Convergence in Crisis

European Integration in Jeopardy

MICHAEL DAUDERSTÄDT

October 2014

- Convergence in terms of economic growth, income and social conditions requires more rapid growth in economically weaker countries. Economic integration is no guarantee of convergence because it facilitates capital and labour mobility, as well as concentration processes. Catch-up processes in poorer countries can succeed or fail, depending on the relevant framework.

- Since 1999 Europe has had considerable success with convergence. In particular, the Central and Eastern European new member states have made real progress. However, on the southern periphery growth has been weaker and as a consequence of austerity policy has collapsed to such an extent that now divergent development has set in.

- By international comparison growth in the European Union (EU) is more or less at the level of comparably developed countries (such as the United States), but far behind that of catching-up economies (for example China). The EU's social development is proceeding more quickly, however. Convergence within Europe is better than in other areas of integration and within nation-states.

- Enhanced convergence is not likely to happen as a result of either scaling back integration or deeper federalisation. It is not easy for the EU to lend direct support to real convergence and the productivity growth needed for that. However, in order to prevent divergence it can and should cushion the effects of monetary shocks and give the member states more leeway as regards economic policy.

Content

Summary

EU discourse these days tends to conceive of convergence in terms of the Maastricht criteria. By contrast, we shall concentrate on the alignment of economies in terms of economic growth, income and social conditions. Economic theory maintains contradictory views on the extent to which economic integration accelerates or hinders such convergence. Classical economic theory expects that poorer countries will catch up, while more recent theories are apprehensive about concentration. It is important to distinguish between real (especially productivity) and nominal (prices, income) convergence. In global financial capitalism nominal shocks – for example, capital flows – can result in massive distortions in real growth processes.

Since the Second World War Europe has exhibited uneven convergence, with stronger catch-up processes up to around 1973, followed by weak and inconsistent catch-up processes up to 1999. In the period under examination here, from 1999, the findings are not clear-cut, but the majority of growth indicators point to convergence. In particular, the post-communist member states were able to catch up significantly. Growth on Europe's southern periphery, however, was weaker and since 2009 has even been negative, due to austerity. The driver of the catch-up process was productivity, which increased rapidly in the poorer countries. Income distribution in the member states varies considerably. There are also substantial differences with regard to social protection ratios. Convergence can be discerned in terms of life expectancy, social deprivation and workers' social conditions. However, much progress was annulled by recession and austerity policy from 2008/2009. Many studies of convergence confirm these findings.

Although the EU is growing more slowly than other regions of the world – for example, Asia – it is at least doing as well as other advanced economies, such as the United States. Growth in the euro zone, however, is much lower. Levels of income distribution – depending on whether it is measured in terms of purchasing power or exchange rates – are between those of Russia and China. With regard to convergence the EU is performing better than other integration areas and also doing better with regard to convergence within countries (for example, within Germany between east and west).

Comparison of alternative integration models with regard to their convergence capabilities yields a mixed picture, which provides little comfort for either eurosceptics or federalists. Better convergence can be expected from neither a lower level of integration nor from alignment of conditions in member states. However, the EU is doing better than we are often led to believe. Its integration model has instigated catch-up processes. The convergence process is discernible and only in the so-called GIPS countries – Greece, Ireland, Portugal and Spain – have there been problems, which can be attributed to the fatal response by the EU to the panic about public debt. However, social divisions have widened in almost every member state. The EU can support real convergence and the productivity growth it requires only indirectly. In order to prevent divergence processes, however, it should cushion the effects of monetary shocks, give the member states more leeway and seek robust legitimacy for its policies.

The author would like to thank the participants in the Friedrich-Ebert-Stiftung workshop on 25 June 2014 – Henrike Allendorf, Eva Belabed, Uta Dirksen, Heiner Flassbeck, Björn Hacker, Christoph Hermann, Ernst Hillebrand, Jörg König, Jürgen Matthes, Waltraud Schelkle, Andrej Stuchlik and Silke Tober – as well as Heribert Kohl for their many helpful comments and additions.

1. Introduction

According to the preamble of the consolidated version of the Treaties on European Union and on the Functioning of the European Union of 2009[1] the parties – that is, the member states –

> resolved to achieve the strengthening and the *convergence of their economies* and to establish an economic and monetary union including, in accordance with the provisions of this Treaty and of the Treaty on the Functioning of the European Union, a single and stable currency. (Author's emphasis)

The goal of convergence predates 2009, however. Already the Maastricht Treaty, signed in February 1992 by the heads of state and government, committed the EU to combatting social exclusion and discrimination and promoting social justice and social protection, as well as economic, social and territorial cohesion. According to Art. 2 of the EC Treaty of 1992:

> The Community shall have as its task, by establishing a common market and an economic and monetary union and by implementing the common policies or activities referred to in Articles 3 and 4, to promote throughout the Community a harmonious, balanced and sustainable development of economic activities, a high level of employment and a high level of social protection, equality of men and women, constant, non-inflationary growth, a high level of competitiveness and *convergence of economic performance,* a high level of environmental protection and improvement of environmental quality, the raising of the standard of living and quality of life, *economic and social cohesion* and solidarity among Member States. (Author's emphasis)

Traditionally, the EU has in particular set itself the goal of reducing disparities in regional incomes and improving social cohesion. The Treaties of Rome at the establishment of the European Union also mention the goal of developing backward regions. The hope of promoting their economic and social development by joining the EU was an important factor in many poorer countries' decisions to apply for accession and undergo the elaborate process of adaptation to the *acquis communautaire*. In return, the EU expected that the young democracies of southern Europe in the 1980s and those of Central and Eastern Europe in the 1990s would also be stabilised by economic success.

The present study investigates the extent to which European integration has met these expectations. In the following section we try to define the notion of convergence, which remains vague in the treaty texts, more precisely and to examine how far this aim has been achieved. For this purpose, besides a theoretical, empirical and literature-based analysis we shall also compare the EU with other integration areas and federal states. We shall then look at whether other integration models with different degrees of depth might promise more success and what the policy consequences would be.

2. Convergence: Concepts, Theories and Indicators

In this section we summarise European views on convergence, review the relevant theoretical literature – especially economic theories – and discuss the possible indicators, as well as those used in this study.

2.1 Concepts in European Discourse

»Convergence« means a number of very different things in the political and economic discourse of the EU. For a long time it was understood to mean the alignment of (per capita) income between regions or states. Within the EU the notion of cohesion was co-opted for this purpose. In particular with regard to convergence of incomes between regions, which it has pursued since 1973 (first enlargement) with one of its biggest programmes, the structural and regional funds, the EU publishes regular reports.[2]

In the course of the development of the Economic and Monetary Union (EMU) something of a semantic change took place. Now »convergence« was primarily taken to mean alignment of the indicators most important for meeting the Maastricht criteria (that is, the budget deficit, the government debt ratio, inflation and the exchange rate). The member states were compelled by the EU to attain the values laid down here in order to meet their

1. See: http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:C2010/083/01&from=EN

2. The eighth report appeared in 2013: http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/interim8/interim8_en.pdf.

contractual obligations with regard to adopting the euro (with the exception of Denmark, Sweden and the United Kingdom).

Within the framework of the Lisbon Strategy and the follow-up Europe 2020 the EU laid down a series of goals concerning employment, education, research and development, environmental protection and poverty reduction. They were supposed to be achieved by means of national programmes coordinated via the open method of coordination,[3] which would have meant convergence in these areas in the event of success.

As a consequence of the panic about public debt in 2010 the EU and the euro zone adopted a series of macroeconomic surveillance programmes in order to avoid similar crises. Basically, these programmes – the fiscal pact, the European semester – are aimed at public debt or budget deficits and expand or deepen the convergence requirements of the Maastricht criteria. In response to criticism of this one-sided focus, the EU introduced surveillance of macroeconomic imbalances, which by means of a scoreboard includes 11 main indicators (for example, current account balance, competitiveness, household indebtedness) and thus goes beyond mere budgetary coordination of economic policies.

Finally, the notion of convergence can be understood and deployed in a wide variety of ways. Basically, there are three perspectives:

1. real convergence of incomes, living standards, employment rates, share of renewable energies and so on;

2. convergence of policies (for example, fiscal policy, monetary policy, social policy, labour market policy, but also foreign policy) and institutions (for example, central bank independence);

3. convergence of attitudes and opinions (for example, agreement on EU membership or general political, social or cultural preferences).

3. In this way the EU laid down common objectives from which the member states derive individual targets and choose policies to achieve them. The EU oversees progress and, if necessary, calls on recalcitrant countries to try harder.

The present paper regards »convergence« from the first standpoint, that is, real convergence. The second standpoint is addressed to the extent that policies directly influence real convergence (for example, through redistribution of market incomes through taxes and transfer). By »divergence« we understand the opposite of »convergence«, namely the drifting apart of regions or member states in relation to income or other indicators.

2.2 Economic Theories on Integration and Convergence

In this section we look at the most important economic theories concerning what processes drive or inhibit convergence, as well as the extent to which in particular the integration of countries contributes to alignment of their incomes and living standards.

Economic theory[4] distinguishes between sigma and beta convergence, as well as between absolute and conditional beta convergence. Sigma convergence is a decrease in dispersion (generally of incomes) between the units under examination. Sigma convergence also means that per capita incomes in the regions in question are coming closer together over time. Dispersion, usually measured in terms of variance or standard deviation, measures the relative disparities or relative distances between the values in question, and also interprets the gaps between the regions in question with regard to their deviation from the mean. Absolute beta convergence means that the poorer regions or states – the units with lower initial values – exhibit higher growth than the richer regions or states (that is, the units with higher values). By contrast, conditional beta convergence means that growth increases more slowly the higher the initial value is. Absolute beta convergence is a necessary (but not sufficient) condition of sigma convergence.[5]

Income convergence does not necessarily depend on the integration of the relevant economies. Theoretically,

4. Classic examples include: Barro, R. J.: Economic Growth in a Cross Section of Countries, in: Quarterly Journal of Economics 106, 1991, pp. 407–43; Barro, R. J./Sala-I-Martin, X.: Convergence across States and Regions, in: Brookings Papers on Economic Activity, 1991, pp. 107–182; Barro, R. J./Sala-I-Martin, X.: Convergence, in: Journal of Political Economy 100, 1992, pp. 223–251. Sala-I-Martin, X.: Regional Cohesion: Evidence and Theories of Regional Growth and Convergence, in: European Economic Review 40, 1996, pp. 1325–1352.

5. See van Suntum, U.: Regionalökonomik, Wachstum und Konvergenz (http://slideplayer.de/slide/651463/).

the convergence or divergence of autarchic economic areas can also be compared, whose respective growth is driven by various internal processes (saving, investment, employment of labour, innovation). In terms of growth theory in the neoclassical paradigm a long-term convergence of such unconnected economies can even be expected because with a rising capital stock capital productivity diminishes, as a result of which poorer countries register higher capital productivity. This can be imagined somewhat as follows: if a country already has an optimal provision of combine harvesters, so that each farmer produces the maximum quantity of wheat, the use of additional combine harvesters will be low while a less well provided country can still increase its productivity by means of further combine harvesters.

In fact, of course, economic development is always influenced by external economic relationships, which can be shaped via a number of legal frameworks (trade agreements, membership of the World Trade Organisation, more far-reaching integration such as a customs union and so on). Globally, the development question – to be more precise, the question of catch-up growth – with regard to the poorer countries in the world economy has exercised theory and practice for decades. Development theory and policy have presented and pursued various explanations and approaches to underdevelopment and how to overcome it. The biggest success stories – Asian countries such as Japan, Korea, Singapore, Taiwan and, since 1990, China – have by no means been instances of the most influential theoretical models (free markets, the Washington Consensus).

In the present paper the question in the European context concerns the extent to which deeper integration – single market, common currency, policy coordination, common supraregional or supranational policies – influence convergence. To that end we look at the economic processes from which a positive influence can be expected from economic integration on income convergence.

The dominant theory is that of (neo-) classical economics, which posits higher growth from more efficient allocation of the factors of production. A distinction has to be drawn here between models with and models without factor mobility; in other words, with or without cross-border flows of labour or capital. If one excludes cross-border factor movements, as was usual – and realistic – for a long time, then international trade promises gains in prosperity. The *locus classicus* is Ricardo's theory of comparative advantage, which on the basis of a two country/two goods model – England and Portugal, wine and cloth – showed that the prosperity of both countries can increase if they specialise in the production of that good in which they have an advantage in terms of productivity. Whether productivity in the – also for that reason – poorer country is lower in all branches than in the richer country plays no role here.

However, this frequently heard justification for free trade should not and indeed cannot be adduced to imply convergence. Although prosperity in the sense of more opportunities for consumption will in both countries rise above the level of a self-sufficient country – otherwise it would not open up its markets – the degree of increase depends on a number of conditions. Even if the national mobility of factors of production is high and thus the costs of structural adaptation to specialisation are low, the productivity gains between the countries can be distributed very unevenly. Depending on the terms of trade or the exchange rate real incomes in one country can grow much more strongly than in the other. In theory, the previously rich, because more productive, country can lose ground (in comparison with the other, originally poorer country), although it will still be richer than before it started to engage in trade and richer than the poorer country; but of course it can also increase its advantage.[6]

In the neoclassical theory of international trade the patterns of specialisation posited by Ricardo are derived from the relative availability of factors of production; in other words, from the extent to which countries are rich in capital or in labour. But this approach makes sense only if one assumes the absence of cross-border factor movements here, too. Accordingly, poorer countries specialise in labour-intensive production due to lack of capital, while the richer countries concentrate on capital-intensive production (Heckscher–Ohlin). As a result, relative factor prices – wages and profits – tend to come into alignment: in the poorer countries wages would rise due to higher demand, while in the richer countries they would fall. Returns on capital, by contrast, would rise (factor price equalisation in accordance with Stolper–Samuelson).

6. See Appendix.

If one makes more realistic assumptions about factor movements – primarily capital, but to some extent also labour – then from the equilibrium perspective of neoclassical economics capital would flow from richer countries to poorer ones, because marginal returns are higher there, as long as the capital stock is low relative to labour supply. For labour the reverse applies. Accordingly, import surpluses are »normal« for poorer countries if they import capital (goods). However, this phase would be rapidly followed by a phase in which returns on capital – to the extent they are not reinvested in the country – flow to the rich foreign country, which in real terms requires an export surplus. Furthermore, immigrant worker remittances enable additional exports from the host countries to the countries of origin.

These equilibrium approaches, which reflect reality only up to a point, give way in alternative approaches (List; *dependencia* theory) and more modern theories (new economic geography, oligopolistic competition, strategic trade theory, theory of transnational value chains, Krugman, Milberg, Baldwin and so on) to more dynamic concepts, which take more account of the long-term development opportunities that are hindered or blocked by a short-term orientation to current comparative advantages (for example, in the case of raw materials).

In a globalised world economy global investors locate stages of production and of value creation where cost advantages currently exist and thus give rise to competition between locations. There are thus winners and losers from integration, in contrast to Ricardo's classical theory, according to which supposedly all the countries concerned will benefit. These approaches, in contrast to neoclassical models, expect no automatic convergence, but acknowledge agglomeration gains, economies of scale and spillover effects, which give rise to concentration processes.

