1. Introduction

Over the next couple of years, the European Union (EU) will face a difficult stage, being confronted with the eventual transition to monetary union. In the beginning of 1997, it is less clear than ever, if and when European Monetary Union (EMU) will eventually be realized and which countries will join in this process. For example, countries such as Germany and England may meet the necessary requirements, but may choose not to join. In contrast, some countries who may possibly wish to enter EMU, may not be allowed to do so.

The actual consequences of the union, if it goes ahead, are currently difficult to predict. It is far from clear whether all member states will benefit from the adoption of a single currency and, if not, which member states will do so and which ones are likely to loose out. Indeed, the member states of the European Union are structurally still quite different; for example, unemployment rates ranged from 4.4 per cent in Austria to 24.2 per cent in Spain in 1994. One reason for this dispersion in unemployment rates is that the EU countries have different wage formation mechanisms and characteristics. Under these conditions, if countries face a common demand or supply shock, different wage and price developments will result. However, a monetary union requires nominal convergence. As a result, divergence in unemployment rates, and therefore real economic divergence, may be unavoidable. Yet if the monetary union consists of countries that are structurally very different, this may threaten overall macroeconomic stability. Such a situation will imply transfers from low-unemployment (high growth) countries to high unemployment (low growth) countries. If this is of a permanent character, the willingness of the low unemployment (high growth) countries to remain within the union will be affected. In addition, an EMU consisting of very different member states may experience conflict about the purpose of monetary union. Countries with a high unemployment rate will argue for a more expansionary policy than countries with a lower one. However, in the union there can only be one single monetary policy with a single rate of inflation. These conflicts may then lead to a relatively higher rate of inflation within the union. The real effects of monetary union will largely depend on the degree of structural convergence prior to its introduction. If economies become structurally less different over time, the effects of the adoption of a single currency will be less severe.

In view of these issues, this dissertation attempts to assess empirically the
esses and, secondly, on long-run growth and convergence as indicators of real convergence. These indicators were chosen because they seemed to be the logical measures for convergence of real economic activity. In addition, most academic and political discussion concentrates on cyclical congruency and the long-run convergence of living standards. As well as providing empirical evidence on real convergence, with regard to the difficulties associated with the transition to monetary union, this work also aims to contribute to the process of European monetary integration by providing proposals for reform.

The starting point for this critique is a review of the recent monetary integration process in Europe. At the end of the 1980s new political initiatives to relaunch EMU among the member states of the EU gained momentum, culminating in the ratification of the Maastricht Treaty by the member states at the beginning of the 1990s and related to this, the plan to adopt a single currency in Europe by the end of the century. The Treaty has set out a path towards EMU following three stages, with transition to the next stage dependent on some degree of convergence being achieved in the previous stage. Economic convergence is thus considered a precondition for further moves towards economic and monetary integration. Before transition to the third and final stage, progress made in terms of economic convergence will be reassessed. Each country will be assessed individually before it is decided whether or not they can proceed into the union. The Protocol referred to in Article 109f of the Treaty sets out four criteria for transition to the third stage relating to inflation performance, budget positions, exchange rate stability and interest-rate convergence. The formulation of the convergence criteria and the gradual approach towards monetary union has been discussed both in academic and political circles. Chapter Two will critically assess the transition process as determined in the Maastricht Treaty. This aims to establish the economic policy background of the subsequent empirical analyses and to provide an analysis of the transition to monetary union.

In Chapter Three, the dynamics of the labor and goods market adjustment processes in Europe are analyzed. This analysis relates to the issue of whether the adoption of a common currency in Europe makes good economic sense. The economic background for this examination is derived from the theory of optimum currency areas. This theory compares the economic costs of flexible and fixed exchange rate systems. The main cost factor in a system of fixed exchange rates is the inability to adjust exchange rates in response to unanticipated disturbances. Based on this theory, it is possible to evaluate the economic costs and benefits of EMU by analyzing the dynamic adjustment processes of the economies in response to disturbances. In doing this, the dynamic interactions of output and un-
employment in the fifteen EU-countries are compared with Canada and the United States. Considering the possibility of a possible multi-speed monetary union there is also included a comparison of the symmetry of shocks across different regions within Europe.

Chapter Four reviews the theoretical and empirical literature on growth and convergence and provides an econometric analysis on convergence in the EU-countries. Disparities between income per capita across regions and countries have been a matter of concern for the European Community (EC) since its inception. The objective of reducing disparities across regions in the EC has already been established in the preamble of the Treaty of Rome. In addition, in the Single European Act of 1987, the Community was given an explicit ability to undertake regional policies aimed at reducing disparities. The issue of growth and convergence is particularly interesting and relevant within the context of European integration for two reasons. First, regional convergence or divergence influences the usefulness of regional economic policies which attempt to equalize the distribution of income and second, European monetary integration might contribute to convergence - or divergence - itself by increasing factor mobility or trade between participating countries. There are fears that a fully-fledged EMU will widen the existing regional inequalities in per capita income within the European Union. Therefore, an empirical analysis of growth and convergence is central to the real economic convergence debate.

