

Mongelli, Francesco Paolo; Vega, Juan Luis

**Working Paper**

## What effects is EMU having on the euro area and its member countries? An overview

ECB Working Paper, No. 599

**Provided in Cooperation with:**

European Central Bank (ECB)

*Suggested Citation:* Mongelli, Francesco Paolo; Vega, Juan Luis (2006) : What effects is EMU having on the euro area and its member countries? An overview, ECB Working Paper, No. 599, European Central Bank (ECB), Frankfurt a. M.

This Version is available at:

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EUROPEAN CENTRAL BANK

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PROCEEDINGS OF JUNE 2005 WORKSHOP ON  
WHAT EFFECTS IS EMU HAVING ON THE EURO  
AREA AND ITS MEMBER COUNTRIES?

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**WORKING PAPER SERIES**

**NO 599 / MARCH 2006**

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HAVING ON THE EURO AREA  
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**AN OVERVIEW**

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# WHAT EFFECTS IS EMU HAVING ON THE EURO AREA AND ITS MEMBER COUNTRIES?

## AN OVERVIEW<sup>1</sup>

by Francesco Paolo Mongelli<sup>2</sup>  
and Juan Luis Vega<sup>3</sup>



In 2006 all ECB publications will feature a motif taken from the €5 banknote.

This paper can be downloaded without charge from <http://www.ecb.int> or from the Social Science Research Network electronic library at [http://ssrn.com/abstract\\_id=887091](http://ssrn.com/abstract_id=887091)

<sup>1</sup> This paper presents an overview of the presentations and discussions at the above workshop: the final version of which are jointly issued as ECB Working Paper Nos 594, 595, 596, 597, and 598. Many colleagues and friends should be thanked for their direct and indirect contributions to this endeavour. In particular we would like to thank for their comments and suggestions Vitor Gaspar, Ad van Riet, Frank Smets, Ana Lamo, Julian Morgan, Carsten Detken, Juanita Samengo-Turner, Dorkas Kistler, and diverse other colleagues at the ECB. We would also like to thank Werner Breun and Urmas Sitam for their technical support. The workshop would not have been possible without the endorsement and support of Otmar Issing, Vitor Gaspar, Gert Jan Hogeweg, Philippe Moutot, Wolfgang Schill, and Hans Joachim Klöckers. Of course we are the most grateful to the workshop presenters (see below), discussants, participants and to Philipp Hartmann. We remain responsible for any error and omission in this overview. The diverse views expressed do not necessarily reflect those of the ECB and/or the Eurosystem.

<sup>2</sup> European Central Bank, Kaiserstrasse 29, 60311 Frankfurt am Main, Germany; e-mail: [Francesco.Mongelli@ecb.int](mailto:Francesco.Mongelli@ecb.int)

<sup>3</sup> Banco de España, Alcalá, 48, 28014 Madrid, Spain; e-mail: [juan\\_luis.vega@bde.es](mailto:juan_luis.vega@bde.es)

## PREFACE

On 16 and 17 June 2005, the ECB has hosted a Conference on “**What Effects is EMU Having on the Euro Area and its Member Countries?**” One and a half decade after the start of the European Economic and Monetary Union (EMU) and more than six years after the launch of the euro, the aim of the conference was to assess what can be learned about the impact of economic and monetary integration and how it has benefited the euro area and its member countries.

The conference brought together academics, central bankers and policy makers to discuss the existing empirical evidence on changes brought about, either directly or indirectly, by EMU and, in particular, the introduction of the euro in five main areas:

- Area 1. Trade integration;
- Area 2. Structural reforms in product and labour markets;
- Area 3. Financial integration;
- Area 4. Business cycles synchronisation and economic specialisation; and
- Area 5. Inflation persistence and inflation differentials.

Lead presenters for each of the aforementioned areas had been asked to put together - and interpret - all the available information, flag any open questions, and also discuss the implications in their respective field of expertise. With the benefit of hindsight, lead presenters and discussants have also addressed some initial presumptions with the evidence that has accumulated thus far.

In order to exchange information and ideas on the above effects, and increase mutual awareness of ongoing work in the diverse areas, we deemed it useful to issue the five leading presentations, together with the accompanying discussions, in the ECB Working Paper Series.

Otmar Issing  
Member of the Executive Board

Francesco Paolo Mongelli  
Conference Organiser

Juan Luis Vega  
Conference Organiser

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**Address**

Kaiserstrasse 29  
60311 Frankfurt am Main, Germany

**Postal address**

Postfach 16 03 19  
60066 Frankfurt am Main, Germany

**Telephone**

+49 69 1344 0

**Internet**

<http://www.ecb.int>

**Fax**

+49 69 1344 6000

**Telex**

411 144 ecb d

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ISSN 1561-0810 (print)

ISSN 1725-2806 (online)

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## Abstract

This paper addresses the effects of the European Economic and Monetary Union (EMU) since the introduction of the euro -- on economic and financial structures, institutions and performance. What type of changes is the euro fostering? What forces is it setting in motion that were not there before? Six years after the launch of the euro, was an appropriate time to start taking stock of these effects. For this purpose, in June 2005, the ECB held a workshop on “*What effects is EMU having on the euro area and its member countries?*” The workshop was organised in five areas: 1. trade integration, 2. business cycles synchronisation, economic specialisation and risk sharing, 3. financial integration, 4. structural reforms in product and labour markets, and 5. inflation persistence. This paper sets the workshop in the context of the current debate on the effects of EMU and brings together several of the issues raised by the leading presentations: i.e., this paper serves as an overview. Overall, the effects of the euro observed are beneficial. However, progress has been uneven in the above areas. Many potential concerns preceding the launch of the euro have been dispelled. Moreover, it will take more time for the full effects of the euro to unravel.

***JEL classification:*** E42, F13, F33 and F42

***Keywords:*** Optimum Currency Area, Economic and Monetary Integration and EMU

## Non-technical summary

A theme that is receiving considerable attention pertains to the effects of the European Economic and Monetary Union (EMU), in particular since the introduction of the euro, on economic and financial structures, institutions and performance. What type of changes is the euro fostering in the medium and longer term? What forces is it setting in motion that were not there before? Is it catalysing further progress in some other areas? Six years after the launch of the euro, was an appropriate time to start taking stock of these effects.

For this purpose, in June 2005, the ECB held a workshop on “What effects is EMU having on the euro area and its member countries?”. The workshop was organised in five areas. This paper sets the workshop in the context of the current debate on the effects of EMU and brings together several of the issues raised by the leading presentations and discussions: i.e., this paper serves as an overview of the workshop. All presentations, and discussions, make use of the most recent data available – i.e., post 1999 data following the launch of the euro -- in the respective areas. The final version of each presentation and discussion is jointly issued as ECB Working Papers nrs. 594, 595, 596, 597, and 598.

Baldwin -- who provided the leading presentation on trade integration -- reassessed the methodology and principal findings of the pre-EMU literature on the effects of currency unions on trade: these effects are recalibrated, but remain quite important. After the start of EMU, the euro has already boosted intra-euro area trade by five to ten percent, and without trade diversion vis-à-vis the rest of the world (i.e., no “fortress Europe”). Detailed theoretical hypothesis are still needed to better understand what drives these effects. How high can the trade deepening effect from the euro be for euro area countries? Given that trade among European countries has continuously risen over the last 50 years, it may be difficult to witness further spectacular surges in intra-European trade. Furthermore, the full trade effects from EMU may require more time to fully display.

Giannone and Reichlin – who provided the leading presentation on business cycles synchronisation, economic specialisation and risk sharing -- find that the euro has had no detectable impact on the degree of heterogeneity of euro area countries. It is also not clear yet whether EMU has favoured or prevented specialisation. Instead, since the early nineties, there has been an increasing degree of risk sharing – in terms of variance of GDP that is smoothed out through capital markets, credit markets, and other transfers -- between the euro area countries.

The discussants asked why output convergence seems to have come to a halt in most of the EU as well as among U.S. States after the 1980s. There is also a generalised decline in output volatility, which, if permanent, would reduce the role of international risk sharing. The lags in technology diffusion and adoption need to be better understood. The evidence on business cycle synchronisation across euro area countries is sensitive to the data set and algorithm used. Furthermore, where increased euro area synchronisation appears, it is not clear whether this is due to a euro area business cycle or to globalisation (there is in fact also evidence of the emergence of a “world business cycle”).

Cappiello, Hördahl, Kadareja, and Manganelli – who provided the leading presentation on financial integration and the impact on financial markets in general -- apply new models of return linkages between different asset markets, and argue that co-movements among stock and government bond markets have increased noticeably around the changeover. Interestingly, however, the increase in financial integration is much more pronounced among a set of larger countries with larger stock markets. The

greater integration associated with the euro also led to an increase in the stability of government bond markets in the euro area.

The discussants of Capiello et alii noted that while the euro has enhanced regional financial integration in both equity and bonds markets, concentration in the banking sector has increased mostly because of domestic mergers. These have dominated because they have helped to cut costs (reducing branching overlaps), allowed to increase or maintain market power, prevent hostile takeovers, or form financial conglomerates. Only more recently do we see an emergence of cross-border banking mergers. Last, the euro has already had a visible impact on international portfolio choices: there is evidence of euro area investors having assigned a higher weight to portfolio investment in euro area countries.

