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Paetzold, Jörg

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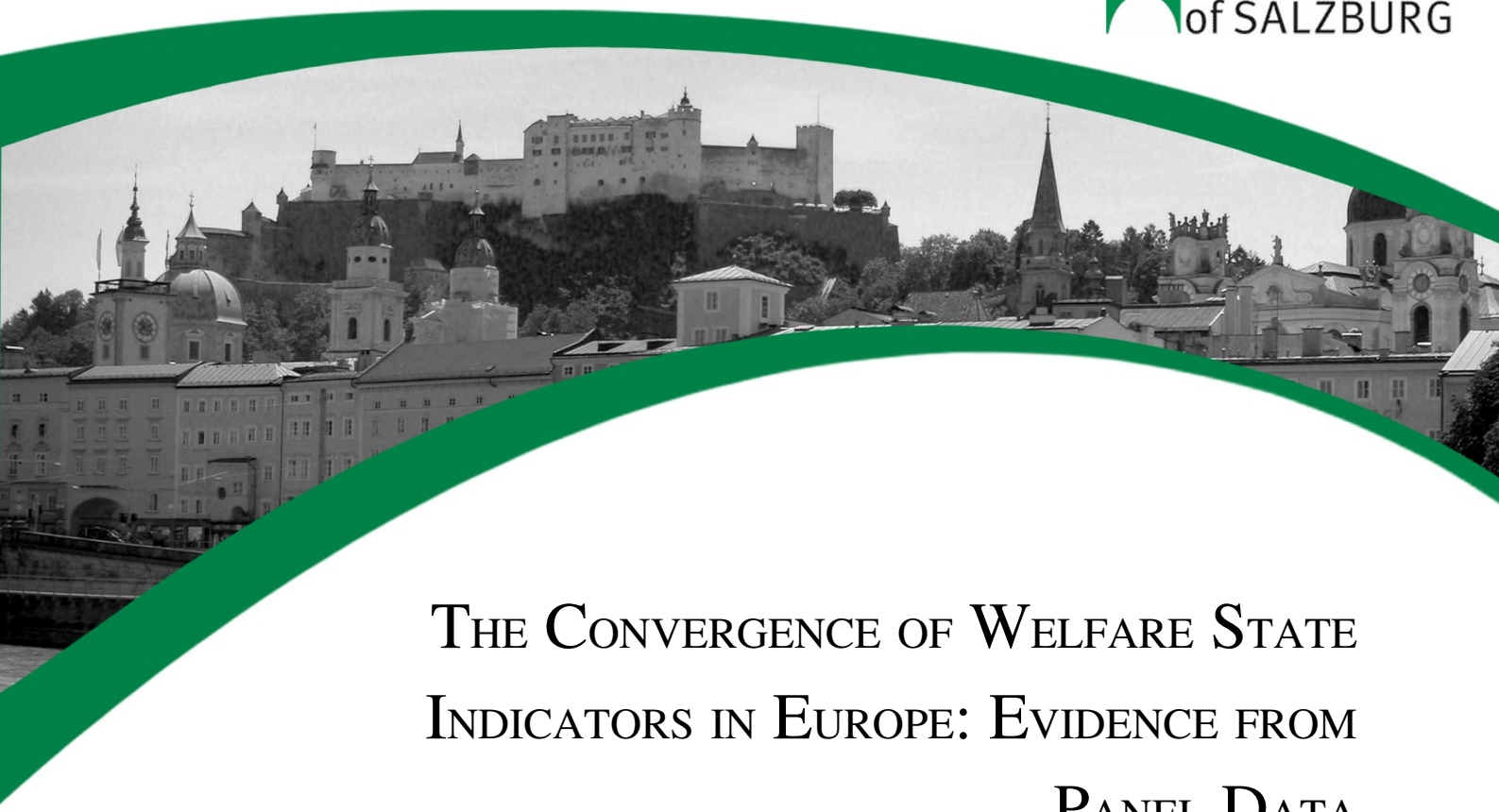

The Convergence of Welfare State Indicators in Europe: Evidence from Panel Data

Jörg Paetzold

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WORKING PAPERS IN ECONOMICS AND FINANCE

The Convergence of Welfare State Indicators in Europe: Evidence from Panel Data*

Jörg Paetzold†

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Abstract

This paper investigates whether there is a convergence in welfare state policies among the "old" EU member states. To identify such trends, we rely on pension and unemployment net replacement rates as well as on public social expenditures. Empirically, we use a sample of 14 economies (EU-15 excl. Lux.) between 1980 and 2005. The empirical findings reveal a presence of a convergence process, driven by strong catch-up of social protection levels in the Southern member states. Furthermore, convergence in replacement rates is substantially less pronounced than using spending data.

Keywords: Social protection, convergence, pension & unemployment replacement rates, Europeanization, welfare state

JEL Codes: I32, I36, J68

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† Salzburg Centre of European Union Studies, University of Salzburg, Mönchsberg 2, A-5020 Salzburg, Austria. E-mail: joerg.paetzold@sbg.ac.at

1 Introduction

It is commonly acknowledged within the welfare state research community that the mature welfare states of the advanced economies in Europe were increasingly put under strain over the last two decades. Greater than ever exposure to international economic forces and competitiveness, demographic transition, new social risks associated with changing work and family patterns and an increasing demand for flexible labour markets are widely identified as the most pressing challenges (see Scharpf et al. 2000; Esping-Andersen 1999; Ferrera and Rhodes 2000).

Being confronted with relatively similar problem patterns led to the assumption that there is a tendency of cross-national convergence of welfare states (see Iversen and Cusack 2000; Taylor-Gooby 2004). Increasing Europeanization and supra-national initiatives like the Lisbon Strategy are also said to enforce convergence among these originally idiosyncratic welfare regimes. In contrast to these convergence scenarios are studies highlighting the mediation effect of differently shaped institutions proposing continuing path-dependency. In their point of view, different welfare regimes will persist and keep following their national trajectories even when challenges are akin (see Huber and Stephens 2001; Pierson 1996; Korpi and Palme 2003).

The goal of this paper is to identify potential convergence or divergence tendencies among the advanced European welfare states since the 1980s. However, it has to be emphasized that I desist from analysing convergence of different institutional types of welfare regimes in Europe. It is obvious that there are different models of welfare regimes in different parts of Europe and common characteristics are sometimes unclear and difficult to detect. Acknowledging these institutional differences between European countries, I pursue a strategy based on potential convergence in welfare state efforts and outputs. This follows the proposition that it may not be all that important if institutional designs are different as long as they deliver similar outcomes. Institutions may look differently and may work with distinct tools to create welfare, but in the end, overall welfare output is the litmus test for welfare state convergence. Therefore, I use three different social indicators reflecting welfare provisions provided by the single countries. The first indicator is a rather broad one, namely public social expenditure. It covers all spheres of public welfare provided. Furthermore, the replacement rates of two major social insurance programs are chosen as indictors for welfare efforts: Public pension and unemployment insurance respectively. Public pensions (replacement rates) have been chosen on the basis of their sheer size – they are usually the biggest budgetary item of total social expenditure in the countries examined. Unemployment replacement rates are interesting to look at because of their sensitivity to changes in social policy (see Korpi and Palme 2003: 431). Therefore, they are well-suited as an indicator for change and potential convergence of welfare states.

Obviously, there has been a body of research embracing the question of convergence in welfare states. However, most of these studies either focus on broad but easily available data of aggregated social expenditure applying advanced econometric techniques (see Alsasua et al. 2007, Attia and Berenger 2007, Schmitt and Starke 2011, Kittel and Obinger 2003) or on certain social protection indicators like replacement rates. Articles using the latter concept usually desist from applying sophisticated econometric panel techniques but rely on simplistic measurements of disparity like the coefficient of variation (see Montanari et. al 2007, Starke et. al 2008). What is largely lacking is the combination of both approaches, i.e. the application of state-of-the-art econometric techniques on data of replacement rates. By bringing together these two 'schools of thought', my research will bridge the gap between a fine-grained measurement of welfare state policies and an explanatory – and not just descriptive – assessment of welfare state convergence.

All three indicators used here are available for what now are called the 'Old EU Member States' (the EU-15 excluding Luxembourg). The dataset containing public social expenditure has a slightly bigger length, using data from 1980-2005. The dataset for the replacement rates covers a period running from 1980 to 2002. The research question is twofold: Firstly, I explore whether social expenditure and replacement rates of the single welfare states converged or diverged within this time period. Secondly, a multivariate regression analysis is applied using a variety of explanatory variables to find out the potential determinants of changes and (conditional) convergence in social provisions. The explanatory variables used act as controls for theoretical considerations about convergence/divergence trends in modern welfare states.

The structure of the paper is as follows. Section 2 provides a brief summary about the state of existing literature. The empirical framework is laid out in section 3. Sections 4, 5 and 6 presents the analysis of social expenditure, unemployment replacement rates and pension replacement rates respectively. Concluding remarks and discussion are offered in the last section.

2 Theoretical considerations: Scenarios of convergence and divergence of welfare state systems in Europe

Existing literature is divided about the question whether long-term convergence already has happened in Western Europe or if it could be expected in future. Additionally, the underlying determinants of such a potential convergence are controversially debated as well. The existing theories offer both strands predicting long-term convergence as well as on-going divergence of welfare provisions. The scenarios laid out here present the most pronounced theoretical considerations of potential convergence/divergence trends and its causes among the advanced European welfare states.

