

EUROPEAN COMMISSION  
DIRECTORATE GENERAL ECONOMIC AND FINANCIAL AFFAIRS  
Economic Studies and Research  
Study Advisor

Brussels,  
ECFIN.A - FB

To: K. Regling  
Via: J. Kröger

From: F. Ballabriga

Subject : *Asymmetric shocks and potential stabilizers in EMU :  
Past, present and prospects*

---

This note aims at framing the discussion of asymmetric macroeconomic variability in the context of EMU. It first focuses on available evidence regarding national and regional variability and the way countries have coped with it. Then some likely future scenarios are considered along with potential stabilizers to deal with idiosyncratic fluctuations. The policy conclusion is that financial integration and structural reforms that improve market functioning will be key elements to avoid the potentially worse scenarios.

CC : A. Cabral  
H. Carré  
A. Italianer  
J. Schmidt

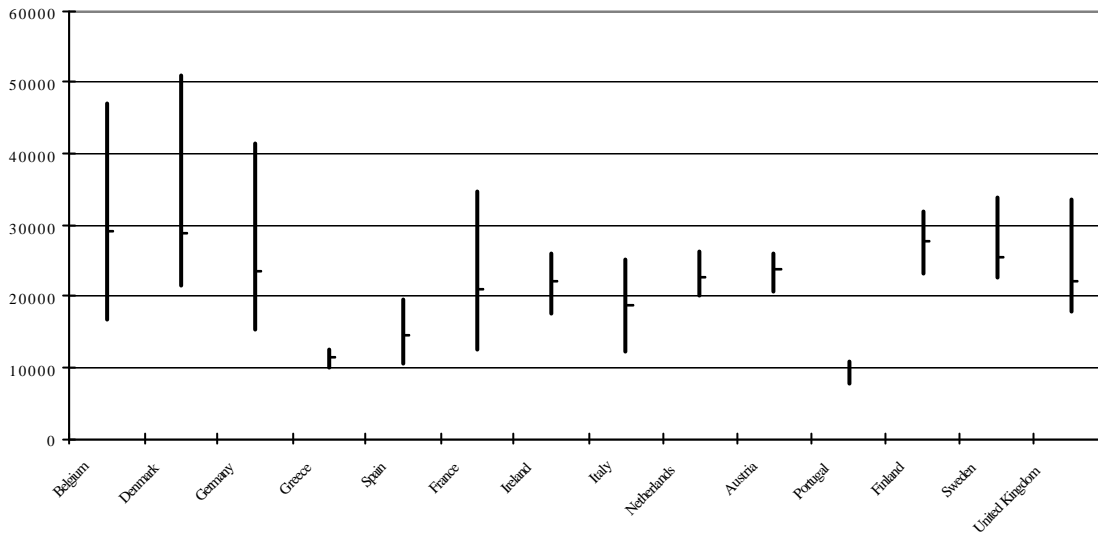
A. Dramais  
F. Schönborn  
C. Martinez Mongay  
W. Röger  
F. Keereman  
S. Deroose