Duval and Elmeskov – who provided the leading presentation on structural reforms in product and labour markets -- observe that on average, the intensity of structural reforms over 1994-2004 has been greater in the euro area than in the rest of the OECD, with top reforming countries being small EMU countries. Reforms have also been typically deeper while at the same time more comprehensive in the euro area. However, reform intensity has not been greater in EMU than in non-EMU EU countries. Furthermore, the advent of EMU did not coincide with an acceleration of reforms: reform intensity was lower over 1999-2004 than in 1994-1998. No such slowdown was observed in non-EMU EU countries. There is also an asymmetry: larger euro area countries have thus far been slower than others in securing structural reforms: this is restricting their adjustment mechanisms, hindering their ability to cope with economic events and is reducing the net benefits from EMU for all – more interlinked – euro area countries.

The discussants observed that the indicators used by Duval and Elmeskov are quite difficult to construct: the OECD should be praised for this continuing effort. They also noted that the difficulty in reforming can be more pronounced for a large economy -- where the response of output to the lowering of inflation and hence to the improved competitiveness ensuing from reforms may tend to be slower -- than in smaller and open economies. There are broader reasons for undertaking structural reform at the current stage, including: external forces, like globalisation or technological changes, or internal forces, like demographics and immigration. The role of the political process for reforms needs to be weighed in. There is also a discontinuity due to a switch in regime, such as EMU is: the past experience of reforms might be only partly informative about the incentives to reform nowadays under EMU. The “TINA argument” (There Is No Alternative) is in fact more forceful under EMU.

Angeloni, Aucremanne and Ciccarelli provided the leading presentation on the effects of EMU on inflation persistence and price setting across some selected euro area countries. By using data covering six countries, they find that, perhaps surprisingly, EMU has not yet had a visible (or measurable) effect on both price setting and inflation persistence, or at least not directly.

The discussant questioned whether no changes in the frequency and magnitude of price adjustments necessarily mean that there were no effects from EMU. One should not look at the frequency of price changes, per se, but rather at the process by which price changes take place: hence a model of price settings would be needed. It would then be entirely possible that one would see changes in that parameter even if there are no changes in the frequency or magnitude of price adjustment. Furthermore, the benefits of not having multiple currencies might also have to be considered. Hence, the statistics on price changes, or the inflation dynamics equations are still difficult to interpret.



Overall, the effects of EMU that we observe are beneficial. However, progress has been uneven in the above areas. Many potential concerns preceding the launch of the euro have been dispelled. All participants in the workshop agreed that it will take considerably more time for the full effects of the euro to unravel.

The workshop dealt with the effects of EMU, and the launch of the euro, as a whole: i.e., from the perspective of the euro area. However, each euro area member country has exhibited different paths toward monetary unification due to country-specific circumstances and a variety of other factors such as national economic and financial characteristics. I.e., while we witness overall positive effects on economic and financial structures and institutions, each member country may be facing dissimilar economic challenges to adapt to the new environment and secure all the benefits from the single currency. These aspects were not discussed at the workshop but also deserve some analysis.

The workshop would not have been possible without the endorsement, encouragement and support of many. We are very grateful to all the workshop presenters, discussants and participants. We are also thankful to Mundell, McKinnon and Kenen – the founders of the Optimum Currency Area theory – for actively participating in the workshop and sharing some of their thoughts and expectations with us.

On the whole, EMU and the launch of the euro has been a catalyst for new research in many areas. The workshop has succeeded in exchanging ideas on the above effects, and increasing mutual awareness of ongoing work in diverse areas. We have to admit that there are as yet no conclusive answers to all our initial questions. The time span since the start of EMU is still too short for strong empirical conclusions. Hence, EMU will remain an important catalyst for new research for the years to come.

*“All my experience tells me that in such a rapidly changing world, where the progress of sciences and technology, the globalisation process and the very profound structural changes in Europe are simultaneous, we have to be humble in front of facts and figures and be ready to take on board, as soon as it is produced, the good research you are delivering.”*

Closing remarks at the Workshop “What effects is EMU having on the euro area and its member countries?” by Jean-Claude Trichet, ECB President.

## 1. INTRODUCTION

Since the launch of the euro on 1 January 1999, and the introduction of euro notes and coins on 1 January 2002, two broad themes have received considerable attention. The first theme relates to the concerns relating to the introduction of the euro and its payment infrastructure, and the establishment of the common monetary policy among 11 countries (Greece then joined in 2001). There was a concern that a single monetary and operational framework – within a new macroeconomic policy framework – may not have fit so many countries still quite diverse in terms of economic and financial development, labour and product markets (and their institutions), track record of economic policies, and diverse other features. The answer to this theme is that a single monetary policy framework has been successfully introduced for all euro area countries. A stability-oriented monetary framework, with low expected inflation, has also been secured, and so was broad macroeconomic stability. Macroeconomic volatility in the euro area is also low in historical terms, and comparable to volatility in other currency areas such as the US.<sup>1</sup>

A second theme that is receiving attention pertains to the effects of the euro, in the medium and longer term, on economic and financial structures, institutions and performance. What type of changes is the euro fostering? What forces might it be setting in motion that were not there before? Is it catalysing further progress in some other areas? Hence, the overarching question is: will euro area countries become more integrated over time? Will their Optimum Currency Area (OCA) rating improve as the euro may foster

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<sup>1</sup> Macroeconomic diversity, differences in conjunctural developments, and inflation and growth differentials among euro area countries, are of course very important: Section 5 addresses some related features. See also ECB Monthly Bulletin October 2005, Box 6: “Output growth differentials within the euro area: are they cyclical or trend-driven?” On inflation differentials see also ECB (2005a) and ECB (2003), while on growth differentials see ECB (2005b) and Benalal, N., J.L. Diaz del Hoyo, B. Pierluigi, and N. Vidalis (2006). Although there is a complementarity with the second theme below, the workshop dealt principally with structural “slow-moving processes”.

some virtuous processes bringing its member countries closer together? The merit for having kick-started a rich literature on what is now known as the “endogeneity of optimum currency area” effect belongs to Rose (2000 and 2004), and Frankel and Rose (1997)). Rose and Frankel concentrated on the analysis of trade integration, which increases significantly, once a currency union is created (see more in Section 4). However, their analysis is based on non-euro data.

Yet, an optimum currency area is defined along more dimensions than just trade integration. Optimality is also measured by the mobility of labour and other factors of production, price and wage flexibility, diversification in production and consumption, similarity in inflation rates, financial integration, fiscal integration,<sup>2</sup> and similarity of shocks. Sharing these OCA properties -- among partner countries forming an “area” -- reduces the usefulness of nominal exchange rate adjustments among them and yields net benefits from sharing a single currency. There is also anticipation that a monetary union may set in motion some virtuous processes in other areas – in addition to trade – which would bring countries closer together. Hence, there may be more sources of endogeneities of OCA at work. The opposite paradigm is that euro area countries may become more specialised (i.e., the Krugman hypothesis) and less synchronised, that other diversities and heterogeneities may surface (or deepen) over time, that financial markets would not allow risk sharing of idiosyncratic national shocks, and no other adequate adjustment mechanisms will develop.

Six years after the introduction of the single currency one can start taking stock, and confront – with the benefit of hindsight – some of the initial concerns and expectations with the evidence that has accumulated thus far and to draw – at least tentatively – some lessons in this respect. For this purpose, on 16-17 June 2005, the ECB held a workshop on “What effects is EMU having on the euro area and its member countries?”. The workshop was organised in five areas. This paper sets the workshop in the context of the current debate on the effects of EMU and brings together several issues raised by the leading presentations: i.e., this paper serves as an overview of the workshop. All presentations, and discussions, make use of the most recent data available – i.e., post 1999

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<sup>2</sup> Fiscal convergence is a multi-faceted concept that includes some public risk sharing facility (akin to US federal budget that permits to absorb part of idiosyncratic state-specific shocks), some convergence in basic elements of taxation and fiscal outlays, and the ability to undertake fiscal adjustment (i.e., for the euro area this would entail some room for manoeuvre for fiscal stabilisers).

data following the launch of the euro -- in the respective areas.<sup>3</sup> However, the time span since the start of EMU is still too short for strong empirical conclusions. Several other caveats and qualifications are mentioned below in the diverse sections.

The paper is organised as follows. Section 2 briefly reviews some arguments for why monetary integration should foster further economic integration. Section 3 provides a simple graphical presentation of the effects being discussed. Sections 4 through 8 focus on some empirical evidence in the following areas: trade integration; structural reforms in product and labour markets; financial integration; business cycles synchronisation, economic specialisation and risk sharing; and inflation persistence and inflation differentials. Section 9 provides some closing observations.

## **2. MARKET-BASED AND INSTITUTIONAL FORCES FOSTERING ENDOGENEITY AND SEVERAL CAVEATS**

What is so special about monetary unions? Why should the European Economic and Monetary Union (EMU), and in particular the introduction of the euro, bring countries closer together improving the *OCA-rating* of the euro area?