Economic theory has focused largely on tradable goods (and services) and processes in the real economy. But economies also include sectors with non-tradable outputs (such as the building sector, retail, health care, education) and catch-up processes also find expression in monetary and price terms (see Box 1, Real and nominal convergence). Thus Balassa and Samuelson have pointed out that incomes in non-tradable sectors are in line with income growth in society as a whole even if they exhibit no or lower real productivity increases. Generally speaking, this requires an above-average increase in the price of their output. It can thus be generally observed that price levels are lower in poorer economies.

Box 1: Real and nominal convergence

By real convergence we mean production of goods and services increasing more in a poorer country in relation to a richer country with the consequence that levels of production and consumption come closer together. Basically, this is based on productivity growth (rise in value added per hour or employee), which leads to convergence. In order to increase prosperity in real terms productivity growth of this kind must not involve an imposition on labour (for example, by making production lines go faster) or the environment (for example, by increasing harmful emissions), but should be the result of innovation and investment. Which policy frameworks and reforms drive real convergence is a matter of controversy. Supply-oriented theories expect growth to arise from more competition and deregulation of the markets for labour, capital, goods and services. Demand-oriented approaches emphasise the role of incomes, as well as the complementary actions of the state and enterprises.

By nominal convergence we mean the alignment of incomes and prices. If this is not accompanied and underpinned by real convergence it will lead in poorer countries to import surpluses and current account deficits, that ultimately lead to an adjustment crisis in terms of which unsustainable prices and incomes revert to a real(istic) level. This process can currently be observed in the crisis countries of the euro zone.

As already mentioned in the body of the text real and nominal convergence processes cannot be separated. Nominal shocks such as capital inflows and outflows have real consequences. They trigger real processes that continue to work over the long term (investments or capital destruction). By contrast, real productivity increases also lead to rises in incomes and/or prices in sectors without such strong productivity growth (Balassa–Samuelson effect) and thus to nominal convergence.

Capital inflows are mainly responsible for these real appreciation processes by fuelling inflation in the recipient country and triggering a currency revaluation. They make it possible to finance import surpluses that help to cover rising demand. The extent to which such convergence is sustainable depends not least on how the imported capital is deployed. If it is used for investment, especially to expand export capacities, the risks are lower than in the case of use for consumption purposes. By contrast, capital outflows lead to real devaluation, in which case any possible export surpluses depend on competitiveness. The scarcely regulated global financial markets can cause massive destabilisation in economies open to capital flows by »nominal shocks« triggered by herd behaviour, bubbles or panics.

Finally, catch-up and development processes can be furthered by transfer payments from rich to poor countries. Such payments are normal within national economies and also important in the EU. In the EU both the structural funds and agricultural policy transfer considerable sums. In the short term they reduce incomes in the donor and raise them in the recipient country (for example, in the case of the German »*Länderfinanzausgleich*«, the financial redistribution between federal states). However, they create demand for the output of the donor country and in this way can reduce the incentive for production in the recipient country (possibly also due to real appreciation of the currency). Over the long term, growth effects emerge especially when aid is used for investment purposes and the recipient country's production potential is enhanced. This logic underlies a large proportion of development aid and European regional policy, which often finances infrastructure projects, although frequently without convincing results.[7]

2.3 Indicators for Measuring Economic and Social Convergence

A number of indicators can be used to measure convergence processes empirically. In the present study we consider three sets of indicators:

1. growth;
2. incomes;
3. social living standards.

7. See Tarschys (2003).

In what follows we shall illustrate which indicators are particularly suitable for measuring convergence in these areas.

With regard to **growth** some of the false perceptions put about by often superficial media coverage should be avoided. For example, gross domestic product (GDP) and its growth tell us little about convergence processes because it depends on the size or growth of the population. If apparently high GDP growth lags behind population growth in fact impoverishment is taking place. Per capita measures should thus be used. Furthermore, exchange rate and inflation effects should also be taken into account. Also when comparing real incomes it makes more sense to present them in terms of purchasing power parities than in terms of exchange rates. In the course of a catch-up process real appreciation takes place, usually in a combination of nominal revaluation of the currency and a higher inflation rate, which then tends to reduce the divergence of purchasing power parity and exchange rate (exchange rate deviation index/ERDI).

Even per capita GDP only captures reality in part. It overlooks non-market-related benefits and costs, such as free time, the environment, house work and the informal sector. Thus, for example, the large gaps between German (European) and US per capita GDP can largely be traced back to a higher per capita labour input (in hours). Thus productivity per hour, which can correct the distortions that arise from looking at per capita GDP, is a better indicator of economic performance. Indicators of »decent work« may also be adduced, because higher productivity may only be the result of violating standards.

Although output growth and **income development** are closely related, they must be distinguished. The main problem with the usual growth perspective is that it overlooks distribution. Per capita GDP is an average value which takes no account of income or growth distribution. In the present study, therefore, we also refer to indicators of inequality itself, such as the Gini coefficient,[8] quintile share ratio (S80/S20)[9] and the wage share for functional distribution in order to obtain a more complete picture. Regardless of inequality the poverty rate can be taken

8. The Gini coefficient has a value of between 0 and 100 (often between 0 and 1), where 0 indicates compete equality and 100 (or 1) a situation in which all income accrues to a single person (or entity).

9. Ratio between the income share of the richest and poorest fifths (quintiles) of the total population.

into consideration, which yields the percentage of the population that earns below 60 per cent of the average income. In order to take account of the effects of state redistribution we need to look not only at the distribution of market incomes, however, but also at disposable incomes – after taxes and transfers – as well as the social expenditure ratio.

Besides indicators of (monetary) income **social living standards** can be captured by means of such real indicators as life expectancy, calorie consumption, available living space and durable consumer goods (for example, cars) or PISA results. In the present study we look at life expectancy, deprivation and evolution of the Human Development Indicator (HDI). With regard to societal conditions indicators such as trade union density, collective agreement coverage and employment protection are informative.

The decrease or increase in the standard deviation or variance of the abovementioned indicators can be taken as pointers with regard to convergence or divergence. Other possible variables include the absolute or relative distance between maximum and minimum, changes in which point towards convergence or divergence, as well as varying growth rates as a function of starting level.

Summary

These days EU discourse tends to consider convergence in terms of the Maastricht criteria. By contrast, we shall focus on the alignment of economies with regard to growth, income and living standards. Economic theory makes contradictory assertions concerning the extent to which economic integration accelerates or retards this convergence. Classical economic theory expects that poorer countries will catch up, while more recent theories fear concentration processes. It is important to distinguish between real (especially productivity) and nominal (prices, incomes) convergence. Within the framework of global financial capitalism nominal shocks can massively distort real growth processes.

3. European Development

In this section we consider in particular development in the EU since 1999. We selected this year as a starting point because that was when European Monetary Union commenced; the accession prospects of the – now admitted – postcommunist countries, together with Cyprus and Malta, were pretty much fixed; and economic policy operated under the aegis of preparations for accession. At the same time, the transformation crisis had been overcome. Comparability is another reason for beginning our account in 1999 and not only in the relevant accession year (2004 or 2007 or 2013).

3.1 Looking Back at Development before 1999

However, convergence or divergence processes have a much longer history (Table 1). Basically, convergence was probably stronger in the years 1950–1970 (including in Central and Eastern Europe, which also registered decent growth rates in the initial phase of the planned economy). The EU itself at the time of its establishment as the European Economic Community (EEC) of six states (Belgium, Federal Republic of Germany, France, Italy, Luxembourg and the Netherlands) was fairly homogenous, if one leaves aside southern Italy. The only »poor« country in the first enlargement was Ireland, which by 1999 had emerged as the second most prosperous EU country, even though this spectacular catch-up process only really began 20 years after accession. Only southern enlargement – Greece in 1981 and Spain and Portugal in 1986 – put the convergence problem squarely on the agenda. While Greece initially fell back somewhat relative to the EU average, Portugal and Spain managed to catch up on accession. In the next enlargement round in 1995 three relatively rich countries came on board in the form of Austria, Finland and Sweden.

The first period (1957–1973) is part of the *trente glorieuses* of European post-War prosperity. Southern Europe caught up. Its per capita income rose from 55 per cent of the EU15 average to around 71 per cent, while in Central and Eastern Europe it remained around 47–50 per cent (Ellison 2001). The high growth in the core countries created jobs for migrant workers from the periphery (southern Italy, Spain, Portugal, Greece, Yugoslavia and Turkey). The Fordist growth model – mass production with mass purchasing power – had still not

Table 1: Integration, convergence and divergence in Europe

Period	Speed of integration	Growth	Regional disparities in the EU15	Regional disparity with regard to Central and Eastern Europe
1957–1973	Medium	High 4–5 %	Decreasing	Decreasing
1973–1985	Slow, first enlargement	Low 2 %	Increasing	Increasing
1985–1990	High (*single market,* southern enlargement)	Medium 3 %	Decreasing?	Increasing
1990–1997	Medium (EMU, EFTA enlargement, association of Central and Eastern European countries)	Low 1–2 %	Decreasing?	Massive increase up to 1993–1995, then slowly decreasing
1998–2001	High (EMU, euro, preaccession strategy of Central and Eastern Europe)	Medium 2–4 %	Decreasing?	Decreasing

Source: Dauderstädt/Witte 2001.

been entirely exhausted on the European periphery when the crisis of 1973/1974 hit (end of the Bretton Woods system, oil crisis). Subsequently, productivity growth halved and unemployment rose. The crisis hit the poorer countries, with their dependence on oil imports and political upheavals (fall of the dictatorships), harder than the core countries, even though the relative position of Central and Eastern Europe barely changed.

With the brief exception of 1985–1990 Europe was unable to manage a longer period of growth after this. This five-year period ended with German unification and the collapse of the European Monetary System (EMS). In the late 1980s the poor new member states Portugal and Spain registered decent growth. Central and Eastern Europe stagnated and fell back in relative terms (to 41 per cent of the EU average). The 1990s were a period of weak and fluctuating growth, but Portugal and, especially, Ireland caught up further. Central and Eastern Europe experienced a dramatic relative and absolute fall in incomes, which was recovered only partially in the second half of the 1990s.

The EU15 exhibited significant income differences in its integration area, with four poor member states: Ireland (accession 1972), Greece (accession 1981), Spain and Portugal (accession 1986) had per capita incomes of between 29 per cent and 64 per cent of the EU average at the time of their accession. At least the three southern European countries are still among the poorest member states. On closer examination Ireland, despite its early entry, grew discernibly faster than the EU average only from 1990 (Table 2). Greece was unable to return to the relative level of 1982 (56.1 per cent of the EU average) until 2000. While Spain did not make substantial progress, Portugal made slow but steady progress after EU accession, even though it is still just under 50 per cent of the EU average. This picture looks a lot better if one compares incomes in terms of purchasing power rather than a common currency. The purchasing power of 1 euro is much higher in all poor countries than in the rich EU countries or in relation to the EU average. Comparison in terms of purchasing power is of particular interest from the standpoint of living standard convergence. Table 2 shows that – measured in terms of purchasing power parities – convergence within the EU has progressed.

Only Ireland accomplished a – spectacular – catch up process in the 1990s, making it one of the most prosperous EU countries today. Its per capita income far exceeds the EU average and is in the top group of member states. The major convergence challenge was eastern enlargement, especially the second round in 2007, when Bulgaria and Romania came on board, two larger and very poor countries, while Croatia (accession in 2013) was already at least at the level of the countries that participated in the first round of eastern enlargement.

Table 2: Convergence processes in ECU and purchasing power in cohesion countries (EU=100)

GDP per capita (EU=100)	Year	Spain	Portugal	Ireland	Greece
ECU	1960	36.3	30.8	62.8	41.8
	1970	49.1	35.1	60.8	54.8
	1980	58.0	29.4	60.8	49.9
	1990	68.8	37.1	70.0	43.3
	2000	67.2	49.4	111.7	52.1
Purchasing power parity	1960	59.1	40.1	62.6	43.6
	1970	72.9	50.4	61.2	62.9
	1980	72.7	55.4	65.5	70.0
	1990	76.5	61.0	73.3	58.3
	2000	82.1	75.7	114.3	67.1

Source: Eurostat.

3.2 Empirical Results since 1999

We shall examine the development of convergence in the EU since 1999 in terms of the three sets of indicators already discussed:

1. growth and its drivers;
2. income (distribution);
3. social living standards.

It should be noted that data unavailability in some instances means that it is not always possible to assess all member states over the entire period 1999–2013.

3.2.1 Growth and Its Drivers

In what follows we shall look at the development of per capita income in the 28 EU member states since 1999. We shall consider real per capita incomes in constant (2005 prices) US dollars (World Bank data) so that later we can compare them with other countries outside the EU (see section »Other integration areas«). On the other hand, we compare the development of real per capita income in euros on a purchasing power parity (PPP) basis (Eurostat).

We further differentiate between three groups of countries. It should be clear that the individual countries within each group differ substantially. However, if we do not want to be confined to country-specific considerations, which would go beyond the scope of this study clustering makes sense. The classification adopted here is oriented towards our core question about the history of integration and income levels:

- rich northwest: the 12 richest countries in 1999 – with a per capita income of over 25,000 US dollars or 20,000 US dollars in 1999 – which include the founding members of the EU/EEC and the countries that joined in 1972 and in 1995;

- poorer southern periphery: the three countries of the southern enlargement (with per capita incomes of over 17,000 US dollars or 13,000 US dollars in 1999);

- poor east: the 13 countries of the three past enlargements – countries with a per capita income of below 17,000 US dollars or 13,000 US dollars in 1999 – which, except for Cyprus and Malta, are all in Central and Eastern Europe. Cyprus and Slovenia are borderline cases with regard to income; they could also go in the second group.

It is also worth differentiating, alongside the growth processes over the whole period 1999–2012, between the periods 1999–2007 and 2007–2012, because the financial market crisis and the great recession have led to a wide range of developments.

Table 3: Convergence and divergence in US dollars and euros (PPP) 1999–2012

	Level			Change		
In USD	**1999**	**2007**	**2012**	**99–12**	**99–07**	**07–12**
Standard deviation	15,749	18,650	16,929	7.5 %	18.4 %	–9.2 %
Max–Min absolute	65,114	87,717	77,899	12.5 %	28.1 %	–12.2 %
(Max–Min)/Min	25.5	19.5	15.8	–38.1 %	–22.7 %	–18.1 %
Max/Min	26.5	20.5	17.5	–36.7	–22.7	–18.1
Rich north west	37,266	44,576	42,301	13.5 %	19.6 %	–5.1 %
Poorer southern periphery	19,234	23,116	20,529	6.7 %	20.2 %	–11.2 %
Poor Central and Eastern Europe+	8,573	12,183	12,177	42.0 %	42.1 %	0 %
Euros PPP	**1999**	**2007**	**2012**	**99–12**	**99–07**	**07–12**
Standard deviation	8,202	11,270	10,544	28.6 %	37.4 %	–6.4 %
Max–Min absolute	37,600	58,400	55,100	46.5 %	55.3 %	–5.7 %
(Max–Min)/Min	8	5.8	4.6	–42.6 %	–27.0 %	–21.4 %
Max/Min	9	6.8	5.6	–37.9	–24.0	–18.3
Rich north west	23,642	33,325	33,483	41.6 %	41.0 %	0.5 %
Poorer southern periphery	14,900	22,733	21,000	40.9 %	52.6 %	–7.6 %
Poor Central and Eastern Europe+	9,515	16, 485	18,023	89.4 %	73.2 %	9.3 %

Source: USD: World Development Indicators; euros PPP: Eurostat; author's calculations.