One of the most prominent hypotheses in supposedly informed public policy discussions is the premise of a downward convergence in welfare provisions due to unfettered market forces and increased economic competition. It is assumed that both the risk of capital flight and outsourcing will trigger a 'race to the bottom' in regulatory competition within the highly integrated economies of the advanced European welfare states (see Tanzi 2002: 122ff.). National governments are supposed to be highly concerned about the competitiveness of their economies and lean government is seen as the most favourable strategy. Since expenses for education as well as a technologically advanced and well-functioning infrastructure are said to be sacrosanct and cannot be the target of major cuts, social policy or the welfare state may have to carry the burden of austerity (cf. Montanari 2007: 299). This leads to a downward spiral of cutting back social spending (alongside with replacement rates) and reducing tax burdens trying to attract new investors or preventing the exodus of capital. According to this view, both the pressure upon national governments to roll back welfare provisions and their subsequent reactions to it has been quite the same in all Western Europe countries, irrespective of a government's ideology. Consequently, the role of politics got to a certain degree marginalized and party preferences should play no big role anymore in welfare provisions. In summary, this convergence scenario predicts a collective decline in social standards towards a residual model of social provision.

On the contrary, some studies predict a trend which is known as the 'compensation hypothesis' (see Rodrik, 1998). This theory stresses 'convergence to the top' due to the emergence of new social risks. In the wake of deepened economic integration and an ever more competitive economic environment, people are faced with rising uncertainty and insecurity about their jobs, their economic status and, eventually, about their life chances. This development amplifies the demand for more social protection and effort provided by the state to offset increasing economic anxiety. Further social risks stem from deindustrialization and the emergence of atypical work patterns both driven by globalisation and post-industrial demographic shifts (see Iversen 2000). These risks materialize almost simultaneously in all countries under examination, which may be followed by similar policy responses of governments irrespective of partisan differences. In a nutshell, advocates of the compensation hypothesis expect a growing demand for compensatory government spending in the countries affected and hence, the convergence process will be rather upwards than downwards.

A third strand in the existing convergence literature expects a "natural process of saturation, best described as convergence to an upper-limit welfare state equilibrium"(Kittel and Obinger 2003: 22). The convergence dynamics can be interpreted as a catching-up process, i.e. a growth to limits. Therefore, rudimentary welfare systems are supposed to stretch out their social provisions to public policy fields which are not covered yet. This leads to the situation that welfare state laggards will experience above average growth in social spending (as well as in

replacement rates), whereas welfare frontrunners will curb spending. Consequently, social provisions should become more similar over time.

Fourth, more institutional accounts argue for persistent divergence mainly rooted in institutional rigidities (see Person 1996). Country-specific peculiarities and assumed path-dependency of state institutions will continuously produce different welfare outcomes, even when challenges are similar. Radical shifts within the welfare system are not expected to be successful due to 'institutional stickiness' and existing institutional veto points (cf. Starke and Obinger 2008: 980). External challenges get mediated by domestic institutional actors and thereby transformed to different social policy responses. Moreover, institutionalism assumes that once a welfare program is established, it is difficult to remove such a benefit. It is commonly said that welfare policies create development trajectories which are hard to reverse or even change. Scholars advocating this perspective expect ongoing divergent welfare efforts resulting in a conservation of the existing varieties in welfare capitalism.

Finally, a fifth perspective states that the divergence of different welfare systems will persist due to a continuance of the 'old partisan politics' paradigm (see Korpi and Palme 2003). "According to this 'old politics' approach, socio-economic problems do not necessarily lead to convergence, since problem pressure always requires political mediation"(Starke and Obinger 2008: 979). Therefore, the degree and universalism of welfare state provisions is dependent on the distribution of political power and leftist parties still hold strong abilities to act in favour of welfare state expansion. Based on the fact that the electorate of different countries got different preferences about the degree of state interventions and free market solutions, a general 'race to the bottom' scenario is rejected. Instead, ongoing divergent responses depending on the different political powerbrokers involved are expected.

Summarizing one can conclude that there is not much of a consensus in welfare state literature about the question of convergence or non-convergence and its underlying determinants. In addition, there is some dispute about causes and directions of change in the corresponding literature. The following Table is a condensed version of Starke's table depicting the different scenarios of convergence and divergence encountered by the existing literature (cf. Starke and Obinger 2008: 978).

Table 1: Welfare state convergence and divergence – scenarios and causal factors

Result	Causes	Examples	Direction of change	Authors
Convergence	Similar problem pressure	Demographic changes, new social risks	Upwards	Iversen and Cusack (2000)
	Legal harmonization	EU: positive and negative integration	Unclear	Leibfried (1995), Scharpf (1999)
	Regulatory competition	Race to the bottom	Downwards	Sinn (2002), Tanzi (2002)
Persistance/ Divergence	Institutional factors	Distinct welfare regimes	Unclear/Status quo	Pierson (1996)
	Political factors	'Old politics'-approach	Unclear	Korpi (2003), Castles (2004)

3 Empirical Framework

Given the huge amount of welfare literature in general, there have been only a few quantitative studies concentrating solely on convergence tendencies among the Old EU Member States (exceptions are Montanari et. Al 2008; Corrado et. al 2003). Furthermore, all studies using panel data and sophisticated econometric techniques are either based on public social expenditure or on certain replacement rates (see Scruggs and Allan 2004/a; Attia and Berenger 2007). In general, there has been some controversy among the welfare state research community about which type of indicator to use, known as the 'dependent variable problem' (Clasen and Siegel 2007). Therefore, in this paper I use an approach combining both schools of thought, i.e. applying a rigorous econometric panel approach to both categories of indicators (aggregated social expenditure and replacement rates). Hence, the contribution to existing literature is, inter alia, the application of the same empirical approach to three different types of indicators of welfare output.

3.1 Dependent variables

To examine convergence in welfare state efforts and its determinants, I use three different dependent variables. The first indicator refers to public social expenditure in % of GDP (*SE*). This

variable covers all public expenditures including old age, survivors, incapacity-related benefits, health, family, active labor market programmes, unemployment and housing (see OECD Social Expenditure Database SOCX). In the analysis of β-convergence, the annual changes (=growth rate) of *SE* are used as dependent variable.

The two other indicators used as dependent variables are income replacement rates. The first one is representing the replacement rate in % of forgone income paid in the face of unemployment (*UNRR* = unemployment net replacement rate). The other indicator refers to public pension payments in the case of retirement (*PNRR* = pension net replacement rate) in % of former income.

Being more precisely, replacement rates are calculated by relating the benefit of a typical household case to the foregoing wage of the same type-case. In the case of the *UNRR*, the ratio of the net unemployment insurance benefit to net income for a single person earning the average production worker wage is chosen as the unit of measurement. The rates are computed by annualizing the benefit for a 6 month spell of unemployment, corrected by potential taxation or social charges of the benefit. Occasionally, when benefit amounts vary within the first six months, items are taken in fractions of the sixth month (26 week) period and annualized. For example, if the benefit stipulates full salary for first week, then 50% of salary for the remaining period, the annualized benefit amount would be APW/26+ (.5*APW)*25/26 (see Scruggs2004/b: Codebook).

In the case of the *PNRR*, the standard pension single person replacement rate is used in this paper. This indicator is defined as "the ratio of net public pension paid to a person earning the APW wage in each year of their working career upon retirement in the year in question" (Scruggs2004/b: Codebook). Again, as it is applied in the case of social expenditure, the annual changes (=growth rate) of the replacement rates are used as the dependent variables in β-convergence analysis.

3.2 Explanatory variables

Testing for conditional β-convergence and the viability of the different theoretical accounts explaining potential trends of divergence/convergence, I include a variety of independent variables to the model. This approach will increase the explanatory power of the model and helps to control for country-specific characteristics and asymmetric shocks. Since changes and convergence in social provisions may not only be caused by social policy shifts but simply by cyclical or demographic factors, I incorporate variables capturing these effects. Taking these considerations into account I control for the following characteristics:

• Unemployment (*unempl*): Soaring levels of unemployment are presumed to increase the number of people living on welfare benefits and thus, it will speed up social expenditure growth. Therefore, changes in the unemployment rate can capture these cyclical factors of social spending fluctuations.

However, in the case of unemployment replacement rates as the dependent variable, opposing effects are expected. Higher unemployment rates are then supposed to drive up costs of social provisions and thus, governments will eventually curb these replacement rates. Additionally, in the face of high and persistent unemployment, politicians may believe in a negative work incentive of too generous unemployment benefits. Following that belief they might tend to cut back unemployment replacement rates in a situation of high joblessness. Unemployment rate is measured as a percentage of civilian labour force. (Note: When analysing *PNRR*, *unempl* is dropped from the equation due to a lack of theoretical reasoning)

• Demographic change (*elderly*): Another factor which is expected to be a driving factor of social expenditure growth in Europe is the rising demographic burden. This reflects the common pressure of an aging population on the European welfare states and its consequences for social spending. It is expected that an increase of the number of beneficiaries will cause a rise in social expenditure. For that reason one has to control for the proportion of elderly in society to capture the size of the ageing population entitled to receive benefits from social insurances.