There are *diverse market-based forces at play*. Following monetary integration some pecuniary costs disappear or decline. The introduction of the euro contributes, amongst others, to reducing trading costs both directly and indirectly: e.g., by removing exchange rate risks and the cost of currency hedging. Information costs will be reduced as well. The euro is also expected to have a catalyzing role for the EU Single Market Program by enhancing price transparency and discouraging price discrimination. This should contribute to reducing market segmentation and fostering competition.

Engel and Rogers (2004) note that a currency union strengthens the effects of a free market by rendering the latter irrevocable and by signalling a commitment toward even more harmonisation in areas of regulations and social policies. A single currency among partner countries is seen as “a much more serious and durable commitment” than other monetary arrangements between countries (McCallum (1995)). It precludes future competitive devaluation, facilitates foreign direct investment and the building of long-term relationships, and is likely to encourage forms of political integration. Producers may

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<sup>3</sup> Some other similar exercises using a mix of pre-EMU and post-EMU data are amongst others, European Commission (2004), Baldwin, Bertola and Seabright (2003), OECD (2000) and OECD (1999).

be more willing to undertake large fixed costs involved with exporting toward other partner countries of the currency area.

Finally, one single money is more efficient than multiple currencies in performing the roles of medium of exchange and unit of account. As a result, a single currency promotes convergence in social conventions with potentially far-reaching legal, contractual and accounting implications (Garcia-Herrero et al (2001)).

There are also *institutional forces at play*, and EMU might have a catalysing role. The existence of EMU is likely to intensify ongoing structural reforms, as for example, those fostered and monitored by the EU Commission, the OECD and other organizations and including: product and labour market reforms; the Financial Services Action Plan (FSAP); the Lamfalussy Report and its follow ups; the Giovannini Report and its follow ups; and others initiatives listed in the EU Commission Scoreboard.

Hence, the expectation is that monetary integration produces an incentive to remove “borders” very broadly intended to include national monies, but also conventions, and many other obstacles and hindrances to economic and financial integration: this will contribute to the narrowing of “distances” and to a change in the incentive structure of agents (see also De Grauwe and Mongelli (2005)). Several caveats apply to the discussion of the effects of EMU. One difficulty is that it represents a still recent regime shift whose effects may require more time to unfold. Instead, we still have very few data points of observations. Another difficulty is that one must disentangle these effects from other developments such as, the liberalisation of international capital movements, financial deregulation, globalization, and the advancement in information and communication technology. Also the advancement in the Single Market Programme may be displaying synergies with the EMU project.

### **3. A SIMPLE GRAPHICAL REPRESENTATION OF THE EFFECTS OF EMU**

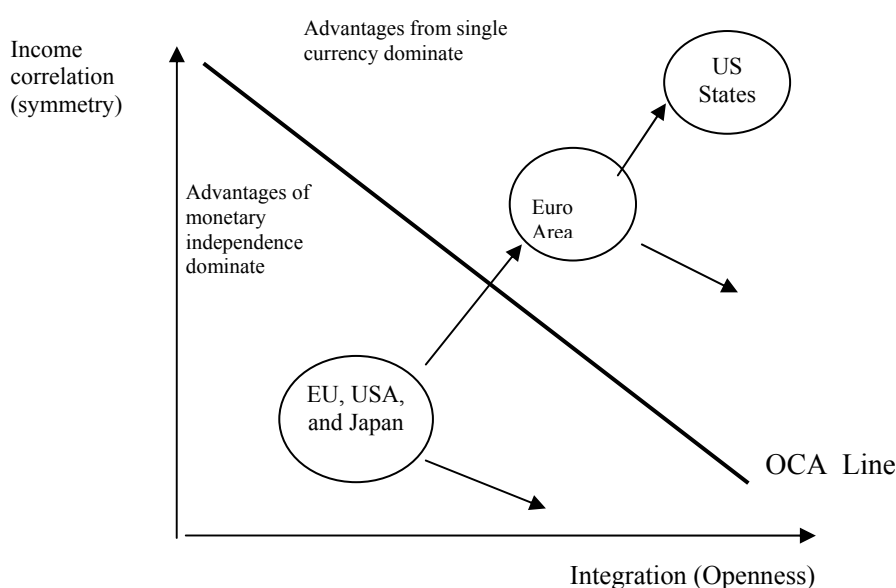
A simple graphical device inspired by Frankel (1999) helps in illustrating some of the effects of EMU that will be presented below. We look at changes in the OCA-rating along three main dimensions: i.e., economic integration (including e.g., openness), income correlation within the currency area, and flexibility of each country participating in the currency area. A deepening of different optimum currency area properties generates improvements in the scores of these three dimensions as follows:





3.1. **Economic integration and income correlation.** The degree of economic openness and the correlation of incomes (that is akin to business cycle synchronisation) are crucial in assessing the net benefits from currency union. Countries sharing a high level of either openness or income correlation among them will find it beneficial *ceteris paribus* to share a single currency. This trade-off is illustrated by the downward sloping “OCA line” in Figure 1.

**Figure 1. Openness, Income Correlation and OCA**



The OCA-line is the collection of combinations of symmetry and integration among groups of countries for which the cost and benefits of a monetary union just balance. It is downward sloping for the following reason. A decline in symmetry (increase in asymmetry) raises the costs of a monetary union. These costs are mainly macroeconomic in nature. They arise because the loss of a national monetary policy instrument is more costly as the degree of asymmetry increases. Integration is a source of benefits of a monetary union, i.e. the greater the degree of integration the more the member countries benefit from the efficiency gains of a monetary union. Thus, the additional (macroeconomic) costs produced by less symmetry can be compensated by the additional (microeconomic) benefits produced by more integration.

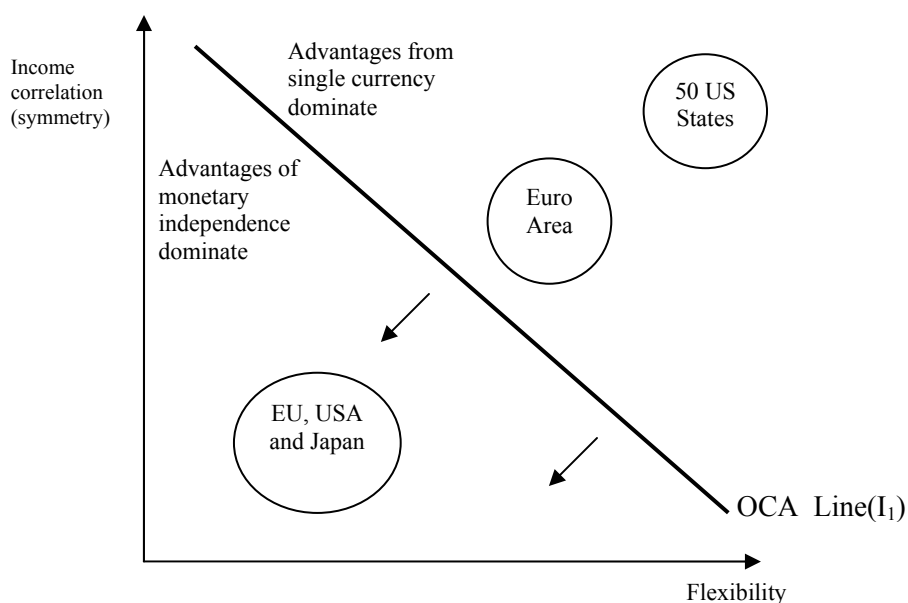
Points to the right of the OCA-line represent groupings of countries for which the benefits of a monetary union exceed its costs. We have put the 50 US States and the euro area to the right of the OCA-line because we believe that the microeconomic benefits of

these monetary unions more than compensate their macroeconomic costs. To the left of the OCA line the benefits from monetary independence dominate the efficiency gains from the union. We have put a virtual group formed by the EU, the US and Japan to the left of the OCA-line because we believe that this group of countries exhibits different characteristics and would not benefit from efficiency gains from sharing a single currency that will compensate for the macroeconomic costs of a monetary union.

The degree of economic integration and income correlation evolve over time. There are different views on such evolution (as illustrated by the arrows around the EU and euro area circles in Figure 1). Most authors agree that openness is likely to increase among countries sharing a single currency (this is discussed further in Section 4 below). There is instead disagreement concerning the extent to which income correlation might rise, stay the same, or fall (as discussed in Section 5 below). In one case the increased openness raises income correlation (and reduces asymmetry of shocks). The EU then moves along the upward arrow. In another case, that we call the specialisation case, we move along the downward sloping arrows in Figure 1. This may then produce the opposite effect if the decline in symmetry is very pronounced: and in this case more flexibility for the monetary union would be required as is discussed next.

**3.2. Income correlation and flexibility.** In addition to the degree of economic openness and income correlation there is another important dimension to judge the merit of monetary integration, i.e., the degree of overall flexibility. Flexibility is intended here in broad terms as capturing price and wage flexibility in the wake of some disturbances. It could also be extended to include the mobility of labour (also broadly intended to encompass geographical and occupational mobility) and other factors of production which render the economy more adaptable. The trade-off between symmetry and flexibility is illustrated by the downward sloping “OCA line” in Figure 2.