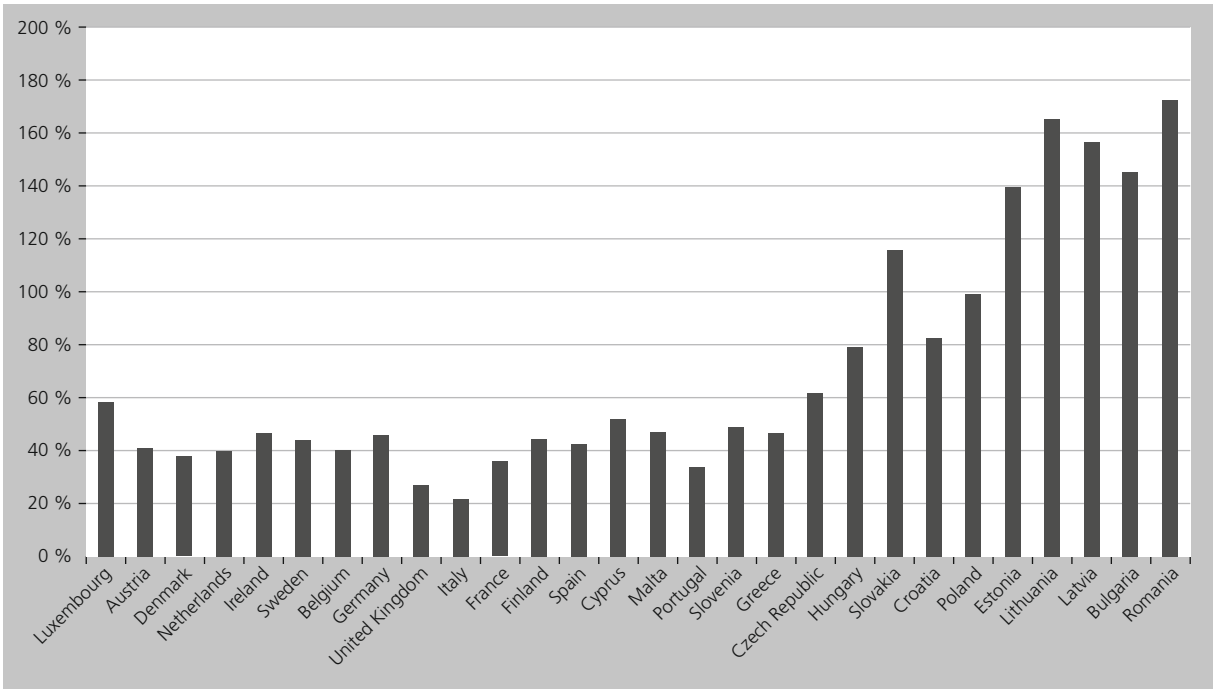
Standard deviation suggests itself as a first indicator of convergence or divergence. It increased slightly across all 28 countries between 1999 and 2012, reaching its maximum in 2007 before receding again (see Table 3). This applies both to exchange rates and purchasing power parities, with the increase in purchasing power being higher. A similar picture emerges if one looks at the absolute distance between the maximum (always Luxembourg) and the minimum (changes over time, but mainly Bulgaria or Romania) because it has increased for both indicators. This speaks against convergence; in particular there is no sigma convergence.

Speaking *for* convergence, by contrast, is the strong increase in the relative difference (ratio between the absolute difference and the lowest income) and the ratio between the maximum and the minimum (how many times more an average inhabitant of the richest country »earns« in comparison with an inhabitant of the poorest). These findings apply equally in the two scales (US dollars and euros PPP), in respect of which the ratio between exchange rates is substantially – around a factor of 3 – more unequal than in terms of purchasing power parities. Convergence is more evident if one considers growth rates as a function of the starting level of the respective country. The group of poorest countries is growing much more quickly than that of the richest countries and the middle group. This positive picture is disturbed by the poor performance of the middle group (Greece, Portugal, Spain), which is growing more slowly than both the poorest and the richest group.

The relative beta convergence – the lower the base level the higher the growth – is presented in Figure 1. This also shows an inconsistency. There would be a clear finding, if there was a continuous decrease in rates with a rising starting level. However, only the strong performance of the Central and Eastern Europe countries is clear, while in the rest of the group no clear connection can be discerned between starting level and growth.

Looking at it from the supply side, per capita income is the product of hourly productivity and labour input (in hours) per person. EU-KLEMS/Conference Board

Figure 1: Nominal growth rates 1999–2012
(%; countries ranked by per capita income in 1999, decreasing from left to right)



Source: Eurostat; author's calculations.

provides data on this (excluding Croatia). Table 4 offers an overview showing, on one hand, that the number of hours worked fluctuates considerably between over 2,000 hours per year and worker (mainly in eastern Europe) and below 1,400 (for example, in Germany). Since 1999 even in respect of this variable there has been relatively constant convergence, associated with a decline in hours (probably due to increasing part-time work). However, the ratio between highest (Max) and lowest (Min) number of hours remains almost unchanged.

The great recession and austerity policy have inevitably exerted a strong influence on unemployment. While up to 2008 substantial convergence is discernible (the spread of and ratio between highest and lowest unemployment rate reached an all-time low in 2008), development diverges massively after 2008. Things are different with regard to hourly productivity. While in the poorer countries it grew rapidly and relatively constantly, in the richer countries it peaked in 2007, before falling off again. Thus the spread diminished only after 2007, while the ratio between highest (Max) and lowest (Min) productivity fell continuously.

Of particular note is the growth in hourly productivity[10] to the extent that, as especially supply-side oriented analyses underline, growth in the poorer countries has been driven primarily by an unrealistic, debt-financed inflation of prices and incomes. Between 1999 and 2007 hourly productivity in the EU27 grew by 20 per cent on average (see Figure 2), but much more strongly in all post-communist countries (with Romania leading the way, on 43.5 per cent, followed by the Baltic states, at between 34 and 39 per cent). The GIPS countries present a mixed picture: Greece was slightly above average, on 21 per cent, while Ireland, on 18 per cent, Portugal, on 8 per cent, and Spain, with only 4 per cent, were

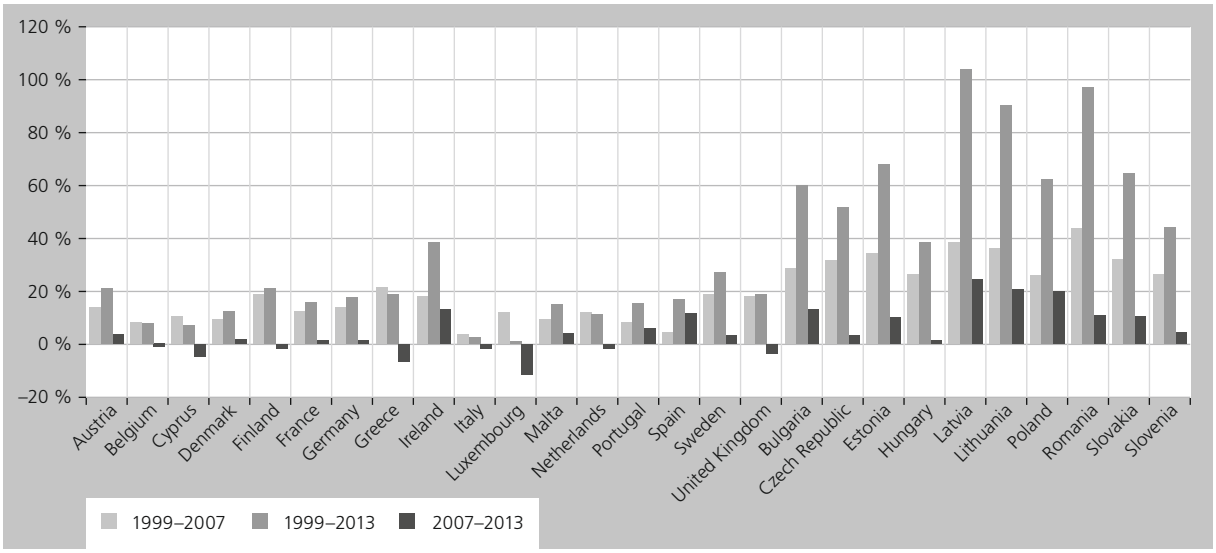
10. Hourly productivity is value created per hour worked. It is more important than value created per employee, because the latter falls, for example, if there is a high proportion of part-time work. As value creation it depends on the prices of primary products and end products. Although one can attempt to correct for these monetary price effects by means of deflators, it can prove difficult if subjective or objective value movements and product changes have to be taken into account.

Table 4: Labour input, unemployment and hourly productivity, 1999–2013

	Spread	Maximum	Minimum	Max/Min
Labour input				
1999	194	2,108	1,437	1.47
2007	203	2,097	1,389	1.51
2013	185	2,036	1,392	1.46
Unemployment				
2000	4.8	18.9	2.2	8.6
2008	1.9	11.3	2.1	3.6
2013	5.6	27.5	4.5	5.6
Productivity				
1999	16.78	73	8	9.23
2007	17.43	82	14	5.92
2013	16.03	73	15	4.74

Source: EU KLEMS/Conference Board; Eurostat; author's calculations.

Figure 2: Growth of hourly productivity (%)



Source: EU KLEMS/Conference Board; author's calculations.

Table 5: Development of distribution indicators

		1999/2000	2005	2007	2009	2012
Mean value	Wage share	63	61.5	61.0	63.5	
	Gini		30.6	30.6	30.5	30.6
	S80/S20		5.0	5.0	5.0	5.1
Dispersion (standard deviation)	Wage share	5.9/7.2	6.1	5.8	6.2	
	Gini		4.3	4.2	3.9	3.6
	S80/S20	1.1	1.2	1.2	1.1	1.1

Source: wage share: AMECO; Gini and S80/S20: Eurostat; author's calculations.

below average. If one looks at the whole period up to 2013, including the crisis, the picture changes little: the EU27 average, due to the longer period, stands at 35 per cent, Central and Eastern Europe are far above it (Romania 96.6 per cent and the Baltic states between 68 and 104 per cent) and the GIPS countries change places somewhat (while Greece still languishes on 18.8 per cent, Ireland is on 38.6 per cent, Portugal 15.8 per cent and Spain, thanks to an improved performance since 2007, on 17.2 per cent).

The best known – thanks to the euro crisis – divergence in the EU concerns unit labour costs,[11] with real unit labour costs diverging substantially less than nominal ones. Because only index values (originally 2005=100, converted here in terms of 2000 as base year) are available as data from Eurostat for a sufficient number of countries and only from 2000, standard deviation in the base year is zero. It then increases constantly to 2012 and rises to 8 (the ratio between Max and Min from 1 to 1.6). The corresponding values for nominal unit labour costs for 2012 are 40 with regard to standard deviation and 2.9 with regard to the Max/Min ratio, although the widest divergence was achieved in 2008 (standard deviation 44; Max/Min 3.3), falling again thereafter.

Overall there has been convergence with regard to per capita income, mainly in Central and Eastern Europe. It was based primarily on their strong growth, which emerged again after the crisis, while in the GIPS countries it collapsed.

11. Unit wage costs are wage costs corrected for productivity; in other words, wages per unit of output. They rise if wages rise or productivity falls.

3.2.2 Income and Distribution

If we look at other aspects of prosperity, such as income distribution, the picture is mixed. The following indicators were examined:

- wage share (data only for 1999–2009);
- the Gini coefficient, the established indicator of income distribution, which varies between 0 for total equality and 100 for total inequality (no data before 2005 for the EU27/28); and
- the S80/S20 ratio between the richest and the poorest quintile (no data before 2005 for the EU27/28).

The picture revealed by Table 5 points to slight convergence. The resumption of increasing dispersion with regard to the wage share in 2009 is probably a consequence of the crisis, which in some countries (for example, Germany) led to a short-term recovery of the wage share. The slight decline in standard deviation is connected to a – albeit slight – rise in average inequality within the member states.

In EU statistics »poor« refers to anyone receiving less than 60 per cent of median income. This statistical approach is controversial, however. It means that in the event of a rise in median incomes households can appear to be poor that previously did not count as poor, even though their incomes have not changed. On this basis »poverty« is thus primarily a statistical artefact because it is measured in terms of the 60-per cent threshold. It can be objected against criticisms of such a statistical definition of poverty that a concern with relative poverty is justified

Table 6: Development of the poverty rate, 2005–2012

Year	2005	2006	2007	2008	2009	2010	2011	2012
Standard deviation	11.5	10.9	10.2	7.9	8.2	8.6	8.5	8.5
Minimum	14.4	16.0	13.9	14.9	14.0	14.4	15.3	15.0
Maximum	61.0	61.3	60.7	44.8	46.2	49.2	49.1	49.3
Max/Min	4.2	3.8	4.4	3.0	3.3	3.4	3.2	3.3

Source: Eurostat and author's calculations.

Table 7: Development of the social protection ratio, 2000–2011

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Standard deviation	5.5	5.7	5.8	6.1	6.1	6.1	6.0	5.9	5.6	5.7	5.6	6.0
Minimum	13.0	12.8	12.7	12.5	12.8	12.6	12.1	11.3	12.7	16.9	17.6	15.1
Maximum	29.9	30.4	31.3	32.2	31.6	31.5	31.2	30.9	31.3	34.7	34.3	34.2
Max/Min	2.3	2.4	2.5	2.6	2.5	2.5	2.6	2.7	2.5	2.1	1.9	2.3

Source: Eurostat and author's calculations.

because it shows that many population groups have not participated in generally rising prosperity. Furthermore, identification of the poverty rate indicates the unequal distribution of incomes.

As we can see from Table 6 there is a considerable dispersion of poverty rates in the EU. While in rich countries the rate tends to be below 20 per cent, in Bulgaria and Romania it is over 40 per cent. The dispersion has contracted since 2005, in respect of which the fall in the ratio between the highest and the lowest rate is to be attributed primarily to the relatively sharp decline in the poverty rate in Bulgaria, from over 60 per cent to below 50 per cent.

Poverty rates are closely correlated with spending on social protection. Bulgaria and Romania are among the member states with the lowest proportion of social spending in GDP (well under 20 per cent), while richer countries spend around 30 per cent of GDP on it. However, this indicator, too, should be approached with caution. A lower share of social spending in GDP is not necessarily due to poor economic performance, but may also be due to relatively low social need (low unemployment or favourable demographic structure). For example, in 2009 in the great recession the social protection ratio rose sharply, only to fall again.

No convergence is discernible in the EU with regard to social protection, perhaps also because of the effects of the crisis (Table 7). Romania, with the lowest rate, and the new member states in general are catching up to some extent, but have rarely climbed above the 20 per cent mark and not by much (with the exception of Slovenia), while in some countries with developed welfare states (for example, in Scandinavia) the existing high rate has increased further. The sharp rise in the austerity countries – Greece, Spain, Portugal and Ireland (where the rate more than doubled between 2000 and 2011) – is striking.

Income distribution also changes due to the effects of the tax system and social transfer payments. As Table 8 (based on OECD data) shows, the Gini coefficient is improving significantly and in almost all EU member states above the OECD average.

