be meaningful? The barometer and thermometer cannot answer this question. For this, we need a better assessment of the flexibility of available adjustment mechanisms. This is the subject of Section 4.

4 Capacity for fiscal adjustment and labour market flexibility

It can be argued that for the most part, the reasons underlying economic divergences are beside the point. The very fact that divergences have grown underlines the importance of alternative economic adjustment channels besides monetary policy.

To the extent that institutions of financial markets, labour markets and fiscal policy are flexible enough to effectively compensate for less-than-optimal monetary policy from the point of view of an individual country, there is little problem. In this respect, the problem of diverging business cycles within a monetary union is very similar to the problem of asymmetric shocks.

In their detail, both fiscal and structural reform are extraordinarily difficult to map out. There is considerable path dependency in policy design, and policymakers are not starting from a clean slate. What can effectively be achieved today depends a great deal on what has been done in the past. For this reason, we will not attempt to propose specific reform measures in this paper; detailed and comprehensive studies have been made elsewhere and are now under consideration by member country governments.

There are, however, several indicators of institutional rigidities in fiscal policy and labour markets. While our analysis is far from conclusive, it provides at least some indication of the relative effectiveness of adjustment channels in different euro area countries, and is thereby useful to identify and focus attention on key areas of concern.

Fiscal flexibility

In the case of fiscal policy, we have run a very simple simulation whereby we computed the risk of different euro area countries exceeding the three per cent stability and growth pact deficit limits in 1999. What we have tested reflects the responsiveness of automatic stabilisers in the economy, and thus does not consider or attempt to assess important discretionary tools that fiscal authorities may have at their disposal.

The method we used involves three steps. First, we assumed that budget balances are only a function of changes in GDP growth – nothing else. In other words, if GDP growth were to remain unchanged, the budget deficit would also remain unchanged from year to year. Second, we subtracted forecast GDP growth in 1999 from growth in 1998 in order to determine what the expected GDP change will be. Finally, we multiplied this GDP change by EC-estimated coefficients for the sensitivity of fiscal balances to GDP to obtain a forecast impact on 1999 budget balances. We repeated the exercise to obtain forecast budget deficits for the year 2000.

Table 4 tabulates the results. The data indicate potential problems for France, but none of the other countries exceed the critical 3 per cent SGP constraint.

Table 4. **Forecast fiscal balances**

	GDP ¹			Sensitivity of budget balances to GDP ²	Forecast Fiscal Balances ³		
	1998	1999 ⁴	2000 ⁴		1998	1999 ⁵	2000 ⁵
Portugal	4,0	3,2	3,3	0,5	-2,3	-2,7	-2,7
Italy	1,4	1,6	2,3	0,5	-2,7	-2,6	-2,3
France	3,2	2,3	2,7	0,5	-2,9	-3,4	-3,2
Germany	2,8	1,7	2,4	0,5	-2,1	-2,7	-2,3
Belgium	2,9	1,9	2,5	0,6	-1,3	-1,9	-1,5
Spain	3,8	3,3	3,5	0,6	-1,8	-2,1	-2,0
Netherlands	3,7	2,3	2,7	0,8	-0,9	-2,0	-1,7
Ireland	11,9	9,3	8,6	0,5	2,3	1,0	0,6
Austria	3,3	2,3	2,7	0,5	-2,1	-2,6	-2,4
Finland	5,3	3,7	3,9	0,6	1,0	0,0	0,2

Data source: EC

¹ Gross domestic product, real percentage change on preceding year.

² EC estimates, 1995

³ General government net lending (+) or borrowing (-) as percentage of GDP.

⁴ 1999 and 2000 forecasts of III-1999.

⁵ Authors' calculations.

Aside from the risks facing France, the conclusions we draw from this exercise are by and large optimistic. Continuing the exercise into the year 2000, none of the other countries ran up against the SGP deficit limit. None of the other countries reach the limit even if GDP growth were to drop by more than one half percentage point from currently forecast levels. Thus, for most of the countries that the thermometer identifies as suffering from a nationally inappropriate monetary policy, the fiscal mechanisms are probably sufficiently robust to avoid problems with the stability and growth pact 3 per cent deficit limit for now.

This nonetheless abstracts from effects of structural issues such as ageing populations, as well as any discretionary measures that governments may undertake. The analysis also abstracts from risks that may result from overheating of economies. In our view, such risks are considerable in some countries, and there may be very little room for complacency even if budgetary processes are in principle good.