**Figure 2. Symmetry, flexibility and OCA**



Points on the OCA-line define combinations of income correlation (symmetry) and flexibility for which the costs and the benefits of a monetary union just balance. It is negatively sloped because a declining degree of symmetry (which raises the costs) necessitates an increasing flexibility (which is a source of benefits of a monetary union), in order to remain on the OCA line. To the right of the OCA-line the degree of flexibility is large given the degree of symmetry, so that the benefits of the union exceed the costs. To the left of the OCA-line there is insufficient flexibility for any given level of symmetry.<sup>4</sup> Again, the 50 US States and the current members of the euro area are located on the right of the OCA line. A currency area formed by the US, the EU and Japan would instead be on the left of the OCA line: i.e., this group is still quite different in terms of economic characteristics and the advantages of economic independence would still dominate.

How would further integration affect the movement of the OCA line? The OCA-line was drawn, *ceteris paribus*, for a given level of integration ( $I_1$ ). Increasing integration has the effect of shifting the OCA-line downwards, i.e. when integration increases the benefits of the union increase so that we need less flexibility and/or less symmetry to

<sup>1</sup> Note that the OCA-line is drawn for a given level of integration ( $I_1$ ). Such level may also be thought as a function of the other OCA dimensions (that cannot all be captured by a simple chart).

make the monetary union beneficial. If there is endogeneity in integration then starting a monetary union among the EU will bring it closer to the OCA-zone.

#### 4. THE EFFECTS OF EMU ON TRADE

What effects do monetary unions have on economic integration, and, in particular, is the euro creating more integration among euro area countries? One needs to distinguish between the pre-EMU and the EMU empirical evidence. In fact, contributions in this area are generally divided in two main branches: those looking at episodes of monetary integration other than (and preceding) EMU, and those looking at EMU (i.e., the euro area).

By studying the effects of several currency unions that have occurred in the past 25-30 years (and hence preceding EMU), Andrew Rose (2000) has shown that monetary integration can lead to very significant deepening of trade by several multiples (even more than 300 percent). This is often referred to as the “Rose effect,” see Box 1. “*Countries which join EMU, no matter what their motivation may be, may satisfy OCA properties ex-post even if they do not ex-ante!*” (Frankel and Rose 1997). The implication for EMU is that the euro area may turn into an optimum currency area (OCA) after the launch of monetary integration even if it wasn’t an OCA before.

##### **Box 1. The “Rose effect” behind the endogeneity of economic integration**

Several authors have inquired whether the mere creation of a currency union leads to an increase in trade, over and above the positive impact generated by the elimination of nominal exchange rate volatility: see, amongst others, Rose (2000 and 2004), the story on the fragmentation of stages of production in Baldwin and Taglioni (2004), Baldwin, Skudelny and Taglioni (2004), and references therein.

The link between trade deepening and exchange rate volatility has been discussed at length by the literature (see also Frankel (2006) for a review of such studies). Most studies employing time series techniques find no significant relationship between the two or at most some very small negative effect of volatility on trade (see Baldwin, Skudelny and Taglioni (2004) for a survey). Cross-sectional studies find relatively small effects, while more recent studies based on panel data analysis find some significant and negative effects of nominal exchange rate uncertainty on trade: in the long run the impact could be quite large and even in the order of 10 percent.

Baldwin, Skudelny and Taglioni (2004) theorize that a drop in exchange rate volatility may increase the volume of trade in two not mutually exclusive ways:

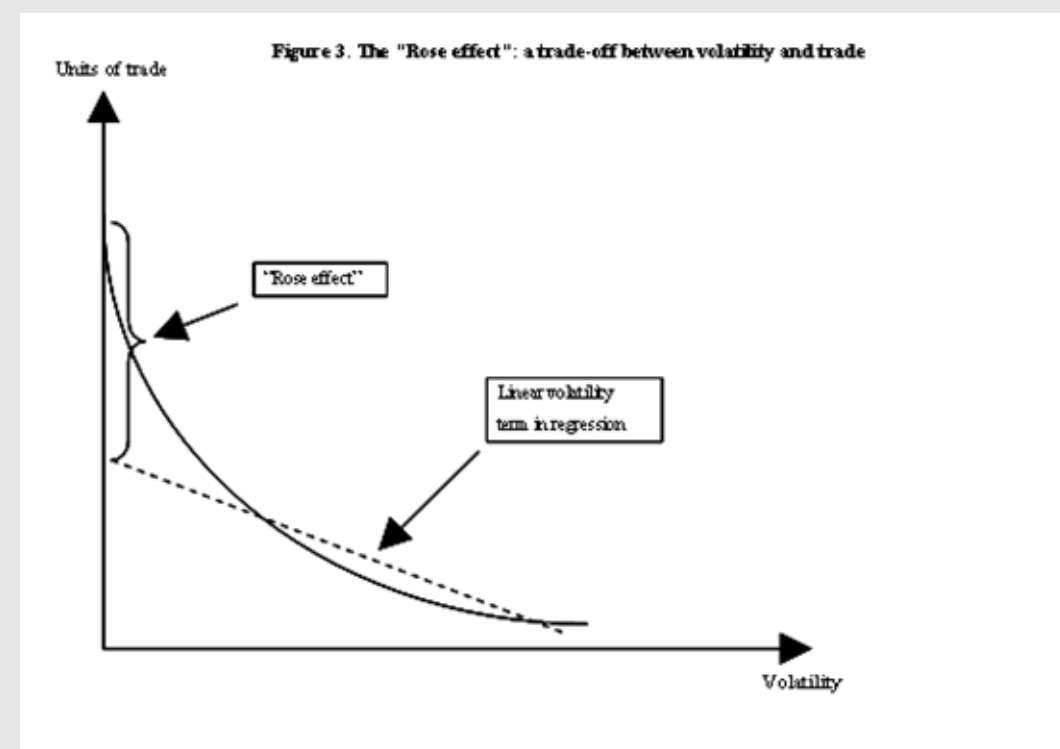
- first by encouraging more export per firm, and
- second by increasing the number of firms that are engaged in exporting.

However, of these two effects the second must be dominating as given the magnitude of the impact of monetary union on trade found by most empirical studies and the small size of transaction costs (conversions of currencies and hedging of exchange rate) that are eliminated by a currency union. Hence, a crucial element is the decision of firms to enter foreign markets as postulated by the “beachhead model” of Baldwin (1988).<sup>2</sup>

In order to conceptualise the “Rose Effect” Baldwin, Skudelny and Taglioni (2004) start by observing that Europe has a high share of small firms that either do not export, or export very little. One factor that keeps them from exporting is the uncertainty involved in trade: therefore, a reduction in uncertainty can induce more firms to export, raising trade volumes. While this accounts for a negative volatility-trade link – see straight dotted line in Figure 4 – it still does not address the “Rose effect,” namely the impact of currency union controlling for a linear (or log-linear) volatility-trade link. To get this, we must also explain why the volatility-trade link is *convex*. Figure 3 helps illustrating this argument.

Suppose the true relationship between volatility and trade is convex, as illustrated by the solid curve in the diagram. An empirical model that assumed a linear link between volatility and trade (again, the straight dotted line), but also allowed a dummy for monetary union (implying zero exchange rate volatility), would estimate the dummy to be positive and significant. There may be two additional sources of convexity discussed by Baldwin et alii (2004):

- first, exchange rate volatility affects relatively more small firms than larger ones. When the initial set of exporting firms includes more small firms, the marginal impact of lower volatility could be large; and
- second, the distribution of European firms is heavily skewed towards smaller firms. “Thus each reduction in the minimum size-class necessary for exporting brings forth an ever larger number of new exporters” generating the “Rose effect” jump in the figure.





In his very comprehensive review of the status of this literature Baldwin (2006) reassesses the origins, methodology and principal findings of the empirical literature that has looked at currency unions preceding EMU. The specification of the gravity model and estimation strategies are reviewed. As a result, the trade effects of currency unions for non-European cases are completely recalibrated (i.e., the trade effects are still important but less sizeable than in early estimates by Rose and others). This is also indirectly relevant for the study of the effects of EMU on trade as it provides an upper threshold estimate as a benchmark. On the other hand, one needs to keep in mind that cases of pre-euro currency unions usually pertain to small (and often poor) countries adopting the currency of a larger partner country. I.e., such studies do not carry direct policy implications for the euro area.<sup>5</sup>

Then Baldwin (2006) turns to the trade effects of the euro thus far. In his view, the euro probably did already boost intra-euro area trade by something like five to ten percent on average, although the estimated size of this effect is likely to change as new data becomes available. Bun and Klaassen (2002) and Micco, Stein and Ordoñez (2003) estimate increases in intra-euro area trade ranging between 4 and 8 percent, and without trade diversion vis-à-vis the rest of the world.<sup>6</sup> In fact, there is evidence that extra-euro area trade has grown by more than intra-euro area trade. Such faster growth in extra-euro area trade may also be related to exogenous and temporary factors, such as the depreciation of the euro from 1999 to 2002. Furthermore, there is also the strength of economic activity in the US, several Asian countries (e.g., China), and in the new EU Member States: i.e., world GDP and trade has grown by more than European GDP and trade.

