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Economic and monetary integration of the new Member States - helping to chart the route

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EUROPEAN CENTRAL BANK

OCCASIONAL PAPER SERIES

NO. 36 / SEPTEMBER 2005

ECONOMIC AND MONETARY INTEGRATION OF THE NEW MEMBER STATES

HELPING TO CHART THE ROUTE

by Ignazio Angeloni,
Michael Flad and
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by Ignazio Angeloni²,
Michael Flad³ and
Francesco Paolo Mongelli⁴



In 2005 all ECB publications will feature a motif taken from the €50 banknote.

This paper can be downloaded without charge from the ECB's website (<http://www.ecb.int>) or from the Social Science Research Network electronic library at http://ssrn.com/abstract_id=807409.

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ABSTRACT

This paper examines diverse aspects of the monetary integration of the ten new Member States (NMS) which joined the EU on 1 May 2004 into the euro area. Most NMS have undergone a rapid and deep transformation in all areas with considerable progress in their processes of reform and convergence, and more is underway. While trade integration with the other 15 EU Member States (EU15) has progressed quickly, convergence in output specialisation to EU standards has been slow, especially if measured in real terms. This may influence negatively the pace of real convergence. Most NMS lag significantly behind in building up and deepening their financial systems. There is also evidence that exchange rate flexibility may still be serving as a useful shock absorber for some NMS, and so far the evidence indicates that real exchange rates have moved, broadly speaking, in line with long term fundamental equilibria. On the positive side, many NMS are quite advanced relative to the euro area in the process of labour market and institutional reform (their labour market structures are more flexible than those of the euro area countries). There is also some evidence that a few NMS have a significant degree of business-cycle synchronisation with the euro area: hence, they may become less likely to be affected by different economic shocks. This, however, is not true for all NMS. The monetary policy institutions of the NMS have also converged to some degree: goals and institutional settings of central banks are now much more similar than before. A case-by-case approach to adopting the euro, based on country-specific conditions, seems natural due to the differences between the countries.

JEL classification: E42, F13, F33 and F42

Keyword: Optimum Currency Area, Economic and Monetary Integration and EMU

NON-TECHNICAL SUMMARY

This paper examines diverse viewpoints on the monetary integration of the ten new EU Member States (NMS) into the euro area. *Monetary integration* means foregoing the use of monetary and exchange rate policies for national purposes alone. In signing the Maastricht Treaty – that contains the institutional arrangements for the conduct of monetary policy in the European Economic and Monetary Union (EMU) – these countries agreed to immediately start taking into account the implications of such policies for other EU members; in the longer run, monetary integration means adopting the euro.

Most NMS have undergone a very rapid and deep transformation in all economic and institutional areas. We can in fact recognise three broad phases: a rapid adjustment period that spans from the early economic and institutional liberalisation till 1996-97; a period characterised by the emerging market and Russian crises from 1997 to 1999, which brought the NMS the pain of rapid financial integration and capital volatility; and a period of convergence with the EU, which brought more sustained growth and stability.

We find evidence of NMS having made significant progress in the processes of reform and convergence, and more is under way. However, a lot remains to be done.

First, all NMS have been able to achieve a high pace of nominal convergence in recent years. As far as real convergence is concerned, however, the record is more mixed and differentiated.

Second, looking at more structural factors we find that, while trade integration with the other 15 EU Member States (EU15) has progressed quickly in recent years and is now quite advanced, convergence in output specialisation to EU standards has been slow, especially if measured in real terms (excluding changes in relative prices). This may influence negatively the pace of real convergence.

Third, there is also some evidence that a few NMS have a higher degree of business-cycle synchronisation with the euro area. Hence, they may become less likely to be affected by radically different economic shocks. This, however, is not true for all NMS.

Fourth, we find that many NMS are quite advanced relative to the euro area in the process of labour market and institutional reform (their labour market structures are more flexible than those of the euro area countries), while they lag significantly behind in building up their financial systems. As regards financial structures and financial deepening, much remains to be done.

Fifth, there is evidence that exchange rate flexibility may still be serving as a useful shock absorber for some NMS, and so far the evidence indicates that real exchange rates have moved, broadly speaking, in line with long-term fundamental equilibria.

Sixth, the monetary policy institutions of the NMS have also converged to some degree. The goals and institutional settings of central banks are now much more similar than before. Looking at central bank statutes, objectives, strategies and instruments, we find that good progress has recently been made in developing sound central banking structures.

All in all there has been very significant progress in the integration of the NMS but a lot remains to be done. There are also still considerable differences across them. Our view is that the conditions for full monetary integration have still not been reached for the group as a whole. A case-by-case approach to adopting the euro – based on country-specific conditions – seems natural.

Where do we stand? [Referring to the structural and institutional convergence of the New Member States] “... the core message remains the same: a lot has been achieved, but many issues still remain to be tackled. Assessing the current situation and establishing in which fields further action will be required – be that with respect to further trade and financial integration, to intra-industrial specialisation or to fiscal consolidation – is of paramount importance, especially to policy-makers.” Lucas Papademos at the Third ECB Central Banking Conference (21 October 2004).

I INTRODUCTION

In May 2004 ten new countries joined the European Union: by this act they expressed their will to integrate their economies into an enlarged EU. *Economic integration* is defined as the elimination of economic frontiers between two or more economies (Pelkmans (2001)).¹ In this paper we employ “economic integration” to mean successful participation in the single European market with free exchange of goods and services, free movement of capital and people, and common rules in certain areas (competition, external trade, money, and certain aspects of finance). The word “integration” should not be interpreted as uniformity: each new Member State (NMS) will retain its comparative advantages and economic specialisation – in fact it is precisely from such differences that any gains from membership originate. *Monetary integration* means foregoing the use of monetary and exchange rate policies for national purposes alone. In signing the Maastricht Treaty, NMS agreed to immediately start taking into account the implications of such policies for other EU Member States;² in the longer run, monetary integration means adopting the euro. The historical legacy also implies that most of these countries will face the additional challenge of combining economic and monetary integration in the EU with their domestic goals of economic development and market-oriented reform.

In this paper we review issues and evidence relevant to monitoring the progress of the integration process. Our focus is on monetary integration and how this is linked with the rest of the integration process. In particular, we are interested in gauging how fast the new Member

States should relinquish their domestic monetary and exchange rate autonomy *given* the state (and likely progress) of their economic structures. We examine the economic integration of the NMS from a number of different angles to determine what this implies overall for the appropriate pace of monetary integration. To this end, we review evidence and arguments provided by other authors and, when this is lacking, contribute some of our own. The paper contains three original contributions: first, we look at the relationship between structural convergence of output and income convergence; second, we look at the effects of different exchange rate regimes on the speed of real exchange rate convergence; and third, we look at the actual behaviour of some NMS’ central banks and find that preferences and policy objectives are quite similar.

We analyse all NMS together. This means taking a broader view and conducting our argument at a relatively high level of generality. We are aware that important differences exist across NMS. On the other hand, there are also important similarities. First, all the countries concerned are small relative to the EU and the euro area. This means that the consequences of their integration strategies will fall mainly upon the NMS themselves – the EU15 will be influenced only to a limited extent. Second, all NMS have less

1 An economic frontier is any demarcation over which actual and potential mobilities of goods, services and production factors, as well as communication flows, are relatively low. For a detailed definition and description of economic integration see Pelkmans (2001).

2 The Maastricht Treaty contains the institutional arrangements for the conduct of monetary policy in the European Economic and Monetary Union (EMU).

developed economic and financial structures relative to the other EU Member States (though there are diversities among NMS in this respect), suggesting that the direction of changes is to some extent common. An advantage of reviewing all NMS together is that this allows us to single out differences that may help them “chart their route” towards a successful adoption of the euro.

In starting to think about these issues, it is tempting to refer to the debate developed in the mid-1990s, when the first “wave” of EMU was in the making. At that time, most of the debate focused on three questions (see Angeloni and Dedola (1999)): (1) whether the prospective members constituted an “optimum currency area”, in the sense defined by Mundell, Kenen and McKinnon in the 1960s;³ (2) if and how their monetary policy transmission differed; and (3) whether the diversity existing in the prospective currency area would permit a cohesive and efficient monetary policy decision-making process. *EMU supporters* and *EMU sceptics* cast their arguments mainly by giving different answers to these questions.

Obviously, using the same framework today requires caution, since conditions have changed. The analysis now also considers forward-looking elements. In fact, experience has shown that many of the conditions of a well-functioning currency area are endogenous, i.e. possibly emerge as a result of the monetary integration process itself.⁴ For example, the degree of trade openness makes successful participation in a currency area more likely, but at the same time it may also be influenced by such participation. A similar argument applies to the transmission mechanism, since the functioning of financial markets is likely to undergo a structural transformation in a currency area. As to the monetary policy decision-making process, the key difference between the 1990s and now is that there is now a well-functioning European Central Bank with its own monetary framework and established track record. It may take the

NMS adopting the euro less time to adopt the operational framework of the Eurosystem.

The paper is organised as follows. First we review, in Section 2, the main recent macroeconomic developments among NMS, focusing particularly on nominal and cyclical convergence. Next, in Sections 3 to 5, we examine three factors concerning the real sector of the NMS economies that are of central importance when judging *whether the optimum currency area conditions are met*: output specialisation, asymmetric shocks and trade integration. In Sections 6 and 7, we look at labour markets and public finances, i.e. two areas whose proper functioning can help to smooth the effects of the loss of monetary autonomy as long as the optimum currency area conditions are not (fully) met. In Section 8, we turn to financial structures and the monetary policy transmission process. Finally, in Section 9 we look at convergence of real exchange rates and in section 10 at central banking institutions and monetary policy-making. Section 11 brings the main conclusions together. To the extent possible we have collected the longest available time series in each area, but, regrettably, the starting point and data coverage is uneven across the various sections. Data and information here are updated to the spring of 2005 (when possible).

3 Over the last 40 years there has been a rich debate on the optimum currency area theory and its diverse properties (see diverse references in Mongelli (2005)). Here we refer to the theory in its broader interpretation and as an organising device for the analysis.

4 There is now a rich debate on the endogenous effects stemming from monetary integration. See Rose (2004) for a meta-analysis of the effects of monetary integration around the world, and De Grauwe and Mongelli (2005) for a discussion of endogeneities among euro area countries.

2 MACROECONOMIC CONVERGENCE OF THE NEW MEMBER STATES: SOME RECENT DATA

The debate on European economic and monetary integration in the late 1980s and 1990s devoted a lot of attention to the

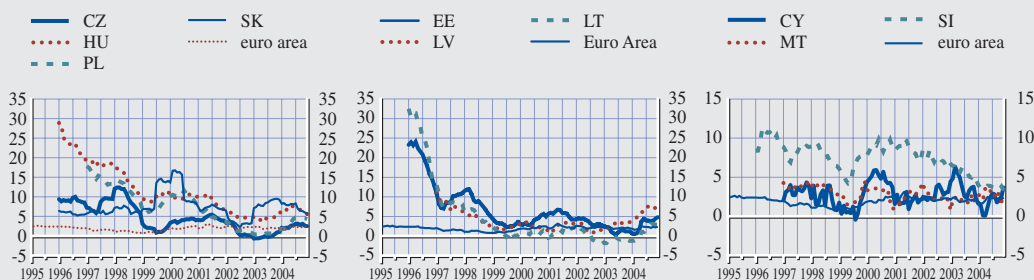
convergence criteria which countries had to meet if they wanted to join EMU.⁵ In this section, we provide a bird's eye view of some selected indicators of nominal and

⁵ For details on the convergence criteria, see also the ECB (2004) and European Commission (2004) convergence reports.

Chart 2.1 Selected indicators of nominal convergence, 1995-2004

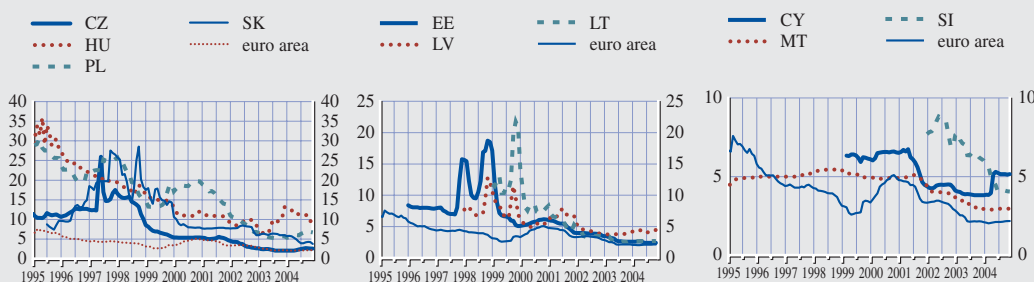
a. Inflation (HICP)

(annual % changes)



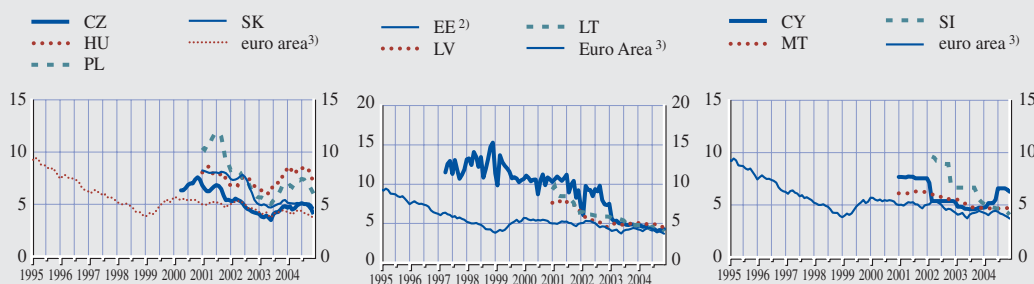
b. Short term interest rates (3-month money market rate)

(% per annum)



c. Long term interest rates (harmonised)¹⁾

(% per annum)



Source: Eurostat and ECB.

¹⁾ Yields refer to government bonds with maturities of close to ten years.

²⁾ Interest rate indicator on new EEK-denominated loans to non-financial corporations and households with maturities over five years (see Statistics Pocket Book 2005).

³⁾ Simple average of EMU countries (excl. Luxembourg).

real convergence and external balances. Specifically Chart 2.1 shows nominal convergence (inflation and interest rates), Chart 2.2 real convergence (growth, productivity and price level convergence), while Chart 2.3 shows exchange rates and current account balances. We are able to

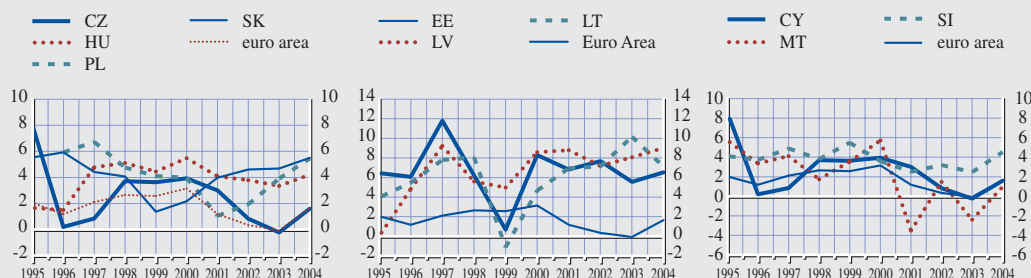
provide a fairly extensive coverage only from 1995 (or slightly earlier in some cases) and till the spring of 2005 whenever possible.