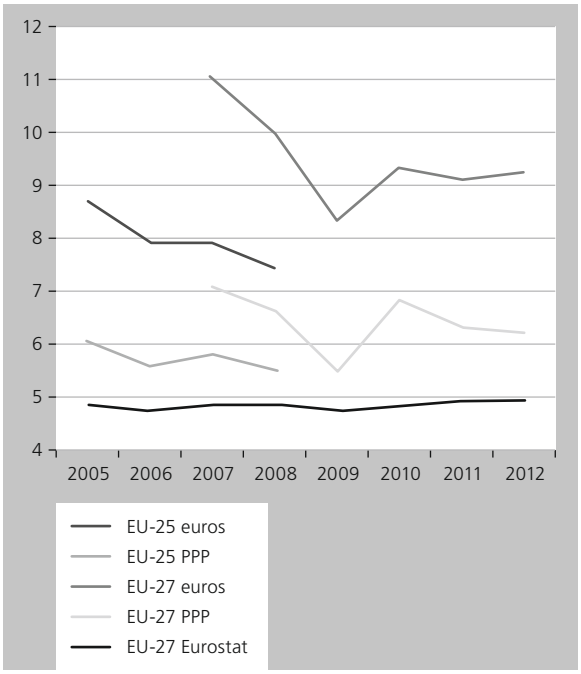
Table 8: Changes in income distribution as a result of redistribution

	Gini Disposable income	Gini Market income	Difference
Slovenia	0.2296	0.3723	0.14
Denmark	0.2433	0.3744	0.13
Czech Republic	0.2532	0.3804	0.13
Slovakia	0.2534	0.3628	0.11
Belgium	0.2563	0.4081	0.15
Finland	0.2584	0.4031	0.14
Sweden	0.2588	0.3680	0.11
Austria	0.2607	0.4062	0.15
Hungary	0.2791		
Ireland	0.2892		
Luxembourg	0.2915	0.4363	0.14
France	0.2920	0.4310	0.14
Netherlands	0.2972	0.3908	0.09
Germany	0.3000	0.4197	0.12
Estonia	0.3056	0.3889	0.08
Greece	0.3067		
Poland	0.3097	0.4348	0.13
Spain	0.3130	0.4052	0.09
Italy	0.3342	0.4647	0.13
United Kingdom	0.3446	0.4559	0.11
Portugal	0.3467	0.4581	0.11
OECD-29	*0.3041*	*0.4073*	*0.10*

Source: OECD (2011).

If one looks at the development of income distribution between and within countries together in an evaluation of the development of inequality throughout the economic area of the EU a sharp decline in inequality since 2009 becomes evident, which then, after a brief rise during the recession, settles into stagnation (Figure 3).

Figure 3: Development of inequality in the EU



Source: Dauderstädt/Keltek 2014.

3.2.3 Social Living Standards

Life expectancy has generally increased in all member states. For the EU27 data are available only for 2007–2012, however. During this period there was convergence with regard to life expectancy because the standard deviation of 5.8 years fell to just under 5 years, declining by around 10 months. Life expectancy rose more strongly (by around 4 years) in countries with lower life expectancy than in those where it was higher (by 2 years), which means that both sigma and beta convergence exist.

Another indicator of social living standards is deprivation, which concerns the proportion of households experiencing certain material problems. Such deprivation includes, among other things: no holiday lasting at least a week outside the place of residence; debts; no regular meals with meat or fish; heating problems; involuntary lack of colour television set, telephone or car; poor housing conditions (too dark, leaking roof, no bath, no indoor toilet). Table 10 shows that the crisis has had a substantial influence on the development of deprivation. Up to 2008 convergence is discernible, followed by

Table 9: Changes in life expectancy

	2005	2006	2007	2008	2009	2010	2011	2012
Standard deviation	5.9	5.8	5.8	5.6	5.1	5.2	5.0	4.9
Minimum	56.6	57.7	58.3	59.2	60.1	60.5	59.9	60.3
Maximum	75.1	75.6	75.8	76.2	76.3	77.2	77.2	77.1
Max/Min	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3

Source: Eurostat and author's calculations.

Table 10: Changes in deprivation, 2005–2012

	2005	2006	2007	2008	2009	2010	2011	2012
Standard deviation	14.2	13.1	12.3	9.3	9.5	10.3	10.1	10.0
Minimum	1.8	1.1	0.8	0.7	1.1	0.5	1.2	1.3
Maximum	58.0	57.7	57.6	41.2	41.9	45.7	43.6	44.1
Max/Min	32.2	52.5	72.0	58.9	38.1	91.4	36.3	33.9

Source: Eurostat and author's calculations.

divergence, which falls back once again from 2010, although without returning to the good levels of 2008.

For the purposes of international comparison the indicator of human development (Human Development Index or HDI) used by the United Nations Development Programme (UNDP)[12] suggests itself, which encompasses the various dimensions of development (income, life expectancy, education and so on). HDI values within the EU fluctuated in 2012 between over 0.9 (1 is the fictive highest value) for the Scandinavian countries, the Netherlands and Germany and below 0.8 for Romania and Bulgaria. Since 2000, however, convergence has been clearly discernible. Standard deviation fell from 0.05 to 0.04. While the maximum value (Sweden) in 2000 was still 27.4 per cent above the worst value (Romania), in 2012 it was only 17.8 per cent (between the Netherlands and Bulgaria).

Finally, we shall look at the development of the situation of the unemployed in terms of statutory labour standards, the minimum wage and trade union density. The indicator for labour standards is a value with 18 components that encompasses various labour law regulations and varies between 0 and 100. Standards changed little between 2006 and 2013 (they were somewhat better in 2010). However, convergence has taken place, with good standards declining somewhat at the top and poor standards improving slightly. This process also improved until 2010, when it went into reverse.

With regard to the minimum wage there has been strong convergence, with a slightly falling average. Convergence has been due primarily to an increase in the minimum wage in the poorer countries. With regard to trade union density there was a marked average decline between 2007 and 2011 with a relatively similar dispersion.

Overall, the social situation has improved, although in and after the crisis some indicators – deprivation, the situation of employees – deteriorated somewhat. Life expectancy and the indicator for human development (HDI), by contrast, rose and converged.

3.3 Review of the Literature

In what follows we present a series of studies that investigate convergence within the EU. The classic text of convergence between states and regions is Barro et al. (1991), in which the authors examine convergence within the United States (between federal states and

12. See: http://hdr.undp.org/en/data.

Table 11: Situation of employees

	Standard deviation	Maximum	Minimum	Max/Min	Average
	Labour standards				
2006	13.5	90.0	49.0	1.84	70.1
2010	11.6	89.0	53.0	1.67	71.4
2013	12.0	89.0	52.0	1.71	70.1
	Minimum wage (EU average = 100)				
2008	55.3	198.0	31.0	6.4	100.1
2010	53.1	193.0	33.0	5.8	99.0
2012	50.9	176.0	36.0	4.9	99.1
2014	47.4	192.0	42.0	4.6	98.8
	Trade union density (%)				
2007	18.6	72.0	8.0	9.0	29.1
2011	18.3	69.0	7.0	9.8	27.2

Source: Kohl (2013); author's calculations.

regions, 1990–1987), Europe (1950–1985) and some nation-states (including Germany). Their key result is that the convergence rate stands at around 2 per cent. Since then there have been numerous studies, of which we can present only a selection. Table 12 provides a first overview.

3.3.1 Long-term Development of Convergence

The historical findings of Barro (1991), who does not cover the period of our investigation, were generally confirmed by a series of studies, such as that of the Council of Economic Experts (1998: 175) for the EU, although with a somewhat slower convergence rate of 1 per cent for the period 1960–1997 and by the Institute for Economic Research, Cologne (1997) on the EU regions with a convergence rate of 1.6 per cent for the period 1980–1993.

The World Bank (2012), in its comprehensive report on European growth, also finds good convergence up to the early 1980s (see Figure 3).

A study by Kaitila (2013), which looks at convergence over a longer period, also shows that, especially from 2000, convergence accelerated, before collapsing in the crisis, at least in the short term. He also investigates how convergence between states affects distribution within states and finds that inequality has mainly – but not always – increased.

Goecke has a similar finding with regard to development between states (2013); however, he restricts himself to the EU15. He also finds convergence (beta and sigma) up to 2009 and a falling off thereafter.

3.3.2 Convergence during the Period under Examination

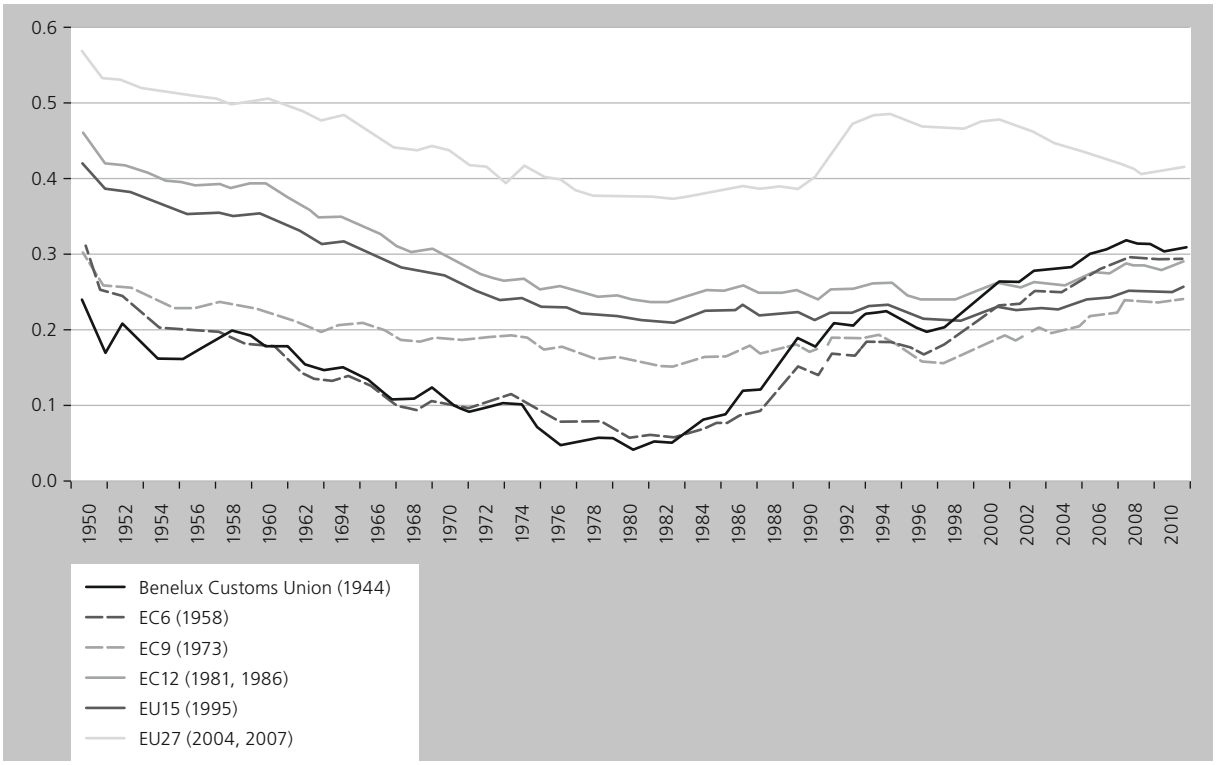
There are numerous studies of the period we are examining, although they concern different regional contexts. Some are limited to the euro area, others to certain groups of countries (new member states, Ireland/Germany) or look at regions rather than states.

The EU has issued a cohesion report every three years for the past few decades, which deals in particular with convergence between the regions. Unfortunately, the reports are not always equally detailed (recent reports in particular have been much shorter) and do not cover the same contents in comparable form, so that temporal development is difficult to capture. Figure 4 (copied from the Fifth Cohesion Report) confirms for the period 2000–2011 what our findings have also shown: up to

Table 12: Brief overview of the selected literature

Author/year	Period	Place/unit	Indicator	Finding
Long-term convergence of GDP (before 1999)				
Barro et al. 1991	1950–1985	EU12/states	GDP per capita	2 % convergence
SVR 1998	1960–1997	EU15/states	GDP per capita	1 % convergence
IW 1997	1980–1993	EU12/regions	GDP per capita	1.6 % convergence
Kaitila 2013	1960–2011	EU15/states	GDP per capita	Convergence up to 2007
			Gini	Convergence
Goecke 2013	1950–2012	EU15/states	GDP per capita	Beta convergence up to 2012 Sigma convergence up to 2007
World Bank 2012	1950–2010	EU27/states	GDP per capita	Convergence up to 1980 and from 2000
Convergence of GDP (various regional contexts)				
Prochniak and Witkowski 2013	1972–2010	EU15/states	GDP per capita	3 % convergence
	1993–2010	EU27/states	GDP per capita	5 % convergence
Crespo et al. 2012	1995–2009	EU28/states	GDP per capita	Convergence
Hoyer and Berndt 2013	1986–2012	EU27/regions	GDP per capita	Convergence, weaker from 2007
Hishow 2014	2007–2013	Euro-states	GDP per capita	Divergence from 2007
Wunsch 2013	1960–2008 1980–2008	States Regions	GDP per capita	Strong beta, weaker sigma convergence
Barrel and te Velde 1999	1976–1997 1991–1997	Ireland Eastern Germany	GDP per capita Productivity	More rapid than Barro
Busch 2014	2004–2014	8 accession countries	GDP per capita	Accelerated convergence
Campos et al. 2013	1972–2012	17 accession countries	GDP per capita	Integration benefits
Bouvet 2010	1977–2003	EU15 (not including IRL and LUX) Regions	GDP per capita	Oscillating phases of convergence and divergence
EU 2013	2000–2012	Euro-12/states	GDP per capita	Convergence up to 2007 Divergence from 2007
Convergence of other indicators				
Estrada et al. 2012	1998–2011	Euro-12/states	Unemployment	Convergence up to 2007 Divergence from 2007
Dreger 2007	1999–2005	EU15 and EU27	Prices	Convergence
Pose Tselios 2013	1995–2000	EU15/regions	Welfare	Convergence
Kohl 2013	2008–2011	EU27/states	Labour relations Living standards	High disparities
König 2014	1999–2010	EU15/states	EU index	Convergence
Filipetti and Peyrache 2013	1993–2007	12 accession and candidate countries	Productivity	Increase/convergence
Lessenski 2012	Unclear	EU27 and Balkans	Economy, quality of life, democracy, governance	Various clusters

Figure 4: Convergence and divergence in Europe, 1950–2010



Source: World Bank (2012), p. 77.

2008 growth rates were higher the poorer the country (the composition of groups of countries varies slightly from ours). With the crisis, however, the middle group fell back.

The report by the European Commission (2013), Employment and Social Developments in Europe, examines convergence (European Commission 2013: 301ff) and also confirms a convergence of incomes up to 2007 and then a partial divergence (for the euro-crisis countries) and ongoing convergence for the eastern European member states. The divergence after 2007 also concerns the labour market and the social situation.