A striking feature is that the budget elasticities to GDP (Table 4, column 4) are so similar across the euro area countries. This suggests that, all else equal, the countries at greatest risk of exceeding the SGP 3 per cent deficit constraint are those which (i) are already close to this constraint and (ii) expect growth to slow down. There is very little difference across euro area countries in terms of relative flexibility of fiscal policy, as regarded from the perspective of automatic stabilisers, although the ability to make discretionary decisions may well differ.

Labour market flexibility

Academics, research institutes, interest groups, national authorities, international organisations, etc have already studied labour markets in the euro area very extensively¹⁹. While there is a heated debate regarding the nature, sequence and

¹⁹ Informative studies include Coe and Snower (1997), European Commission (1999), and OECD (1994, 1999a).

timetable of policy measures, an overwhelming consensus exists that labour markets should become more flexible.

In assessing the capacity of individual countries to respond to economic shocks and pressures, it is also useful to have a rough assessment of the *relative* flexibility of labour markets across the euro area²⁰. One way to do this is to rank countries in terms of different labour market rigidity indicators. Table 5 does this, using as indicators net replacement rates, tax wedges, employers' social security contributions and long-term unemployment. An overall rank (in the last column) is obtained by naively summing the ranks of countries for each of the four indicators. The ranking exercise suggests that labour markets in France and Finland are the most inflexible; by comparison, Ireland, Luxembourg and Portugal have the most flexible labour markets.

Table 5. **Indicators of labour market rigidities**

Net replacement rate ¹		Total tax wedge ²		Employer's social security contributions ³		Long-term unemployment rate ⁴		Overall inflexibility ⁵	
FI	103	FI	50,3	IT	31,7	SP	9,4	France	1
LU	91	IT	48,3	FR	30,2	IT	8,3	Finland	2
FR	84	BE	48,2	BE	25,8	BE	5,4	Belgium	3
NL	82	FR	45,4	SP	23,5	FR	5,0	Italy	4
GE	80	NL	39,9	FI	20,5	GE	4,9	Spain	5
PT	77	AT	37,3	AT	19,6	IE	4,4	Germany	6
BE	72	GE	35,0	PT	19,2	FI	3,2	Netherlands	7
AT	69	SP	33,5	GE	16,8	PT	2,1	Austria	8
SP	67	PT	30,9	LU	11,7	NL	1,9	Portugal	9
IE	64	IE	29,9	IE	10,7	AT	1,3	Luxembourg	10
IT	11	LU	22,7	NL	7,6	LU	0,9	Ireland	11

Sources: Long-term unemployment is from the EC, the rest of the data is from the OECD.

¹ Per cent of the average earnings of a production worker, in the 12th month of unemployment benefit receipt, for a couple with two children, dependent spouse. Data is from 1997.

² Per cent of gross labour costs for average production workers. Includes income taxes, employer and employee social security contributions, but not indirect taxes and cash transfers. Tax rates refer to one-earner couples with two children, and take into account standard tax reliefs. Data is from 1996.

³ Per cent of gross labour costs for average production workers. Data is from 1996.

⁴ Unemployment duration is greater than one year. Data is from 1998.

⁵ Obtained by adding the ranks of each country in each of the four indicators.

There are at least three serious limitations to this type of exercise. First, the overall inflexibility ranking places an equal weight on each of the four indicators, without considering interactions or co-movements between indicators. Second, the choice of indicators is debatable²¹. Third, the rankings do not consider how small or large the difference is between countries, even though large differences should matter much more than small ones. In summary, a different ranking might result from adding

