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**THE EUROPEAN ECONOMIC AND MONETARY UNION
AND THE THEORY OF OPTIMUM CURRENCY AREAS**

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ABSTRACT

An Optimum Currency Areas is characterized as a geographic region which would maximize its economic efficiency by adopting a single currency. The theory of Optimum Currency Areas attempts to determine such criteria that would indicate the necessary common features of a currency union countries in order to evaluate its attractiveness for potential new members. There are two main aspects to consider. First, with monetary policy being set centrally, individual member countries are no longer able to use autonomous monetary or exchange rate policy to offset the adverse effects of asymmetric shocks. The effect of these shocks may vary greatly, but almost always will result in a loss of output and increase in unemployment. The main factors that will determine the magnitude of these effects will include, but not restrict to, the degree of labor mobility across the currency union, flexibility of prices and wages, degree of openness of the whole economy, industrial structure of the economy and the level of financial integration with fellow currency union countries. Second, there will be a need for union-wide agreement on the desired rates of inflation and other macroeconomic variables that the union's central bank should aim for. In other words, there need to be common preferences. Without such common preferences, any currency union remains highly fragile. Since the OCA theory is frequently used to evaluate whether a country or countries are ready to become members of a currency union, one of the final stages of economic integration, the question will be addressed whether the European Union (or, more precisely, the Eurozone) is an optimum currency area and, if not, what are the likely challenges that lie ahead of policymakers for it to become one.

ABSTRAKT

Optimální měnová oblast je charakterizována jako geografický region, který může zavedením společné měny maximalizovat svoji ekonomickou výkonnost. Teorie optimálních měnových oblastí se pokouší určit vlastnosti, které mají všechny země měnové unie společné a pomohly tak odpovědět na otázku, jestli bude vstup nových členů přínosem či nikoli. V úvahu přicházejí dva hlavní problémy. Zaprvé, v okamžiku, kdy je měnová politika přenesena na centrální úroveň, jednotlivé členské země již nemohou používat nezávislou měnovou a kurzovou politiku v reakci na negativní asymetrické šoky. I když se dopady těchto šoků různí, téměř vždy znamenají propad produktu a zvýšení nezaměstnanosti. Faktory, které ovlivní sílu těchto dopadů, mimo jiné zahrnují stupeň mobility pracovních sil napříč měnovou unií, flexibilitu cen a mezd, úroveň otevření ekonomiky vůči obchodu, průmyslovou strukturu ekonomiky a úroveň finanční provázanosti s ostatními členskými zeměmi měnové unie. Zadruhé, bude zde nutnost konsensu ohledně míry inflace a dalších makroekonomických veličin tak, aby mohla unijní centrální banka příslušně nastavit svou politiku. Jinými slovy, členské země budou muset mít společné preference. Bez těchto společných preferencí zůstane jakákoli měnová unie výrazně nestabilní. Teorie optimálních měnových oblastí se často používá k vyhodnocení přípravy země nebo zemí na vstup do měnové unie, jedné z finálních fází ekonomické integrace, proto se tato práce bude snažit zodpovědět otázku, jestli je Evropská Unie (nebo přesněji Eurozóna) optimální měnovou oblastí. Pokud ne, pokusí se nastínit, jaké kroky budou muset političtí činitelé podniknout, aby se jí stala.

CONTENTS

Abstract	1
Abstrakt	4
Contents.....	5
Introduction	7
Chapter 1.....	10
Labor Mobility Criterion.....	10
Openness Criterion.....	15
Industrial structure criterion.....	16
Inflation preferences criterion.....	17
Financial Integration Criterion.....	19
Political Integration Criterion	20
OCA criteria – Critique.....	20
OCA Endogeneity	23
Chapter 2.....	25
Economic Integration.....	25
Types of Economic Integration.....	26
European Economic and Monetary Union Overview	28
Chapter 3.....	31
EMU and Price and Wage flexibility.....	31
EMU and Labor Mobility.....	32
EMU and Openness.....	33
EMU and Industrial Structure	34
EMU and Inflation Preferences.....	35
EMU and Financial integration.....	37
EMU and Political Integration	38
Final Overview of Empirical Evidence.....	40
Chapter 4.....	42
Costs and Benefits overview.....	42
Benefits of Single Currency	42
Costs of Single Currency	44
Costs and Benefits Compared	47

Chapter 5.....	49
Maastricht Criteria Overview.....	49
Monetary Criteria.....	49
Fiscal Criteria.....	50
Chapter 6.....	52
Euro and old EU Economies.....	52
Euro and new EU Economies.....	54
Euro and the Czech republic.....	57
Concluding Remarks.....	60
Literature and References.....	63
Appendix.....	67
Macroeconomic Indicators of EU25 Countries (2006).....	67
Maastricht Criteria Overview Prior to EMU Launch.....	69
Trade Openness of New Member States.....	70
Overview of Public Finances 1999-2004.....	71
Employment Protection in New Member States.....	72
Index of Business Cycle Correlation Between EU Member States.....	73

INTRODUCTION

As far as its history goes, the international monetary system has been always characterized by a large number of independent currencies. For the most part, these have been circulating within sovereign nation states. With the promotion of international trade and gradual opening of economic borders, independent currencies were more and more viewed as political, rather than strictly economic, phenomenon. Between the world wars, currencies became a policy tool of the then widespread protectionism, notably in the form of exchange rate controls and mutual inconvertibility. Within the process creation of the Bretton Woods system¹, for the first time a serious debate arose what exchange rate arrangement should be adopted for the world's major currencies in order to avoid another deep economic crisis like the one in 1929-1933. As a result of this decades-long debate, the theory of optimum currency areas came into existence.

An optimum currency area (OCA) is defined as optimal geographically delimited area within which there is a single currency or a group of currencies with irrevocably fixed exchange rates in circulation. It is of little relevance to the OCA theory whether such single currency, or the group of pegged currencies, fluctuate against the other world's currency or are a part of greater fixed exchange system. The optimality, as well as the level thereof, can be then determined by means of several criteria, which are to be analyzed later in this paper. Simply expressed, the more criteria of the OCA theory are passed, the less useful is the nominal exchange rate as a policy tool to offset the adverse effects of asymmetric shocks and thus the more benefits there are to a common currency. In such case, devaluation loses its purpose and exchange rate might as well as surrendered. As a conclusion from the application of this theory, countries would be able to choose whether or not to form a currency area - in anticipation that current and future benefits will exceed the costs.

¹ International monetary system of fixed exchange rates, managed by a group of newly created international institutions, using the U.S. dollar as a central reserve currency (1945-1971)

Although its underlying ideas were already outlined by Friedman (1953) in his paper advocating the use of flexible exchange rates, the core of the OCA theory did not solidify until Mundell's (1961) well-known contribution. Still in its early phase, the theory was further supplemented by the works of McKinnon (1963), Kenen (1969), Fleming (1971) and Ingram (1973). The goal of the first chapter is to trace the evolution of the OCA theory, and in the process to analyze the OCA criteria that one by one appeared. Some authors² identify several phases in development of the OCA theory, and refer to the 60's and early 70's as the pioneering phase. In effect, this was the time when the theory's pillar stones have been built and successfully implanted into the mainstream economic theory, despite having yet no empirical content³. This era was characterized by agonizing existence of the Bretton Woods exchange rate regime, capital controls in most developed countries⁴, the rise of European economies and the nascent process of European economic integration. It is quite an irony that such important and influential theory actually emerged rather as a by-product of heated debate between the advocates and opponents of flexible exchange rates⁵.

During the late 70's, sometimes referred to as the "reconciliation phase" of the OCA theory, few more criteria were added, such as the similarity of shocks. Moreover, the OCA theory for the first time became subject to extensive empirical testing in order to verify or reject its theoretical conclusions. The criteria were also tested among one another, so that the ones with most impact could be identified. Unfortunately, major works undertaken in this respect delivered only inconclusive results⁶. The main problem lied in the theory's inconsistency – the evidence suggested that, according to several criteria, some countries

² Mongelli (2002)

³ In fair defense, though, there was no reference data available at that time – there were simply no monetary unions large enough to allow for testing of the OCA theory's findings

⁴ Necessity if countries wanted to keep the fixed exchange rates and autonomous monetary policies at the same time – without capital controls the currencies would be subject to speculative attacks, as infamously experienced in the early 90's when these controls were finally lifted

⁵ Even as Mundell received the Nobel prize (1999) for his now world-famous theory, he did not retract from the position that he never thought of his contributions as a separate theory, he merely considered it part of the greater debate between fixed and flexible exchange rates

⁶ Tower and Willet (1976)

should indeed fix their exchange rates or introduce single currency with their main trading partners. However, the second set of OCA criteria pointed to the opposite conclusion for the very same countries. The theory also lost some momentum due to the generally slowed pace of the European integration, especially following the failed attempt for monetary integration in the early 70's. However, with successful operation of the European Monetary System in the early 80's, the OCA theory was revived and adopted into its framework assessment of the main benefits and costs from monetary unification. The balance of opinion slowly shifted in favor of currency unions⁷. Although the OCA criteria did not change per se, some of them have been reinterpreted. In the second half of the 80's, the issue of monetary integration in Europe became more pressing as members of the European Economic Community began to seriously contemplate a second go at common currency. It is no wonder that where there is a political decision, there is also a need to justify this, preferably in the most impartial way possible. This dilemma was addressed by the "One Market, One Money" report (Emerson et al. (1992))⁸, in which the authors retorted to the OCA theory to prove the benefits of the soon-to-be Economic and Monetary Union.

The last phase of the OCA theory rests on empirical, rather than theoretical, contributions. The EU now offers a wealth of relevant data to test the various OCA criteria and their relevance to the overall theory. In spite of this, any decisions about currencies, purely economic phenomena, remain political in nature.

⁷ The terms currency union and monetary union are used interchangeably

⁸ Although, having been commissioned by the EU Commission, serious doubts about its impartiality are indeed in place

CHAPTER 1

LABOR MOBILITY CRITERION

In his ground-breaking paper, Mundell (1961) examines possible mechanisms of adjustment when countries or regions face exogenous⁹ (as opposed to policy-induced), country-specific (as opposed to sector-specific¹⁰) shocks, with particular reference to the US and Canada. He argues that exchange rate changes between the US dollar and Canadian dollars did not provide either country with a satisfactory means of adjustment since the main asymmetry was not between the countries themselves, but between the eastern and western parts of them both. Mechanisms were therefore required to adjust relative prices between east and west rather than between north and south. These regions, east and west in our terms, would constitute an optimum currency area. Between these currency areas, flexible exchange rate would be capable of delivering the necessary adjustment.

Mundell deduces that labor mobility is of essential importance for a currency area to work efficiently. To illustrate this, let us consider the following scenario with two countries (A and B). Assumptions of this model include downward rigidity of prices and wages. Let us suppose that as a result of an asymmetric¹¹ shock, country A suffers a fall in the demand for its output and country B, on the other hand, enjoys a rise in the demand for its output. If there is no currency union between the two countries and monetary and exchange rate policies remain autonomous, then all that is needed to restore equilibrium is for country A to let its currency depreciate. At the same time, appreciating exchange rate in country B will prevent an inflationary spiral and maintain product market equilibrium.

⁹ Shocks caused by outside events over which the government authorities in a particular economy have no direct control

¹⁰ Empirical evidence suggests that most of the economic shocks are actually of sector-specific nature. This implies that exchange rate as policy tool is likely to deliver only very limited adjustment and other adjustment mechanisms need to be sought to offset the adverse effects

¹¹ This example and Mundell's overall theory delimiting optimal areas for separate currencies hold together only as long the impacts of the shock vary between regions, i.e. they are asymmetric. If the impacts were the same (symmetric), all the countries would simply change the exchange rate as the adjustment needed would be the same for all – there would simply be no reason to have separate currencies in the first place

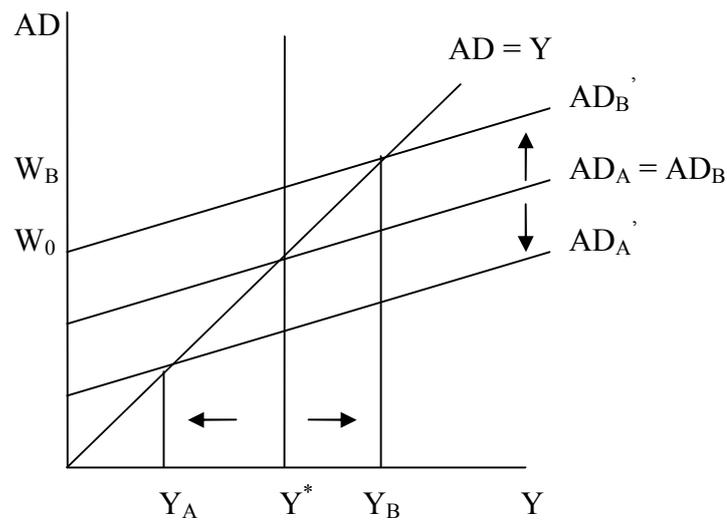


Figure 1

With monetary union and common currency, quite understandably, no depreciation can take place as monetary and exchange rate policy is being set centrally. Without this mechanism, there will be excess supply in country A – which will lead to unemployment, and excess demand in country B, which in turn will lead to inflation. According to Mundell, the answer to this enigma lies in mobile workforce. As long as there is labor mobility between the two countries, in times of excess supply in country A its workforce will relocate to country B where excess demand will stimulate creation of more jobs. As a result, country B will produce higher output without the necessary threat of higher inflation and country A will produce lower output without the threat of spiking unemployment. The example can be illustrated by Fig. 1 (Keynesian 45° model).

