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**Globalization, welfare regimes and social protection  
expenditures in Western and Eastern European countries<sup>1</sup>**

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## Abstract

This paper analyzes the effects of globalization on social protection expenditures in European countries. The analysis adds to the literature due to its special focus on (a) the Eastern European countries and (b) on differences in globalization effects between welfare regimes. We find evidence in favor of the compensation hypothesis in Western Europe which is driven by the conservative welfare regime, outweighing the efficiency effect of globalization in the social-democratic welfare regime. In Eastern European countries the efficiency effect is predominant. No globalization effect is found for the liberal and the southern welfare regimes. Our results indicate some convergence within Western Europe and a divergence between the East and the West of Europe. We stress the importance of disaggregating by welfare regimes when exploring the effects of globalization on public social protection expenditures.

This paper analyzes the effects of globalization on social expenditures as a share of total public expenditures in Western and Eastern European countries. A particular focus is on differences in the globalization effect across welfare regimes.

In the literature two hypotheses about the direction of the globalization effect on social welfare expenditures are advanced: the efficiency and the compensation hypotheses. The efficiency hypothesis argues that globalization generally restrains governments via increased budgetary pressure due to trade liberalization and increased factor mobility (Dreher et al (2008a)). Moreover, fiscal competition among governments for mobile factors of production may lead to a relative decline in the supply of public consumption goods in general and welfare expenditures in particular (e.g. Zodrow and Mieszkowski (1986); Sinn (1997)).<sup>2</sup> More specifically, the share of public consumption goods in total public expenditures might decrease as a large share is frequently seen as an impediment to international competitiveness. Thus, globalization leads not only to a general decline in public expenditures but also to a shift towards public inputs, which benefit firms (see Keen and Marchand (1997); Matsumoto (2000)).

In contrast, the compensation hypothesis argues that governments expand the welfare state to insure citizens against increased economic risks due to globalization (Rodrik (1997 and 1998); Garret and Mitchell (2001); Swank (2002)). It is in the interest of governments to expand social welfare expenditures as citizens (voters) seek to be compensated by the public sector (Rodrik (1998)). Thus, the compensation hypothesis predicts a demand-led change in the structure of government expenditure in favor of public consumption goods and social expenditures in particular.

The two views need not be interpreted as competing hypotheses. They rather constitute two effects operating in opposite directions, off-setting each other. As Dreher et al (2008a) argue, one can think of the government as balancing the benefits and costs of providing public goods and services. Globalization leads to a downward pressure on public expenditures, on public consumption goods in particular, through the efficiency channel. At the same time, according to the compensation hypothesis, the demand for public social expenditures rises and so does the associated benefit or incentive for the policy maker.

Hence, no clear-cut theoretical predictions about the effects of globalization on the share of social welfare expenditures in total expenditures may be given. Thus, empirical exploration is required to ascertain whether the evolution of the social welfare expenditure share is dominated by the efficiency or the compensation effect.

A number of empirical papers (see the surveys provided by Dreher et al (2008a) and Gemmel

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<sup>2</sup> Throughout the article social expenditures, social protection expenditures, social welfare expenditures and expenditures on social protection are used interchangeably.

et al (2008)) try to shed light on this issue. The major part of this empirical research proceeds by modeling either total government expenditures or a particular element of public spending as a function of one or more proxies for globalization. Usually a country's openness to trade and foreign direct investment (FDI) or some compound globalization measure (see Table 1 in Gemmel et al. (2008); Adam and Kamas (2007); Görg et al. (2007); Potrafke (2009)) is used to proxy the globalization phenomenon. Recently, several papers also analyze the impact globalization has on the composition of government expenditures by jointly relating various components of public expenditures to proxies for globalization (see Dreher et al. (2008a); Gemmel et al (2008); Sanz and Velazquez (2007); Shelton (2007)).

Unfortunately, like theoretical predictions the empirical evidence is also ambiguous, as the number of studies supporting the efficiency hypothesis is matched by studies favoring the compensation hypothesis (see Gemmel et al (2008), pg. 156). Moreover, some studies (e.g. Dreher et al (2008a); Sanz and Velazquez (2007)) find no globalization effect at all. Finally, Bretschger and Hettich (2002) argue in favor of existing complementarities between the efficiency and compensation hypotheses. They find that globalization has a negative and significant impact on corporate income tax rates. At the same time globalization also raises social expenditures. Thus, „the efficiency and the compensation hypotheses therefore both have a role in explaining government behaviour, the former for revenue, the latter for expenditure.” (Bretschger and Hettich 2002, p. 714)

Notable features of the available studies are that most of them are based on a sample of advanced OECD countries (see Table 1 in Gemmel et al (2008)) and none of them explicitly analyses the influence of welfare regimes on the dissemination of globalization effects. These observations are the starting points for the current study. Based on the available prior work, this paper seeks to explain the effect of globalization on social protection expenditures as a share of total public expenditures. We add to the literature by focusing on differences between Western and Central and Eastern European countries (CEECs) in the EU and on the isolation of globalization effects conditional on the welfare regimes in force. Various proxy variables for the globalization process are used in the empirical estimations (openness to trade and FDI as well as compound globalization measures capturing several aspects of the multi-faceted globalization phenomenon).

The focus on CEECs is chosen because globalization might exert different effects on transition countries compared to advanced Western European democracies: On the one hand, Eastern European governments have been especially active in using fiscal policy tools like cuts in effective corporate income taxes (e.g. Bellak and Leibrecht (2009)), the introduction of flat-rate personal income taxes (e.g. Keen et al (2006)) or the creation of special economic zones (e.g. World Bank (2008)) to attract foreign capital. These tax and subsidy decisions may necessitate budget consolidation in terms of social expenditure cuts.

On the other hand, after the transition crisis unemployment has increased and labor force participation rates of women and elderly people have decreased significantly (Havlik and Landesmann (2005); Onaran (2008)). In particular, privatization-led FDI went along with early pension schemes for the older population, dramatically increasing the need for social protection expenditures. Moreover, the process of accession to the EU might have generated EU level external pressures for the development of welfare states as well as advances in domestic parliamentary democracy, which can militate towards high levels of welfare provision (see Orenstein and Hass (2005)).

For the Western countries, we explicitly separate the effects of globalization on countries grouped by the welfare regimes in force.<sup>3</sup> The country specific institutional and political context may make a difference in terms of mediating the effects of globalization. Specifically, welfare regimes, with their particular levels and structures of expenditures on social welfare, display path-dependency as national traditions, institutions, resource dependency, cost of alternatives, and voters' interests transform common challenges into welfare regime specific challenges (Scharpf and Schmidt (2000); Taylor-Gooby (2001); Esping-Andersen (1996); Swank (2001)). Thus path-dependence may create an institutional lock-in of governments and citizens' behaviors. For instance, in generous welfare states expectations as well as dependency relations by citizens may be created which cannot be changed quickly given the public support for welfare state measures and governments' electoral considerations. Then scaling down of social protection expenditures is relatively unlikely. In contrast, if social protection is not widespread, it might be hard to form the coalitions to demand it under the competitive pressures of globalization and limited room for tax increases (see Kautto and Kvist (2002)). In this case, scaling up social protection expenditures is rather unlikely. However, several authors (e.g. Brady et al (2005); Adelantado and Cuevas (2006)) point out that globalization may lead to welfare retrenchment in generous welfare states like the Scandinavian countries, while forcing an increase in less generous welfare regimes. This view implies convergence towards the middle. Downward convergence may be related to the existence of limits to growth of the welfare regime given already existing high tax rates leaving little room to increase spending and taxation (Huber and Stephens (2001)). Upward or "catch-up" convergence of the less generous welfare regimes might be triggered by increasing demand for compensation along with globalization and the need to make openness politically acceptable or by increased political integration in the context of the EU (Kautto and Kvist (2002)). These arguments again support the view that globalization should exert different effects across welfare regimes.

