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Social expenditure, social rights, and benefit receipt as indicators of welfare state generosity

Welfare state
generosity

Three peas in a pod, or a different kettle of fish altogether?

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Abstract

Purpose – Revitalising the debate about how to operationalise and measure the extent of welfare states – the so-called dependent variable problem – recent research claims a close theoretical interaction between three different indicators: aggregated data on social expenditure, social rights and social benefit receipt. It is suggested that they all serve as an approximation of welfare state generosity as a dependent variable and help understand variation between as well as change of welfare states. The purpose of this paper is to investigate how these three indicators statistically relate to each other, using data on unemployment cash benefits.

Design/methodology/approach – To this end, a time series cross-sectional analysis is carried out, covering 16 European countries for the period 2003–2011.

Findings – Results confirm theoretical reflections on the link between the different indicators, whereby higher levels of social expenditure are positively associated with more generous social rights as well as higher levels of benefit receipt. Additionally, the study points to an ambivalent relation between benefit access and benefit levels within indicators as well as across them. This suggests competing policy choices in European welfare states, whereby more generous benefit access implies lower benefit levels and vice versa.

Originality/value – The study contributes to the existing dependent variable literature in a twofold way. First, the conceptual link between the three different indicators and the assumptions they are associated with are critically reviewed. Second, by providing a statistical analysis of the relation between the different indicators across 16 countries, the study goes beyond theoretical elaborations about their association as well as existing small-N or medium-N case time trend studies.

Keywords EU-SILC, Benefit reciprocity data, Dependent variable problem, Welfare state generosity

Paper type Research paper

Introduction

Next to the issue of defining the welfare state, the question of how to conceptually operationalise and measure the size of a welfare state or the extent to which it provides welfare to individuals and households has been key in welfare state research. Labelled as the “dependent variable problem” in academic literature (Green-Pedersen, 2004), discussions revolve around the quantitative measurement of differences between and developments within the extent or the “quality” of welfare states – an idea that is also captured by the notions “welfare stateness”, “welfare effort” or “welfare state generosity”. To this effect, a large body of research puts forward two yardstick indicators: social expenditure data as the budgetary size of what is considered to represent public welfare and data on the generosity of benefit-related social rights. In a more recent research, other scholars suggest the extent and level of benefit receipt as a third and hitherto underused indicator (De Deken and Clasen, 2013; van Oorschot, 2013) of what could be labelled more neutrally as the “extent of public welfare provision”. In contrast to the two prevailing

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This study is based on data from Eurostat, EU Statistics on Income and Living Conditions 2004–2014. The responsibility for all conclusions drawn from the data lies entirely with the author.

indicators, this is micro-level data that are either derived from administrative records or via surveys. By giving an idea of the received extent of public welfare provision in national contexts rather than the legally intended extent or the financial output resulting from the legal intentions, they are believed to complement our understanding of welfare state differences and welfare state change.

Notwithstanding these recent studies, little is known about the relative value of benefit reciprocity data in comparison with social expenditure and social rights data. van Oorschot (2013) highlighted the close theoretical interaction between them, whereby benefit receipt can be considered the result of social rights addressing social needs and eventually determines the total of social expenditure. However, when studying data of three European countries, De Deken and Clasen (2011) found that depending on the benefit, “expenditure and caseload data should be regarded as separate indicators since trends in one are not necessarily reflected in the developments of the other” (p. 307).

Against this inconclusive background, in the current paper, the link between the three indicators is further explored. The issue is not merely a methodological one, as it also touches upon the question to what extent these different indicators actually capture the same notion of public welfare and can be used to describe the development of advanced welfare state democracies and their social outcomes. Despite different approaches, they all seek to obtain a better picture of the extent of the welfare state in quantitative terms, normatively assuming that a larger extent equals better quality. Sharing this same starting point, one might expect a positive relation between the three indicators. This hypothesis is investigated in the paper by focussing on unemployment expenditure, unemployment benefit rights and unemployment benefit reciprocity data for 16 European countries for the period 2003–2011. The contribution of the study to existing dependent variable literature is twofold. First, the conceptual link between the three different indicators and the assumptions they are associated with are critically reviewed. Second, by statistically analysing the direct relationship between the three indicators in a cross-sectional time series regression model, the study goes beyond examining merely descriptive time trends in the different indicators.