In terms of the diagram above, the both countries are initially in equilibrium at common output level Y^* . The asymmetric shock causes the aggregate demand in country A to shift downward and simultaneously in country B to shift upward. With aggregate supply in both countries fixed in the short run at $0Y^*$, there is clearly excess demand in country B and excess supply in country A, causing pressures on inflation, or unemployment respectively. Flexible labor mobility will allow for adjustment of the vertical line of potential output Y^* , and thus will ensure that full employment and stable inflation would remain in both countries. As

evidenced by the two now different vertical lines of potential output, country B will now produce $0Y_B$, whereas country A only $0Y_A$. Nonetheless, the total output of the two countries will remain the same. In conclusion, Mundell argues that in the presence of sticky prices and wages, labor mobility is the only mechanism that would facilitate adjustment in face of asymmetric demand shock. In the absence of such high labor mobility, currency union will inevitably have countries with persistent high unemployment on the one side and countries with persistent high inflation on the other – depending on the nature of the asymmetric shock. Most importantly still, there would be no mechanism to restore long-term equilibrium in either country.

Mundell’s original theory was built on the assumption – in line with the then prevalent simple Keynesian model above – that wages and prices were inflexible. At the same time, however, Mundell acknowledged that the greater the flexibility of wages, the more likely it is that national (or regional, for that matter) full unemployment could be maintained. Let us then examine whether this could be the alternative mechanism that could facilitate adjustment in response to asymmetric shock.

Fig. 2 and 3 illustrate the labor markets in countries A and B. The demands for labor in the two countries are represented by the two negatively sloped lines D_A and D_B . Vertical curves

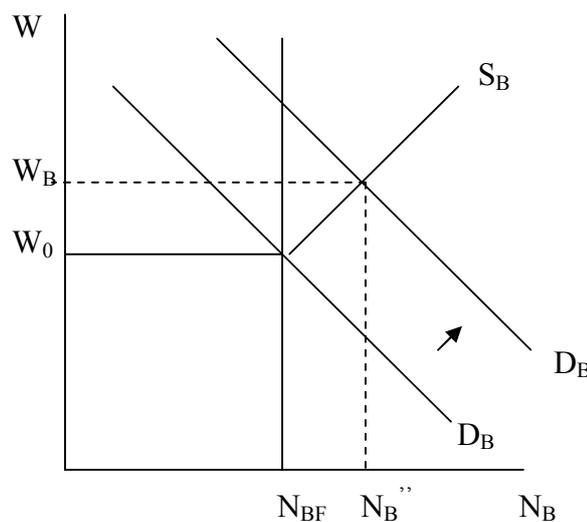


Figure 2

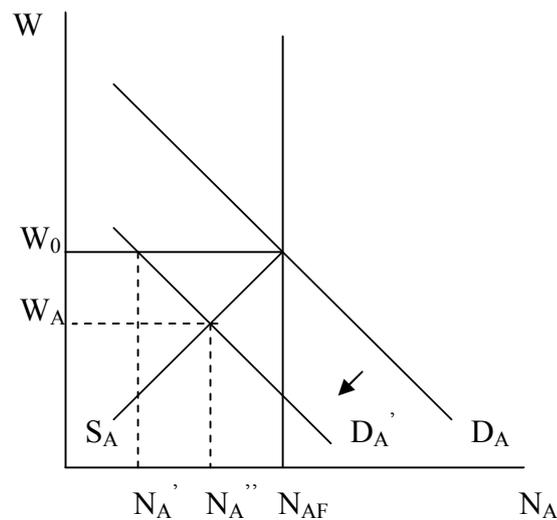


Figure 3

N_{AF} and N_{BF} represent full employment. In case of the fixed wages scenario, the labor supply curves in each country are horizontal, given by the equilibrium wage W_0 , until full employment is reached, at which point the labor supply curve becomes vertical. By contrast, the figures also feature neo-classical upward-sloped supply curves, which pass through the intersection of the demand curves and the fixed wage curves. Initially, both economies are in equilibrium and enjoy full employment.

Let us now suppose that an asymmetric shock will reduce the demand for labor in country A (D_A to D_A') and raise the demand for labor in country B (D_B to D_B'). Without any wage flexibility, employment in country drops to N_A' . With a certain degree of wage flexibility, unemployment in country A would fall only to N_A'' as the fall in demand for labor in country A would be accompanied by lower wage rate. At the same time, with wage flexibility employment in country B can rise to N_B'' as workforce from country A is attracted by rising wage. This brings us to the conclusion that even with alternative adjustment mechanism some level of labor mobility is essential. In order to allow for a better understanding, money wage flexibility and labor mobility can be combined within the term labor market flexibility. Without such labor market flexibility, the costs of a monetary union are likely to be very high

in terms of lost output and inability to maintain full employment when faced with asymmetric demand shock.

As labor markets are subject to constantly changing policies, its overall flexibility is to a great extent bound by these as well as various institutions and labor market structures in the various member states. Some labor markets enjoy a significant degree of decentralization, such as the UK; others experience severe rigidity due to strict centralization, such as in France or Germany. The differences of these may introduce further costs to a monetary union, because as a result of asymmetric shock they can lead to very divergent wage and price developments¹². To illustrate this, let us consider the following example. An adverse shock hits an economy with centralized bargaining structure. Highly organized labor unions do not push ahead with excessive wage claims as they realize that this will translate into higher prices and thus real wages will not increase. Due to this fact, they see no incentive for making excessive wage claims. In the decentralized system, however, each individual union will assume that its wage claims will have only minimal impact on average price level and therefore will put forward high wage claims. As these independent unions play a non-cooperative game, they would feel disadvantaged to other unions if they exercised restraint. As a result of this, the non-cooperative wage equilibrium is higher than in the cooperative game played by centralized unions. Nevertheless, there is a moderating factor in the fear that excessive wage claims might lead to redundancy and unemployment.

Having reviewed Mundell's contribution, we can conclude that, given the practical need for stabilization policies in existing economies, an area would benefit from a separate currency if, when faced with some macroeconomic shock, the economic costs of adjustment through changes in wage and price levels, or through factor mobility (either labor and capital), would be higher than those of altering the exchange rate.

¹² Bruno and Sachs (1985)

OPENNESS CRITERION

McKinnon (1963) supplemented Mundell's analysis by adding a second OCA criterion – openness of the economy¹³. The main underlying idea behind this criterion is that the more open the economy is, the less effective a devaluation becomes as an instrument of policy. If that is the case, joining a monetary union will simply be of greater benefit as such – otherwise very strong – policy instrument will not be missed. McKinnon's argument further goes that, due to constant trade, overall price level in the economy will not differ greatly from the world price level, since the very definition of open economy means that its goods markets are very closely integrated with world's markets. Neither consumers nor businesses will suffer from an exchange rate induced illusion that certain goods are cheaper or more expensive. If the price levels do differ, then a goods arbitrage will indeed take place – a mechanism that would see to it that the price levels remain closely aligned. Suppose that price levels in two countries differ ($P_A < P_B$). As a result of this, there will be an incentive for traders to purchase the goods in country A, ship it across the borders and sell it in country B. If all traders were rational and began exploiting this opportunity, the price in A will start to rise while price B will fall, leading to a price equalization by means of goods arbitrage.

Considering the scenario above, McKinnon concludes that devaluation of the exchange rate results primarily in higher domestic import costs and higher domestic price level. Thus, devaluation affects only nominal price level and has very little or no effect on the real economy. This reasoning is in line with the classical neutrality of money theory, according to which monetary variables cannot affect real variables in the economy (real GDP, employment etc). At the same time, the strength of this criterion is undermined by the assumption of perfect competition, which, of course, is a condition that cannot be fulfilled by virtually any selected market. As discussed in later chapters, however, empirical evidence suggests that

¹³ Measured by various indicators, such as ratio of trade over GDP, the share of tradable (vs non-tradable) goods and services in the economy, marginal propensity to import, international capital mobility etc;

while such condition may not met in the short run, in the long run this might as well be the case.

INDUSTRIAL STRUCTURE CRITERION

Kenen (1969) entered the OCA debate with the notion that it is not only labor markers that are of importance when delimiting optimum currency area. When faced with an asymmetric shock, Kenen argues that it is equally important how the economy is structured¹⁴. To illustrate this, let us consider a situation when the entire currency union is affected by an adverse shock (i.e. symmetric shock). If the industrial structures of all currency union member countries are similar and well-diversified, the impacts of this shock will fall equally on all sectors of the economy. As a result, no further adjustment would need to take place. If, however, there are differences between industrial structures of member countries, for instance if some are more developed and specialized than others, even a symmetric shock will have divergent impacts. As a result of this, disequilibrium will be created and re-distribution of economic activity between the currency union states will take place. This redistribution is likely to be costly and will translate into overall high costs of maintaining a currency union between countries that are structurally different. At the same time, diversification in production and consumption reduces the need for change in terms of trade by means of exchange rate adjustments and thus provides an intrinsic protection against shocks. In conclusion to Kenen's contribution, monetary union between structurally similar economies is preferable because the costs of adjustments in face of both symmetric and asymmetric shocks are significantly lower. Moreover, well-diversified countries are far less likely to suffer from forsaking exchange rate changes and, therefore, would benefit more from a single currency.

¹⁴ Sometimes referred to as diversified "job portfolio"

INFLATION PREFERENCES CRITERION

Fleming (1971) came forth with one further criterion. He argues that the costs of establishing and maintaining a monetary union are very tightly linked with the costs needed to establish a union-wide set of common policy preferences. Fleming concentrates on the common union preference on the rate of inflation, but unemployment and output growth are not left behind. If two countries' outputs permanently grow at different rates, then the faster growing country will be constrained to grow at the speed of the slower growing country, because there is no possibility of exchange rate devaluation in order to remedy balance of payments disequilibrium. Applying the same logic, two countries with different rates of inflation can only co-exist provided that the country with higher inflation devaluates its currency against the currency of the country with lower inflation. Within a monetary union, this is obviously not possible and both countries have to accept the centrally preferred rate of inflation. Since changes in prices have an impact on the terms of trade, the stability of prices will foster trade and thus, by supporting equilibrium in the current account, will reduce the need for nominal exchange rate adjustments.

To formalize the above, let us apply the Purchasing Power Parity theory (PPP)¹⁵. This theory implies that $\Delta ER = \Delta P - \Delta P^*$, where ER is the price of a unit of foreign currency in terms of domestic currency (or exchange rate), P and P* are the domestic and foreign price levels respectively. Different price levels (or changes thereof – inflation) can only be supported if $\Delta ER > 0$. But since in a monetary union always $\Delta ER = 0$, both countries cannot do otherwise but accept a common rate of inflation.

To illustrate this better still, let us consider the scenario in Fig. 4. The two Philips curves PC_A and PC_B in the right-hand quadrant represent the different preferences of inflation (and unemployment) in the two countries. In the short-term, the negatively slope curves represent the inverse relationship between inflation and unemployment; in this example we assume that

¹⁵ Being based on the law of one price, the Purchasing Power Parity theory states that exchange rates between currencies are in equilibrium when their purchasing power is the same in each of the two countries. This means that the exchange rate between two countries should be equal the ratio of the two countries' price level of a fixed basket of goods and services

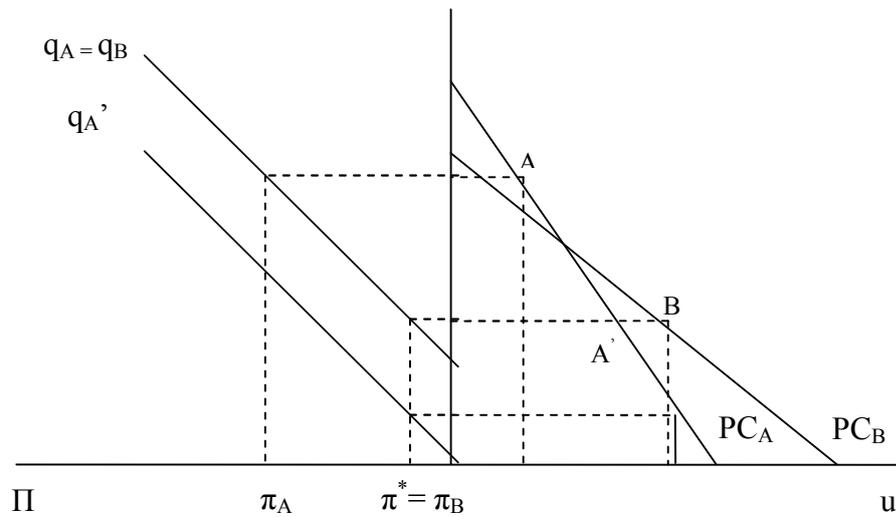


Figure 5

country A has a preference for lower unemployment and higher inflation than country B, and vice versa. Based on their discretion, both countries initially choose their optimal combination of the two macroeconomic variables, represented by points A and B. As already outlined above, the different rates of inflation are now only consistent if the exchange rates can adjust to facilitate equilibrium. Since there is a common monetary policy and no means to adjust exchange rate, the two countries are literally stuck with a common rate of inflation, represented by a union rate of inflation π^* . It is obvious from the figure that this scenario will involve a higher level of unemployment in country A than its government would have opted for.