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<sup>3</sup> The disaggregation by welfare regimes is done for the Western countries only as for CEECs data restrictions are binding. Thus, we cannot disaggregate this country group by welfare regimes. Yet, the CEECs seem to constitute an own type of welfare regime (see section 2). Moreover, the section containing robustness checks also includes the estimation results for the case where CEECs enter the empirical model as an additional welfare regime.

We concentrate on public social protection expenditures here as these expenditures are indisputably the expenditure category that one expects to be positively (negatively) affected by the compensation (efficiency) effect of globalization.<sup>4</sup> Other public spending categories can be viewed simultaneously as public consumption goods and as public inputs. For instance, education expenditures might be considered a public input as human capital is a factor of production.<sup>5</sup> Thus, it is not entirely clear whether globalization's efficiency effects should reduce or increase these expenditures. Concentrating on social expenditures reduces this ambiguity. Note that we normalize social protection expenditures by total public expenditures. This normalization more narrowly reflects the expenditure priorities set within the public sector than normalizing by GDP (see Kaufman and Segura-Ubiergo (2001)). However, to capture the importance of the public sector in an economy we also control for the (one year lagged) share of total public expenditures in GDP in the estimations.

Based on a two-way fixed effects estimator and on the operationalization of the multi-faceted phenomenon of globalization by three KOF globalization indices (see Dreher (2006b) and Dreher et al (2008b))<sup>6</sup> we find evidence in favor of the compensation hypothesis in Western Europe. However, we see that this compensation process is mainly driven by a conservative welfare regime. In contrast, in social-democratic welfare regimes evidence in favor of the efficiency hypothesis is established. These different trends are consistent with the convergence view outlined above. However, neither upward convergence nor downward pressure is established for the southern and liberal welfare regimes. Concerning CEECs, the paper finds evidence in favor of the efficiency hypothesis.

The paper is structured as follows: Section two reviews literature on institutional background and welfare regime typologies. Section three presents the model applied in the empirical analysis. Section four describes the variables and databases used and section five presents the results. Section six concludes the paper.

## 2 Grouping of countries into welfare regimes

The welfare state literature indicates considerable heterogeneity among Western European countries and between the Western and the Eastern countries related to the institutional setting of a country. Esping-Andersen (1990) identifies three welfare regimes according to indices of de commodification and stratification in 18 OECD countries in the post-war period:

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<sup>4</sup> We are grateful to the referee who pointed out these aspects.

<sup>5</sup> Note that the widely used classifications of expenditure categories used by Kneller et al (1999) as well as Oxley and Martin (1991) and Sounders (1993) also differ in this respect.

<sup>6</sup> KOF is short for Konjunkturforschungsstelle located at the Swiss Federal Institute of Technology, Zurich.

(i) social-democratic regimes, which are universalistic and egalitarian with high degrees of decommodification, little stratification and a limited role for privatized social services (countries included in this regime are Sweden, Finland, Denmark, Norway); (ii) the conservative regime, strongly associated with employment protection with the family at its heart (Germany, France, Austria, Belgium, Italy, Japan, Switzerland and the Netherlands) and (iii) the liberal regime with low decommodification, high stratification, a restricted state role and a significant private insurance contribution (UK, USA, Ireland, Canada, Australia).

This categorization has been criticized in respect of the range of countries and regimes, the overemphasis on cash benefits and the absence of gender implications (see Bambra (2006); Kasza (2002); Leibfried (1992)). Due to its simplicity and wide use in the literature, we use Esping-Andersen's classification, but extend it by adding a separate welfare regime for the southern European countries (Italy, Spain, Greece, Portugal, Cyprus and Malta) as suggested by Ferrera (1996) and Bonoli (1997). According to Ferrera (1996) southern countries are *inter alia* characterized by a highly fragmented and polarized welfare regime with generous pensions paired with substantial gaps in the social safety net, a departure from the corporatist tradition in the field of health care, a highly collusive mix between public and private institutions in the welfare sphere and the persistence of clientelism in the distribution of cash subsidies.

While some studies see welfare states in post communist countries within the liberal welfare regime, based on a mix of social insurance and social assistance and a partial privatization of social policy with just a few corporatist attributes (e.g. Ferge (2001); Standing (1996)), others argue that the CEECs constitute a separate post-socialist regime type (Aidukaite (2004); Lelkes (2000)).

Moreover, Fenger (2007) distinguishes a "post-communist European type" welfare regime and a "former USSR type" regime. He argues that the post-communist European type (including Bulgaria, Croatia, Czech Republic, Hungary, Poland and Slovakia) seem to mix characteristics of both the conservative and the social-democratic types of Esping-Andersen. Fenger (2007) defines the former USSR type (including Belarus, Estonia, Latvia, Lithuania, Russia and Ukraine) as characterized by high levels of female participation, a rather extensive public sector, high economic growth and high inflation.

Alternatively, Orenstein and Hass (2005) distinguish between European and Eurasian post-communist welfare states where the European category includes the Czech Republic, Hungary, Poland and Slovakia, the more successful Balkan and former Yugoslav republics (Slovenia, Croatia, FYR Macedonia, Romania, Bulgaria) and the Baltic states (Estonia, Lithuania, Latvia). The Eurasian category brings together the former Soviet republics excluding the Baltic countries. According to Orenstein and Hass (2005), a pervasive "Europe effect" in the domains of economics, politics and state administration derived from good



prospects of joining the EU increased these states' commitment and ability to support welfare state spending. In the domestic political domain, the accession process has not only reinforced parliamentary democracy but also enabled interest groups to lobby for a continuation of high levels of welfare provision. In the administrative domain, old EU member states, which feared mass immigration and social dumping from the East, pushed for the development of welfare states in the CEECs. According to this thesis, there would be less of a difference between the Baltic and other countries within the CEECs (see Orenstein and Hass (2005) for details).

Bohle and Greskovits (2007) distinguish between three types of welfare regimes in the CEECs: a neoliberal type in the Baltic States, an embedded neoliberal type in the Visegrad states (Czech Republic, Hungary, Poland and Slovakia) and a neo-corporatist type in Slovenia. Their classification is based on the countries' institutions and performances in marketization, industrial transformation, social inclusion and macroeconomic stability. In their model legacies and initial choices as well as transnational influences play important roles in defining these different trajectories.

Taken together, the studies dealing with post communist countries suggest that there is some heterogeneity in the welfare regime type across them. However, the new CEE EU member countries seem to have rather similar welfare regimes in force. I

It is important that these countries constitute a particular welfare regime type which is different from those in force in West European countries. This provides further justification for splitting countries between West and East in the empirical analysis.