Indicators of the extent of public welfare provision

Social expenditure and social rights data

Being a key institution of contemporary societies, the notion of the “welfare state” is “contested and common sense at the same time” (Kuitto, 2016, p. 38). It has been and it continues to be an impetus for ambiguous discussions, resulting in broader definitions of the welfare state as “all mechanisms which provide social protection against and redistribution of market mechanisms and outcomes” (Clasen and Siegel, 2007, p. 6) as well as narrower ones, whereby the welfare state consists of various statutory and non-statutory cash or in-kind policy programmes. Evidently being shaped by a narrower understanding of the concept of “welfare state”, existing literature on the dependent variable problem primarily suggests two indicators of the extent of public welfare provision: the budgetary “effort” that is made by a state to provide welfare benefits to its population (Castles, 2002; Hicks and Swank, 1984; Pierson, 1996, 2001; Wilensky, 1975a) and the “generosity” of social rights granting welfare benefits (Esping-Andersen, 1990; Scruggs, 2007, 2008; Scruggs and Allan, 2006). Both indicators represent quantitative approaches to comparative welfare state analysis and provide information on benefits for internationally recognised social risks (i.e. International Labour Organisation – Convention No. 102). Studies based on these indicators usually produce large- to medium-N instead of small-N comparisons and allow for a broad-brush view and generalisable conclusions (Ebbinghaus, 2006; Lieberman, 1991).

Measurements approximating the cost side are either total or programmatic social expenditure as a proportion of GDP or in Purchasing Power Standards. Both are provided by the OECD’s Social Expenditure (SOCX) database, Eurostat’s European system of

integrated social protection statistics (ESSPROS) database as well as by the ILO social security database. Proxy measurements of the generosity of benefit rights include entitlement criteria (personal scope), eligibility conditions (including the material scope) and the replacement rate of a certain cash benefit as stipulated in the legislation. Examples of indexes with this type of information are constructed within and made available by the Social Citizenship Indicator Programme (SCIP) and the Comparative Welfare Entitlements Data set (CWED).

The implicit assumption of the expenditure indicator is that more-generous welfare states are characterised by comparatively higher levels of social spending. With the social rights indicators, it is assumed that in more-generous welfare states, legal provisions grant cash benefits that are more accessible in terms of their entitlement criteria, relatively high in terms of their replacement rates, and are paid for a comparably long period of time. A larger extent of the welfare state is thus associated to higher cost outcomes of welfare policies and a higher quality of social benefit rights. For this reason, the extent of public welfare provision is often also referred to as “welfare state generosity” or “welfare stateness” (Kuitto, 2011; Scruggs and Allan, 2006).

Benefit reciprocity data

Using quantitative information on the receipt of social (cash) benefits for a better understanding of the character and change of welfare states in addition to information on their budgetary size and on the generosity of benefit rights is not new (Flora, 1986a, b, 1987; Kaim-Caudle, 1973). However, the idea has received far less attention in comparative welfare state research. These type of data, which are either derived from national administrative records or surveys, have been brought back into the dependent variable discussion as a third indicator of the extent of public welfare provision (De Deken and Clasen, 2011, 2013; Immervoll *et al.*, 2004, 2015; van Oorschot, 2013; van Oorschot and Reinstadler, 2013).

In many of these recent studies, benefit reciprocity data are considered as a useful addition to the existing indicators. Some scholars emphasise the individual-level character of the data, which would allow studying the social distribution of benefit receipt, whilst others highlight that they would better reflect social-administrative agency and benefit take-up. With regard to the overall concept of welfare state generosity, it is assumed that high levels of benefit receipt in terms of benefit access and/or relative benefit amounts represent higher levels of public welfare provision. Regardless of these positive features, De Deken and Clasen (2011, 2013) also pointed out difficulties of this data for comparative welfare state analyses in terms of benefit categorisations, conceptual boundaries, reliability, data availability, and data consistency. When summarising the various conceptual and methodological strengths and weaknesses of the three indicators of the extent of public welfare provision, Otto (2017a) concluded that the use of any of them entails problems and that the appropriate choice for one or the other highly depends on the focus of the proposed research. Following this line of argumentation, benefit reciprocity data serve as much an approximation of the extent of public welfare provision as the two prevailing indicators. It even has the potential to add to the picture and to deliver new insights in welfare variations across countries and over time.

The conceptual and theoretical link between the three indicators

The elaborations above indicate an interesting connection between the different indicators. Conceptually, they all aim to capture the extent of public welfare provision, with the idea that a larger extent associates either with a higher cost output of welfare programmes, a more generous input in terms of benefit rights, or higher levels of benefit receipt. However, does this make them alike as three peas in a pod? According to Bolukbasi and Öktem (2018), in early comparisons of advanced welfare state democracies of the 1970s, the

operationalisation of the concepts “welfare stateness”, “welfare effort” and “welfare state generosity” relied on social expenditure data and detailed narratives. With an increasing interest in more political conceptions of the welfare state, such as social citizenship, interest grew in operationalising these concepts by means of social rights measurements. From a measurement validity point of view (Adcock and Collier, 2001), this implies a substantial difference in systematically conceptualising a common background concept, not to mention the deviation in further measurement steps.

Theoretically, the use of social expenditure data to study the (changing) extent or generosity of welfare states is defended by the argument that it provides a means to measure differences and changes to spending levels as governments’ budgetary effort in extending or cutting back budget for welfare provision (Castles, 2002). Accordingly, the indicator has been used in functional and structural theories of welfare state change (Iversen and Cusack, 2000; Swank, 2001; Wilensky, 1975b), whereby economic growth, rising social needs, and modernisation processes are supposed to affect the welfare provision of affluent democracies either negatively (efficiency hypothesis, Garrett and Mitchell, 2001) or positively (compensation hypothesis, Rodrik, 1998).