The left-hand quadrant represents the relationship between wages, prices and productivity in both countries. Formally, $\Pi = \Delta W - q$; where q represents the change in productivity. The both curves are unity, thus reflecting the directly proportional relationship between prices and wages, with the rate of productivity growth representing the vertical distance from origin. This quadrant offers one further argument in favor of a common preferences within a monetary union. Let us suppose that that the two countries shall, after all, agree on a common rate of inflation, thus maintaining different levels of unemployment according to their individual Philips curves. On top of that we assume that country A has, due to any reasons,

lower productivity growth – manifested by lower intercept of the q_A curve (shifting down it to q_A'). Lower productivity will thus result in higher unemployment in country A even with the same rate of inflation in both countries. In conclusion to this, countries within a monetary union need to share a common preference for the rate of inflation and at the same time should have similar levels of productivity growth as differences in this will lead to divergent rates of unemployment.

FINANCIAL INTEGRATION CRITERION

Ingram (1973) notes that there is one further element – degree of financial integration – that can reduce the need for exchange rate adjustments. High level of financial integration allows to mitigate effects of adverse shocks through increased capital flows, that is, by borrowing money from the surplus areas and transferring it to areas where it is needed. Such flows can take place both between regions and between countries. As opposed to changes in industrial structure that might take years to complete, financial flows can be reverted in the matter of days and weeks once the shock is over. This, however, constitutes both advantage and disadvantage at the same time. Where there is a high level of financial integration and free capital mobility (i.e. no capital controls), even the slightest changes in interest rates can induce substantial capital movements across regions and countries. This largely prevents better effectiveness of national monetary policy. Conversely, these flows can indeed facilitate fine-tuned adjustment, ease the financing of external imbalances and promote effective and efficient allocation of resources. At the same time, they are not, due to their highly reactive nature, substitute for a permanent adjustment; rather, they can smoothen the long-term adjustment process where necessary. Countries that already share a single currency have even more financial tools at their disposal, such as pooled foreign exchange reserves.

POLITICAL INTEGRATION CRITERION

Several authors argue that political integration is of prime standing among the OCA criteria. While, obviously, this is no economic criterion, it is understandable that political influences will enter the play whenever a country is about to give up one of the symbols of its sovereignty. It is interesting that the notion of national currencies has not always been so filled with sentiment and patriotic pride¹⁶. Due to the experiences with totalitarian regimes and regained freedom and independence¹⁷, these states are now reluctant to let go of their currencies despite perhaps overwhelming economic argumentation. The introduction of single currency brings along with it all kinds of political commitments, necessary institutional cooperation (national central banks), or coordination of economic policies. It thus appears reasonable to assume that a viable and successful currency union must share more than the baseline economic elements.

OCA CRITERIA – CRITIQUE

Although the OCA theory has fairly rapidly established itself in the mainstream of economic theory, it has not gone without criticism. Throughout the 60's and 70's, the main problem of the OCA theory was already outlined earlier in this paper and will be also discussed later – its inconclusiveness. Due to the nature of this theory and the various criteria being put forward by different authors, the theory has never really developed into a consistent set of arguments, supported by solid empirical evidence. It has remained a problem until today that for the very same set of countries, different criteria may deliver opposite answer to the OCA question. For example, two countries may be equally structured, well-diversified and open to trade, but, on the other hand, also marked by mutually low factor mobility. The

¹⁶ In J.S. Mill's words "...so much of barbarism, however, still remains in the transactions of most civilised nations, that almost all independent countries choose to assert their nationality by having, to their own inconvenience and that of their neighbours, a peculiar currency of their own." (1894)

¹⁷ There are, of course, other reasons beside this one – citizens of the United Kingdom hold their pound sterling as one of the few remnants of their once mighty global empire

theory is thus inconclusive in addressing the question whether single currency is in order or flexible exchange rate would be better suited to facilitate adjustment. This inevitably becomes an issue of consistency, because where there are contradicting answers, one view has to be chosen. How do we rank the OCA criteria; are some of them more relevant than other? This question remains largely unanswered in OCA literature. However, quite reasonable suggestion has been offered by Ishiyama (1975) – policy-making decision should be based on a majority of the OCA criteria and definitely not just one. At the same time, each country should evaluate its own costs and benefits of participating in a currency union and decide according to its own self-interest.

Second set of criticisms is based on the notion of exchange rate adjustments. The OCA theory gives conditions under which there would be sufficient number of mechanisms facilitating adjustment if exchange rate changes were abandoned. On the one hand, the theory implies that if such conditions are not met, then the currency should be allowed to fluctuate freely in order for the adjustment to materialize. This is based on the assumption that exchange rate changes can indeed deliver this adjustment; but what if they are not as effective as assumed? If exchange rate changes are less effective in securing nominal adjustment, then, of course, the costs of abandoning this policy tool are low and a country may as well enter a monetary union without qualifying for membership by means of the OCA criteria. As in the previous case, this becomes more of an empirical, rather than theoretical, problem¹⁸. This as well as further criticism against the OCA theory has been also put forward by Glavan (2004) who concludes that the entire OCA theory is unfit evaluate benefits and costs of adopting a single currency within the current international monetary order, simply because the main assumptions and background ideas have been drawn up in different international monetary environment (see the argument in paragraph below) and thus the theory is no longer applicable. In fairness, this is a minority opinion.

¹⁸ Canzoneri, Vallés and Viñals (1996) vs De Grauwe (2002)

Interesting insight has been offered by McKinnon (2000). He gave an overview of Mundell's work on concentrated on the development in his theories – the “two Mundells” as he calls it. The earlier Mundell, who wrote the 1961 seminal paper on OCA theory, was still entrenched in the Keynesian beliefs of policy fine-tuning and stationary expectations. In this setting, flexible exchange rate and autonomous monetary policy were indeed theoretically capable of delivering the necessary adjustments to asymmetric shocks. The problem was that, at the time, there was no experience with flexible exchange rates apart that from Canada, which experimented with the floating currency in the early 60's, and with very little success. Advocates of the flexible exchange rates were then deeply disappointed in the 70's, when currencies started to float following collapse of the Bretton-Woods system and, instead of the anticipated smooth adjustment, the exchange rates became highly volatile¹⁹. As of 70's onwards, the “later Mundell” already adopted the forward-looking approach. He arguably acknowledged the risk of high capital mobility and came to appreciate to benefits of elimination of exchange rate uncertainty. In accordance with McKinnon's view, it is true that since early 1970's, Mundell has become a fervent advocate of common currencies and indeed greatly supported creation of the EMU. Unlike most economists at the time when the plans for the EMU were being drawn, he himself defended the idea of monetary integration in Europe. This thus constitutes a great paradox, because there is “a Mundell” on each side of the debate! Since EMU critics relied heavily on the theory of optimum currency areas, it was really quite an irony that Mundell suddenly found himself in an interesting position of having to refute arguments that were based on his very own earlier work.

Considering the above, this paper acknowledges that the OCA criteria have substantial limitations in their practical application. Partially stemming from the fact that they have been drawn up in different era, some of the theory's conclusions may no longer hold. At the same time, given these limitations, there are no reasons for the theory to be disbanded altogether.

¹⁹ Truth to be said, the oil and other supply shocks did not really help to bring stability, either

OCA ENDOGENEITY

The “One Market, One Money” Report, mentioned earlier in this paper, concluded that monetary integration in Europe should indeed proceed, as it entails far more benefits than costs. Emerson and the co-authors argue that the standard OCA criteria are likely to be downward biased towards the benefits of currency union as they do not take into consideration the dynamism of its creation.

The notion that the optimum currency area attributes change over time has been explored in detail by Frankel (1999). There is a widespread agreement that single currency fosters mutual trade (this is discussed in more detail in the chapter on single currency benefits and costs). The problem here is that both theoretical and empirical approach suggest two alternative scenarios²⁰. Krugman argues that increased trade among member countries will lead to their specialization for those goods in which they hold a comparative advantage as the single currency removes barriers to trade and allows producers of these goods to exploit the economies of scale. Quite logically, in such case their economies would become less-diversified and more vulnerable to asymmetric shocks while their incomes would become less correlated. This is indeed quite a paradox because, in this scenario, the more will the countries integrate and open up to trade, the further away they will be from an optimum currency area.

Frankel and Rose (1997) offer alternative view. They argue that there is indeed a positive relationship between more trade due to integration and income correlation. In their view, member countries will benefit from single currency beyond the effects of elimination of exchange rate uncertainty, including promotion of foreign direct investment, labor mobility, intra-industry as well as inter-industry trade, and synchronization of business cycles. There are also political implications as single currency is already viewed as a strong enough commitment for member countries to engage in cooperation in all other levels of economic activity with their new partners. In light of this, creation of a currency union might have positive impact on several of the OCA criteria and might thus reverse their applicability –

²⁰ Krugman (1993) vs Frankel and Rose (1997)

they would qualify *ex-post*, although they did not qualify *ex-ante*. This has become known as the OCA endogeneity.

CHAPTER 2

ECONOMIC INTEGRATION

Before any analysis and assessment can be carried out using the introduced theoretical framework, certain terms must first be defined.

Very simply expressed, economic integration is a process of elimination of economic frontiers between two or more countries. By economic frontier we can understand any demarcation across which the actual as well as potential mobility of goods, services and factors of production is very low. On the both sides of such economic frontier, the determination of prices is only insignificantly affected by flows over this frontier. As is in reality usually the case, these economic frontiers often coincide with regional, country or political boundaries. Conventional wisdom suggests that the most significant benefit of economic integration is the increased competition, and hence increased economic efficiency, lower prices and greater selection of products for the customer. At the same time, rising income will lead to overall greater welfare of the citizens.

One of the main underlying ideas behind the European economic integration²¹ is the strive to reduce or outright eliminate the role of national states in maintaining territorial frontiers which simultaneously also serve as frontiers of economic nature. While this is a necessary precondition for any economic integration, it is not sufficient as certain frontiers cannot be simply dismantled due to perhaps geographic (e.g. sea, mountains) or historical reasons. The other problem is that to a certain extent, any economic integration has a political dimension – and this becomes of major importance when dealing with modern western European economies in which the state has adopted some sort of a paternalistic and all-powerful role. Economic integration can thus be split into two elements – market integration and economic policy integration.

²¹ Or any other economic integration, for that matter

Market integration, as the title already suggests, remains in essence a market-driven elimination of economic frontiers, without any involvement of policy-makers. By means of market integration, economic subjects (firms and consumers) gradually adapt from conditions within different regions of member states to conditions across the entire integrated area. Due to significantly increased amount of trade opportunities, this will usually manifest in substantial rise of cross-frontier movements of goods, services and factors of production.

Policy integration, on the other hand, is a more vague concept. It refers to a large number of different policies, using large number of different policy instruments. Such policy integration may cover anything from informal agreements or policy coordination to strictly binding rules and commitments. Whereas market integration would be a manifestation of Adam Smith's invisible hand, policy integration would be Keynes's government response to market failures. Because policy integration may involve a lesser or greater amount of discretion, its overall impact on general economic welfare is ambiguous.

TYPES OF ECONOMIC INTEGRATION

Due to its natural complexity and diverging levels of intensity, economists have introduced several main types of economic integration. These types have been amended over the years, but the basic classification²² has remained in essence until today. The notion of the stages of integration is essential and indispensable for understanding of relevant economic literature as well as for key issues of policy-makers.

At the bottom of this ladder stands the Free Trade Area (FTA). The FTA consists of a group of countries among which trade flows enjoy no visible barriers to trade (e.g. tariffs or quantitative restrictions). The aim of FTA is to reduce barriers to trade and to allow for increased specialization, division of labor, and most importantly the benefits of comparative advantage. A Free Trade Area is a relatively weak (and, therefore, the one most common)

²² Balassa (1976)

form on economic integration as member countries retain their right to limit by any means necessary trade between themselves and other non-member country.

A Customs Union (CU) is such form of integration where there is not merely free trade between member countries, but also an external arrangement vis-à-vis non-member countries. All CU member countries impose the same tariffs and quotas on their external trade, thus in effect creating a common trade policy. As opposed to the FTA, the CU already involves a certain extent of policy-making, since there must be a decision reached on the level of common external tariff. Of course, the easy approach would be to take an arithmetic average of existing tariffs (as the European Economic Community did in 1968), but there are other potential areas of conflict as well. The CU needs to erect common customs rules, needs to decide on the distribution of tariff revenues and also needs to introduce different pieces of legislation such as harmonized anti-dumping rules.

