WSI

Diskussionspapiere

European Monetary Union:
Nominal Convergence, Real Divergence and Slow Growth?

An investigation into the effects of changing macroeconomic policy institutions associated with monetary union

Eckhard Hein

Achim Truger

WSI Discussion Paper No. 107

September 2002

Dr. Eckhard Hein, Dr. Achim Truger
WSI in der Hans Boeckler Stiftung,
Hans Boeckler Str. 39,
40476 Duesseldorf,
Germany
e-mail: eckhard-hein@boeckler.de, achim-truger@boeckler.de

European Monetary Union: Nominal Convergence, Real Divergence and Slow Growth?

An investigation into the effects of changing macroeconomic policy institutions associated with monetary union[#]

Eckhard Hein

Achim Truger

Abstract

It is by now widely accepted that the structural characteristics of the countries to become the euro area did not adhere to the conditions of an optimum currency area (OCA) when the euro was introduced in 1999. However, the satisfaction of OCA criteria may not be required for a workable currency union, because the criteria have to rely on a very restrictive concept of money and their satisfaction may be largely endogenous to shifts in the economic policy regime. Growth and convergence of prosperity across a currency union rather depend on the appropriate macroeconomic policy institutions. Therefore, in this paper the effects of the new EMU institutional framework for monetary, fiscal and wage policies on overall growth and on convergence across the euro area are analysed. It is concluded that not only the period of nominal convergence towards EMU but also the initial period of the euro area has suffered from a rather restrictive macroeconomic policy mix which has neither been conducive to aggregate growth nor to real convergence across the euro area. In order to improve growth and convergence some major institutional reforms seem to be required.

JEL classification: E58, E61, F15

Keywords: European Monetary Union, nominal convergence, real convergence, macroeconomic policy mix

[#] Alexander Hartberg has assisted us in the collection of data. Carsten Ochsen has provided helpful comments on our econometric estimations. They are, of course, not responsible for remaining errors.

1. Introduction

It is by now widely accepted that the structural characteristics of the countries to become the euro area did not adhere to the conditions of an optimum currency area (OCA) when the euro was introduced in 1999. Although there had been significant convergence of nominal variables among the economies of the European Union (EU), at the start of the European Monetary Union (EMU) the potential member countries displayed wide varieties in terms of GDP growth, labour productivity and unemployment rates. Factor market, goods market and financial market integration was generally considered to be lower than in the USA as a benchmark for an OCA. Taking the OCA conditions seriously, would therefore have meant to postpone or even to abandon the EMU project.

As is claimed by some authors, however, the OCA approach may not be a reasonable approach to determine a workable currency area. Frankel/Rose (1998) have argued that the satisfaction of OCA criteria will be largely endogenous to shifts in the economic policy regime. OCA criteria are more likely to be fulfilled ex post than ex ante. Goodhart (1998) has even claimed that the OCA approach is generally flawed as a concept to determine a currency union because it only applies to a metallist concept of money in which money is seen as having developed from a private sector cost minimisation process in order to facilitate trade. A more encompassing cartalist concept of money, however, requires to take into account political and fiscal institutions in order to define a workable currency union.

From this perspective it follows, that the analysis of the prospects for economic growth and convergence in the euro area has to focus on the effects of the structural change in institutions which has taken place in 1999. Have the elimination of exchange rates and the reduction of uncertainty in goods and capital markets, the introduction of a goal and instrument independent central bank conducting common monetary policies, the regulations for fiscal policies, and the labour market and wage setting institutions in the euro area been conducive to real convergence and prosperity? Does the euro area therefore approach the characteristics usually associated with an OCA? And if not, which are the impediments to convergence and growth?

In order to assess these questions we will in the second part of the paper provide a brief review of OCA theory, its application to the countries to become the euro area and a critique

of its relevance as a yardstick for a workable currency union. In the third part we will present an account of the degree of convergence of nominal and real variables across EMU member countries, as well as of the development of aggregate growth and unemployment - before and after the introduction of the common currency. As convergence across EMU and aggregate growth performance of the euro area have remained rather unsatisfactory during the second half of the 1990s, we will then examine the structure of EMU institutions in order to identify impediments to convergence and growth in part four. This analysis will be supplemented by an empirical investigation into the effects of macropolicy variables on GDP growth as the key to prosperity and convergence. In part five we will conclude with some implications for economic policy reforms in the euro area in order to improve aggregate economic growth and employment and to enhance real convergence across the euro area.

2. OCA criteria and European monetary integration

Starting with Mundell's (1961) seminal paper, OCA theory has been developed during the 1960s in order to determine the optimum scope of an economic area with fixed exchange rates and common monetary policies. Based on a full employment equilibrium model with some nominal wage and price rigidities, this approach focuses on the trade-off between the reduction of transaction costs within a single currency area and the increase in adjustment costs in terms of employment and inflation associated with the loss of the exchange rate as an adjustment instrument in the case of asymmetric shocks. According to the contributions to OCA theory, the exchange rate can be given up as an adjustment instrument, if either shocks are symmetric or if there are adequate adjustment mechanisms in factor, goods and financial markets to cope with asymmetric shocks. Even in the presence of rigid wages and prices, countries may then be able to gain from the beneficial effects of a currency union, i.e. from the reduction of information and transaction costs as well as the elimination of exchange rate risks. Mundell (1961) proposes a high degree of factor market integration as an alternative absorber of asymmetric shocks. McKinnon (1963) argues that a high degree of goods market integration makes exchange rate adjustments redundant. According to Kenen (1969), the degree of output diversification reduces the sensitiveness of a specific economy to asymmetric exogenous shocks and therefore the necessity of exchange rate adjustments. Following Ingram (1962), a high degree of financial integration may ease the adjustment pressure in the case of inter-regional payment imbalances with financial flows relaxing the

need for exchange rate adjustments in the short run, when wages and prices are assumed to be more rigid than in the long run.[1]

Applying these criteria to the countries to become the EMU and taking the USA as a reference for an OCA, it is by now widely acknowledged that EMU could not be considered to be an OCA at its start in 1999 (Frankel, 2000).[2] Among others, especially Eichengreen (1997) has shown that shocks have tended to be more asymmetric in Europe than in the US, but that labour market and financial market integration has been more developed among US regions than among the potential EMU member countries.[3] Arestis/McCauley/Sawyer (2001) and Arestis et al. (2001, 2002) have confirmed a tendency towards nominal convergence of inflation rates, interest rates and budget deficit-GDP ratios across potential EMU member countries during the 1990s, but real variables had not converged at all until 1999. Real GDP growth rates among potential member countries of EMU differed widely without a tendency towards convergence. Output gaps also differed continuously indicating a considerable amount of cyclical divergence. Unemployment rates remained at a high and continuously divergent state during the 1990s.

But should we really expect the OCA criteria to be satisfied at the start of a currency union? Contrary to this view, Frankel/Rose (1998) have argued that the satisfaction of OCA criteria will be largely endogenous to shifts in the economic policy regime. Following Lucas' (1976) critique of the theory of economic policy, they suppose that market participants will adapt to changes in the economic policy regime. According to their view, the similarities of shocks and cycles between countries are crucially dependent on the extent of intra-industrial trade among each other.[4] As the extent of trade will be enhanced by a common currency due to the elimination of exchange rate risks and the reduction of information as well as transaction costs, they conclude that OCA criteria are more likely to be satisfied ex post than ex ante.

[1] Further arguments put forward to support the membership in a currency union concern similar inflation rates and homogenous preferences concerning the inflation-unemployment trade-off among member countries. See the surveys by Kawai (1987) and Wagner (1998, pp. 21).
[2] See Schelkle (2001) for a selective survey of some important studies.
[3] Contrary to Eichengreen (1997), Mihov (2001) found that business cycle correlation displayed more variation across US regions than across the major European countries during the 1960s until the late 1990s. But he also concludes that high labour market mobility and the US fiscal system smooth out these regional asymmetries, whereas the euro area has no mechanisms to deal with even smaller regional asymmetries.
[4] Frankel/Rose (1998) find a strong positive effect of trade intensity on income correlation for a panel of 21 industrialised countries in the period from 1959 to 1993.

Schelkle (2001) has carried the argument one step further. If convergence is not a precondition, but rather a result of monetary integration, she asks, how can we explain that countries enter into a process of monetary integration? Considering the exchange rate not as an economic policy instrument that can be used for adjustment purposes, but rather as an asset price which is susceptible to stock-flow dynamics and expectations, the attempts to reduce exchange rate instabilities, uncertainties and asymmetries between countries are identified as driving forces behind monetary integration

A similar perspective follows from Goodhart's (1998) more fundamental critique of OCA theory. According to his view, OCA theory is based on a special and limited understanding of money. Money is seen as having developed from a private sector cost minimisation process in order to facilitate trade. The straightforward question is then: which is the optimum area for a single currency in order to satisfy this requirement? This metalist/transaction cost view of money, however, is internally inconsistent, because it has to admit the necessity of an authority solving the information problems inherent in the use of precious metals or other commodities as money, i.e. through minting money coins. The metalist view can therefore be replaced by a cartalist view of money, in which money creation is determined by political institutions right from the start. Imposing tax payments the political authorities have to define the means of these payments and hence the means of account and exchange for private transactions.[5] Therefore, currency areas have nothing to do with transaction cost minimisation but with considerations of political sovereignty, fiscal authority and money creation. This cartalist view of money is superior in explaining the history of monetary integration: Political fragmentation resp. unification determines the use of a single currency, and successful currency unions depend on the convergence of monetary and political, and therefore fiscal, integration, according to Goodhart.

If the satisfaction of OCA-criteria is theoretically invalid for the determination of a currency union and perhaps endogenous to the formation of a currency union, those criteria cannot be applied to assess the potential and actual success of monetary integration in the case of EMU as well. In order to approach this problem, the effects of monetary integration and institutions on the interaction of monetary, fiscal and wage policies and on economic growth and convergence across the currency area rather have to be examined: Is the structural change in

the institutional framework associated with monetary integration conducive to the ultimate purpose of a currency union: "bringing net economic benefits to its population" (Frankel, 2000)?