From the standpoint of nominal convergence, the earlier part of the sample period we are considering is quite tumultuous: several NMS

Chart 2.2 Selected indicators of real convergence, 1995-2004

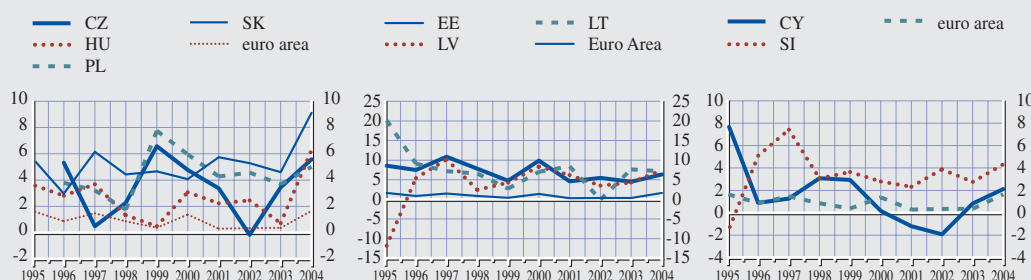
a. Real GDP growth per capita

(annual % changes; end of period)



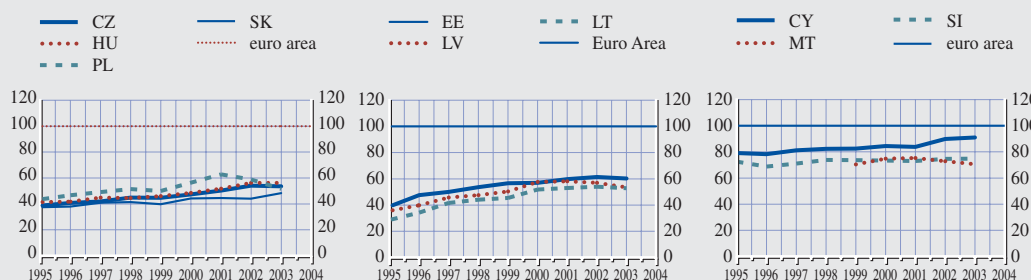
b. Labor productivity (gross value added – total economy at constant prices per employees)

(annual % changes; end of period)



c. Comparative price levels)¹⁾

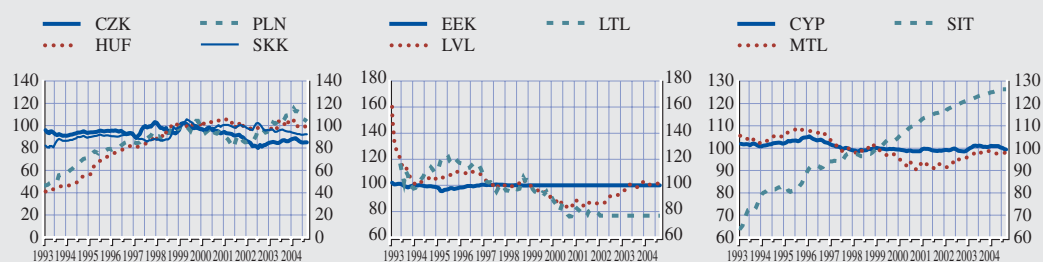
(Euro Area = 100)



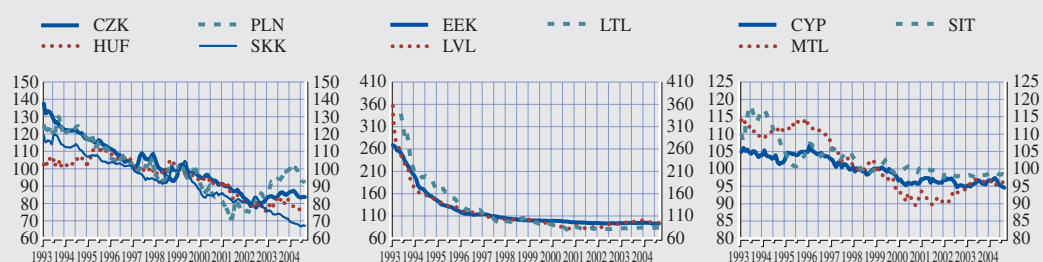
Source: Eurostat and ECB.

Chart 2.3 Selected exchange rate indicators and current account balance, 1993/1995-2004

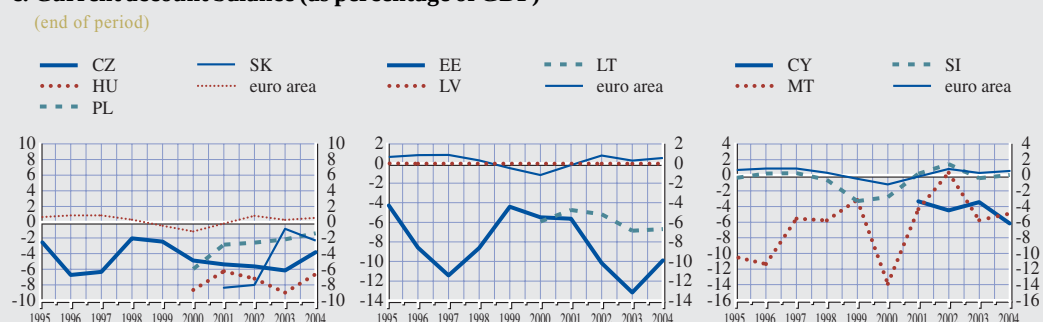
a. National bilateral exchange rate (vis-à-vis EUR)¹⁾



b. Real bilateral exchange rate (vis-à-vis EUR)²⁾



c. Current account balance (as percentage of GDP)



Source: ECB.

1) "Synthetic"EUR prior to 1999 (Q1 1999 = 100, increase means an appreciation of EUR).

2) "Synthetic"EUR prior to 1999 (CPI deflated, Q1 1999 = 100, increase means an appreciation of EUR).

exhibited even double-digit inflation in the run-up to the 1998 Russian crisis and thereafter. All NMS have since been able to bring down their inflation rates (see Chart 2.1a). Short-term and long-term interest rates (Charts 2.1b and 2.1c) have also fallen significantly toward euro area levels, albeit at different paces. A group of countries, including the Czech Republic, the Baltic countries, Malta and Cyprus, exhibited earlier convergence than others. Very importantly, such nominal convergence also reveals the reform efforts made by NMS and their clear policy preferences that are discussed further below.

Chart 2.2 presents some indicators of real convergence that reveal a more mixed picture. All NMS have posted a higher per-capita real GDP growth rate than the euro area average (Chart 2.2a), but, with a few exceptions (Hungary and Slovenia), they have also exhibited very high volatility of real GDP growth. Changes in labour productivity are also higher than the euro area average but generally exhibit high volatilities (Chart 2.2b). Comparative price levels⁶ are still gradually and slowly catching up with the euro area level (Chart 2.2c). However, they are still considerably lower in almost all NMS (with the exception of Malta, Cyprus and Slovenia), and it may require some time to close this gap.

A look at some selected exchange rate and current account balance indicators is useful at this stage to capture some of the different developments experienced and policy strategies pursued by the NMS (Charts 2.3a and 2.3b). A group of countries, i.e., Estonia, Cyprus and Malta have maintained nominal bilateral exchange rate pegs vis-à-vis the euro over the whole period. The Czech Republic and Slovakia have had flexible exchange rates against the euro for several years. The Czech Republic, Slovakia, and Estonia have experienced some appreciation of the real bilateral exchange rate on account of their inflation rates being higher the euro area average. Cyprus and Malta, on the other hand, have recorded relatively stable real bilateral

exchange rates on account of their inflation rates being relatively low vis-à-vis the euro area average. Hungary, Poland and Slovenia have seen a gradual depreciation of their nominal bilateral exchange rates vis-à-vis the euro over the period but have contained appreciation in their real bilateral exchange rates. Latvia and Lithuania are somewhere in between, having experienced a significant real appreciation, particularly in the early part of the sample period. Last, the NMS have experienced very different developments in their current account balances, with some countries exhibiting very high and volatile deficits (such as Hungary, Estonia, Malta, and Cyprus).

In summary, this brief overview of nominal and real convergence indicators suggests that the NMS have displayed a high level of macroeconomic convergence with the euro area, in particular on the nominal side. However, for some countries this is still a very recent achievement. The exchange rate indicators also illustrate the different stages the countries have reached in the process of convergence: some NMS are still experiencing some nominal depreciation or real appreciation (such as Slovakia and to some extent Hungary). Differences in the process of gradual appreciation of NMS' currencies are a phenomenon that we discuss further in Section 9. Their current exchange rate regimes and plans for ERM II entry are summarised in Table 9.1.

3 OUTPUT COMPOSITION AND STRUCTURAL CONVERGENCE

We now turn to the composition of output, which is important for assessing the degree of structural convergence. There are several reasons why this deeper level of real convergence is relevant for this discussion. If the output composition differs internationally,

⁶ In terms of final consumption by households including indirect taxes as calculated by Eurostat.



sectoral disturbances tend to generate asymmetric country disturbances.⁷ By a similar reasoning, differences in the output composition tend to generate asynchronous national cycles, since sectors have different cyclical properties and may even respond differently to monetary policy (as recently shown by Dedola and Lippi (2000)).

The composition of output and employment tends to be closely related to the stage of economic development. International comparisons have shown that a higher level of development tends to be associated with a smaller share of agriculture in aggregate output and a larger share of services, whereas the share of industry typically has an inverted U-shaped relationship to per capita output, increasing first and declining later (Chenery and Taylor, 1968). The output shares can then be used to “benchmark” the degree of economic development, as recently done for central European countries by Raiser et al. (2003).

Against this background, we examine some evidence regarding the composition of output and employment in the NMS, using the euro area and the United States as benchmarks for comparison. We are mainly interested in whether there are relevant differences in the composition of output and in how the differences have evolved over time.

Table 3.1 shows the shares of five activities (agriculture, construction, manufacturing, energy and services) in total value added for all NMS, the euro area and the United States in the period 1995-2003. Longer comparable data series are unfortunately not available. Data for all 25 EU Member States over this time span are only available at this (low) level of disaggregation.⁸ In order to condense a lot of information, we also compute, following Krugman (1993), an index of output dissimilarity to assess the overall difference in output composition between the NMS taken as a region and the euro area. Our index is the sum of the absolute differences in the shares of the five activities, and is expressed as a percentage

of the maximum value this sum can assume (i.e. a value of 2):

$$Distance_{NMS-EA} = \frac{\sum_j |S_{NMSj} - S_{EAj}|}{2} \times 100,$$

where j denotes the activity. The construction of the index is such that a value close to zero indicates identical output composition, while higher values up to 100 mean increasing dissimilarity in output structure.

Table 3.1 (Panel a) that shows the shares of five activities at current prices reveal a significant difference in output composition between the NMS and the euro area. Agriculture accounts for a significantly larger share in the NMS, and services represent a much smaller share. Manufacturing and construction are marginally larger in the NMS, as is the energy activity. At the same time, while there are no dramatic changes in the structure of output in such short periods, as one would expect, there is nonetheless a clear trend of convergence of the NMS towards the euro area. The share of agriculture declines while that of services increases, and the distance indicator confirms this overall impression. Interestingly, the distance between the euro area and the United States first declines and then rises in the nine-year period considered. This is mainly due to a marked increase in the share of services in the United States from the beginning of the new millennium, which was not matched by Europe.

Table 3.1 (Panel b) computes the same measures on a real basis, i.e. using value added data at constant (1995) prices rather than at current prices, to examine whether the movements noted in the previous panel are due

7 Kenen (1969) argues that a high diversification in production and consumption within each country, i.e. in the “portfolio of jobs”, and correspondingly in imports and exports, dilutes the possible impact of shocks specific to any particular sector. This reduces the need for changes in the terms of trade via the nominal exchange rate.

8 Both Raiser et al. (2003) and Bems (2004) warn that the distortion in the economic structure of formerly centrally planned economies may bias the international comparisons of output shares. The bias should be less relevant in our case since our sample starts in 1995, when the transition process was largely completed.

Table 3.1a Output composition, 1995-2003 – Current prices

	1995	1996	1997	1998	1999	2000	2001	2002	2003
New Member States¹⁾									
agriculture	6.1	5.8	5.3	4.8	4.1	3.9	4.0	3.5	3.3
building and construction	6.9	6.9	7.0	7.6	7.2	7.0	6.5	6.3	6.0
manufacturing	22.6	22.5	22.4	21.7	21.7	21.5	20.2	20.1	20.2
energy	6.4	6.1	5.6	5.2	5.1	5.0	5.0	5.1	5.1
services	58.0	58.6	59.6	60.8	61.8	62.5	64.2	65.0	65.4
Euro area²⁾									
agriculture	2.7	2.8	2.7	2.6	2.5	2.4	2.4	2.2	2.2
building and construction	6.1	5.8	5.6	5.4	5.5	5.5	5.5	5.5	5.5
manufacturing	20.6	20.1	20.2	20.2	19.8	19.8	19.5	19.1	18.7
energy	3.0	3.0	2.8	2.8	2.6	2.5	2.5	2.5	2.5
services	67.7	68.3	68.7	68.9	69.6	69.8	70.2	70.7	71.1
Distance between NMS and euro area	9.6	9.7	9.1	8.2	7.8	7.3	6.0	5.5	6.0
Distance between NMS and smaller euro area countries³⁾	9.8	9.4	9.9	9.0	9.0	8.9	8.1	8.2	8.9
USA									
agriculture	1.1	1.3	1.3	1.2	1.0	1.0	1.0	0.9	1.0
building and construction	3.9	4.0	4.1	4.3	4.4	4.4	4.5	4.4	4.4
manufacturing	16.3	15.8	15.8	15.4	14.8	14.5	13.3	12.9	12.7
energy	3.4	3.5	3.4	2.9	2.9	3.2	3.1	2.9	3.1
services	75.3	75.3	75.5	76.3	76.9	76.9	78.0	78.8	78.8
Distance between USA and euro area	8.4	7.6	7.3	7.4	7.6	7.7	8.4	8.6	8.3

Source: AMECO (European Commission Directorate General for Economic and Financial Affairs).

1) Excluding Malta.

2) Excluding Ireland.

3) Smaller euro area countries: Greece and Portugal.

to real output redistribution, or changes in relative prices, or both. In principle, one would expect both price and quantity changes to occur. Several forces are in motion. Productivity growth in the traded sector should raise the relative prices of services (to the extent they are less traded) in NMS via the Balassa-Samuelson mechanism. Changes in consumption patterns linked to an increase in living standards should also favour higher demand for (and the prices of) services and lower demand for agricultural products. At the same time, one should see real resources flow from the “stagnant” activities to the “growing” activities, presumably services and to some extent industry.⁹

Comparing the panels, the main message is that on a real basis (Panel b), the changes in the output composition are much less evident than at current prices (Panel a). The declining trends in agriculture and construction and the rising trend in services are more muted; the share of manufacturing rises rather than declines. The overall distance between the NMS and the euro area remains roughly constant. For comparison, the gap between the euro area and the United States again follows its U-shaped

9 Interestingly, while the pioneering research on the redistribution of output (such as Baumol, 1967) concluded that services would normally be a “stagnant” activity, where productivity increase should be weaker than in the rest of the economy, in the recent years this view has clearly changed. Nordhaus (2002) shows that in the US the service activity was the main contributor to the acceleration of productivity in the second half of the 1990s.