However, in the case of pension replacement rates as dependent variable, a negative effect of an increase of the elderly rate on the generosity of pension replacement rates is expected. It is assumed that a rising proportion of pensioners in society will eventually overload the capacity of public pension funds and a cut back of PNRR may become inevitable. To control for both effects, a variable is included which gives an account of the proportion of a country's population older than 65 years. (Note: When analysing *UNRR*, *elderly* is dropped from the equation due to a lack of theoretical reasoning)

• Trade openness of the economy (*trade_openness*): Acknowledging both theoretical accounts about a 'race to the bottom' and the 'compensation hypothesis', I have to control for the effect of external trade dependence. A trade to GDP ratio is included which is the sum of exports and imports divided by GDP. This ratio functions as an indicator for macroeconomic openness and is expressed in current prices and current exchange rates.

• Financial openness of the economy (*fin_openness*): For receiving a full picture about the relationship between a country's integration in the world economy and the welfare state, one also has to look at its extent of openness in cross-border capital transactions. This variable capturing the degree of financial liberalization helps to evaluate whether an increase in economic openness can be associated with an upward or downward pressure on both government social spending and NRR. The index-variable constructed by Menzie and Hiro

measures the extent of openness in capital account transactions by quantifying the extensity of capital controls and restrictions on cross-border financial transactions (Menzie and Hiro 2008: 313). It is based on the IMF's 'Annual Report on Exchange Arrangements and Exchange Restrictions' (AREAER). The variable takes on higher values the more open a country is to cross-border financial transactions.

• GDP-growth (*GDP_growth*): Growth of real GDP is included with the expectation that higher levels of growth can be associated with more generous social provisions and hence, with a stronger growth in social expenditure (and in replacement rates, respectively). It is measured as the percentage change from previous year.

• Political orientation of the government (*gov_left*): According to the 'old politics' paradigm, similar socio-economic challenges do not necessarily lead to convergence, since political mediation and the distribution of power act as an intervening variable. Consequently, this perspective reckons that left parties still act as an agent of welfare expansion and therefore advocates for higher growth in social provisions. Following this consideration, I include a variable capturing the political orientation of the government. It measures the cabinets' composition, i.e. the cabinet posts held by social-democratic and other leftist parties as a percentage of total cabinet posts.

• Government debt (*debt*): Excessive government debts and budgetary crises are considered as one of the major driving forces for cutbacks in social provisions. The inclusion of gross government debt (financial liabilities) as a percentage of GDP will control for the consequences of indebtedness.

3.3 Data sources

The data used in this paper stems from a variety of sources. Most of the data is taken from the OECD Social Expenditure Database (SOCX), which contains aggregate and disaggregated data on social spending. Data from the OECD Economic Outlook completes this information on economic- and socio-economic factors. Variables displaying political characteristics are taken from the comparative political data set collected by the University of Bern (see Armingeon et al. 2010). Data measuring financial openness stems from an index constructed by Menzie and Hiro and is based on the IMF's 'Annual Report on Exchange Arrangements and Exchange Restrictions' (AREAER). Information regarding net replacement rates is gathered from two different sources: The first one is the 'Welfare State Entitlements Data Set' compiled by Lyle Scruggs from the University of Connecticut (see Scruggs 2004/b). His data set collection provides net replacement rates (for both pensions and unemployment) for eighteen of the most advanced OECD – economies. The second source of information is the 'Social Citizenship Indicators Program'

(SCIP) of Stockholm University. It contains net replacement rates for the so-called 'latin rim' countries Portugal, Spain and Greece.

4 Specification and Estimation

As already mentioned, I apply two widely recognized concepts in economics to study convergence/divergence in social provisions, namely σ-convergence as well as absolute and conditional β-convergence.

In particular, I examine convergence of (i) social expenditure in % of GDP (*SE*), (ii) of the unemployment net replacement rates in % of forgone income (*UNRR*) and (iii) public pension payments % of former income (*PNRR*).

The concept of σ-convergence is defined by the measurement of an indicator of disparity between different units (e.g. countries) and its development over time. The indicator used in this paper is the coefficient of variation (CV). It consists of the standard deviation of a variable divided by the value of the mean of the corresponding variable. Thus a convergence trend is present when the CV decreases, indicating a shrinking disparity of the variable at hand. Equation (1) states the composition of the coefficient of variation:

$$CV_t = \frac{\sigma_t}{\mu_t} \tag{1}$$

The LHS denotes the coefficient of variation of the single years. On the RHS, σ and μ represents the variable's standard deviation and its mean respectively. Both values contain annual cross-sectional information of the sample and are averaged over the countries.

Secondly, the concept of absolute β-convergence is applied to detect convergence tendencies in social provisions. This concept derives from works by Sala-i-Martin and Barro (Barro 1992), who developed it in the context of neoclassical growth models. On the basis of their theory, I follow recognized welfare convergence analyses (e.g. Corrado et. al 2003, Caminada et. al 2010) assuming an underlying common steady state level of welfare provisions to which all countries are converging, regardless their economic, social or institutional specificities.[1] Hence, this convergence concept implies that there is an inverse relationship between the initial level of social provisions and the subsequent growth of it. Put differently, the further away a country from the steady-state level at time zero, the more pronounced is its future growth, i.e. catching-up takes place. From the seminal paper of Sala-i-Martin and Barro (see Barro 1992: 225), one can derive the relationship:

[1] This assumption will be relaxed in a second stage of my analysis, allowing for individual steady state levels.

$$\frac{1}{T} ln\left(\frac{y_T}{y_0}\right) = x + \frac{1-e^{-bT}}{T} ln\left(\frac{y^*}{y_0}\right) \quad (2)$$

The LHS shows the average growth rate of y (the respective social indicator, i.e. *SE*, *UNRR* or *PNRR*) over an interval between 0 and T. On the RHS, x represents the steady state growth rate and y^* stands for the steady state of y. The initial value of y is written as y_0. The superscript b captures the relationship between the average growth rate and the gap in y^* and y_0. If

$$b > 0, a\ gap\ between\ y^* and\ y_0\ has\ a\ positive\ impact\ on\ the\ growth\ rate\ of\ y$$
$$b = 0, a\ gap\ between\ y^* and\ y_0\ has\ no\ impact\ on\ the\ growth\ rate\ of\ y$$
$$b < 0, a\ gap\ between\ y^* and\ y_0\ has\ a\ negative\ impact\ on\ the\ growth\ rate\ of\ y$$

In the first case, catching-up convergence would be present. The wider the gap between y^* and y_0, the stronger the average growth rate on the LHS. In the second case of $b = 0$, the whole product drops and there is no effect of a gap in y^* and y_0 on the growth rate. In the third case ($b < 0$), a widening of a gap between y^* and y_0 would have a diminishing effect on the average growth rate of y. This denotes that frontrunners in welfare benefits would increase their efforts even more, whereas laggards would curb social provisions. Divergence and persistence would prevail.

Specifying the model further, I have to rearrange equation (2) as follows

$$\frac{1}{T} ln\left(\frac{y_T}{y_0}\right) = x + \frac{(1-e^{-bT})}{T} lny^* + \frac{(e^{-bT})}{T} lny_0 - \frac{1}{T} lny_0 \quad (3)$$

$$\frac{1}{T} ln\left(\frac{y_T}{y_0}\right) = x + \frac{(1-e^{-bT})}{T} lny^* + \frac{(e^{-bT}-1)}{T} lny_0 \quad (4)$$

For estimating β-convergence using an econometric model, one has to reformulate equation (4) as

$$\frac{1}{T} ln\left(\frac{y_{iT}}{y_{i0}}\right) = \propto_i + \beta lny_{i0} + \varepsilon_i \quad (5)$$

where the LHS stands for the average growth rate of either *SE*, *UNRR* or *PNRR* over a certain time period, $\propto_i = x_i + \frac{1-e^{-bT}}{T} lny_i^*$, β denotes the convergence coefficient and consists of $\frac{e^{-bT}-1}{T}$ and ε represents the error term. i indicates the unit of the cross-section, that is the country. T refers to the time span, the index 0 indicates the initial period. Absolute convergence implies

that there is a common steady state, which means that $\propto_i = \propto$, i.e. the same for all countries. Convergence takes place when $\beta < 0$, which can be proven by

$$\beta \equiv \frac{e^{-bT}-1}{T} < 0 \quad (6)$$

$$\frac{e^{-bT}-1}{T} < 0 \quad (7)$$

$$e^{-bT} - 1 < 0 \quad (8)$$

$$-bT < ln1 \quad (9)$$

$$b > 0 \quad (10)$$

It is straightforward that if $\beta < 0$, the condition for convergence (namely $b > 0$) as denoted in equation (2) is fulfilled.