3. The state of nominal and real convergence in 1999 and what has been achieved since then

In this section we shortly reconsider the process of nominal and real convergence from the early 1980s until the late 1990s and try to evaluate if there has been any significant change since the beginning of EMU in 1999 until 2001. In addition to the question of convergence we also address the question of macroeconomic prosperity, i.e. whether EMU (=EU-12) has on average been an economic success for the member countries as compared to the 1980s and the United States. As data is only available for 3 years since the introduction of EMU and as extending the EMU-period a few years backwards until the beginning of the nominal convergence process suffers from considerable arbitrariness, we refrain from using statistical significance tests and rely completely on graphical analysis instead. As a measure for convergence we use the standard deviation of the relevant variables. We calculate our indicators from annual time series data from 1981 to 2001, mainly from the OECD and the EU-Commission.

(Figure 1 around here)

Our results confirm the earlier findings by others concerning the convergence progress until 1999 and additionally show that, as yet, there have been no major changes in the general trends. There has been a substantial degree of convergence of the nominal variables (see figure 1). With Greece becoming the 12th EMU-member in 2001, the short term nominal interest rates have completely converged in 2001, as this rate is uniformly set by the ECB for all 12 EMU countries. Somewhat more interestingly, the convergence in the long term nominal interest rates has been similarly perfect over the last three years. With respect to inflation rates, there has been no further convergence since 1999. Regarding the budget deficit-GDP-ratio, the trend of decreasing dispersion since the beginning of the 1990s seems

[5] And through issuing (base)money the political authorities do not only make available the means of tax payments but also obtain the seigniorage.

to have been broken, as there is a substantial increase in 2000 that is not completely reversed in 2001. However, we believe this to be mainly due to the considerably differing revenues from the UMTS-auctions many of the countries have had in 2000 or 2001.

(Figure 2 around here)

(Figure 3 around here)

For the real variables there is no clear tendency towards convergence in a longer run perspective (see figures 2 and 3). The dispersion of the GDP growth rate has been moving up and down rather erratically since the 1980s and has continued to do so after 1999. The dispersion of the unemployment rate has decreased steadily since 1994 and has further gone down after 1999, however, the dispersion seems to follow the variations in the unemployment rate over the business cycle and has now reached the level of the early 1980s. There seems to have been no synchronisation of the business cycles after monetary union: The dispersion of the output gap has come down from its high values of the beginning 1990s. However, there has already been a slight increase in 1999 and 2000 again, and compared to the 1980s there has on average been no reduction. For two important real economic indicators there even seems to have developed a long run process of divergence (see figure 3). The dispersion of economic prosperity in EMU (as measured by GDP per capita in purchasing power standards with EU-12=100) and productivity (as measured by GDP per employee in purchasing power standards with EU-12=100) has been increasing since the 1980s with no tendency of a reversal of this trend.

(Figure 4 around here)

Has EMU as a whole been an economic success for the member countries? A look at the data from 1981 to 2001 shows a rather mixed picture (see figure 4). Inflation and government debt have been reduced very effectively over this period. However, for the – certainly more important – real indicators GDP growth and unemployment rate, the results are not impressive. Growth and unemployment rates have recovered significantly from their unsatisfactory levels of the beginning and mid 1990s, but this basically seems to be the normal course of events over the business cycle. Comparing the average rates during the 1990s with the 1980s there is certainly not much progress to be seen: From 1980 to 1990 the

average annual growth rate was 2.3% as compared to 2.0% from 1990 to 2000 and the unemployment rate averaged 9.3% over the 1980s as compared to 10.3% over the 1990s.

The impression that EMU (or the process towards it) should not be considered an overwhelming economic success is reinforced by a comparison with the USA: During the 1990s the US economy grew at an average annual rate of 3.2% and had an unemployment rate of only 5.6%. At the same time the USA managed to have a lower average budget deficit and even a slightly lower average inflation rate.

4. Impediments to growth and convergence in EMU: current economic policy institutions and a lack of macroeconomic policy co-ordination

The institutional framework for economic policies that has prevailed in the euro area since 1999 is characterised by a clear cut assignment of goals and instruments to the economic policy actors, on the one hand, and by an asymmetry in the degree of centralisation and co-ordination of the respective policies across the euro area, on the other hand.

4.1 Monetary policy

Since 1999 monetary policies for the euro area as a whole have been conducted by the Euro System with the European Central Bank (ECB) at its top. According to the 1992 Maastricht Treaty (MT), the ECB's primary goal is price stability. Only if price stability is achieved, the ECB ought to support economic policies of the EU. In choosing its precise goals and instruments the ECB is independent: it is free to define price stability and to apply the appropriate means to achieve it (Bean, 1998; Bibow, 2002). Under the conditions of slow European growth, high unemployment, nominal wage restraint and low inflation enforced on the potential EMU member countries by the convergence process,[6] the goal and instrument independent ECB defined its primary goal, price stability, to be achieved when annual growth of the Harmonised Index of Consumer Prices (HICP) remains below 2% in the medium term (ECB, 1999). This is a quite restrictive interpretation of price stability, because it undercuts the 3% medium term inflation record of the former core economy of the EMS, Germany (Bibow, 2002), it neglects that sustained upswings in OECD countries have usually been associated with inflation rates considerably above 2% (Heine/Herr, 2001), and it does not take

[6] See Bibow (2001) and Lombard (2000) for a detailed account of the restrictive macroeconomic effects of the EMU convergence process.

into account that measured HCPI inflation may exceed true inflation because quality improvements and substitution processes are not taken into account (Artis, 2002).

The restrictive stance of the ECB also becomes clear in its "two pillar strategy" which consists of a reference value for the growth of M3, on the one hand, and a broadly based assessment of the outlook for future price development and risks to price stability in the euro area as a whole, on the other hand.[7] Here it is neither the place to discuss the usefulness of monetary quantities as target or reference values for monetary policy nor to illuminate the potential inconsistencies which may arise from the simultaneous use of monetary aggregates and inflation prospects as guidelines for monetary policies.[8] Rather the implications of the assumed low trend rate of real GDP growth underlying the reference value for M3 are of interest in our context. The reference value for M3 growth was set at 4.5% and was based on the assumption of a trend decline of velocity of 0.5% to 1%, an inflation rate of 1% to 2% and a trend rate of real GDP growth of 2% to 2.5%. With its modest assumption for potential GDP growth the ECB simply extrapolated the modest growth experience of the 1990s without recognising that European growth in this period was itself a result of restrictive monetary and fiscal policies. From this a more expansive monetary policy than the one enforced by the Bundesbank on the EMS during the 1990s could not be expected at the very start of EMU. The ECB did not seem to intend "to give growth a chance" (Bibow, 2002).

As some detailed accounts have shown, ECB's monetary policies have indeed revealed a profound "anti growth bias" (Bibow, 2002) during the first three years of operation: The ECB did not follow the Fed's symmetric strategy. Instead it focused asymmetrically on the short-term outlook of upward price risks without taking care of growth and employment whenever the absence of any risk for accelerating inflation would have allowed to do so (Bibow, 2002; Hein, 2002a).[9] This became especially apparent in 2001 when world economic growth stumbled and the Fed started to lower interest rates in January, finally by 4.25 percentage

[7] This assessment is based on the outlook of the development of wages, exchange rates, bond rates, term structures of interest rates, real economic activity, fiscal indicators, price and cost indicators, industry and consumer expectations.

[8] See Heine/Herr (2001) for a comprehensive critique of the ECB's monetary strategy and Buiter (1999) for a critique of the ECB's lack of openness, transparency and accountability and on some further inconsistencies in the institutional configuration of the European System of Central Banks, i.e. a "lender of last resort"-vacuum and the lack of prudential supervision and surveillance of financial institutions (see also Artis, 2002).

[9] Artis (2002) and Begg (2002) are more modest in their assessments of ECB policies and stress that the ECB has gained credibility and that things could have become even worse. But they have to admit that during the

points at the end of the year. The ECB hesitated until May when the downswing could no longer be neglected and reduced interest rates in four small steps by only 1.5 percentage points. HCPI growth still above the target during the whole year did not seem to allow for more expansive policies. But as in the precedent years, nominal wage growth put no pressure on inflation. The main causes for rising inflation arose from increasing prices for oil derivatives and rising food prices caused by animal diseases. These exogenous shocks, however, will only cause problems for the stability of the aggregate price level and will justify restrictive monetary policies, if relative price changes trigger second round effects of nominal wages, which was not the case in 2001. The rather restrictive ECB reactions were neither conducive to European growth and employment nor to the internal and the external value of the euro: the inflation rate exceeded the ECB's target and the exchange rate continued to deteriorate until recently when turmoil in US financial markets and slow growth prospects in the US made the euro appreciate.[10] The effects of the ECB's anti-growth bias will even become worse in the future, because during the initial years of EMU most of the member countries have still gained from interest rate convergence which made their interest rates fall to the lower German level within an overall trend of falling interest rates during the 1990s (see figure 5).

(Figure 5 around here)

In addition to the ECB's restrictive aggregate effects on EMU growth, also structural effects and problems associated with a single monetary policy for the euro area as a whole have to be considered. Firstly, these problems are associated with an incomplete synchronisation of the business cycle across the euro area and with the fact that ECB member countries display different long run trend rates of growth and inflation. This means that the ECB has to apply its single instrument, the interest rate on main refinancing operations, to an economic area with quite different growth, unemployment and inflation rates (Arestis et al., 2002). For this reason, the application of a single instrument to the whole area will certainly have different effects.

---

initial period the ECB has profited from quite favourable world economic circumstances so that in our view things will indeed become worse if the ECB will stick to its restrictive policies.

[10] See Arestis et al. (2001, 2002) and especially Bibow (2002, 2002a) for an explanation of the euro exchange rate by the comparative growth and profitability expectations of actors in international financial markets. As rising interest rates in the euro area were associated with weakened growth and profitability expectations, the euro exchange rate declined, contrary to what the interest parity theorem would have predicted.