Table 3.1b Output composition, 1995-2003 – Constant prices

(% of total value added)

	1995	1996	1997	1998	1999	2000	2001	2002	2003
New Member States¹⁾									
agriculture	6.1	6.0	5.8	5.2	5.2	5.0	5.0	4.6	4.2
building and construction	6.9	6.6	6.7	6.5	6.3	6.0	5.6	5.3	5.0
manufacturing	22.6	23.3	24.6	24.6	24.5	25.3	25.1	25.0	26.0
energy	6.4	6.7	5.9	6.0	5.8	5.8	5.6	5.5	5.2
services	58.0	57.4	57.0	57.7	58.2	57.9	58.7	59.6	59.6
Euro area²⁾									
agriculture	2.7	2.9	2.8	2.8	2.8	2.7	2.6	2.6	2.5
building and construction	6.1	5.9	5.6	5.5	5.5	5.4	5.3	5.2	5.1
manufacturing	20.6	20.1	20.4	20.5	20.1	20.2	20.0	19.8	19.7
energy	3.0	3.0	2.9	2.8	2.9	2.8	2.7	2.7	2.8
services	67.7	68.1	68.3	68.4	68.8	68.9	69.4	69.7	69.9
Distance between NMS and euro area	9.6	10.9	10.4	9.9	9.8	10.2	9.9	9.3	9.9
Distance between NMS and smaller euro area countries³⁾	9.8	10.1	10.8	9.9	10.4	11.0	10.5	10.8	11.0
USA									
agriculture	1.1	1.2	1.3	1.2	1.2	1.3	1.3	1.3	1.3
building and construction	3.9	3.9	3.9	4.1	4.1	3.9	3.8	3.6	3.5
manufacturing	16.3	15.9	16.3	16.5	16.4	16.9	15.9	15.9	15.7
energy	3.4	3.3	3.1	2.7	2.7	2.6	2.4	2.4	2.3
services	75.3	75.7	75.4	75.5	75.6	75.3	76.6	76.8	77.2
Distance between USA and euro area	8.4	7.8	7.4	7.1	6.8	6.4	7.2	7.1	7.2

Source: AMECO (European Commission Directorate General for Economic and Financial Affairs).

1) Excluding Malta.

2) Excluding Ireland.

3) Smaller euro area countries: Greece and Portugal.

curve, rising at the end of the sample due to a sharp increase in the weight of services in the United States.

Table 3.1 (Panel c) shows similar shares and indices, but calculated on the basis of employment rather than output. The difference between the NMS and the euro area is much greater, signalling that the stagnant activities (agriculture particularly) are characterised by lower labour productivity. The distance is also great in the services activity, where it is rising. The overall index shows some convergence, but it is slow and starting from a high initial level of convergence (i.e., there had already been a lot of previous convergence).

As a check we also add a comparison with small euro area countries, i.e. Greece and Portugal, as data is missing for Ireland (see Table 3.1 Panels a, b and c). The distance-indicator is even higher, implying an even greater divergence of the output composition of the NMS from that of the small euro area countries (Greece and Portugal only).

Table 3.2 documents the dispersion within the two groups, the NMS and the euro area, proxied by the standard deviation of the shares of agriculture and services. The most evident feature is that the dispersion is much higher in the NMS, particularly in services. Unlike in the euro area, there is no tendency for this divergence to diminish over time.

Table 3.1c Output composition, 1995-2003 – Employment

(% of total value added)									
	1995	1996	1997	1998	1999	2000	2001	2002	2003
New Member States¹⁾									
agriculture	17.4	17.8	17.3	16.9	16.9	17.1	16.8	16.9	16.7
building and construction	6.6	6.5	6.7	6.8	6.7	6.6	6.5	6.1	6.1
manufacturing	22.9	22.7	22.6	22.3	21.8	21.2	21.0	20.8	20.7
energy	2.8	2.6	2.6	2.5	2.7	2.9	2.8	2.7	2.8
services	50.3	50.4	50.8	51.5	51.9	52.2	52.9	53.5	53.7
Euro area²⁾									
agriculture	5.8	5.6	5.5	5.3	5.1	4.9	4.8	4.7	4.6
building and construction	7.5	7.4	7.3	7.2	7.2	7.2	7.2	7.1	7.1
manufacturing	20.2	19.9	19.7	19.5	19.2	18.9	18.7	18.3	18.1
energy	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.1
services	65.3	66.0	66.4	67.0	67.5	68.1	68.4	69.0	70.1
Distance between NMS and euro area	17.7	18.2	17.9	17.4	17.1	16.8	16.6	16.8	16.1
Distance between NMS and smaller euro area countries³⁾	8.8	9.1	9.0	9.3	9.2	9.2	9.4	9.8	9.7
USA									
agriculture	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6
building and construction	5.0	5.1	5.2	5.3	5.5	5.5	5.6	5.5	5.6
manufacturing	18.2	17.9	17.6	17.3	16.8	16.6	15.9	15.2	14.6
energy	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7
services	74.3	74.5	74.7	75.0	75.4	75.6	76.2	77.0	77.5
Distance between USA and euro area	11.8	11.3	10.9	10.7	10.4	10.0	10.1	10.4	11.7

Source: AMECO (European Commission Directorate General for Economic and Financial Affairs).

1) Excluding Malta.

2) Excluding Ireland.

3) Smaller euro area countries: Greece and Portugal.

The evidence from Tables 3.1 and 3.2 raises two questions. First, if indeed there are factors impeding (or slowing down) structural changes in the resource allocation in NMS, then what are they and what policies are needed to remove them? All in all, given the evidence presented below, we doubt that the lack of labour market flexibility is the reason. The root of the problem could be in the financial markets. As we will see below in Section 8, NMS are generally characterised by undersized domestic financial and banking sectors, a deficiency only partly compensated by external finance and by the presence of foreign intermediaries. Finance is a critical input in the process of economic restructuring, one that requires the presence of several elements:

funding, project screening ability and a sound attitude towards risk-taking, all of which in turn require developed institutional and legal structures. There are indications that some of these elements may be missing in the case of the NMS. Another impediment may be the slow accumulation (or adaptation) of human capital. In any case, we are not equipped to tackle this type of question; neither is it central to this paper.

The second question is qualitatively different: what are the implications of the seemingly low level of structural convergence for the process of convergence of aggregate income and living standards? In order to shed some light on this issue, we insert our measures of output

Table 3.2 Output composition – cross-country differences, 1995-2003

(% of total value added)

a. Current prices

	1995	1996	1997	1998	1999	2000	2001	2002	2003
New Member States¹⁾ (weighted ³⁾ standard deviations)									
agriculture	1.6	2.0	1.9	1.6	1.4	1.3	1.1	1.2	1.0
services	4.0	4.4	3.9	3.7	4.1	4.3	4.1	4.2	4.2
Euro area²⁾ (weighted ³⁾ standard deviations)									
agriculture	2.1	1.9	1.8	1.6	1.6	1.4	1.3	1.4	1.3
services	2.4	2.5	2.6	2.7	2.9	2.9	2.7	2.8	3

b. Constant (1995) prices

	1995	1996	1997	1998	1999	2000	2001	2002	2003
New Member States¹⁾ (weighted ³⁾ standard deviations)									
agriculture	1.6	1.8	2.9	2.5	2.2	2.3	2.2	2.1	1.9
services	4.0	4.8	4.7	4.6	4.6	5.0	4.8	4.4	4.5
Euro area²⁾ (weighted ³⁾ standard deviations)									
agriculture	2.1	2.0	1.9	1.8	1.8	1.6	1.5	1.4	1.3
services	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.5	2.5

Source: AMECO (European Commission Directorate General for Economic and Financial Affairs).

1) Excluding Malta.

2) Excluding Ireland.

3) Weight: individual country shares in total activity's output.

composition into an empirical model of real income convergence across countries, of the type recently used by, for example, Sala-i-Martin (1997). In the literature on this topic, it is often mentioned that output composition may be one of the determinants of real convergence; our regressions explore this idea in the context of NMS. Our specification has the growth of per capita output on the left-hand side and selected explanatory variables, among those most commonly used in the literature, on the right-hand side. We estimate this specification in panel form for all NMS (except Cyprus and Malta) over the period 1995-2003, with annual data, as follows:

$$(1) \Delta y_t = \beta_0 + \beta_1 \cdot y_{t-1} + \beta_2 \cdot Distance_t + \beta_3 \cdot Distance\ services_t + \beta_4 \cdot Trade\ openness_t + \beta_5 \cdot Investment_t,$$

where y_t stands for the log real per capita GDP; $Distance_t$ and $Distance\ services_t$ represents the composition of output (constant prices) relative to the euro area, considering all activities and only the services activity respectively; $Trade\ openness_t$ is the ratio of each country's exports plus imports to GDP; $Investment_t$ is the ratio of the country's gross capital formation to GDP; and Δ is the first difference operator.

In Table 3.3, column (1) shows the results for the basic regression. NMS' economic growth rates are strongly affected by each period's starting level of per capita income (the β -convergence discussed in the empirical growth literature). Every percentage point increase in per capita income reduces its growth rate by around 1.7 percentage point. Next we extend

this specification. Column (2) shows that an important factor is also the degree of trade openness: NMS that are more open to trade record higher economic growth (the coefficient is not always significant though). Columns (3), (4) and (5) explore the role of output composition, using two indicators: the overall *Distance* indicator and the simple difference in the share of services. The significance of both distance measures is obtained if both indicators are included. Column (6), which excludes the trade openness, shows that the distance indicators retain explanatory power. Finally, Columns (7) and (8) introduce the investment rate, in line with what is suggested in the empirical literature. This variable is indeed significant, but it appears to be collinear with the distance indicators (column (8) versus column (5)) – as one would indeed expect, if our hypothesis is true. All in all, Column (5), with distance indicators and trade openness, seems marginally better (in terms of statistical performance) than Column (7), with trade openness replaced by investment.

In summary, our evidence suggests that the output composition of NMS is still significantly different from that of the other Member States. We do observe a certain convergence in the relative weight of the main components of output, but this seems largely driven by changes in relative prices. The differences in output composition enter significantly in regressions explaining real per capita growth in NMS. All in all, the evidence shows that, although structural convergence is ongoing, the process is far from complete and needs to be better understood.

4 CYCLICAL PROPERTIES AND THE NATURE OF SHOCKS

Most of the empirical literature on optimum currency areas has focused on measuring cross-country asymmetries in economic shocks and in their propagation mechanisms. Intuitively, the more similar aggregate supply and demand shocks are, and the more similar the speed with which the economy adjusts – taking into

Table 3.3 Output composition at constant prices – panel estimation: new Member States (excluding Cyprus and Malta), 1995-2003

Dependent variable: Δy_t	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Independent variables:	Pooled OLS ¹⁾							
Constant (β_0)	0.18*** (0.0454)	0.17*** (0.0465)	0.18*** (0.0468)	0.17*** (0.0471)	0.18*** (0.0455)	0.20*** (0.0449)	0.17*** (0.0450)	0.17*** (0.0455)
y_{t-1}	-0.017*** (0.0056)	-0.018*** (0.0056)	-0.016*** (0.0057)	-0.017*** (0.0057)	-0.16*** (0.0055)	-0.016*** (0.0056)	-0.018*** (0.0055)	-0.017** (0.0055)
Distance _t			-0.001 (0.0012)		-0.009** (0.0036)	-0.007** (0.0035)	-0.006* (0.0034)	-0.007* (0.0041)
Distance services _t				-0.0004 (0.0011)	-0.007** (0.0034)	-0.005* (0.0031)	-0.004 (0.0031)	-0.005 (0.0040)
Trade openness _t		0.018 (0.0157)	0.014 (0.0161)	0.016 (0.0167)	0.028* (0.0169)			0.004 (0.0261)
Investment _t							0.12** (0.0582)	0.11 (0.0910)
Adjusted R ²	0.11	0.12	0.12	0.11	0.18	0.15	0.18	0.17

Sources: AMECO (European Commission Directorate General for Economic and Financial Affairs) and Eurostat.

Note: Standard errors in parenthesis.

*** = significant at 1%; ** = significant at 5%; * = significant at 10%.

1) Based on “dynamic completeness of the conditional mean” (see data appendix).

consideration also the policy responses to shocks – the less need there is for monetary policy autonomy and the higher the net benefits from adopting a common currency.¹⁰

Recently, several empirical analyses have focused on the NMS. The results of this work are fairly clear and have been summarized by de Haan et al. (2004), so no additional analysis is needed here. A meta-analysis of business cycle correlation analyses has been conducted by Fidrmuc and Korhonen (2005), who survey 27 independent studies between 1998 and 2004. They find that results of the individual studies differ quite significantly, depending on the methodology, time span and data frequency used. Hungary, Poland and Slovenia exhibit a high correlation irrespective of the indicators used – at a level comparable to that of some “core” euro area member countries. Another group of NMS (including the Czech Republic) show a level of business cycle synchronisation comparable to that of several euro area countries.

Two papers raise some relevant additional points. Frenkel and Nickel (2002) set up a structural vector auto-regression model to identify and compare demand and supply shocks – as well as the speed with which economies adjust to shocks – between euro area countries and central and eastern European countries (CEECs). They find that, over the period 1993-2001, there are still differences in the shocks and in the process of adjustment to shocks when the euro area as a whole is compared with the CEECs as a group. Some caution is needed in interpreting the results since a different picture emerges when individual CEEC countries are compared with individual countries of the euro area. There is almost no difference between the more advanced CEECs and the small euro area countries as regards the correlation of their shocks vis-à-vis the euro area. The authors see reasons to believe that the similarity between the CEECs and countries of the euro area will increase over the next few years as their economies become more integrated.

Darvas and Szapáry (2003) conduct an extensive investigation of business cycle synchronisation of most NMS (with the exception of Cyprus and Malta) and euro area countries. They use diverse macroeconomic series, including GDP, industrial production, private consumption, consumption of services, and investment. Diverse measurement and filtering techniques are applied for robustness. They find evidence of high business cycle co-movements for Hungary, Poland and Slovenia. The Czech Republic and Slovakia exhibit a lower degree of co-movement, while the remaining Baltic countries show no co-movement. There are diverse explanations and caveats for such findings in the paper.¹¹ At the same time, the authors note that this may not be worrisome, as business cycle synchronisation has shown a high degree of “endogeneity” for euro area countries: i.e. EU membership – and in particular participation in the euro area – is expected to foster co-movements through diverse channels.

In summary, various studies in this field suggest that most NMS are still significantly diverse as to the size and nature of the economic shocks to their business cycles. While for some countries the cycles and the underlying shocks seem to be strongly correlated with the euro area, in many other cases no stable co-movements can be detected. In addition, with few exceptions, most NMS exhibit a generally low speed of adjustment to shocks. Overall, these results suggest that the co-movements of economic cycles and of structural disturbances between many NMS and the euro area are more limited than the high level of trade integration already achieved (see

10 Prominent studies in this literature are Blanchard and Quah (1989) and Bayoumi and Eichengreen (1996). Masson and Taylor (1993) argued that analysing the nature of shocks is a catch-all Optimum Currency Area property as it amounts to jointly examining a number of different features relevant to determining whether countries constitute an optimum currency area. Tavlas (1993) lists some caveats of this literature.

11 One comment we may add is that the benchmark for comparisons of synchronisation is not always clear because of size differences: i.e. empirical tests compare countries and/or regions of uneven sizes.

next Section 5) could lead us to think. Only a few NMS, such as Hungary, Poland, and Slovenia, have already achieved a good level of economic correlation with the countries of the euro area.

5 INTEGRATION IN THE EU TRADE AREA

Openness to international trade is a key element in measuring the international integration of any economy and in evaluating options concerning exchange rate regimes and entry into a currency union. The higher the degree of openness, the more changes in international prices of tradables are transmitted to domestic prices and the cost of living, and the less useful is the nominal exchange rate as an adjustment instrument. Moreover, a high trade openness is likely to lead to more synchronous economic cycles and reduce the need for domestic stabilisation policies, an

argument made for example by Frankel and Rose (1998 and 2000) and Rose (2000).

In Table 5.1 we provide data on trade openness, defined as the average ratio of exports and imports to GDP, in the period 1995-2004. These data clearly signal a high and rising degree of openness for NMS. In the period, the average openness of the NMS rises from 32% to 48%, whereas that of euro area members (including intra-area trade) rises from 27% to 35%. It is also noteworthy that the degree of openness is more uniform within the group of NMS (standard deviation of about 15%) than it is for the euro area members (standard deviation of around 20% at the end of the sample). The smaller NMS tend to be more open, as is the case in the euro area.