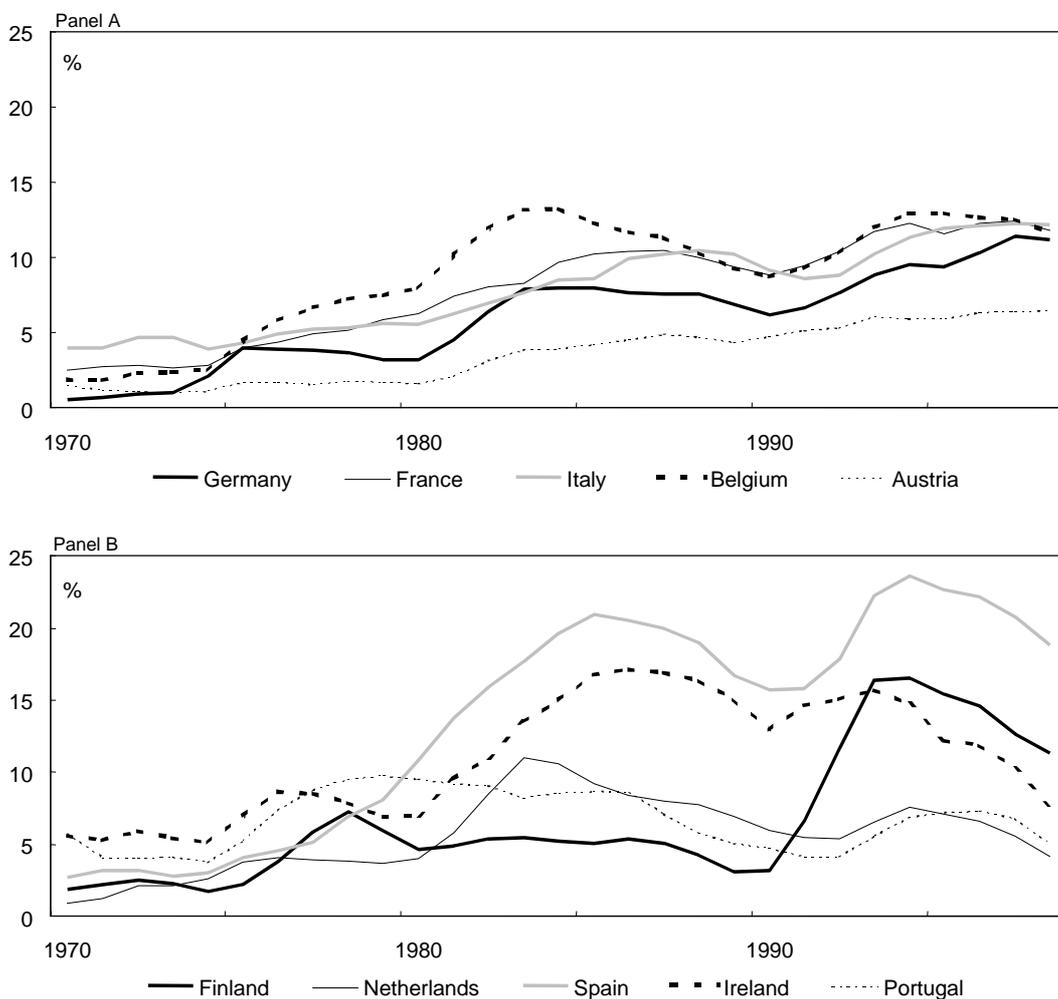
²⁰ This does not take away from the fact that all EU countries may be experiencing a gradual increase in labour market flexibility as cross-border labour mobility increases, at least for skilled workers. Current labour market adjustment via cross-border (and even internal) migration is very low, however, and is expected to increase only very slowly. For a discussion of this, see Eichengreen (1998c) and OECD (1999b).

²¹ For example, employers' social security contributions (column 3) is already included as a component in the total tax wedge (column 2).

more indicators, considering slightly different indicators or weighting the current indicators in a different way. Nonetheless, the sole purpose of the exercise is to provide one indication of relative labour market inflexibility across the euro area, and Table 5 should be viewed with this in mind.

Figures 6 and 7 show the different developments that have taken place in two groups of euro area countries. Figure 6 panel A shows countries that have seen a slow but steady increase in unemployment rates. These include the three largest countries (Germany, France and Italy), which together make up close to 70 per cent of the euro area weighted average. Except for Belgium, there has been very little volatility in the series. Panel B shows rapidly growing countries that have consequently in recent years experienced substantial declines in their unemployment rates. With the exceptions of Spain and Finland, unemployment rates are now below 7-8 per cent.