Melitz (2006), in discussing the presentation of Baldwin, rationalizes trade effects of such a magnitude with the use of an intra-temporal elasticity of substitution on the order of 6 to 8 on average: a fall in relative prices of just 1 percent would then generate a rise in bilateral trade in the order of 5 to 7 percent. To obtain higher effects than that (i.e., in the order of 15 percent over some time) would require a complementarity effect: i.e., that introducing a common currency can be likened to a graded reduction in a trade barrier applying more to some, the euro area member countries, than others. Melitz notes that the

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<sup>5</sup> Rose (2004) undertakes a “meta-analysis,” pulling together estimates from 34 other studies, which yield a central tendency of 30% to 90% for the pre-EMU currency union effect.

<sup>6</sup> Evidence suggests that the euro has stimulated trade not only across the euro area, but also with the rest of the world. The export share with countries outside the euro area rose to almost 20% of GDP in 2003 from around 17% in 1997 (a similar development is recorded for imports).

reduction applies to everyone that trades with two of the members, or more, as implied by Micco, Stein and Ordoñez (2003).

Baldwin (2006) concludes that the way forward needs to be guided by detailed theoretical hypothesis as to how the euro affects trade.<sup>7</sup> As there is not enough data yet to answer the question “How much did the euro boost trade?” one needs to tackle the question “*If the euro boosted trade by sharpening competition, then in which dataset should we find the footprints?*”. In any case, increased competition could go along with welfare gains even without observing increased trade flows.

There are diverse open issues concerning the empirical investigation of the trade creating effects of currency unions. Frankel (2006) observes that the association between monetary unification and trade deepening might arise because both are caused by a third factor, such as colonial history, remaining political links, complementarity of endowments, or accidents of history. Hence the empirical investigation may still be shrouded by missing variables, misspecification of the equation, or endogeneity of the currency decision. Frankel (2006) notes that there is a strong home-country bias in trade in both quantity data and price data. This point must be taken as the benchmark, not the presumption of perfect integration. The difference in currencies is one of the explanations for the bias, and hence removing national currencies contributes to the reduction in the bias and to the Rose effect.

Concerning EMU, it would be essential to understand if rising intra-euro area trade is reflecting greater specialization (possibly contributing to less synchronised business cycles), or to more intra-industry trade (likely making national business cycles more synchronized). Anderton, di Mauro and Moneta (2004) report that in several sectors, trade among European countries is increasingly characterised by vertical specialisation, that is, by countries specialising in particular stages of a good’s production sequence, rather than in producing the entire good. This type of trade stems from the internationalisation of production chains and should foster output correlation across countries. Anderton et alii also note that the impact of such developments (e.g., on the transmission of shocks) are not yet fully understood. There are several other forces impinging on intra and extra euro area trade and that need to be better understood. Labour regulations and high levels of

taxation might hamper technological innovation that could in turn slow down intra- and extra-euro area exports. This risk may be compounded by the product composition of euro area exports given the relatively low share in fast-growing high-tech sectors. On the other hand, in an integrated market technological innovations are easier to share and the new products benefit from economies of scale.

Hence, all in all, in terms of Figure 1, euro area countries seem to be moving rightward along the openness dimension and toward the region with more advantages from a single currency.<sup>8</sup> What shall we expect? How high can the trade deepening effect from the euro be for euro area countries once they fully unravel? European countries exhibit already high degrees of reciprocal openness: i.e., trade among European countries has continuously risen over the last 50 years since the onset of European institutional integration that started in 1957. Mongelli, Dorrucchi and Agur (2005) note that the EU did witness a very significant deepening of intra-regional trade among its member countries over the 1960-2003 period: i.e., by about 1200-1400 percent depending on the group considered. This is a large multiple of the increase found by Rose and Frankel, but over a much longer period of time. Therefore, it may be difficult to witness further spectacular surges in intra-European trade of several orders of magnitudes. Frankel (2006) also notes that the display of the Rose Effect takes time as “... roughly two-thirds of the tripling effect may be reached within three decades of a change in regime.”

Two promising areas, for an analysis of the effects of EMU, are the impact of the euro on intra-euro area trade in services, which has grown considerably, and intra-euro area FDIs (and their relationship with trade flows), which have caught up with extra-euro area FDIs.

## **5. EFFECTS OF EMU ON BUSINESS CYCLE SYNCHRONISATION, RISK SHARING AND SPECIALIZATION**

A subject that is receiving considerable attention pertains to the real effect of the euro on macroeconomic structures. Several related aspects were discussed at the workshop: the

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<sup>7</sup> Baldwin also discusses the economic mechanisms that might be driving the euro's trade effects, lays out a theoretical model, and puts forward diverse competing hypotheses and a battery of diagnostic tests -- that could help reject some or all of the theoretical explanations.

<sup>8</sup> Other studies providing similar findings are Berger and Nitsch (2005), De Nardis and Vicarelli (2003), and Flam and Nordstrom (2003).

convergence of output levels, the issue of business cycle synchronisation, the issue of specialization, and last the issue of risk sharing. The reasons are clear: in a monetary union if shocks become more persistent, large and idiosyncratic (i.e., less synchronised or asymmetric) this could pose a challenge to policy-making – at least to the extent that such shocks are not insured through international risk-sharing.

### 5.1 Business cycle synchronisation

Giannone and Reichlin (2006) acknowledge that the issue of diverging economic performance among euro area countries -- and the role that the single monetary policy might have played in this respect -- has been receiving a lot of attention both in academic and policy circles.<sup>9</sup>

Against this background, they look at the empirical evidence and analyse trends and business cycles in the euro area and its current member countries since 1970. They ask themselves how much heterogeneity is really there and to what extent should we worry about it. Their answer is: “*not much and we should not worry, at least not yet*”. They present a wealth of stylised facts on growth differentials and business cycle synchronisation among Euro Area countries. They also compare empirical findings with those obtained for regions in the US, a mature monetary union.

Giannone and Reichlin (2006) show that output levels are not converging in Europe, with the exception of the remarkable catch-up of Ireland's output. However, they are clearly not diverging either. However, U.S. regions display a similar pattern. Furthermore, cyclical asymmetries among euro area countries are relatively small and similar to those among US regions. Moreover, statistical tests are unable to detect signs of significant structural change in this respect. Hence, for instance, turning points in national business cycles have shown a remarkable degree of simultaneity since 1970. In the same vein, co-movements within the euro area are shown to be larger than between the euro area and the rest of the world.

This suggests in turn that euro area countries are “close enough” for area-wide aggregates to capture the bulk of national features. That is consistent with the views in Artis, Krolzig and Toro (1999), Mansour (2003) and Del Negro and Ottrok (2003), who

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<sup>9</sup> See also Lane (2006), ECB (2005a and b), ECB (2003), and Benalal, N., J.L. Diaz del Hoyo, B. Pierluigi, and N. Vidalis (2006), and references therein.

already argue for the existence of a European business cycle. Other authors – notably Lumsdaine and Prasad (2003), Canova, Ciccarelli and Ortega (2003), or Gregory, Head and Raynauld (1997) – emphasise instead the existence of a “world business cycle”. In connection with this debate, Camacho, Pérez-Quirós and Sáiz (2004) have developed indicators of the distance between national business cycles. They show that – although the existence of a euro area business cycle proper, different from the world business cycle, can be formally rejected – bilateral distances corresponding to euro area countries tend to cluster together, which suggests that the business cycles of euro area Countries have in fact much more in common with one another than with other countries. Interestingly enough, the authors show that bilateral distances can be explained by structural features such as the relative weight of the different sectors, developments in labour productivity, fiscal policies and – importantly – bilateral trade. On the contrary, monetary and exchange rate policies are found to be not significant.

Giannone and Reichlin (2006) also show that common shocks account for the bulk of output fluctuations in euro area countries. Country-specific shocks in turn have small but persistent effects. That notwithstanding, the latter – rather than heterogeneous responses to common shocks – are the main culprits for existing asymmetries among euro area countries. This pattern – the authors show – is not different from the US case, although the size of idiosyncratic shocks turns out to be more homogeneous across US regions than it is for euro area countries.

## 5.2 Specialisation

An aspect that is often related to the analysis of synchronisation is that of specialisation: i.e., whether or not EMU is resulting in higher sectoral specialisation across euro area countries. The relevance of this aspect stems from the fact that a higher degree of specialisation might imply a greater vulnerability to asymmetric shocks and a greater need for relative price adjustments.

There are two distinct views on the subject. The first view, supported by Krugman (1993) and the new economic geography literature, suggests that, as trade barriers are reduced, inter-industry trade increases and opportunities for exploiting economies of scale and specialisation in production should arise whenever countries have a comparative



advantage. Consequently, countries' production structures would become less diversified and thus increasingly vulnerable to asymmetric shocks while business cycles would become less synchronised. The second, and opposite, view postulated by the endogeneity of OCA literature suggests that EMU would instead lead to greater intra-industry trade integration and more similar economic structures. In this case, business cycles would become more strongly synchronised through the convergence of factor endowments and technology, as well as reduced exchange rate variability, which otherwise would tend to weaken intra-industry trade.

The evidence on whether EMU has favoured or prevented specialisation in the euro area is not clear yet. Giannone and Reichlin (2006) show that there has been no visible change yet. According to an overview published by the European Commission, there have so far only been modest changes in the pattern of industrial concentration and geographical specialisation within the euro area. While production specialisation has gradually increased since the 1970s, export specialisation appears to have decreased, which could be partly explained by the increased importance of intra-industry trade.