F. Coricelli  
H. Huizinga  
L. Jonung  
P. Mills  
K. Pichelmann  
H. Oksanen

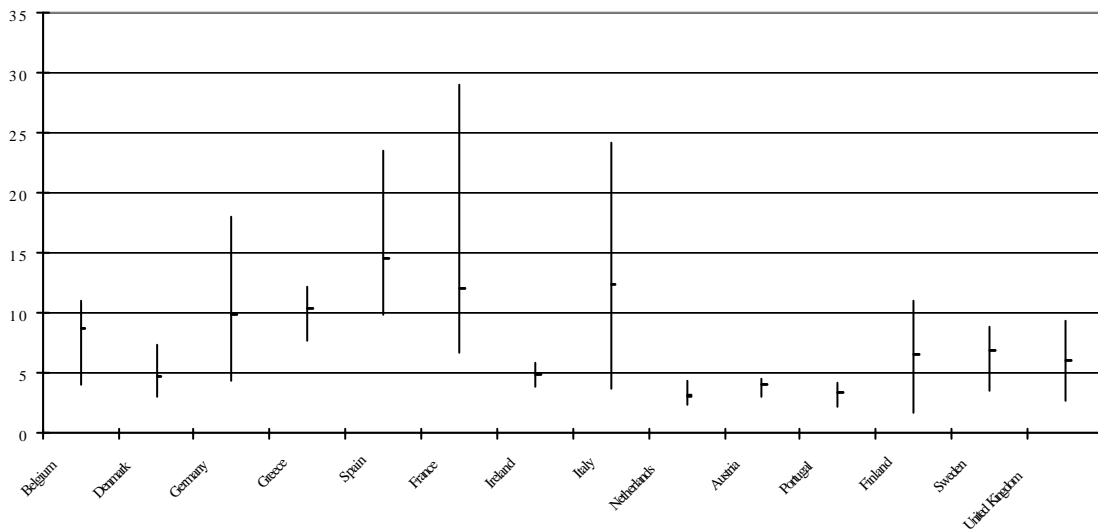
## 1. INTRODUCTION

Forces driving economic growth have led to a EU map characterised by economic disparities. Figure 1 provides a static illustration of this fact in terms of the income per capita for the year 1999 and the unemployment rate for the year 2000. The range of regional disparities within countries looks at least as important as the range across countries.

*Figure 1a. Regional Income per capita Range: 1999*



*Figure 1b. Regional Unemployment Range: 2000*



Source: Eurostat

In this context, EMU has proceeded with special concern about the issue of economic convergence and its potential effects on the degree of asymmetry of national macroeconomic fluctuations. This concern is connected with the loss of the national monetary instruments for stabilization and is the focus of this note.

After some conceptual remarks, the note looks briefly at pre-EMU evidence on macroeconomic synchronicity. Then it proceeds to consider alternative future scenarios and draw policy conclusions.

## 2. BRIEF CONCEPTUAL GUIDE

A country/region experiences asymmetric macroeconomic variability when its economic activity fluctuates relative to other countries/regions. There are several potential sources of fluctuations. Shocks stemming from the external sector or, if any, from a common policy (e.g. a single monetary policy) are *common shocks*. Those originated in the domestic sector (policy or non-policy) are *country shocks*. Both common and country shocks may be either symmetric or asymmetric. A common shock will be asymmetric if its transmission (size, sign, and persistence) is different across countries. This will be the case if the policy response and/or the economic structure (factor mix, product mix, market rigidities...) of the private sector are different. On the other hand, a country shock will be asymmetric if it remains basically idiosyncratic, affecting mainly the domestic sector. This will be the case if economic integration is low. Otherwise, the shock will be transmitted across countries and may generate symmetric or asymmetric variability.

It should be emphasized that different degrees of persistence can make a shock asymmetric. The degree of persistence of shocks depend on both the structure of the policy (mainly regulation) and non-policy (mainly market structure and rigidities) sectors, which determine the transmission effects. For instance, a country with a sclerotic labor market or an unsound banking system will tend to generate high persistence.

## 3. PRE-EMU EVIDENCE

### Variability across countries

The 1990s debate about the viability of the European single currency was very much centered around the existing degree of macroeconomic synchronicity among EU countries. The objective was to assess the extent to which Europe could be considered an Optimal Currency Area (OCA). In this respect, the available empirical evidence for the pre-EMU period contains a mix of optimistic and pessimistic elements.

On the one hand, studies looking at output correlation tend to find that national output co-movement increased slightly during the period 1980-1998 relative to the 60s and 70s. On the other hand, non-negligible asymmetric components in output variability between core and periphery countries tend to be reported for the same period. Besides, and despite the advances in economic integration, the sources of national macroeconomic variability remained largely idiosyncratic. As a quantitative illustration of this fact, Table 1 reports estimates of the percentage of output and inflation variability explained by idiosyncratic shocks during the period 1980-96 in a set of selected countries. As can be seen, the percentage tends to be above 50%.

Table 1. *Idiosyncratic Variability in Europe: 1980 – 1996*

	<i>Inflation</i>	<i>Output</i>
Germany	56% - 86%	77% - 90%
France	59% - 84%	58% - 75%
U.K.	37% - 58%	64% - 82%
Spain	39% - 58%	37% - 63%

Each range represents a 90% confidence band for the percentage of variability explained by idiosyncratic shocks. Source: Ballabriga, Sebastián, Vallés (1999), JIE,48.