In order to account for differences in economic, social or institutional specificities, a set of factors is included to the model allowing for heterogeneous steady-states. Thus, this specification takes advantage of the panel structure of my data and controls for conditional convergence (including the explanatory variables as laid out in section 3.2). A version of equation (2) is considered and a dynamic panel specification applied:

$$ln\left(\frac{y_{it}}{y_{it-1}}\right) = \propto_i + \beta_1 lny_{it-1} + \beta_k \pi_{it-1} + \omega_t + \varepsilon_{it} \quad (11)$$

Where $\propto_i = x_i + \left(1 - e^{-bT}\right) lny_i^*$ and β_1 consists of $e^{-b} - 1$. Again, $\beta_1 < 0$ indicates convergence. The dependent variable on the LHS represents the annual change/growth of *SE*, *UNRR* and *PNRR*, respectively. The lagged dependent variable y_{it-1} is now the variable which reflects the initial level of the corresponding social indicator. This time, the parameter $\propto_i$ may be different for each country, which means that countries move towards specific steady state levels. Thus, $\propto_i$ presents a dummy variable for each country, reflecting their specific characteristics and structural differences. Hence, in the case of a great number of statistically significant dummies, the influence of the distinctive welfare systems would be more pronounced. Put differently, the country dummies function as a control for the institutional theory of path-dependency. Additionally, these country dummies act as a control for the omitted variable bias capturing all unobservable country specific effects of the cross-section unit. Time effects are included capturing common trends and external shocks to which all countries are jointly exposed. A

Hausman-Test is applied for all three indicators suggesting that a fixed effects estimator is preferable to the random effects estimator and thus, a FE-Estimation is used. Further explanatory variables π_i are added (as described in section 3.2) and lagged by one period (except of *Unempl*[2]). The reason for using the lagged values is twofold: Firstly, theory assumes that there is a lag between for instance a change in government composition (depicted by a change in the variable *Gov_left*) and its subsequent effect on social expenditure growth. This presumed time lag can be found in almost all of the independent variables used. Secondly, using lagged values of all time varying explanatory variables helps to reduce the problem of simultaneity bias and causality. Even if one assumes that the LHS of the model equation shapes the regressors on the RHS, this process do not occur with a repercussive effect. In fact, it is more reasonable to assume that today's growth in social expenditure affects tomorrow's debt ratio, GDP growth, etc. Hence, lagging all independent variables helps avoiding problems of causality and simultaneity.

When working with panel data consisting of a large time series dimension, researcher's attention is directly drawn to the potential problem of non-stationarity. Dealing with this potential source of bias, I apply a panel unit root test developed by Levin, Lin and Chu (2002). For all three dependent variables as well as the regressors I include a constant and one lag of the corresponding variable in the regression. For the majority of variables, the null hypothesis of non-stationarity can be rejected at the 10 % significance level. Two regressors show problems with unit roots, a nation's proportion of elderly people (*Elderly*) and government's debt position (*Debt*), respectively. Hence, I take their first differences (depicted by Δ) at the RHS so that from now on all variables used in the model are stationary.[3]

Another issue for analysts working with panel data is the structure of the error terms. Error terms for one unit of one year might correlate with those of the preceding year (serial correlation), or errors for one unit correlate with those of another unit (contemporaneous correlation. Moreover, the variance of the error terms may differ across units (panel heteroscedasticity). Addressing these potential sources of bias, I estimate base equation (11) including all explanatory variables and perform tests on the nature of the error terms. First of all, I check for the presence of contemporaneous correlation. As a result, the applied Pasaran CD (cross-sectional dependence) test indicates that the residuals are correlated across countries. In a next step, an adapted version of the Wald test rejecting the null hypothesis of groupwise homoscedasticity. Both problems can be addressed by using panel-corrected standard errors

[2] An increase in unemployment will almost immediately be transmitted into higher social expenditure (*SE*) by the effect of automatic stabilizers. It is thus unlikely to find a substantial time lag between an increase of *Unempl* and the growth of social expenditure. Therefore, the annual change in unemployment is chosen as the correct specification.

[3] Since unit root tests are sometimes notorious for their low power (Kittel and Winner 2005), I double checked all LLC results with the Ipshin-test based on Im, Pesaran and Shin (2003). By and large, the results obtained from LLC are confirmed.

(PCSE) recommended by Beck and Katz (1995). The application of the PCSE routine will account for these two OLS violations and corrects the produced standard errors adequately.

Controlling for serial correlation I execute a LM test (Wooldridge test), i.e. using an auxiliary regression of the captured residuals on all the independent variables as well as the lagged residuals. The null hypothesis of independent error terms has to be rejected. To deal with this autocorrelation, I insert the lagged dependent variable $ln\left(\frac{y_{it-1}}{y_{it-2}}\right)$ on the RHS. Thus, modelling serial correlation by the inclusion of a LDV means to treat the dynamics (or correlations) as a substance, rather than as a nuisance of the model (see Beck and Katz 1996: 29). This solution was implemented not only on empirical grounds, but also due to theoretical considerations. Changes in the growth of social provisions are presumed to be rather sticky and not prone to quick shifts between two consecutive time periods. This follows from the assumption that policy-makers can only change margins of programmes and therefore, it is likely that current growth will be similar to the previous year's growth (cf. Kittel and Obinger 2003: 31). This dynamic memory of the model is interesting in it's own respect and has not inevitably to be removed from it.

In the case of social expenditure *SE* as the dependent variable, the final version of the estimated equation of conditional convergence is then the following:

$$Ln\left(\frac{SE_{it}}{SE_{it-1}}\right) = \propto_i + \beta_1\, lnSE_{it-1} + \beta_2 ln\left(\frac{y_{it-1}}{y_{it-2}}\right) + \beta_3 \Delta Elderly_{it-1} \qquad (12)$$
$$+\beta_4 \Delta Debt_{it-1} + \beta_5 Trade_openness_{it-1} + \beta_6 Gov_left_{it-1}$$
$$+\beta_7 GDP_growth_{it-1} + \beta_8 \Delta Unempl_{it} + +\beta_9 Fin_Openness_{it-1} + \omega_t + \varepsilon_{it}$$

The corresponding equations for *UNRR* and *PNRR* are slightly modified versions of (12) and can be found in the appendix.

5 Descriptive Statistics

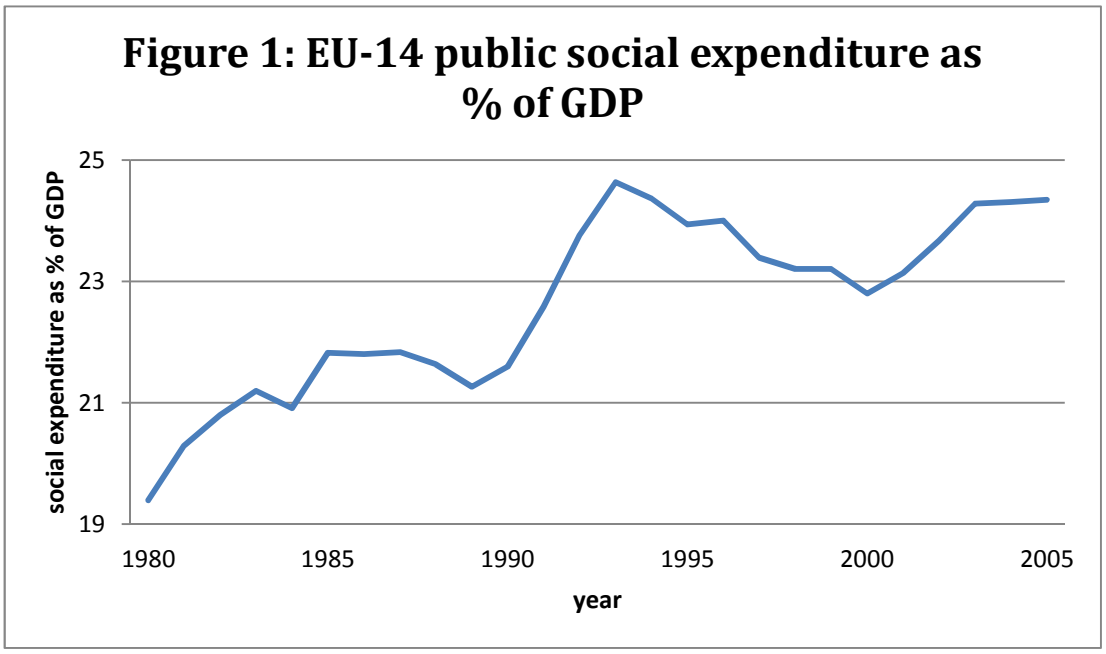
Table 2 reports total public social expenditure as a percentage of GDP in the EU-14 between 1980 and 2005. For the whole time span, an increase of social expenditure can be examined in all countries except of the Netherlands. On average, social expenditures of the EU-14 increases by 4.96 percentage points of GDP from 1980 to 2005. This broad-based growth both in individual as well as in averaged *SE*-levels suggests that the welfare states of Western Europe are not on a general retreat. In fact, it questions the proposition of a 'race to the bottom' in social provisions. Furthermore, a process of catching-up by the southern European states can be noticed. Starting from a very low level of social spending in 1980, the Mediterranean countries showed in parts excessive growth rates of *SE* in subsequent years. Taking Spain, Portugal,

Greece and Italy together as a group (denoted as SPIG countries, see also Figure A1 in the Appendix), this cluster experienced an above average rise in total social expenditure of 9 percentage points from 1980 to 2005.