Secondly, the problem of asymmetric effects of a single monetary policy will be intensified by different monetary transmission mechanisms across the euro area due to different goods, labour and especially financial market structures. For the countries to become the EMU, Cecchetti (1999) has shown that countries with many small banks, less healthy banking systems, and poorer direct capital access display a greater sensitivity to monetary policy shocks than do countries with big, healthy banks and deep, well-developed capital markets, because the former country group is especially susceptible to the lending channel of monetary transmission. As financial structure depends on the legal systems, especially on the laws governing shareholder and creditor rights and on the enforcement of those laws, and as these legal systems vary a lot across the euro area, the introduction of the euro cannot be expected to be an immediate catalyst for the harmonisation of financial structure and hence the monetary transmission process across the euro area.[11]

4.2 Fiscal policies

In the face of aggregately restrictive and structurally asymmetric effects of the single monetary policy executed by the ECB, there is no compensating pendant of fiscal policies at the EMU level. The EU budget only amounts to 1.2% of EU GDP, it is mandated to be balanced and it is dominated by the needs of the common agricultural policy with only the minor rest going to the cohesion and structural funds. Under these conditions, the EU budget can neither be used as an aggregate stabiliser nor as a means to fight structural and regional asymmetries (Arestis/McCauley/Sawyer 2001a). Fiscal policies are still in the national domain and they are "co-ordinated" by the regulations of the MT and especially by the 1997 Amsterdam Stability and Growth Pact (ASGP). Whereas the MT defined a 3% limit for the budget deficit-GDP-ratio and a 60% limit for the public debt-GDP-ratio as convergence criteria,[12] the ASGP is intended to reinforce the budget deficit criterion in the course of EMU.[13] It requires balanced budgets or even budget surpluses in the medium run, i.e. over the trade cycle, in order to reduce public debt. Member countries have to present annual stability

[11] This position is reinforced by Mihov's (2001) VAR analysis of the effects of monetary policy shocks on GDP growth and inflation in Europe and the US in the 1980s and 1990s. He finds diverse responses to a change in monetary policies across Europe depending on different financial structures which then affect the relative importance of interest rate and credit channels. Although the diversity of monetary policy transmission could be addressed through measures that harmonise financial practices and eliminate barriers to cross-country competition in financial markets, Mihov's findings for the pre-1999 period seem also to be valid for the first years of EMU. On the diversity of monetary policy transmission among the main countries of the euro area see also Kashyap/Stein (1997) and Bondt (2000).

[12] That these criteria lack any sound economic foundation and are arbitrarily defined is shown by Pasinetti (1998).

[13] See Allsopp/Vines (1998), Arestis/McCauley/Sawyer (2001a), Eichengreen (1998) and Semmler (2000) for an extensive and critical discussion of the ASGP.

programmes to the European Commission in which the path towards balanced budgets is defined and which serve as an early warning system signalling when a member country will approach the 3% limit of the debt-GDP ratio. If a country breaches this reference value the "excessive deficit" procedure will be applied. If there is an economic recession and real GDP is falling by more than 2%, there will be no penalties but the deficit has to be corrected as soon as the recession has finished. When output falls between 0.75% and 2% the council of economic and finance ministers will have to decide whether this situation has to be considered an excessive deficit. If there is no fall in real output, the excessive deficit will have to be corrected within a year. If a country does not introduce corrective measures it will be subject to penalties: a non interest-bearing deposit which will be returned if the deficit is eliminated within two years, but which will become a fine if the budget deficit is not corrected within this period.[14] These fines will then add to the deficit which they were intended to cure in the first place.

According to Eichengreen (1998), there have been put forward four major but unsustainable reasons for the restraints codified in the ASGP: If fiscal restraints for member countries are considered to be a protection for the ECB from pressure of inflationary debt bail-out, the argument ignores that sub-central governments control their own tax instruments and therefore can respond to the debt problems by raising their own taxes. If the fiscal restraint is considered to neutralise more general inflationary pressures arising from excessive public spending, there is no convincing argument why the ECB should accommodate these pressures. If fiscal restraint is considered to internalise cross-border interest rate spill-overs imposed by excessive lending of one country on the other member countries, this argument neglects that financial markets have internationalised world wide which makes it impossible for a single medium-sized country to drive up world interest rates. If, finally, fiscal restraints are considered to encourage policy co-ordination in a more general way, it should be taken into account that the ASGP limits the flexibility of national policies and may therefore actually impede the willingness to co-ordinate. Taken together, the arguments proposing strict constraints on and convergence of national fiscal policies across a currency union are rather weak.

[14] The non-interest bearing deposit is composed of a fixed component, 0.2% of GDP, and a variable component, one tenth of the difference between the deficit ratio and the 3% limit (Arestis/McCauley/Sawyer 2001a).

These considerations imply that the institutional configuration of fiscal policies within EMU rather reinforces than contains the aggregately restrictive and structurally asymmetric effects of ECB policies. The lack of relevant fiscal federalism does not allow to tackle regional and structural asymmetries. Faced with a general recession, the decentralised system of fiscal authorities who are committed to avoid deficits will encourage free-riding on stabilisation provided by other countries in the EMU. This prisoner's dilemma makes public expenditures tend to be pro-cyclical. Automatic fiscal stabilisers are weakened, especially because the ASGP criteria do not distinguish between structural and cyclical budget deficits and do not include a "golden rule" which would allow for debt finance of public investment.

(Figure 6 around here)

A look at the data gives no clear indication, that fiscal policies have yet amplified structural asymmetries among EMU members, but clearly confirms the hypothesis of an overall restrictive and pro-cyclical stance of EMU fiscal policies in the 1990s. There has been a falling trend in the dispersion of budget deficit-GDP-ratios since the beginning of the 1990s (see figure 6). One might want to conclude now, that this is due to uniform prescriptions for all countries, which reduced national fiscal policies' capacity to react to country specific shocks. However, we believe this conclusion to be problematic for two reasons: Firstly, a large part of the reduction of the dispersion is simply due to convergence of government net interest payments (in percent of GDP) during the consolidation process of the 1990s in combination with interest rate convergence across EMU. The dispersion of the primary deficit-GDP-ratios (budget deficits without government net interest payments) used to be substantially lower than the dispersion of the budget deficit-GDP-ratios during the 1980s, with the latter converging towards the former during the 1990s. Secondly, the decrease in the dispersion of the primary deficits might well be explained by a slight decrease in output gap dispersion, indicating that there was no need for more asymmetric fiscal policies during this period. In the near future, however, this picture might change. If the slowdown the world economy has experienced since 2001 continues, a substantial decrease in the dispersion of budget deficits might well coincide with an increase in output gap dispersion: Whereas countries close to the 3-percent-limit, like Germany, Italy, France and Portugal, might be forced into restrictive fiscal policies, thereby further decreasing their output gaps, the other countries will be able to increase government debt, thereby stabilising their economies.

(Figure 7 around here)

Empirical evidence is much more conclusive with respect to the overall restrictive and pro-cyclical effects of EMU fiscal policies (see figure 7). As a measure for the economic effects of fiscal policies we use the annual change of the structural (cyclically adjusted) primary deficit ratio (PDR) as percentage of potential GDP. Using primary deficits allows us to focus on those components of public debt directly connected with effective demand. By using cyclically adjusted data and relating them to potential GDP we try to exclude the cyclical effects of automatic stabilisers on the budget deficit. This allows – if only in an imperfect way – to view the budget deficit as an exogenous policy variable affecting demand and growth. A positive change in the PDR indicates restrictive fiscal policies, a negative one expansive fiscal policies. In order to determine whether fiscal policies are pro-cyclical or not we compare the change in PDR to the change in the output gap. If both have the opposite sign, fiscal policies are pro-cyclical, if they have the same sign, fiscal policies are counter-cyclical.[15]

As figure 7 shows, fiscal policies have been restrictive in seven out of eleven years since 1991, with the extent of fiscal contractions by far exceeding the extent of fiscal expansions. In four out of these seven years restrictive policies were even sharply pro-cyclical. During EMU, fiscal policies have been almost neutral with slightly expansive effects in 2000. In 2001, finally, they remained slightly expansive without, however, reacting to the fall in the output gap. Comparing the 1990s to the 1980s, one has to admit that fiscal policies in EMU countries had already acted in a restrictive and pro-cyclical way at the beginning of the 1980s. During the 1990s however, the situation seems to have worsened. It may well be that the worst is still to come, as sticking to the MT and ASGP in the current economic situation would mean restrictive and pro-cyclical fiscal policies in Germany, France and Italy, whose aggregate GDP makes up more than two thirds of EMU's GDP. And this time, fiscal contraction would happen without any compensation through the expansive effects of interest rate convergence on effective demand.

4.3 Wage bargaining

Under the conditions of a single monetary policy for the euro area as a whole and restricted fiscal policies, real wage determination is usually considered to be the one and only

adjustment mechanism in the case of aggregate and symmetric as well as in the case of structurally or regionally asymmetric shocks. In order to fulfill this requirement, proposals for further deregulation of European labour markets, decentralisation of wage bargaining, reduction in the reservation wage rate given by social benefits, and active labour market policies increasing qualifications and mobility of labour supply are made, especially by those authors who suppose that the European unemployment problem is predominantly "structural". Some even consider European monetary integration as a catalyst for the necessary deregulation in labour markets which has so long been waited for (Calmfors, 1998; Issing, 2002).

But as Allsop/Vines (1998) have remarked, wage restraint imposed by deregulation of labour markets and decentralisation of wage bargaining will only stimulate growth and employment if the ECB stands ready to reward nominal wage restraint by more symmetric and hence more expansive monetary policies. According to their view, neither fiscal restraint nor supply-side reforms will necessarily lead to more growth: A growth oriented reaction function of the central bank is required as well in order to transmit a reduction in the NAIRU (Non-Accelerating-Inflation-Rate-of-Unemployment) made possible by deregulation into a reduction in actual unemployment through higher investment and growth. As we have mentioned above, during its first three years of operation the ECB does not seem to have followed this kind of strategy, contrary to the more successful Federal Reserve in the USA during the 1990s.

But the attempt to reduce European unemployment by means of labour market deregulation and wage bargaining decentralisation in order to expand the ECB's room for manoeuvre also bears another risk: This strategy does not only have to suppose symmetric reactions of the ECB whenever the inflation target is missed. It also has to rely on symmetric effects of monetary policies or an appropriate real balance effect. This, however, cannot be taken for granted in a monetary economy. Rising inflation rates in economic booms with unemployment decreasing below the NAIRU can always be stopped in the short run by the central bank increasing interest rates and choking investment. Economic recessions with unemployment rising above the NAIRU and decelerating inflation or even deflation may, however, not be converted by the central bank lowering interest rates due to profit-expectation and debt-deflation effects in the private sector (Hein, 2002a).