Similarly, a study of sectoral specialisation carried out by the European System of Central Banks in 2004 (see ECB (2004)) found the production structure of euro area countries to be relatively similar. Indeed, it appears more homogeneous than in the United States and relatively stable over time. In contrast, a host of studies have highlighted agglomeration or clustering effects. They suggest that the agglomeration of production factors (by generating an environment that creates positive externalities, the presence of competitors and informal links with complementary businesses, the supply of qualified labour and investment capital, and the proximity of research capacity) is increasingly important and could indeed increase specialisation and reduce cross-border trade within industries.

Overall, the time span since the start of EMU is too short for strong empirical conclusions and a view of the effects of EMU on specialisation is consequently still difficult to obtain. This is also an area in which country-specific analysis and industry-specific analysis may be necessary. Barry (2006) argues in fact that specialisation for some tradeable industries (such as pharmaceutical industries) was possible in Ireland due to lower entry costs and barriers than in other industries, and fortunate economic policies over a long stretch of time.

### 5.3 Risk sharing

Some recent research (for example, Kalemli-Ozcan et al., 2003) documents that risk sharing tends to increase in a currency union, bolstering the case for higher specialisation in production. The peculiarity of this channel is that any resulting asymmetries in GDP fluctuations would not translate in income volatility because ownership is diversified. This essentially will help to smooth consumption across countries and, therefore, limit the welfare cost of GDP fluctuations.

Giannone and Reichlin show that, since the early nineties, the possibilities of hedging consumption against country-specific shocks (i.e. risk-sharing) have increased in the euro area, thereby reducing the welfare cost of heterogeneous economic activity. Whilst the percentage of variance of GDP that euro area countries smoothed out through capital markets, credit markets, and other transfers has increased, the level of risk sharing remains below that among US regions. Policy can support further cross-border risk sharing by removing any remaining obstacle to financial market integration.

Sørensen (2006), the first discussant, questions why output convergence seems to have come to a halt in the EU as well as among U.S. States. Such convergence was instead occurring in Europe, and in the US, before the 1980s. He also points out the decline in output volatility, which, if permanent, would reduce the role of international risk sharing (at least as long as the low level of asymmetry persists).

Sørensen then observes that income is not output as Giannone and Reichlin (2006) implicitly assume when they compare U.S. income convergence with European output convergence. Furthermore, he questions the interpretation that the U.S. business cycle seems to lead the European business cycle: i.e., shocks to U.S. GDP propagate to EU countries with a lag of about one year. An interpretative model would be needed to investigate this aspect further: for example, technological advances (say, the internet) may cause a wave of investment and growth, the United States has an ability to raise capital and implement innovations faster, therefore U.S. GDP increases before that of Europe, but after a year or two, the new technology gets implemented in Europe. Hence, part of the lags would stem from slower technology adoption in Europe. If instead a true adverse shock hits the US (e.g., a major hurricane), then there may or may not be reason to believe that such a shock might spill-over to Europe – for example through demand, price-effects

from changes in nominal exchange rates, etc. – but in this case, time series patterns such as those identified by Giannone and Reichlin cannot tell.

McCarthy (2006), the second discussant of Giannone and Reichlin (2006), confirms that there is no conclusive evidence whether EMU has increased business cycle synchronisation across euro area countries (even including the pre-EMU “convergence phase”).<sup>10</sup> The results hinge on diverse factors, including the data used (e.g. monthly industrial productions data or quarterly GDP data) as well as on the cycle-dating algorithms employed to isolate the stylized facts on business cycles (classical or growth-deviation identification of the cycles) and the various techniques used to evaluate the degree of synchronicity of cycles. Furthermore, where increased synchronisation of cycles among euro-area countries appears to be supported by the analysis, it is not clear whether this is due to a specifically euro-area business cycle or due to globalisation (Artis (2005) discusses in fact the emergence of a “world business cycle”). Last McCarthy (2006) invites to carefully assess the issue of cyclical symmetries across euro area countries: although cyclical dispersion has remained quite low in the past few years in the euro area as a whole, disparities in cyclical positions between the (four or five) larger Member States have increased steadily. More consideration should be given to the sources of growth (which have differed in recent years across the euro area), the role of structural reforms, and other growth enhancing factors.

## **6. EFFECTS OF EMU ON FINANCIAL MARKETS**

Cappiello, Hördahl, Kadareja, and Manganeli (2006) discuss the impact of the euro on financial markets in general, including its effects on financial integration. Financial integration is quite broad as it embraces an assortment of financial instruments, a wide array of financial intermediaries, and a variety of financial market segments. Baele, Ferrando, Hördahl, Krylova, and Monnet (2004) find that the euro has had a visible impact in the re-organisation of several segments of European financial markets, such as money markets. In other segments, the introduction of the euro may be starting to contribute to greater depth and liquidity. In bond and equity markets a process of

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<sup>10</sup> She quoted European Economy – Economic Paper 227 (vol. 1 and 2): Proceedings of the 2004 first annual DG ECFIN research conference on “Business Cycles and Growth in Europe” at [http://europa.eu.int/comm/economy\\_finance/publications/economic\\_papers/economicpapers227\\_en.htm](http://europa.eu.int/comm/economy_finance/publications/economic_papers/economicpapers227_en.htm)

structural change and increasing integration is unfolding. Spreads between government bonds have quickly narrowed to very low levels (see Cappiello, Engle and Shephard (2003)). The scale of the euro-denominated corporate bond market has grown rapidly and many equity investors now treat the eurozone as a single entity.

Cappiello, Hördahl, Kadareja, and Manganelli (2006) apply new models of return linkages between different asset markets, and argue that co-movements among stock markets and government bond markets have increased noticeably around the changeover. Interestingly, however, the increase in integration is much more pronounced among a set of larger countries with larger stock markets, whereas changes in integration are rather limited or insignificant among a group of smaller countries. These facts could be explained either by the more limited trade relationships among some of those countries or by patterns in the investment management industry that tend to concentrate investments in larger and more liquid markets. The greater integration associated with the euro also led to an increase in the stability of government bond markets in the euro area. This fact benefits European sovereigns – as funding risks are softened –, investors – as this market becomes a more secure “safe haven” – and corporations – which experience, *ceteris paribus*, a decrease in the cost of capital. Some heterogeneity between groups of countries notwithstanding, these results illustrate that financial integration is one of the most successful European policy programs under the Lisbon Agenda.

Next Cappiello et alii (2006) examine the interaction of monetary policy and the macroeconomy in general with financial markets, focusing on the effects of the euro on the behaviour of the term structure of interest rates. The authors show that the period following the introduction of the euro has been characterised by a generally more stable environment of macroeconomic fundamentals and a reduction in the variability of estimated risk premia, as priced in the yield curve at various maturities.

Xavier Vives (2006), in discussing the paper of Cappiello et alii (2006), questions why the integration of the European banking sector has been so much slower than that in the securities markets. The view of a 1999 CEPR Report was that financial markets in the European Union were still fundamentally segmented (see Danthine, J.P, F. Giavazzi, E.L. von Thadden and X. Vives (1999)). Concentration in the banking sector in the different European national markets has increased thereafter, but mostly because of domestic mergers. These have dominated because they have helped to cut costs reducing branching

overlaps, allowed to increase or maintain market power, prevent a hostile takeover, or form financial conglomerates. Cross-border banking mergers in Europe have been not so common because they face some obstacles that are not present, say, in the US market, including: more limited economies of international diversification, the existence of labour market rigidities, differences in language, regulation and corporate culture in the different markets, and political interference to foster national champions.

At present, retail markets remains regional since proximity to clients, access to information and long term relationships are key competitive drivers. There is more integration at the large end of the market. Integration is largely absent from bank lending to SMEs. In private equity it is significant, while it is only modest in syndicated bank lending. Investment banking integration has also occurred largely on the back of penetration of European markets by US banks, which have injected a greater degree of competition and efficiency in the new issue process to the benefit of European corporations.

The second discussant of Cappiello et alii (2006), Bruno Gerard, first notes that the euro has already had a visible impact on international portfolio choices. There is evidence of euro area investors having assigned a higher weight to portfolio investment in euro area countries even after controlling for the effect of a large set of variables borrowed from the finance literature and adjusting for valuation changes (see De Santis and Gérard (2005)). The increase in the weights – on top of the world average portfolio weight increase in euro area assets – amounts to 12.5 and 21.7 percentage points for equity and bonds and notes holdings respectively.

He then cites some evidence concerning the relative importance of country and industry factors as determinants of international equity returns. He asserts that although industry- and country-based portfolios are indistinguishable in terms of mean-variance efficiency there is a remarkable change in the structure of euro area equity returns. Whereas country returns were more volatile but less correlated than industry returns in the early nineties, the opposite is true for the late 90s and the beginning of the 21st century (see also Eiling, Gerard and de Roon (2005)). Further, the striking increase in industry idiosyncratic risk caused a near doubling of the average gains from optimal regional cross-industry diversification. In terms of risk reduction the average gains have more than doubled in the period since the introduction of the euro. Even within a group of closely



linked economies like the euro area, broader diversification, across both countries and industries, remains essential.