For a more direct measure of reciprocal trade integration it is necessary to look at bilateral flows. Table 5.2 shows that for selected pairs of

Table 5.1 Trade openness, 1995-2004

(exports plus imports in percentage of GDP)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
New Member States										
Czech Republic	0.36	0.43	0.46	0.48	0.49	0.57	0.60	0.55	0.58	0.56
Estonia	0.58	0.57	0.75	0.72	0.64	0.84	0.77	0.72	0.75	0.74
Cyprus	0.27	0.29	0.28	0.25	0.24	0.25	0.27	0.24	0.21	0.27
Latvia	0.50	0.48	0.48	0.43	0.36	0.41	0.45	0.47	0.46	0.45
Lithuania	0.32	0.32	0.44	0.52	0.55	0.64	0.61	0.55	0.54	0.57
Hungary	0.32	0.33	0.36	0.38	0.32	0.33	0.34	0.34	0.36	0.42
Malta	0.70	0.64	0.59	0.74	0.62	0.77	0.93	0.63	0.61	0.75
Poland	0.19	0.20	0.22	0.22	0.22	0.24	0.23	0.25	0.29	0.30
Slovenia	0.45	0.44	0.46	0.46	0.43	0.50	0.49	0.48	0.48	0.50
Slovakia	0.47	0.50	0.53	0.57	0.56	0.64	0.69	0.67	0.67	0.62
mean	0.32	0.35	0.39	0.41	0.41	0.48	0.48	0.46	0.48	0.48
standard deviation	0.14	0.14	0.15	0.16	0.16	0.20	0.21	0.17	0.16	0.15
NMSL ¹⁾	0.26	0.28	0.31	0.33	0.34	0.38	0.37	0.38	0.41	0.42
Euro area										
Total trade										
mean	0.27	0.27	0.30	0.30	0.32	0.37	0.37	0.36	0.35	0.35
standard deviation	0.14	0.15	0.17	0.17	0.17	0.20	0.20	0.21	0.19	0.21
Extra-euro area trade										
mean	0.12	0.13	0.15	0.15	0.16	0.19	0.18	0.18	0.17	0.18
standard deviation	0.07	0.07	0.08	0.08	0.09	0.10	0.10	0.09	0.08	0.08
USA	0.09	0.09	0.10	0.09	0.09	0.10	0.10	0.09	0.09	0.09

Sources: AMECO (European Commission Directorate General for Economic and Financial Affairs) and DTS (International Monetary Fund).

1) Large NMS: Czech Republic, Hungary and Poland.

Table 5.2 Export diversification, 1995-2004

(percentage ratio of bilateral exports to total exports)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
NMS towards NMS										
mean	0.14	0.16	0.14	0.14	0.13	0.13	0.13	0.13	0.13	0.14
standard deviation	0.14	0.12	0.11	0.09	0.08	0.08	0.08	0.07	0.06	0.06
NMS towards euro area										
mean	0.40	0.49	0.53	0.57	0.61	0.60	0.59	0.57	0.58	0.55
standard deviation	0.15	0.11	0.13	0.12	0.11	0.12	0.11	0.11	0.11	0.10
Total										
(NMS towards NMS and euro area)										
mean	0.54	0.65	0.67	0.71	0.74	0.72	0.72	0.70	0.71	0.70
Euro area towards euro area										
mean	0.52	0.51	0.45	0.46	0.51	0.51	0.50	0.49	0.51	0.50
NMS towards USA										
mean	0.02	0.02	0.02	0.03	0.04	0.04	0.03	0.03	0.03	0.04
Euro area towards USA										
mean	0.06	0.06	0.06	0.07	0.07	0.08	0.08	0.08	0.07	0.07

Source: DOT (International Monetary Fund).

country groups, the ratio of bilateral exports to total exports (average of the group and standard deviation). For example, the first line in the table reveals that in 1995 on average 14% of NMS' exports were directed to other NMS, with a standard deviation across countries of 14%. In the next lines we see that the share of NMS' exports going to the euro area rose from 40% to 55% in the period, a number that is higher than that for the euro area countries themselves (50%). The standard deviation of exports to the euro area among NMS interestingly declines, reaching 10% in 2004. Another interesting measure is that obtained by combining NMS and euro area countries, as in a hypothetical extended euro area, to see the share of NMS exports that would be directed to recipients within this enlarged area. Again we see a very high and rising integration (from 54% to 70%). A more detailed overview of NMS' and the euro area's total exports/imports (in percentage shares) to/from various regions, confirming the basic message just described, is provided in the appendix (Table A.1).

In summary, our evidence on trade openness and the direction of exports indicates that the NMS have recently considerably increased their trade integration with the euro area. Their

share of trade with the euro area is, on average, even greater than that of within the euro area. Trade integration may have implications for exchange rate volatility and for the choice of the exchange rate regime, aspects to which we will turn in Section 9.

6 LABOUR MARKETS

From the viewpoint of optimal currency areas, the way labour markets function is important in two respects. First, flexible labour markets (i.e. with features including a competitive wage setting mechanism; geographical and intersectoral labour mobility; efficient information; a light and transparent regulatory framework) reduce the costs of adverse demand and supply disturbances in terms of output and employment. A flexible labour market reduces the need to resort to active monetary and exchange rate policies to smooth the impact of these shocks at the national level, facilitating a country's participation in a currency area.¹² Second, the labour market is at the same time a relevant channel of transmission of economic

¹² For a thorough definition and description of labour market flexibility see Beatson (1995).

disturbances (monetary and other) to prices and to the real sector; as such, it affects the cyclical properties of the economy as well as the “sacrifice ratio”, i.e. the price/output tradeoffs faced by monetary policy-makers. Hence, a currency area can operate more smoothly when the labour market structures of its member countries are relatively similar and adaptable. This reduces the risks of internal tensions when the area is hit by common (e.g. monetary policy) shocks.

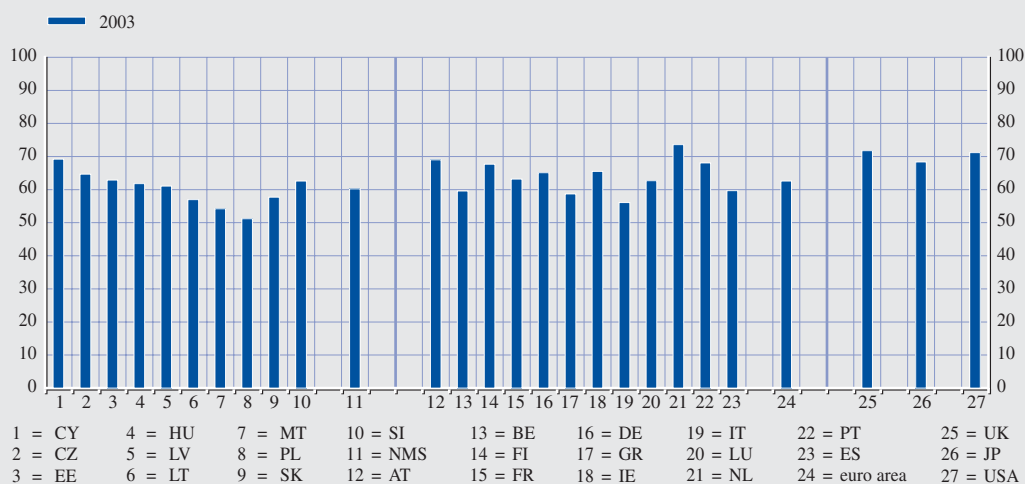
Over the last 10-15 years, the labour markets of the NMS have witnessed an enormous turnaround. They have evolved from a centralised system to a more liberalised regime. Given this evolution, which is still under way, we are only able to tentatively compare labour market characteristics and institutions and assess the degree of labour market flexibility in comparison with that of the euro area.

We first assess some indirect evidence on the degree of competitiveness of labour markets. Chart 6.1 shows the degree of labour force participation (the labour force as a percentage of the population aged 15-64) in the NMS and

euro area countries, and compares it with that in the United Kingdom, the United States and Japan. All other things equal, the higher the participation in the labour force, the more competitive the market is likely to be. Our comparison shows that the Netherlands is at the top of the ranking, followed by the United Kingdom and the United States. The NMS are on average behind the euro area, and both are significantly behind the United States, the United Kingdom and Japan. There are considerable differences within the two groups – Cyprus and the Netherlands are at the top of the respective rankings of the NMS and the euro area countries.

Table 6.1, Column 2 compares the degrees of trade union membership (expressed as a percentage of total dependent workers). Rankings here are almost the mirror image of those in the previous chart: unionisation is higher in the NMS and the euro area relative to the United States and the United Kingdom. Again there is a lot of dispersion across the NMS, but no less in the euro area. In the euro area, unionisation is slightly higher than in the NMS on average. The last three columns of Table 6.1 show the prevailing wage setting

Chart 6.1 Labour force participation



Source: Eurostat.

Table 6.1 Labour market institutions

	Union density (%) ¹⁾	Collective bargaining coverage (%)	Dominant bargaining level	Low pay regulation mechanism
Czech Republic	30	25-30	Company	National minimum wage
Estonia	14.8	29	Company	National minimum wage
Cyprus	70	65-70	Sectoral	Collective agreements
Latvia	30	<20	Company	National minimum wage
Lithuania	15	10-15	Company	National minimum wage
Hungary	20	34	Company	National minimum wage
Malta	n.a.	n.a.	Company	National minimum wage
Poland	15	40	Company	National minimum wage
Slovenia	41.3	100	Intersectoral	National minimum wage
Slovakia	40	48	Sectoral	National minimum wage
NMS²⁾	34.1³⁾	40³⁾	n.a.	n.a.
Belgium	69.2	100	Intersectoral	National minimum wage
Germany	29.7	67	Sectoral	Collective agreements
Greece	32.5	n.a.	Sectoral	National minimum wage
Spain	15	81	Sectoral	National minimum wage
France	9.1	90	Company	National minimum wage
Ireland	44.5	n.a.	Intersectoral	National minimum wage
Italy	35.4	90	Sectoral	Collective agreements
Luxembourg	50	60	Company/sectoral	National minimum wage
Netherlands	27	78	Sectoral	National minimum wage
Austria	39.8	98	Sectoral	Collective agreements
Portugal	30	62	Sectoral	National minimum wage
Finland	79	90	Intersectoral	Collective agreements
Euro area²⁾	38.4	81⁴⁾	n.a.	n.a.
Denmark	87.5	85	Sectoral/intersectoral	n.a.
Sweden	79	94	Sectoral	n.a.
UK	29	36	Company	n.a.
EU15	30.4	n.a.	n.a.	n.a.

Sources: European Commission and European Industrial Relations Observatory (EIRO) "Industrial relations in the EU Member States and candidate countries" (2002).

Note: Data refers to various years in the period 1999-2001.

1) Union membership as a percentage of total employment.

2) GDP-weighted.

3) Excluding Malta.

4) Excluding Greece and Ireland.

practices. Collective bargaining coverage is considerably lower in the NMS, and most of the bargaining takes place at the company level, while in the euro area bargaining takes mainly place at the sectoral or national level. The picture emerging from this table is that, in general, these practices tend to be more competitive in the NMS than in the euro area. However, both groups of countries are on average less competitive than the United Kingdom.

Table 6.2 provides some information on the stringency of employment protection legislation and the generosity and duration of unemployment benefits. This is also an area in

which transformation is rapid and information is unfortunately patchy. Table 6.2 illustrates that, on average, the NMS are somewhat more flexible than the EU15 countries.

Chart 6.2 gives some indication of how labour mobility in the largest NMS compares with that in the EU15. Unfortunately these data only allow us to measure the percentage of the population changing residence domestically, and not from one country to another (i.e., the data doesn't show someone moving from Poland to the Czech Republic). Mobility in the EU15 is only slightly higher than in the largest NMS, whereas they are both sharply below that in the United States. In the United States about

Table 6.2 Employment protection and unemployment benefits

	Employment ¹⁾		Collective dismissals ¹⁾	Overall index ¹⁾²⁾	Replacement ratio, % (in relation to previously gross earnings) ³⁾	Duration of unemployment benefits (month)
	Regular	Temporary				
Czech Republic	2.8	0.5	4.3	2.1	50, 40 after 9 months ³⁾	6
Estonia	3.1	1.4	4.1	2.6	Flat rate of 8% of the gross average wage ⁴⁾	6 ⁶⁾
Cyprus					60	156 working days
Latvia					50	9
Lithuania					9–34 ³⁾	6
Hungary	2.1	0.6	3.4	1.7	65	12
Malta					n.a.	n.a.
Poland	2.2	1	3.9	2	Flat rate of EUR 115 (22% of the average wage) ⁵⁾	12 (longer in areas with high unempl.) ⁵⁾
Slovenia	3.4	2.4	4.8	3.5	70, 60 after 3 months	3-24 depending on length of employment
Slovakia	2.6	1.4	4.4	2.4	60, 50 after 3 months	9
NMS ⁶⁾	2.7	1.2	4.1	2.4		
EU15	2.4	2.1	3.2	2.4	median 70 (range 40-90)	median 12 (range 6-60)

Sources: OECD, Riboud et al. (2002), European Commission and Polish Ministry of Economic Affairs and Labour website for data on Poland.

1) Indicators translate into values ranging from 0 (no employment protection) to 5 (strict employment protection).

2) Overall index: average of the indicators for regular/temporary employment and collective costs of dismissal.

3) For the Czech Republic and Lithuania, previous net earnings.

4) Reshaping of benefit programme in 2001 with the new benefits paid in 2003. Under the new programme, the benefits are earnings-related. Data presented in the table refer to the previous programme.

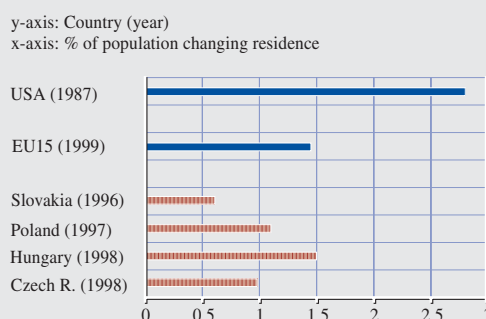
5) Flat rate adjusted for CPI, set at PLN 498.20 for the second half of 2003.

6) Excluding Cyprus, Latvia, Lithuania and Malta.

2.8% of the population changes residence in any given year, nearly twice as much as in the EU.

In summary, labour markets of the NMS have undergone considerable transformations. Given the sketchiness of the data, we are only able to compare some specific dimensions. In some areas NMS labour practices seem significantly more flexible, for example unionisation and the incidence of collective bargaining. There is significant heterogeneity in labour market institutions across the NMS as well as the EU15 countries. Furthermore, there is still a significant gap between the continental European countries (including the NMS) and the United States, and to a lesser extent the United Kingdom, which both have very flexible labour markets.

Chart 6.2 Labour mobility



Sources: European Commission, OECD and Center for Social and Economic Research.

1) Data for the USA unavailable beyond 1987.

7 PUBLIC FINANCES

With the EU accession, NMS have become subject to the EU fiscal framework, including also the fiscal requirements for the eventual adoption of the euro. The interest in the stance of public finances in NMS has increased recently; research in this area includes Orban and Szapáry (2004), who focus on the NMS' compliance with the Stability and Growth Pact for euro area countries and Rzonca et al. (2005), who examine the effects of fiscal adjustment strategies on the NMS' economies. Recently, von Hagen and Traistaru (2004) have provided an overview of literature relating to four key aspects of public finances in the NMS: a) the size of the public sector; b) the sustainability of public debt; c) the quality of the budget; and d) the role played by the budgeting institutions. In this section we limit ourselves to presenting a few basic data on the situation of the NMS on average; we refer to the literature for further detail.