[15] A positive change in the output gap indicates an economic uspwing, a negative change an economic

Nominal wage externalities for macroeconomic performance can more effectively be internalised by economy wide co-ordination of wage bargaining aiming at wage hikes determined by the sum of long-run national productivity growth and the central bank's target inflation rate, as has been shown in numerous studies on the interaction between labour market institutions and central bank independence.[16] Effectively co-ordinated wage bargaining is not only capable of containing inflationary pressure whenever unemployment increases and can therefore be considered to reduce the NAIRU as an employment barrier given by conflict inflation and to allow the central bank to tolerate a higher degree of employment without missing its inflation target.[17] Effectively co-ordinated wage bargaining will also contain pressure on nominal wages and therefore destabilising disinflationary and deflationary tendencies whenever the economy slides into recession (Hein, 2002a). Effective wage bargaining co-ordination can therefore be considered as an important means for nominal and real stabilisation of the economy.

But effective wage bargaining co-ordination across the euro area is difficult to achieve. At the start of EMU, wage bargaining systems of member countries differed substantially. Since then systems with a high degree of national co-ordination (Austria, Germany, Finland, the Netherlands) have coexisted with systems of low co-ordination on the national level (France, Italy, Ireland, Portugal, Spain) (Traxler, 1999). Under these conditions there have been several attempts of labour unions to co-ordinate wage bargaining across borders.[18] In the Declaration of Doorn (1998), the trade union federations of Germany and the Benelux-countries agreed to aim at real wage increases according to productivity growth in order to prevent wage dumping. At the sector level, the European Metalworker Federation (EMF) has been the first to develop concepts of European co-ordination of nominal bargaining demands based on productivity growth rates and inflation. This line has now been followed by most of the European industry federations and by the European Trade Union Confederation (ETUC). Trans-national wage bargaining co-ordination, however, faces serious obstacles, which are

---

downswing.

[16] See Franzese (2001), Hein (2002) and Soskice/Iversen (2001) for overviews and some implications for EMU.

[17] As Kittel/Traxler (2001) have made clear, effective wage bargaining co-ordination requires a high degree of horizontal co-ordination between industries, through pattern bargaining, state imposed co-ordination, intra-associational co-ordination by the peak association, inter-associational co-ordination or state-sponsored co-ordination, as a necessary but not a sufficient condition for wage setting to take its macroeconomic effects into account. In order to translate and implement the results of horizontal co-ordination and to prevent wage-drift or wage-dumping, also a high degree of vertical co-ordination within industries is needed, through a high level of union and bargaining agreement coverage, legal enforceability of collective agreements and peace obligations.

rooted in different national wage bargaining systems and different degrees of national co-ordination. These basic problems are increased by some overall trends in the development of wage bargaining institutions. According to Calmfors (2001) and Pichelmann (2001), on the one hand, there has been a general trend towards decentralisation of wage bargaining since the 1970s because of decentralisation of business decisions, stronger international competition and a desire of capital to limit union power. On the other hand, there has been a tendency towards national social pacts since the 1980s which aim at nominal wage moderation in order to maintain or improve international price competitiveness of national business under the conditions of slow growth.[19] Although these two tendencies might contradict each other, they are both detrimental to wage bargaining co-ordination across EMU countries.

The lack of effective wage bargaining co-ordination within some EMU countries and especially across EMU countries as well as the tendencies towards decentralisation of wage bargaining and "competitive corporatism" exert harmful effects on macroeconomic performance. When employment is generally increasing or when there are asymmetric exogenous shocks limiting the national scopes for distribution, there arise major problems for those countries without effective wage bargaining co-ordination. With no nominal wage moderation, small countries with only minor impacts on inflation in the euro area suffer losses in market shares and employment. A lack of wage moderation and increasing inflation in intermediate or bigger countries with major impacts on inflation in the euro area makes the ECB intervene and causes overall losses in output and employment in the euro area. Economies with effective wage bargaining co-ordination are, however, able to contain inflation when employment is increasing or when they are hit by asymmetric exogenous shocks. Regional disparities are therefore exacerbated by different degrees of wage bargaining co-ordination across the euro area.

With persisting and increasing unemployment as in the present situation, countries with effective wage bargaining co-ordination also make active use of their co-ordination advantage and keep their bargaining agreements below those of their competitors in euro area. This "competitive corporatism" does not destabilise macroeconomic development as long as its introduction is confined to small countries (as the Netherlands or Ireland). A "beggar thy

[18] On the state of co-ordination of wage bargaining across EMU see Hoffmann/Mermet (2000), Pichelmann (2001), Schulten/Bispinck (2001), Schulten (2001, 2002) and Traxler (1999).

[19] Also Crouch (2000) and Schulten (2002a) identify a major tendency towards "competitive corporatism" in EMU member countries. According to Calmfors (2001), there are pacts for competitiveness in Belgium, Germany, Greece, Finland, Italy, Ireland, the Netherlands, Portugal and Spain.

neighbour" policy however, becomes a major macroeconomic problem and causes a deflationary impact on the euro area as a whole as soon as it is pursued by some major economies.[20] Nominal wage restraint and falling wage shares then seriously impede growth and employment, as will be shown below.

(Figure 8 around here)

That the institutional structure of labour markets and wage bargaining in EMU has indeed imposed a deflationary impact on bargaining results and on wage shares can be seen in figure 8 which displays the development of the adjusted wage share, i.e. the share of wages in GDP under the assumption of a constant share of employees in total employment. Of course, the adjusted wage share as an indicator for the development of functional income distribution is also affected by other factors than nominal wage bargaining and labour market institutions. Especially the degree of competition in the goods market which determines the mark-up on unit labour costs in firms' pricing will have an influence as well. But although the degree of competition in the goods market has rather increased in the common currency union implying a falling profit share and a rising wage share, the actual development of the adjusted wage share displays the falling tendencies implied by our analysis of the effects of wage bargaining and labour market institutions in EMU.

4.4 In sum: a restrictive policy-mix

Taken together, the institutional configuration of macroeconomic policies that has characterised the euro area since 1999 implies that the policy mix responsible for slow growth, high unemployment and unsatisfactory real convergence during the 1990s (Semmler, 2000) has been continued: Monetary policies by the politically and economically independent ECB, primarily committed to pursue low inflation, display a pronounced anti-growth bias and have considerable asymmetric effects across the euro area. During the convergence process and the initial years of EMU the restrictive effects of this anti-growth bias, however, were moderated for those countries that gained from the convergence of interest rates to the lower German level within a generally falling trend of interest rates. Insufficient fiscal federalism

[20] Simulations with the Oxford Economic Forecasting Model by Fritsche et al. (1999) show that nominal wage reductions in Germany improve international competitiveness and hence production and employment in Germany but also reduce output and employment in the other EMU countries by a considerable amount. The reduction of interest rates made possible by German wage moderation does not have sufficiently compensating effects. If the Netherlands, however, follow a "beggar thy neighbour" strategy there are neither effects on output and employment in the other EMU economies nor on the interest rate.

and national fiscal policies restrained by the ASGP are neither able to counteract regional and structural asymmetries nor to stabilise the European macroeconomy in a severe recession. Insufficiently co-ordinated wage bargaining across the euro area, deregulation of labour markets, decentralisation of bargaining and "competitive corporatism" on the national level impose wage restraint and falling wage shares on EMU which reinforce the asymmetric and deflationary tendencies determined by monetary and fiscal policies. As the euro area is a rather closed economy,[21] the improvement of international price competitiveness associated with these deflationary tendencies cannot provide sufficient relief through improved trade balance.

4.5 An empirical test: EMU macroeconomic policies matter for growth and convergence!

In what follows the implications of the macroeconomic policy mix for growth and convergence in EMU derived from our analysis of the EMU institutional framework in the previous section will be checked by an empirical test. Our analysis is based on annual data of 11 EMU member countries for the period from 1981 to 2001.[22] Following the results by Mihov (2001) who did not find any structural break in economic behaviour associated with the introduction of EMU in 1999 and our descriptive data which do not display any acceleration of real convergence since 1999, we do not consider sub-periods but assume some stability in the estimated reaction coefficients during the whole period under consideration. Our analysis is confined to the identification of the macroeconomic determinants of real GDP growth, because we consider growth to be the key to prosperity and convergence across EMU. GDP growth has a positive effect on employment, on the one hand, and on productivity growth and hence GDP per capita, on the other hand. Here it is not the place to attempt a full explanation of growth in the euro area or in each EMU country. Therefore, differences and asymmetries in policy transmissions cannot be identified with our crude estimations. Rather the effects of the macroeconomic policies discussed above on economic growth in the euro area as a whole as precondition for prosperity and convergence are examined using pooled regressions for the data set mentioned above.

As determinants of real GDP growth ($\hat{Y}$) the following macroeconomic policy parameters are considered. For the effects of monetary policies we used the short-run real interest rate (i). The instrument of monetary policies is, of course, the short run nominal interest rate. But as

[21] The proportion of euro area exports in euro area GDP amounts to approximately 15%. The trade balance surplus has accounted for 0.5 to 1.2 % of GDP between 1999 and 2001 (ECB, 2002).
[22] Only Luxembourg is missing due to a lack of data.

central banks target a certain inflation rate they have to push through a certain short run real interest rate. Through different channels (money, credit, asset prices, exchange rate) short-run real interest rate variations should have lagged adverse effects on real GDP growth. For our estimations we assumed a time lag of one year. For reasons already given in section 4.1.2 we used the annual change in the structural primary government deficit ratio (PDR) as a determinant for the effects of fiscal policies on real GDP growth. An increase in the PDR will have an adverse effect on real GDP growth.

The effects of wage bargaining are approximated by choosing the adjusted wage share (WS) as a determinant of real GDP growth. The effects of changing income shares on investment and growth are quite ambiguous. With the propensity to save out of wages exceeding the savings propensity out of profits, a falling wage share means falling consumption demand with an immediately contractive effect on investment and GDP-growth, on the one hand. On the other hand, falling wage shares associated with nominal wage restraint improve international competitiveness and the trade balance and, therefore, stimulate investment and growth. With a slowdown in inflation, the central bank may also cut interest rates and stimulate investment and growth. Finally, a falling wage share is associated with rising unit profits which may also improve investment and growth. As the stimulating effects of declining wage shares for investment and growth are rather indirect and uncertain, we assume that the direct and contractive effects will dominate and suppose a slightly positive relation between the adjusted wage share and GDP growth.

Finally, we took the effect of world economic growth on EMU member countries' growth rates into account and used the real GDP growth rate of the USA ($\hat{Y}_{USA}$) as a further determinant. A positive effect is not only established through trade in the goods market but also through co-movements in asset market prices with the associated impact on consumption and investment.