In contrast to this, social rights data were originally collected to study the shape and direction of legal changes to public welfare provisions and to better understand the legislative impact of organised class interests (Hicks, 1999; Huber and Stephens, 2001; Korpi and Palme, 2003; Stephens, 2010). Following this power resource logic, changes to benefit rights reflect government preferences concerning the access and amount of cash benefits in direct response to electoral pressure. More recent research (Jensen *et al.*, 2017) using more refined social rights measurements even found that governments opt for less visible policy instruments regulating benefit access and benefit levels, when cutting back on welfare provisions in general and on popular benefits in particular. Putting aside the methodological differences, social rights data thus give a more nuanced idea of different welfare state instruments and of the specific legal adjustments that are made to reduce the budgetary size of the welfare state. This is certainly one reason why the indicator has served as a major source for the categorisation of welfare states (see summaries by Arts and Gelissen, 2002; Ferragina and Seeleib-Kaiser, 2011).

Benefit reciprocity data are theoretically somewhere in between the previous two indicators. Following van Oorschot’s (2013) reflections, actual benefit receipt could be considered the result of social rights addressing social needs in a population, on the one hand, and as a driver of social expenditure, on the other hand. Consequently, this data would mirror benefit access and the amount of cash benefits more directly than the hypothetical paper reality of benefit rights data or the pure cost reality of benefit expenditure figures. They would reveal the actual extent of welfare provision in national contexts rather than the legally intended extent (social rights) or the financial expenditure resulting from the legal intentions (social expenditure). Apart from that, the indicator would accommodate the theoretical reasoning behind social rights and social expenditure as indicators of the extent of public welfare provision, whereby legally more generous social security schemes and higher spending are equalised with a higher “quality” or “level” of welfare provision. In their empirical study of three European countries, De Deken and Clasen (2011) raised, however, doubts about the extent to which social expenditure and administrative caseload data are comparable indicators for measuring the extent of public welfare provision.

The elaborations above summarise and critically review two of the key issues discussed in the literature on the dependent variable problem in welfare state comparison: the measurement and the theoretical underpinning of the extent of public welfare provision. All three indicators share the same background concept for their dependent variable and aim to quantify information on the size and the dimension of this variable. However, they vary in further aspects of a classic framework on conceptualisation, operationalisation, and measurement.

Altogether, this gives rise to the main research question of this paper: how are social expenditure, social rights and benefit reciprocity data as different indicators of the extent of public welfare provision statistically related to each other? If they are conceptually aiming for the same, more generous benefit rights and higher levels of benefit receipt should positively relate to social expenditure (see Figure 1). In a similar vein, more generous benefit rights should be positively associated with benefit receipt as suggested in the theory.

The research question is particularly appealing given the above-mentioned similarities between the indicators in approaching the qualitative extend of the welfare state in quantitative terms, on the one hand, and the differences in operationalising and theoretically framing welfare state generosity, on the other hand. This could suggest that they “measure different aspects of the welfare state” (van Oorschot and Reinstadler, 2013, p. 3), which are, however, comparable to each other.

Data

For this study, the focus is on individually granted public unemployment cash benefits (UE). This selection represents an important working age population benefit in European welfare states, for which data are available for the years and countries studied across the different indicators.

Against this background and by referring to the three central indicators of the extent of public welfare provision discussed in the theoretical sections above, the relationship between the following variables will be analysed: unemployment cash benefit expenditure as a proportion of GDP, unemployment cash benefit rights and unemployment cash benefit receipt. The next sections will elaborate on the data sources and the operationalisation of each indicator separately. Generally, the data cover 16 European countries[1] and all the cross-sectional observations that are available for the years 2003–2011[2]. The selection of the countries and the time period was based on the availability of data across the different indicators.

Unemployment benefit expenditure

Data for unemployment cash benefit expenditure as a proportion of GDP are taken from Eurostat’s ESSPROS data set (variable *spr_exp_gdp*). For the further analysis, the yearly values of this indicator (UESOCX in this paper) are divided by the respective yearly unemployment rates (Eurostat variable *lfsa_urgaed*). These need-adjusted unemployment expenditure figures (UESOCX.na) serve as the basis for the comparison across time and

Figure 1.
Theoretical relation
between different
indicators of the
extent of public
welfare provision/
welfare state
generosity

between indicators. The need correction is inspired by previous research (Elsässer *et al.*, 2015; Siegel, 2001, 2002) and necessary where countries' expenditure figures aim to reflect national differences in the extent of public welfare provision, rather than in social needs for benefit provision. If this need deflation is not done, a stronger influx of people in need – e.g. in unemployment – could easily increase the expenditure measurement without the welfare state actually being more generous in its welfare provision.