Hence, overall the euro has enhanced regional financial integration in the euro area in both equity and bonds markets. But there are some areas in which financial market integration has not had a significant effect yet. For example the integration of the European banking system is still incipient and has thus far been slower than that – for example -- in the securities and bond markets. The latter part of 2005 and early 2006 have brought some novelties here though.

There are also some effects of financial market integration that may enhance heterogeneities within the euro area over time. For example, Kalemlı-Ozcan, Sørensen, Yosha (2003) warn that higher financial integration may lead to more asymmetric macroeconomic fluctuations, possibly counterbalancing the other channels. The argument runs as follows. Economic integration leads to better risk-sharing opportunities (income insurance) through financial market integration. This in turn makes specialisation in production more attractive, rendering macroeconomic fluctuations less symmetric. Hence, financial integration may increase heterogeneities. As already discussed, there has been no visible impact of EMU on specialisation and heterogeneities. All in all, although the euro area is still not operating as a unified financial market we are observing quite some deepening of overall financial integration. In terms of Figure 2 we might be observing a downward push of the Line OCA  $I_1$  and an expansion of the region with more advantages from a single currency.

## **7. EFFECTS OF EMU ON PRODUCT AND LABOUR MARKET REFORMS**

Duval and Elmeskov (2006) take an empirical look at the political economy of structural reforms, and investigate whether EMU is encouraging or hindering product and labour market reforms. This is an issue much debated in the literature although no consensus view in this respect has emerged as yet. Bertola and Boeri (2003) take stock of reforms carried out in Europe in the field of employment protection and unemployment benefits. Their data point to an acceleration since the mid-90s episodes of reforms, especially in the euro area and in the field of unemployment benefits. This finding would be consistent with the argument put forward by Blanchard and Giavazzi (2003), who

claim that product market deregulation and enhanced competition would decrease total rents to be shared and, with them, the incentives for workers to appropriate such rents. That in turn would weaken labour unions bargaining position, reducing insider power and would hence lead to labour market deregulation. On the other hand, Saint-Paul and Bentolila (2002) argue that the loss of monetary policy discretion at the country level lowers the incentive to undertake large-scale reform of labour markets as it precludes a “two-handed” approach according to which macroeconomic stimulus should facilitate structural reforms. They conclude, however, that EMU increases the likelihood of having *gradual* reforms as well as co-ordination of reform across member countries.

Drawing on evidence assembled in the context of the *OECD Jobs Strategy*, Duval and Elmeskov observe that on average, the intensity of structural reforms over 1994-2004 has been greater in the euro area than in the rest of the OECD, with top reforming countries being small EMU countries. Reforms have also been typically deeper while at the same time more comprehensive in the euro area. However, reform intensity has not been greater in EMU than in non-EMU EU countries. Furthermore, the advent of EMU did not coincide with an acceleration of reforms: intensity was lower over 1999-2004, compared with 1994-1998. No such slowdown was observed in non-EMU EU countries. Finally, there is evidence that reform patterns have been less responsive to needs for reform in EMU than in other OECD countries.

Duval and Elmeskov (2006) find tentative evidence that large countries participating in exchange-rate arrangements which constrain their monetary policy autonomy tend to undertake fewer reforms than other countries. This is consistent with larger countries having a greater (perceived) need for monetary accommodation of structural reform whereas for small, open economies such accommodation to a larger extent occurs spontaneously via endogenous changes in competitiveness and external trade. The finding is also consistent with the descriptive evidence according to which smaller euro-area members did better in terms of structural reform in labour (unemployment benefit and tax systems) and product markets than the larger ones. This may raise the need for structural reform co-ordination across countries in helping to stimulate reform in the first place.

Nickell (2006), the first discussant of Duval and Elmeskov (2006), agrees that EMU may reduce the incentives to undertake structural reforms of labour and product markets.

This difficulty can be more pronounced for a large economy where the response of output to the lowering of inflation and hence to the improved competitiveness ensuing from reforms may tend to be slower than in smaller and open economies. With little help from monetary policy, the rise in potential output will translate only gradually into an increase in actual output and employment. However, Nickell notes that this difficulty should not be over-stressed, and in the big scheme of things it is probably not that important.

Structural reforms may start with product market reforms, because it is possible that they suffer less from the EMU problem than labour market reforms. Such reforms should aim at increasing the intensity of product market competition. Overall prices would then tend to be lower and real wages would tend to be higher (except for those workers who were originally able to capture monopoly rents). Profits would also tend to be lower. The consequences of this shift, Nickell adds, could easily be a short-run increase in real expenditure because the short-run propensity to spend is probably higher out of wages than out of profits. So output and employment may well rise even without any relaxation of monetary policy.

The main sectors worth concentrating on are the big service sectors, such as retail distribution, and professional and financial services. In these sectors there is less naturally occurring international competition. Furthermore, the recent experience of the United States suggests there are substantial productivity gains just waiting to be picked up (driven also by ICT investments alongside complementary changes in the organisation of production). Furthermore, these large productivity gains were not accompanied by job losses. Another specialised service sector where deregulation can yield large benefits is that of job placement. Supra-national agencies, which were set up in the EU following the single market initiative, could push for the introduction and implementation of such reforms.

Last, Nickell (2006) observes that labour market reforms often appear to be very difficult to achieve and, because they are, quite rightly, in the hands of national governments, there is no supra-national body to take the blame. There are also plenty of opportunities to undertake “reforms” which make matters worse, and there are even examples of “non-reforms.” His advice is to focus on reforms which help people in a bad situation, for example, by helping the non-employed into work and several success stories can be pointed out. There have also been successful reforms in the social security systems

of some EU countries. A thriving private job-placement sector can also be of assistance. Overall, “... the question of where we go from here, unfortunately, remains open.”

Jimeno (2006), the second discussant of Duval and Elmeskov (2006), puts forward several observations and qualifications. Concerning the drivers of structural reforms he observes the role of the electoral system and ideological factors. However, at the current stage, external forces, like globalisation or technological changes, or internal forces, like demographics and immigration, are among the main reasons for undertaking structural reform. The current labour markets of most European countries were designed to cope with the social risks implied by a socio-economic situation – that of the third quarter of the 20th Century – which is completely different from the current one. Against this background the possibility of using monetary and fiscal policies to accommodate structural reforms seems like a rather marginal factor in the decision to implement structural reforms.

Jimeno (2006) also comments on the identification of structural reforms. The OECD indicators used in the paper to identify the main structural reforms are quite difficult to construct: Duval and Elmeskov (2006) should be praised for this effort. However, some caution is needed in strictly interpreting their outcome. First, identifying “major reforms” in a “relative sense”, as done by selecting changes in indicators of labour market institutions that exceed one standard deviation of changes across countries, may be misleading, if reform activity is low in all countries. Second, it is clear that the impact of a particular regulation depends on other regulations in place. This casts some doubts about the meaning of additive combinations of independent indicators and leads to questioning the existence of a unique set of “optimal institutions” and “unique strategies” to reform. There are also some puzzles: first, Spain has witnessed a very significant decline in unemployment (from about 20% in the mid-1990s down to 10% nowadays) without indications of having pursued major structural reforms; and second, there is the widespread incidence of wage moderation in most EU countries during the 1990s, despite few significant reforms of labour market institutions.

Concerning the empirical exercise conducted by Duval and Elmeskov (2006), Jimeno notes that if the implementation of structural reforms is also the result of a political process, this should be tested among the diverse regressors considered. Moreover, a discontinuity due to a switch in regime should be considered: the experience

of reforms in the period 1985-2003 under fixed exchange rates is only partly informative about the incentives to reform nowadays under EMU. There is the TINA argument (There Is No Alternative), which is more forceful under EMU, as the authors themselves acknowledged. Furthermore, the internal and external factors that drive the costs and benefits of structural reforms are much different now than 15 years ago, or even during the run-up to EMU. Hence, the negative effect of the lack of independent monetary policy on the implementation of structural reforms needs to be explored further with alternative specifications. Otherwise, the suspicion of omitted variable bias affecting the coefficients of interest would be well-founded.

Finally concerning the deceleration in the process of reform in EMU countries, Jimeno (2006) concludes that if reforms follow a gradual process and there are complementarities that make one reform to be the origins of future reforms, it may be too early to make a call. Concerning the determinants of structural reforms, small countries are likely to be undertaking more reforms, but not for the reasons claimed by Duval and Elmeskov (2006). Rather, in small countries consensus building is easier and this helps to undertake structural reforms. Also, the notion of competitiveness is more firmly built-in in social attitudes, which rises public awareness of the need of structural reforms in the current scenario. In any case, Jimeno (2006) shares Duval's and Elmeskov's (2006) view that reforms should accelerate in EMU countries. The so-called open method of coordination under the Lisbon's strategy has thus far not delivered as expected. The two main options left are: a continuing communication of the high-order principles of sound economic management, and hope for some political leadership and a more widespread understanding of the opportunity costs (of not reforming).

All in all, we think that the evidence on product and labour market reforms is showing that the euro area is only very slowly moving toward a higher degree of flexibility: i.e., it is very gradually moving rightwards on the horizontal dimension of Figure 2 and toward more advantages from a single currency. While this effect is taking place for the euro area as a whole, it is more pronounced in smaller euro area countries. Nickell (2006) suggests a sequencing and prioritization that may reduce the political economy obstacles to structural reforms.