The state of a country's public finances is relevant to its participation in a currency area because they affect the conditions of participation for the country itself, or for others. On the one hand, the theory of optimum currency areas suggests that countries relinquishing monetary policy independence need to rely more on other policy instruments to conduct counter-cyclical actions, including, first and foremost, fiscal policy. A flexible and adjustable (and by implication, sustainable) budget is therefore necessary for a country considering adopting a common currency. Alternatively, a union budget with a system of supranational fiscal transfers would be necessary to guarantee full adjustment to asymmetric shocks (Kenen, 1969), a requirement clearly not fulfilled by the EU at present. On the other hand, in a monetary area, each country's public finances can more easily affect the conditions for other countries, and a stronger bias towards higher deficits and debts can arise, as stressed by the political economy literature (Schuknecht, 2004).

Table 7.1 Public debt and deficits, 1998-2004

(% of GDP)

a. Gross debt

	1998	1999	2000	2001	2002	2003	2004	average yearly change
New Member States								
mean	27.9	34.7	34.6	36.0	37.0	39.5	39.8	1.7
standard deviation	22.0	20.8	20.0	19.8	20.3	22.5	23.6	.
Euro area								
mean	69.1	67.7	64.7	64.2	63.4	63.3	63.1	-0.8
standard deviation	32.6	32.3	32.3	32.2	31.5	30.2	30.0	.

b. Net deficit/surplus

	1998	1999	2000	2001	2002	2003	2004	average
New Member States								
mean	-2.1	-3.3	-3.9	-3.5	-4.1	-4.5	-2.9	-3.5
standard deviation	1.8	1.4	3.3	2.1	2.9	4.4	2.1	.
Euro area								
mean	-1.3	-0.5	0.8	-0.2	-1.1	-1.7	-1.8	-1.0
standard deviation	1.9	1.5	3.4	2.2	3.0	4.6	2.2	.

Sources: AMECO (European Commission Directorate General for Economic and Financial Affairs) and Eurostat.

Table 7.2 Structure of public finance, 1995–2004

a. New Member States ¹⁾										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total revenues (% of GDP)	38.2	38.0	38.0	37.4	36.8	42.0	42.5	42.5	42.3	42.8
of which (% of total revenues)										
Direct taxes and social contributions	52.8	51.0	51.1	51.8	52.0	51.9	52.5	52.2	51.8	49.3
Indirect taxes	32.7	33.1	32.0	32.6	33.0	33.7	32.7	32.8	33.0	33.0
Other revenues	14.5	15.9	16.9	15.6	15.0	14.4	14.8	15.0	15.2	17.6
Total Expenditure (% of GDP)	43.0	41.7	41.2	39.8	39.4	38.3	39.4	38.6	38.9	37.1
of which (% of total expenditures)										
Transfers to households	28.3	29.8	30.0	30.9	32.9	38.0	37.5	38.2	37.9	39.1
Interest payments	7.8	6.7	5.6	3.7	3.8	7.8	7.4	7.0	6.6	6.6
Consumption expenditures	39.1	40.5	40.5	41.5	41.8	51.1	49.7	52.3	52.4	53.1
Other expenditures	24.8	23.0	23.9	23.9	21.4	3.1	5.3	2.5	3.0	1.1
¹⁾ Excluding Cyprus, Malta and Slovenia (for the entire period) and Hungary (for the period 1995–1999).										
b. Euro area										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total revenues (% of GDP)	46.4	47.2	47.6	47.0	47.5	47.2	46.5	46.1	46.2	45.7
of which (% of total revenues)										
Direct taxes and social contributions	62.0	62.4	62.3	61.3	61.3	61.7	61.6	61.1	60.4	60.4
Indirect taxes	26.9	26.8	27.0	28.7	28.9	28.7	28.5	29.0	29.1	29.7
Other revenues	11.1	10.8	10.7	10.0	9.9	9.6	9.9	9.9	10.5	9.9
Total Expenditure (% of GDP)	51.5	51.5	50.2	49.3	48.8	47.1	48.2	48.5	49.1	48.4
of which (% of total expenditures)										
Transfers to households	33.6	34.3	35.0	34.8	34.8	35.3	34.4	34.9	35.1	35.3
Interest payments	10.9	11.0	10.3	9.6	8.7	8.6	8.2	7.5	7.1	6.8
Consumption expenditures	39.8	39.8	40.3	40.4	40.7	42.2	41.6	42.1	42.1	42.3
Other expenditures	15.7	14.8	14.4	15.3	15.8	13.8	15.8	15.5	15.8	15.6

Source: AMECO (European Commission Directorate General for Economic and Financial Affairs).

Table 7.1 shows the public sector deficit and debt, for the group of NMS taken as an aggregate and for the euro area, over the period 1998 to 2004. The debt/GDP ratio is much lower in the NMS than in the euro area (Panel a) but rises – in the euro area it slowly declines. The different trend is the result of significant deficits in the NMS of around 4% of GDP or more, against much smaller deficits in the euro area. In both areas there are significant differences across countries. More information on the structure of the budgets (revenues and expenditures) is reported in Table 7.2. Some significant differences exist between the two groups. First, the weight of indirect taxes relative to direct taxes is higher in the NMS than the euro area. Indirect taxes may be more flexibly manageable, and easier to administer (for example, as regards preventing tax evasion); they may also represent less

of a disincentive to labour and capital accumulation. On the revenue side, public consumption (which includes public sector wages), once a relatively small share, has climbed and now constitutes over 50% of GDP (42% in the euro area). Interest payments are broadly comparable between the two groups, but the composition is clearly different; in the NMS they are made up by a higher interest rate accruing on a lower level of debt. This may give some room for fiscal manoeuvre forwarding future, when interest rates in the NMS converge to the lower level of the euro area.

In summary, the public finance situation of the NMS, taken as a whole, appears relatively comfortable at present if one looks at the low level of debt. However, the existence of a very high deficit on average, and the high and rising

share of public consumption, which may be difficult to compress in the future¹³, do not leave room for complacency. Another aspect deserves consideration: i.e. the macroeconomic context in the NMS. They have higher output growth than the average euro area country. This makes the fiscal situation in many NMS even more critical.

8 FINANCIAL MARKETS AND MONETARY TRANSMISSION

There are still some differences in the monetary transmission mechanism between the NMS and euro area countries: we first review some recent studies and then look at some differences in the respective financial sectors. The link between financial structures and the monetary policy transmission mechanism is one of the most widely explored areas of recent empirical research. The debate in this area received new impetus in the late 1990s, in connection with the preparation of EMU. Most of the attention was concentrated, at that time, on the possibility that the differences in the financial and banking markets across EMU candidates could result in asymmetries in the effect of the single monetary policy once the euro was introduced. Moreover, Cecchetti (2001)¹⁴ drew attention to the fact that differences in financial structures are related to the nature of the national legal system, and therefore are difficult to reduce in a short period of time.¹⁵

Recently, a number of studies have appeared on the transmission mechanism of monetary policy in the NMS. Often these studies take the results of the Eurosystem project as benchmark. Jarociński (2004) compares responses to monetary shocks for several euro area countries with those in the Czech Republic, Slovakia, Hungary, Poland and Slovenia using a Bayesian estimation technique. Interestingly, he finds that the short-run output and price responses are stronger in the euro area than in the NMS, while in the medium run the response is of

comparable size. He also finds that interest rate shocks are stronger and more persistent in NMS, while the accompanying exchange rate effects are similar in size but also more persistent. Stronger and/or more protracted interest rate and exchange rate movements in the NMS have an ultimate effect, but short-term responses are muted. The author conjectures that the short-term sluggishness may depend on the functioning of the financial markets, whose lack of depth prevents, at first, an efficient transmission of the change of monetary policy to the financial conditions faced by household and firms.

Schmitz (2004) directly investigates the role of banks in monetary policy transmission in the NMS. She shows that banks contract their lending in response to an increase in the short-term interest rate of the euro area but exhibit only a weak reaction after changes in the domestic monetary indicator. This is attributed to the dominant role played by foreign-owned banks, which adjust their lending to a greater extent after an increase in euro area interest rates than their domestic-owned competitors do with respect to domestic rates. Since the presence of foreign-owned banks has been rising in NMS, one should expect euro area monetary policy to have an increasing effect on monetary and financial conditions in the NMS. She also finds that larger banks show a weaker response to monetary policy, in line with earlier findings in the literature on the credit channel.

Anzuini and Levy (2004) review the financial structure of the three largest NMS, the Czech Republic, Hungary and Poland, with emphasis on the corporate and household sectors, against the benchmark of the EU15 average. Three

13 Especially if, as seems likely, part of the increase depends on wage increases attributable to Balassa-Samuelson effects. We thank György Szapáry for pointing out this possibility to us.

14 For other related essays and for references to the relevant literature, see also Bundesbank (2001).

15 Angeloni et al. (2003) describe the results of an empirical project conducted by the ECB and by the euro area national central banks.

aspects stand out. First, the large NMS have a lower financial depth: total financial assets are in a range of 2.5 to 4.5 times GDP, which is far behind the EU average of 8 times GDP. Financial depth is greatest in the Czech Republic, at 4.5 times GDP. Households hold few financial assets: between 55% and 83% of GDP in Poland, Hungary and Czech Republic, compared with 232% in the EU. As a result, the wealth effects of equity prices and the impact of interest rates on their balance sheets are weak. The second feature is that these countries exhibit a low level of financial intermediation, measured as the ratio of financial assets held by banks to financial assets held by other sectors. The low level of bank credit (often substituted by trade credit) reduces the relevance of credit channel effects and may explain why interest rate changes have less impact on the respective economy, especially in the short term. The balance-sheet channel is also relatively weak due to the modest size of marketable debt and a low impact of interest rates on firms' balance sheets. The third feature is that foreign financial intermediaries play an important role in these financial systems.

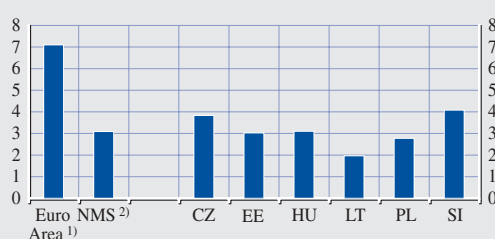
Outside the financial system, there are other characteristics that may make the NMS' economies more sensitive to monetary policy. Since the size of capital stock in these economies is adjusting upward, they tend to exhibit a higher share of investment in GDP, see Süppel (2003). As consumer credit to households is expanding, credit could be more important on the margin than on average. Moreover, as we have seen, NMS are very open to international trade but they specialize in production characterized by relatively high price elasticity, something that could make the exchange rate channel stronger.

All in all, it seems reasonable to focus on financial markets when trying to explain the relatively weak short-term monetary transmission mechanism suggested by the econometric literature. In the rest of this section we review some data concerning

specific features of the financial systems, among those more likely to affect the transmission, as usual with the euro area as benchmark for comparison.

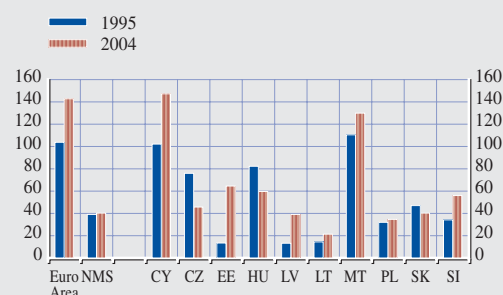
We have already mentioned the relative lack of financial depth in the NMS. Chart 8.1 documents this and provides a further breakdown by country. The ratio of financial assets to GDP is more than double in the euro area, as we have noted. Among the NMS, the three largest countries are close to the group average, with the Czech Republic slightly more financially developed than Hungary and Poland. Domestic bank credit as a percentage of GDP (Chart 8.2) is also double in the euro area, and the gap seems to have been on the rise between 1995 and 2004. Cyprus and Malta are more credit-intensive than the CEECs, reflecting the structural weaknesses that the transition process has entailed for the banking sectors in these countries. Among the largest countries, the Czech Republic and Hungary seem more credit-intensive than the average for the NMS, but the distance here is shrinking. Chart 8.3 plots outstanding bank loans and stock market capitalisation as percentages of GDP. Interestingly, while scatter points below the 45-degree line reveal that the NMS are generally using more bank credit than market-based finance, this propensity is not stronger (in fact it is slightly weaker) than in the euro area. Finally, Table 8.1 collects a number of indicators describing the structure of the banking sector and the financial structure of the corporate sector. The choice of indicators is inspired by Cecchetti (2001), but is subject to certain availability constraints. Somewhat surprisingly, despite the low credit-intensity, the number of credit institutions per capita is not lower in the NMS. The banking sectors of the NMS are more concentrated, and are characterised by higher interest margins and the incidence of costs. These indicators would speak for a low level of competition and efficiency in the provision of banking services. However, the ECB (2005) suggests that there is a high degree of competition at least in some NMS,

Chart 8.1 Ratio of financial assets to GDP, 2002



Source: ECB.
 1) Excluding Greece, Ireland and Luxembourg.
 2) Excluding Cyprus, Latvia, Malta and Slovakia.

Chart 8.2 Domestic bank credit as a percentage of GDP



Sources: AMECO (European Commission Directorate General for Economic and Financial Affairs) and IFS (International Monetary Fund).

attributable to the aggressive lending behaviour of (mostly foreign-owned) banks.

The corporate sector indicators all document the low incidence of market-based debt in the NMS, relative to population and GDP. Whereas, as we noted just above, the incidence of market financing is not low *in relation to*

bank financing, it is low in relation to the size of the economies, another indication of the low financial depth of these countries.

In summary, the lesser degree of development of the financial sectors in the NMS relative to the euro area is quite significant and emerges from several indicators that we have examined.

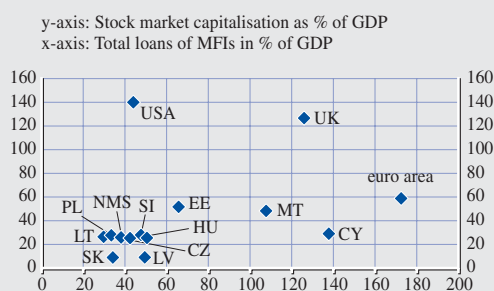
Table 8.1 Structure of banking sector and corporate finance, 2004

	Banks				Corporate finance		
	Credit institutions per million people ¹⁾	Concentration ratio: top five banks (as % of total bank assets)	Net interest margin	Cost to income ratio	Publicly traded domestic companies per million people	Stock market capitalization as % of GDP	Corporate debt by residence of issuer as % of GDP
Euro area	20.7	55.9	0.4	62.7	18.4	58.8	154.3
NMS	20.5	65.7	1.4	60.9	13.7	25.5	38.8 ²⁾
Czech Republic	6.9	68.1	2.3	125.2	5.2	25.2	53.5
Estonia	5.2	47.4	2.2	47.4	10.4	51.8	-
Cyprus	547.1	73.7	2.2	63.2	199.8	28.9	45.4
Latvia	9.9	77.7	0.4	77.7	24.2	9.7	-
Lithuania	20.9	62.8	1.7	62.8	12.5	26.5	-
Hungary	21.9	68.6	0.5	68.6	4.5	26.2	61.5
Malta	30.0	50.4	1.4	50.4	32.5	48.2	-
Poland	17.2	61.0	2.8	61.0	5.5	26.6	39.9
Slovenia	13.0	68.9	2.7	68.9	70.1	27.5	8.4
Slovakia	4.1	78.4	0.2	78.4	54.7	9.8	9.5

Source: AMECO (EC/ECFIN), BankScope, BIS, ECB, Federation of European Securities Exchanges, and World Federation of Stock Exchanges.

1) "Credit institutions per million people" refers to the definition used in the directive "2000/12/EC", i.e. the term "bank" is not defined by the ECB.

2) For corporate debt w/o Estonia, Latvia, Lithuania and Malta.