Unemployment benefit rights

Data regarding the generosity of unemployment benefit rights are derived from the CWED II. This social rights index includes national access-related and amount-related information on unemployment benefit rights (e.g. the qualification period, coverage and replacement rates), which are combined in a single/composite measurement ("uegen" in the CWED II). The 16 European countries included in the study are the only ones recording data on all components of this composite measurement across the years of observation. To make sure that only information for these specific countries is used, rather than for all countries included in the CWED II, the country figures of the composite indicator (here UERGEN) were recalculated on the basis of the equation provided by the methodological genealogy in the CWED project (Scruggs, 2014, pp. 17-19). Moreover, since benefit access and benefit amount are two central elements in benefit rights (see for instance Jensen *et al.*, 2017) and analogous to the two benefit reciprocity measurements that will be explained in the subsequent paragraph, cross-sectional values for two more variables were calculated: benefit access generosity (UERGEN.AG) and benefit level generosity (UERGEN.LG). Both are based on the various index components of UERGEN separating access-related from level-related benefit rights information. The formulas for their calculation are provided in a note[3] and are based, just like the composite indicator, on the methodological genealogy of the CWED project (Scruggs, 2014, pp. 17-19).

Unemployment benefit receipt

Data regarding unemployment benefit receipt are taken from the user database (UDB) of the EU-SILC, the annual EU Statistics on Income and Living Conditions (variable PY090). Since the EU-SILC measures all income components for the year prior to the survey, cross-sectional data for the survey years 2004–2012 are used, referring to the measurement years 2003–2011 (see footnote 2). To account for differences in the national sample sizes in the database, all the data were weighted using the EU-SILC's personal cross-sectional weight (variable PB040) in the further operationalisation process.

For the operationalisation of benefit receipt, a distinction between two aspects is made: whether an individual has access to a benefit (1 = yes, 0 = no) and if so, the amount is received. Aggregated at the country level, the "benefit access rate" (UEAR) represents the national proportion of the total working age population (16–64 years of age) that has actual access to unemployment benefits (access = 1). Since social need inflation does not only affect expenditure figures, yearly national access rates are divided by the respective yearly national unemployment rates[4]. This generates need-adjusted unemployment benefit access rates (UEAR.na) per country and year, which serve as a basis in the analysis.

Individual-level benefit amount is measured as a transfer share, that is, as the proportion an individual's benefit income takes relative to the median total household income in a country's working age population. The measurement indicates the relative amount of a benefit received by a person compared with the level of income that is a minimum for half of the national working population. At the national level, the transfer share (UETSg, with "g" reflecting that it is computed on the basis of gross incomes) is calculated as the median of the individual-level transfer shares. The use of a relative measurement is preferred to ensure comparability across countries with different levels of economic development and purchasing power.

Some data limitations

As highlighted in previous research (Arora *et al.*, 2015; Atkinson and Marlier, 2010; De Deken and Kittel, 2007; Goedemé, 2013a, b; Graf *et al.*, 2011; Iacovou *et al.*, 2012; Lohmann, 2011; Mack, 2016; van Oorschot and Reinstadler, 2013; United Nations, 2014), using information from the databases mentioned above requires some caution and consideration. The most important issues concerning the present research are mentioned hereafter. However, since these issues are structural and inherent to the design of the databases, the current study is not able to overcome or correct for them. Further, it would not directly be possible to assess their effects on the outcomes of the study.

With regard to the CWED II and other social rights indexes, several authors (Kvist *et al.*, 2013; Scruggs, 2006) have questioned the representativeness and generalisability of data based on “typical cases”, for instance, benefit replacement rates. In the CWED II, these rates are generated for a fictive average full-time production worker in the manufacturing sector who is 40 years old, was working for the 20 years preceding the loss of income or the benefit period, and for two different household types assuming a single earner model. This approach not only ignores policy nuances in the social protection and incentive structure for different social groups, but also the rise of atypical employment, changes in the economic sectors and the increasing diversity in the constellation and work intensity of households. Choosing these typical cases can have implications for the observation and interpretation of change in welfare state generosity, namely, an underreporting of changes to benefit rights for other groups of workers and household constellations. Further, replacement rates annualise the benefit for an initial six month period of unemployment (i.e. calculating the benefit for the first 26 weeks and multiplying this by 2), before calculating taxes and deducting tax liability from social insurance. As pointed out by Ferrarini *et al.* (2013), this can lead to an overestimation of replacement rates in cases where they are reduced after an initial period of unemployment, or where benefits are not paid for the duration of 12 months.