Figure 6. **Unemployment rates since 1970**



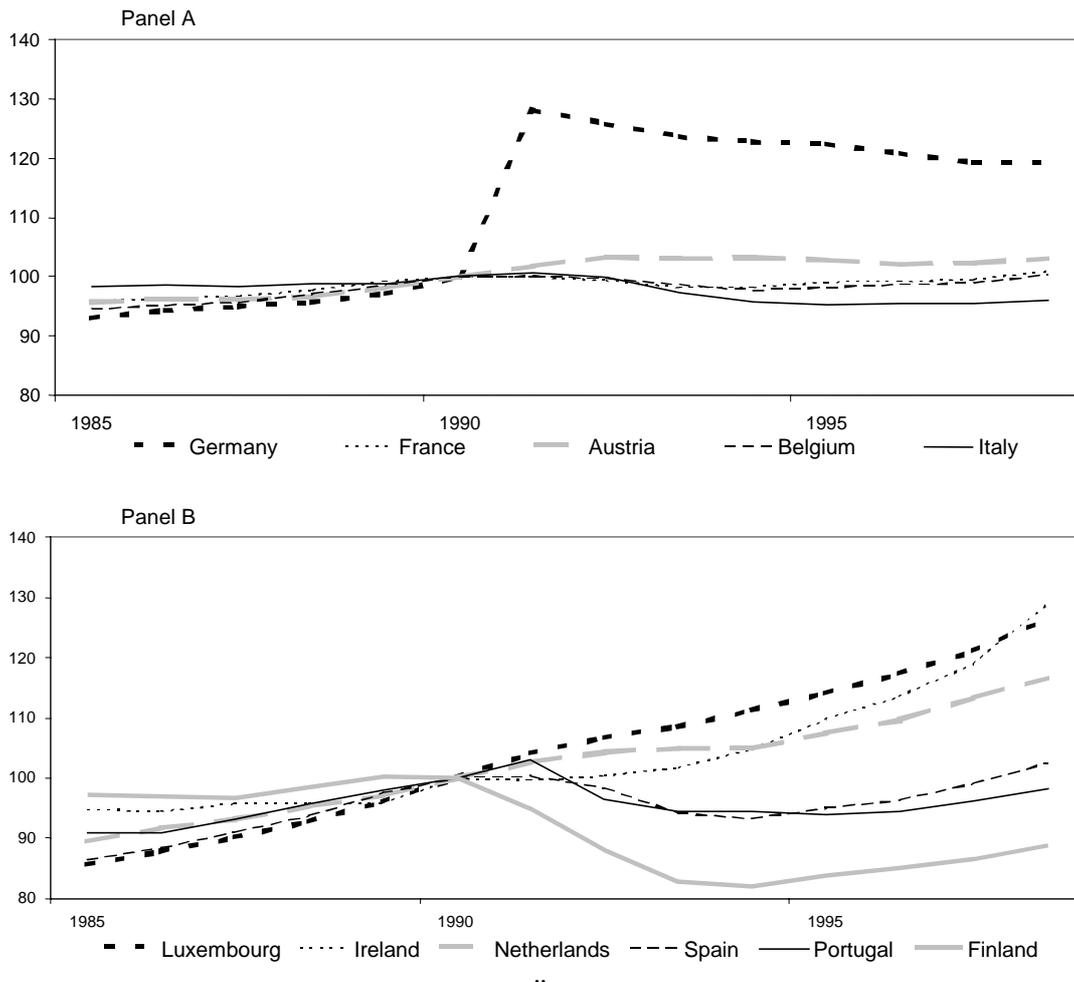
Data source: OECD Economic Outlook 65.

This 7-8 per cent level is important for reasons relating to the effective functioning of labour market institutions. In all countries, receiving unemployment benefits is contingent on the applicant actively looking for work. This job search requirement is in practice much easier to enforce when unemployment is low; usually there is not a great shortage of jobs and labour offices have better opportunities to monitor the

individual cases of job-seekers who fail to successfully find jobs. When the unemployment rate rises much above 7-8 per cent, the job search requirement becomes much harder to enforce, leading to greater incidence of abuse of the system and labour market offices that are much less effective in implementing policy.

Figure 7 shows a similar split between high growth and low growth countries as regards employment and job creation. In Panel A, countries which represent the greater part of the euro area have shown little or no job creation since 1985. The large positive jump in Germany's employment corresponds to the increase in population following the unification of East and West Germany.

Figure 7. **Employment developments since 1985 (1990=100)**



Data source: OECD Economic Outlook 65.

In Panel B, employment likewise mirrors the developments in economic growth that are evident in the corresponding unemployment trends in Figure 6, Panel B. Nevertheless, recent positive developments notwithstanding, the only significant net growth in employment since 1985 seems to have come from Luxembourg, Ireland and the Netherlands, which may have progressed further with structural reforms.