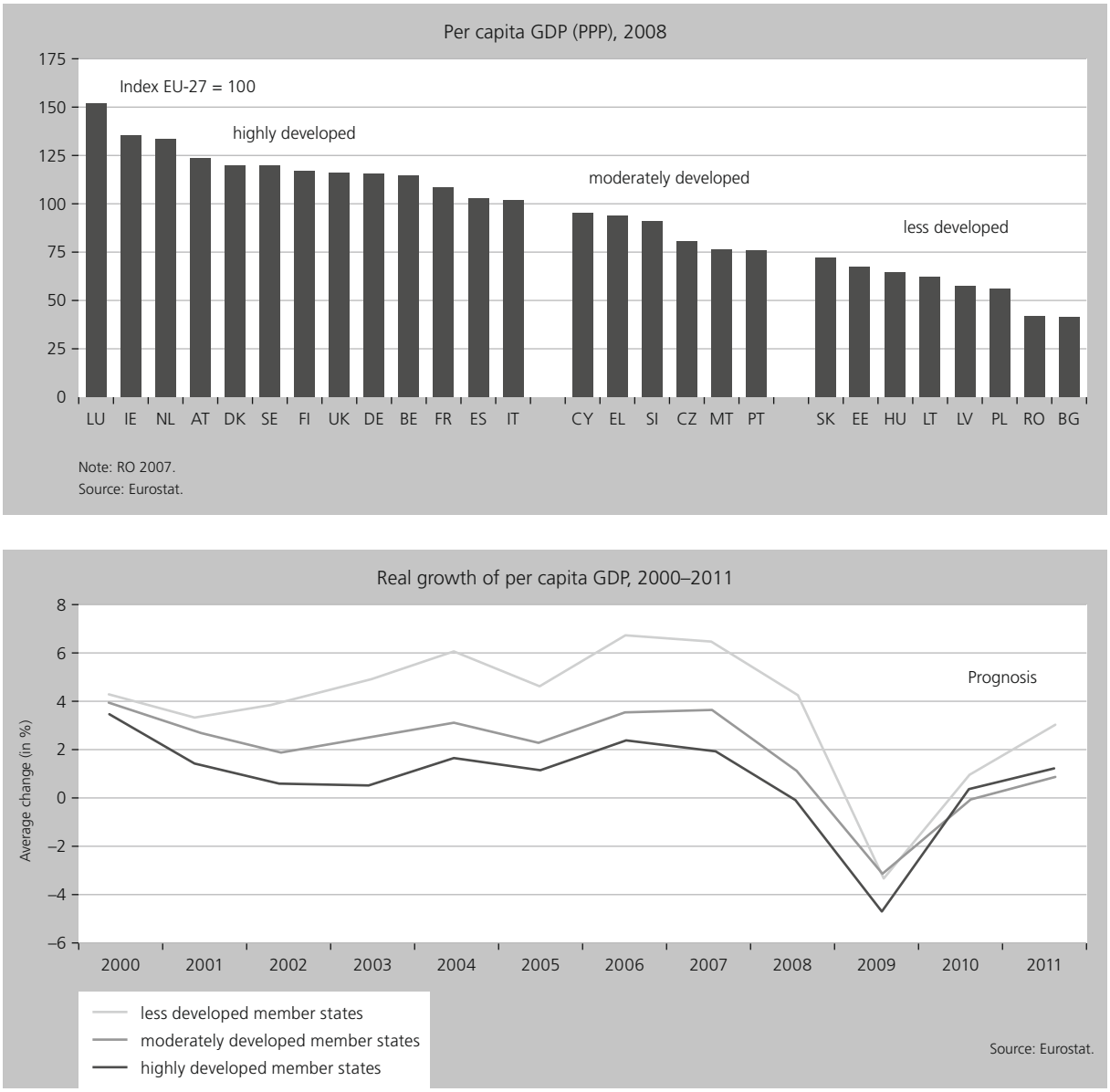
Próchniak and Witkowski (2013) ask themselves the same basic question concerning beta convergence for two groups of countries: EU27 for 1993–2010 and EU15 for 1972–2010. Their model calculation yields a high convergence (5 per cent a year) for the first group and still 3 per cent for the second, which puts them well over Barro's convergence of 2 per cent.

Crespo et al. (2012) examine the normal convergence of per capita income within the EU28. However, they do not limit themselves to the past, in which they ascertain convergence between 1995 and 2010, but boldly project up to 2070, expecting further convergence because investments in education and child care will foster growth.

Bouvet (2010) finds alternating phases of convergence for the 197 regions of the EU15 (not including Ireland, Luxembourg, eastern Germany and Groningen): 1979–1982, 1986–1989, 1992–1993, 2000–2003. The regional disparities are twice as high in the EU as in the United States. Convergence derives from countries' catching up (convergence of states), while regional disparities internal to states are not decreasing.

Hoyer and Berndt (2013) look at convergence primarily for regions from the perspective of the European Investment Bank (EIB). They find convergence since 1986, with the standard deviation from 2000 to 2007 falling by 2.4 per cent a year, and then to 2009 by 0.15 per cent.

Figure 5: Per capita GDP 2008 and growth 2000–2011 in three groups of countries



Source: EU, Fifth Cohesion Report.

They also mention the higher growth rates of the new member states and the catch-up process that this entails.

Barrel and te Velde (1999) are a little more optimistic as regards the speed of convergence, but point out that the countries undergoing catch-up development that they investigate, namely eastern Germany and Ireland, are special cases.

Wunsch (2013) examines beta and sigma convergence both between member states and between regions. He identifies three phases: western Europe catching up with the United States (1950–1973); northern and southern Europe catching up with central Europe (1974–1993); and eastern Europe catching up with western Europe (1994–2010). Between 1960 and 1999 he finds strong beta convergence and weaker sigma convergence up

to 1980. Regional convergence was weaker because regional differences often increased within countries.

Busch (2014) takes the tenth anniversary of eastern enlargement as the occasion to look at the development of the new member states (not including Bulgaria and Romania). He finds an acceleration of growth after accession, which he attributes to heightened investment, migration and access to EU funds.

Hishow (2014), by contrast, favours a stronger internal devaluation but discerns high political and social hurdles, for which reason he is generally sceptical of monetary union. He concentrates his investigation of convergence on the euro zone, although he surrenders consistency somewhat by leaving out the eastern European euro countries. He, too, finds a catch-up process up to 2007, although this has gone into reverse due to the euro crisis (public debt panic and austerity). Because, in his view, inflation rates inevitably converge in a currency area he fears that many euro countries are incapable of catching up, which means that Europe only has a choice between two evils: wind up the monetary union or move to a transfer union.

A contrafactual study by Campos et al. (2013) tries to prove that EU membership has been positive for member states' growth. For the purposes of comparison the study looks at how fictional, structurally similar countries that are not EU members would have fared. Analysis shows a positive productivity and growth effect of EU membership.

3.3.3 Convergence of Other Indicators

Confined to the euro countries Estrada et al. (2012) follow an approach that analyses not only growth but also the labour market (unemployment, employment), inflation and competitiveness. They find that up to 2008 unemployment rates and prices of tradable goods converged, but not those of non-tradable goods. They do not expect major effects from attempts at internal devaluation, but regard the problems of countries with external deficits as structural problems (lack of innovation and so on).

Using a multidimensional approach to convergence König (2014) investigates the intensity of integration of the 15 »old« member states of the EU (not including Luxembourg) by means of an »EU index« (market participation, adjustment to economic cycles, compliance with EU regulations and so on). Comparing 1999 and 2010 he finds for the EU15 that the depth of integration has increased in all countries. Dispersion (according to the author's calculations) has increased in tandem with this.

Filippetti and Peyrache (2013) examine the role of labour productivity in convergence. They find that capital accumulation is the most important factor in explaining the growth in labour productivity among poorer countries, although major differences remain, calling for special efforts, especially to close the technology gap.

Dreger's (2007) study on price convergence shows that prices in the EU have converged since 2004, rising in the new member states, while falling in the old ones. Price differences are higher in relation to services than in the case of goods and indicate both the importance of looking at income in terms of purchasing power parity and the role of price rises in the catch-up process (Balassa-Samuelson).

Pose and Tselios (2013) consider a welfare index that, following Amartya Sen, combines growth and distribution, although only for a brief period (1995–2000) and in the regions of the EU15. In this period they establish convergence, which they attribute above all to women's higher labour force participation.

Lessenski (2012) presents a »catch-up index«, with four dimensions: economy, quality of life, democracy and governance. Each of these dimensions is mapped by an indicator of complex composition. On the basis of these values Lessenski distinguishes between six clusters within the country groups he investigates, which in addition to the EU28 includes the Western Balkans. He establishes different levels of convergence with the standards of his control group, the EU15+2 (EU15 plus Malta and Cyprus), ranging from catching up fairly well (Estonia, Slovenia and Czech Republic) to lagging behind (Bulgaria, Romania and the Western Balkans).

Kohl (2013) discusses convergence and divergence but in fact looks not at changes in dispersion or intervals but rather at indicators of labour relations (wages, union density) and social conditions (poverty, social benefits and services). He notes a deterioration, caused, on one

hand, by the crisis and, on the other, by sharp disparities between the member states.

Summary

Between the Second World War and 1999 Europe exhibited unequal convergence with strong catch-up processes up to around 1973 and weak and uneven ones thereafter. In the period under investigation here from 1999 findings are not unambiguous, but the majority of growth indicators point towards convergence. The post-communist countries in particular have caught up well. Growth on the southern periphery has been weaker and from 2009 receded again due to austerity. The catch-up process was driven by productivity, which increased more rapidly in the poorer countries. Income distribution changed little, but convergence is discernible in terms of poverty rates. Redistribution is uneven in the member states. Thus social protection ratios differ sharply, without converging rapidly. With regard to social living standards convergence is found in terms of life expectancy, deprivation and the situation of employees. Progress on many fronts was put into reverse by the recession and austerity policy from 2008/2009, however. The review of studies of convergence confirms this finding.

4. Europe by International Comparison

The EU and, in particular, the euro zone are not currently among the most economically successful regions in the world. Although their per capita income is relatively high, it is lower than the average for advanced economies. This is due to the number of relatively poor member states from Central and Eastern Europe. EU growth is broadly on a par with the average of the developed countries, for example, the United States, while that of the euro zone is substantially below it (see Table 13).

The reasons for this are to be found in the comparatively low and falling propensity to invest (see Figure 6) and high unemployment (see Table 14).

The Human Development Index (HDI) makes it possible to compare Europe's social development. As already mentioned, the EU average improved between 2000 and 2012 from 0.818 to 0.862, an increase of 5.4 per cent. Broken down, the increase was 4.4 per cent for the group of countries with a very high HDI and 3.3 per cent for the United States, while the group of weaker countries with a high HDI improved by 9.1 per cent (from 0.695 to 0.758). By comparison Europe does better in the social domain than in the economic one.

Europe's performance with regard to convergence should be measured not only in terms of facts and figures, but also in comparison with other integration areas. Such a comparison has consequences for policy recommendations. Depending on whether regions under comparison do better or worse it would seem to make sense either to introduce such structures and policies into the EU or to modify existing ones. We look at two types of area of comparison: (i) other international integration areas, such as the Mercado Común del Sur (the Southern Common Market or Mercosur), the North American Free Trade Agreement (NAFTA) and the Association of Southeast Asian Nations (ASEAN); (ii) national economies in which convergence of subnational regions is characterised by deeper integration.

4.1 Other Integration Areas

From among the many integration areas (free trade zones, customs unions and so on) worldwide we selected three for comparison with the EU, namely Mercosur, ASEAN and NAFTA. This is because they have a similar income level (in contrast, for example, to the Economic Community of West African States, ECOWAS) and also look back on a longer period of integration than other integration areas.

Nevertheless, such a comparison is not unproblematic, due to a number of marked differences. First, none of these integration areas is as deeply integrated or has as many member states as the EU. Second, the development differences are sometimes even greater than in the EU. Finally, each integration area has its own particular features. Mercosur exhibits relatively low income differentiation, apart from Paraguay. In ASEAN, which overall is much poorer, there are two outliers with high incomes, namely Brunei and Singapore (in the EU the same applies to Luxembourg). NAFTA, in turn, has only three very large members, one of which, Mexico, is much poorer than the two rich northern countries the

Table 13: Per capita income and growth by international comparison (GDP per capita PPP; current prices in US dollars)

Region	1993	2000	2005	2010	2013	Growth 1993–2013 (%)
EU	16,107	21,898	26,693	30,255	32,152	99.6
Euro area	18,457	24,709	28,992	33,484	34,016	84.3
Advanced economies	20,814	28,147	34,202	38,392	41,653	100.1
G7	22,606	30,239	36,386	40,255	43,817	93.8
USA	20,814	28,147	34,202	38,392	53,101	100.8
Emerging and developing countries	2,387	3,168	4,392	6,196	7,308	206.2
– Asia	1,272	2,077	3,214	5,227	6,549	414.9
– Europe	6,234	8,262	11,445	14,380	16,336	162.0
– ASEAN-5	2,253	2,969	3,992	5,250	6,208	175.5
– Latin America	6,149	7,588	8,991	11,262	12,667	106.0
– Middle East and North Africa	4,643	5,940	7,557	9,525	10,659	129.6
– Sub-Saharan Africa	1,215	1,413	1,819	2,283	2,565	111.1

Source: IMF WEO; author's calculations.

Table 14: Unemployment rates by international comparison

Region	1993	2000	2005	2010	2011	2012	2013
Advanced economies	7.5	6.0	6.3	8.3	8.0	8.0	7.9
Euro area	10.0	8.8	9.2	10.2	10.2	11.4	12.1
G7	7.1	5.6	6.2	8.2	7.7	7.4	7.1

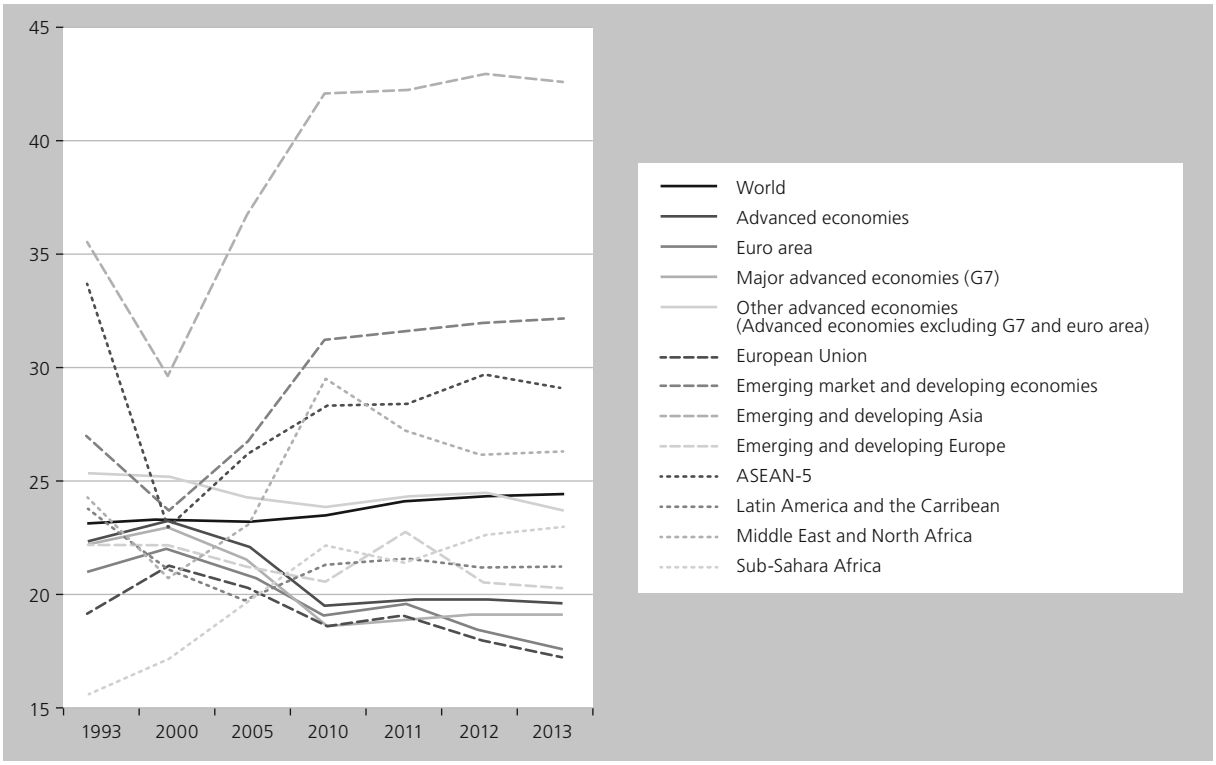
Source: IMF WEO; data only for these country groups.