Three modern theories of economic growth are reviewed and their implications for economic convergence summarized. Theories of technological catch-up argue that an inefficient use of technology may lead to a process of convergence, depending on the degree of economic development within an economy. Neoclassical growth theories predict convergence due to decreasing returns to reproducible factors. Finally, new growth theories maintain that economic growth may be influenced by factors such as market size, economies of scale and institutional structure, so differences in living standards would possibly persist.

The subsequent statistical analysis consists of two parts; a descriptive statistical section and an econometric inductive one. Two main goals are associated with this. Firstly, the stability of the convergence process across time and across countries is analyzed. Existing empirical analyses tend to suggest that the process has not been stable, and this chapter attempts to confirm this view. Secondly, there is an analysis of why differences in growth and convergence processes in the European Union over time and across countries persists.

Chapter Five provides the main conclusions of this study and derives implications for the European monetary integration process. In summary, the
empirical evidence suggests that structural differences across European countries exist and are likely to persist in the foreseeable future. Such structural differences may enhance political pressure, particularly in low-income, high-unemployment countries, to increase public spending which would contribute to higher public deficits and may involve a non-sustainable financial position within these countries. A non-sustainable financial position tends to be associated with negative external effects on other member states. The European Central Bank (ECB) may be forced to monetize the budget deficits, which would imply a higher inflation rate and an associated welfare loss for the other countries involved, or the defaulting government may ask for a net transfer from those governments which are solvent. These kinds of pressure on the ECB will be intensified in the presence of persistent differences in real economic activity.

To achieve a successful and stable monetary union in the presence of structural differences it appears particularly important to strengthen the institutional framework to make it less vulnerable to political pressure, and which will make policies in the union more credible, and to improve market transparency and information flows. Based on these arguments, the following policy proposals are formulated:

I. Broad interpretation of convergence criteria

An important issue in the transition to monetary union is how the convergence criteria determined in the Maastricht Treaty are to be applied. In principle, each country should be able to join monetary union as soon as it wants to do so. Each country may evaluate the costs and benefits of joining the union and decide if it is in its national interest to participate. However, the "necessary preconditions" as established in Art. 109j need to be taken into consideration.

II. Monetary policy coordination among the nonparticipants

The gradual transition approach will probably lead to a multi-speed monetary union. If this is the case, the possibility of splitting the European Union apart should be taken into account. As suggested in Chapter Three, a solution may be to create currency blocks in Europe. Those countries not eligible to enter the third stage initially might gain from forming a separate monetary union (or unions). The efficiency gains obtained from these currency blocks would enable the lagging countries to catch-up those already in the third stage of monetary union.

III. Institutional strengthening

To strengthen the institutional framework of the EU the implementation of incentive contracts is proposed. Incentive contracts are arrangements by which the central banker is penalized for inflation. Several formulations of the incentive contracts for the executive board of the ECB may be thought of. Firstly, the in-
comes of the members of the executive board of the ECB might be made contingent on the state of the economy, thereby influencing the incentives the executive board faces in choosing the rate of inflation. Secondly, targeting rules might be enforced by making the ECB's budget depend on adherence to the rules. Thirdly, a stronger measure defining procedures for the removal of the executive board of the ECB should it fail to maintain price stability could be introduced. Whatever actual form the incentive contract took it would make the future ECB more accountable. At the same time, it would be costly for the governors of the ECB to succumb to national political pressures and would thereby contribute to securing price stability within the future union. The contract should include an inflation targeting procedure, similar to those already followed successfully by many central banks.

IV. Public debt management

A way to make policies more tenable is to enforce a time-consistent public debt management scheme. One way to do this is to require the use of short-maturity bonds in highly indebted countries. Short maturities reduce the government's incentive to produce surprise inflation and therefore would contribute to solving the time-consistency problems of fiscal policies in the EU.

An alternative, or complementary, way is to use inflation-indexed bonds - bonds whose interest payments and principal are tied to inflation. Index-linked bonds influence governments' incentives and so tend to make monetary policies more credible. In short, with nominal public debt, governments have an incentive to inflate debts away at the bond holders' expense. If payments of interest and principal increase with rising price levels, governments will be less tempted to implement inflationary policies. Index-linked bonds provide an additional benefit in that they can help governments to estimate financial markets' expectations of inflation. This is useful for monetary policymaking, as a rise in the expected inflation rate may be a sign that policy should be tightened directly. In this way the administration of monetary policies could be improved. Moreover, it would help in the prediction of long-term interest rates, as they contain inflation rate expectations and this would therefore contribute to the evaluation of risk more precisely.

Inflation-indexed bonds would both help markets to evaluate risk by providing estimates of inflationary expectations, and contribute to make monetary policies more credible by changing governments' incentives. In the future one might require the member states of the monetary union to issue inflation-indexed bonds. To obtain a self-balancing mechanism, highly indebted countries may be required
to issue a larger share of their outstanding government bonds in the form of inflation-indexed bonds than the low-debt countries.