Chart 8.3 Size of the banking sector and stock market, 2004

Sources: ECB, Federation of European Securities Exchanges, national central banks and World Federation of Exchanges.

It is reasonable to assume that this feature could be behind some of the differences that have been detected in the transmission mechanisms between the NMS and euro area countries: e.g. particularly the longer lags of monetary transmission.

9 EXCHANGE RATE POLICIES AND CONVERGENCE

This section looks at the record of exchange rate movements of the NMS, the process of convergence of relative prices, and the merits of exchange rate flexibility. The management

of exchange rates in the NMS during the process of economic reform and in preparation for EU membership has been extensively discussed. As shown in Section 2, the strategies adopted by individual countries have differed significantly, and some have made exchange rate policy a central aspect of their overall integration strategy. On the one hand, a high degree of exchange rate flexibility may reduce the burden on policy-makers, freeing up room for manoeuvre that can be used to attain domestic policy targets. On the other hand, excessive exchange rate volatility may be a hindrance to the convergence process itself, by undermining the effort to stabilise market expectations. Striking the correct balance can be particularly complex.

With accession, the NMS have adhered to a set of rules which commit them to cooperation and consultation on exchange rate matters through participation in ERM II when conditions are ripe.¹⁶ Recently, Buitier and Grafe (2002) and von Hagen and Traistaru (2004) have compared these rules to a “purgatory”, a punishment that

16 ERM II is a system of bilateral exchange rate bands with the euro, whose main elements are the central parity (to which markets tend to attribute a high signalling value as to future conversion rates) and a wide band size ($\pm 15\%$), combined with a unilateral intervention requirement at the margin. An explanation of ECB policy concerning exchange rate issues relating to the NMS can be found at: <http://www.ecb.int/pub/pdf/other/policyaccexchangerateen.pdf>.

Table 9.1 Exchange rate regimes, plans for ERM II entry and Euro adoption

	Exchange rate regime (as of May 2005)	Entry into ERM II	Planned adoption of Euro
Czech Republic	Managed float to Euro	<i>Not announced</i>	2010
Estonia	ERM II member (as of June 2004)	June 2004	2007
Cyprus	ERM II member (as of May 2005)	May 2005	¹⁾
Latvia	ERM II member (as of May 2005)	May 2005	2008
Lithuania	ERM II member (as of June 2004)	June 2004	2007
Hungary	Peg to euro with band $\pm 15\%$	<i>Not announced</i>	2010
Malta	ERM II member (as of May 2005)	May 2005	²⁾
Poland	Free Float	<i>Not announced</i>	2008-2009
Slovenia	ERM II member (as of June 2004)	June 2004	2007
Slovakia	Managed float	2006	2009

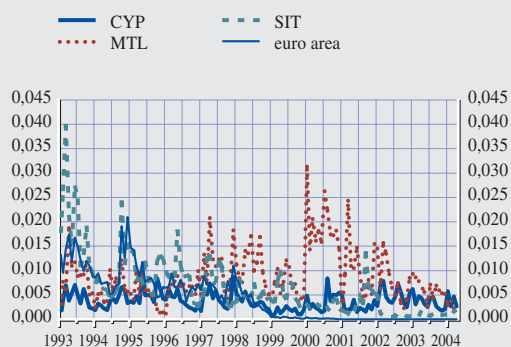
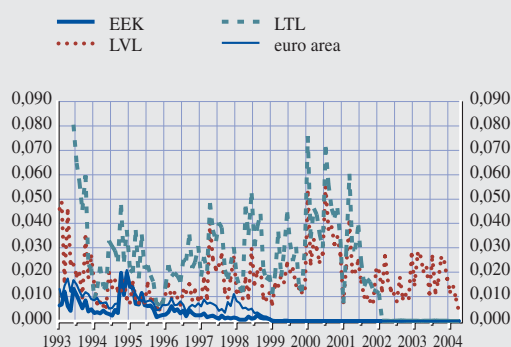
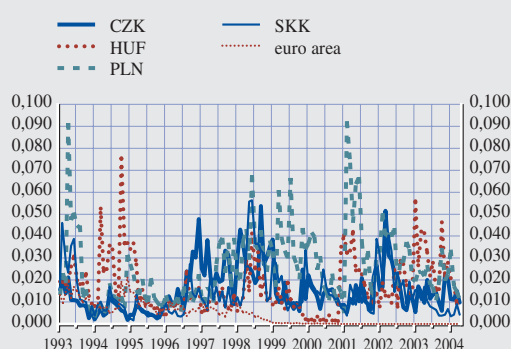
Source: ECB.

1) As soon as possible after ERM II Membership.

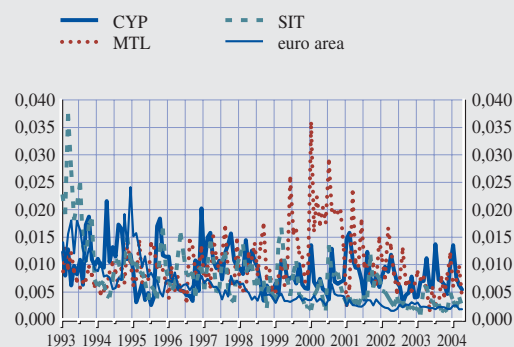
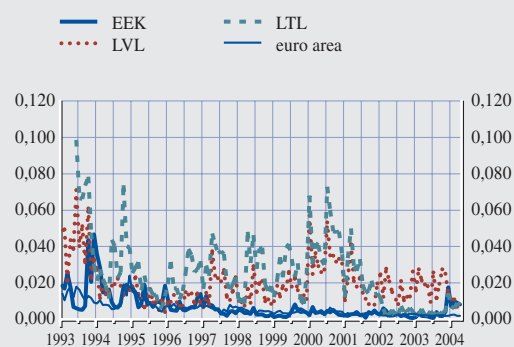
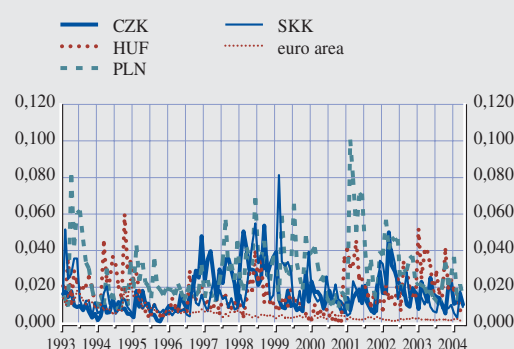
2) As soon as economic convergence permits.

Chart 9.1 Volatility of nominal and real bilateral exchange rates, 1993-2004

**a. Nominal bilateral exchange rate¹⁾
(moving sample standard deviations)²⁾**



**b. Real bilateral exchange rate¹⁾
(moving sample standard deviations)²⁾**



1) For the NMS: vis-à-vis EUR, “synthetic” EUR prior to 1999; for the euro area: simple average of the 12 member countries’ bilateral exchange rates vis-à-vis EUR/“synthetic” EUR prior to 1999.

2) Of the rate of change in the bilateral exchange rate (vis-à-vis EUR, “synthetic EUR”) with smoothing parameter $n = 4$.

1) For the NMS: vis-à-vis EUR, “synthetic” EUR prior to 1999 (CPI-deflated); for the euro area: simple average of the national competitiveness indicators of the 12 member countries

2) Of the rate of change in the bilateral exchange rate (vis-à-vis EUR, “synthetic EUR”) with smoothing parameter $n = 4$.

formerly unstable countries have to endure before being admitted to the “paradise” of Monetary Union.

The exchange rate regimes currently in place in all NMS and their status vis-à-vis entry into ERM II and adoption of the euro are summarised in Table 9.1. Two questions arise at this point. The first question is whether the exchange rate instrument can still be used by NMS – within the confines of a set of rules – during convergence from very uneven initial price levels and supply side conditions. The second question – which is addressed in Section 10 – asks whether, in the meantime, monetary policy can contribute as a stabilizing factor.

9.1 NOMINAL AND REAL EXCHANGE RATE MOVEMENTS

The first question is addressed in three stages. In the *first stage* we discuss the record of exchange rate movements, both nominal and real, of NMS in the last decade. We look at gradual cumulative changes in the nominal and real bilateral exchange rates of the NMS currencies vis-à-vis the euro. Chart 2.3 has already illustrated how NMS have pursued different strategies over the last decade. Several NMS, have pegged their nominal exchange rate, displaying a trend toward measured real appreciation, while a few seem to peg the real exchange rate.

Chart 9.1 (Panels a and b) presents volatilities of nominal and real bilateral exchange rates of NMS and the euro area from 1993 to 2004.¹⁷ Most NMS experienced in the early 1990s a high volatility of their bilateral exchange rates and very significant changes vis-à-vis the euro. The 1993-95/96 period is particularly “turbulent” for most NMS. Nominal bilateral exchange rates significantly depreciated, while real bilateral exchange rates generally appreciated. Nominal and real exchange rate volatility was also quite high in this early period and then subsided, to rise again during the Asian and Russian crisis and its aftermath.

Volatility then declines for most currencies after 2000. Compared with the volatility of the euro area exchange rate, in the more recent period NMS exchange rates do not appear to have been exceedingly volatile, possibly also as a result of pegs.

Chart 9.2 plots nominal and real exchange rate volatilities on a bilateral and effective basis for each NMS. The chart shows of course that both volatilities tend to be correlated across countries, as one would expect when prices are relatively sticky. An important aspect is, however, that real variability tends to exceed nominal variability (the points in the charts are mainly above the 45-degree line), which might indicate an effort towards nominal stabilisation.

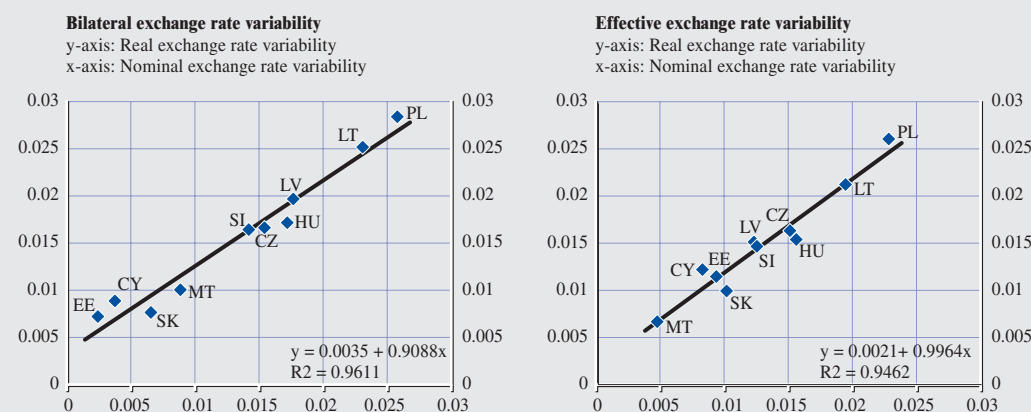
9.2 REAL EXCHANGE RATE CONVERGENCE

In the *second stage* we compare the short-term dynamics of NMS real exchange rates with those within the euro area. Clearly, in the years subsequent to 1999 there were no nominal exchange rate changes among euro area countries. In Chart 9.3 we plot the average real exchange rate changes with the euro area, for each NMS country, against the initial price levels (comparative price levels of final household consumption including indirect taxes, calculated by Eurostat). The aim is to see whether price levels tended to converge in the period concerned, i.e. 1999-2004. We also show the euro area countries in a separate panel. Changes in real exchange rates for euro area countries coincide with the cumulated inflation differentials of each country relative to the area, since in this period no changes in nominal exchange rates took place. The slope of the interpolating lines gives the average speed of convergence of relative prices, per unit of deviation of price levels from the “law of one price” (absolute purchasing power parity). The chart confirms that convergence to

17 Moving sample standard deviation of the growth rate of the bilateral exchange rate e (vis-à-vis EUR, “synthetic EUR”) with smoothing parameter $n=4$, i.e. $\sigma^d = \left[\frac{1}{n} \sum_{k=1}^n (e_{t-k} - \bar{e}_t)^2 \right]^{0.5}$.

Chart 9.2 Volatility of bilateral and effective exchange rates for NMS¹⁾, 1993-2004

(period averages)²⁾



Source: ECB.

1) Vis-à-vis EUR and “synthetic” EUR prior to 1999.

2) Based upon moving sample standard deviations with smoothing parameter $n = 4$.

the law of one price did indeed take place, both in the NMS and in the euro area, and also suggests that the speed of adjustment may have been systematically higher in the NMS than in the euro area.

There may be three broad types of explanations of why the speed of adjustment of real exchange rates differs across NMS. First, the adjustment speed could be related to the size of the deviation in a non-linear way, e.g. more than proportionally. In this case, countries deviating more from purchasing power parity (e.g. the NMS with lower comparative price levels) would tend to converge more rapidly. Second, the difference could be due to the exchange rate regime; for example, the speed could be higher if the nominal exchange rate is allowed to adjust more flexibly. This would be the case if goods prices are sticky while exchange rates adjust flexibly and in a way consistent with external balance. The third explanation is that differences in adjustment speeds could be due to other economic characteristics. One example of this is the country's openness to external trade and capital movements: the more open the country, the higher the market pressure towards adjustment would tend to be.

9.3 THE SPEED OF REAL EXCHANGE CONVERGENCE

In the *third stage* we combine data for the NMS and for euro area countries in a single data panel in order to estimate the effects of different exchange rate regimes on the speed of convergence of real exchange rates. The panel estimates in Table 9.2 explore these issues on the basis of annual data in Chart 9.3 for the period 1995-2004, including both NMS and euro area countries; the dependent variable is the annual change in the real bilateral exchange rate (RER). Again we lay out a general specification that encompasses, in a simple way, the three explanations just discussed:

$$(2) \Delta RER_t = \beta_0 + \beta_1 \cdot RER_{t-1} + \beta_2 \cdot RER_{t-1}^2 + \beta_3 \cdot NMS + \beta_4 \cdot Trade\ openness_t + \beta_5 \cdot Monetary\&\ Exchange\ Regime.$$

In the case of the NMS, *RER* stands for the logged real bilateral exchange rate of the euro vis-à-vis the national currency. In the case of the euro area, *RER* stands for the (log) national competitiveness indicator; its squared term tries to capture a possible non-linearity; *NMS* is a dummy variable for NMS; and *Trade openness_t* is the ratio of each country's exports

plus imports to GDP. As proxy for the monetary and exchange regime we tried two alternative specifications. The first simply differentiates the NMS according to whether for most of the sample they a) followed de facto an inflation targeting regime and floated their exchange rates (Czech Republic, Hungary, Poland), or b) had fixed or semi-fixed exchange rates (all others). The second uses instead the “natural classification” of exchange regimes proposed by the IMF (Rogoff et al., 2004). In using this classification, we simply distinguish between three categories: pegged, limited flexibility, and managed or full floating. An important distinction between the two specifications is that the classification proposed by Rogoff et al. (2004) allows for changes in the exchange rate regime over time, whereas the measures in equations (3) to (6) simply amount to a set of country dummies.