United States and Canada. Thus the whole convergence dynamic depends on Mexico's catch-up process.

Comparing growth rates (as an indicator of economic success) in these integration areas between 1999 and 2012 with those of the EU ASEAN comes off best, with an (unweighted) average of 63.4 per cent (although from a very low starting level, especially after the Asian crisis of 1997/1998). Mercosur registers 27.4 per cent, NAFTA 14.7 per cent and the EU 32.6 per cent. The low NAFTA score is somewhat surprising given the high income levels in the United States and Canada. The growth differences between the integration areas indicate patchy global beta convergence, which requires that the groups of poorer countries grow more rapidly than groups of richer countries. The faltering exception is Latin America. The EU is poorer in comparison with NAFTA.

With regard to convergence performance Table 15 shows that the EU comes out fairly well. In all areas the dispersion of per capita income (standard deviation) increased, but the increase was lowest in the EU. Looking at the per capita income ratio between the richest and the poorest country the decrease in variance was highest in ASEAN, while in NAFTA it stagnated and in Mercosur it deteriorated. It should be noted here, however, that in ASEAN this value was already very high at the start of the period under consideration and substantially above that of the EU even in 2012.

Figure 6: Investment rates by international comparison



Source: IMF WEO.

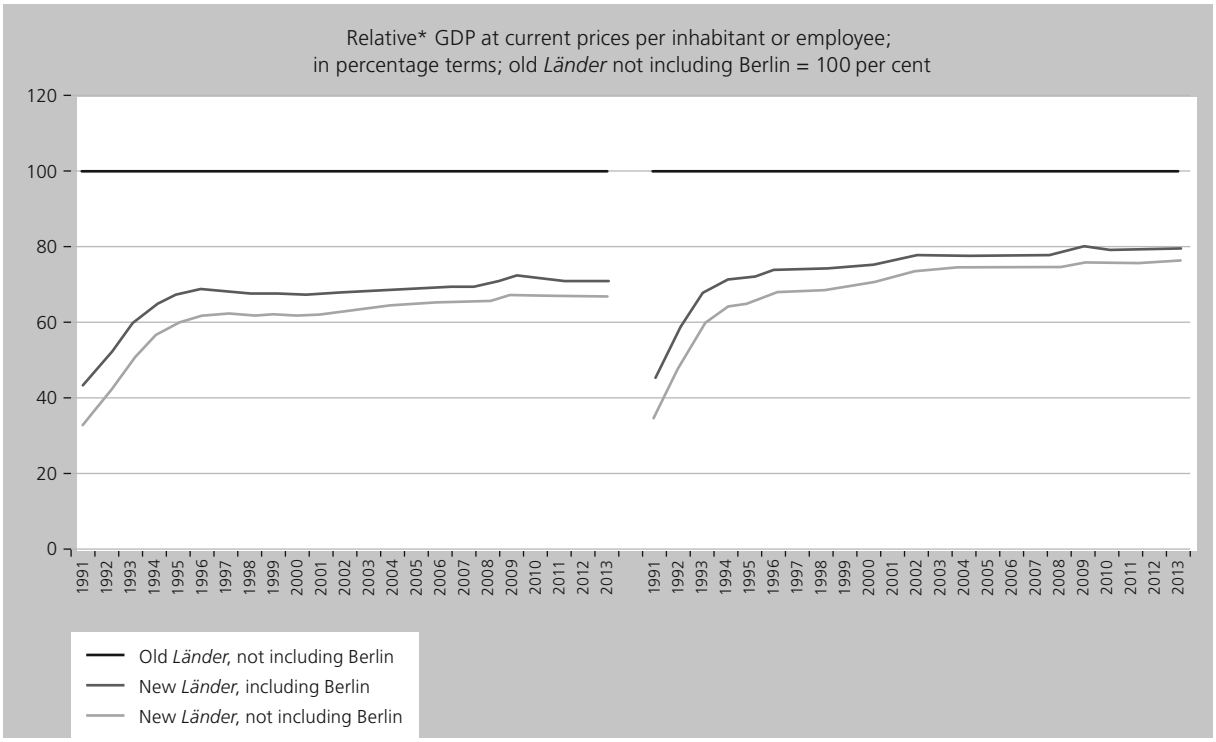
Table 15: Comparison of convergence processes in integration areas

	Mercosur	**NAFTA**	**ASEAN**	**EU**
Standard deviation 1999 (USD)	1,525	16,749	10,168	15,749
Standard deviation 2012 (USD)	2,521	19,123	12,362	16,929
Standard deviation change	65.2 %	14.2 %	21.6 %	7.5 %
Max/Min 1999	3.4	5.3	83.3	26.5
Max/Min 2012	4.4	5.3	37.1	17.5
Max/Min change	27.7 %	0 %	–55.4 %	–36.7 %

Source: World Development Indicators; author's calculations.

If one looks at the growth of various countries within a particular integration area in terms of beta convergence (poor countries grow more rapidly) the following picture emerges: in Mercosur the income of the poorest country (Paraguay) grew, by some distance, the most slowly. In NAFTA Mexico's growth was between that of the United States and of Canada, in other words, neither higher nor lower than that of many other Latin American countries (for example, Mercosur; Castaneda 2014). In ASEAN, by contrast, the three poorest countries – Cambodia, Laos and Vietnam – grew much more rapidly than the average (no data are available for Myanmar). Because, into the bargain, Brunei's per capita income fell slightly this explains ASEAN's good performance with regard to the Max/Min relationship.

Figure 7: Eastern Germany's stagnating catch-up process



* Relative GDP per inhabitant and per employee is calculated as the ratio between the current eastern German and the western German (not including Berlin) value.

Source: Working group »Volkswirtschaftliche Gesamtrechnungen der Länder«: Bruttoinlandsprodukt, Bruttowertschöpfung in den Ländern der Bundesrepublik Deutschland 1991 bis 2013. Series 1, Volume 1, Stuttgart: Statistisches Landesamt Baden-Württemberg, appears annually, March 2013 figures, Berechnungstand des Statistischen Bundesamtes: August 2013/February 2014, at: http://www.vgrdl.de/Arbeitskreis_VGR/tbls/R1B1.zip, last accessed on 1 April 2014; calculations and presentation by IWH.

Source: IW Halle (2014).

4.2 Convergence within a Nation State

Within countries there are also regional income differences, which may rise or fall. As a rule, it can be expected that convergence within countries will be more marked than between them, because central governments adopt appropriate policies to support convergence, which is often the goal or even the statutory obligation of the government. For the purpose of comparison with the EU there are fairly large states with sharp regional development differences.

The abovementioned work of Barro et al. (1991) examined and confirmed convergence between the federal states of the United States. However, with regard to the reduction of the differences it is moving only at the rate of 2 per cent a year.

For Germany (convergence between western and eastern Germany) Ludwig and Scheufele (2009) estimate a reduction of around 2 per cent a year. Such a rate is not very satisfying in political terms because 37 years would be needed to reduce the gap even by half. The Institute for Economic Research in Halle (IW Halle), in a press release of 15 April 2014, even diagnosed that the catch-up process may grind to a halt (see Figure 7). Within Europe Italy is another example of high regional differences – between the Mezzogiorno and northern Italy – which have diminished little despite considerable regional policy efforts and migration.

These figures can be compared with the distribution data (although not broken down regionally) for income, if one uses the figures presented by Dauderstädt/Keltek (2014) for the EU. While, according to them, the ratio between

the income of the richest and the poorest quintiles of the EU population lies between 6 and 7 (purchasing power parities) or between 9 and 10 (exchange rates), other large economies, according to the UN Human Development Report (2013) register 4.9 (India), 7.3 (Russia), 8.4 (United States) and 9.6 (China).

Summary

Although the EU is growing more slowly than some other regions of the world (for example, Asia), its growth matches that of other advanced economies (for example, the United States). Only the euro zone is performing much worse. The Human Development Index improved in the EU more rapidly than in comparable countries. Income distribution (depending on whether it is calculated in terms of purchasing power parities or exchange rates) lies between the values for Russia and China. With regard to convergence the EU performs better than other integration areas and also does better with regard to convergence within countries (for example, within Germany between east and west).

5. Convergence Scenarios in Alternative Integration Models

As we have shown, income convergence in the EU has been fairly substantial over longer periods, even in comparison with other integration areas or with convergence within countries. The EU's weak points are, on one hand, the relatively low convergence between regions, although that is due rather to divergence processes within countries, and on the other hand the discontinuity of convergence. Especially after the crisis of 2008 convergence has slowed down in the euro zone or even switched to divergence.

In particular in response to the euro crisis the EU's existing integration and growth model has been called into question. Although most positions are not new, they have gained in importance due to the crisis. In what follows three ideal-typical alternatives are compared with a continuation of the current model (status quo):

1. decentralised market integration;
2. deeper political integration;
3. partial disintegration.

It should be noted here that the status quo itself is not static because the EU – not least in response to the crisis – has begun to make a series of substantial changes in particular with regard to economic policy and for the euro zone, especially in relation to the coordination of economic policy and banking oversight (see Hacker 2013).

The comparison encompasses the following aspects: chances of realisation of and problems with the respective model; its susceptibility to convergence from both a theoretical and – as far as possible – an empirical standpoint; and its compatibility with successful catch-up processes. For the purpose of comparison we selected Ireland, as the EU country that has undergone the most pronounced catch-up process, and East Asia, the region with the most successful model by global comparison. Finally, we examine the extent to which the respective scenarios could facilitate more social cohesion within the member states.

5.1 Decentralised Market Integration

By »decentralised market integration« we mean an integration model oriented primarily towards dismantling market barriers and in which the states in the European area largely refrain from centralised coordination policy. This corresponds more or less to »conservative« British ideas about European integration. In Scharpf's terminology (Scharpf 1996) this represents a concept of negative integration based on market creation without positive integration in terms of policies aimed at regulating and guiding markets.

To be sure, such a model cannot be implemented in its purest form. It would involve many powerful interests subjecting themselves to a fictional market discipline. Ultimately, even a maximal policy of market opening would require accompanying common policies, such as competition policy, common minimum standards with regard to consumer protection and conditions of production (for example, the environment, workers' rights), unless one is willing to accept a race to the bottom and concentration processes. With regard to

markets for services, as well as for capital and labour, other challenges arise, if one wishes to obviate all barriers: rules on immigration and regulation of banks and other capital market institutions.

The question of a common currency also remains open, which, on one hand, would be in the interest of stronger market integration (price transparency, lower transaction costs), but on the other hand would require a common monetary policy. If one took the abovementioned »conservative« British ideas as the basis of this model of decentralised market integration, of course, a common currency would be out of the question. But in that case the question arises of how one would deal with competitive devaluation by member states and with currency crises that would be a distinct possibility due to (now free) capital movements.

In the context of the question at issue in this paper particular attention must be paid to whether such an integration model would promote convergence or rather lead to more divergence. The theories on the relationship between convergence and divergence summarised briefly at the outset unfortunately suggest rather contradictory arguments:

- According to neoclassical theory, on the assumption of perfect markets, market integration should accelerate convergence. Not only would prices and factor incomes converge via markets for goods and services, but free factor mobility would organise this process more rapidly and directly if capital flows into the poorer countries and labour into the richer ones. Profits and wages would adjust to one another and productivity would be bound to increase. Internal distribution within member states between capital and labour should – according to the theory – change in such a way that wages would rise in the poorer countries and fall in the richer ones, while returns on capital would develop conversely.

- On the more realistic assumption of imperfect markets, characterised often by increasing economies of scale and the benefits of agglomeration, the picture changes considerably. In this context it is likely that economic activities will intensify where advantages are available from pools of skilled workers, complementary state institutions (infrastructure, research, training) and business clusters. These development hubs attract qualified workers and capital and serve the large common market. To be sure, certain inputs – for example, stages of production that require a lot of low qualified labour – will be sourced from (or outsourced to) locations where it can be had most cheaply. In global value chains, however, local employees can obtain only relatively low incomes.

In actual economies, of course, macroeconomic experiments are not feasible, so that from an empirical standpoint certainty is unattainable. Needless to say, an EU based on pure market integration could not really be compared with a nation-state, in which regions compete with one another or cooperate because nation-states generally have comprehensive common policies. Such an EU should rather be compared with integration areas without strong community policies or even with the world economy as a whole, in which market barriers, especially with regard to markets for services, capital and labour, are still very high. As we saw in the previous section, other integration areas could hardly be described as exhibiting better convergence.

Another way of examining the capacity to support convergence of this integration model is to ask to what extent it permits or promotes successful catch-up strategies. This brings us, first, to the Irish model and then to the East Asian model.

- The Irish model is easily compatible with the model based on pure market integration. This is owing, to a certain extent, to its fundamental framework, because it relies heavily on attracting foreign investment by means of favourable inducements (low taxes, qualified and cheap workers). Tax policy, indeed, is dependent on trading partners' tolerating tax dumping of the kind that encourages profit shifting in company accounts and tax avoidance by means of transfer pricing, and that no supranational authority takes action against it.

- The East Asian model of protected export promotion and financial repression (low interest rates, forced saving), by contrast, is based on intervention in both goods markets (protectionism) and in capital markets (capital controls). Decentralised integration could scarcely be realised by such means.

The bottom line is that such an integration model would boil down to intense and primarily unregulated competition between states and locations. That facilitates catch-up processes of the kind witnessed in Ireland and

also Central and Eastern Europe. At the same time, however, it is also possible that poorer countries can get stuck in a vicious circle of low competitiveness and lack of resources of the kind needed to improve local conditions. We can also assume – at least during a longer period of transition – that income distribution will shift in favour of the capital that takes advantage of lower costs in cheap locations. In the case of Ireland the wage share fell dramatically and around a fifth of national value added flows into the coffers of foreign investors.

The Irish example does not bode well for social cohesion. However, it does not have to be so. Classical economic theory (Ricardo, Heckscher and Ohlin) would even expect some improvement in the scope for distribution and wage increases in poorer countries. However, they assume immobile factors of production. In a globalised economy there is strong pressure to capitalise on location advantages, often at the expense of social development. To the extent, however, that high quality locations raise growth and employment, there is also scope for higher real wages and social benefits, albeit without redistribution. Finally, wages also rose substantially in Ireland, although without improving the wage share.

5.2 Partial Disintegration

In this model states regain more room to manoeuvre with regard to economic and monetary policy. Given the existing level of integration this would require partial disintegration, either by member states' abandoning European coordination or by »renationalising« some of the competences surrendered to the EU. An important question in this context is whether this would involve fundamental and permanent changes or short-term one-off measures. Needless to say, the former would call EU integration into question more than the latter, which could even be implemented by arrangement with the EU.