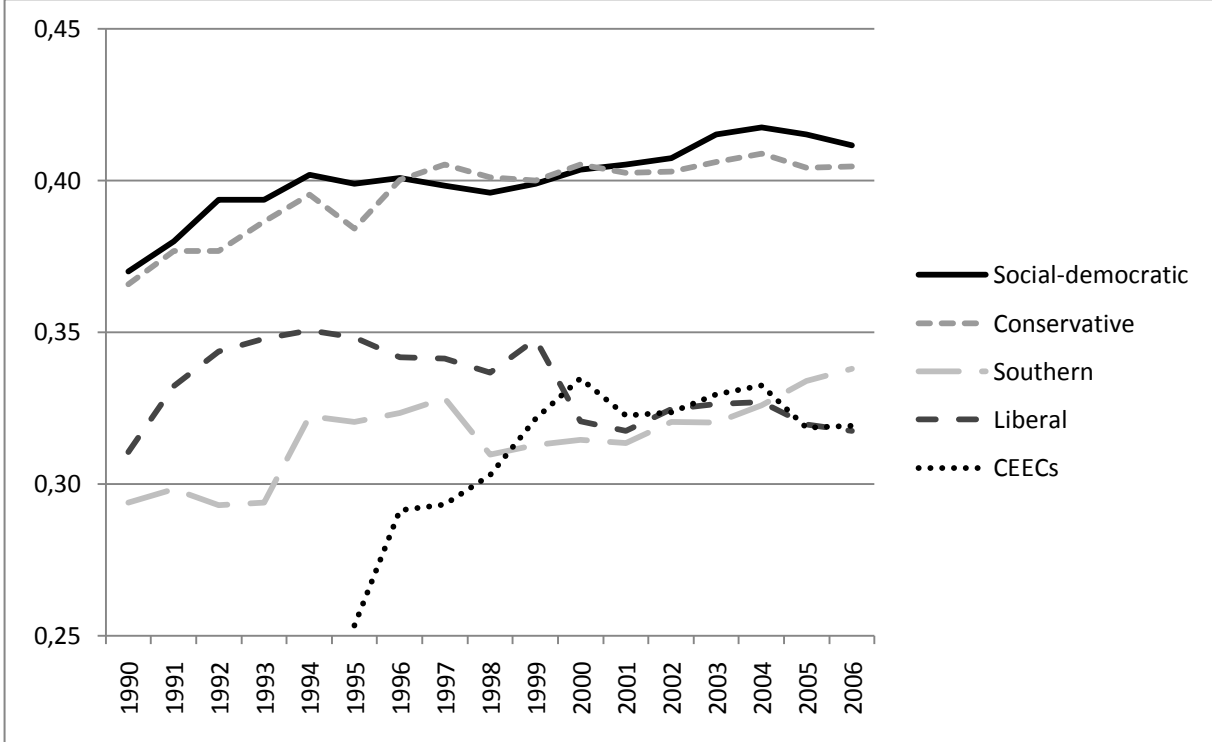
Figure 1 explores whether these classifications fit our data.<sup>7</sup> It shows the development of social protection as a share of total public expenditures, disaggregated by welfare regimes and for the CEECs. The figure demonstrates that there is a link between the respective welfare state regime and the share of expenditures on social protection. The share of social protection spending in the conservative countries, starting from about 36% increased across time and converged with that in social-democratic countries. Conservative and social-democratic regimes have proportions of social spending over 40%, when the average of the whole period is considered. This picture is in line with Bamba (2006), who finds evidence of convergence between the two regimes. There is also a modest increase in the share of social protection expenditures in the southern welfare regime, although the level is still lower than for the social-democratic and conservative regimes. The liberal welfare regime has also preserved a rather low share of social protection expenditures. Finally, since the year 2000 the CEECs included in the sample have median shares of social protection expenditures

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<sup>7</sup> Due to missing data we cannot include Bulgaria in the analysis. However, we include Norway in the group of Western European countries. Moreover, the latter also contains Cyprus and Malta due to their clear institutional difference from the CEECs. In total we have 27 countries included in the analysis: the EU-27 less Bulgaria plus Norway (also see section four).

comparable to those of the liberal and the southern regimes. The development over the years 1995 to 2000 is dominated by the Czech Republic which experienced a marked increase in the share of social expenditures in this period (see Eurostat 2007 and 2008 for details).

Figure 1 Social protection expenditures as share of total public expenditures



Data source: Eurostat COFOG database (see Eurostat 2007 and 2008)

### 3 Empirical model

We start our empirical explorations with a baseline model that pools all countries and welfare regimes (Equation 1):

$$EX_{it} = \beta G_{it-1} + \delta C_{it-1} + \alpha_i + \omega_t + \varepsilon_{it} \tag{1}$$

where (i) is the country index (ranging from 1 to 27) and (t) is the year index (ranging from 1990 to 2006).  $EX_{it}$  is the share of social protection expenditures in total public expenditures in country (i) and year (t).  $G_{it-1}$  is the one year lagged globalization indicator and  $C_{it-1}$  is the matrix of one year lagged control variables.  $\alpha_i$  captures country fixed effects,  $\omega_t$  captures time fixed effects and  $\varepsilon_{it}$  is the remainder error term.

To analyze whether globalization exerts a differential impact upon West European countries and on CEECs, we estimate the empirical model shown in Equation 1 not only for the full sample but also for the Western and Eastern European country groups separately.

As outlined in section two, the globalization impact on social protection expenditures might

vary across welfare regimes. For the West European country group we explore this issue by estimating welfare regime specific globalization effects. The empirical model estimated is shown in Equation 2:

$$EX_{it} = \sum_{j=1}^4 \beta_j D_j G_{it-1} + \delta C_{it-1} + \alpha_i + \omega_t + \sum_{j=1}^3 \rho_j D_j Trend + \varepsilon_{it} \quad (2)$$

where  $D_j$  is a dummy variable representing the different welfare regimes. For instance, if  $j = 1$   $D$  has entry 1 if a country belongs to the social-democratic welfare regime and zero otherwise.  $j = 2$  is for the conservative,  $j = 3$  for the southern and  $j = 4$  for the liberal welfare regime. Thus, the estimated coefficients  $\beta_j$  can be directly interpreted as the marginal effect of a one unit increase in the respective globalization indicator on the share of public social protection expenditures conditional on the respective welfare regime. Due to data limitations we differentiate the globalization variable by welfare regimes but not the control variables contained in  $C_{it-1}$ . However, we also control for welfare regime specific time trends, captured by  $\sum_{j=1}^3 \rho_j D_j Trend$  in Equation 2. Including welfare specific time trends aims to capture differences in developments over time in social expenditures across welfare regimes. If path-dependence plays a role, such differences are likely to be present. Note that, as we also include a full set of time dummies one of the welfare regime specific trends cannot be identified. This is the reason why the second summation index in Equation 2 runs from 1 to 3. Also note that including a trend variable in Equation 1 would not change results as we apply a two-way fixed effects estimator.

As shown, all right-hand side variables enter into Equations 1 and 2 with a one year lag. This is done for two reasons: First, to cope with time lags in the political decision and budgeting process and second, to mitigate potential problems due to reverse causality. A better way to cope with endogeneity issues would be to apply a GMM-approach. However, due to the low number of cross-sections (countries) a reliable GMM-estimation is precluded (also see Potrafke 2009).<sup>8</sup> A second best approach is to use lagged values of the right-hand side variables (see Wooldridge (2002, pg. 301)). In each estimation the variance-covariance-matrix of the remainder error term,  $\varepsilon_{it}$ , is calculated using the approach developed by Newey and West (1987). Therefore, standard errors are fully robust with respect to serial correlation as well as general heteroscedasticity (see Baum et al. (2007)).<sup>9</sup> Estimations are carried out with Schaffer's `xtivreg2` Stata command (see Schaffer (2010)).

#### 4 Data issues and control variables

<sup>8</sup> The cross-sectional dimensions are 18 (Western countries) and 9 (CEECs), respectively.

<sup>9</sup> Newey-West-HAC robust standard errors are chosen as the alternative cluster-robust standard errors need a rather large number of clusters (here countries) for reliable inference. Typically a minimum cluster dimension of about 50 is required (see Nichols and Schaffer 2007).

#### a. Measuring social expenditures

The data for expenditures on social protection as a share of total expenditures ( $EX_{it}$ ) is taken from Eurostat's COFOG database (Eurostat 2007 and 2008). This database provides internationally comparable data on 10 functional expenditure categories, including the item "social protection", capturing *inter alia* socially motivated expenditures on sickness and disability, old age, family and children, survivors, unemployment and housing.

The novelty and decisive difference of the Eurostat dataset is that it is the first to cover all 27 EU member states. Data for Western EU member states is generally available from 1990 to 2006 and is on a consolidated general government level. However, for some countries figures are available for a shorter time period only. For the CEECs data is generally available from 2000 onwards. For the Czech Republic the series starts in 1995. Table A1 in the appendix summarizes data availability by country. It shows that we exclude Bulgaria but include Norway in the analysis.