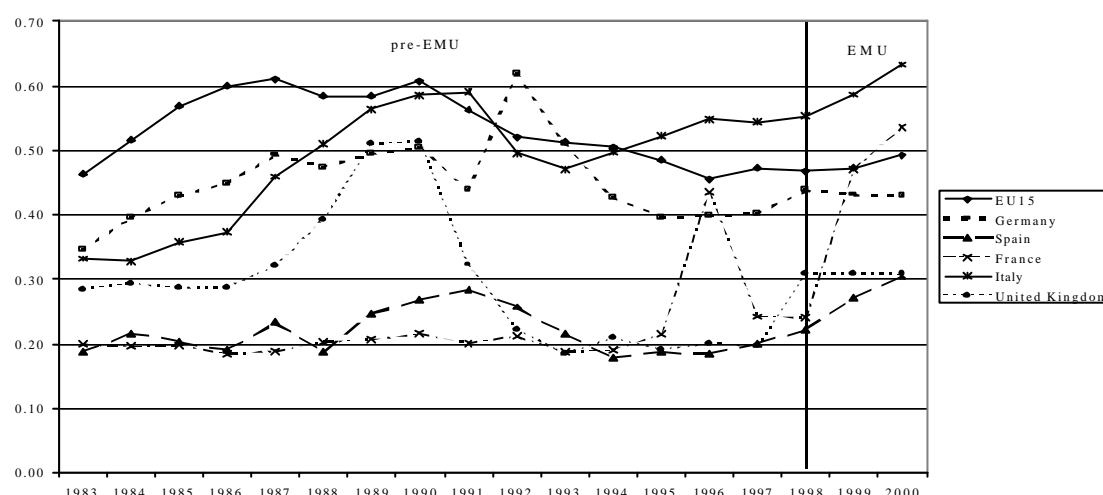
Overall, a probably safe conclusion is to say that the pre-EMU period saw some advances in cyclical synchronicity across countries but was also characterised by a considerable degree of asymmetry, mainly stemming from country shocks with large idiosyncratic components.

### Variability across regions within countries

Another aspect of pre-EMU macroeconomic variability is that it may be as asymmetric across regions within countries as across EU countries. As indirect evidence, Figure 2 presents the time profile of the coefficients of variation for regional unemployment rates in a set of selected countries, along with the corresponding coefficient for EU countries (except Luxembourg)<sup>1</sup>. Two features deserve emphasis:

- Diversity across countries was larger than across regions within countries during the 80s. However, the gap shrank during the 90s.
- Some countries tended to display during the 90s larger internal diversity than found across EU countries (specially Italy in the graph).

Figure 2. Coefficients of Variation of Regional Unemployment Rates: 1983-2000



Source: Eurostat

Thus, to the extent that this diversity reflects the consequences of asymmetric shocks, it suggests that European asymmetries have been important at the regional level.

### Variability across European regions

Another dimension of European macroeconomic variability is the co-movement of economic activity across regions of different countries. In this respect, the following two facts convey relevant information:

<sup>1</sup> This figure is more informative than Figure 1. On the one hand, it allows to see the dynamics of diversity. On the other hand, it is less sensitive to outliers, and so more robust to alternative regional divisions.

- As measured by employment growth, the correlation of regional aggregates tended to increase with EU aggregates and decrease with national aggregates (slightly in both cases) during the 80s and 90s relative to previous decades.
- Intra-industry trade among EU countries has increased steadily. On average, in 1998 intra-industry trade was about 10% higher than in 1980.

This evidence is consistent with the view that the similarity of the productive structures is considerable among EU countries, and that a tendency toward production diversification more than specialisation was prevalent in the pre-EMU period.

#### **4. HOW DID EU COUNTRIES DEALT WITH THEIR MACROECONOMIC VARIABILITY DURING THE PRE-EMU PERIOD ?**

##### **Country level**

To adjust to permanent asymmetric shocks, non-core countries tended to rely on nominal exchange rate realignments to correct international relative prices. The 1992 crisis of the Exchange Rate Mechanism provides the most spectacular example, illustrating a situation where the accumulation of inflation differentials became finally unsustainable. This crisis can in fact be interpreted as signalling the difficulties that countries found to adjust through the market mechanism i.e. wage restraint. The high degree of wage and price rigidity ruled out de facto any significant role for the market adjustment mechanism.