Using ESSPROS and EU-SILC to compare the extent of welfare state provision between countries and over time also requires careful consideration. First, in contrast to social rights indexes such as the CWED II, both EU-SILC and ESPROSS unemployment, cash benefit data usually include information about more than one benefit. In line with the Eurostat definition for both databases (Eurostat, 2016), unemployment cash benefit is a “target variable” compiling income information from various unemployment programmes. Unfortunately, it is not possible for data users to deconstruct the target variables. Second, several countries report income in the EU-SILC benefit target variables only as gross income. This limits the present study to the calculation of gross rather than net income figures, which risks underestimating – in the same way as for unemployment benefit rights and unemployment expenditure information – the importance of taxes, tax rebates, and tax credits. Third, EU-SILC guidelines require a total non-response of households (unit response rate) below 40 per cent. Despite this, non-response rates significantly vary across countries. For example, in 2010, total sample household non-response rates varied from 3.16 per cent (Romania) to 48.29 per cent (Denmark) (Eurostat, 2012). Where response rates are low, proxy interviewing and imputation techniques are employed. Using imputed cases in statistical analyses might, however, lead to underestimates of confidence intervals and will show results as significant in some situation where they are not. Second, imputation often biases relations between variables.

Methods

Data across all countries and years are pooled and the various indicators are regressed on each other. This method is chosen for two reasons. First, because comparable data of all indicators and their respective measurements are only available for the relatively recent past (2003 to 2011) and only for 16 European countries. Second, the relatively small number of countries and of time points (maximum of 9 time points for 16 countries, which gives a maximum of $N = 144$

depending on the indicator) is a significant constraint on the analysis. The impact of different national policy emphases or specific time points cannot be explored this way. However, a broad brush idea of the overall relationships is given while keeping control of time.

A Prais Winston regression model with panel-corrected standard errors (PCSE) was chosen to overcome the traditional limitations of ordinary least square models with estimation of time-series cross-sectional data, which include panel heteroscedasticity, serial correlation of error terms and trending (Beck and Katz, 1995, 2004, 2011). Autocorrelation was checked with the Wooldridge test. As expected, there are significant autocorrelations in every independent and in the dependent variable. This is no surprise as the variables are all time series of the various indicators of the extent of public welfare provision. To deal with serial correlation of errors, an autocorrelation parameter (AR_1) was included in the model. This was preferred to the incorporation of a lagged dependent variable as predictor, as this method may obscure the relationship between the substantive independent variables and the dependent variable (Achen, 2001; Beck and Katz, 2004). Fixed effects for countries were not included. Given the small time period ($T = \max 9$) including country dummies would reduce degrees of freedom and eliminate variance.

To get a very first idea of the relations, exploratory correlational analyses between country means (for the period 2003 to 2011) are conducted. Subsequently, in following the theoretical expectations, Model 1 starts out regressing social expenditure on social rights and benefit receipt. Models 2 and 3 regress the two reciprocity-based measurements on social rights and social expenditure. Models 4 to 8 repeat these steps but substitute the composite social rights (UERGEN) measurement by the access-related and the level-related measurements (UERGEN.AG and UERGEN.LG). Since economic cycles are believed to strongly influence extents of welfare provision and the social expenditure indicator in particular (Green-Pedersen, 2004; Jensen, 2011), GDP volumes (Eurostat variable *nama_10_gdp*) serve as a control variable.

Results

Table I indicates the bivariate correlations between the indicators: UESOCX.na (need-adjusted unemployment cash benefit expenditure as a proportion of GDP), UERGEN (unemployment cash benefit rights generosity as a composite social rights measurement), UERGEN.AG (access-related unemployment cash benefit rights generosity), UERGEN.LG (level-related unemployment cash benefit rights generosity), UEAR.na (unemployment cash benefit access rate), and UETSg (gross unemployment cash benefit transfer share). It indicates that more generous unemployment

	UESOCX.na	UERGEN	UERGEN.AG	UERGEN.LG	UEAR.na	UETSg
<i>Social expenditure</i>						
UESOCX.na	–					
<i>Social benefit rights</i>						
UERGEN	0.66	–				
UERGEN.AG	0.17	0.54	–			
UERGEN.LG	0.67	0.82	–0.04	–		
<i>Benefit receipt</i>						
UEAR.na	0.75	0.43	0.20	0.38	–	
UETSg	0.41	0.24	–0.11	0.40	0.10	–

Table I.
Correlations between different indicators of welfare state generosity (averaged values 2003–2011)

Notes: $N = 144$. UESOCX.na, need-adjusted unemployment cash benefit expenditure as a share of GDP; UERGEN, unemployment cash benefit right generosity; UERGEN.AG, access-related unemployment cash benefit rights generosity; UERGEN.LG, level-related unemployment cash benefit rights generosity; UEAR.na, need-adjusted unemployment cash benefit access rate; UETSg, gross unemployment cash benefit transfer share

Source: Own calculations

benefit rights are positively and strongly related to need-corrected unemployment benefit expenditure as a proportion of GDP. Need-corrected unemployment benefit access rates as well as transfer shares are also positively related to unemployment benefit expenditure figures. The correlation is particularly strong in relation to access rates. In line with expectations, this indicates that higher scores on the benefit rights indicator and higher scores on the benefit reciprocity indicator are positively related with higher score on the social expenditure indicator. This is interpreted as showing that the various indicators indeed share a common reference to the generosity of unemployment welfare provision, c.q. to “welfare stateness” in the field of unemployment benefit.