#### b. Measuring globalization

Globalization is a multi-faceted phenomenon comprising economic, social, institutional and political aspects (Dreher (2006b); Dreher et al (2008b)). In empirical work the economic part of globalization is frequently operationalized via a country's openness to trade or FDI (see e.g. Dreher et al (2008a); Gemmel et al. (2008)). However, using either trade or FDI to measure globalization has several shortcomings. First, FDI and trade may capture different economic aspects related to the globalization process. For instance, imports and inward FDI might have different effects on domestic workers due to different spill-over effects of these types of market integration on the domestic economy (see e.g. Lipsey (2002) on FDI spill-over effects). Moreover, according to the OLI-paradigm (Dunning (2001)), to receive inward FDI a country has to provide foreign firms with certain location advantages. Thus, receiving FDI instead of imports might be based on a pronounced shift in public expenditures in favor of public inputs and at the cost of welfare expenditures. Second, FDI is only one particular type of mobile capital. For instance, small economies might not receive much FDI, due to their lack of location advantages, but might nevertheless be very open and thus prone to globalization effects if they receive huge amounts of portfolio and other types of capital (e.g. Dharmapala and Hines (2009) on tax havens). Third, trade and FDI clearly capture only some economic aspects of the multi-faceted globalization phenomenon. However, exclusion of social, institutional and political dimensions aspects of the globalization phenomenon probably leads to biased estimates (see Dreher et al (2008b, pg. 79 on this issue)). For these reasons an index of globalization combining trade and FDI with other variables related to the globalization process is more appropriate than using trade or FDI in isolation.

In our analysis we use several proxy variables for the globalization phenomenon, not least to explore how results depend on the operationalisation of globalization. Specifically, we apply:

- (i) The sum of imports and exports as a share of GDP to capture trade openness. This indicator is biased, because small countries engage to higher degrees in trade, without necessarily being more open. To correct for this small country bias we use the method proposed by Bretschger and Hettich (2002) and later also used by Adam and Kammas (2007). Thus, we estimate trade as a function of the relative country size (GDP of the country as a ratio to the average GDP of the sample) in an auxiliary regression and use the residuals of this regression, denoted by  $trade_{it}$ , in our estimations along with the relative size variable<sup>10</sup>;
- (ii) The sum of inward and outward FDI stock as a ratio to GDP ( $fdistock_{it}$ ) to capture openness to FDI;
- (iii) Various KOF globalization indices developed by Dreher (2006b) and updated by Dreher et al (2008b). The KOF indices are weighted indices of various globalization variables. The weights are determined via principal component analysis. Thus, these indices capture the globalization process rather broadly. Three different KOF indices are used in the analysis: (a)  $KOFflows_{it-1}$  is based on the actual flows of goods and services, income, and capital. This variable not only brings together FDI and trade but also adds portfolio investments and income payments to foreign nationals; (b)  $KOFecon_{it-1}$ , which incorporates legal restrictions, i.e. de jure measures of formal openness such as restrictions on trade and financial flows, in addition to actual flows of goods, services, capital, etc; (c)  $KOFglob_{it-1}$ , which combines economic globalization with social and political globalization, incorporating the number of embassies and high commissions in the country, the number of international organizations to which the country is a member of, the number of international treaties signed, personal contacts, information flows and cultural proximity (Dreher (2006b)). As  $KOFglob_{it}$  captures the globalization phenomenon in the broadest available sense it is our preferred globalization measure.

It has to be stressed that the correlations between trade and FDI, respectively, with the KOF indices are relatively low (cf. Table A3). For example, the correlation of trade (FDI) with  $KOFglob_{it}$  is 0.46 (0.66). This tends to confirm the problems associated with measuring the globalization phenomenon (see Dreher et al (2008, pg. 271) on this issue).

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<sup>10</sup> Rodrik (1998) and Adam and Kammas (2007) also interact a trade variable with terms of trade volatility to capture external risk. Rodrik (1998) uses the three or five year averages of the dependent variable. The terms of trade risk is the standard deviation of the logarithmic difference of terms of trade in sub periods of three or five years. Our panel is too short to calculate meaningful standard deviations, especially for the estimations based on CEEC data. Thus, as in Rodrik (1997) we suppose that “the riskiness of each country’s trade is absorbed into the fixed effect” (Rodrik, 1997, pg. 61 and footnote 8).

### c. Control variables

Various control variables enter the  $C_{it-1}$ -matrix. As there is no accepted theoretical model available which dictates the appropriate choice of control variables (also see Dreher et al (2008a) on this issue) the variables contained in  $C_{it-1}$  are based on the findings of prior empirical studies (e.g. Dreher (2006a); Dreher et al (2008a); Gemmel et al (2008); Shelton (2007); Sanz and Velazquez (2007)).

We use the lagged growth rate of real GDP ( $growth_{it-1}$ ) to capture the influence of the economic cycle on the share of social protection expenditures. In a recession, social transfers are expected to rise whereas periods of high growth lead to a decrease in unemployment claims.

Another control variable is the one year lagged inflation rate ( $inflation_{it-1}$ ), measured as the yearly growth rate in the GDP deflator with base year 1995. This variable intends to capture shifts in expenditures due to differences in governmental "price-setting" power between expenditure categories. Specifically, the government behaves more as a price taker for some expenditure categories (e.g. expenditures on economic services), but for social protection it might be a quasi-monopolist. This difference in price-setting power might have an impact on the share of social expenditures in total expenditures. Specifically, because many social protection expenditures are not inflation adjusted we expect a negatively signed coefficient.

Lagged government debt ( $debt_{it-1}$ ) measured as general government consolidated gross debt as a percentage of GDP on the one hand intends to capture constraints of a government's "room for maneuver". In particular, higher debt levels imply higher levels of interest payments (e.g. Sanz and Velazquez (2007)) and *ceteris paribus* a lower share of social protection expenditures. From this perspective a negative relationship of this variable with the social protection expenditures can therefore be expected. On the other hand, as stressed by Sanz and Velazquez (2007) a pressure to reduce public debt in GDP might also decrease the share of social protection expenditures, if fiscal adjustment mainly falls "upon social welfare so as to protect productive government expenditure" (ibidem, p. 922). Thus, also a positive relationship between ( $debt_{it-1}$ ) and the share of social protection expenditures is plausible. *A priori* the impact of the lagged debt level on the share of social protection expenditures is therefore ambiguous.

The dependency ratio ( $depend_{it-1}$ ) is measured as the number of persons in the age groups 0-15 and 65 and over as a ratio of the working age population. Its lagged value aims to proxy the effect of the importance of an inactive population on social expenditures. The effect of an aging society should be particularly well captured by this variable. A positive relationship is expected.

The one year lagged ratio of total public spending to GDP ( $expend_{it-1}$ ) serves as another

control variable. This variable intends to capture the importance of the public sector in an economy. Specifically, in minimalist states expenditures for social protection are probably of relatively low importance (see Dreher et al (2008a)). A positive relationship with the share of social protection expenditures is thus expected.

In order to cope with small country bias (see Bretschger and Hettich (2002) and above) a country's relative size, ( $size_{it-1}$ ) is included in the set of regressors. This variable is measured as the proportion of a country's GDP in relation to the average sample GDP.

Note that we do not include a country's unemployment rate in the empirical model. The reason is that  $inflation_{it-1}$  is contained in  $C_{it-1}$  which is directly linked with the unemployment rate according to the Phillips-curve relationship.<sup>11</sup> Furthermore,  $growth_{it-1}$  is also related to the unemployment rate via Okun's law. Nevertheless, as a robustness check, we also estimate an empirical model which includes a proxy variable for a country's unemployment rate ( $unemp_{it-1}$ ) instead of its rate of inflation. In this case a positively signed coefficient for  $unemp_{it-1}$  is expected. A higher rate of unemployment should *ceteris paribus* be paired with a higher share of social protection expenditures.

Furthermore we do not include a lagged dependent variable in the empirical models as the resulting estimates would suffer from the Nickell-bias. As already noted in section three, reliable GMM-estimation is precluded due to the small number of cross-sections. However, the inclusion of country and time fixed effects, of welfare specific time trends as well as of lagged total expenditures in GDP in the empirical models accounts for inertia in the endogenous variable.