On the other hand, EU countries seem to have made systematic active use of their macroeconomic stabilisation policies to deal with deviations from potential output generated by temporary shocks. Estimation of simple monetary (in the Taylor tradition) and fiscal policy rules for EU countries during the period 1979-1998 shows that:

- Despite the strong external constraint imposed by the Exchange Rate Mechanism, most national monetary authorities applied a counter-cyclical monetary policy in response to domestic output fluctuations.
- Fiscal policy (inter-temporal dimension) was also counter-cyclical in most countries.

More controversial is, however, the degree of dampening provided by macro policy. In this respect, the available evidence regarding the impact of fiscal policy suggests that between 10 and 30% of output fluctuations may have been dampened through automatic stabilization during the pre-EMU period.

##### **Regional level**

Regional asymmetric fluctuations within countries can be handled through several channels:

1. Regional relative price adjustment
2. Inter-regional migration
3. Inter-regional fiscal transfers (intra-temporal dimension of fiscal policy)
4. Risk sharing through financial markets (both credit and capital markets)

The role of channels 1 and 2 as systematic mechanisms for regional adjustment in European countries has been weak during the pre-EMU period. Table 2 is informative about the relative role of channel 1

at international and regional levels. It shows that regional relative prices tend to adjust much less than relative international prices.

*Table 2a. International Price Variability Relative to Germany (percent): 1988-1996*

Belgium	1.1
Denmark	3.9
Germany	
Greece	3.5
Spain	9.4
France	3.4
Ireland	9.1
Italy	12.6
Netherlands	3.2
Austria	
Portugal	6.8
Finland	17.2
Sweden	13.3
United Kingdom	9.6
Standard deviation of the log national GDP deflator less Germany's log national GDP deflator, in national currency	

*Table 2b. Intra-national Relative Price Variability (percent)*

Germany	1970-95	1.2
Italy	1970-96	2.5
Regional standard deviations of the log regional GDP deflator less the log national GDP deflator.		

Source: Obstfeld and Peri (1998). NBER WP # 6431

On the other hand, Table 3 is informative about the relative role of channel 2 in Europe and North America. It illustrates the well known fact that the US model of regional adjustment relies more on interregional migration.

*Table 3 . Average Net Interregional Migration (percent of regional population)*

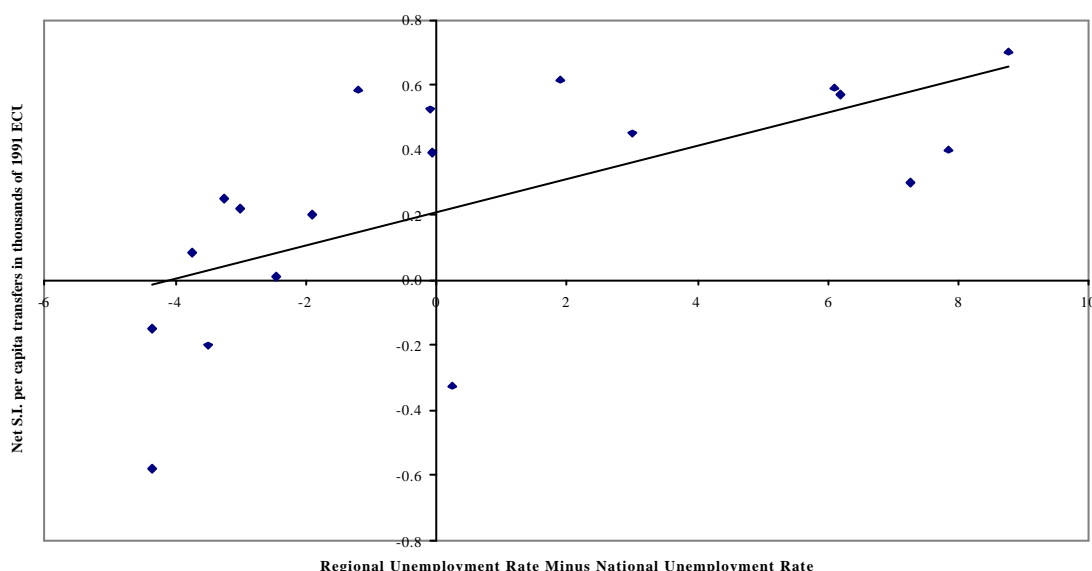
<b>Period</b>	<b>Canada</b>	<b>US</b>	<b>Germany</b>	<b>Italy</b>	<b>UK</b>
1970-79	0.62	1.20	0.27	0.37	0.47
1980-89	0.63	0.84	0.34	0.33	0.26
1990-95	0.52	0.87	0.31	0.40	0.20
National figures are population weighted averages over regions. For the period indicated, each regional figure is calculated as the average absolute value of the change in regional working-age population (measured net of national working-age population growth). German numbers are for western <i>Länder</i> only, leaving out Berlin.					