One substantial disintegration step would be withdrawal from the monetary union. For euro countries that would mean a reversion to their national currency, while for other EU states it would involve the end of convergence efforts within the framework of the Maastricht criteria (debt level, budget deficit, inflation, exchange rate fixing), to the extent that they are not in their own interest outside this framework. More problematic would be a resumption of competences in industrial policy (subsidies) and foreign trade policy (trade policy, regulation of cross-border movements of capital and labour) because they would call into question the very basis of the European integration model.

Evidently, such an integration model, especially a partial winding up of the monetary union, would be very costly both politically and economically and thus unlikely. The resulting exchange rate changes and capital movements would impose considerable adjustment pressure on the member states concerned. On the other hand, weaker countries in particular could improve their competitiveness through external devaluation – of the exchange rate instead of so-called »internal devaluation« by means of nominal-wage moderation – if they were willing to accept cuts in real wages. Without the latter, wage rises – in compensation for inflation due to devaluation – would negate any cost benefits. These countries could also tackle recession by means of an expansive fiscal policy and/or a loose monetary policy. If a state was to borrow abroad it would have to do so either in foreign currency – which in the case of devaluation would increase the debt – or in its own currency at a high interest rate in order to compensate for exchange rate risk.

What would be the effects of this integration model on the chances of convergence or the risks of divergence? Theory gives us little to go on. Probably it would enable the member states to run a more flexible economic policy and, ideally, to ensure that recessions were shorter and shallower. Partial exit from the free trade zone would, for example, enable the southern European countries, even without devaluation, to use import duties and export subsidies to compensate for the price differences occurring due to the different unit wage cost development between them and the northern EU countries. At the same time, customs revenues would help to rehabilitate public finances, as long as they were not negated by spending on subsidies.

However, long-term convergence requires growth, which is dependent on the development of productivity and dynamic competitiveness (in contrast to price competitiveness and any existing comparative advantages). Primarily, however, this process is driven by investments by companies and the state in the physical and intangible capital stock (facilities, infrastructure, research, education and training).

Empirically, a looser integration model along these lines can best be compared with the EU before Maastricht, especially if one entertains the idea of exiting from the monetary union as a disintegration step. Convergence during this period concerns the southern European countries and Ireland. As the abovementioned studies (for example, World Bank 2012; Figure 4) show, this convergence was not particularly good. If anything, it was better in the period prior to 1980, which would suggest even stronger disintegration, namely exit from the EU.

Ireland's catch-up took place mainly in the 1990s and was characterised neither by devaluation, high deficits nor debt, which would have hampered deeper integration, such as participation in the monetary union. One possible problem for Ireland's strategy would have been a wider range of responses on the part of other member states, which were prevented by EU law from implementing national measures to counteract Irish practices concerning profit shifting and tax competition. If, by contrast, EU member states had wanted to pursue the East Asian catch-up model, they would have had to implement partial or even far-reaching disintegration in order to be able to apply the necessary policies, such as protected export promotion and financial repression.

It would be easier to safeguard social cohesion against competitive pressures under such a model of partial disintegration. However, here, too, distributive room to manoeuvre depends on general growth and prosperity. In the event that the economic pie grows bigger (productivity) gains could be fairly distributed.

5.3 Deeper Political Integration

In this model the EU would implement enhanced supranational economic coordination and come closer to the kind of distribution of competences characteristic of a federal state (rather than a union of states). Measures of this kind have been taken – albeit irregularly – in the course of European integration and were the subject of intensive controversy in the recent crisis, under the heading »fiscal union« (see Hacker 2013). Even more far-reaching fiscal competences are also conceivable, as a consequence of which more resources could be made available at the supranational level for distribution to poorer member states or regions. One form this might take is financial equalisation among member states along the lines of the financial equalisation practiced among German *Länder*. Another form of deeper integration would be to expand the social union by introducing European unemployment insurance (see Dullien 2014). With regard to public debt such proposals as eurobonds (see Delpla/von Weizsäcker 2011) or a European debt repayment fund (Council of Economic Experts) were under discussion, which would also have deepened integration.

From a theoretical perspective a stronger inflow of capital – whether in the form of transfers or facilitated borrowing – would make it possible to improve the capital stock in poorer countries, which is essential for higher long-term growth. However, this would work only if this capital were invested productively. Automatic stabilisers at the European level could cushion asymmetrical shocks and avoid or ameliorate country-specific vicious circles of mutually reinforcing falling demand and employment. From a conservative standpoint the fear would be that such »insurance« would lead to moral hazard; in other words, they would be an inducement to political irresponsibility and to neglect national efforts.

From an empirical standpoint it seems reasonable to compare this model with convergence processes within countries because an EU more committed to political integration exhibits many characteristics of a national economy. The findings are not very encouraging, however. As already mentioned, convergence within states is not proceeding more rapidly than convergence between states (2 per cent in the United States, according to Barro). The catch-up process within Germany, for example, has been stagnant, after initial progress, for a good ten years. In the EU inequalities within individual countries have increased or at least have not improved, while those between countries have declined (see Wunsch 2013; see Dauderstädt/Keltek 2014). Even in Germany, however, there has been convergence – for example, in 1960–1970 Bavaria in western Germany caught up, after starting out fairly poor, by fostering the arms and automobile industries.

However, it should be pointed out that the level of internal inequality is generally lower than between states. There is thus a surge of convergence when interregional transfer systems are introduced, whether community-oriented (for example, financial equalisation between *Länder* in

Germany or subsidies to cities and municipalities) or oriented towards households or individuals (for example, social protection), because they raise incomes in poorer regions. This gives rise to multiplier effects because higher local purchasing power drags local supply along with it or at least stabilises it and thus leads to more employment and higher incomes.

If we look – as in the other two scenarios – at the chances of successful catch-up strategies (Ireland, East Asia) the outcome is clear: in an even more centralised integration model the East Asian model would have had no chance and the Irish one very little. To the extent that a politically more closely integrated EU with more closely coordinated economic policy were also to harmonise corporate taxation it would be much more difficult to emulate Ireland's strategy.

If greater social cohesion were really an aim within the framework of deeper political integration with common economic policy-making it would undoubtedly improve when the model was implemented. Common unemployment insurance or financial equalisation between states would facilitate social protection in poorer member states or in those hit harder by unemployment. If, however, enhanced supranational competences are used to impose further-reaching cuts in social safety nets, lower wages and labour market liberalisation the effect would be the opposite.

5.4 Status Quo

The scenario we shall consider last is also the most probable: continuation of the status quo, perhaps with a few modifications, which are constantly under discussion and occasionally implemented. Given the fact that we can start out from the actually existing integration model theoretical considerations are less relevant. One can merely state that processes are clearly taking place that are difficult to explain theoretically and look for a suitable theoretical explanation for the observed developments.

As already mentioned, since 1999 there has been a fairly successful convergence process, although in the 2009 crisis it »split«: while for the new member states of Central and Eastern Europe it continued, after a slump, for the deficit countries (GIPS) it flipped into a divergence process. Real convergence (up to 2009), on one hand, confirms the (neo)classical assumption that access to capital, opportunities for migration and integrated markets for goods and services enable poorer countries to catch up. On the other hand, the inequality within countries that was growing at the same time shows that even the counter assumption – agglomeration economies, concentration processes, path dependency – is not unjustified because growth concentrates rather at certain poles. The fears expressed prior to eastern enlargement that attempts to implement deeper integration would hinder convergence (see, for example, Dauderstädt 2000b) proved to be largely groundless.

The EU is thus doing better than many believe when it comes to convergence. The principal mistake was the way it reacted to the public debt panic of 2010. The refusal to jointly shoulder the debts that rose sharply in the course of the financial market crisis and the great recession or for the ECB at least to provide an implicit guarantee as a de facto lender of last resort triggered a spiral of capital flight, public debt, banking crisis, austerity and recession. It is true that the growth models of the GIPS countries were not sustainable in the sense of endlessly »putting off the evil day« – although that applies to virtually all one-sided models – but they could have been eased into a soft landing rather than condemned to a sudden collapse. The demands of the Troika led to collapses in growth, enormous unemployment and rising public debt. In 2012 the ECB, with Mario Draghi's declaration, turned things around; if this had happened in 2010 it would have nipped the crisis in the bud and prevented the catastrophic austerity policy. Significantly, in 2014 the countries concerned were able to turn to the capital markets once again, although their debts were higher than ever and growth rates remained extremely weak.

The support packages and control mechanisms (six pack, macroeconomic supervision and so on) put in place in the crisis further reinforce the EU's traditional economic policy model, which one-sidedly relies on supply side measures, while neglecting the demand side. The EU has no common vision of a European economy in which there are growth opportunities for all member states and fair distribution of value added, primarily by means of a productivity-oriented wage policy that promotes dynamic feedback between supply and demand.

Looking back at the history of integration so far it cannot be said that the EU represents a glorious chapter when

Summary

Comparison of alternative integration models with regard to their likelihood of leading to convergence yields a mixed picture, which gives neither eurosceptics nor federalists much encouragement, as the table shows:

Criterion	Chances of realisation	Susceptibility to convergence		Compatibility with catching up		Social cohesion
Model		Theoretical	Empirical	Ireland	East Asia	
Decentralised market integration	Low	Unclear	Not much better	Good	Poor	Fairly poor
Partial de-integration	Costly	Unclear	Rather better	Possible	Better	Rather better
Deeper political integration	Low	Better	Rather worse	Worse	Poor	Unclear
Status quo	Probable	Irrelevant	Good	Good	Poor	Rather poor

Better convergence is to be expected neither from weaker integration nor from emulation of conditions within nation states.

it comes to social progress. Distribution within countries has rather deteriorated than improved. In the crisis the indebted countries were forced to dismantle the welfare state and to impose wage cuts. The supply-side bias in EU economic policy described above has time and time again made social conditions worse or at least has meant that they did not improve in tandem with economic growth.

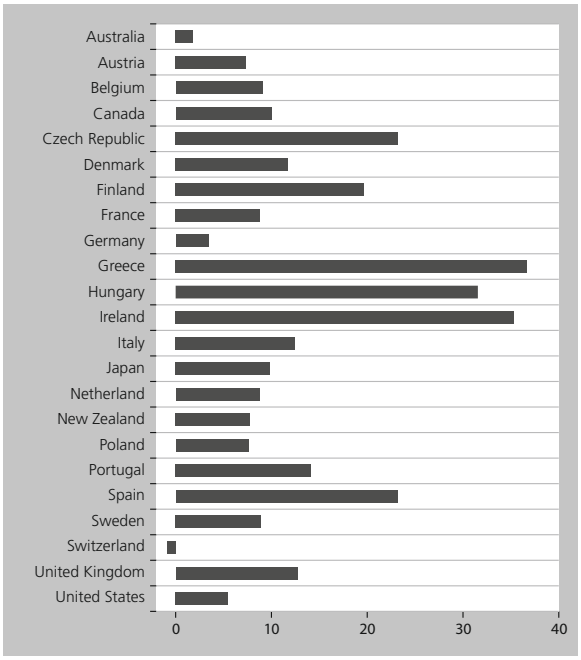
6. Conclusions: Analysis and Policy

Finally, we shall sum up the analytical findings and discuss some policy implications.

6.1 Convergence in Crisis

Although by international comparison the EU is neither a particularly dynamic nor a particularly social (in the sense of reducing inequality) region, with regard to convergence it has not done worse (especially since 1999) than other integration areas and has done better than economies working within the nation-state framework. Its weak point is rather the increasing inequality within states (between households, regions and capital and labour) in many member states. In the financial crisis incomes fell dramatically in many member states.

Figure 8: Loss of growth (potential output 2007/2015; %)



Source: Ball (2014).

Subsequently, however, clear, albeit differentiated divergence has been discernible. Things have gone downhill in the countries hit by the public debt panic (GIPS) since 2009, while most of the new member states

have resumed their catch-up processes. Figure 8 does not distinguish between the effects of the great recession and austerity policy, but it does clearly show the collapse of growth in the GIPS countries. Also notable are the losses in the Czech Republic and Hungary, although neither country joined the euro.

What are the causes?

- The EU's **relatively weak growth** overall in comparison with poor countries in the world economy is the result of the already relatively high income level and the proximity to the productivity frontier. The gap with the richer countries is smaller and may be explained by the neglect of the demand side and the one-sided stability-oriented monetary and fiscal policy.

- Successful **convergence** since 1999 is due to the strong catch-up processes of the new member states, which have benefited from high direct investment and market access due to the EU, not to mention low real interest rates in the poorer euro-countries, which triggered a boom there, albeit especially in the non-tradable sector (real estate). The divergence since 1999 is due primarily to the misguided austerity policy in and capital flight from the indebted states.

- The increasing **social inequality** is the result of an asymmetry: while with regard to convergence between countries the traditional catch-up factors (investment, education and training, specialisation) came into play, within countries the falling wage share and agglomeration economies led to unequal developments. Within countries such political protection mechanisms as redistribution systems, competition controls, regulation and public ownership came under pressure from integration-related and EU-driven location competition, harmonisation and liberalisation (see Dauderstädt 2002; see Höpner/Schäfer 2010).

The essence of convergence lies in real productivity growth, perhaps backed up by employment growth, primarily due to reductions in unemployment. Better-off countries are characterised by relatively lower per capita labour input in this context (see Table 2), in respect of which a reduction in unemployment or of involuntary part-time employment is always welcome. Longer working weeks and shorter holidays, by contrast, can scarcely be regarded as welfare improvements. Labour input depends primarily on demand. It can be domestic and underpinned by monetary and fiscal policy measures; it can also come from abroad, fostered by a low real exchange rate. The latter promotes convergence only to a limited extent, however, because it lowers income by international comparison.

Thus productivity growth remains the key driver of convergence. It even makes higher incomes possible without jeopardising competitiveness because unit labour costs do not rise as long as wage increases do not exceed productivity growth. Productivity growth depends on numerous factors whose susceptibility to policy-making vary. Within the private corporate sector productivity growth is due primarily to investments and structural change (often resulting from external economic factors, such as the specialisation discussed by Ricardo). Investments are also key productivity drivers for the public sector; this includes both investments in physical capital stock and education and training or investments in intangible capital.

The distribution of productivity gains in this context is not independent of the integration of national economies. In the form of lower prices they can be passed on to all, while in the case of exports they go primarily to foreigners. They can benefit capital owners in the form of higher profits if wages and taxes lag growth due to competitive pressures, thereby exacerbating social inequality. Employees also benefit from a productivity-oriented wage policy. The state, too, benefits from more revenues if profits and wages are higher, which enables it to improve its provision of public goods and social protection (FES 2011).

6.2 Policies for Social Convergence

Policy-making can foster productivity growth in a variety of ways. It can favour private investments by means of tax concessions, protection against (import) competition, low interest rates or direct subsidies and it can invest itself, among other things to facilitate complementary private investments (for example, transport connections for a private manufacturing plant; specific training of skilled workers required for production). Unfortunately, it often turns out that state measures of this kind do not lead to lasting growth but only to deadweight losses and white elephants. Examples of this include Italy's Mezzogiorno

and – to a lesser extent – Germany's new *Länder*. Ireland, by contrast, is an example of successful deployment of European and national resources for the purpose of advancing a catch-up process sustained by (foreign) private investment. East Asian catch-up processes, too, have benefited from a political framework of this kind.