Tables A.2 to A.4 in the appendix contain information on the measurement of the variables, the databases used and descriptive statistics.

## 5 Estimation results

### a. Globalization and social protection expenditures in Western Europe and CEECs

Table 1 shows the results for the baseline model (Equation 1) for the full country sample, which pools all countries, as well as for the countries grouped into Western countries and CEECs. In specifications (1)-(3) globalization is captured by  $trade_{it-1}$  and in specifications (4)-(6) by  $fdistock_{it-1}$ .

[Table 1 about here]

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<sup>11</sup> We are grateful to the referee who pointed out this aspect.

The results indicate that trade openness leads to a significant negative effect on the share of social protection expenditures in each country group. For the Western European country group this result is supplemented by the negative impact of  $fdistock_{it-1}$ . Thus, for these countries the effects of both individual globalization variables provide evidence in favor of the efficiency hypothesis. In contrast, in the CEECs  $fdistock_{it-1}$  has a positive effect on the share of social protection expenditures. In the pooled sample the coefficient of  $fdistock_{it-1}$  is negative indicating the dominance of efficiency pressures.<sup>12</sup> Diverging results for the CEECs are an indication that conclusions concerning globalization effects on the share of social protection expenditures can hinge upon the operationalization of the globalization phenomenon.

Clearly, both variables, trade and FDI volumes, are rather narrow definitions of the multifaceted globalization phenomenon. Therefore Table 2 shows results for Equation (1) estimated using the three KOF indices of globalization. In specifications (1)-(3) the globalization variable is  $KOFflows_{it-1}$ , in specifications (4)-(6) it is  $KOFecon_{it-1}$ , and in specifications (7)-(9) globalization is measured in the broadest index via  $KOFglob_{it-1}$ . Again results for the full country sample and for countries separated as the Western countries and CEECs are shown.

Table 2 displays several striking differences when compared to Table 1. In Table 2 the globalization effect is statistically insignificant albeit positive in the full country sample across all three KOF indices. Thus, these results signal that globalization does not exert any effect on the share of social protection expenditures at all or that efficiency and compensating effects cancel each other out. However, separating countries into West and East European countries reveals that in the former country group compensating effects are dominant, whereas in the latter efficiency effects prevail. For the Western European country group this evidence in favor of the compensation hypothesis is present across all three KOF indices. For the CEECs the efficiency effect is derived based on the two broader definitions of globalization,  $KOFecon_{it-1}$  and  $KOFglob_{it-1}$ .

Note that these results remain valid when we include  $KOFflows_{it}$  together with the restrictions part of  $KOFecon_{it}$  in the empirical model.<sup>13</sup> However, this reveals that in the CEECs the negative impact of globalization is driven by a reduction in legal restrictions. This may indicate that policy makers who deregulated trade and capital controls also decreased the share of public spending on social protection in order to create room for fiscal policy to attract FDI or to increase the competitiveness of the firms based in the country. In contrast, in the West European country group the positive impact stems from an increase in actual flows rather than the easing of legal restrictions, which is not implausible given that most legal restrictions were

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<sup>12</sup> Note, these results are robust to the inclusion of  $trade_{it-1}$  and  $fdistock_{it-1}$  simultaneously in the empirical model. Detailed results can be received upon request.

<sup>13</sup> Detailed results are omitted for brevity. They are available upon request.



abolished in these countries before the start of our sample period.

Taken together the results displayed in Tables 1 and 2 signal the importance of carefully considering the operationalization of the globalization phenomenon. Moreover, results reveal that the globalization impact may differ across country groups. Using the KOF indices, which capture the multi-faceted phenomenon of globalization better than single trade or FDI variables, we conclude that there is evidence in favor of compensation effects prevailing in West European countries and efficiency effects in the CEECs.

[Table 2 about here]

Regarding control variables, we discuss the results displayed in Table 2 based on the broadest measure of globalization ( $KOF_{glob_{it-1}}$ ). However, the signs and statistical significance of the coefficients are rather robust with respect to the choice of the particular KOF index. The growth rate of real GDP ( $growth_{it-1}$ ) is a good predictor of the need for social protection: In periods of higher GDP growth rates the share of social protection expenditures is lower (also see Potrafke (2009); Dreher (2006a)). However the coefficient is only statistically significant in the full country sample and for the West European countries. As expected, rising inflation decreases spending on social protection, probably because social benefits are not necessarily inflation adjusted. Again, no statistically significant effect for the CEECs is established.

Higher national debt levels imply higher shares of expenditures on social protection in West Europe and in the full sample. In CEECs the effect is not statistically different from zero. This positive impact is in line with the findings of Sanz and Velazquez (2007). An increase in the dependency ratio leads to a rise in the share of social protection expenditures, especially in the CEECs. This result is in line with Gemmel et al. (2008) and Sanz and Velazquez (2007) who find a positive impact of the share of elderly persons on the share of welfare expenditures. The one year lagged total public expenditures as a ratio to GDP have a positive effect on the share of social protection in both country groups. However, the effect gains statistical significance only in the full country sample. Dreher et al (2008a) find a similar result. Larger countries in Western Europe have a lower share of expenditures on social protection, as indicated by the negative coefficient of the size variable. Finally, note that time dummies are statistically highly significant (jointly).

It is difficult to compare our results concerning the globalization impact with prior literature. Countries and time span considered, econometric approaches applied and measurement of the globalization phenomenon vary substantially between the available studies (also see Gemmel et al (2008)). Moreover, we have a special focus on Western Europe and the CEECs, whereas most other studies are based on a sample of OECD countries. Further, we

normalize social expenditures by total public expenditures to narrowly capture the expenditure priorities set within the public sector. Some other studies normalize by GDP (e.g. Potrafke (2009)). Our results based on the trade and FDI volume (cf. Table 1), which indicate the dominance of efficiency effects are in line with Kaufman and Segura-Ubiergo (2001) and Garret and Mitchell (2001) (also see Table 1 in Gemmel et al (2008)). Based on panel data these authors *inter alia* also explore globalization effects on the share of social protection expenditures using the trade volume as proxy for globalization. On the other hand, our results are add odds with the studies of Hicks and Swank (1992), Huber et al (1993) and Bretschger and Hettich (2002), who find a positive effect of trade volume on the share of social protection expenditures. Moreover, and also in contrast to this study, Dreher et al (2008a) find no effect of trade volume on the share of social expenditures. Finally, Gemmel et al. (2008) find a positive effect of FDI volume and no effect of openness to trade on the share of social expenditures.

Concerning CEECs Kaufman and Segura-Ubiergo (2001) also establish the dominance of efficiency effects based on a sample of Latin American countries using the trade volume as proxy variable for globalization. Thus, for emerging countries the empirical evidence is rather in favor of a squeeze in the share of social expenditures due to globalization.

Based on the broader KOF indices some studies find that the share of social expenditure is essentially unrelated to globalization (Dreher (2006a); Sanz and Velazquez (2007); Dreher et al (2008a)). We reach at a similar conclusion if we use the KOF indices and the full country sample; however our results indicate the importance of heterogeneity between country groups. Gemmel et al (2008) find evidence in favor of the compensation hypothesis in their estimations based on the KOF index.

#### b. Globalization, social expenditures and welfare regimes

So far we have focused on differences between Western and Eastern European countries. Next we control for heterogeneity among welfare states regimes within Western Europe. The results are reported in Table 3.

The results indicate important differences regarding the response to globalization across welfare regime and are robust with respect to the choice of the KOF index. Specifically, globalization exerts efficiency effects on countries in the social-democratic welfare regime. In contrast, the compensation hypothesis is verified for the conservative welfare regime. No effect is found for the liberal and southern welfare regimes. Hence, globalization leads particularly to efficiency pressures on the most generous welfare regime. Moreover, some evidence of convergence of the social-democratic and the conservative welfare regimes exists . As noted, the absence of a statistical relationship between globalization and the share of social protection in the southern and the liberal welfare regimes might indicate that there are

no globalization effects at work at all or that efficiency and compensation effects cancel each other out in these welfare regimes.