Single Market for Commodities (SMC) is an area within which all restrictions on trade, be that visible or invisible, are abolished. The invisible barriers to trade, often referred to as non-tariffs barriers, include technical, material and tax barriers. Common Market (CM) supplements the single market for goods by introducing free mobility of factors of production and of financial assets. By means of this, any citizen of member country is free to seek employment, establish business or make investments in any other common market member country without having to obtain approval from any authority, unless of course when there are very specific legal requirements.

Monetary union (MU) combines the features of common market with irrevocably fixed exchange rates (so-called incomplete MU) or common currency. In practice this means that the trade between member countries proceeds not only without any restrictions, but also without the danger of exchange rate fluctuations. As a result of this, trade between MU member countries is no longer considered as an international trade *per se*. Economic integration can be still taken one step further, taking into account increased coordination or even full harmonization of economic policies. This would result in Economic and Monetary Union (EMU). Given that MU brings a common currency and therefore a common monetary

policy, EMU adds to this a common fiscal policy (it does not really matter whether in the form of non-binding policy coordination or hard-and-fast rules). Other features of EMU might include harmonized tax policy, or unemployment and social policies.

The following table summarizes:

	FTA	CU	SMC	CM	MU	EMU
No internal visible trade restrictions	X	X	X	X	X	X
Common external trade restrictions		X	X	X	X	X
No internal invisible trade restrictions			X	X	X	X
Free mobility of factors of production				X	X	X
Common currency					X	X
Common (coordinated) economic policy						X

Figure 6

EUROPEAN ECONOMIC AND MONETARY UNION OVERVIEW

Already during the Bretton-Woods era, western European countries have undertaken certain steps aimed at reduction of dependence on the dollar by means of establishing their own monetary identity. Indeed, the notion of monetary integration was even of one the goals of the early European Economic Community.

The very idea of a monetary union within EC has been first outlined in the Werner report (1970)²³, but due to lack of political will it was lodged, only to be resurrected some two decades later. On this subject Mundell notes that it has been a missed opportunity. The two decades of fixed exchange rates have delivered high level of macroeconomic convergence, and thus, from the OCA perspective, the EC may as well have benefited from single currency lot more than several decades later.

²³ It is very interesting indeed that to this occasion, Mundell wrote a paper making a case for single European currency

Throughout the seventies and the beginning of eighties the European Communities have suffered from what is often referred to as Euro-sclerosis²⁴. Following successful formation of the customs union and completion of the first enlargement²⁵, the EC member states and their leading politicians lacked further ideas for integration. Or rather, there was no political will to continue with integration, be that integration of economic or political nature. This intermission has been overcome by introduction of two major integration projects in the eighties – the Single Market and only several years later the Economic and Monetary Union (EMU).

Following the problems that arose with functioning of the European monetary system²⁶, European leaders have called on president of the European Commission²⁷ to propose concrete stages that would lead to formation of the EMU. The Delors report (1989) listed essential conditions²⁸ for a monetary union and opened the road towards single currency. Most importantly, the report emphasized that any monetary union is doomed to fail unless there is a sufficient degree of convergence between the member states. In legal terms, the Delors report and thus the EMU have been engraved into the Treaty on the European Union, or informally the Maastricht Treaty (MT). The Maastricht Treaty also provided the legal basis for the European Central Bank (ECB) as well as protocols for the European System of Central Banks (ESCB), and the ECB's predecessor, the European Monetary Institute.

Following three stages of the EMU preparation, the ECB started its operation in June 1998, 6 months before the yet non-cash Euro was launched. Following a 3-year long transition period, Euro in its physical form successfully replaced the national currencies of 12 EMU members as of 1.1. 2002.

Some consider the EMU a blessing, others a curse. Some EU countries have embraced adoption of the Euro in nationwide referendums, others have rejected it. It is not, however, the

²⁴ Term used to describe slow-moving or totally suspended pace of European integration

²⁵ Admission of UK, Denmark and Ireland in 1972

²⁶ 1979 established system of stable, but adjustable, exchange rates

²⁷ Jacques Delors, Commission president 1985-1995

²⁸ Full convertibility of currencies, complete liberalization of capital flows and irrevocably fixed exchange rates

intention of this paper to question the political motives behind the EMU, although in itself the EMU clearly has political dimension as it entails the transfer of national monetary policy decision-making powers to a supranational entity - the European Central Bank. Having relinquished national sovereignty in such an important field and thus giving up the most effective policy tool is a quite substantial contribution to political integration. Own currency and a central bank are, after all, clear elements of statehood. Despite the heated debate at Maastricht, the Treaty has made the ECB independent all political influence. According to many economists, this went too far by granting the ECB not only full instrument independence, but also significant powers of goal independence. Having done that, the ECB has a clear mandate for preserving price stability, but at the same time has no obligation to take into consideration other macroeconomic factors (which the ECB to a limited extent does, but more or less on its own volition rather than because of a binding commitment to do so). Monetary policy-making is thus fully centralized and fully depoliticized. The EMU countries have indeed achieved a significant level of convergence, but it is now the question whether this would be enough to a level that EMU would constitute an optimum currency area.

CHAPTER 3

As pointed out by Eichengreen (1990), “the question of whether Europe is an optimum currency area is not one, unfortunately, which can be answered with a simple yes or no. The OCA literature does not provide a formal test through whose application this hypothesis can be accepted or rejected”. The fact that there is no simple “plug-and-play” test that would give definitive answer has indeed lowered the theory’s applicability. In the early 1990’s when the EMU project was being designed, economists as well as policy-makers were quite understandably looking for answers to this simple question – would EMU constitute an optimum currency area? Mere normative implications of the OCA theory frustrated (and still frustrates) economists and politicians alike. This chapter will offer an overview of some empirical evidence that addresses the OCA question and the specific criteria.

EMU AND PRICE AND WAGE FLEXIBILITY

As already pointed out by Friedman and Mundell, wage and price flexibility can be the ideal mechanism to deliver the adjustment to permanent shocks. Yet there is widespread agreement that such flexibility is very low across European countries, not least as opposed to for instance the US. OECD (1999) identifies several main contributors to this - inadequate implementation of the Single Market rules, prevailing state aid and other competition distorting policies in various sectors, or maintaining of invisible barriers to trade. More importantly, the price flexibility varies widely across countries. Low wage flexibility is accompanied hand in hand by low price flexibility. Despite some progress with introduction of the Single Market, real wages are still substantially downward rigid across EU²⁹. Eventually, rising unemployment does put some pressure on real wages to decrease, but still process is far slower than desired³⁰.

²⁹ Calmfors and Driffil (1998)

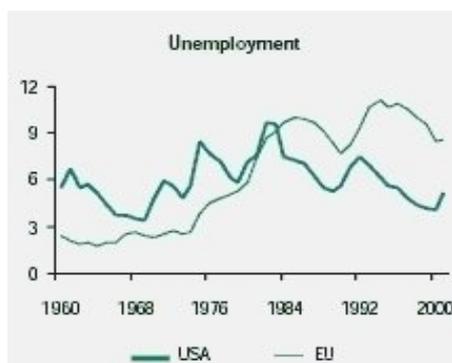
³⁰ Blanchard and Wolfers (2000)

EMU AND LABOR MOBILITY

As outlined in the previous chapters, labor market mobility can provide for the necessary real adjustment when the inflexible prices and wages are unable to do so. Referring back to Mundell, the potential costs of establishing and maintaining a currency union are to be largely dependant on the frequency and scale of adverse shocks and whether such shocks would be offset or absorbed by factor mobility. Unfortunately, there is an overwhelming evidence for a case of the Economic and Monetary Union not being an area with mobile workforce. Among many studies that compare labor mobility between EU and US, Thomas (1995) finds that European labor force is up to ten times less likely to migrate for work; as a result of this, there are persisting high levels of unemployment in specific regions and countries. Other studies concentrate on the high levels of labor market protection in the EU, which makes is very difficult for businesses to react flexibly to economic downturns. Moreover, this causes one further distinct difference between the American and European labor markets. Due to the substantial job protection, Europeans are far less likely to find themselves out of work, but, at the same, once this is the case they also have far lower chance of finding another employment soon due to the very strong position of the insiders (people who have employment). European Commission acknowledges that almost half of the unemployed people EU-wide have been out of work for more than a year. In the US, the same figure is approximately four times less. In accordance with the above, OECD (1999) finds that there are very weak economic incentives

for workers to migrate – persisting high levels of unemployment in most large economies, or income convergence and reduced wage differentials across EU countries.

The chart shows the comparison of rates of unemployment in Europe and the US over the last several decades. While the EU (EC-6 then) scored better in the 60's and 70's, since early



Unemployment in the EC/EU
Source : EU Commission
Figure 7

80's the trend has reversed and the unemployment in Europe has since then repeatedly peaked at a higher level than the US following each adverse economic shock. This points to a simple conclusion that since erection of the welfare states, the EU labor market are not well suited to absorb adverse shocks.

Although the European Commission has argued repeatedly that more integration will foster job growth³¹, there has been no evidence of this either³². There are several factors that help explain this. First and most important, there are the cultural and language barriers to migration. Despite most Europeans now being able to speak in at least one other language than their own, mobility remains low. Other reasons include poor institutional framework for inter-regional job matching process, high costs of moving and setting up new home (including strictly regulated housing markets), limited transferability of social protection statuses, restrictions on public sector employment, or problems with mutual recognition of professional qualifications.

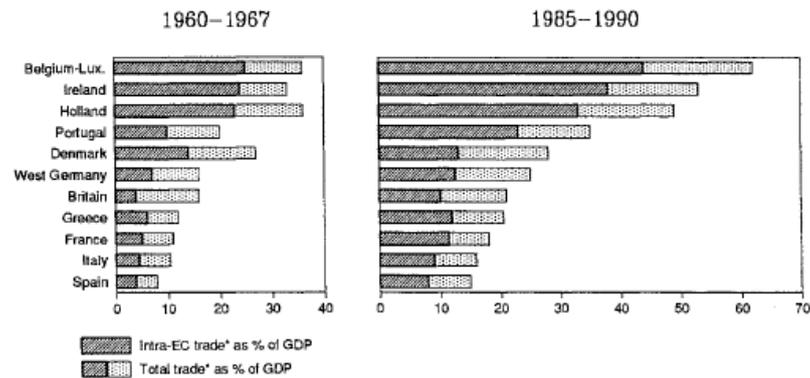
A natural implication to the above is that the EMU as a currency area would be sub-optimal unless there would other economic mechanism that would replace the labor mobility. The theoretical approach of Mundell and others suggested that such mechanism could perhaps be found in wage and price flexibility. Since, as discussed above, western Europe does not score high in this attribute either, the adjustment mechanism – if such exists, that is – has to be looked for elsewhere. For now, we must satisfy with the conclusion that considering the labor market flexibility criteria, EMU would not pass.

EMU AND OPENNESS

Level of economic openness, generally measured by a combined ratio of imports and exports to GDP, is quite high across the EU countries. If count the intra-EU trade as international, the openness now averages almost 50% (see Appendix). As evidenced by the

³¹ The main advertisement of the now discredited Lisbon Agenda (2000)

³² Braunerhjelm, Faini, Norman, Ruane, and Seabright (2000)



Openness of EC/EU countries
 Source : Eurostat
 Figure 8

chart above, the level of openness has been steadily increasing for all countries studied. In line with McKinnon's argumentation, it is before all small countries that need to open up their economies in order to tie their inflation to a stable strong neighbor (Germany in our case). The Single Market and accompanying liberalization have further fostered strong growth of intra-industry trade, as a result of which significant price equalization took place. If measured based on the level of openness, EMU would most likely pass for an optimum currency area.

EMU AND INDUSTRIAL STRUCTURE

There is a wide agreement that EU economies are fairly well diversified. Perhaps surprisingly, the US has a far more specialized economy and demonstrates lower levels of inter-regional production diversification³³. OECD (1999) came forward with indicator of similarity between the production and consumption structures in the EU countries. This index of similarity (basically a difference from the mean benchmark value – the EU average) showed indeed very high levels of similarity across the whole EU. More positively still, when examined over a period of time, this index has been found to be growing steadily. As a result of this, EU economies less likely to experience adverse asymmetric shocks as even the then

³³ Krugman (1993)

15 countries showed more production and consumption structure homogeneity than the 12 US Federal Reserve Districts. Expressed in very simple terms, the EU economies are quite alike in the fact that they produce and consume just about a little bit of everything, therefore, should there be a sector-specific demand shock, most countries would experience this symmetrically. More integration is thus likely to cause the external shocks' effects to be distributed evenly across countries

EMU AND INFLATION PREFERENCES

The theoretical section showed that divergent rates of inflation are potentially the source of great imbalance within currency union countries. First of all, it is notable that the rates of inflation across EU countries have fallen sharply from what used the norm in the 70's and 80's. Owing to the overall more stable macroeconomic environment and the successful operation of the inflation targeting regime, there is a natural process of inflation rate convergence in the whole set of developed market economies. Discounting this process, however, the EU and Eurozone countries still show certain national variations, which stem from, but are indeed not restricted to, differences in statistical measurements, differences in business cycles, effects of yet incomplete Single Market – not yet full cross-border transparency that would equalize the prices of tradable goods, and of course the Balassa-Samuelson effect which, in simple terms, is the empirical observation that consumer price levels are systematically higher in richer countries than in poor countries due to the fact that certain goods and services in the economy are non-tradable and as a result of this the effects of productivity growth are not distributed evenly (higher productivity is initially achieved only in the non-protected sector). This effect mainly applies to countries that are “catching up” in terms of their economic growth (for instance strongly experienced by transition countries) since inflation shows a substantial level of correlation with growth.