However, when breaking down the composite benefit rights indicator (UERGEN) into an access-related and a level-related benefit rights generosity component (UERGEN.AG and UERGEN.LG), an interesting observation is made: the two benefit rights components are negatively correlated. Additionally, generous access-related unemployment benefit rights are negatively correlated to unemployment benefit transfer shares (UETSg). This might suggest an ambivalent relation between benefit access-related and benefit level-related aspects within indicators as well as an interaction between these access-related and level-related aspects across indicators. However, neither of the two benefit receipt-based measurements access rates or transfer shares are negatively related to each other nor are level-related benefit rights generosity and the receipt-based unemployment access rates. Results of this exploratory correlational analysis can, however, only give an idea of the relations between indicators and should not be overestimated. Especially the statistical significance should be neglected, given that for a correlation with $N < 20$ (here $N = 16$) to be statistically significant at the 5 per cent level, a correlation coefficient of at least 0.90 would be needed (Bonett and Wright, 2000).

The results of the cross-sectional time series regression analysis (Tables II and III) will help create a better understanding. They suggest that, *ceteris paribus*, need-adjusted unemployment benefit access rates and transfer shares are positively associated to need-adjusted unemployment cash benefit expenditure as a proportion of GDP (model 1). The same applies to the generosity of unemployment benefit rights (model 1). Altogether, this confirms the exploratory correlational study as well as existing theoretical claims (van Oorschot, 2013), whereby generous benefit rights and high levels of benefit receipt in terms of benefit access and benefit amounts are positively related to spending figures.

	Model 1 (UESOCX.na)		Model 2 (UEAR.na)		Model 3 (UETSg)	
	β	PCSE	β	PCSE	β	PCSE
Constant	-0.12	(0.02)**	0.86	(0.35)	7.88	(1.46)***
<i>Social expenditure</i>	DV	–	4.89	(1.44)***	18.49	(3.31)***
UESOCX.na						
<i>Social rights generosity</i>	0.02	(0.003)***	0.03	(0.04)***	0.09	(0.17)
UERGEN						
<i>Benefit receipt</i>	0.06	(0.01)***	DV	–	-1.71	(0.35)***
UEAR.na						
UETSg	0.01	(0.002)***	-0.07	(0.01)***	DV	–
GDP	3.96e-09	5.33e-09	-1.18e-07	9.88e-08	-4.67e-07	3.71e-07
<i>N</i>	125		125		125	
Wald χ^2 (df)	185.68 (4)***		52.68 (4)***		69.00 (4)**	
ρ	0.7276		0.8711		0.7588	
R^2	0.6996		0.4848		0.5367	

Notes: DV, dependent variable. Prais Winsten regression model with AR1 autocorrelation parameter and panel-corrected standard errors (PCSE). Model estimated with Stata SE 14.2 with `xtpcse` command, casewise observation and AR1 option. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.001$

Table II.
Results of Prais
Winsten regression
models with social
expenditure, social
rights and benefit
reciprocity data

Table III.
Results of Prais
Winsten regression
models with
need-adjusted
unemployment
expenditure,
access-related and
level-related benefit
rights generosity,
need-adjusted benefit
access rates and
transfer shares

	Model 4 (UESOCX.na) β PCSE	Model 5 (UEAR.na) β PCSE	Model 6 (UETSg) β PCSE	Model 7 (UERGEN.AG) β PCSE	Model 8 (UERGEN.LG) β PCSE
Constant	-0.24 DV	0.41 4.93	8.14 16.23	9.41 1.73	10.70 10.34
<i>Social expenditure</i> UESOCX.na	(0.05)*** -	(0.72) (1.46)***	(3.16)** (3.64)***	(0.76)*** (1.23)	(0.84)*** (1.76)***
<i>Social rights</i> UERGEN.AG	0.01 (0.004)*	0.06 (0.06)	-0.31 (0.27)	DV -	-0.10 (0.07)
<i>Benefit receipt</i> UERGEN.LG	0.02 (0.003)***	0.02 (0.03)	0.33 (0.18)*	0.003 (0.06)	DV -
<i>UEAR.na</i> UETSg	0.06 (0.01)***	DV -	-0.88 (0.41)**	0.13 (0.14)	-0.06 (0.18)
<i>GDP</i> UEAR.na	0.007 (0.002)***	-0.07 (0.01)***	DV -	-0.02 (0.03)	0.07 (0.03)**
<i>N</i> Wald χ^2 (df)	6.55e-09 125	-1.31e-07 125	-2.93e-07 125	3.98e-07 125	-1.98e-07 125
ρ	333.21 (5)*** 0.7251	58.35 (5)*** 0.8700	72.58 (5)*** 0.7973	15.76 (5)*** 0.8896	93.49 (5)*** 0.8137
R^2	0.7041	0.4869	0.5576	0.0076	0.6981

Notes: DV, dependent variable. Prais Winsten regression model with AR1 autocorrelation parameter and panel-corrected standard errors (PCSE). Model estimated with Stata SE 14.2 with xtpcse command, casewise observation and AR1 option. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.001$

In Table II, we can also see that need-adjusted access rates (models 2, 3, 5 and 6), *ceteris paribus*, are negatively related to transfer shares. This is in line with previous research on benefit receipt, which suggests that the reciprocity-based extent of public welfare provision of cash benefits in Europe is structured by an ambivalent relation between benefit access and benefit amounts (van Oorschot, 2013).