[Table 3 about here]

Concerning control variables Table 3 implies that the growth rate of real GDP, the debt level and the importance of the public sector matter for the share of social protection expenditures. As expected, the coefficient of  $growth_{it-1}$  is negative and that of  $expend_{it-1}$  positive. Moreover, some evidence exists that larger countries have lower shares of social expenditures. The time dummies (jointly) as well as the welfare regime specific trends are statistically significant.

The negative impact of globalization on the share of social expenditures in the social-democratic welfare regime is consistent with the arguments set out by Huber and Stephens (2001) about the welfare retrenchment effects of globalization and limits to expansion in very generous welfare regimes, where tax rates are already high and there is little room to increase spending via higher taxation. Moreover, the predominance of the compensation effect in the conservative welfare regime is consistent with Kautto and Kvist (2002) who cite evidence demonstrating a “catch-up convergence” in France and Netherlands. In the conservative welfare regimes national institutions, resource dependency, and voters’ interests prevent the scaling down of social protection expenditures and create further pressures to meet the demand for compensation against the vulnerabilities created by globalization. Our findings are also consistent with Achterberg and Yerkes (2009) or Adelantado and Cuevas (2006), who show that there is no general trend towards a retrenchment of welfare regimes.

#### c. Robustness checks

We conducted several robustness checks to explore the sensitivity of our results with respect to the control variables included and the econometric approach applied. The robustness analysis is based on our preferred specification based on the broadest globalization index,  $KOFglob_{it-1}$ , and the split by welfare regimes displayed in Column 3 of Table 3. Table 4 displays the results of the robustness analysis. Column 1 shows that our results are broadly unaltered in case  $inflation_{it-1}$  is substituted by the unemployment rate ( $unemp_{it-1}$ ). As expected the coefficient of  $unemp_{it-1}$  carries a positive sign and is statistically significant. The only difference compared to our preferred specification is the insignificant impact of  $debt_{it-1}$ . Column 2 of Table 4 shows the results when a variable indicating the ideology of the

government cabinet in force is added ( $govparty_{it-1}$ ).<sup>14</sup> Political scientists produced a great deal of theory about the impact of partisan politics and political parties on government expenditures.<sup>15</sup> As  $govparty_{it-1}$  is 1 for hegemony of right-wing parties and 5 for left-wing parties we expect its coefficient to have a positive sign. However, Column 2 of Table 4 shows that this variable neither enters our preferred specification with a statistically significant effect nor does its inclusion change our substantive results. Potrafke (2009) provides some evidence that partisan politics might matter for the share of social protection expenditures in interaction with globalization, rather than in isolation. However since the aim of this paper is to highlight the effects of globalization rather than partisan politics, we do not explore the interaction effects further.

Column 3 and Column 4 show that our substantive results are also robust with respect to the exclusion of insignificant variables ( $depend_{it-1}$  and  $inflation_{it-1}$ ) from the preferred specification.<sup>16</sup>

The specification shown in Column 5 includes the CEECs as a fifth welfare regime. Results displayed are fully consistent with those in Column 3 of Table 3 and Column 9 in Table 2: Efficiency effects dominate in social-democratic countries and in CEECs whereas the evidence is in favor of the compensation hypothesis in the conservative welfare regime. Again, no effect is established for the liberal and the southern welfare regimes.

Finally, Column 6 of Table 4 shows that our results are also unaltered if we exclude time dummies and correct non-parametrically for contemporaneous correlation in residuals.<sup>17</sup>

[Table 4 about here]

## 6 Summary and conclusions

This paper has analyzed the effects of globalization on the share of expenditures on social protection in total public expenditures in European countries. The novelty of the paper is that we test the heterogeneity of the globalization effects on social protection expenditures in different country groups and welfare regimes. Moreover, globalization is measured by alternative indicators like the openness to trade and FDI as well as various KOF globalization indices. The latter have the advantage of bringing together further dimensions of economic

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<sup>14</sup> See Armingeon et al. (2009).

<sup>15</sup> See Cusack (1997) for an overview.

<sup>16</sup> We also examine the robustness of the CEEC specific results displayed in Column 9 of Table 2 with respect to the exclusion of insignificant control variables. This leads to an empirical model including  $KOFglob_{it-1}$  and  $depend_{it-1}$  as well as the time dummies. The coefficient on the globalization variable carries a statistically significant value of -0.79. The coefficient of the dependency ratio is statistically significant with a value of 2.69. Results will be provided upon request.

<sup>17</sup> These results are based on Hoechle's `xtscc` Stata command (see Hoechle 2007) which calculates Driscoll-Kraay type standard errors.

globalization like portfolio investments, income payments to foreigners, *de jure* measures like capital controls and trade restrictions as well as social and political globalization. Thus, the KOF indices have advantages as they capture the multi-faceted globalization phenomenon more broadly than proxies based on single aspects, like trade and FDI volume. Welfare regimes used are based on an "augmented" Esping-Andersen" typology.

There are important differences between Eastern and Western Europe as well as among welfare regimes in Western Europe. Regarding Western Europe, globalization measured by the KOF indices leads to an increased share of social protection expenditures. This finding is consistent with the view that the demand for protection against vulnerability and income losses in the age of globalization outweighs efficiency pressures exerted by globalization. Thus, the evidence provided here is in favor of the compensation hypothesis. Regarding the CEECs the analysis implies that globalization leads to a significant decline in the share of social protection expenditures. Hence, the CEECs verify the efficiency hypothesis.

There are further differences between the welfare regimes within Western Europe. The share of social protection is increasing due to globalization in the conservative welfare regime and decreasing in the social-democratic welfare regime. Moreover, we find that our globalization variables are unrelated to the share of social protection expenditures in the liberal and southern welfare regimes. This implies that globalization has no effect at all in these regimes or that efficiency and compensation effects cancel each other out.

Although our analysis implies that the effects of globalization on social protection expenditures should be analyzed by disaggregating the welfare regimes and country groups, we stress that the results derived are based on a rather limited data set, especially for CEECs. Thus, results are indicative rather than conclusive. Further empirical analysis of the topic is clearly needed.

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## Tables

Table 1: Baseline model

	(1)	(2)	(3)	(4)	(5)	(6)
	All	West	East	All	West	East
$\text{trade}_{it-1}$	-0.042*** (0.010)	-0.037*** (0.009)	-0.085** (0.042)			
$\text{fdistock}_{it-1}$				-0.023*** (0.009)	-0.030*** (0.008)	0.093*** (0.014)
$\text{growth}_{it-1}$	-0.250*** (0.062)	-0.222*** (0.067)	0.021 (0.167)	-0.368*** (0.078)	-0.360*** (0.078)	-0.084 (0.112)
$\text{depend}_{it-1}$	0.112** (0.053)	0.023 (0.048)	2.303*** (0.562)	0.153** (0.063)	0.045 (0.059)	2.153*** (0.532)
$\text{inflation}_{it-1}$	-0.101*** (0.037)	-0.097** (0.048)	-0.126 (0.094)	-0.122*** (0.040)	-0.102** (0.049)	-0.076 (0.087)
$\text{size}_{it-1}$	-0.014*** (0.005)	-0.015*** (0.005)	0.074 (0.113)	-0.017*** (0.005)	-0.017*** (0.005)	0.258** (0.119)
$\text{debt}_{it-1}$	0.024** (0.011)	0.038*** (0.010)	-0.018 (0.071)	0.014 (0.013)	0.028** (0.013)	0.002 (0.065)
$\text{expend}_{it-1}$	0.143*** (0.055)	0.124** (0.060)	0.266 (0.188)	0.137** (0.058)	0.133** (0.061)	0.107 (0.152)
$N$	293	240	53	269	216	53
$R^2$	0.494	0.559	0.654	0.511	0.594	0.720
TD	105.0***	99.7***	81.4***	90.3***	92.4***	48.6***