Table 2: Total public social expenditure as a percentage of GDP in the EU-14

	1980	1990	2005	Δ 1980-2005
Austria	22.47	23.87	27.20	4.73
Belgium	23.50	24.89	26.40	2.90
Denmark	24.76	25.14	27.08	2.32
Finland	18.03	24.17	26.10	8.07
France	20.76	25.09	29.17	8.41
Germany	22.75	22.28	26.75	4.00
Greece	10.24	16.47	20.55	10.30
Ireland	16.67	14.93	16.73	0.07
Italy	17.98	19.95	24.98	7.00
Netherlands	24.79	25.57	20.88	-3.92
Portugal	10.22	12.89	23.10	12.88
Spain	15.55	19.95	21.24	5.70
Sweden	27.10	30.20	29.43	2.33
UK	16.69	17.02	21.29	4.56
Mean	19.39	21.60	24.35	4.96

Figure 1 illustrates the development of average (EU-14) public social expenditure of the whole sample over time. The graph points out strong growth in average SE-level from 1980 to the early nineties, reaching a maximum of 24.64 percent of GDP in 1993. This climax was followed by a moderate decline of social spending in subsequent years, turning into growth again during the 2000s. In the end year of the time span (2005), the peak level of SE is almost reached again with 24.35 percent of GDP. Again, widespread and persistent cutbacks in overall social spending levels cannot be observed.



Turning towards the two other indicators of social provisions, Table 3 presents unemployment replacement rates *UNRR* and pension replacement rates *PNRR*, respectively. Figures are available from 1980 to 2002. In the case of *UNRR* results differ considerably from country to country. Some countries experienced huge cutbacks in *UNRR*, whereas other governments improved the protection level of their citizens in the face of unemployment. The biggest cuts were executed in Ireland and the UK, with -31 and -26.8 percentage points, respectively. A remarkable increase in *UNRR* can be examined in Finland (+ 23.0 percentage points) and Portugal (+ 21.7 percentage points). However, a majority of the countries slashed replacement rates, in total nine countries provided less unemployment protection in 2002 than in 1980. Moreover, the average unemployment replacement rate of the EU-14 decreased by 5.6 percentage points of the APWW from 1980 to 2002. This broad-based shrinking of *UNRR* in almost two-thirds of the countries might put some evidence on the proposition of a 'race to the bottom' in unemployment protection, even though results are rather mixed.

The figures of pension net replacement rates differ to a lesser extent than those for unemployment but again, it is rather difficult to identify a common pattern. Seven out of fourteen countries cut back on *PNRR* during the twenty-two years of examination. However, the size of these retrenchments is smaller than in the realm of unemployment replacement rates. This difference has its seed in the two extreme outliers UK and Ireland, respectively. As mentioned above, these two countries tremendously reduced theirs unemployment replacement rates in the 1980s. In contrast, both countries experienced no contraction of pension net replacement rates over time. Rather surprisingly, the country with the biggest cutback in *PNRR*

over the whole time span is Portugal (-14.5 percentage points). This development can be explained best by the high degree of fragmentation in Portugal's pension schemes. During the eighties Portugal was characterized by generous protection levels for 'insiders' (e.g. highly unionized branches) but only weak provisions to those located outside these regulated and institutionalized labour markets (cf. Ferrera 1996: 19ff.). In recent years, this 'insider-outsider polarity' got diminished slowly, accompanied by a decrease of overall pension replacement rates. However, the problem of such a dualistic, polarized labour market still exists not only in Portugal but also in other Southern European countries. For instance, Italian pension net replacement rates soared during the last two decades and reached almost full income replacement level. This reflects an Italian peculiarity which differentiates in welfare provisions not only between 'insiders' and 'outsiders' but also between younger generations and the elderly. The Italian welfare state has repeatedly been described as a strongly familialistic system with overly generous pensions for the retired which then gets redistributed inter-familial to their children and grandchildren (see Esping-Andersen 1999: 181). However, averaging pension replacement rates over all countries, an increase of 2.9 percentage points from 1980 to 2002 is evident. Therefore, in the area of pension benefits, one may question the proposition of a broad-based 'race to the bottom' in social provisions.

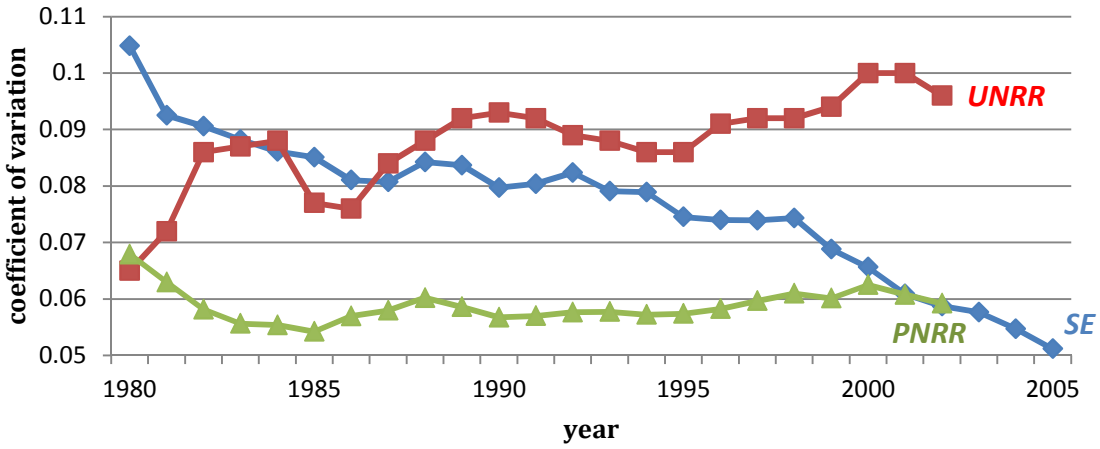
Table 3: Trends in Program Replacement Rates (*UNRR* & *PNRR*)

	Unemployment net replacement rates as a percentage of APWW				Pension net replacement rates as a percentage of APWW			
	1980	1990	2002	Δ 1980-2002	1980	1990	2002	Δ 1980-2002
Austria	58.0	58.0	55.0	-3.0	80.3	82.4	85.3	5
Belgium	65.5	63.9	65.7	0.2	81.3	79.6	74.1	-7.2
Denmark	77.3	67.9	59.4	-17.9	45.6	54.1	51.6	6
Finland	34.4	62.7	57.4	23.0	56.8	67.3	63.5	6.7
France	67.7	70.3	70.1	2.4	59.1	59.8	52.0	-7.1
Germany	68.0	63.0	60.0	-8.0	76.5	75.4	72.0	-4.5
Greece	64.5	65.7	61.3	-3.2	61.2	62.4	59.0	-2.2
Ireland	60.0	35.1	29.0	-31.0	36.3	41.7	37.8	1.5
Italy	44.0	52.0	50.3	6.3	60.6	71.6	93.3	32.7
Netherlands	86.2	74.3	78.1	-8.1	53.2	47.6	51.0	-2.2
Portugal	51.9	80.4	73.6	21.7	92.6	91.3	78.1	-14.5
Spain	81.8	68.9	63.3	-18.5	64.5	79.7	77.0	12.5
Sweden	82.0	85.2	67.0	-15.0	64.1	65.0	59.4	-4.7
UK	45.8	19.9	19.0	-26.8	37.3	46.9	55.3	18
Mean	63.4	62.0	57.8	-5.6	62.1	66.1	65.0	2.9

6 Estimation Results

This section presents the results of the empirical analysis as described in Section 4. First of all I apply the concept of σ-convergence using the coefficient of variation (CV) as the indicator of disparity. Recall that σ-convergence is present when a decrease of the CV is observable. Figure 2 graphically picture the trend of *SE*, *UNRR* and *PNRR*, respectively. In the case of public social expenditure, a decrease in variance among the countries is observable. The CV drops from 0.105 to 0.051, with an average growth in σ-convergence sums up to 2.7% per annum. Hence, a considerable cross-national convergence in social expenditure is observable. This convergence in social expenditure contrasts with the traditional emphasis on path dependence in comparative welfare state studies.

Figure 2: Coefficient of variation - *SE*, *UNRR* and *PNRR* as social indicators



In the case of *PNRR*, a declining coefficient of variation can be observed as well. However, the magnitude of convergence is attenuated; the CV slightly decreases from 0.068 to 0.059. Thus, the average growth in σ-convergence sums up to 0.6% per year. Looking at shorter time periods, one can distinguish between times of convergence tendencies and periods with patterns of divergence. In fact, the time after 1992 is characterized by a diminutive increase of the CV, indicating divergence. Nevertheless, the overall tendency of pension net replacement rates can be described as trend towards less variance and therefore convergence among the EU-14.

By contrast, the CV of unemployment replacement rates rises from 0.065 to 0.096 over the whole time sample. Judging by the coefficient of variation, there is some divergence in *UNRR* among the countries present (however, by excluding the two outliers UK and Ireland from the

sample, the CV is dropping and indicating convergence). The average decline in σ-convergence amounts to 1.9% per year, despite the fact that the graph shows a fair deal of volatility. Time periods with a pronounced growth of the CV are followed by times of a shrinking coefficient. All in all, a trend towards increasing disparity and divergence can be examined.