Inflation in the Eurozone countries prior to Euro launch (%)				
Country	1999	2000	2001	2002
Germany	0.6	1.9	2.2	0.9
France	0.6	1.7	1.5	0.9
Italy	1.7	2.5	2.8	1.8
Spain	2.3	3.4	3.7	2.5
Netherlands	2.2	2.6	4.5	2.6
Belgium	1.1	1.9	2.4	1.7
Austria	0.6	2.3	2.6	2.0
Finland	1.2	3.4	2.7	1.8
Greece	1.9	2.8	3.6	3.1
Portugal	2.3	2.9	4.0	2.3
Ireland	1.7	5.6	4.5	3.5
Luxemburg	1.0	3.2	2.2	1.4
Euro zone*	1.1	2.3	2.5	1.5

*Source: Eurostat
Figure 9*

The table below shows the rates on inflation of EU15 in the few years prior to the physical launch of the single currency. Despite the variations, there is a fairly clear trend towards convergence. The countries with highest rates of inflation are also the poorest ones in terms of EU GDP average, therefore, this can be attributed to the catching up effect described above.

As already noted, certain level of inflation differentials will always remain. It is a question, then, how long lasting should these differentials be for them to be considered underlying differences in inflation preferences rather than the process of catching up. In accordance with a priori assumption, Rogoff (1996) finds that the real exchange rate does eventually adjust to reflect the Purchasing Power Parity, but indeed only very slowly and in the long run; short-run deviations from the PPP are quite

large. There are several factors to blame, including existing barriers to trade (non-tariff barriers, high transportation costs), rigidity in consumer and price-setting behavior, menu and adjustments costs, or fixed entry and pricing to market costs. Nevertheless, available evidence suggests that the inflation differentials are falling as the factors above are mitigated by the progressing benefits of the Single Market. This is confirmed by Beck and Weber (2001) who investigate the consumer price index in EU countries for effects of the law of one price. They find that since the late 90's the cross-border price volatility has been falling steadily; the authors conclude that this might not be arbitrary as the date coincides with launching of the Euro. Although yet only in non-cash form, mandatory double-pricing certainly contributed to goods arbitrage and overall effect of the law of one price. Several years into its existence, the

Euro has delivered further on this. The only countries still experience elevated rate of inflation are those that either face some one-off shock or are in the process of catching up with the richer club members. There is thus a reason for cautious optimism that the EMU would, and if not then soon will, satisfy this OCA criterion.

EMU AND FINANCIAL INTEGRATION

As discussed in the corresponding theoretical section, Ingram believed that high level of financial integration was the decisive factor delimiting the size of optimum currency area. The practical implication of this is that the common currency helps to create a transparent and efficient capital market at larger scale than national markets. Since reliably functioning sector of financial services is an essential precondition for stable macroeconomic environment on the national level, there is no reason why the same logic cannot be transferred onto the whole EU.

There are several measures for the level of financial integration between regions or countries – magnitude of cross-border financial flows (the quantity test), applicability of the law of one price (the arbitrage test), and similarity of the financial markets institutions. In terms of the quantity test, most economists³⁴ find evidence of low level of financial integration – manifested mainly by low cross-country asset ownership. Interestingly enough, although in absolute terms they are larger, in relative terms (as of GDP) they are actually lower than prior to the World War I³⁵. On the positive note, there is enough evidence³⁶ to believe that the financial market integration has been steadily growing since early 90's, which indeed has to do with EU liberalization of financial services³⁷ and launching of the Single Market. While this is indeed a good sign, it still remains a fact that the level of financial

³⁴ Obstfeld and Rogoff (2000)

³⁵ Bordo, Eichengreen and Kim (1998)

³⁶ Gaspar and Mongelli (2001)

³⁷ The EU Banking license, introduced in 1992, now allows a bank from EU member states to freely offer its services within any other EU country

market integration between regions within countries than across countries³⁸, which is the reason for a “home bias” in portfolio holdings.

Concerning the arbitrage test, there is no doubt that in the view of this test the level of financial integration in EU has risen quite substantially in the recent years. Introduction of the Euro gave way to rapid integration of the money markets, as a result of which interest differentials on Eurozone government bonds have converged³⁹. Smaller interest differentials imply fewer opportunities for arbitrage, and thus confirmation of the law of one price.

As far as the similarity of financial market institutions is concerned, again, the evidence points to a significant improvement in recent years. Examining various factors such as legal structure, bank financing mechanisms, contract enforcement costs, or interest sensitivity of spending⁴⁰, studies suggest that countries display certain differences, but these have been diminishing and are likely to diminish further. Further positive effect is brought about by stronger competition in the financial services sector, as evidence for instance by growing convergence of average bid-ask spreads on comparable financial products.

The level of financial integration is one of the OCA criteria that the EMU is very likely to pass. Since the restrictions on capital movements in late eighties and early nineties, EU countries have become significantly more integrated. Despite the progress, there are some obstacles still ahead, such as big differences in corporate governance structures or financial legislation (taxation, crime-fighting).

EMU AND POLITICAL INTEGRATION

Of all the OCA criteria, this one may be the hardest to test. Not only of its normativeness, but also because the will for political integration is something quite unstable, and tends to have a several year election cycle. Following the Euro-sclerosis in the 70's and early 80's, however,

³⁸ Bayoumi and Klein (1997)

³⁹ Issing (2000)

⁴⁰ De Bondt (2000)

a reasonable level of public support for more integration has been maintained across EU countries. Some authors⁴¹ argue that the level of common policy preferences (inflation, exchange rate, fiscal stability) has reached already a higher level than necessary for monetary integration. On the one hand, this to a great extent depends on how we actually define a political integration. At the moment, the EU is an international organization *sui generis*. It is an organization with independent states as members, but due to the organization's nature with the members' sovereignty limited in certain areas⁴². As of yet, it is no single state, but it already has a single currency, single monetary policy, coordinated economic policy, and proposed Constitution (whether or not it eventually enters into force is of little relevance for the purpose of this analysis). Since the EU is thus somehow in the middle between a state and a regular international organization where member states retain their veto right, the level of political integration is not easy to define. Mongelli (2002) offers a set of three approaches to this definition.

First, there is the aspect of functional political integration. By means of the policy cooperation in the Council of the European Union, initiation and, following approval from the legislative bodies, implementation of the policies by the EU Commission and legal oversight of these action by the European Court of Justice all share elements of state-like constitutional framework. Although the powers that these institutions hold vis-à-vis one another are quite complicated and unlike any governmental structure of a member state, it remain true that they limit and in certain areas outright nullify the powers of nation states. Ongoing policy harmonization in areas not yet brought on the EU level only strengthens the conviction that political integration has in this respect advanced quite far.

This brings us to the second aspect – transferred powers over economic policies. With monetary and exchange rate policy now being managed centrally by the European Central Bank, or more widely the European System of Central Banks, the states are now left with only

⁴¹ Vanthoor (1999)

⁴² Not to mention the fact that the current legal framework of the EU does not account for the possibility of some country actually leaving the bloc

fiscal and microeconomic policies at their disposal. Even then, fiscal policies are being tied by inflexible rules such as the Stability and Growth Pact (SGP) and the Excessive Deficit Procedures contained therein, while microeconomic policies are subject to constant scrutiny by the Commission. Again, the approach would point towards a significant level of political integration already attained.

Finally, there is the aspect of increased need for political coordination. The previous paragraphs suggested and the this policy coordination is the cause behind the political integration, but the logic can be also reversed. Due to the increasing policy spill-over effects, brought about by progressing globalization, it may simply make sense for countries to pool their resources and tackle the policy challenges together. Such coordination may bring lower costs from adjustment to shocks or benefits from risk-sharing.

In accordance with the above, Padoa-Schioppa (2000) believes that the current policy architecture of the European Union constitutes several elements of statehood and the organization thus amounts to a political union. Even elements that missing, such as existence of real European federal budget (current EU budget with expenditure around 1% of EU GDP hardly qualifies), are emulated one way or another; in the particular case of the federal budget for instance by strong financial integration and coordinated fiscal policies. All in all, there appears to be enough argumentation supporting the notion that the EU has become at least a partial political union and as such would qualify our last OCA criterion.

FINAL OVERVIEW OF EMPIRICAL EVIDENCE

As discussed in the theoretical section, and later confirmed by the presented empirical evidence, there is a significant degree of ambiguity among the OCA criteria. Although in theory they are all consistent, in reality it almost always happens that that one of the criteria or more point in an opposite direction than the remaining ones. The European Economic and Monetary Union is a case in point.

When asymmetric shock hits European economies, labor markets are due to their inflexibility quite unlikely to offset these effects. Worse still, labor mobility in Europe has even slightly fallen from what it used to be several decades ago. On the other hand, high production and consumption diversification as well as openness to trade suggest the EMU member countries have not lost so much from losing the exchange rate as a policy tool since it is likely not to be very effective these days anyway. On top of strong financial integration, regions of the “core Europe” experience not only high level of trade, but also of factor market integration, suggesting that optimum currency area, if not reached already, may not be far away. The preferences of inflation rate have converged significantly over the years, but still are several steps from full convergence, even if we account for the catching up of poorer economies. Again we arrive at the problem of how to rank the OCA criteria by their importance or relevance for given set of countries. Since there has been so far no theoretical framework developed for allow for this ranking, we might as well satisfy with taking the middle ground. The EMU, according to the existing criteria, is most likely not yet a full-fledged optimum currency area, but it is fair to say that progress is being made for it become one in the near future.

CHAPTER 4

COSTS AND BENEFITS OVERVIEW

Initially, the OCA theory did not really address the issue of costs and benefits of adopting single currency in multi-country regions since it mainly concentrated on delimiting the optimal size of such region by means attributes this region needs to have in order to a single currency to make economic sense. The analysis of costs and benefits of participation in a currency area came on board some 20 years later. It was mainly result of the fact that empirical evidence available at that time delivered only inconclusive tests of the various OCA criteria. Since without supporting evidence any theory finds it hard to justify its existence, the cost-benefit analysis was introduced to at least partially offset this failure. On the positive note, however, it was only a matter of time because, after all, positive balance between benefits and costs of establishing a currency union is the main driving force behind any monetary integration. The OCA literature examines in detail both permanent and one-off benefits and costs that are connected with participation in a currency area. Since these manifest differently across countries (small vs large economies, country with record of low vs high inflation, more vs less open to trade), they are hard to capture empirically. Yet without a doubt they exist and a brief overview follows. Both benefits and costs can be divided into three main categories – effects on microeconomic efficiency, effects on macroeconomic stability, and external effects.

BENEFITS OF SINGLE CURRENCY

Benefits from improvements in microeconomic efficiency result principally from the expansion of markets within which a single currency circulates. This is a simple direct proportion – the larger the market with one currency, the greater the benefits. These include better utilization of the basic functions of a currency (unit of account, medium of exchange, store of value). Single currency will bring better price transparency and this in turn will lead

to greater competition, more efficient allocation of resources and reduction of prices. At the same time, price discrimination will be prevented. Single currency will also bring about reduction of transaction costs – households and firms no longer have to pay for currency conversions, while firms have substantial savings with menu and accounting costs as all the auditing and reporting is carried out in one currency. The extent of all these savings will obviously depend on the magnitude of trade volumes among currency union countries. While one specific industry may lose (say, banking industry loses the profitable business of currency conversions), the overall welfare gain from reduction in transaction costs is hardly disputable.

The positive effect on macroeconomic stability are even harder to capture. Membership in a stable and large currency union has been proven to enhance overall price stability, especially when there is a credible and independent central monetary authority present. Access to enlarged financial market, increased availability of external financing, and enhanced reputation for member countries with a record of higher inflation all contribute to higher macroeconomic stability (one or more countries posing as inflation anchor)⁴³. Several years' experience of the EMU has showed that these benefits have indeed materialized. Although this has not exactly been the case of EMU, a single currency can, in theory, also contribute to more even distribution of effects of asymmetric shocks (although only nominal ones, not real).