Source: Obstfeld and Peri (1998). NBER WP # 6431

Channel 3 has played a more significant role. Here a distinction between the stabilisation and redistribution roles of regional fiscal transfers is relevant. Available pre-EMU evidence suggests that France, Germany, and UK tended to offset through fiscal interregional transfers around 25-30% of their regional temporary fluctuations, and a similar percentage of their permanent (long-run) regional income differences. However, the distinction between stabilisation and redistribution is empirically difficult, and the estimated long-run percentage may be reflecting stabilisation actions in response to persistent shocks.

In any case, the persistence of fiscal transfers seems to be a stylised fact of pre-EMU evidence. As an illustration, Figure 3 shows data for Italy. Such persistence in combination with structural obstacles (housing, predominance of temporary labour contracts, etc.) can lead to situations of regional non-adjustment.

*Figure 3. Average Regional Net Transfers – Average Regional Unemployment  
Italy: 1977-1994*



Source: Obstfeld and Peri (1998). NBER WP # 6431

Explicit formal evidence for the role of channel 4 in EU countries is not readily available. However, there seems to be little doubt that it has been a very important smoothing tool for temporary regional fluctuations in the pre-EMU period. A study for Spain suggests that capital (across regional ownership of assets) and credit markets offset around 50% of regional income fluctuations during the period 1973-93. Similar results for the US (a corresponding percentage of 65% for the period 1963-1990) reinforce the view that the financial system is a key stabilizer in mature currency unions.

## 5. EARLY EMU EVIDENCE AND PROSPECTS

### Early years

EMU evidence is obviously still scarce but suggests that little has changed at country and regional levels relative to the pre-EMU period.

Regarding across-country cyclical synchronisation, the recently published issue of the *European Economy* (2002/2) looks at GDP correlation among Euro area countries during the period 1991-2001, and concludes that for most countries the actual degree of synchronisation is about the same as at the beginning of the 90s.

A similar picture emerges with respect to regional diversity within countries. For example, no progress is visible in the evolution of the persistent difference between the unemployment rates of West and East Germany (7.8 and 17.4, respectively, in 2000). Similarly, the reduction of the unemployment rate in Spain by 10% between 1994 and 2000 has come along with no effects on regional disparities, which, as shown in Figure 2, are even higher.

Finally, intra-industry trade in 2001 remained at the level of the late 90s.

## **Prospects**

Overall, the European historical picture suggests that asymmetric macroeconomic variability has been an important issue at both regional and national levels. There are two crucial elements one needs to have in mind in drawing future scenarios. First, the potential effect of economic growth on the European diversity landscape. Second, the potential scope for the progressive configuration of the Euro zone as a single economic entity.

### Growth effects

Regarding the potential effects of growth, the question is what economic map can emerge at national and regional levels in the coming years as a consequence of growth dynamics.

In this respect, growth theory and evidence are inconclusive. As summarised in the 2000 AER, neo-classical growth theory predicts income convergence (due to diminishing returns of capital and exogenous technical progress), whereas endogenous growth theories conclude that convergence may not materialise (due to increasing returns of capital and different abilities to generate or adopt new technologies). Available empirical evidence does not clarify the picture. On the other hand, economic growth may lead to spatial specialisation due to economies of agglomeration, although eventually they may become diseconomies of agglomeration and lead to higher spatial diversification.

This lack of clear-cut conclusions notwithstanding, one can take as a reasonable working hypothesis the fact that a trade-off between national convergence and regional disparities is likely to characterise catching-up processes. The reason is that national growth tends to be driven by growth-pole effects concentrated in specific regions in the country. It remains, however, an open question whether the catching-up processes along with the economic forces leading to spatial concentration will draw a European map of diversify or specialise countries. Based on this we can consider two alternative scenarios:

Scenario 1      Regional diversity within member countries will remain (either in terms of income or productive structure), and regional diversity will also characterise enlargement countries as they catch-up. At the same time, economic forces driving growth will



shape a European mosaic made up of countries with similarly diversified productive structures.