Column (1) (Table 9.2) shows that there is a systematically faster convergence in the NMS than the euro area, quantifiable at about 3.4% (i.e. the gap is closed by this amount on average on a yearly basis). This confirms the visual impression from the chart. The nonlinear term has its expected sign and is highly significant. Trade openness as an economic characteristic which influences the adjustment speed is not very significant when the regressions are run with the NMS dummy. Columns (3) to (6) add our dummies for inflation targeting/floating and for fixed/semi-fixed exchange rates: the coefficients are not significant if the NMS dummy is kept, but the dummy for a fixed/semi-fixed regime becomes significant if the NMS is taken out of the regression. One drawback of this estimate is that since the dummy is not time-varying, it tends to be very close to minus the NMS dummy, since all euro area countries belong to the fixed/semi-fixed group (column (5)). The estimates using the

Table 9.2 Real Exchange Rate Convergence – panel estimation: NMS (excl. CY and MT) and euro area (excl. LU), 1995-2004

Dependent variable: ΔRER_t	(1)	(2)	(3)	(4)	(5)	(6)	(7) ^{IMF}	(8) ^{IMF}	(9) ^{IMF}
Independent variables:	Pooled OLS ¹⁾						Pooled OLS ¹⁾		
Constant (β_0)	5.90*** (2.0297)	5.77*** (2.0262)	5.74*** (2.1245)	5.68*** (2.0563)	6.37*** (2.0263)	5.84*** (2.0596)	5.56** (2.2566)	4.89** (2.5419)	5.61** (2.1039)
RER_{t-1}	-2.35*** (0.9046)	-2.30** (0.9164)	-2.28** (0.9441)	-2.25** (0.9195)	-2.54*** (0.9068)	-2.30** (0.9211)	-2.21** (0.9982)	-1.90* (1.1312)	-2.22** (0.9392)
RER^2_{t-1}	0.23* (0.1009)	0.22* (0.1022)	0.22** (0.1050)	0.22** (0.1028)	0.25** (0.1014)	0.22** (0.1030)	0.21* (0.1107)	0.18* (0.1259)	0.21** (0.1050)
NMS	0.034*** (0.0083)	0.028*** (0.0090)	0.030*** (0.0090)	0.019* (0.0130)			0.033*** (0.0120)	0.034*** (0.0115)	0.025*** (0.0082)
Trade openness _t		0.020* (0.0123)	0.019* (0.0119)	0.026* (0.0133)		0.037*** (0.0088)	0.019 (0.0130)	0.022* (0.0120)	0.024* (0.0127)
<i>M&E Regime</i>							<i>M&E Regime</i>		
– IT & floating			0.002 (0.0114)				– pegged	0.006 (0.0098)	
– Fixed/semi-fixed				-0.010 (0.0144)	-0.029*** (0.0092)	-0.027*** (0.0093)	– limited flex.	-0.018* (0.0121)	
							– managed float/ floating		0.010 (0.0082)
Adjusted R ²	0.52	0.52	0.52	0.52	0.50	0.52	0.52	0.53	0.52

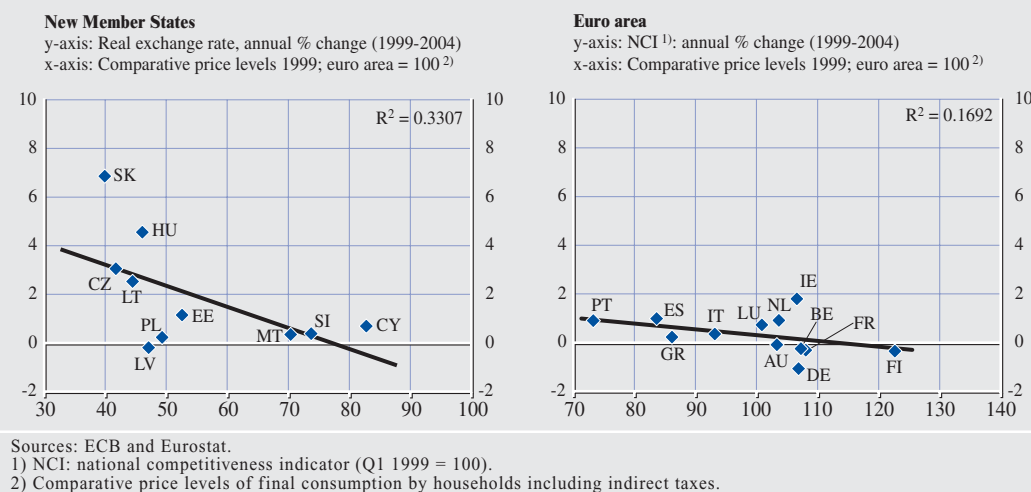
Sources: AMECO (EC/ECFIN) and ECB.

Robust standard errors in parenthesis.

1) Based on “dynamic completeness of the conditional mean” (see data appendix).

***: = sign. at 1%; **: = sign. at 5%; *: = sign. at 10%.

Chart 9.3 Convergence of real exchange rates



IMF proxy are presented next. Overall, they seem to perform somewhat better empirically than our crude time-invariant dummies. As a result, it cannot be excluded that a limited degree of flexibility reduces the adjustment speed. Other forms of exchange rate policy do not play a significant role.

We summarise the evidence in this section as follows. First, despite some short-term volatility, real exchange rates in the NMS have steadily converged in recent years. The speed of convergence since 1999 has been higher than that observed among the euro area countries. It cannot be excluded that the flexibility of the exchange rate may have played a role in shaping this difference, though more evidence would be needed before strong conclusions can be drawn on this issue.

10 CENTRAL BANK INDEPENDENCE AND THE CONDUCT OF MONETARY POLICY

This section examines the convergence of the NMS in the sphere of central banking. The aim is to see whether central bank institutions and monetary policy-making in the NMS have evolved in a way consistent with participation in the euro area.

Central bank legal independence, as defined by the Treaty, and conformity with the euro area central bank operational framework are formal prerequisites for adopting the single currency. The European Commission and the ECB monitor progress in this area in their convergence reports (European Commission, 2004; ECB, 2004), providing a detailed account of the extent to and the way in which the relevant Treaty provisions are translated into the national legislation and central bank statutes. Hence, the convergence reports are the most complete published sources for an assessment of the legal convergence of candidate countries' central banks. Here we use the results of the 2004 Commission Convergence Report (Table 2.1) to calculate summary indicators of central bank legal and operational convergence for each NMS and for a selected number of legal areas. The results are reported in Table 10.1, where the indices are expressed in percentages (a value of 100 means full adaptation, 0 no adaptation at all¹⁸). As one can see, convergence is largely complete in the key area of legal independence. The chapter

18 Based on the European Commission Convergence Report (2004). Indices calculated by scoring the legal compatibility in the NMS: a score of 3 stands for convergence, a score of 2 for provisions requiring clarification, a score of 1 for imperfections, and a score of 0 for incompatible provisions.

“Objectives and decisions” (of the above report) refers to the way in which policy decisions are adopted and the criteria on which they are based, as well as the personal independence of the Governor and the Board. “Monetary financing” refers to the Treaty requirement that the central bank should not finance the public sector with monetary means. In both areas the index value is above 80% in all countries and often reaches 100%.

The chapter “Integration in the ESCB” refers to how and how much the central bank’s operational and administrative framework is in line with the European System of Central Banks. In this area, more technical than the preceding one, progress is less complete. Aside from “Banknotes and coins”, an area that does not require the participation of all central banks, the sub-areas where preparation is less advanced are those relating to monetary operation (i.e. the preparation to participate in the system’s open market transactions) and foreign exchange operations. All in all, however, the picture emerging from Table 10.1 suggests that preparation is fairly advanced in most key areas.

Beyond these formal and technical requirements, however, it is of interest to examine whether the candidate central banks possess other characteristics that may facilitate

their smooth integration into the euro area monetary policy decision-making mechanism. As argued by, for example, De Haan et al. (2004, chapter 6), legal arrangements may at times be misleading or insufficient to fully explain the real institutional status or the actual independence of central banks. Seeing the substance behind the legal and statutory veil is complex, however. Considering that a central element in ECB policy is its commitment to maintain price stability in the medium term, it is natural to ask whether the recent record of practical policy-making of the candidate central banks is consistent with this objective. Examining the *actual behaviour* of central banks is one way of checking whether their *preferences* with regard to policy objectives are similar¹⁹. Taking this into account, in the rest of this section we estimate monetary policy decision rules for the three largest NMS (Hungary, Czech Republic and Poland) and compare them with a corresponding estimate for the euro area, over the period 1995-2004, using monthly data. The

19 Monetary policy decision-making rules are influenced by the preferences central banks have with regard to policy outcomes and by the monetary transmission mechanism. On the basis of this idea, Cecchetti and Krause (...) use the parameters of reaction functions to infer, under certain assumptions, the objectives of central banks. Angeloni and Dedola (1999) compared the decision rules of European central banks before the introduction of the euro and concluded that they had become more similar in the decade preceding 1999.

Table 10.1 Central bank legislation

(in % of total legal convergence)¹⁾

	CY	CZ	EE	LV	LT	HU	MT	PL	SK	SI
Central Bank Independence										
A: Objectives and Decisions	96.8	87.3	87.3	87.3	96.8	87.3	96.8	84.1	87.3	87.3
B: Monetary Financing	100.0	100.0	100.0	100.0	100.0	86.7	93.3	86.7	86.7	100.0
Integration in the ESCB:										
C: FX-Operations	72.2	69.4	69.4	69.4	52.8	50.0	38.9	38.9	66.7	83.3
D: Monetary Operations	57.1	57.1	42.9	71.4	42.9	42.9	42.9	28.6	28.6	52.4
E: Banknotes/Coins	0.0	8.3	25.0	0.0	25.0	25.0	0.0	0.0	8.3	25.0
F: Financial Provisions	100.0	80.0	73.3	60.0	100.0	80.0	80.0	80.0	60.0	100.0
G: Other issues	71.4	78.6	64.3	75.0	71.4	81.0	76.2	77.4	73.8	100.0
Overall Index:	78.5	75.5	71.2	74.2	76.6	72.6	72.6	66.4	68.3	83.9

Source: Commission Convergence Report 2004 and ECB.

1) Calculated by scoring the legal compatibility in the NMS: 3 = convergence. 2 = provisions requiring clarification. 1=imperfections. 0 = incompatible provisions.

three countries are particularly relevant on account of their size. They are also suitable for our purpose because their monetary policy regimes have been comparable: they have for years conducted an independent monetary policy within an inflation targeting framework and with floating or flexible exchange rates²⁰.

We approximate the policy of each of these three countries and that of the euro area in the simplest possible form, a Taylor rule with exponential interest rate smoothing:

$$(3) \quad i_t = \beta_1 \cdot i_{t-1} + (1 - \beta_1) \cdot (\beta_0 + \beta_2 \cdot \pi_{t-1} + \beta_3 \cdot ygap_{t-1} + \beta_4 \cdot i_{t-1}^* + \beta_5 \cdot dummy) + \varepsilon_t$$

where i_t is a short-term interest rate, π_{t-1} and $ygap_{t-1}$ represent a lagged inflation rate and lagged output gap respectively, i_{t-1}^* is the US dollar short-term interest rate relevant for the euro area,²¹ and ε_t is an error term. Striking a compromise between the need to have a homogeneous period for estimation and the need to gain degrees of freedom, we estimate over a period starting in 1995 and then correct with constant dummies the pre-EMU years (for the euro area) and the years preceding the adoption of inflation targeting for NMS.²²

Our analytical strategy is as follows. First, we perform a separate estimation of the policy rule for each country and for the euro area, to study the characteristics of the estimates in a simple mono-equational context. Next, we estimate a system, to exploit the cross-country correlations of the residuals, and within this system we perform cross-equation restriction tests. In particular we are interested in testing the homogeneity with the euro area across countries of some key parameters, such as interest rate smoothing – which can proxy the degree of policy activism – and the reaction to inflation – which proxies the degree of aversion to deviations from price stability.

All results are summarised in Table 10.2. The first panel shows the individual estimates, and

the panels below show the system estimation and the tests of the restrictions respectively. The country-specific estimates display a reasonable goodness of fit and broadly plausible coefficients. Interest smoothing is high, especially in Hungary, and higher than in the euro area. The (long-term) coefficient on inflation is significant (except in Hungary) but below unity, violating the “Taylor principle”. This coefficient is below unity for the euro area. However, it rises above unity if one also considers the effect of the foreign interest rate: an increase in global inflation, equally rising domestic and foreign inflation, and foreign interest rates to the same extent or more would raise euro area rates more than inflation. The output gap coefficients are not significant for the Czech Republic and Hungary. The system estimation (second panel) in general strengthens the results. The tests of cross-equation restrictions (third panel) suggest that the speed of adjustments is higher in the NMS than in the euro area; but the long-run effects of inflation are broadly similar, as are those of the output gap.

Our empirical findings regarding the stance of the monetary policy of the ECB are in line with other studies that discuss monetary policy decision rules for the euro area by applying Taylor-type reaction functions with interest rate smoothing. Surico (2003) considers asymmetric preferences of the ECB but finds no evidence of asymmetric responses other than strong reactions to output contractions. As in our case, his point estimates of lagged inflation first violate the Taylor principle, but considering cross products of the state

20 The Czech National Bank became the first NMS central bank to directly target a price stability objective in 1997. Poland followed in 1998 and Hungary in 2001.

21 This rate, which improves the empirical fit of the euro area specification, can be interpreted as a proxy for inflationary pressures of global origin, stemming from international prices (to which the US rate may react first) and the exchange rate.

22 This amounts to assuming that all coefficients are constant across regimes except the constant; obviously a strong assumption, justifiable only on the basis of the short data period available.

Table 10.2 Monetary policy rules, 1995-2004

a. Country specific estimation				
	Czech Republic	Hungary	Poland	Euro area
Constant	0.011 (0.012)	0.059 (0.0441)	0.067*** (0.0197)	0.0004 (0.0049)
Lagged dependent	0.90*** (0.0308)	0.95*** (0.0466)	0.90*** (0.0333)	0.81*** (0.0291)
Inflation	0.85*** (0.2506)	0.59 (0.5588)	0.79*** (0.2653)	0.81*** (0.1876)
Output-gap	0.11 (0.2799)	0.5 (0.8793)	0.79* (0.4594)	0.16* (0.0932)
Foreign interest rate	—	—	—	0.46*** (0.0556)
Dummy	0.0037** (0.0017)	-0.0005 (0.0028)	0.0003 (0.0044)	1995: 0.0036*** (0.0009) 1996: 0.0007 (0.0007) 1997: 0.0010** (0.0005)
Adjusted - R ²	0.98	0.98	0.97	0.99
b. System Estimation ¹⁾				
	Czech Republic	Hungary	Poland	Euro area
Constant	0.011 (0.012)	0.057 (0.041)	0.067*** (0.0211)	0.0009 (0.0049)
Lagged dependent	0.91*** (0.0301)	0.94*** (0.0444)	0.91*** (0.0323)	0.82*** (0.0274)
Inflation	0.86*** (0.2478)	0.71 (0.4612)	0.78*** (0.2807)	0.86*** (0.185)
Output-gap	0.11 (0.2771)	0.38 (0.7681)	0.85* (0.4975)	0.15* (0.0908)
Foreign interest rate	—	—	—	0.47*** (0.055)
Dummy	0.0036** (0.0016)	-0.0014 (0.0027)	0.00008 (0.004)	1995: 0.0033*** (0.0009) 1996: 0.0006 (0.0006) 1997: 0.0009* (0.0005)
Adjusted - R ²	0.99	0.98	0.98	0.99
c. Wald-test of equality of coefficients with the euro area ²⁾				
	Czech Republic	Hungary	Poland	
Short-run coefficient:				
lagged dependent		4.76**	5.52**	4.17**
Long-run coefficient:				
inflation		0.00019	0.092	0.055
Long-run coefficient:				
output-gap		0.023	0.085	1.92

Source: ECB, Eurostat and OECD Main Economic Indicators
Standard errors in parenthesis.

1) See data appendix for estimation details.

2) Wald-test statistic reported – Chi-square distributed with degrees of freedom equaling the number of equality restrictions.