To summarize my results with respect to σ-convergence: For both *SE* and *PNRR*, I observe declining patterns in CV which suggests that the variation across countries decreased over time. However, this trend does not monotonically take place but rather vary over time. In addition, convergence patterns are more pronounced for *SE* than *PNRR*. On the contrary, the CV for unemployment replacement rates shows a trend towards disparity and divergence.

In my next step I employ the concept of absolute β-convergence using cross-sectional data. As explained in section 4, the concept of absolute β-convergence implies that countries with lower initial levels of social protection experience a greater growth rate of the social indicators in subsequent years. Figures A2-A4 illustrate this inverse relationship regarding the three social indicators used in my study (see appendix).

Moving on to econometric modelling, equation (5) is applied, regressing the annual growth rate of the respective social indicator on its initial level at the beginning of the period. A significant and negative coefficient on the initial level indicates a trend of convergence. Cross-sectional data from the EU-14 is used and an ordinary least square (OLS) regression model exercised.

All convergence coefficients given in Table 4 indicate a negative relationship between the initial values of each social indicator and its subsequent growth. Thus, laggard countries in social provisions experienced higher growth rates in the respective indicators than 'front-runners'. However, only the coefficients of *SE* and *PNRR* show significant convergence (at the 1% and 10% level of significance, respectively). In contrast, the replacement rates of unemployment seem not to have converged over time. Summarizing, the estimations of absolute β-convergence reveal a catching-up process in terms of public social expenditure and pension replacement rates since the 1980s.

Table 4: Absolute β-convergence of the three social indicators *SE*, *UNRR* and *PNRR*

Dependent Variable	Initial level of social indicator
Δ*SE*	-0.027***
	(0.005)
Δ*UNRR*	-0.017
	(0.016)
Δ*PNRR*	-0.014*
	(0.007)

Notes: Constant not reported. Standard errors in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01

As discussed above, the concept of absolute β-convergence assumes an underlying common steady-state level of social provisions to which country-specific welfare systems are converging. To ease this assumption and to take full advantage of the panel structure of my data, a more advanced analysis of convergence is carried out now, namely conditional β-convergence. Taking the potential heterogeneity of the existing welfare systems into account, this concept of convergence allows countries to move towards their individual steady-state values. Moreover, this framework enables me to control for a variety of influencing factors on social provisions. These factors may stem from both domestic characteristics reflecting a country's socio-economic situation (e.g. unemployment rate, elderly rate, national debt) and external factors such as the degree of openness in trade and international transactions. For instance it is reasonable to assume that a rise in social expenditure may simply be rooted in a severe economic downturn which increases the number of beneficiaries of a welfare system. These cyclical factors influencing social spending are now implemented into the model. Moreover, the application of a panel approach leads to an increase in the number of observations and therefore, the model is supposed to be more robust in its results.

Table 5 displays the results when the dynamic panel specification is applied including conditional factors as independent variables. The dependent variables are the annual changes in *SE*, *UNRR* and *PNRR*, respectively. The main finding of the panel analysis is that convergence can be found throughout the model. For all three different social indicators, the β_1 – coefficients are always significantly smaller than 0 (at a 1% significance level), indicating a consistent negative relationship between the change of the social indicators and theirs initial levels (now the lagged levels). This is a striking result bearing in mind that previous research on absolute convergence showed mixed results. Hence, convergence is present but conditional on cyclical, domestic as well as on external factors.

First of all I will examine the effect of the conditional factors on the growth of social expenditure in greater detail. One domestic factor is a particular driver of social spending, namely the change in unemployment. An increase in unemployment has a strongly significant positive effect on *SE.* This demonstrates how the automatic stabilizers and eventually, the state of the domestic economy, contribute to the growth of social spending. In the short run, a change in the elderly rate has the expected positive influence on the growth of *SE*, but proved to be insignificant. However, this variable turns out to become highly significant in the long run when $Elderly_{t-1}$ is inserted on the RHS (not displayed)[4]. Another variable capturing domestic effects is the debt burden of a country. Assigning a positive influence on short term changes in debt, my model suggests that governments use social policy programs as a deficit financed fiscal stimulus. However, this variable failed statistical significance by a narrow margin. Investigating the long-

[4] Not displayed due to indications of Elderly_{t-1} as non-stationary. Therefore, Δ *Elderly* is used.

term influence of debt levels on social spending, the expected restraining effect is present and significant (not displayed). A more cyclical factor, the rate of GDP growth, turns out to be negative but insignificant. Thus, a robust considerable influence of changes in GDP on the growth of social spending cannot be confirmed.

Controlling for external factors influencing social expenditure growth, I included two indicators measuring a country's integration in the world economy (namely *Fin_openness* and *Trade_openness*). The consistently negative coefficients of both variables tend to support the 'efficiency paper' that economic integration puts a downward pressure on social spending although it is significant only for *Fin_openness*.

Finally the coefficient of the government variable (*Gov_left*) shows only negligible negative effects and proved to be not significant. This result rejects the idea of the so-called 'old politics' paradigm, which assumes that left parties continuously act as agents of welfare expansion and therefore can be associated with stronger growth in social expenditures.

The country dummies included in the present model are of particular importance. They capture time-constant idiosyncrasies of the single welfare systems and should be regarded as being part of the underlying institutional fabric of a country (cf. Garrett and Mitchell 2001: 163). Therefore, I list the number of significant dummies (significance < 0.05) in table 5. Seven of these country dummies show statistical significance suggesting that half of the countries included in the sample follow distinct trajectories in their steady-state growth path. It seems that although convergence tendencies are present, the countries of the EU-14 may still feature differences in their long-run steady-state values of social expenditure. An auxiliary regression excluding all control variables and dummies from the model and repeating the panel regression brings additional evidence to the assumption of different steady-state levels. The convergence-coefficient of this ('panel') absolute β-convergence model is -0.043.[5] The fact that the coefficients of absolute and conditional convergence have quite different magnitudes (-0.043 and -0.117, respectively) affirms the proposition of heterogeneous steady-state levels of the countries examined. Following Barro in his influential paper, the coefficients of absolute and conditional convergence will coincide if the countries are perfectly homogenous with respect to their steady-state values (cf. Barro 1992: 243ff.).

In summary the results achieved by the panel estimation given in Table 5 are in line with the findings of both σ-convergence and cross-sectional analysis as they show a convergence trend in social expenditure between 1980 and 2005. However, convergence is partly conditional on domestic factors and institutional idiosyncrasies inducing a movement towards country specific means. Nevertheless, the catching-up pattern remains and suggests that the distinct welfare systems of the EU-14 increasingly deliver similar outputs in terms of overall social spending.

[5] Results are not reported. Note that a simple comparison with the 'standard' coefficient for absolute β-convergence as presented in Table 4 would be misleading due to the use of cross-sectional data in this test.

Analysing the trends of convergence in replacement rates, I start off with *UNRR*. Column 2 of Table 5 presents the results using changes in unemployment net replacement rates as dependent variable. The main finding of the panel estimation is that conditional convergence takes place and that countries move towards different country-specific levels of unemployment replacement rates. The β_1 – coefficient is significantly smaller than 0 (at a 1% significance level) indicating that countries with low initial UNRR (now the lagged levels of replacement rates) move faster towards their respective steady state. However, this does not imply that countries grow together and become more similar in terms of unemployment net replacement rates. In fact, the high number of statistically significant country dummies reflects the different individual steady-state levels (N=9). Estimating the regression presented in column (2) and excluding country dummies reinforces the idea that inertial idiosyncrasies of the single welfare systems matter (results not reported). Omitting the dummies, the model at hand loses a fair deal of its explanatory power (R^2=0.10). Concluding, time-invariant effects play a decisive role in changes of *UNRR* highlighting that national peculiarities are hard to catch with the commonly used explanatory variables.

The second major result of the panel equation at hand is that most explanatory variables included in the model play no substantial role in explaining changes of *UNRR*. An exemption is the variable capturing trade openness. Similar with the results of *SE*, the degree of a country's integration in the world economy (depicted by *Trade_openness*) has a statistically significant negative effect on the growth of unemployment replacement rates. However, for the other globalization indicator *Fin-openness*, results are less consistent.

Recapitulating the results one can summarize that country dummies and hence, countries' time-constant idiosyncrasies form a crucial part of analysing changes in *UNRR*. The number of individually significant dummies is substantially high and the applied F-tests also reveal their joint significance. Furthermore, a reconsideration of the underlying driving forces of changes in *UNRR* has to be exercised. The vast majority of the explanatory variables included in the model perform poorly. In summary, the result achieved by the panel estimation of *UNRR* are in line with the findings of disparity and divergence in the σ – and (absolute) β – analysis as they show only marginal trends of convergence at its best and in some cases even divergence. This instability of convergence patterns can be found throughout the different models and tests. All in all, there is insufficient evidence that convergence in terms of unemployment net replacement rates is present among the countries of the EU-14. It shows that the distinct welfare states of the EU-14 continuously deliver differing outputs in terms of *UNRR* over the last two decades.