Similar to this observation, in Table II, we can see that the access-related and level-related components of the social rights indicator also negatively relate to each other (model 8). Additionally, generous benefit access rights are negatively but statistically not significantly associated with high transfer shares (model 7). Complementary to this, generous benefit level rights demonstrate, *ceteris paribus*, a negative, not statistically significant relation to benefit access rates (model 8). To some extent, this further underpins the earlier-mentioned hypothesis of a negative relationship between benefit access and benefit levels within indicators as well as across them.

Apart from these observations, the estimates of the autocorrelation parameter (ρ) are high and the standard errors are larger than in the model without autocorrelation (results are not displayed here), which is to be expected if there is autocorrelation. Sensitivity analysis indicates that the inclusion of the AR_1 variable in the first model is responsible for the high R^2 0.70 (Beck and Katz, 2004, p. 17). If the AR_1 variable is removed and the dependent variable lagged, explanatory power remains satisfactory at 0.63.

Conclusions

Many scholars have been using social expenditure, social rights, and benefit reciprocity data as approximating indicators of the extent – sometimes also referred to as the generosity – of public welfare provision in quantitative terms. Despite aiming to get a grip of the same background concept and a shared interest in quantify information on its size, these indicators are based on different measurement approaches and come along with diverse theoretical assumptions. As a consequence, they are neither alike as three peas in a pod nor are they a different kettle of fish altogether.

The study confirms theoretical reflections about how social expenditure, social rights and benefit reciprocity data relate to each other (van Oorschot, 2013). It demonstrates that in terms of unemployment cash benefits, generous benefit rights, high levels of benefit receipt as well as relatively high benefit amounts are indeed positively associated with spending on unemployment cash benefits.

Similarly, a positive relationship is found between generous benefit rights and benefit receipt, whereby more-generous benefit rights increase both benefit access and relative benefit levels. However, when deconstructing unemployment benefit rights data into an access-related and a level-related benefit generosity component, an interesting pattern is revealed: first, both elements are negatively related to each other, suggesting some sort of a trade-off. When benefit access rights are extended, this appears to happen to the detriment of benefit level rights. Second, this trade-off does not only exist in benefit rights but also in benefit receipt data, with benefit access rates and transfer shares being negatively associated. Third, the access-level trade-off appears to also exist across indicators. When access-related benefit rights become more generous, reciprocity-based transfer shares decrease. Vice versa, more-generous level-related benefit rights come along with decreasing numbers of people receiving/having access to the benefit.

The findings support previous research suggesting a trade-off between the benefit coverage and the generosity of benefit levels in recent years (Kevins, 2017) as well as research claiming that governments of several European countries seem to keep budgetary control over their welfare expenses by combining broad(er) benefit access with low(er) benefit amounts and vice versa (Otto, 2017b). For example, in Scandinavian welfare systems, universal coverage for unemployment benefits is increasingly accompanied by

decreasing relative levels of benefit due to the non-adaptation of amount-related aspects such as benefit indexation rules and benefit assessment bases (Esser *et al.*, 2013). In this regard, it is noteworthy that the choice for the various access-related and level-related policy instruments in reforming public welfare provisions appears to follow an electoral blame avoidance pattern. Jensen *et al.* (2017) suggest that, although benefit reforms differ between countries, governments try to escape blame for unpopular cutbacks by implementing less obvious reforms in benefit access or benefit amount rules. Conversely, in order to maximise the recognition of benefit expansion or of cuts in benefits of less deserving social groups (van Oorschot, 2006), rather visible policy instruments are used.

Unfortunately, due to data limitations, no cross-country differences could be studied. This restricts the analysis to rather general conclusions without a deeper insight into national variations. Despite this shortcoming, the present research brings empirical evidence for conceptual and theoretical claims on how different indicators of the extent of public welfare provision relate to each other. In contrast to measuring the social and redistributional outcomes of welfare state provision, these indicators are all conceived as output measurements of the welfare state. Output in terms of governments' budgetary spending levels, output in terms of governments' social reforms, and output in terms of benefit receipt are applied by government agencies. The positive associations between them do not come as a surprise. Already Korpi and Palme (1998) stressed that the effect of a welfare programme is a function not only of the specific benefit rights such as entitlement criteria, but also of its budgetary size. The paper contributes to the "dependent variable problem" literature because it contains not only a critical review of the conceptual and theoretical links between different indicators of the extent of public welfare provision but also provides statistical analyses of these links. Results indicate that the positive relation between the prevailing indicators in literature also applies to benefit receipt as a hitherto underused indicator in welfare state comparison. As such, the study complements our insight into how European welfare states develop and what kind of data might help us in analysing these trends. Additionally, the identified trade-off between benefit access and benefit levels indicates what policy choices recent trends might involve. Future research will have to investigate if the observations made for unemployment benefits also hold for other benefit types and a larger sample of countries. Such research will crucially depend on the availability of comparable data for as many European countries as possible over a longer period of time and with detailed information on the various benefits.