Scenario 2 Within-country regional diversity as in Scenario 1. But growth forces will shape a European mosaic of countries with specialised productive structures.

Thus, Scenario 1 assumes that a configuration similar to the pre-EMU period will prevail, whereas Scenario 2 assumes a configuration closer to the one prevalent in the US.

### Endogenous dynamics

The second important element in thinking about the future of asymmetric variability is the extent to which Europe will eventually develop toward a single economic entity. The argument here is that Optimal Currency Areas do not need to exist from the outset, but rather are made along the way. In this sense, a dynamic view is appropriate: As a currency area becomes a more mature currency union it endogenously develops or activates new stabilisers to deal with asymmetries, and may even eliminate sources of asymmetries.

Regarding the suppression of asymmetries, one potential candidate is monetary policy. National monetary policies were a potential source of asymmetric variability across countries. The single monetary policy may still be a source of asymmetries if important transmission differences across countries prevail, as seems to be the case at present. However, as progress in structural reforms and mainly toward a single financial space is made, those asymmetries may be significantly reduced. On the other hand, one-fit-all issues are likely to be more important than asymmetric transmission, and this will depend on whether Scenario 1 or 2 above prevail.

More relevant is the availability of appropriate stabilisers. In this regard, the progress in structural reforms could improve market functioning, providing higher wage and price flexibility at national levels, and higher regional mobility within countries. This would activate, at least partially, adjustment mechanisms to deal with across-country and across-regional (within-country) asymmetries, respectively. More importantly, however, the completion of the single financial space can deliver an effective tool for smoothing across-country asymmetries in the way it operated across regions within countries during the pre-EMU period.

As a way to make the discussion operational, we can consider the following two scenarios:

Scenario A Financial integration is achieved and substantial progress is made in the improvement of market functioning.

Scenario B Financial integration is achieved but progress in structural reforms is slow, and markets remain sclerotic.

Thus, Scenario B is more pessimistic, projecting to the future the market situation prevalent in the pre-EMU period.

## **6. HOW WILL EMU COUNTRIES DEAL WITH THEIR MACROECONOMIC FLUCTUATIONS ?**

Combining the above scenarios we can obtain tentative answers to the question of how important will be national-relative-to-regional asymmetric macroeconomic variability in the future, and whether EMU countries will be well equipped to face it.

The most favourable situation would be associated with the combination of Scenarios 1 and A. In such case, intra-industry trade across countries would be high and rigidities in the private sector low. This would reduce the relative importance of national asymmetries both because country shocks would tend to have a low idiosyncratic component and because the transmission of common shocks would tend to be more homogeneous (due to a more homogenous private sector). Regional diversity within countries would tend to dominate, making asymmetric fluctuations within countries more likely. In any case, countries would have a better stabilisation tool kit to handle asymmetries than in the pre-EMU period: National fiscal instruments would be still in place for regional stabilisation within countries (operating under the SGP constraint but with the support of structural and cohesion funds), the single monetary policy and the Euro would be rather good substitutes for the former national monetary instruments, the single financial market would provide a key additional buffer to smooth out national and regional asymmetries, and market functioning would be better.

The less favourable outcome would combine Scenarios 2 and B. Asymmetries across countries could be even larger than regional asymmetries within countries. In terms of stabilisers, the Euro Area monetary instruments would be a rather imperfect substitute for national monetary instruments, although the single financial market could very well make up for that loss (except for the devaluation option). If that was not the case, however, fiscal policy could get overloaded in trying to make up for the lack of a counter-cyclical monetary policy (inter-temporal stabilisation), being at the same time dealing with regional diversity (intra-temporal dimension, stabilisation or redistribution) and constrained by the SGP.

Other combinations would provide intermediate outcomes. Thus, a combination of Scenarios 2 and A would certainly reduce the risk associated with combination 2-B by adding market flexibility, particularly domestic labour mobility across regions. On the other hand, the combination of Scenarios 1 and B would deliver a situation not far from the combination 1-A, or, in any case, not worse than the situation prevalent in the pre-EMU period.

The policy conclusion that comes out from the analysis is that financial integration and structural reforms that improve market functioning will be key elements to avoid the potentially worse scenarios in the future of EMU.