Benefits from positive external effects include mainly the disappearance of exchange rate uncertainty. Households' and firms' incomes and revenues are no longer subject to exchange rate fluctuations (even within a fixed exchange rate regime there is the possibility of devaluation or revaluation) and this has been confirmed to significantly boost trade⁴⁴. Elimination of the exchange rate risk intermediates further positive effects, such as lower transaction costs (no currency hedging necessary), and by doing so it strengthens the efficient allocation of resources as firms now do not have to worry about something they could

⁴³ There is an inverse relationship between the inflation adjustment and size of the country – if large country adopts the currency of a smaller one, it imposes its high inflation on its instead of accepting the neighboring country's lower level

⁴⁴ Rose (2000)

influence in the first place. Further positive external effects include the reduced need to hold foreign exchange reserves; in the same way as monetary policy, exchange rate policy (including the responsibility for potential currency interventions) is transferred onto a central monetary authority and the need for any member country's central bank to hold exchange reserves is thus lower (while the need for reserves of other member countries' currencies is eliminated altogether). For small countries, having a single currency prevents the occurrence of speculative attacks. Furthermore, the common currency is likely to be more competitive on world markets than separate national currencies. It will be held in greater quantity by currency union's trading partners and domestic firms will certainly find it easier to conclude transactions in their own currency. Historically, stable money was marked by its widespread distribution since its large accumulation meant that even large shocks to production were small in comparison to the outstanding stocks held. In the current world of some 200 independent countries and slightly lower amount of independent currencies, the one currency with the larger number of transactions will be, for a given inflation rate, also the most stable one.

Overall, the benefits of introducing a single currency are considerable, but they do not come without a price.

COSTS OF SINGLE CURRENCY

As opposed to the benefits, the costs resulting from the deterioration in microeconomic efficiency are rather one-off. The main costs here relate to the costs of switching to a new currency – administrative costs from recalculation of prices and re-negotiation of contracts, or the hardware costs of adapting everything from price lists to vending machines. There is also the danger of businesses trying to exploit this opportunity at the consumers' expense. It is certainly no mere joke that the Euro has been dubbed "Teuro"⁴⁵ in Germany. When recalculating the prices in new currency, many businesses have intentionally used this to raise

⁴⁵ germ. "teuer" = "expensive"

the prices, counting on the consumers not being able to tell right away that prices have changed more than by nominal re-calculation. The same has happened in Italy and other countries. On the other hand, however, the costs are also only one-time as forward-looking and rational consumers will eventually realize this and will take it into consideration in their wage bargaining. More microeconomic costs are brought about by the necessity for financing a new central monetary institution, hence more administrative costs for each currency union country as national central banks remain in existence, although with significantly less tasks ahead of them.

Similarly as with benefits, there are also costs from decreased macroeconomic stability. Within globalized economy where sizeable financial flows travel across continents in the matters of hours and minutes, membership in a currency area deprives countries of the single two most effective policy instrument – interest rate and the exchange rate. As the power over these two instruments is transferred onto the central monetary authority, member countries are left with very few options of how to address the effects of adverse asymmetric shocks, especially with downward rigid prices and wages. Because of this, fiscal policy is now in the sole instrument to offset these shocks; and this is can be dangerous. Most theories of modern economics, as represented for instance by the two-country Mundell-Fleming model, acknowledge the existence of spillover effects from reckless fiscal policies. Let us consider a simple example. Country A in a monetary union (let us refer to EMU, but the reasoning can as well be generalized) suffers from an adverse shock. Since monetary policy is determined centrally at the union level, country A uses fiscal policy to stabilize its output in face of an asymmetric demand shock. Automatic stabilizers are at work, budget deficit rises. Since country A needs to finance its deficits, it issues bonds at large scale. Their prices drop and push the interest rates up. We are not far from reality if we assume for the moment that EMU base interest rate has an effect on world interest rates. This rising interest rate induces higher capital inflow into the EMU and thus appreciation of the union currency, igniting the

crowding-out effect of domestic investment⁴⁶. This in turn reduces the demand for exports from all of the EMU countries. Thus, through the exchange rate response, the asymmetric demand shock in country A creates a potential for negative spillover effects on neighboring country B, to stick with our model example. It may as well be that repercussions on country B, and on any other countries in the monetary union, will be greater with higher fiscal response in country A. The bottom line here is that country A needs a real depreciation of its currency in order to regain competitiveness, but that of course cannot happen since it has no national currency to begin with. Adjustment can only take place in the long run through falling price level (facilitated by other factors, such as labor mobility); rigid prices offer no means to restore short-run equilibrium. This simple example has shown that within a monetary union, fiscal discipline is essential. If a country continues ruthlessly with its budget deficits and suddenly finds itself on an unsustainable path of increasing government debt, it also creates negative spillover effects (externalities) towards rest of the EMU countries. When the fiscal position becomes unsustainable, a country either defaults on its debt or leaves the union in order to be able to devalue freely. In the former case, country with high debt/GDP ratio will use the EMU capital markets to finance its restructured debt and thus drive up interest rates, which will raise the real burden of servicing debts in all the other EMU countries. It might also rely on the partner countries that they would come to rescue. Alternatively, the European Central Bank may be pressured to monetize the debt – increase the money supply in order to keep the borrowing cost down, which may save the day but in turn also compromise the inflation target. While the European Commission maintains that EMU countries do and will behave responsibly, Eichengreen and Wyplosz (1998) disagree. They argue that with the EMU, governments tend to borrow more, simply because they can. That is understandable; they are no longer constrained by the size of national capital markets a face no potential exchange rate risks which, ironically, is one of the greatest benefits of single currency.

⁴⁶ De Grauwe (2003)

Finally, there are also costs associated with negative external effects, but these are very closely linked to the macroeconomic costs discussed in the previous paragraph. Irresponsible policies are likely to induce externalities such as raised costs of servicing debts in all member countries due to higher risk premium imposed on the assets in the union currency by international financial markets. To the external effects we can also count seigniorage – although the classification of this effect as benefit or cost depends largely on the point of view. Seigniorage is the revenue gained by governments or central banks from issuing money. It is the difference between the face value of money, which economic agents consider a valuable asset, and the virtually zero production costs thereof. Since the ECB is the body responsible for issuing Euro coins and notes, seigniorage acquired this way will now accrue to the EU as whole, while individual member countries lose it. The question whether there will or will not be a synergy effect in place depends, among other, on the rate of inflation of thus the central bank's need to pour more liquidity into the economy. With overall lower inflation in the monetary union, there might as well be net seigniorage loss.

COSTS AND BENEFITS COMPARED

The simplest possible comparison and evaluation of costs and benefits has been offered by Krugman (1991), and is illustrated by the figure below. Krugman argues that openness of the economy is one of the attributes where there is a very clear relationship with costs (indirect

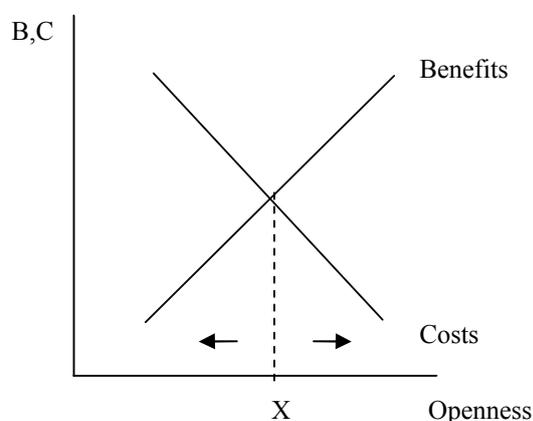


Figure 10

proportion) and benefits (direct proportion – with rising openness benefits rise), hence its application in this model. This is in line with McKinnon's OCA criterion of openness. Vertical axis represents the costs and benefits of establishing a monetary union as a percentage of GDP, horizontal axis then the economy's openness, measured by trade as a percentage of GDP. The costs curve is negatively sloped because with rising openness costs of joining the union fall as in such open economy exchange rate is not really an effective policy instrument and might as well be surrendered. Conversely, the benefits curve is positively sloped as there is greater reduction in transaction costs when the economy trades more. The intersection point X shows the minimum level of openness for a rational country to contemplate entering a monetary union. Ideally, the level of openness should exceed X for the union to have better prospects. Other OCA factors enter this model as well. While the increased occurrence of asymmetric shocks may shift the costs curve upwards, the benefits may be shifted in the same direction for instance by increased labor market flexibility. Again, now it becomes a matter of empirical testing where does the breakpoint lie and whether the EMU countries have surpassed it already or not.

As there are factors on both sides of the equation, in order to support the benefit side as much as possible, policy-makers have – in line with the Delors report – come up with several convergence criteria that were put in place to ensure that the level of convergence between EMU-to-be countries is high enough to sway the scales on the benefits side.

CHAPTER 5

MAASTRICHT CRITERIA OVERVIEW

Considering the quite understandable fear that formation of the EMU without necessary convergence between member states might render it rather short-lived, EC government officials agreed to produce several convergence criteria. These include three monetary and two fiscal criteria that took the form of provisions of the Maastricht Treaty (1991).

MONETARY CRITERIA

The first criterion requires that a member state have a sustainable rate of inflation that on average does not exceed by more than one percentage point that of the three best performing member states⁴⁷. This makes sense since we already several times in this paper pointed out that a monetary union must inevitably share its inflation preferences in order to be stable – in other words, monetary union should gradually converge towards a common rate of inflation of tradable goods. Convergence of inflation rates is essential because members with higher inflation would not be price-competitive and therefore would be facing permanent recession. At Maastricht, this provision was fervently advocated by Germany (and the Bundesbank), which only confirmed its reputation as a guardian of low inflation.

According to the second criterion, a country will qualify for EMU membership if its average nominal long-term interest rate does not exceed by more than two percentage points that of the three best performing member states in terms of price stability⁴⁸. Given the very high intra-EC capital mobility, this might have been rather just a cosmetic condition. Those states that have no problem complying with the first criterion should generally have no problem at all passing this one as well.

⁴⁷ Protocol on the convergence criteria, annexed to the Treaty establishing the European Community, article 1

⁴⁸ Protocol on the convergence criteria, annexed to the Treaty establishing the European Community, article 4

The third criterion states that a country has to respect the given fluctuation margins of the exchange rate mechanism (ERM) for the period of at least two years prior to EMU entrance⁴⁹. This one is a bit tricky. It was primarily designed to prevent competitive devaluations prior to EMU launching, but at the same it might have spawned future problems. Contrary to general belief, there was no solid reason not to have one final grand realignment of the exchange rates before they were to be irrevocably fixed in 1998. Within the European monetary system (EMS), exchange rate realignments were generally the result of political power rather than actual economic conditions. The final realignment would have prevented complaints from some member states that they have entered the EMU at grossly overvalued exchange rates, as has for instance recently become the issue in the Netherlands, which by the way played a major role in negative outcome of the referendum on European constitution two years ago.

FISCAL CRITERIA

The fourth and fifth criterion refer to fiscal policies. During the reference period prior to entrance, EMU applicant country should not have more than 3%⁵⁰ ratio of the planned or actual government deficit⁵¹ to gross domestic product at market prices and no more than 60%⁵² ratio of government debt^{53,54} to gross domestic product at market prices. As was argued in the previous section, formal constraints were supposed to secure fiscal discipline among EMU member states. At Maastricht, it was originally presumed that those countries that fail these criteria in the benchmark year (1998) would be excluded from the EMU. Yet the sufficiently vague and unclear wording (higher budget deficits allowed if “exceptional and

⁴⁹ Protocol on the convergence criteria, annexed to the Treaty establishing the European Community, article 3

⁵⁰ Protocol on the excessive deficit procedure, annexed to the Treaty establishing the European Community, article 1

⁵¹ Deficit defined as net borrowing/net lending, i.e. difference between the revenue and expenditure of the general government

⁵² Protocol on the excessive deficit procedure, annexed to the Treaty establishing the European Community, article 1

⁵³ Debt defined as general government gross consolidated debt at nominal value outstanding at the end of the year

⁵⁴ General government defined as a combination of central government, regional government, local government and social security funds

temporary and the ratio remains close to reference value”⁵⁵, higher debt allowed if it is “sufficiently diminishing and approaching the reference value at a satisfactory pace”⁵⁶) allowed for gradual disintegration of these rules. Substantial political background can be traced here because if the fiscal criteria were to be applied rigidly, quite a few of the countries would have been prevented from joining (among other Italy, Greece, Belgium). Some EC countries had a debt/GDP ratio well over 100% at the time when these rules were forged, and conventional wisdom suggests that it is virtually impossible to reduce this ratio under 60% in five or so years. Thus, countries were deemed compliant even if they merely showed a “satisfactory progress” towards meeting the criteria. On one hand, it reflects the flexible approach of European integration. On the other hand, it gave a warning of the things to come. *Classis proverb* says that rules are meant to be broken. Well, in policy-making, not really. Since any policy rules rely on their credibility, they are as good as non-existent once they lose it.