***; = sign. at 1%; **; = sign. at 5%; *; = sign. at 10%.

“—” indicates that the coefficient is not significant in the estimation.

variables and reasonable values of the output gap implies a feedback parameter of inflation greater than 1. On the other hand, Gerlach and Schnabel (1998) find that the original Taylor rule augmented by a smoothing parameter fits

the euro area data quite well, with a slope of 1.5 on (future) inflation and 0.5 on the (contemporaneous) output gap. Another contribution along this line is represented by Gerdesmeier and Roffia (2004), in which the

authors account in particular for economic variables that a fictitious ECB might have taken into consideration (e.g. USD/EUR exchange rates, M3 growth and commodity prices). Their coefficient of inflation ranges from 1.9 to 2.2 with deviations of output being in a range of 0.1 to 0.5. Finally, Gerlach-Kristen (2003) estimates reaction functions under the assumption that interest rates, inflation and output are cointegrated and argues that, in contrast to traditional Taylor rules, these cointegrated monetary policy reaction functions forecast better out of sample. Interpreting long-run interest rates as a proxy for long-run inflation expectations, her estimates imply a coefficient of inflation of 1.73.

In summary, legal and operational compatibility of the NMS with legal arrangements of the European System of Central Banks is fairly advanced. While convergence is largely completed in the key area of legal independence, preparations are less advanced in the more technical area of central banks' operational and administrative framework. Regarding the actual monetary policy-making in the NMS, the key policy objective preferences of the three largest NMS (Hungary, the Czech Republic and Poland) are consistent with the ECB's commitment to price stability, while the degree of policy activism (i.e. the speed of adjustments) is higher in the NMS than in the euro area.

II CONCLUSIONS

After their accession to the EU in May 2004, the ten new Member States have automatically become candidates for EMU, and some have already announced calendars for joining. This paper has shed some light on diverse aspects of the monetary integration of the NMS with the euro area.

First, all NMS have been able to achieve a high pace of nominal convergence in recent years. As regards real convergence, however, and in

diverse policy areas, the record is more mixed and differentiated across NMS. For example, public finance is a cloud on the horizon for several NMS.

Second, looking at more structural factors we find that, while trade integration with the EU15 has progressed quickly in recent years and is now quite advanced, convergence in output specialisation to EU standards (characterised by a relatively low share of agriculture and a high share of services in aggregate output) has been slow, especially if measured in real terms (excluding changes in relative prices). This suggests that while relative prices have moved flexibly, part of the real adjustment processes that these price changes are supposed to stimulate may be lagging behind. We have also shown that the difference in output specialisation relative to euro area countries may influence negatively the pace of the real convergence of NMS.

Third, there is also some evidence that a few NMS have a higher degree of business cycle synchronization with the euro area: hence, they may be less likely to be affected by radically different economic shocks (and will need less means to mitigate those shocks). This, however, is not true for all NMS.

Fourth, we find that many NMS are quite advanced relative to the euro area in the process of labour market and institutional reform (their labour market structures are more flexible than those of the euro area countries), while they lag significantly behind in building up their financial systems. Hence, as regards financial structures and financial deepening, much remains to be done.

Fifth, there is evidence that real exchange rates have moved – broadly speaking – in line with long-term fundamental equilibria, and some exchange rate flexibility may still be useful for some NMS.

Sixth, the monetary policy institutions of the NMS have also converged to some degree. The

goals and institutional settings of central banks are now much more similar than before. Looking at central bank statutes, objectives, strategies and instruments, we find that good progress has recently been made in developing sound central banking structures.

All in all, there has been very significant progress in the integration of the NMS but a lot remains to be done. There are also still differences across them. Our view is that the conditions for full monetary integration have still not been reached for the group of NMS as a whole. A case-by-case approach to adopting the euro – based on country-specific conditions – therefore seems natural.

DATA APPENDIX

COUNTRY ABBREVIATIONS:

AT: Austria, BE: Belgium, CY: Cyprus, CZ: Czech Republic, DE: Germany, DK: Denmark, EE: Estonia, ES: Spain, FI: Finland, FR: France, GR: Greece, HU: Hungary, IE: Ireland, IT: Italy, JP: Japan, LU: Luxembourg, LT: Lithuania, LV: Latvia, MT: Malta, NL: Netherlands, PL: Poland, PT: Portugal, SE: Sweden, SI: Slovenia, SK: Slovakia, UK: United Kingdom

CURRENCY ABBREVIATIONS:

CYP: Cyprus pound, CZK: Czech koruna, EEK: Estonian kroon, EUR: euro, HUF: Hungarian forint, LTL: Lithuanian litas, LVL: Latvian lats, MTL: Maltese lira, PLN: Polish zloty, SIT: Slovenian tolar, SKK: Slovak koruna

TABLES:

TABLE 3.1:

- calculated as described in the text
- yearly data
- source: AMECO (European Commission/ECFIN)

TABLE 3.2:

- see Table 3.1

TABLE 3.3:

- basic calculation: see text; investment: gross capital formation of total economy relative to GDP (1995 prices)
- yearly data
- countries considered: CZ, EE, LV, LT, HU, PL, SK, SI
- “dynamic completeness of the conditional mean”: assuming the absence of time-constant omitted factors, there are enough regressors to explain all influence of exogenous and lagged dependent variables on the regressand – i.e. strict exogeneity assumption relaxed, pooled OLS appropriate provided that the pooled

OLS-residuals are not serially correlated and (favourably) homoskedastic. If heteroskedasticity is detected but no serial correlation, then the usual heteroskedasticity-robust standard errors and test statistics from the pooled OLS regression can be used (for further discussion see Wooldridge, 2002, pp. 171-179). In Table 3.3 neither serial correlation nor heteroskedasticity was detected (test results are available from the authors upon request)

- sources: AMECO (European Commission/ECFIN), Eurostat

TABLE 5.1:

- calculated as described in the text
- yearly data
- sources: AMECO (European Commission/ECFIN), IMF-DTS

TABLE 5.2:

- calculated as described in the text
- yearly data
- source: IMF-DTS

TABLE 6.1:

- source: European Commission, European Industrial Relations Observatory (EIRO) “Industrial Relations in the EU Member States and Candidate Countries”(2002)

TABLE 6.2:

- source: OECD, Riboud et al. (2002), European Commission, and Polish Ministry of Economic Affairs and Labour website for data on Poland

TABLE 7.1:

- sources: AMECO (European Commission/ECFIN), Eurostat

TABLE 7.2:

- source: AMECO (European Commission/ECFIN)

TABLE 8.1:

- calculated as described in the text; total loans: including loans to other MFIs; corporate debt by residence of issuer: international debt securities (amount outstanding) all issuers plus domestic debt securities (amount outstanding) all issuers
- sources: AMECO (European Commission/ECFIN), BankScope, BIS, ECB, Federation of European Securities Exchanges, World Federation of Exchanges

TABLE 9.1:

- source: ECB

TABLE 9.2:

- basic calculations: see text; real bilateral exchange rates vis-à-vis EUR/“synthetic” EUR prior to 1999 (CPI-deflated, Q1 1999 = 100): yearly averages (based on monthly data); national competitiveness indicators (Q1 1999 = 100): yearly averages (based on monthly data)
- Exchange regime:
 - Equ. (1)-(6): de facto exchange rate arrangements
 - Equ (7^{IMF})-(9^{IMF}): using IMF/Rogoff et al. (2004) definitions of “natural classification”
- yearly data
- countries considered: CZ, EE, LV, LT, HU, PL, SK, SI, AT, BE, DE, GR, FI, FR, IE, IT, NL, PT, ES.
- see Table 3.3 for a discussion of “dynamic completeness of the conditional mean”; in Table 9.2, we corrected for cross-section heteroskedasticity (test results are available from the authors upon request)
- sources: AMECO (European Commission/ECFIN), ECB

TABLE 10.1:

- based on the European Commission Convergence Report (2004). Indices calculated by scoring the legal compatibility in the NMS: 3 = convergence, 2 = provisions requiring clarification, 1 = imperfections, 0 = incompatible provisions

- sources: European Commission Convergence Report (2004), ECB

TABLE 10.2:

- basic calculations: see text; interest rates: one-month interbank rates for CZ, HU, PL and the euro area, federal funds rate for the United States; inflation: national CPI/HICP, output gap: difference between industrial production and its Hodrick-Prescott trend
- monthly data, seasonally adjusted
- “system estimation” based on nonlinear GLS
- sources: ECB, Eurostat, OECD Main Economic Indicators

TABLE A.1:

- calculated as described in the text
- yearly data
- sources: AMECO (EC/ECFIN), IMF-DTS

CHARTS:**CHART 2.1:**

- monthly data
- source: Eurostat and ECB

CHART 2.2:

- annual data; data on GDP and gross value added: total economy, working-day adjusted
- sources: Eurostat and ECB

CHART 2.3:

- annual and monthly data; data on current account not seasonally adjusted
- source: ECB

CHART 6.1:

- yearly data
- source: Eurostat

CHART 6.2:

- sources: European Commission, OECD and Center for Social and Economic Research

CHART 8.1:

- source: ECB

CHART 8.2:

- sources: AMECO (European Commission/ECFIN), IMF-IFS

CHART 8.3:

- calculated as described in the text
- sources: ECB, Federation of European Securities Exchanges, national central banks, World Federation of Exchanges

CHART 9.1:

- calculated as described in the text; real bilateral exchange rate (CPI-deflated); national competitiveness indicator
- monthly data (Q1 1999 = 100)
- source: ECB

CHART 9.2:

- see Figure 9.1

CHART 9.3:

- real bilateral exchange rate and national competitiveness indicator: see Figure 9.1; yearly growth rate; comparative price levels: comparative price levels of final consumption by households including indirect taxes
- sources: ECB, Eurostat

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Table A.I Exports and imports – summary tables

a. Share of euro area exports to selected regions¹⁾
(ratio of exports to total exports)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<i>Towards New Member States</i>										
mean	0,04	0,04	0,04	0,05	0,04	0,05	0,05	0,05	0,05	0,05
stdev	0,02	0,03	0,03	0,04	0,03	0,03	0,03	0,03	0,04	0,04
<i>Towards euro area</i>										
mean	0,52	0,51	0,45	0,46	0,51	0,51	0,50	0,49	0,51	0,50
stdev	0,09	0,09	0,10	0,10	0,09	0,09	0,10	0,09	0,09	0,09
<i>Towards other EU15</i>										
mean	0,12	0,12	0,11	0,11	0,11	0,11	0,11	0,11	0,11	0,10
stdev	0,04	0,04	0,06	0,06	0,06	0,05	0,06	0,06	0,05	0,05
<i>Towards USA</i>										
mean	0,06	0,06	0,06	0,07	0,07	0,08	0,08	0,08	0,07	0,07
stdev	0,02	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,04	0,04
<i>Towards Asia</i>										
mean	0,06	0,07	0,06	0,04	0,04	0,05	0,05	0,05	0,05	0,05
stdev	0,02	0,02	0,03	0,02	0,02	0,02	0,02	0,02	0,02	0,03
<i>Towards ROW</i>										
mean	0,20	0,20	0,28	0,27	0,21	0,21	0,22	0,22	0,22	0,22
stdev	0,04	0,04	0,06	0,05	0,08	0,08	0,08	0,09	0,08	0,08

b. Share of euro area imports from selected regions¹⁾
(ratio of imports to total imports)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<i>From New Member States</i>										
mean	0,03	0,03	0,03	0,04	0,04	0,04	0,04	0,05	0,05	0,05
stdev	0,02	0,02	0,03	0,03	0,03	0,03	0,04	0,04	0,05	0,04
<i>From euro area</i>										
mean	0,51	0,51	0,44	0,45	0,50	0,48	0,49	0,49	0,50	0,50
stdev	0,09	0,09	0,11	0,11	0,10	0,10	0,10	0,10	0,10	0,10
<i>From other EU15</i>										
mean	0,11	0,11	0,10	0,10	0,10	0,10	0,09	0,09	0,09	0,08
stdev	0,05	0,05	0,06	0,06	0,07	0,06	0,07	0,07	0,06	0,06
<i>From USA</i>										
mean	0,07	0,07	0,07	0,07	0,07	0,07	0,06	0,06	0,05	0,05
stdev	0,02	0,02	0,03	0,04	0,03	0,04	0,03	0,03	0,03	0,03
<i>From Asia</i>										
mean	0,07	0,07	0,07	0,08	0,07	0,08	0,08	0,08	0,08	0,09
stdev	0,02	0,02	0,04	0,04	0,04	0,04	0,04	0,04	0,05	0,05
<i>From ROW</i>										
mean	0,21	0,21	0,29	0,27	0,22	0,24	0,24	0,23	0,23	0,23
stdev	0,04	0,04	0,07	0,07	0,08	0,08	0,08	0,08	0,08	0,07

Source: IMF-Direction of Trade Statistics and authors' calculations.

1) Numbers may not sum up to 100% due to rounding errors.

2) Excl. MT 1995/1996/1997 and HU 1995; numbers may not sum up to 100% due to rounding errors.

Table A.1 (cont'd)

c. Share of NMS exports to selected regions²⁾
(ratio of exports to total exports)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<i>Towards New Member States</i>										
mean	0,14	0,16	0,14	0,14	0,13	0,13	0,13	0,13	0,13	0,14
stdev	0,14	0,12	0,11	0,09	0,08	0,08	0,08	0,07	0,06	0,06
<i>Towards euro area</i>										
mean	0,40	0,49	0,53	0,57	0,61	0,60	0,59	0,57	0,58	0,55
stdev	0,27	0,25	0,24	0,26	0,26	0,26	0,26	0,25	0,26	0,24
<i>Towards other EU15</i>										
mean	0,06	0,06	0,06	0,07	0,08	0,08	0,08	0,10	0,09	0,09
stdev	0,04	0,04	0,05	0,05	0,06	0,06	0,05	0,06	0,05	0,0
<i>Towards USA</i>										
mean	0,02	0,02	0,02	0,03	0,04	0,04	0,03	0,03	0,03	0,04
stdev	0,01	0,01	0,01	0,02	0,03	0,04	0,02	0,02	0,02	0,02
<i>Towards Asia</i>										
mean	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02
stdev	0,01	0,01	0,01	0,03	0,02	0,03	0,03	0,02	0,03	0,03
<i>Towards ROW</i>										
mean	0,18	0,22	0,20	0,17	0,13	0,14	0,14	0,15	0,15	0,16
stdev	0,10	0,11	0,11	0,08	0,06	0,06	0,07	0,06	0,07	0,06

d. Share of NMS imports from selected regions²⁾
(ratio of imports to total imports)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<i>From New Member States</i>										
mean	0,11	0,11	0,10	0,10	0,09	0,10	0,10	0,10	0,11	0,11
stdev	0,11	0,08	0,07	0,06	0,06	0,05	0,05	0,06	0,07	0,06
<i>From euro area</i>										
mean	0,48	0,48	0,50	0,55	0,55	0,52	0,52	0,52	0,52	0,58
stdev	0,10	0,09	0,09	0,07	0,07	0,07	0,07	0,07	0,06	0,09
<i>From other EU15</i>										
mean	0,08	0,08	0,08	0,08	0,07	0,07	0,07	0,07	0,06	0,06
stdev	0,04	0,04	0,04	0,03	0,03	0,03	0,03	0,03	0,03	0,03
<i>From USA</i>										
mean	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,03	0,03	0,01
stdev	0,02	0,03	0,03	0,02	0,02	0,02	0,02	0,01	0,01	0,01
<i>From Asia</i>										
mean	0,05	0,05	0,06	0,07	0,07	0,07	0,08	0,09	0,10	0,07
stdev	0,02	0,02	0,02	0,03	0,03	0,04	0,04	0,04	0,04	0,03
<i>From ROW</i>										
mean	0,20	0,24	0,22	0,18	0,17	0,20	0,20	0,19	0,18	0,17
stdev	0,11	0,05	0,06	0,05	0,05	0,06	0,05	0,05	0,05	0,08

Source: IMF-Direction of Trade Statistics and authors' calculations.

1) Numbers may not sum up to 100% due to rounding errors.

2) Excl. MT 1995/1996/1997 and HU 1995; numbers may not sum up to 100% due to rounding errors.

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