(Table 1 around here)

As can be seen from table (1) the coefficients of the pooled least square estimation have the expected signs and are statistically significant, predominantly at the 1% level, the change in

the real short-term interest rate only at the 10% level.[23] The regression results support our claim from the previous chapter that EMU macroeconomic policy institutions have restrictive effects. Overly restrictive monetary policies by the ECB, pro-cyclical fiscal policies and falling wage shares implied by present wage bargaining and labour market institutions can be considered as serious impediments to growth and convergence in the euro area.[24]

5. Conclusions

The conclusions to be drawn from our analysis are quite straightforward: The clear-cut assignment of economic policy goals and instruments to the economic policy actors in EMU, which follows the prescriptions of what Arestis/McCauley/Sawyer (2001a) have termed "new monetarism", prevents a more expansive macroeconomic policy mix which will also be conducive to increasing real convergence. Contrary to the new monetarist view of Issing (2002), this would require some implicit or explicit ex-ante policy co-ordination in which economic policy actors accept common responsibility for high employment and growth as well as low inflation across the euro area. Co-ordinated wage bargaining across the euro area should aim at nominal wage hikes determined by long-run national productivity growth and the target inflation rate of the ECB. On the one hand, the aggravation of regional and structural asymmetries associated with competitive corporatism would be prevented. On the other hand, deflationary pressures in economic recessions as well as inflationary pressures in economic upswings would be contained. This would allow the ECB to abandon its anti-growth bias and to tolerate higher rates of growth and lower rates of unemployment without missing its inflation target. The inflation target, however, should be increased in order to make different growth paths associated with different inflation rates and hence real convergence of GDP per capita across the euro area possible. National fiscal policies should be co-ordinated across the euro area in order to prevent free-riding in economic downswings. Automatic fiscal stabilisers should be allowed to work without limiting budget deficits in the downswing. Deficit finance of public investment (golden rule) should not be prevented in

[23] We have added a first order auto-regressive term ($\mu_{i,t-1}$) which captures the systematic influences on real GDP growth not explicitly addressed in our estimations, especially past GDP growth. Without the first order auto-regressive term our estimations were already statistically significant on the 1% or on the 5% level, but still displayed a high degree of auto-correlation in the residuals.

[24] As we have shown in another paper dealing with Germany's unsatisfactory performance during the second half of the 1990s, the macroeconomic policy determinants of real GDP growth in the euro area can also be used as a first approximation for the identification of growth differentials among euro area member countries (Truger/Hein, 2002).

order to propagate economic growth. Fiscal federalism should be improved in order to tackle regional and structural asymmetries across the euro area.

In order to achieve such a policy-mix some major institutional reforms appear to be unavoidable. With respect to monetary policy, transparency and accountability of ECB policies will have to be increased, where necessary by appropriate changes in the EU treaty. As to fiscal policies and the ASGP the balanced budget rule and the deficit criterion will have to be replaced by golden rule financing of public investment or by some other rule conducive to fiscal sustainability. Finally, with respect to wage bargaining EMU wide co-ordination will have to be encouraged. To achieve this, labour unions and employer associations will have to be strengthened and labour market deregulation will have to be stopped.

References

Allsopp, C. and Vines, D. 1998. The assessment: macroeconomic policy after EMU. Oxford Review of Economic Policy 14 (3), 1-23.

Arestis, P. et al. 2001. The causes of euro instability, in: Arestis, P., Brown, A., Sawyer, M. (Eds.), The Euro. Evolution and Prospects. Edward Elgar, Cheltenham.

Arestis, P. et al. 2002: The euro: reflections on the first three years. International Review of Applied Economics 16, 1-17.

Arestis, P. et al. 2002a. Explaining the euro's initial decline. Eastern Economic Journal 28, 71-88.

Arestis, P., McCauley, C., Sawyer, M. 2001: The conditions surrounding the launch of the euro, in: Arestis, P., Brown, A., Sawyer, M. (Eds.), The Euro. Evolution and Prospects. Edward Elgar, Cheltenham.

Arestis, P., McCauley, K., Sawyer, M. 2001a. An alternative stability pact for the European Union. Cambridge Journal of Economics 25, 113-130.

Artis, M 2002. The performance of the European Central Bank. International Review of Applied Economics 16, 19-29.

Bean, C. 1998. Monetary policy under EMU. Oxford Review of Economic Policy 14 (3), 41-53.

Begg, I. 2002. The euro: a success against the odds? Eastern Economic Journal 28, 25-44.

Bibow, J. 2001. Making EMU work: some lessons from the 1990s. International Review of Applied Economics 15, 233-259.

Bibow, J. 2002. The monetary policies of the European Central Bank and the euro's (mal-)performance: a stability oriented assessment. International Review of Applied Economics 16, 31-50.

Bibow, J. 2002a. The markets versus the ECB, and the euro's plunge. Eastern Economic Journal 28, 45-57.

Bondt, G.J.d. 2000. Financial Structure and Monetary Transmission in Europe: A Cross-Country Study. Edward Elgar, Cheltenham.

Buiter, W.H. 1999. Alice in Euroland. Journal of Common Market Studies 37, 181-209.

Calmfors, L. 1998. Macroeconomic policy, wage setting, and employment - what difference does the EMU make? Oxford Review of Economic Policy 14 (3), 125-151.

Calmfors, L. 2001. Wages and wage-bargaining institutions in the EMU – a survey of the issues. Empirica 28, 325-351.

Cecchetti, S.G. 1999. Legal structure, financial structure, and the monetary policy transmission mechanism. Federal Reserve Bank of New York Economic Policy Review 5 (7), 9-28.

Crouch, C. 2000. National wage determination and European Monetary Union, in: Crouch, C. (Ed.), After the Euro. Shaping Institutions for Governance in the Wake of European Monetary Union, Oxford University Press, Oxford.

ECB 1999. Die stabilitätsorientierte geldpolitische Strategie des Eurosystems. Monatsbericht, January 1999, 43-56.

ECB 2002. Monthly Bulletins. ECB, Frankfurt.

Eichengreen, B. 1997. European Monetary Unification: Theory, Practice, and Analysis. MIT Press, Cambridge/Massachusetts.

Eichengreen, B. 1998. European monetary unification: a tour d'horizon. Oxford Review of Economic Policy 14(3), 24-40.

European Commission 2001. European Economy 72. EC, Luxembourg.

Frankel, J.A. 2000. EMU and the euro: an American perspective. Manuscript, presented in Frankfurt, June 21, 2000. http://ksghome.harvard.edu/~.jfrankel.academic.ksg/speechs&testimony.htm.

Frankel, J.A., Rose, A.K. 1998. The endogeneity of the optimum currency area criteria. The Economic Journal 108, 1009-1025.

Franzese, R.J. 2001. Strategic interaction of monetary policymakers and wage/price bargainers: a review with implications for the European common-currency area. Empirica 28, 457-486.

Fritsche, U. et al. 1999. Is there a need for a co-ordinated European wage and labour market policy?, in: Huemer, G., Mesch, M. and Traxler, F. (Eds), The Role of Employer Associations and Labour Unions in the EMU, Ashgate, Aldershot.

Goodhart, C. 1998. The two concepts of money: implications for the analysis of optimal currency areas. European Journal of Political Economy 14, 407-432.

Hein, E. 2002. Central bank independence, labour market institutions and the perspectives for inflation and employment in the European Monetary Union. Political Economy. Review of Political Economy and Social Sciences 10, 37-64.

Hein, E. 2002a. Monetary policy and wage bargaining in the EMU: restrictive ECB policies, high unemployment, nominal wage restraint and inflation above the target. Banca Nazionale del Lavoro Quarterly Review, forthcoming.

Heine, M., Herr, H. 2001. Das Eurosystem: Eine paradigmenorientierte Darstellung und kritische Würdigung der europäischen Geldpolitik. Rosa Luxemburg Stiftung, Berlin.

Hoffmann, R., Mermet, E. 2000. Wage coordination in the European Union – challenges for the coordination of collective bargaining, in: Hoffmann, R. et al. (Eds.), Transnational Industrial Relations in Europe. Hans Böckler Stiftung, Düsseldorf.

Ingram, J.C. 1962. Regional Payment Mechanisms: The Case of Puerto Rico. University of North Carolina Press, Chapel Hill.

Issing, O. 2002. On macro economic policy co-ordination in EMU. Journal of Common Market Studies 40, 354-358.

Kashyap, A.K., Stein, J.C. 1997. The role of banks in monetary policy: a survey with implications for the European Monetary Union. Federal Reserve Bank of Chicago Economic Perpectives 22(5), 2-18.

Kawai, M. 1987. Optimum currency areas, in: Eatwell, J., Milgate, M., Newman, P. (Eds.), The New Palgrave. A Dictionary of Economics, Vol. 3. MacMillan, London, 740-743.

Kenen, P.B. 1969. The theory of optimum currency areas: an eclectic view, in: Mundell, R.A., Swoboda, A.K. (Eds.), Monetary Problems of the International Economy. University of Chicago Press, Chicago.

Kittel, B., Traxler, F. 2001. Lohnverhandlungssysteme und Geldpolitik. Wirtschaft und Gesellschaft 27, 11-40.

Lombard, M. 2000. Restrictive macroeconomic policies and unemployment in the European Union. Review of Political Economy 12, 317-332.

Lucas, R.E. 1976. Econometric policy evaluation: a critique, in: Brunner, K., Meltzer, A.H. (Eds.), The Phillips Curve and Labour Markets, Carnegie-Rochester Conference Series on Public Policy. North-Holland, Amsterdam, 19-46.

McKinnon, R. 1963. Optimum currency areas. American Economic Review 53, 717-725.

Mihov, I. 2001. Monetary policy implementation and transmission in the European Monetary Union. Economic Policy, October 2001, 371-406.

Mundell, R.A. 1961. A theory of optimum currency areas. American Economic Review 51, 657-665.

OECD 2001. Economic Outlook 70, data on cd-rom. OECD, Paris.

Pasinetti, L.L. 1998. The myth (or folly) of the 3% deficit/GDP Maastricht 'parameter'. Cambridge Journal of Economics 22, 103-116.

Pichelmann, K. 2001. Monitoring wage developments in EMU. Empirica 28, 353-373.

Schelkle, W. 2001. The optimum currency area approach to European monetary integration: framework of debate or dead end? South Bank European Papers, No. 2/2001. European Institute , South Bank University, London.