Notes

1. Austria (AT), Belgium (BE), Denmark (DK), Finland (FI), France (FR), Germany (DE), Greece (GR), Ireland (IE), Lithuania (LT), The Netherlands (NL), Norway (NO), Portugal (PT), Poland (PL), Sweden (SE), Slovakia (SK) and the UK.
2. In the EU-SILC user database, income data always refer to the calendar year before the release of the survey, except for the UK and Ireland where the income reference period is the survey calendar year itself or the 12 months preceding the survey.
3. The de-construction of the composite unemployment benefit generosity indicator in the CWED II into an access-related (UERGEN.AG) and a benefit level-related (UERGEN.LG) generosity measurement follows the calculation of the composite components as explained in the CWED II genealogy, but separates access-related from level-related information. The calculation formulas are:

$$\text{UERGEN.AG}_{cy} = (\text{uescorequal} + \text{uescorewait} + 12.5) \times \text{uecov}$$

$$\text{UERGEN.LG}_{cy} = (\text{uescorerr} \times 2 + \text{uescoredur}),$$

where UERGEN.AG_{cy} stands for the access generosity of unemployment benefit rights of *c* (a specific country) in *y* (a specific year), which is the sum of the CWED variables uescorequal (the standardised

logged value of the unemployment qualification period based on the mean and standard deviation for the years 1980 to 2007) and *uescorewait* (the standardised unemployment waiting days based on the mean and standard deviation of the years 1980–2007) and 12.5 (to make the sum in brackets take a minimum value of 0), multiplied by *uecov* (the rate of the population covered for the risk). Where further, *UERGENTLGcy* stands for the level-related generosity of unemployment benefit rights of *c* (a specific country) in *y* (a specific year) and is the sum of the CWED variables *uescorerr* (the standardised value of the replacement rates based on the mean and standard deviation for the years 1980–2007) multiplied by two and of *uescoredur* (the standardised logged value of the unemployment benefit duration based on the mean and standard deviation for the years 1980–2007).

4. For the need adjustment of the receipt-based unemployment benefit access rates in countries, Eurostat unemployment rates (*lfsa_urgaed*, unemployment rate among individuals aged 15–64 years) are matched so that they correspond to the respective benefit income year in the EU-SILC user database. This is necessary because the EU-SILC income data always refer to the calendar year before the release of the survey, except for the UK and Ireland where the income reference period is the survey calendar year itself or the 12 months preceding the survey.

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Appendix

Welfare state generosity

	Measurement	Min.	Max.	Mean	Std
<i>Social expenditure</i>					
Unemployment expenditure	Expenditure on public cash unemployment benefits as a share of GDP (Eurostat)	0.40	3.34	1.29	0.76
Unemployment expenditure (need-adjusted)	Expenditure data divided by respective yearly unemployment rate (Eurostat)	0.07	0.43	0.18	0.11
<i>Social rights</i>					
Unemployment benefit rights generosity	Generosity of unemployment cash benefits (CWED II)	5.65	14.50	9.65	2.39
Access-related unemployment benefit rights generosity	Generosity of access-related unemployment benefit rights (own calculation on the basis of CWED II data)	7.60	13.32	9.93	1.42
Level-related unemployment benefit rights generosity	Generosity of level-related unemployment benefit rights (own calculation on the basis of CWED II data)	7.23	15.59	12.17	2.39
<i>Benefit reciprocity</i>					
Unemployment benefit access rate	Share of individuals receiving income from unemployment cash benefits out of the total working age population (own calculation on the basis of EU-SILC data)	2.13	21.53	9.15	6.15
Unemployment benefit access rate (need-adjusted)	National access rate divided by the respective yearly unemployment rate	0.22	4.23	1.38	1.08
Unemployment benefit transfer share	Median of the share individuals' gross unemployment cash benefit income takes relative to the median gross household income in the total working age population (own calculation on the basis of EU-SILC data)	5.27	18.21	9.48	3.38
<i>Context</i>					
Unemployment rate	Unemployment rate in the working age population (Eurostat, lfsa_urgaed)	3.51	14.04	8.09	2.99
GDP	GDP volumes in million euros at current prices (Eurostat)	25,327.81	2,444,805	588,142.3	763,780.8

Note: Data includes averages (2003–2011) of the 16 European countries included in the study

Table AI.
Overview variables

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