As for the to the particular numbers chosen at Maastricht – 3% and 60 % – Buiter, Corsetti, Roubini (1992) note that, at first sight, these appear completely arbitrary. In 1991, the prospective EMU member states (EU15 being the reference data set, rather than EC12) averaged 63.7 % in the debt/GDP ratio and 4.5 % in the deficit/GDP ratio (see Appendix). Of course, it would be foolish to believe that any particular numbers would be optimal for each member state, but a simple average appears to have been a good guiding force in the negotiations. There is one other potential explanation for the deficit/GDP ratio. Although not explicitly, EC documents invoke the “golden rule of public finance”. This rule states that current expenditure should only be financed by current revenue; only capital expenditure is to be financed by increasing debt. And as luck would have it, the public investment in EU15 averaged nearly exactly 3 % during 1975-1990.

⁵⁵ Treaty establishing the European Community, article 104 (a)

⁵⁶ Treaty establishing the European Community, article 104 (b)

CHAPTER 6

EURO AND OLD EU ECONOMIES

As the common currency Euro was adopted in 1999, the evidence presented in previous chapters suggests that neither the EU nor the 12-member subset that has formed the monetary union was at the time an optimal currency area. Ideally, currency areas should be regions with internal factor mobility and external capital immobility, and compact and homogenous enough to show as little regional variation in business cycles as possible; otherwise, a one-size-fits-all monetary policy will leave some regions lingering in recession, while others will grow so fast that they will overheat and face strong inflationary pressures. Few economists dispute that this is exactly what has been happening in Europe, with countries like Ireland experiencing rapid growth and calling for rather tight monetary policy. On the other hand, there are big economies like Germany or Italy which continuously stagnate and constantly call for European Central Bank to lower the union interest rates. Over the years of integration on the old continent, various countries have been called “the sick man of Europe” at some point. Nevertheless, it appears that never before has the competition for the title been so fierce. Italy has not yet emerged from the second recession as little as four years. Germany, despite tentative stabs at structural reform and now renewed efforts under the grand coalition, is struggling with glacial growth rates and double-digit unemployment. Truth to be said, France is not faring much better.

On the positive side, there are indeed ways to mitigate imbalances within big currency areas. Considering the OCA theory in its purest form, even America may not fully qualify as an optimal currency area⁵⁷; for instance its regions sometimes boom or shrink out of sync with the rest of the economy. To counter this, America has important features that at least partially address the problems of unified monetary policy. Federal programs act as automatic

⁵⁷ Although in practice it is clear that one single American dollar is more beneficial than separate currencies for all 12 Federal Districts

fiscal stabilizers, taking tax revenues from booming areas and transferring them to ailing regions. Then, of course, there is America's highly flexible labor market. This allows wages and prices to adjust downward, giving depressed regions a competitive advantage that can attract new companies. It is no rare phenomenon that workers in declining industrial regions simply pack up and move across the country to find work. Along with the workforce, capital flows freely as well.

In Europe, by contrast, few mechanisms exist to bring the Euro area's widely divergent business cycles into sync with one another. The ECB has been trying its best to steer monetary policy somewhere in the middle between slow and fast growing economies, but this would have been tough with 3 countries, not to mention 12 or more. The result has been a monetary policy that is too hot for some, too cold for others, and unfortunately just right for almost no one. In spite of this, things are not as gloomy as Milton Friedman suggests⁵⁸. The lack of adjustment mechanisms means that "ever closer union" is perhaps a glowing and distant ideal, but at the same time it is the only way forward provided that the Euro stays. At the moment, language and cultural barriers (including differences in social welfare) encourage workers to stay in their own country, no matter how high the unemployment is. Single market and monetary union have helped to reduce these problems of excessively high tax rates, over-regulation of the labor market, and the unbelievably soft cushion of the social safety net. As many European struggle with overly rigid labor markets, getting these to be more flexible would be an important first step towards making EU an optimum currency area. Expressed in very simple terms, a single currency requires a single labor market. Unfortunately, with this gate towards higher convergence at the moment closed and locked, new ways must be explored. If Europe's economies do not continue building an ultimately border-free single market, both for goods and services, that would eventually smooth out regional disparities, there is a risk that some members will eventually find the rift between their economies and the union monetary policy too wide to sustain. In terms of the previous chapter, the key policy-

⁵⁸ Friedman repeatedly expressed his deep conviction that EMU will collapse within 10 years or less

making goal is to ensure that the benefits from single currency are as large as possible while the costs are reduced to minimum.

Despite initially promising plans, policy moves in the recent years have been in the wrong direction. The stability and growth pact, enacted in 1997, which was supposed to help force fiscal policies into alignment, has been first ignored and then weakened⁵⁹. Progress has also stalled on measures to widen market access, such as the EU services directive⁶⁰, by means of which the EU would have repaid its largest outstanding debt to the single market. Furthermore, fierce public opposition to eroding generous worker and consumer protection legislation has rendered governments unwilling, or perhaps due to the election dangers unable, to implement the kinds of deep structural reforms that would facilitate the necessary changes. Euro-idealists argued that the single currency itself would deliver more economic growth; looking at the numbers – during 1999-2004 the EU grew on average 1,9%, the UK 2,5% and the US 3,1% – this has not exactly been the case.

EURO AND NEW EU ECONOMIES

Literature that tries to apply the OCA theory on Central and Eastern European countries gives ambiguous conclusions, but tends to lean towards mild optimism as far the introduction of Euro in these countries is concerned. Following their entry to the EU in May 2004, by provisions of the Accession Treaty the new member states have automatically become candidates for the EMU. Economists are quite united that, following a rapid catching up in the last 15 years, these former communist countries have achieved a high level of nominal convergence with their western neighbors. The problem remains in the level of real convergence, which, unfortunately, is not addressed by any of the Maastricht criteria. Trade

⁵⁹ All of the three Euro area's three biggest economies have breached the Maastricht criteria repeatedly without triggering the supposedly automatic sanctions. In March 2005, the European Union acknowledged reality by relaxing the requirements, filling the rules with enough loopholes to render the whole pact effectively toothless

⁶⁰ After about two years of political haggling, the Services directive has been finally passed earlier this year, but in a drastically truncated version

integration with the EU15 has progressed rapidly and is now indeed even higher than for some the EU15 countries themselves – in 2005, the ratio of exports to the EU15 as of GDP reached 16% for Eurozone average, while the analogous indicators amounted to 15% for Poland, 28% for Slovenia, 36% for Estonia and Hungary and 38% for the Czech Republic⁶¹. On top of this, even business cycles have become largely synchronized⁶². On the other hand, much remains to be done in areas of labor market and financial market institutions. Overall, the conditions for full monetary integration of the whole region with western Europe have not yet been met, but that, however, does not preclude the fact that certain countries already have.

As already discussed earlier, the transition countries experience the “catching up” effect, by means of which rapidly increasing productivity leads to real appreciation of their currencies. This force can be ventilated either through higher inflation rate (if the exchange rate is fixed) or the appreciation of the nominal exchange rate (if it is floating). Referring to the Maastricht criteria, this has significant implications for the EMU would-be countries. Either they have trouble meeting the inflation target, or their exchange rate would be seen by the ECB as too volatile. The problem is that the inflation criterion has far more political clout than the exchange rate one since politicians (and their voters) understandably value stable prices level more than stable exchange rate (although that, in turn, has an immediate in price of imported goods anyway). Due to this fact, countries that have prior to fixation of their exchange rate in the Exchange Rate Mechanism II maintained floating exchange rate (such as Slovenia; as opposed to Baltic countries) appear to be better off in terms of qualifying for the single currency.

Lithuania experienced quite some disappointment last year when the European Commission rejected its bid for the Euro. While Lithuania fulfilled all other four convergence criteria, it failed to satisfy the inflation target by one tenth of a percentage point. There have been calls accusing the Commission of double standards as previously it was commonplace

⁶¹ Błaszkiwicz and Wozniak (2003)

⁶² Angeloni, Flad, and Mongelli (2005)

that mere convergence to the target would have been deemed compliant⁶³. On the other hand, the Commission may be now setting a new approach by means of which the Maastricht criteria are there really to be fulfilled, not only to be close to fulfillment, which indeed sends a message to the all other applicant countries, including the Czech Republic. This may also be a bad message for Estonia, which is in a similar position as Lithuania. Later last year, Estonian government openly gave up on its efforts to curb inflation to meet the Maastricht target (which is, in all fairness, borderline impossible task with 10% plus GDP growth rate and constant budget surpluses) and announced its Euro plans to be put on hold for some time.

Slovakia, however, lives a different story. Last year it has successfully pegged its currency to the Euro within the ERM II system and is now expecting that, unless operations of current government complicate the fulfillment of Maastricht criteria, it will start using the Euro as of 1.1. 2009⁶⁴. Politically, it is a success and a clear message to the other CEE countries. At the same time, it remains a question whether such early adoption of the Euro will not hamper growth as recent economic boom requires a policy of cheap money; something the ECB is very unlikely to grant. Malta and Cyprus are in a similar position and are on the way to start using the Euro either 2008 or 2009. Further positive example is being offered by Slovenia, which already accepted the Euro as of 1.1. 2007 and thus became the first central European country to do so.

Poland and Hungary, on the other hand, are both quite far away from the Euro. Hungary submitted its Convergence program last year with the conclusion that adoption of the Euro its being postponed indefinitely until further notice. The main cause of this are Hungary's unsustainable fiscal policies. Ironically, at the time of the EU entry, Hungary was a Euro-frontrunner and was set to enter the Eurozone as soon as 2007. At present, 2012 is still considered an optimistic outlook.

⁶³ Quite understandably, Lithuanian officials have further complained that the Maastricht inflation criterion is wrongly based on the whole EU and not the Eurozone, whereby it is influenced by countries that do not have the Euro yet; in these calls they have been supported by J. C. Juncker, chairman of the group of Eurozone finance ministers

⁶⁴ Political plan, but also backed by recent OECD publication (Economic Survey of the Slovak Republic 2007)

Considering the current gloomy state of the western European economies, it comes as no surprise that the existing Eurozone members are quite anxious about its expansion eastward. It is true that the new EU countries are bound by the accession treaty to fulfill the Maastricht criteria and adopt the Euro, but this commitment has been drafted in quite different political and economic conditions. The ECB is warning against the Euro being used in countries with significantly lower price and wage level. Moreover, it calls for real convergence to be evaluated instead of the nominal one. All in all, there is not much that can be gained from rushing into the Eurozone before achieving a sufficient level of convergence first.

EURO AND THE CZECH REPUBLIC

As soon the Czech Republic became a full-fledged member of the EU, governmental politicians were falling over themselves to announce the earliest possible dates to adopt the Euro. In late 2005, prospects were still looking likely for the national currency to be fixed within the ERM II in 2007 and then launching the Euro two years later⁶⁵. Then, of course, the Maastricht criteria⁶⁶ entered the debate.

While having no serious problems with the monetary criteria, similarly as Poland and Hungary, the Czech Republic has significant problems with its fiscal deficits. While the level of general government debt is still acceptable, the year-to-year budget deficits have in the recent years consistently breached the 3% Maastricht limit. As mandatory expenditures account for most of this, substantial political reforms are needed to deliver consolidation of the fiscal position. The European Commission has indeed identified the Czech Republic as one of the countries with the highest risk associated with fiscal policies.

In light of this, the original roadmap of the previous government that expected adoption of the Euro in 2010 has now been revised. As strong fiscal retrenchment in near future is unlikely, the efforts for early introduction of Euro appear to have lost momentum. Recent

⁶⁵ Ministry of Finance press release 29.11.2005

⁶⁶ Which, at the occasion, Zdenek Tuma, governor of the Czech National Bank, repeatedly labeled as outdated and too rigid

signals suggest that CR may not even enter the EMU II within the next year, which would automatically postpone any Euro contemplations. This is in line with the current Convergence program⁶⁷, released by the new government in February 2007. While the document itself does not set specific dates for start of the Euro, the year 2012 is mentioned as feasible. As far the technical plan for currency replacement is concerned, the government foresees the “big bang” approach (copying the one used in Slovenia) whereby the Czech crown would cease to be a legal tender as soon as very few weeks after the Euro is put into circulation. Moreover, both Poland and Hungary are now also contemplating this year, so that there would be certain political advantages to this timing as well.

The intriguing question, posed by many economists and journalists alike, is why the Czech Republic does not take advantage of its solidly growing economy and start dealing with its fundamental problems, such as the one described above. Inflation is under control, exports are going through the roof and there is a stable inflow of foreign investment. Yet very little is being done to bring the fiscal position back on track towards the Maastricht limit. An obvious answer is the lack of political will and the currently deadlocked parliament. Any fiscal reform measures need to be based on spending cuts and accompanied by rising private expenditure in areas previously fully covered by social welfare. All in all, the country is set to introduce the Euro in several years’ time, but there is still much to be done before this can happen.

From the perspective of OCA theory, the benefits to this are clear. The Czech Republic has a very high level of business interconnection with the current Eurozone countries (at the moment approximately at 60% share in total trade), and this is likely to increase still, especially if we account for the other CEE countries that are bound to join Eurozone sooner or later. There is also a very high level of financial integration as some 80% of foreign direct investment comes from the EU; virtually the whole domestic banking sector is under control of Eurozone-based banks. The structure of economy is quite alike with other developed western economies – small agricultural sector, shrinking heavy industry and booming services

⁶⁷ Document to be produced on annual basis, evaluating the prospects of adopting the single currency

industry. Given the limitations of the OCA theory, empirical evidence⁶⁸ suggests that it is fairly reasonable to assume that the CR will not bear significantly more costs associated with Eurozone entry than the existing EMU countries. Moreover, there are likely to be greater benefits than those reaped by peripheral EU countries, such as Portugal or Greece.