Schulten, T. 2001. The European Metalworkers' Federation's approach to a European coordination of collective bargaining – experiences, problems and prospects, in Schulten, T., Bispinck, R. (Eds.), Collective Bargaining under the Euro. Experiences from the European Metal Industry. European Trade Union Institute, Brussels.

Schulten, T. 2002. Europeanisation of Collective Bargaining. An Overview on Trade Union Initiatives for a Transnational Coordination of Collective Bargaining Policy, WSI Discussion-paper No. 101. WSI in der Hans-Böckler-Stiftung, Düsseldorf.

Schulten, T. 2002a. A European Solidaristic Wage Policy? European Journal of Industrial Relations 8, 173-196.

Schulten, T. and Bispinck, R. (Eds.) 2001. Collective Bargaining under the Euro. Experiences from the European Metal Industry. European Trade Union Institute, Brussels.

Semmler, W. 2000. The European Monetary Union: success of failure? Political Economy. Review of Political Economy and Social Sciences 7, 5-24.

Soskice, D. 2000. Wage determination in the EMU, in: Hoffmann, R. et al. (Eds.), Transnational Industrial Relations in Europe. Hans Böckler Stiftung, Düsseldorf.

Soskice, D., Iversen, T. 2001. Multiple wage bargaining systems in the single European currency area. Empirica 28, 435-456.

SVR 1997. Jahresgutachten 1997/98 des Sachverständigenrates zur Begutachtung der gesamtwirtschaftlichen Entwicklung. Bundestagsdrucksache 13/9690, Deutscher Bundestag, Bonn.

Traxler, F. 1999. Wage-setting institutions and European Monetary Union, in: Huemer, G., Mesch, M., Traxler, F. (Eds), The Role of Employer Associations and Labour Unions in the EMU, Ashgate, Aldershot.

Truger, A., Hein, E. 2002. "Schlusslicht Deutschland": Makroökonomische Ursachen. Wirtschaftsdienst 82 (7), 402-410.

Wagner, H. 1998. Europäische Wirtschaftspolitik, 2nd edition. Springer, Berlin et al.

Table 1: Pooled least-squares estimations for real GDP growth in 11 EMU countries, 1981 – 2001

$\hat{Y}_{i,t} = f(\Delta i_{i,t-1}, \Delta PDR_{i,t}, WS_{i,t}, \hat{Y}_{USA,t})$, with signs $(-, -, +, +)$	
$\Delta i_{i,t-1}$	-0.099* (-1.933)
$\Delta PDQ_{i,t}$	-0.244*** (-2.617)
$WS_{i,t}$	0.024*** (3.831)
$\hat{Y}_{USA,t}$	0.378*** (4.246)
$\mu_{i,t-1}$	0.644*** (8.268)
adj. R^2	0.434
DW	1.935
Number of countries	11
Number of observations	198
Notes: $\Delta i_{i,t-1}$: change in short term real interest rate; $\Delta PDR_{i,t}$: change in structural primary government deficit-GDP ratio; $WS_{i,t}$: adjusted wage share; $\hat{Y}_{USA,t}$: real GDP growth rate in the USA; $\mu_{i,t-1}$: first order auto-regressive term, t-values in brackets, White-heteroskedastizity-consistent standard-errors and co-variances, *** 1%-level, ** 5%-level, * 10%-level	
Sources: European Commission (2001), OECD (2001), SVR (1997), authors' calculations	

Figure 1: Standard deviation of short term and long term nominal interest rates, inflation rates and budget deficit-GDP-ratio in EU-12, 1981-2001

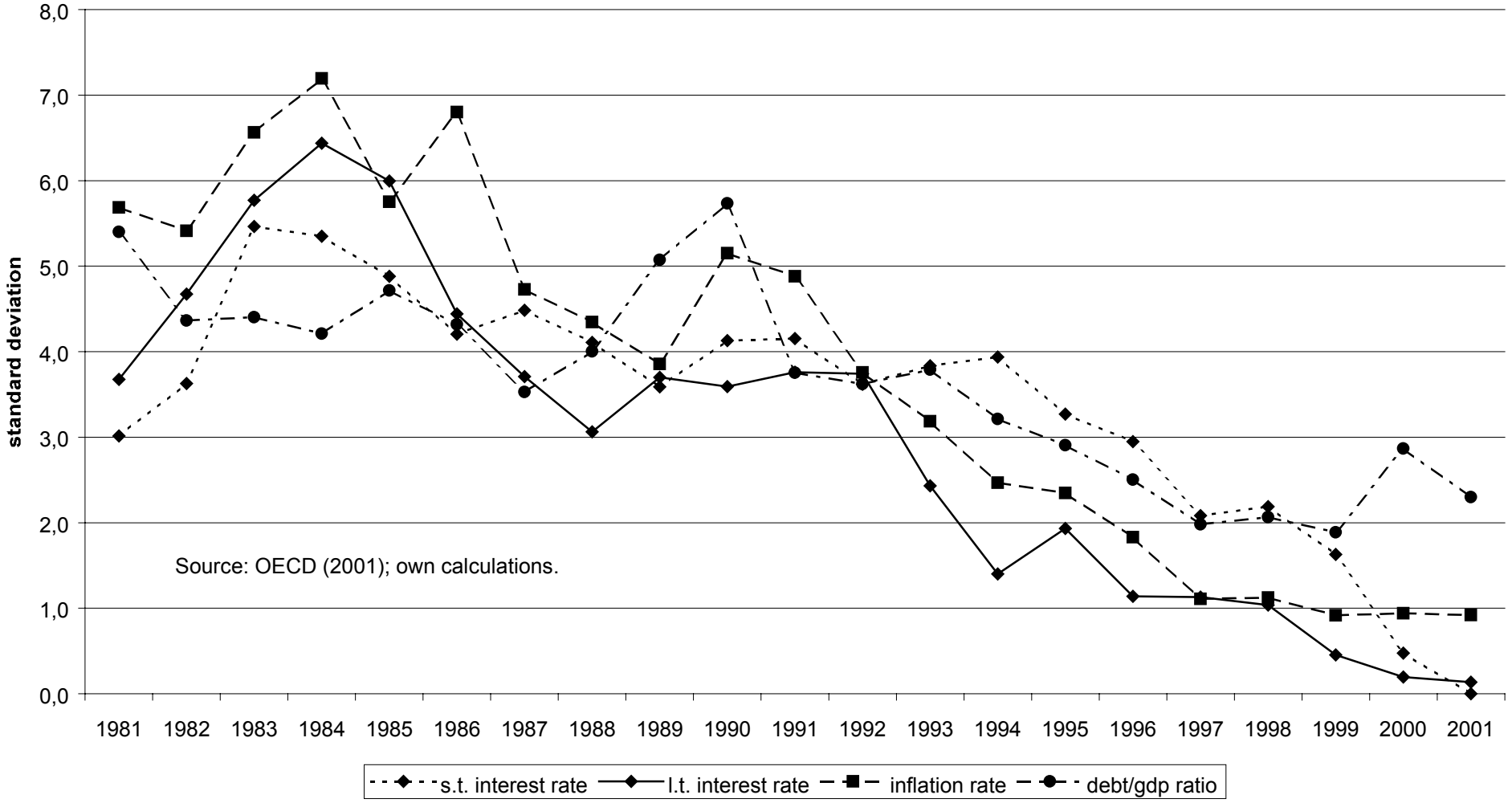

Figure 2: Standard deviation of GDP-growth-rate, output gap, and unemployment rate in EU-12, 1981-2001

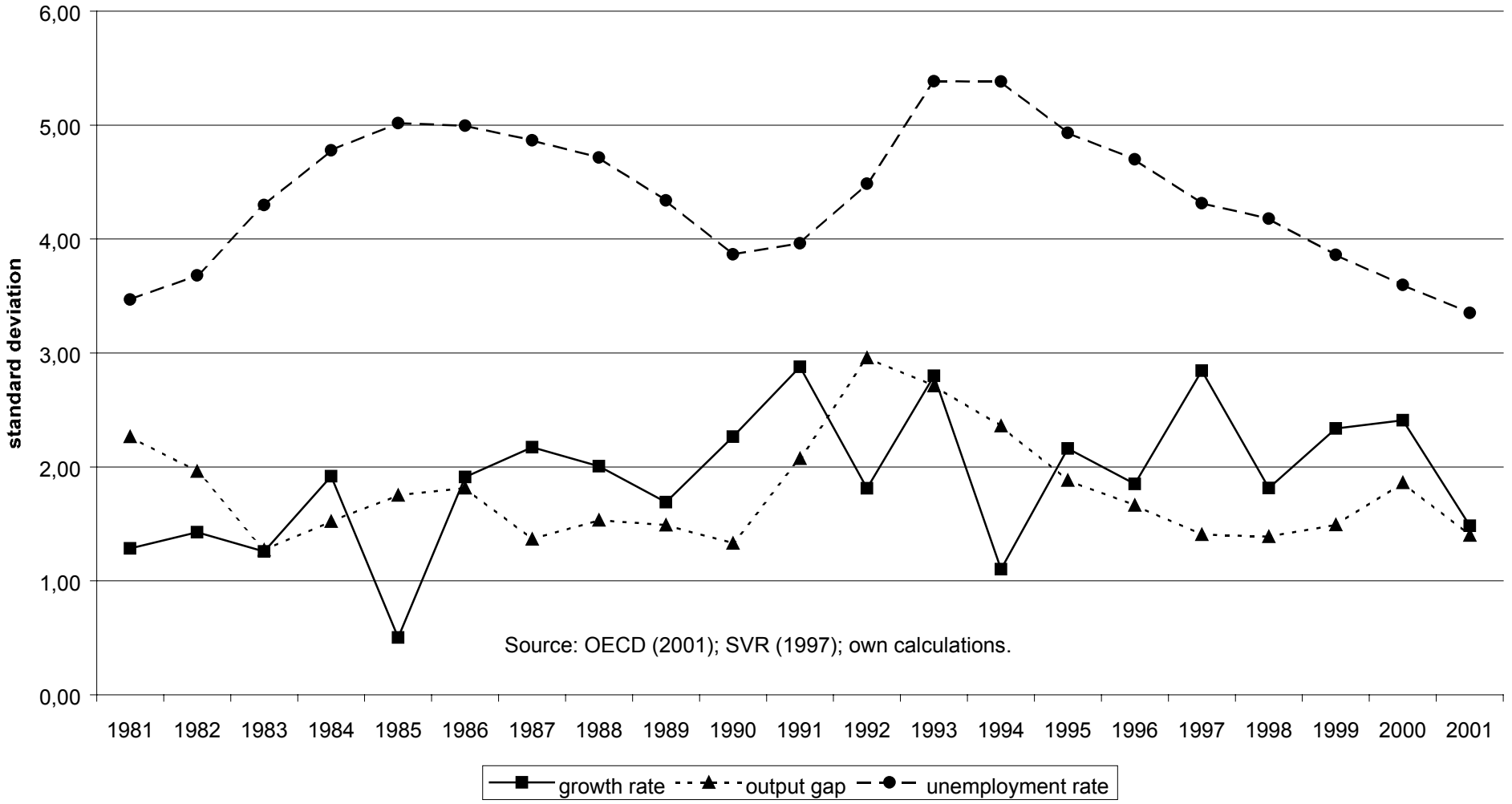

Figure 3: Standard deviation of GDP per capita and GDP per employee in EU-12 (GDP in purchasing power parities with EU-12 = 100), 1981-2001