In summary, there is not a great deal of evidence to suggest that the euro area economies by and large have efficient mechanisms at their disposal which will allow them to adapt to diverging economic developments and occasional asymmetric shocks of moderate size. Fortunately, the 3 per cent fiscal deficit limit imposed by the stability pact is still probably not unduly tight, so there exists a window of

opportunity to take effective reform measures. While labour markets are showing increasing signs of flexibility in half of the euro area countries, these are primarily the smaller ones representing only a small fraction of the euro area weighted average. In terms of relative capacities of labour markets to adapt, there remains a wide divergence.

Clearly the absence of an imminent crisis is not a good reason for complacency; serious longer term structural issues, such as ageing populations, will still require response measures. Moreover, there remains the potential for large external shocks from America, Japan or emerging markets, as well as the formidable challenge of smoothly integrating the accession countries to the EU. In any event, more flexibly functioning markets lead to faster and less disruptive adaptation to changes in the economic environment, of which there will probably be many more as Europe continues to integrate more closely.

5 Concluding remarks

Both cyclical and structural divergences exist within the euro area. For this reason, a common monetary policy is virtually certain to occasionally be too loose or too tight for national circumstances. This increases the pressure on alternative channels of adjustment, such as fiscal policy or labour markets, to compensate for monetary rigidity. The lower the flexibility of these channels, the greater the problem becomes of cyclical issues turning into more persistent, structural ones. All large divergences are important and should be paid careful attention to.

With regard to improved surveillance tools, we have two proposals. First, with regard to country comparisons, a “convergence barometer” is developed which simultaneously illustrates divergences in six more or less interdependent dimensions. Comparing barometer readings over time also introduces a dynamic dimension. Second, in order to assess strains on real sector adjustment mechanisms, we propose a Taylor rule based “monetary thermometer”. This would provide a benchmark for how much actual monetary policy deviates from what would be the optimal if the entire Euro area economy were to look exactly like that of an individual member state.

While little time has passed so far since the introduction of the euro, the effectiveness of policy measures in the euro area will become easier to assess as more data becomes available. In the meantime, much work remains to be done in assessing and enhancing the capacity of real economic adjustment channels to respond not only to asymmetric shocks but also to trend and cyclical divergences within the common currency area.

Directions for further research

There are at least two logical extensions to this paper. First, a more thorough assessment is needed of the current capacity of economies to adjust by themselves to economic imbalances, including a common monetary policy that may be too loose or too tight for national conditions. Related to this work is the development of alternative mechanisms to support stabilisation in member countries which are unable to return to a sustainable growth path on their own accord.

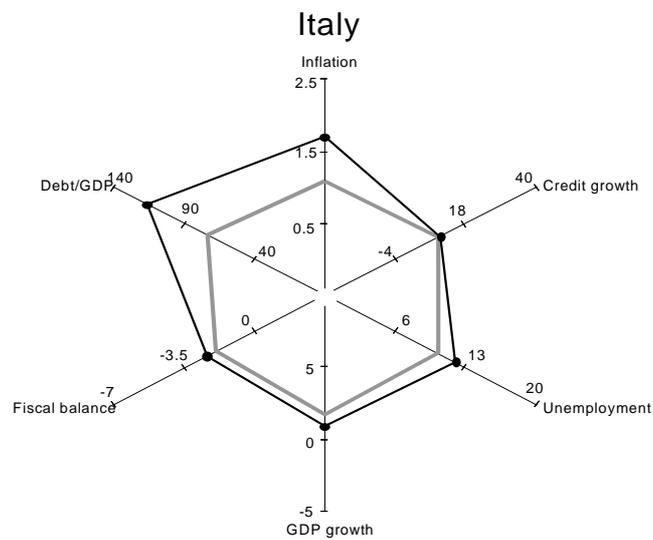
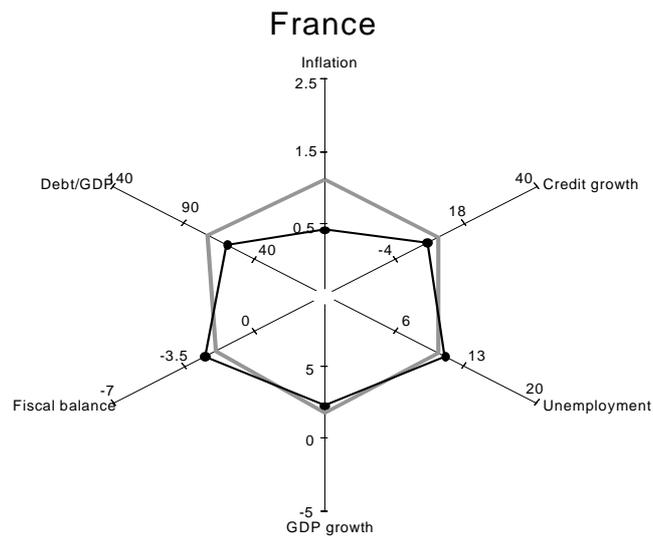
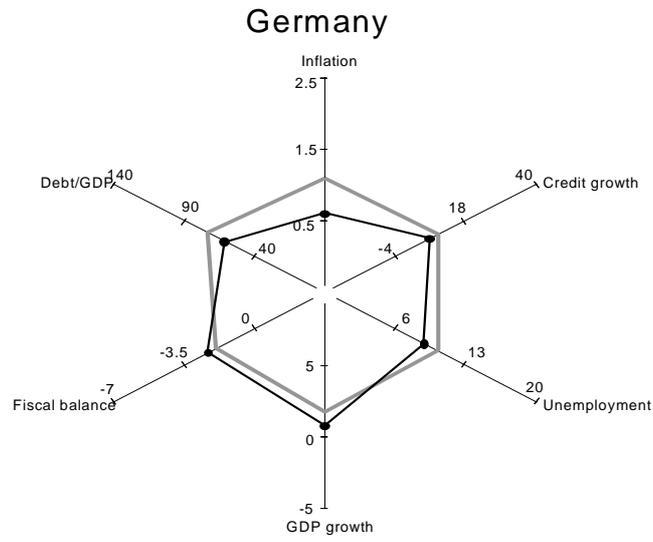
The second and more straightforward extension is to apply the framework above to the EU enlargement debate, where the challenge is to ensure the smooth transition of applicant countries into the EMU. Versions of the convergence barometer and monetary thermometer could be developed which would facilitate surveillance of countries which are currently on an accession track to the EU, and consequently expected to eventually join the euro area.