Notes: Newey-West-HAC robust standard errors in parentheses; country fixed effects included; estimates based on Schaffer's `xtivreg2` command with the `bw(2)` robust option; TD = Test of joint significance of time dummies; \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 2: Baseline model with KOF indices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	West	East	All	West	East	All	West	East
KOFflows <sub>it-1</sub>	0.024 (0.019)	0.046** (0.020)	0.074 (0.052)						
KOFecon <sub>it-1</sub>				0.016 (0.030)	0.053** (0.026)	-0.207* (0.109)			
KOFglob <sub>it-1</sub>							0.052 (0.058)	0.132** (0.052)	-0.646*** (0.218)
growth <sub>it-1</sub>	-0.304*** (0.071)	-0.264*** (0.079)	-0.207 (0.150)	-0.302*** (0.071)	-0.272*** (0.078)	-0.072 (0.141)	-0.304*** (0.071)	-0.270*** (0.079)	-0.020 (0.134)
depend <sub>it-1</sub>	0.121** (0.057)	0.041 (0.052)	2.039*** (0.563)	0.113* (0.058)	0.044 (0.057)	2.226*** (0.645)	0.126** (0.056)	0.066 (0.054)	2.489*** (0.647)
inflation <sub>it-1</sub>	-0.120*** (0.043)	-0.141*** (0.053)	-0.156* (0.091)	-0.119*** (0.042)	-0.129** (0.054)	-0.160 (0.098)	-0.112*** (0.043)	-0.104** (0.051)	-0.094 (0.093)
size <sub>it-1</sub>	-0.015*** (0.004)	-0.014*** (0.005)	0.216 (0.143)	-0.015*** (0.005)	-0.014*** (0.005)	0.088 (0.121)	-0.015*** (0.004)	-0.014*** (0.005)	0.010 (0.095)
debt <sub>it-1</sub>	0.028** (0.012)	0.036*** (0.011)	-0.044 (0.073)	0.031** (0.012)	0.040*** (0.012)	0.025 (0.090)	0.029** (0.012)	0.037*** (0.011)	-0.032 (0.068)
expend <sub>it-1</sub>	0.106* (0.055)	0.085 (0.059)	0.090 (0.173)	0.102* (0.056)	0.071 (0.064)	0.091 (0.174)	0.104* (0.056)	0.079 (0.064)	0.166 (0.154)
<i>N</i>	293	240	53	293	240	53	293	240	53
R <sup>2</sup>	0.460	0.539	0.634	0.457	0.536	0.660	0.459	0.547	0.697
TD	63.6***	64.7***	65.1***	55.2***	52.7***	64.2***	38.8****	30.6***	85.6***

Notes: Newey-West-HAC robust standard errors in parentheses; country fixed effects included; estimates based on Schaffer's `xtivreg2` command with the `bw(2)` robust option; TD = Test of joint significance of time dummies; \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 3: Welfare regime split

	(1)	(2)	(3)
	KOFflows	KOFecon	KOFglob
WR1KOFflows <sub>it-1</sub>	-0.074*** (0.023)		
WR2KOFflows <sub>it-1</sub>	0.078*** (0.030)		
WR3KOFflows <sub>it-1</sub>	-0.032 (0.030)		
WR4KOFflows <sub>it-1</sub>	-0.058 (0.042)		
WR1KOFecon <sub>it-1</sub>		-0.134*** (0.027)	
WR2KOFgecon <sub>it-1</sub>		0.125** (0.050)	
WR3KOFecon <sub>it-1</sub>		-0.020 (0.034)	
WR4KOFecon <sub>it-1</sub>		-0.052 (0.088)	
WR1KOFglob <sub>it-1</sub>			-0.258*** (0.048)
WR2KOFglob <sub>it-1</sub>			0.171** (0.067)
WR3KOFglob <sub>it-1</sub>			-0.057 (0.083)
WR4kKOFglob <sub>it-1</sub>			-0.027 (0.175)
growth <sub>it-1</sub>	-0.182*** (0.050)	-0.155*** (0.046)	-0.138*** (0.047)
depend <sub>it-1</sub>	-0.092 (0.066)	-0.071 (0.066)	-0.083 (0.063)
inflation <sub>it-1</sub>	0.030 (0.039)	0.020 (0.039)	0.009 (0.037)
size <sub>it-1</sub>	-0.005 (0.004)	-0.006 (0.004)	-0.007* (0.004)
debt <sub>it-1</sub>	0.023** (0.010)	0.019** (0.009)	0.024*** (0.008)
expend <sub>it-1</sub>	0.132*** (0.048)	0.153*** (0.046)	0.153*** (0.045)
WR1trend	0.004*** (0.001)	0.004*** (0.001)	0.005*** (0.001)
WR2trend	0.002** (0.001)	0.002* (0.001)	0.002 (0.001)
WR3trend	0.007*** (0.001)	0.006*** (0.001)	0.007*** (0.002)
<i>N</i>	240	240	240
R <sup>2</sup>	0.701	0.709	0.715
TD	38.9***	44.4***	41.7***
TWRtrend	65.35***	59.23***	53.15***

Notes: Newey-West-HAC robust standard errors in parentheses; country fixed effects included; estimates based on Schaffer's xtvreg2 command with the bw(2) robust option; TD = Test of joint significance of time dummies; WR1 = social-democratic welfare regime, WR2 = conservative welfare regime, WR3 = southern welfare regime, WR4 = liberal welfare regime; TWRtrend = Test of joint significance of welfare specific trends; \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 4: Robustness checks

	(1)	(2)	(3)	(4)	(5)	(6)
	unemp	govparty	depend	inflation	CEECs	Driscoll-Kraay
WR1KOFglob $_{it-1}$	-0.241*** (0.055)	-0.248*** (0.051)	-0.255*** (0.048)	-0.253*** (0.048)	-0.227*** (0.050)	-0.159*** (0.037)
WR2KOFglob $_{it-1}$	0.193*** (0.069)	0.197*** (0.068)	0.187*** (0.067)	0.188*** (0.067)	0.181*** (0.069)	0.240*** (0.054)
WR3KOFglob $_{it-1}$	-0.066 (0.085)	-0.049 (0.079)	-0.018 (0.079)	-0.020 (0.081)	-0.065 (0.088)	0.027 (0.059)
WR4KOFglob $_{it-1}$	0.036 (0.171)	-0.037 (0.172)	0.022 (0.174)	0.027 (0.173)	0.065 (0.181)	0.145 (0.133)
WR5KOFglob $_{it-1}$					-0.363* (0.191)	
growth $_{it-1}$	-0.161*** (0.046)	-0.133*** (0.048)	-0.136*** (0.047)	-0.139*** (0.045)	-0.186*** (0.049)	-0.090*** (0.030)
depend $_{it-1}$	-0.089 (0.059)	-0.093 (0.062)			-0.022 (0.066)	-0.025 (0.045)
unemp $_{it-1}$	0.169** (0.075)					
size $_{it-1}$	-0.006* (0.004)	-0.007** (0.004)	-0.009** (0.004)	-0.009** (0.004)	-0.009** (0.004)	-0.001 (0.003)
debt $_{it-1}$	0.011 (0.009)	0.026*** (0.008)	0.021** (0.008)	0.020** (0.008)	0.019** (0.009)	0.027*** (0.007)
expend $_{it-1}$	0.113** (0.048)	0.156*** (0.044)	0.153*** (0.045)	0.151*** (0.043)	0.135*** (0.044)	0.086** (0.038)
inflation $_{it-1}$		0.003 (0.037)	0.009 (0.037)		-0.108** (0.043)	-0.018 (0.027)
govparty $_{it-1}$		-0.001 (0.001)				
WR1trend	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.004*** (0.001)
WR2trend	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)	0.001 (0.000)
WR3trend	0.007*** (0.002)	0.006*** (0.002)	0.006*** (0.002)	0.006*** (0.002)	0.006*** (0.002)	0.005*** (0.001)
WR4trend						-0.002** (0.001)
WR5trend					0.005 (0.003)	
$N$	240	239	240	240	293	240
$R^2$	0.724	0.722	0.713	0.713	0.640	0.665
TD	34.6***	45.9***	38.7***	39.8***	43.8***	
TWRtrend	62.91***	51.95***	54.38***	54.21***	49.05***	45.72***