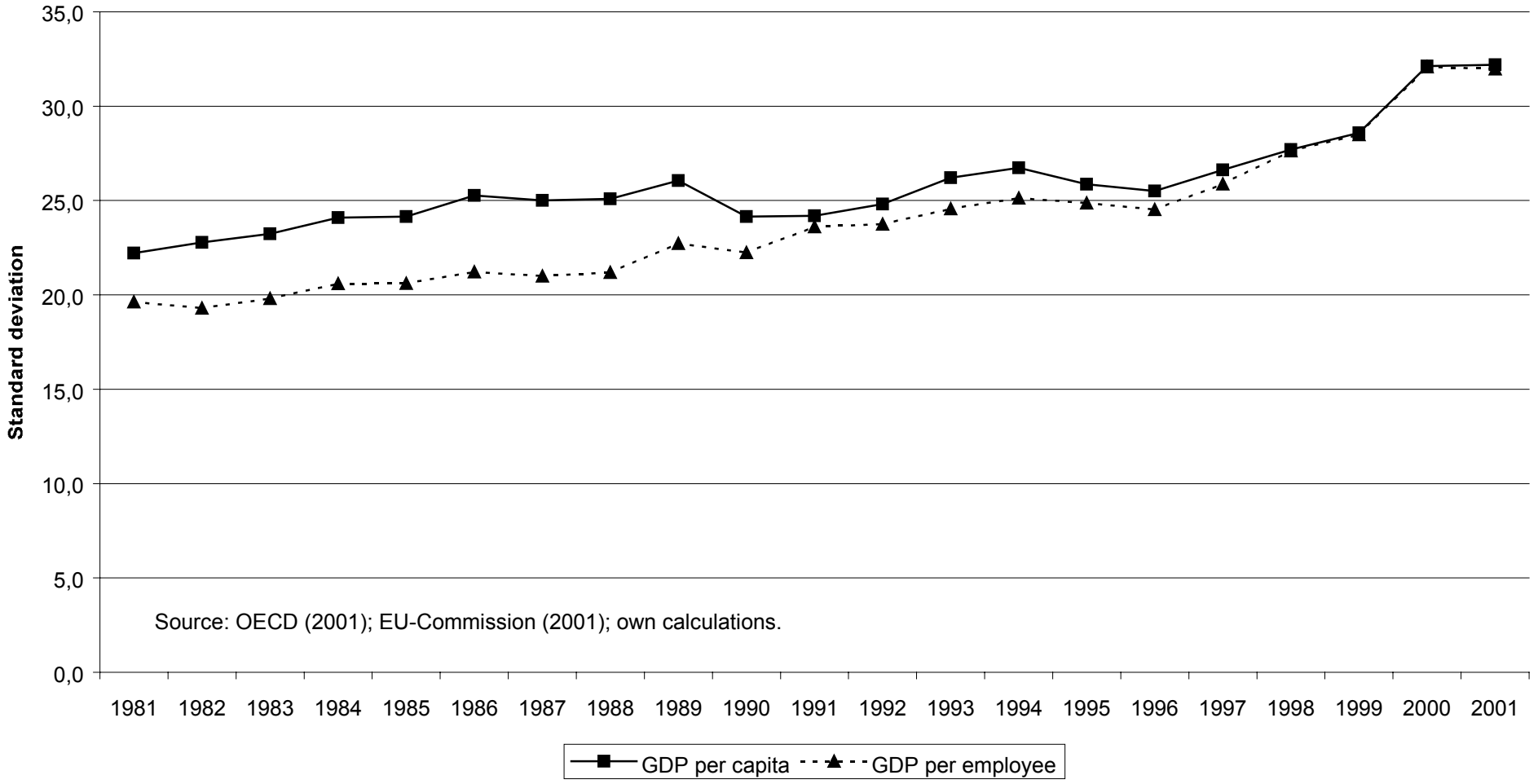

Figure 4: GDP-growth rate, unemployment rate, inflation rate, and deficit-GDP-ratio in EU-12, 1981-2001

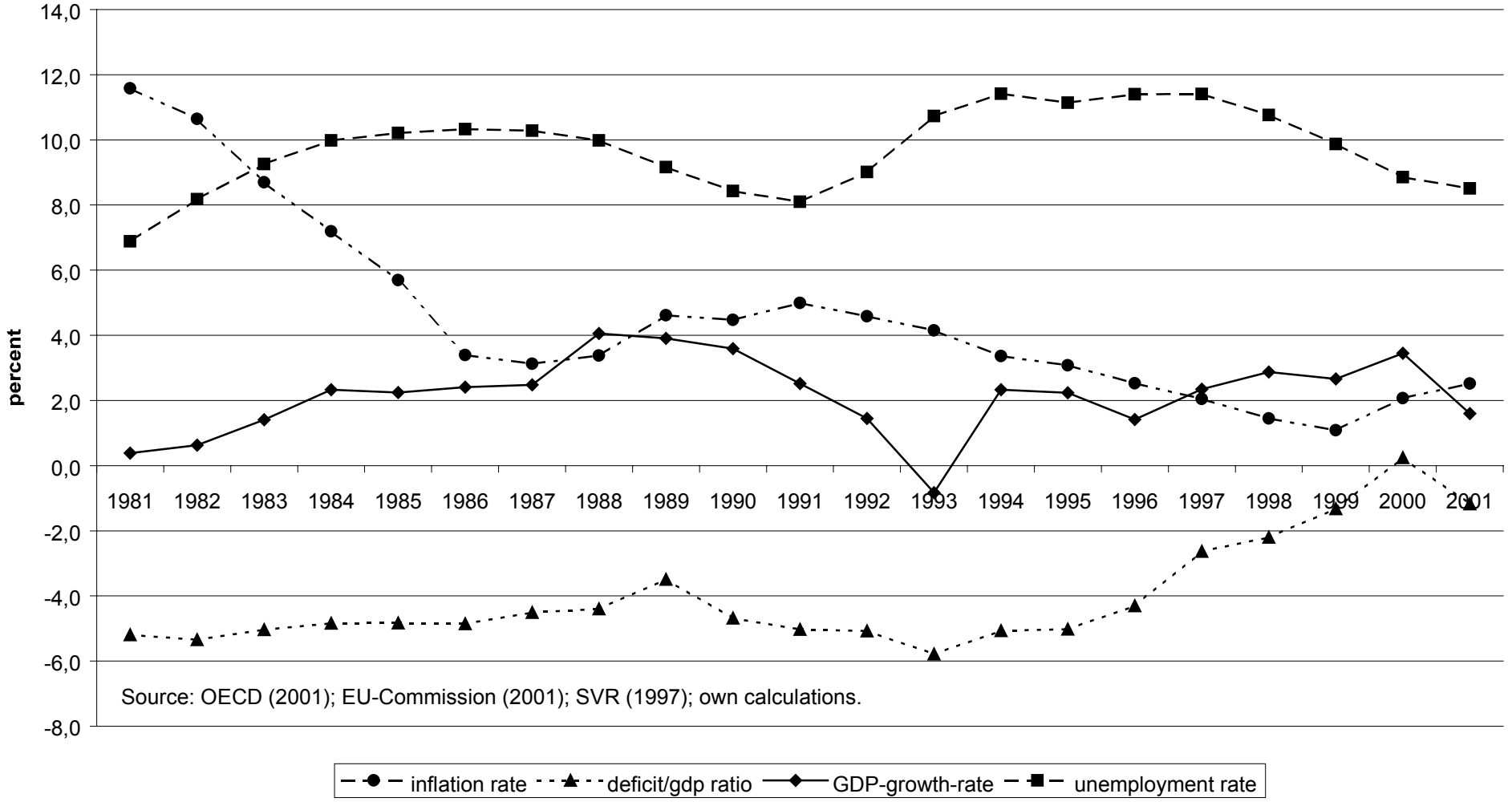

Figure 5: Short term and long term nominal interest rates in EU-12: DM-Group vs. Non-DM-Group, 1981-2001