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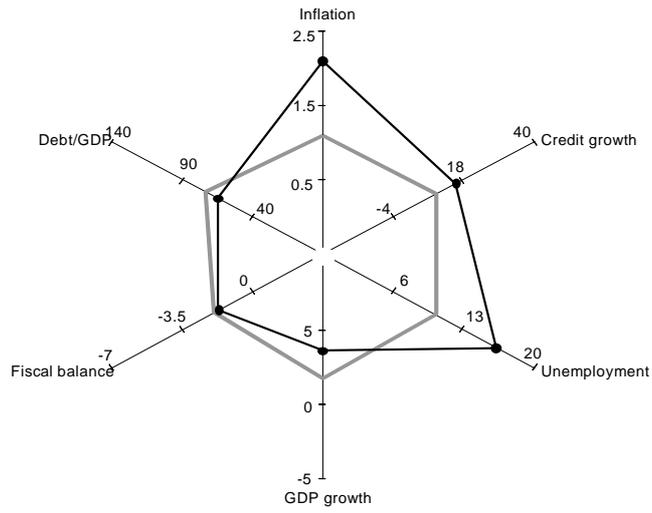
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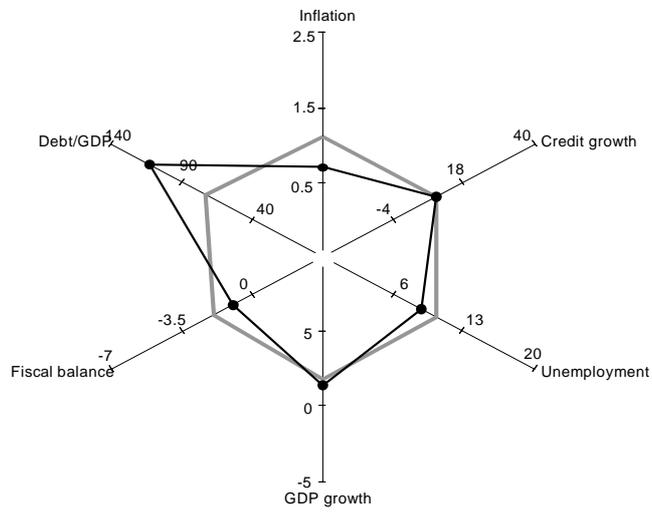
Annex 1. Convergence barometers for each euro area country