Finally I analyse β-convergence in pension replacement rates (*PNRR*) as depicted in the third column. The panel estimations show that conditional convergence can be found, indicated by an β_1 – coefficient significantly smaller than 0. This result signifies that there exists a consistent

negative relationship between the growth of *PNRR* and their initial levels meaning that countries with low initial replacement rates move faster towards their respective steady state. Controlling for the magnitude of the country dummies I run a regression excluding the dummies from the model (as I did for *UNRR*). This time, the convergence coefficient does remain significant as do the explanatory variables. The results are in line with those of absolute β- and σ-convergence.

Analysing the conditional factors of convergence I can state that both domestic and external factors are potential drivers of changes in pension replacement rates. A change in the elderly rate has a significant positive effect on *PNRR.* This might indicate how the retired via interest group representation influence social policy. However, it contradicts the assumption that a rising proportion of pensioners in society will eventually overload the capacity of public pension funds and therefore, replacement rates will be slashed. In addition, the coefficient of the government variable (*Gov_left*) shows negligibly negative but significant effects on changes in *PNRR.* This result runs against conventional wisdom of leftist parties functioning as advocates of welfare state provisions. Controlling for external factors, I included two indicators measuring a country's exposure to international economic forces (*Fin_openness* and *Trade_openness*). The consistently negative coefficients of both variables tend to support the 'efficiency paper' that economic integration puts a downward pressure on pension replacement rates although it is significant only for *Fin_openness*.

In summary the results obtained by the panel estimation give evidence that a convergence process of PNRR occurred between 1980 and 2002. This is coherent with the findings of both σ-convergence and cross-sectional analysis. Nevertheless, the results gained by using panel data reveal strong signs of conditional convergence and the existence of a fair deal of diversity in steady states. These findings bolster the idea of a 'European social snake' with countries moving towards parallel but different levels of social provisions rather than towards a single European social model (see Atkinson 1996: 287).

Table 5:Determinants of changes in social indicators(*SE*, *UNRR*&*PNRR*)

Independent Variables	**Δ*SE* as % of GDP**	**Δ*UNRR* as % of APWW**	**Δ*PNRR* as % of APWW**
$Social\ Expenditure_{t-1}$ (β_1)	-0.117***		
	(0.030)		
$Replacement\ Rate_{t-1}$ (β_1)		-0.327***	-0.184***
		(0.049)	(0.040)
Δ $Dependent\ Variable_{t-1}$	0.095	-0.367***	-0.286***
	(0.087)	(0.099)	(0.085)
Δ*Elderly*	0.007		0.011*
	(0.010)		(0.007)
Δ *Debt*	0.001	0.001	-0.001
	(0.001)	(0.001)	(0.000)
$Trade_openness_{t-1}$	-0.0003	-0.001**	-0.000
	(0.005)	(0.001)	(0.000)
Gov_left_{t-1}	-0.000	-0.000	-0.0001*
	(0.000)	(0.000)	(0.000)
GDP_growth_{t-1}	-0.001	0.001	-0.002
	(0.002)	(0.003)	(0.001)
Δ *Unempl*	0.109***	0.005	
	(0.003)	(0.004)	
$Fin_openness_{t-1}$	0.008***	0.002	-0.005*
	(0.003)	(0.044)	(0.002)
N	336	294	294
R^2 (Wald chi)	0.46***	0.41***	0.37***
	(17743.67)	(1689.21)	(2526.75)
F-test (joint country effect)	31.68***	79.69***	78.85***
N of sign. country dummies	7	9	9

Notes: Constant and time effects not reported. Panel-corrected standard errors (PCSEs) in parentheses. ***significant at 0.01 level. **significant at 0.05 level. *significant at 0.10 level

7 Conclusions

The present paper aims to contribute to the existing literature concerning the question of convergence in welfare states among the so-called 'Old EU Member States'. More precisely, convergence in welfare output is used as the benchmark for a general convergence trend among these different countries. As indicators for welfare output social expenditures, unemployment replacement rates and pension replacement rates were chosen.

The overall result can be labelled as 'divergence within convergence'. Using a macro perspective, an upward convergence of overall welfare output can be examined. The social expenditures in the EU-14 indicate a strong trend of convergence, no matter what methods or model specifications are used. This pattern holds even when controlled for cyclical, social-economical and demographic factors. Additionally, an increase of social expenditures happened in all countries except of the Netherlands. The catch-up theory has been identified as the theory which explains growth of social expenditure the best. This implies that welfare laggards experienced higher growth rates of social spending than frontrunner countries during the years studied. Since data on social expenditure does not clarify if convergence in minor social policy programs took place as well, the next step was an extensive analysis of pension and unemployment replacement rates.

Moving on to the analysis of unemployment net replacement rates, a different picture emerges. The results point out only negligible trends of convergence and in some cases, contradicting results are obtained. The majority of countries seem to follow national trajectories and the underlying institutional fabrics of the single countries are from a significant relevance. Furthermore, a notable decline in unemployment net replacement rates occurred with cutbacks in more than half of all countries. However, none of the tested theories explain this retreat sufficiently, except of the institutional approach. It seems that national peculiarities and path-dependency of state institutions continuously produce different welfare outcomes, even when challenges are akin.

In the case of pension net replacement rates, results are more congruent with those received from *SE*-analysis. Trends of convergence have been detected throughout the different models and specifications. Evidence for conditional convergence has been found, pointing at the high relevance of country-specific peculiarities. Moreover, pension net replacement rates of the EU-14 have increased on average, driven by higher growth rates of the initial laggard countries. All in all, data supports both theories about growth to limits ('catch-up') and institutional path-dependency.

By achieving results that indicate strong trends of convergence in social expenditure but more ambiguous developments in at least one field of social protection (namely UNRR), one can identify two potential underlying causes: The first one has to do with distinct developments in a few of the countries examined. As mentioned above, most of the catching-up process in social expenditure has been governed by the southern European countries. This catching-up process combined with fairly stable levels of *SE* in the remaining countries is partly driving the results of an upward convergence trend in social expenditure. By contrast, the southern European countries assured respectable unemployment and pension replacement rates already in 1980, at least for certain groups of the labour force (see Ferrera 1996: 20ff.). Hence, these countries could no longer serve as locomotives for upward convergence and catching up in Western Europe.

Replacement rates as well as welfare state arrangements are quite static over time, making it sometimes difficult for researchers to detect changes. Therefore, the task of future research is to come up with a sophisticated model taking into account the persistent nature of the data. Additionally, with my data ending in 2002, new data has to be gathered for analysing contemporary trends in replacement rates. For instance, the more recent effects of European Integration on welfare state convergence have to be explored in greater detail. With the Open Method of Coordination (OMC), the EU stretches its influence to the realm of social and labour market policies, aiming explicitly for convergence. Hence, more recent data will help to shed some light on OMC's policy impact. In doing so, future research will be able to further unpuzzle the ambiguous signs of convergence in welfare efforts and outputs.

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Appendix:

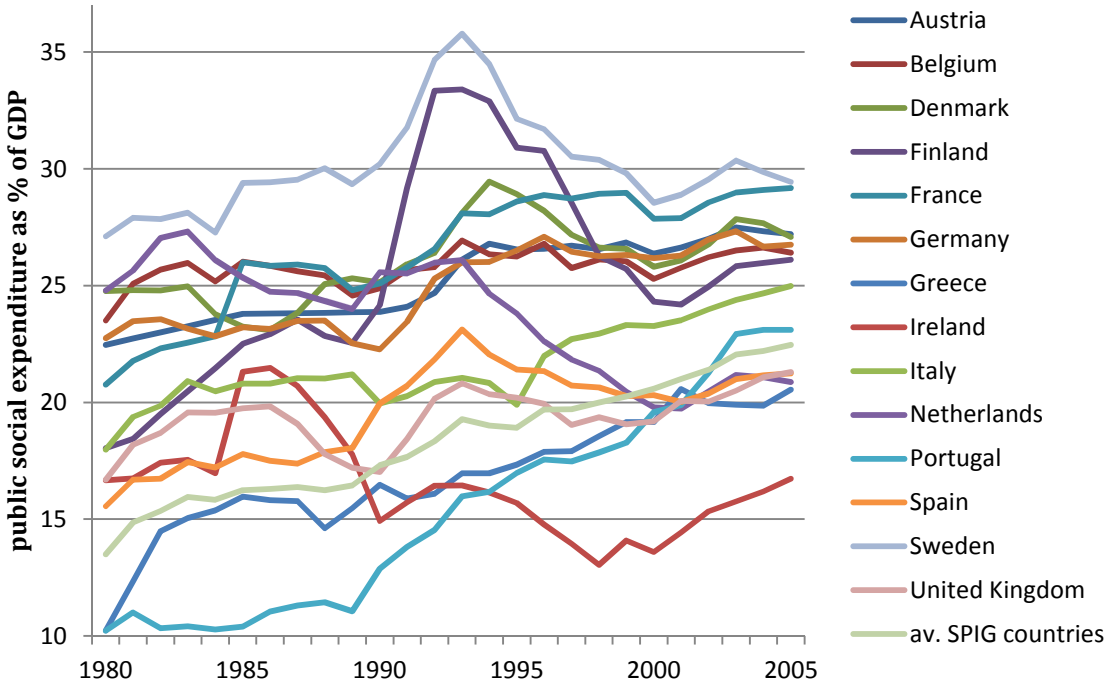
Estimation of *UNRR* in the first order dynamic panel specification:

$$Ln\left(\frac{UNRR_{it}}{UNRR_{it-1}}\right) = \propto_i + \beta_1 lnUNRR_{it-1} + \beta_2 ln\left(\frac{UNRR_{it-1}}{UNRR_{it-2}}\right) + \quad (12)$$
$$+\beta_4 \Delta Debt_{it-1} + \beta_5 Trade_openness_{it-1} + \beta_6 Gov_left_{it-1}$$
$$+\beta_7 GDP_growth_{it-1} + \beta_8 \Delta Unempl_{it} + +\beta_9 Fin_Openness_{it-1} + \omega_t + \varepsilon_{it}$$