As already mentioned, although the EU's current integration model is not entirely compatible with such a catch-up strategy it has facilitated catch-up processes in Ireland and in many Central and Eastern European countries. While the EU precludes certain national distortions of competitive conditions it does permit general national policies aimed at cost alleviation for corporations (for example, low corporation tax, as in Ireland, or wage moderation, as in Germany). Such policies, however, reinforce inequality, attenuate demand and depend for their effectiveness on other countries' boosting demand. The imbalances that arise in this way can lead to debt crises. It would be better to ensure that funds distributed by Europe – which although small in relation to EU GDP are considerable for some recipients – really boost the development and modernisation of poorer regions and member states. Particularly in the wake of recent disastrous experiences of capital allocation by »the market« and in the global financial crisis, and given the good experiences in East Asia, it would be perverse to regard all public capital allocation as inefficient by default.

Even though the EU's options are restricted when it comes to accelerating convergence it should nevertheless try to steer clear of divergence processes and try to prevent them. To that end it should deploy its extended economic policy competences – macroeconomic surveillance – to identify imbalances at an early stage and to correct them. In the 2008 financial market crisis the EU left it to the member states – not least under German influence – to deal with the problems in their financial sectors, although these sectors were already closely intertwined, especially in the euro area. The ensuing recession in 2009 was tackled in a relatively uncoordinated manner. In the third phase of the crisis, the public debt panic, the EU reacted hesitantly and with ineffectual countermeasures that had to be beefed up under pressure from the financial markets. Only in 2012 did Draghi's declaration herald a long overdue response from the ECB, which eased tensions, although without bringing about an economic upturn. At the same time, the EU enhanced its economic policy role by means of tighter control of fiscal policy and of macroeconomic imbalances. In the countries with public debt problems it unleashed austerity policies which served only to exacerbate the recession and the social crisis there. As a result, the debate on the depth and merits of integration intensified everywhere.

Scepticism was nurtured by concerns that predated the crisis. Scholars such as Scharpf, Streeck and Höpner had long expressed fears about a hollowing out of the welfare state and the corporatist social model by policies oriented towards competition and enforced harmonisation. These fears were confirmed by the crisis and austerity policy. Scharpf diagnosed the incompatibility of Mediterranean models of capitalism with the requirements of a monetary union conceived along German lines. Euroscepticism was also evident in the results of the European elections in 2014. On the other hand, opinion polls in many countries show a majority in favour of a stronger EU commitment to social policy (see Dethlefsen 2014).

The EU thus confronts a dilemma: on one hand, to give member states more room to find and set out on their own path to prosperity and social balance, and on the other hand to stand by them in the event of economic and social crises. In particular from a German and conservative standpoint any support has to be tied to relinquishments of sovereignty to prevent irresponsibility and moral hazard. This view has become established throughout the EU and is a contributory factor in the growing euroscepticism.

Alternative policy proposals were based on the Communitisation of risks by issuing eurobonds (see Delpla and Weizsäcker 2011; Sachverständigenrat [German Council of Economic Experts]) or the introduction of a European unemployment insurance (see Dullien 2014). Such policies could complement the EU's current economic policy toolbox to prevent divergence processes or at least to ameliorate them. If measures of partial disintegration are entertained, such as exit from the monetary union, other disintegration policies can be imagined that might be less disruptive. For example, the member states with double deficit problems (budget and current account deficits) could be permitted, on a temporary basis, to reintroduce customs duties. This would, on one hand, generate state revenues and, on the other hand, cause a devaluation by making imports more expensive and exports cheaper, if revenues are also

used to subsidise exports. The initial rate of duty should, for example, be in keeping with the desired devaluation. It should subsequently be gradually reduced to zero over a period of years in order to restore the single market.

It would help to obtain political acceptance of such measures if they were able to find legitimacy through public discussion and democratic decision-making rather than being dictated by experts behind closed doors. In this context the best guarantee of assent is if the outcome of a policy legitimises it. It is no coincidence that the EU's achievements in terms of convergence prior to 2008 were accompanied by a highpoint in public enthusiasm for European integration.

Bibliography

Ball L.M. (2014): Long-term Damage from the Great Recession in OECD Countries, online at: http://www.econ2.jhu.edu/People/Ball/long%20term%20damage.pdf (accessed on 27.5.14).

Barrell, Ray / te Velde, Dirk Willem (1999): Labour Productivity and Convergence within Europe: East German and Irish Experience, online at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.31.8943&rep=rep1&type=pdf (accessed on 27.5.14).

Barro, Robert J. et al. (1991): Convergence Across States and Regions, Brookings Papers on Economic Activity No.1, pp. 107–182, online at: http://miha.ef.unilj.si/_dokumenti3plus2/195003/BarroSala-i-Martin1991-Convergenceacrossstatesandregions.pdf (accessed on 27.5.14).

Bouvet, Florence (2010): EMU and the Dynamics of Regional Per Capita Income Inequality in Europe, online at: https://www.dallasfed.org/assets/documents/institute/events/2010/10eu_bouvet.pdf (accessed on 27.5.14).

Busch, Bertold (2014): Zehn Jahre Osterweiterung der Europäischen Union, iw-Trends 1/2014, online at: http://www.iwkoeln.de/de/studien/iw-trends/beitrag/berthold-busch-zehn-jahre-osterweiterung-der-europaeischen-union-161535 (accessed on 5.8.2014).

Campos, Nauro F. / Coricelli, Fabrizio / Moretti, Luigi (2013): Economic Growth and European Integration: A Counterfactual Analysis, online at: http://www.siecon.org/online/wp-content/uploads/2013/09/Campos-Coricelli-Moretti.pdf (accessed on 27.5.14).

Castañeda, Jorge G. (2014): NAFTA's Mixed Record – The View From Mexico, in: Foreign Affairs, 93 (1): 134–141.

Cuaresma, Jesus Crespo et al. (2012): Income Convergence Prospects in Europe: Assessing the Role of Human Capital Dynamics, Wirtschaftsuniversität Wien, Working Paper No. 143.

Dauderstädt, Michael (2000a): Weder populäre Globalisierung noch globaler Populismus: ein weltwirtschaftliches Gedankenexperiment, online at: http://library.fes.de/fulltext/id/00936toc.htm (accessed on 27.5.2014).

– (2000b): EU-Osterweiterung Chancen und Risiken, in: ifo-Schnelldienst 31 (53): 3–6.

– (2002): Anpassungszwänge und Legitimationsverlust: Das europäische Dilemma, in: IPG 2/2002.

Dauderstädt, Michael / Keltek, Cem (2014): Krise, Austerität und Kohäsion: Europas stagnierende Ungleichheit, Bonn: FES.

Dauderstädt, Michael / Witte, Lothar (2001): Cohesive Growth in the Enlarging Euroland, Bonn: FES.

Delpla, Jacques / von Weizsäcker, Jakob (2011): Eurobonds. Das Blue Bond-Konzept und seine Implikationen, Berlin: FES.

Dethlefsen, Knut et al. (2014): Social Cohesion in Europe after the Crisis, Warsaw.

Dreger, Christian (2007): Preiskonvergenz in der erweiterten Europäischen Union, DIW-Wochenbericht 38/2007.

Dullien, Sebastian (2014): Eine Europäische Arbeitslosenversicherung als Stabilisator für die Eurozone, Bonn: FES.

Ellison, David L. (2001): CEEC Prospects for Convergence: A Theoretical and Historical Overview. In: Dauderstädt, Michael/Witte, Lothar (2001): Cohesive Growth in the Enlarging Euroland, Bonn: FES.

Estrada, Ángel / Galí, Jordi / López-Salido, David (2012): Patterns of Convergence and Divergence in the Euro Area, IMF, online at: https://www.imf.org/external/np/res/seminars/2012/arc/pdf/ELS.pdf (accessed on 27.5.14).

EU (2010): In Europas Zukunft investieren. Fünfter Bericht über den wirtschaftlichen, sozialen und territorialen Zusammenhalt.

European Commission (2013): Employment and Social Developments in Europe.

FES (2011): Soziales Wachstum. Leitbild einer fortschrittlichen Wirtschaftspolitik, Wiso Diskurs, Bonn.

Filippetti, Andrea / Peyrache, Antonio (2013): Is the Convergence Party Over? Labour Productivity and the Technology Gap in the EU, in: Journal of Common Market Studies, 51 (6): 1006–1022.

Goecke, Henry (2013): Europa driftet auseinander. Ist dies das Ende der realwirtschaftlichen Konvergenz? iw-Trends, Köln.

Hacker, Björn (2013): On the Way to a Fiscal or a Stability Union? The Plans for a »Genuine« Economic and Monetary Union, Berlin: FES.

Höpner, Martin / Schäfer, Armin (2010): Grenzen der Integration – wie die Intensivierung der Wirtschaftsintegration zur Gefahr für die politische Integration wird, in: integration 1/2010.

Hoyer, Werner / Berndt, Markus (2013): Aufbruch in ein neues Kapitel bei der Abgleichung der Lebensbedingungen in Europa, in: Zeitschrift für Wirtschaftspolitik, 62 (1): 70–81.

Institut der deutschen Wirtschaft (1997): iw-trends, 1/1997.

Institut für Wirtschaftsforschung Halle (2014): Press release, online at: http://www.iwh-halle.de/d/publik/presse/13-14.pdf.

Hishow, Ognian N. (2014): Divergenz statt Konvergenz in der Wirtschafts- und Währungsunion? Ein währungstheoretisch begründetes Plädoyer für eine andere Währungsunion, SWP-Studie, Berlin.

Kaitila, Ville (2013): Convergence, Income Distribution and the Economic Crisis in Europe, ETLA Working Paper No. 14, online at: http://www.etla.fi/wp-content/uploads/ETLA-Working-Papers-14.pdf (accessed on 27.5.14).

Kohl, Heribert (2013): Konvergenz und Divergenz in der Europäischen Union. Eine Zwischenbilanz zu Arbeitsbeziehungen und Lebensverhältnissen in den EU-Mitgliedsländern in Zeiten der Krise.

König, Jörg (2014): Measuring European Economic Integration, Dissertation Göttingen, online at: http://ediss.uni-goettingen.de/bitstream/handle/11858/00-1735-0000-0022-5E5E-0/Dissertation_J%C3%B6rg%20K%C3%B6nig.pdf?sequence=1 (accessed on 27.5.14).

Lessenski, Marin (2012) State of the Union: A Big Bang Theory of Europe. Findings of the Catch-up Index Sofia (Open Society Institute), online at: http://eupi.osi.bg/fce/001/0066/files/CatchUpIndexReport_c.pdf (accessed on 5.8.2014).

Ludwig, Udo / Scheufele, Rolf (2009): Der lange Weg der Konvergenz, in: Wirtschaft im Wandel 10: 400–407.

OECD (2011): Divided We Stand: Why Inequality Keeps Rising, Paris.

Próchniak, Mariusz / Witkowski, Bartosz (2013): Time Stability of Beta-convergence among EU Countries – Bayesian Model Averaging Perspective, in: Economic Modelling 30: 322–333.

Rodríguez-Pose, Andrés / Vassilis Tselios (2013): Towards Inclusive Growth: Is There Regional Convergence in Social Welfare? In: International Regional Science Review.

Sachverständigenrat (Jahresgutachten 1998/99): online at: http://www.sachverstaendigenrat-wirtschaft.de/fileadmin/dateiablage/download/gutachten/1400073.pdf (accessed on 27.5.14).

Scharpf, Fritz W. (1996): Negative and Positive Integration in the Political Economy of European Welfare States, in: Marks, Gary et al. (eds): Governance in the European Union. London: Sage, pp. 15–39.

Tarschys, Daniel (2003): Reinventing Cohesion. The Future of European Structural Policy, Stockholm: SIEPS.

UN (2013): Human Development Report, online at: http://hdr.undp.org/sites/default/files/reports/14/hdr2013_en_complete.pdf.

World Bank (2012): Europe's Golden Growth, online at: http://www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/04/20/000386194_20120420032146/Rendered/PDF/681680PUB0EPI0040190201120Box367902B.pdf (accessed on 27.5.14).

Wunsch, Pierre (2013): Is the European Integration Machine Broken? In: Intereconomics 2: 78–83.

Appendix: Questionable Convergence in the Ricardo Model

The following example is based on Dauderstädt (2000a). It distinguishes between two economies each with 1,000 workers and two goods, productivity with regard to which is presented in Table 1. We also assume two currencies: the crown in East/South and the euro in West/North. The exchange rate results from the terms of trade. In both regions wages are 20,000 currency units a year (crowns in East/South and euros in West/North). The payrolls of 20 million correspond in this model to national income and enable, in the case of self-sufficiency, the purchase and consumption of total output, the price of which corresponds to labour costs.

Table 1: Level of productivity in the two regions

Country region	Employee year/ bicycle	Price/bicycle	Employee year/ computer	Price/computer
East/South	4	80,000	100	2,000,000
West/North	2	40,000	10	200,000

With specialisation after the markets have been opened up to free trade East/South produces more bicycles and West/North more computers. How many bicycles will be exchanged for how many computers is not fixed in advance. Scenario A (Table 2a) assumes that 120 bicycles are exchanged for 10 computers. Both regions do better than under self-sufficiency.

Table 2a: Adaptation through free trade (poorer region does better)

Country/ Region	Production under self-sufficiency		Production under specialisation		Consumption after trade	
Product	Bicycles	Computers	Bicycles	Computers	Bicycles	Computers
East/South	125	5	250	0	130	10
West/North	250	50	150	70	270	60
Total	375	55	400	70	400	70

Given our assumed wages and prices, under self-sufficiency value creation in East/South amounts to 125 x 80,000 Kr + 5 × 2,000,000 Kr = 20,000,000 Kr = 1,000 (employees) × 20,000 Kr annual wages. With specialisation the level of consumption (at the old prices) rises to 130 × 80,000 Kr + 10 × 2,000,000 Kr = 30,400,000 Kr, that is, by 52 per cent. In the richer region West/North income stands at 20,000,000 euros = 250 × 40,000 euros + 50 × 200,000 euros. With specialisation the level of consumption (at the old prices) rises to 270 × 40,000 euros + 60 × 200,000 euros = 22,800,000 euros, that is, by (only) 14 per cent. Because the exchange rate must be 4.8 Kr/euro to enable the exchange of 120 bicycles for 10 computers the income of the richer country is 3.6 times greater. However, a convergence process has set in because at this exchange rate the income ratio was previously 4.8 (equal number of currency units).

Scenario B (Table 2b) assumes that 120 bicycles are exchanged for only 5 computers. But in this instance, too, both countries do better than under self-sufficiency. But with specialisation and trade East/South (at the old prices) gets 130 × 80,000 Kr + 5 × 2,000,000 Kr = 20,400,000 Kr, in other words, 2 per cent more. In the richer region West/North, however, due to specialisation, the level of consumption (at the old prices) rises to 270 × 40,000 euros + 65 × 200,000 euros = 23,800,000 euros, in other words, by 19 per cent. The exchange rate necessary for that is

9.6 Kr/euro. This results in an income ratio of 11.2. With these terms of trade divergence has taken place (old ratio at new exchange rate: 9.6).

Table 2b: Adaptation through free trade (richer region does better)

Country/ Region	**Production under self-sufficiency**		**Production under specialisation**		**Consumption after trade**	
Product	Bicycles	Computers	Bicycles	Computers	Bicycles	Computers
East/South	125	5	250	0	130	5
West/North	250	50	150	70	270	65
Total	375	55	400	70	400	70

In principle, a further option is available, namely to convert productivity gains into leisure time. In that case output and consumption would remain below full employment, which otherwise is our basic assumption.