Notes: Newey-West-HAC robust standard errors in parentheses except Column 6 (Driscoll-Kraay robust standard errors); country fixed effects included; estimates based on Schaffer's xtivreg2 command with the bw(2) robust option and on Hoechle's xtsc command; TD = Test of joint significance of time dummies; WR1 = social-democratic welfare regime, WR2 = conservative welfare regime, WR3 = southern welfare regime, WR4 = liberal welfare regime; WR5 = CEECs; TWRtrend = Test of joint significance of welfare specific trends; \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## Appendix

Table A.1: Data availability by country

Country	Data availability
Belgium	1990 - 2006
Czech Republic	1995 - 2006
Denmark	1990 - 2006
Germany	1991 - 2006
Estonia	1995 - 2006
Ireland	1991 - 2006
Greece	1990 - 2006
Spain	1995 - 2006
France	1995 - 2005
Italy	1990 - 2006
Cyprus	1998 - 2006
Latvia	1998 - 2006
Lithuania	2002 - 2006
Luxemburg	1990 - 2006
Hungary	2001 - 2006
Malta	1995 - 2006
Netherlands	1995 - 2006
Austria	1995 - 2006
Poland	2002 - 2006
Portugal	1990 - 2006
Romania	2002 - 2005
Slovenia	2000 - 2006
Slovakia	2003 - 2005
Finland	1990 - 2006
Sweden	1995 - 2006
United Kingdom	1990 - 2006
Norway	1990 - 2006

Table A.2: Definition of variables, data sources and expected relationship with social protection expenditures

Variable	Source	Definition	Expected sign
$EX_{it}$	Eurostat New Cronos Database	Social Protection expenditures according to COFOG Classification as proportion of total expenditures	Endogenous variable
$growth_{it-1}$	Eurostat New Cronos Database	Real GDP growth rate – annual change in real GDP	-
$unemp_{it-1}$	Eurostat New Cronos Database; AMECO Database	Unemployment persons as a share of total active population. According to labor force surveys	+
$inflation_{it-1}$	Eurostat New Cronos Database	GDP deflator, measured as rate of change on previous year; base year 1995	-
$debt_{it-1}$	Eurostat New Cronos Database; AMECO Database	General government consolidated gross debt divided by GDP	?
$depend_{it-1}$	Eurostat New Cronos Database	Total number persons of age when they are economically inactive (0-15 and 65 and over) divided by the number of persons of working age (from 15 to 64)	+
$govparty_{it-1}$	Comparative Political Data Set III from the University of Berne	Ordinal variable ranging from 1 to 5. "1" indicates hegemony of right-wing and center parties, whereas "5" stands for hegemony of social democratic and other left parties	+
$expend_{it-1}$	Eurostat New Cronos Database	Total government expenditures divided by GDP	+
$size_{it-1}$	Eurostat New Cronos Database	Country GDP divided by sample average GDP	?
$trade_{it-1}$	Own Calculations	Residuals from an auxiliary regression of "trade" on "size" and a constant (See Bretschger and Hettich 2002).	Variable of main interest
$fdistock_{it-1}$	UNCTAD World Investment Report	Sum of inward and outward stock of FDI divided by GDP	Variable of main interest
$KOFflows_{it-1}$	Swiss Federal Institute of Technology, Zurich, Konjunkturforschungsstelle	Index from 1 to 100 consisting of trade, FDI flows, FDI stock, portfolio investment and income payments to foreign nationals, weighted according to a principal component analysis.	Variable of main interest
$KOFecon_{it-1}$	Swiss Federal Institute of Technology, Zurich, Konjunkturforschungsstelle	Composite index from 1 to 100 of KOFflows and KOF-restrictions, which is an indicator of de-jure openness.	Variable of main interest
$KOFglob_{it-1}$	Swiss Federal Institute of Technology, Zurich, Konjunkturforschungsstelle	Overall globalization index from 1 to 100, which includes KOFecon but also indices on social and political globalization.	Variable of main interest

Table A.3: Correlation matrix of explanatory variables

	growth	unemp	inflation	debt	govparty	depend	expend	size	trade	fdistock	KOFFlows	KOFecon	KOFglob
growth	1.00												
unemp	0.06	1.00											
inflation	0.11	0.00	1.00										
debt	-0.39	0.24	-0.11	1.00									
govparty	0.04	0.01	-0.02	0.06	1.00								
depend	-0.09	-0.08	-0.13	0.14	0.13	1.00							
expend	-0.56	0.04	-0.29	0.46	0.18	0.25	1.00						
size	-0.32	0.13	-0.22	0.24	0.10	0.12	0.15	1.00					
trade	0.28	-0.28	-0.14	-0.32	-0.14	-0.08	-0.34	0.01	1.00				
fdistock	0.10	-0.32	-0.15	-0.18	-0.11	0.16	-0.20	-0.12	0.70	1.00			
KOFFlows	0.32	-0.38	-0.21	-0.24	-0.09	0.04	-0.22	-0.45	0.64	0.73	1.00		
KOFecon	0.30	-0.34	-0.29	-0.23	-0.03	0.12	-0.13	-0.38	0.61	0.71	0.92	1.00	
KOFglob	0.10	-0.37	-0.44	-0.03	0.01	0.18	0.09	-0.16	0.46	0.66	0.79	0.87	1.00

Note: for convenience are time and country identifier excluded



Table A.4: Descriptive statistics

Variable		Mean	Std. Dev.	Min	Max
EX <sub>it</sub>	overall	0.360	0.057	0.208	0.477
	between		0.056	0.223	0.448
	within		0.017	0.291	0.418
growth <sub>it-1</sub>	overall	0.035	0.027	-0.062	0.160
	between		0.020	0.013	0.083
	within		0.020	-0.052	0.138
unemp <sub>it-1</sub>	overall	0.077	0.034	0.016	0.196
	between		0.035	0.030	0.175
	within		0.018	0.032	0.151
inflation <sub>it-1</sub>	overall	0.035	0.035	-0.019	0.243
	between		0.032	0.011	0.171
	within		0.027	-0.021	0.204
debt <sub>it-1</sub>	overall	0.548	0.307	0.038	1.377
	between		0.277	0.055	1.150
	within		0.095	0.253	0.965
govparty <sub>it-1</sub>	overall	2.767	1.450	1.000	5.000
	between		0.883	1.000	4.909
	within		1.236	0.142	5.585
depend <sub>it-1</sub>	overall	0.490	0.036	0.402	0.606
	between		0.037	0.406	0.552
	within		0.016	0.434	0.578
expend <sub>it-1</sub>	overall	0.464	0.068	0.315	0.647
	between		0.065	0.336	0.574
	within		0.028	0.388	0.565
size <sub>it-1</sub>	overall	1.176	1.644	0.011	7.088
	between		1.540	0.012	6.013
	within		0.212	-0.094	2.251
trade <sub>it-1</sub>	overall	0.041	0.461	-0.678	1.925
	between		0.407	-0.609	1.297
	within		0.128	-0.444	0.668
fdistock <sub>it-1</sub>	overall	0.608	0.499	0.095	2.704
	between		0.544	0.153	2.314
	within		0.219	-0.027	1.293
KOFflows <sub>it-1</sub>	overall	0.748	0.157	0.380	0.998
	between		0.131	0.474	0.993
	within		0.068	0.497	0.891
KOFecon <sub>it-1</sub>	overall	0.812	0.097	0.574	0.987
	between		0.083	0.653	0.962
	within		0.047	0.630	0.938
KOFglob <sub>it-1</sub>	overall	0.810	0.069	0.604	0.926
	between		0.060	0.691	0.905
	within		0.035	0.676	0.878