Estimation of *PNRR* in the first order dynamic panel specification:

$$Ln\left(\frac{PNRR_{it}}{PNRR_{it-1}}\right) = \propto_i + \beta_1 lnPNRR_{it-1} + \beta_2 ln\left(\frac{PNRR_{it-1}}{PNRR_{it-2}}\right) + \beta_3 \Delta Elderly_{it-1} \quad (13)$$
$$+\beta_4 \Delta Debt_{it-1} + \beta_5 Trade_openness_{it-1} + \beta_6 Gov_left_{it-1}$$
$$+\beta_7 GDP_growth_{it-1} + \beta_9 Fin_Openness_{it-1} + \omega_t + \varepsilon_{it}$$

Figure A1: Public social expenditure as % of GDP



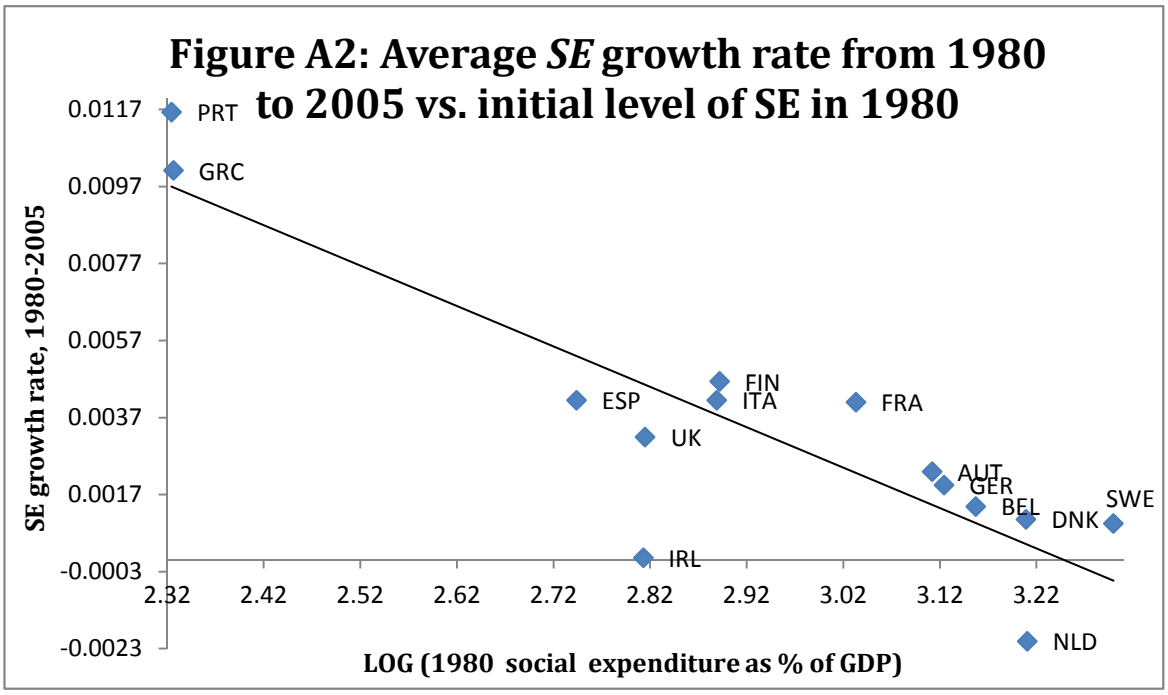


Figure A2: Average *SE* growth rate from 1980 to 2005 vs. initial level of SE in 1980
SE growth rate, 1980-2005
0.0117
0.0097
0.0077
0.0057
0.0037
0.0017
-0.0003
-0.0023
2.32
2.42
2.52
2.62
2.72
2.82
2.92
3.02
3.12
3.22
PRT
GRC
FIN
ITA
ESP
FRA
UK
AUT
GER
BEL
DNK
SWE
IRL
NLD
LOG (1980 social expenditure as % of GDP)

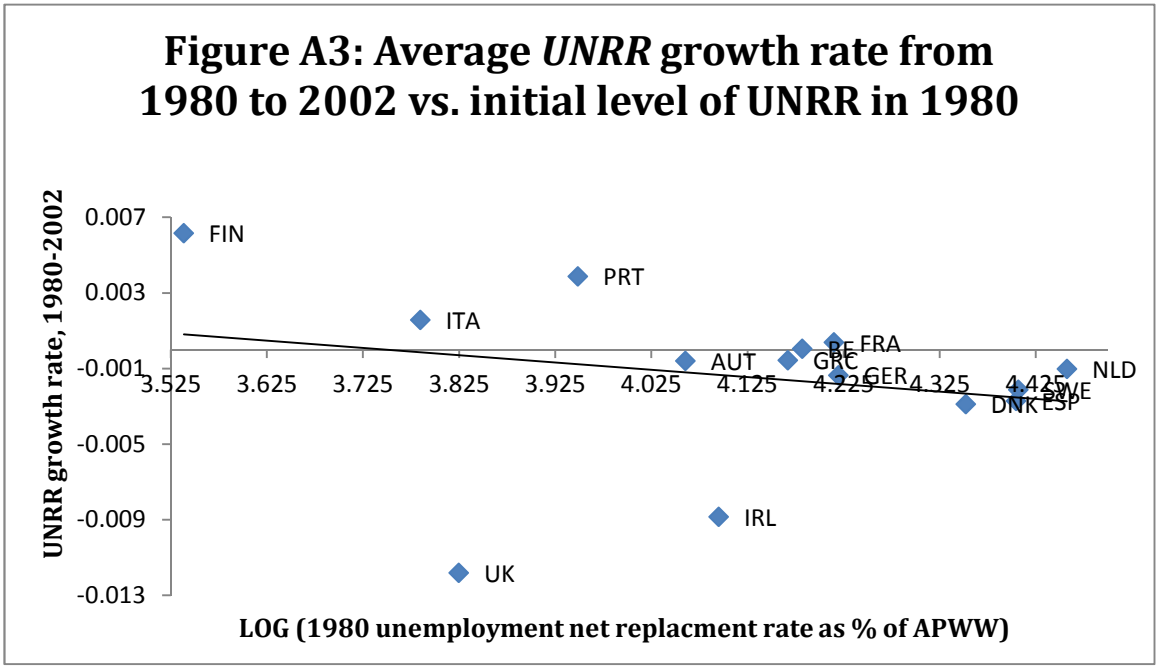
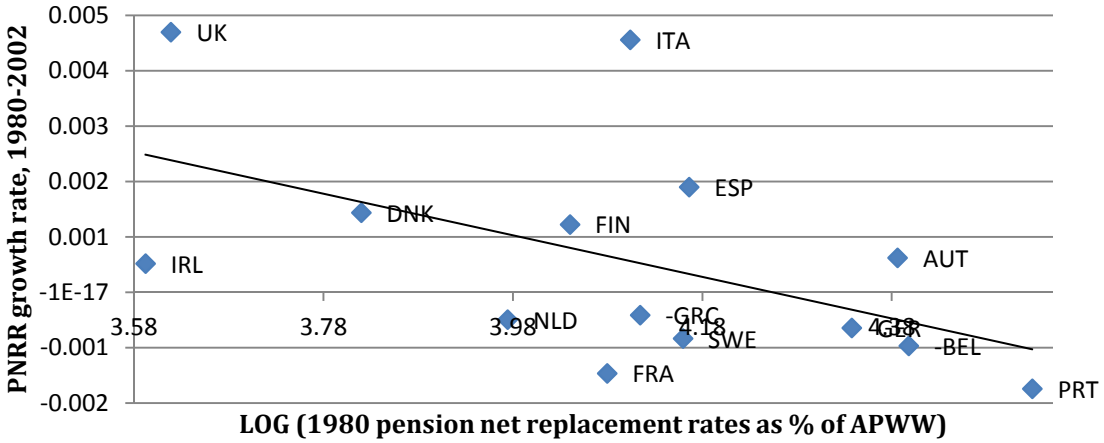


Figure A3: Average *UNRR* growth rate from 1980 to 2002 vs. initial level of UNRR in 1980
UNRR growth rate, 1980-2002
0.007
0.003
-0.001
-0.005
-0.009
-0.013
3.525
3.625
3.725
3.825
3.925
4.025
4.125
4.225
4.325
4.425
FIN
PRT
ITA
FRA
AUT
GRC
GER
NLD
DNK
ESP
IRL
UK
LOG (1980 unemployment net replacment rate as % of APWW)

Figure A4: Average *PNRR* growth rate from 1980 to 2002 vs. initial level of PNRR in 1980



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