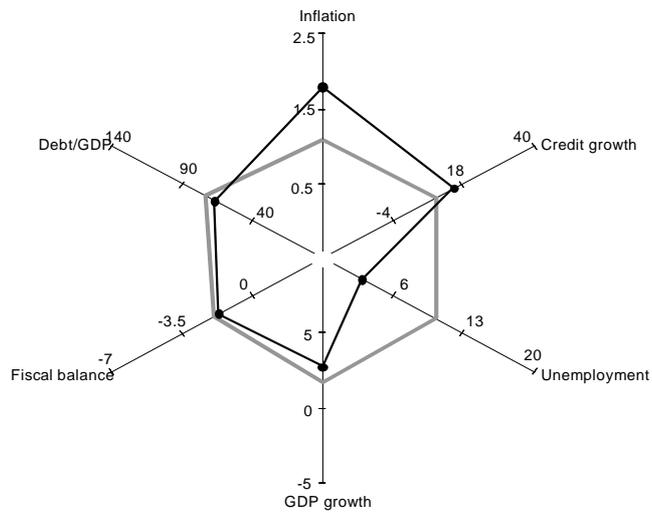
Spain



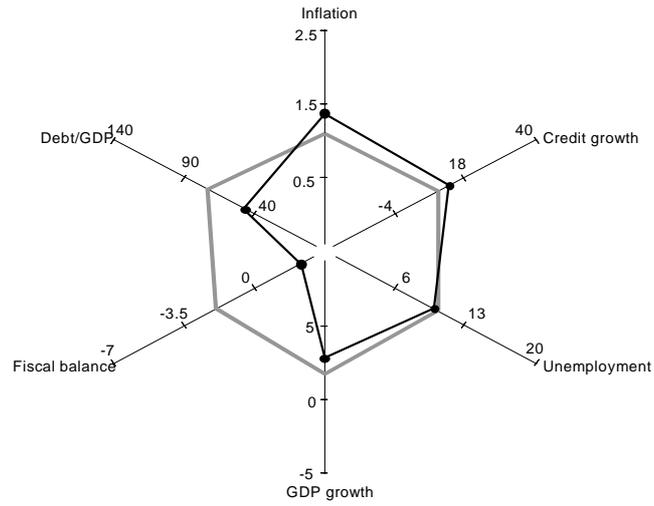
Belgium



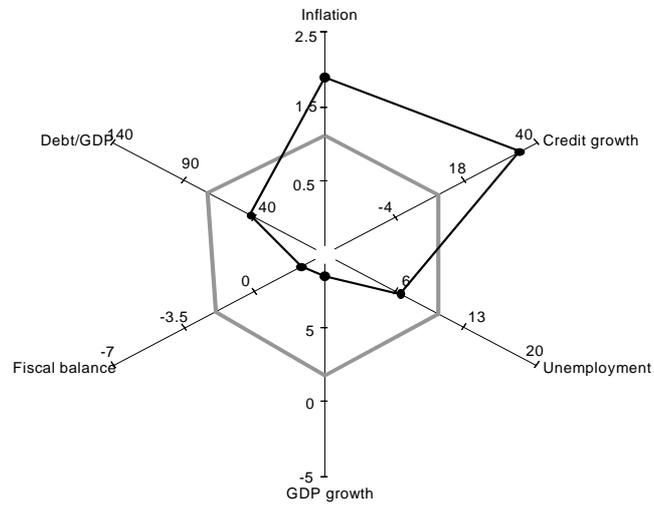
Netherlands



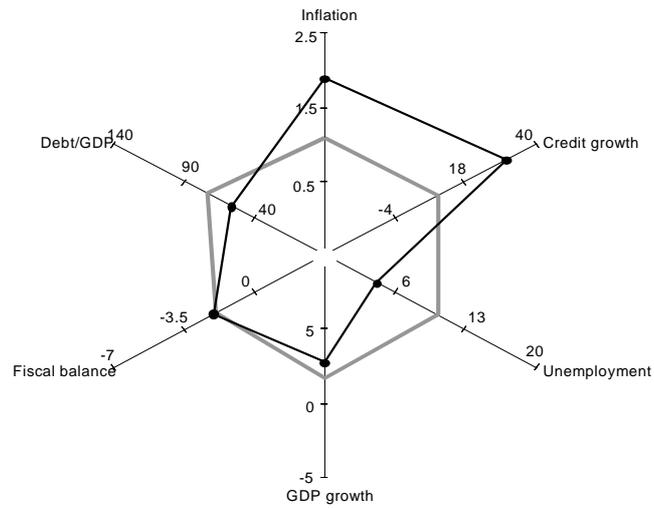
Finland



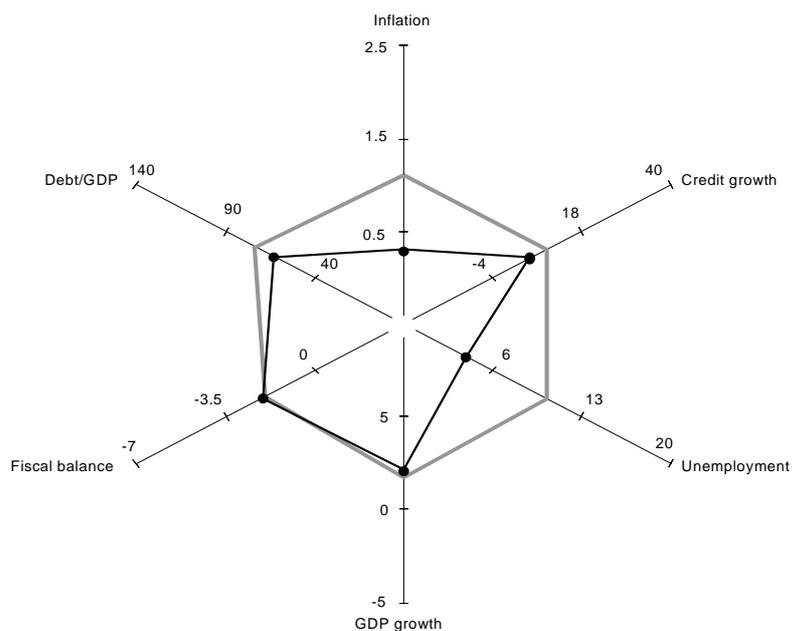
Ireland



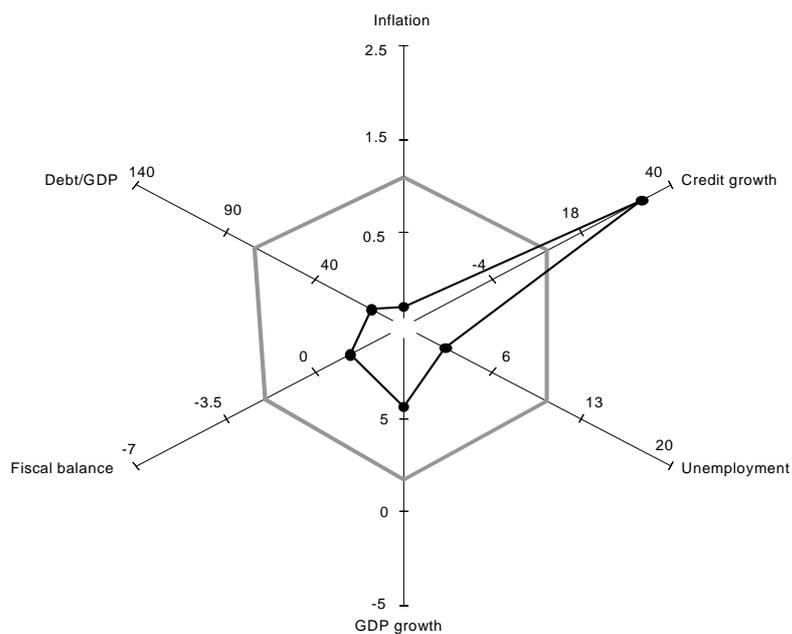
Portugal



Austria



Luxembourg



Data note: The dates of the latest observations are as indicated below.

	EU11	BE	DE	ES	FR	IE	IT	LU	NL	AT	PT	FI
Inflation	7/99	7/99	7/99	7/99	7/99	7/99	7/99	7/99	7/99	7/99	7/99	7/99
Unemployment	6/99	6/99	6/99	6/99	6/99	5/99	4/99	6/99	5/99	6/99	6/99	6/99
Credit growth	5/99	5/99	5/99	5/99	5/99	5/99	5/99	5/99	5/99	5/99	5/99	5/99
GDP growth	q1-99	q4-98	q1-99	q4-98	q1-99	98	q1-99	98	q1-99	q4-98	q4-98	q1-99
Fiscal balance	99	99	99	99	99	99	99	99	99	99	99	99
Debt/GDP	99	99	99	99	99	99	99	99	99	99	99	99