⁶⁸ Čech, Horváth, and Komárek (2003), Fidrmuc (2001)

CONCLUDING REMARKS

The theory of Optimum Currency Areas, introduced by Robert Mundell in early 1960's, attempts to establish the conditions under which it would be beneficial and economically viable for group of countries to share a single currency. Whereas the United States of America clearly pass the OCA test – as a region with internal factor mobility and external factor immobility, the case for a single currency in the EU is not so strong. This paper has outlined the main criteria for delimitation of such region and tried to apply some empirical evidence to the Economic and Monetary Union.

It is certainly not easy to summarize and somehow draw generalized conclusions from the vast number and both theoretical and empirical papers that in one way or another deal with the Euro area and the OCA theory. With a certain degree of simplification, this paper leans on the side of those who claim that the Eurozone is not yet an optimum currency area. Although the Eurozone countries score quite high in some the OCA criteria, such as level of openness, well-diversified and similarly structured economy, or level of financial integration, in other areas, mainly regarding the level of labor market flexibility, it still lags behind. At the same time, it is fair to say that if the 11 countries that formed the EMU in 1999 did not constitute an optimum currency area, the current 13 (including Slovenia as of this year) are indeed gravitating towards one.

There is a room for optimism if a dynamic and forward-looking approach is taken. Introduction of a single currency has led to increased volumes of mutual trade and contributed to the overall deepening of integration. This so-called OCA endogeneity implies that even if certain OCA criteria are not satisfied before entry, they might as well be several years after that, simply brought about by the very effects of having the single currency. Empirical evidence suggests that this is not only the case of trade, but on a limited scale applies to labor market integration as well. This endogeneity can be thus seen as a process triggered by single currency, setting in motion market forces that were earlier perhaps too weak to materialize. In spite of this modification of the OCA theory, its practical application still has significant

limitations. Literature gives no clear guidance on how to empirically test the criteria in order to deliver unambiguous results. Thus, although the theory essentially gives a framework for any intellectual discussion of currency unions, one should not expect it to fully answer whether single currency would or would not be of benefit to any given set of countries.

To no surprise, the European single currency has both critics and advocates, in both the political and academic camps. While Friedman prophesized its early collapse, Mundell, being his student, actually wrote that “the Euro may be the most important development in the international monetary system since the dollar replaced the pound sterling as the dominant international currency soon after the outbreak of World War I”⁶⁹. As the French and Dutch referendums have for the time being dashed the hopes of political union in Europe⁷⁰, there have been justified fears that the monetary union might be in peril, too. It may be too early to judge, but, considering the above as the two opposing extremes, the argumentation presented in this paper leans towards Mundell in the view that the Euro has in its 8 years of existence brought about more benefits than costs and, provided that there is no political decision to remove it and sufficient structural reforms are implemented, will see to it that the European Economic and Monetary Union eventually becomes an Optimum Currency Area.

Taking into consideration current position of the Czech government, adoption of Euro in the Czech Republic before 2012 is very unlikely due to problematic fulfillment of the Maastricht convergence criteria. As the OCA theory can indeed serve as one of the tools to evaluate country’s readiness for a monetary union, this paper argues that the conditions given by this theory have not yet been met, although they are significantly closer to fulfillment now than several years ago. If we summarize the above, the Czech Republic has reached neither the nominal nor the real convergence necessary to enter the EMU at this point in time. Since higher level of convergence will automatically translate into greater benefits and lower costs of single currency, there is not much reason to challenge the current Euro roadmap.

⁶⁹ The Case for the Euro" (1998)

⁷⁰ As a result of which Paul de Grauwe, prominent Belgian economist, expressed his conviction that, without political union, EU countries will within the next 20 years return to their former national currencies

Acknowledging that adoption of the Euro is going to be, after all, a political decision, this paper believes that there is no need to rush into the Eurozone as of yet as there is not enough economic argumentation, including the OCA theory, to suggest that the benefits would exceed the costs.

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APPENDIX

MACROECONOMIC INDICATORS OF EU25 COUNTRIES (2006)

2006 (%)	Inflation	Unemployment	GDP growth	Taxation (% GDP)	GDP vs EU25	Deficit (% GDP)	Debt (% GDP)	Current Account (% GDP)
Austria	2,0	5,0	3,0	43,0	123	-1,5	63,0	1
Belgium	2,0	8,5	2,7	45,7	118	-2,3	93,0	2,5
Bulgaria	7,0	9,0	6,0	n/a	33	3,1	30,0	-12,0
Cyprus	2,0	5,0	3,8	33,3	89	-2,3	69,0	-6
Czech Rep.	2,0	7,5	6,0	36,2	74	-3,6	30,5	-2
Denmark	2,0	4,0	3,0	48,8	122	4,2	36,0	3
Estonia	4,5	5,6	11,0	33,4	60	2,3	4,5	-10
EU15	2,2	7,9	n/a	n/a	n/a	-2,3	64,5	-0,6
EU25	2,2	8,8	2,8	n/a	n/a	-2,3	63,2	n/a
Finland	1,0	7,5	5,0	44,8	111	2,7	41,0	5
France	2,0	10,0	2,2	43,8	108	-2,9	67,0	-2
Germany	2,0	9,5	2,5	40,3	110	-3,2	68,0	4
Greece	3,0	10,0	3,8	36,2	85	-5,2	108,0	-8
Hungary	4,0	7,5	4,0	39,1	62	-6,5	58,0	-7
Ireland	2,0	4,4	5,3	29,9	140	1,1	27,5	-3
Italy	2,0	7,8	1,7	42,9	100	-4,1	107,0	-2
Latvia	7,0	7,0	11,0	28,9	48	0,1	12,0	-13
Lithuania	4,0	6,0	8,0	28,5	52	-0,5	19,0	-7
Luxembourg	3,0	5,0	5,5	41,3	251	-1,0	6,0	12
Malta	3,0	7,5	2,0	33,6	70	-3,2	74,0	-11
Netherlands	2,0	4,0	3,0	39,3	126	-0,3	53,0	8
Poland	1,0	17,0	5,0	35,8	50	-2,5	42,0	-2
Portugal	3,0	7,5	1,0	37,0	71	-6,0	64,0	-9
Romania	7,0	7,0	7,0	n/a	34	-0,4	15,0	-9

Slovakia	4,0	13,0	7,0	30,6	57	-3,1	35,0	-9
Slovenia	2,5	6,0	5,0	40,1	82	-1,4	28,0	-2
Spain	4,0	8,5	3,8	35,6	98	1,1	43,0	-8
Sweden	1,0	7,0	4,0	50,8	115	3,0	50,0	6
UK	2,0	5,0	3,0	35,7	118	-3,3	42,0	-2

Source : Eurostat

MAASTRICHT CRITERIA OVERVIEW PRIOR TO EMU LAUNCH

		HICP inflation ^(a)		Long-term interest rate ^(b)		General government surplus (+) or deficit (-) ^(c)			General government gross debt ^(c)			Exchange rates			
REFERENCE VALUE		2.7 (1997)		7.8 (1997)		3.0 (1997)			60.0 (1997)			ERM participation			
Belgium	1996		1.8		6.5	5.7	##	-3.2	-2.1	-1.7	126.9	122.2	118.1	YES	
	1997		1.4	-	-	-									
	1998														
Denmark	1996		2.1		7.2	6.2	##	-0.7	0.7	1.1	70.6	65.1	59.5	YES	
	1997		1.9	-	-	-	#								
	1998														
Germany	1996		1.2		6.2	5.6	##	-3.4	-2.7	-2.5	60.4	61.3	61.2	YES	
	1997		1.4	-	-	-									
	1998														
Greece	1996		7.9		14.4		#	-7.5	-4.0	-2.2	111.6	108.7	107.7	YES	
	1997		5.2	-	9.8	-									
	1998														
Spain	1996		3.6		8.7	6.3	##	-4.6	-2.6	-2.2	70.1	68.8	67.4	YES	
	1997		1.8	-	-	-									
	1998														
France	1996	**	2.1	*	6.3	5.5	##	-4.1	-3.0	-2.9	#	55.7	58.0	58.1	YES
	1997		1.2	*	-	-									
	1998														
Ireland	1996	**	2.2	*	7.3	6.2	##	-0.4	0.9	1.1	#	72.7	66.3	59.5	YES
	1997	*	1.2	*	-	-	#								
	1998			*											
Italy	1996		4.0		9.4	6.7	##	-6.7	-2.7	-2.5	124.0	121.6	118.1	YES	
	1997		1.8	-	-	-									
	1998														
Luxembourg	1996	**	1.2	*	6.3	5.6	##	2.5	1.7	1.0	#	6.6	6.7	7.1	YES
	1997	*	1.4	*	-	-	#								
	1998			*											
Netherlands	1996		1.4		6.2	5.5	##	-2.3	-1.4	-1.6	77.2	72.1	70.0	YES	
	1997		1.8	-	-	-	#								
	1998														
Austria	1996	*	1.8	*	6.3	5.6	##	-4.0	-2.5	-2.3	69.5	66.1	64.7	YES	
	1997		1.1	-	-	-									
	1998														
Portugal	1996		2.9		8.6	6.2	##	-3.2	-2.5	-2.2	65.0	62.0	60.0	YES	
	1997		1.8	-	-	-									
	1998														
Finland	1996	**	1.1	*	7.1	5.9	##	-3.3	-0.9	0.3	#	57.6	55.8	53.6	YES ^(d)
	1997		1.3	*	-	-									
	1998														
Sweden	1996	*	0.8	*	8.0	6.5	##	-3.5	-0.8	0.5	#	76.7	76.6	74.1	NO
	1997		1.9	-	-	-									
	1998														
United Kingdom	1996		2.5		7.9	7.0	##	-4.8	-1.9	-0.6	#	54.7	53.4	52.3	NO
	1997		1.8	-	-	-	#								
	1998														

Source : European Commission

TRADE OPENNESS OF NEW MEMBER STATES

(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

Source : European Central Bank

OVERVIEW OF PUBLIC FINANCES 1999-2004

(% 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	.

Source : European Central Bank

EMPLOYMENT PROTECTION IN NEW MEMBER STATES

	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
NMS⁶⁾	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.

Source : European Central Bank

INDEX OF BUSINESS CYCLE CORRELATION BETWEEN EU MEMBER STATES

COUNTRY	Correlation between the Euro zone and respective countries								
	Annual Real GDP growth			Annual growth of industrial production index			Annual change in the unemployment rate		
	1999Q1-2003Q2	2000Q1-2003Q2	2001Q1-2003Q2	1999Q1-2003Q2	2000Q1-2003Q2	2001Q1-2003Q2	1999Q1-2003Q2	2000Q1-2003Q2	2001Q1-2003Q2
Bulgaria	0.17	0.38	-0.23	0.42	0.60	0.67	-0.76	-0.82	-0.74
Romania	-0.52	-0.75	0.16	0.16	0.28	0.42	-0.38	-0.19	-0.06
Czech Republic	0.21	0.63	0.57	0.21	0.37	0.80	-0.38	-0.06	0.30
Estonia	0.04	0.47	0.08	0.46	0.70	0.38	-0.68	-0.60	-0.21
Hungary	0.48	0.47	0.89	0.90	0.91	0.82	0.83	0.84	0.89
Latvia	-0.03	0.14	0.65	0.01	-0.23	0.52	0.70	0.71	0.43
Lithuania	-0.55	-0.65	-0.15	-0.21	-0.26	-0.02	-0.77	-0.86	-0.82
Poland	-0.38	-0.49	0.14	0.78	0.83	0.79	-0.72	-0.72	-0.79
Slovenia	0.52	0.64	0.30	0.55	0.67	0.35	0.32	0.39	0.24
Slovakia	-0.74	-0.85	-0.38	0.28	0.51	0.67	-0.40	-0.14	0.01
Germany	0.96	0.96	0.97	0.99	0.99	0.99	0.90	0.95	0.93
France	0.80	0.95	0.90	0.90	0.91	0.79	-0.41	-0.32	-0.47
Portugal	0.59	0.75	0.55	0.06	0.03	0.38	0.97	0.92	0.87
Spain	0.73	0.83	0.69	0.77	0.79	0.56	0.66	0.58	0.42
Greece	-0.04	-0.01	-0.36	0.67	0.83	0.61	0.29	0.16	0.11
Italy	0.93	0.96	0.92	0.96	0.97	0.97	-0.48	-0.44	-0.72
Finland	0.77	0.85	0.45	0.90	0.94	0.88	0.91	0.85	0.74
Sweden	0.77	0.79	0.22	0.90	0.92	0.79	0.96	0.93	0.98

Source : European Commission