## 8. EFFECTS OF EMU ON INFLATION PERSISTENCE AND DIFFERENTIALS

The dispersion of national inflation rates steadily declined in the run-up to EMU and then broadly stabilised at the beginning of Stage Three of EMU. Thereafter, the level of inflation dispersion across the euro area has changed very little -- with the exception of a modest increase over the 2000-2002 period. Such inflation dispersion is not unusually large. In fact, their magnitude is similar to those differentials seen in the United States among the 14 US Metropolitan Statistical Areas. Where the euro area distinguishes itself from the US is that the observed inflation differentials have in general been quite persistent for euro area countries. In any case, in a monetary union some inflation differentials constitute a natural way of adjusting relative prices in the face of asymmetric demand or supply developments.<sup>11</sup>

The last 6 ½ years have also shown that changes in relative prices have been larger and more frequent than anticipated. Hence, the fear that the euro may have hindered adjustment of relative prices is clearly refuted. The German economy, for example, has been able to catch up with the average of the euro area in terms of cost competitiveness after the loss of competitiveness associated with German reunification. From this viewpoint the euro area has been more flexible than had been anticipated by many observers.

In some cases inflation differentials emerge from an economy that has been outperforming the average in terms of cost competitiveness and that is adjusting towards a more normal level in line with the average. This has been the case for some time for the Netherlands and is possibly still relevant for Ireland.

The existence of persistent inflation differentials among euro area countries is an issue which has drawn recently a lot of attention in academic and policy debates. Persistent inflation differentials are a concern to the extent that they reflect misaligned national economic policies or structural rigidities: this is when an economy having an

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<sup>11</sup> Inflation differentials are also a natural feature of the euro area in view of the gradual convergence or catching-up process regarding GDP per-capita (that was not discussed at the workshop). For a deeper analysis of the factors behind inflation differentials in EMU see ECB (2003) and ECB Monthly Bulletin Article of May 2005.



already relatively low level of cost competitiveness continues to face further deterioration due to higher inflation.<sup>12</sup>

Angeloni, Aucremanne and Ciccarelli (2006) examine the effects of EMU on inflation persistence and price setting across some selected euro area countries. By using data spanning from 1985Q1 to 2004Q4 and covering 6 countries (Spain, Germany, France, Italy, Belgium and Austria), they find that, perhaps surprisingly, EMU has not yet had a visible (or measurable) effect on both price setting and inflation persistence, or at least not directly. More specifically, their results can be summarised in two parts. First, they find no evidence of a structural change around 1999. At the end of 2001 and in the beginning of 2002 (i.e. the period surrounding the euro cash changeover) retail price adjustment frequencies increased substantially albeit temporarily, while the magnitude of price adjustment declined. Second, they do find evidence of a decline in the persistence of the inflation process in the mid-1990s, which could be due to a structural change in private inflationary expectations associated, at least in part, to policies linked to the preparation of EMU.

That inflation persistence has been moderate in the euro area during the last decade or so is also documented in the conclusions of the Eurosystem Inflation Persistence Network (see ECB (2005)).<sup>13</sup> An important explanatory factor is the anchoring of low inflation expectations of economic agents. However, the link to the convergence process leading to monetary union is – as pointed out by the authors – weakened by the fact that a similar degree of inflation persistence is found at a more global scale and in areas of the world (e.g. the US) that have experienced no currency reforms in recent years.

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<sup>12</sup> In that case additional attention must be given to increasing the flexibility and adaptability of both institutions and market structures in the national economy concerned in order for the appropriate adjustment mechanism to function.

<sup>13</sup> The Eurosystem Inflation Persistence Network (or IPN) consisted of researchers from the ECB and the 12 National Central banks (NCBs) belonging to the euro area. The Network assembled and analysed a new data set, including: a rich menu of aggregate and sectoral price indices for all euro area countries; individual price records underlying the compilation of consumer and producer price indices; and survey information on the mechanisms underlying price setting behaviour in euro area countries. This unprecedented data set was used by the IPN to study a number of general questions concerning the rigidity of prices and the persistence of inflation in the euro area and its member countries, as well as their causes and policy implications. For more information, see [http://www.ecb.int/home/html/researcher\\_ipn.en.html](http://www.ecb.int/home/html/researcher_ipn.en.html). For further references on inflation persistence see also ECB Working Papers nrs. 331-335, 370-371, 383-384, 413-418, 448-451, 461-466, 495-496, 511, 521-524, 534-536, 538-541, 556, and 561-564.

In commenting Angeloni, Aucremanne and Ciccarelli (2006), Dickens (2006) questions whether no changes in the frequency and magnitude of price adjustments necessarily mean that there were no effects from EMU. One should not look at the frequency of price changes, per se, but rather at the process by which price changes take place. A model of price changes would be needed, in order to generate an estimate of the cost of price adjustment, or some similar structural parameter. It would then be entirely possible that one would see changes in that parameter even if there are no changes in the frequency or magnitude of price adjustment.

Dickens would expect the frequency of price changes to decline as the rate of inflation declined (both in the EU and the US). The fact that it didn't suggests the possibility that EMU may have reduced the cost of price changes or made product markets more competitive making failure to adjust more costly. A very different picture from the results presented by Angeloni, Aucremanne and Ciccarelli (2006) could emerge by looking at the frequency of price changes at different points in time controlling for the rate of inflation.

Akerlof, Dickens and Perry (2000) proposed that wage and price setters tend to ignore inflation in price setting at low rates of inflation and presented evidence of this for the US: when inflation is low, price setting should become less responsive to recent shocks. Since both the US and EU have had low and stable inflation for the last decade, one should expect inflation persistence to weaken. But this doesn't mean that the EMU shouldn't get some of the credit for the decline in persistence in the EU.<sup>14</sup>

Tony Yates (2006), the other discussant of Angeloni, Aucremanne and Ciccarelli (2006) noted that there is no general equilibrium model of the benefits of not having multiple currencies, and that we do not have a complete theory of what it is EMU would have done to price-setting. It is therefore hard to interpret either the statistics on price changes, or the inflation dynamics equations, since we do not know what we would

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<sup>14</sup> Dickens also mentioned the International Wage Flexibility Project (IWFP), as project akin to the IPN, and using much the same approach to cross national research. In the IWFP, teams in thirteen countries have gathered and analyzed micro data on wage changes over a period of thirty years to gauge the relative importance of real vs. nominal rigidities (see Dickens, William T. Lorenz Goette, Erica L. Groshen, Steinar Holden, Julian Messina, Mark E. Schweitzer, Jarkko Turunen, and Melanie Ward (2005)).

expect. More direct ways of assessing the presence of factors we know would contribute to altering the reduced forms for inflation and should be explored in future research in this area, including the stability of structural equations for inflation and the stability of monetary policy reaction functions. Some additional tests could also be conducted using inflation expectations data, some time series for proxies for competition, or estimated shocks to the mark up, or 'off-model' estimates of profitability or mark-ups.

Last, ECB (2005) notes also that several features of inflation persistence, as for example the frequency of price changes, and several characteristics of price setting in the euro area are still not well understood. Wage stickiness and the functioning of labour and product markets in the euro area appear to play an important role in price dynamics and would need to be examined further.

## **9. SOME FINAL OBSERVATIONS**

By and large many initial concerns regarding the effects that the ECB's single monetary policy might have on member countries have been dispelled. Some important elements from the analysis of the effects of EMU are already emerging, for example that:

- euro area trade integration has augmented without trade diversion (i.e., no "fortress Europe");
- EMU has significantly accelerated the process of European financial integration;
- if we look at pre-EMU and EMU data, euro area countries, as a group, have undertaken more structural reforms than they are normally given credit for. At the same time such reforms take time to display their positive effects, and a lot has still to be done;
- however, since the start of EMU larger euro area countries have thus far been slower than others in securing structural reforms: this is restricting their adjustment mechanisms, hindering their ability to cope with economic developments, and is also reducing the net benefits from EMU for all – more interlinked – euro area countries.
- larger euro area countries have benefited proportionately more from some elements of financial integration but have been slower in conducting the needed structural reforms;

- business cycle synchronisation among euro area countries remains high and there is no evidence that euro area countries are becoming more specialised and less synchronised. Inflation differentials are also limited, but show more persistence;
- signs of increased divergence in growth rates that have emerged so far are limited, and the dispersion of real GDP growth rates in the euro area has remained very close to its historical average; and
- risk sharing has augmented as well: this signals both a higher degree of overall financial integration but also attests the deepening of overall economic integration.

Overall, the effects of EMU that we observe are beneficial. Many potential concerns preceding the launch of the euro have been dispelled. All participants in the workshop agreed that it will take considerably more time for the full effects of the euro to unravel. The launch of the euro has also been a catalyst for new research in many areas.

The workshop has dealt with the effects of EMU, and the launch of the euro, as a whole: i.e., from the perspective of the euro area. However, each euro area member country has exhibited different paths toward monetary unification due to country-specific circumstances and a variety of other factors such as national economic and financial characteristics. These aspects were not discussed at the workshop but also deserve some analysis.

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ISSN 1561081-0



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