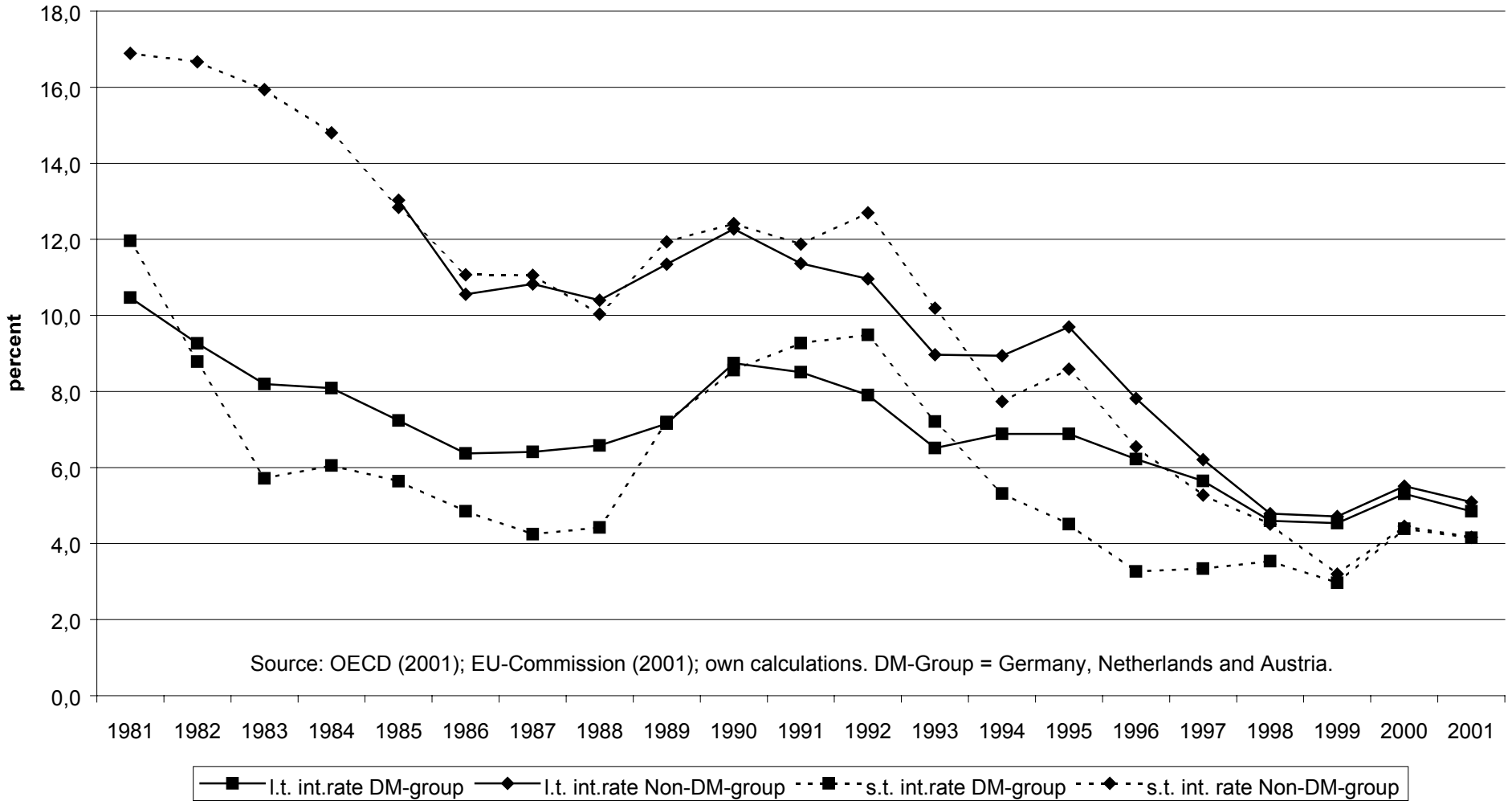

Figure 6: Standard deviation of budget deficit- and primary budget deficit-GDP-ratio and output gap in EU-12, 1981-2001

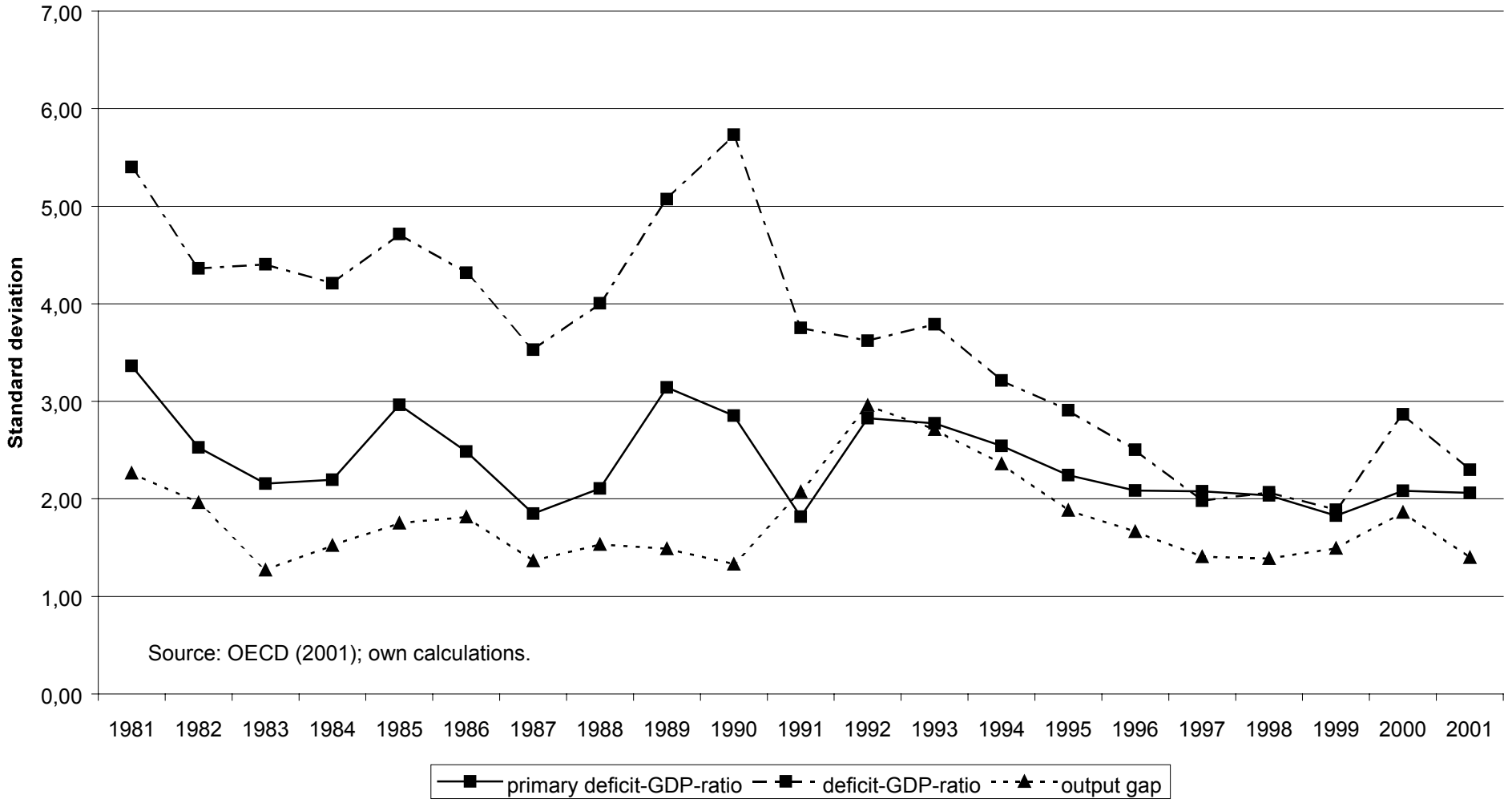

Figure 7: Annual change of structural primary deficit-GDP-ratio and output gap in percent of potential GDP in EU-12, 1981-2001

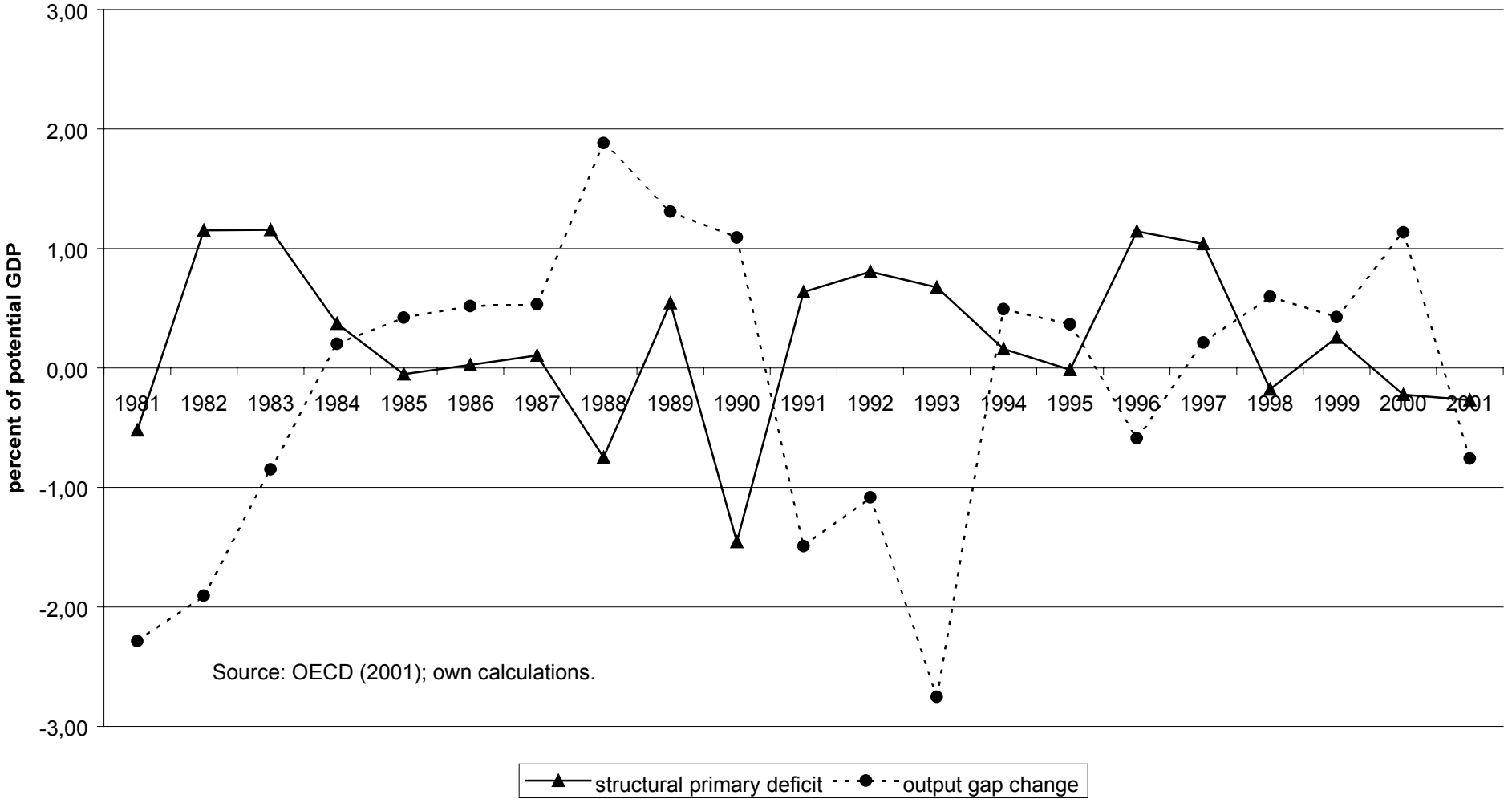

Figure 8: Adjusted wage share in EU-12, 1981-2001