A Political Economy Analysis of Regional Disparities

*Structural and Institutional Determinants*

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A Political Economy Analysis of Regional Disparities in Developed Democracies: Structural Trends, Institutions, and Actors

Work in Progress – Working Paper

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Abstract
Research on regional disparities has gained much attention over the last years in the regional science literature. Comparative political economists, however, tend to overlook the relationship between national institutional arrangements, political actors, macroeconomic factors, and regional outcomes. This article tries to integrate the political economy literature with the study of regional disparities by using the standard toolbox available to political economists in explaining why some developed democracies have higher degrees of regional disparities relative to others. In the article, it is argued that regional disparities in GDP and Gini in developed economies are determined by structural factors such as deindustrialization, capital mobility, and economic growth. However, generous welfare rights and social spending can mitigate some of the adverse effects of the structural factors on regional disparities in Gini. Some results also indicate that coordinated employers, strong leftist governments and members of the EMU can lead to lower regional disparities, although the results are less robust. The arguments are tested using a time-series cross-section framework with data from 1980-2004.
Introduction

Research on regional disparities has gained much attention over the last years in the regional science literature (Nijkamp et al. 2015). Comparative political economists, however, tend to overlook the relationship between national institutional arrangements, macroeconomic factors, and regional outcomes. These interrelationships are well described and analyzed at the national level in the literature, but regional outcomes remain poorly understood. Regional disparities are, however, crucial for understanding solidarity, personal inequality, and development in the developed democracies. This article tries to integrate the political economy literature with the study of regional disparities by using the standard toolbox available to political economists in explaining regional disparities in developed democracies. Why do some western democracies face bigger regional disparities relative to others? What role do institutional factors, actors, and structural trends play for changes in regional disparities? Analyzing these questions, the article finds that structural factors such as deindustrialization, capital mobility, and economic growth tend to increase regional disparities in western democracies. However, strong and encompassing social policy seem to mitigate these adverse effects on regional disparities in income. The article also finds some scant evidence for the claim that strong leftist governments, well-coordinated employers as well as members of the EMU are can minimize regional disparities, although these explanations are empirically fragile.

Structural factors have been prominent in the debate on determinants of disparities. The usual suspects include ‘globalization’, deindustrialization, and economic growth (Dreher & Gaston, 2008; Huber & Stephens, 2014). The debate of the social effects of these structural trends is, to say the least, debatable. However, scholars tend to view ‘globalization’ – in particular trade – and the process of deindustrialization as undermining equality. With respect to economic growth, the tides are more divided (Williamson, 1965; Myrdal 1957).

It is, however, no longer controversial to state that institutions matter for inequalities. The conventional wisdom amongst welfare state scholars is that the welfare state and generous social policy is paramount for sustaining equal societies as well as eliminating inequality (Korpi & Palme,
1998; Bradley et al. 2003; Huber & Stephens, 2014). These studies tend to focus at the national level (often by aggregating micro-level household income data), and hence overlooks the regional dimension. This conventional wisdom, however, also have implication – at least theoretically – for the study of spatial inequalities. If a country has a big and encompassing welfare state, one could then also expect smaller differences between regions within the country as the welfare state moves resources from the richer to the poorer regions (either directly through taxes or indirectly through policy schemes such as unemployment benefits). Being a member of the European Union (EU) could likewise diminish regional inequalities as the EU’s structural and cohesion funds could help alleviate poorer regions in the target country. Participating in the common market could, furthermore, prove useful for minimizing regional disparities, as more regions gain access to the benefits of trade.

Actors in the political economy can also influence disparities. One the one hand, Power Resource Theorists (PRT) argue that governments with strong leftist parties tend to fight poverty and inequality relatively more than governments with weak left representation in government (Stephens, 1979; Korpi, 1983; Esping-Andersen, 1990). One could then expect governments with strong leftist parties to pay close attention to regional disparities. On the other hand, Varieties of Capitalism (VoC) scholars argue that employers can be equally important in understanding the role of social policy and hence inequality, as some firms rely on high levels of social security to sustain quality production (Swenson, 2002; Mares, 2003; Hall & Soskice, 2001; Hall & Gingerich, 2009). Countries with strong and coordinated employers could then be expected to minimize regional disparities relatively to countries with weak and fragmented employer organizations. These insights are, however, absent in much of the regional science literature and actors tend to be left out of analysis.

This study assesses all three major explanations (i.e. structural, institutional, and actor-oriented explanations) abilities to explain regional disparities in developed democracies. Using time-series cross-section analysis with data from 1980-2004 including 15 western democracies, it is argued that regional disparities in GDP and Gini by and large are driven by structural factors – in particular by economic growth, deindustrialization, and capital mobility. However, a big and encompassing
welfare state seem to mitigate some of these effects by minimizing regional disparities in Gini. The welfare state is, therefore, argued to be crucial for sustaining regional equality in the long run. The welfare state not only matter for inter-personal inequality but also inter-regional inequality as well – a quite substantial part of the inter-personal inequality may indeed be driven by regional disparities. The article finds less robust results for the claims derived from the actor-oriented models as well as the predictions derived from member states of the EMU & EU.

The article is structured as follows. First, there will be an overview of central theories and hypotheses in explaining regional disparities seen through the lens of a comparative political economist. Second, the article presents the data and econometric framework. Third, the results are interpreted and discussed. The final section concludes.

**Literature and hypotheses**

**Structural trends**

Structural trends driving regional disparities have been debated intensely. The usual suspects include economic growth, deindustrialization, and ‘globalization’. The effects of economic growth on regional disparities can be framed within three famous theories of growth and inequality: Solow’s (1956) theory of exogenous growth, Myrdal’s (1957) cumulative causation theory and Kuznets’ (1955) development theory.

Although admittedly crude, Solow’s (1956) neoclassical growth theory predicts that growth laggards will catch-up to the growth frontiers as the laggards more easily can benefit from the technological advantages of more developed nations by adopting their technologies – hence there will be a catch-up process in output over time (Barro & Sala-i-Martin, 1992). Applying this logic to regions one would expect less economically developed regions to catch up with more developed
regions. Economic growth, in this perspective, is therefore expected to diminish disparities over time\(^1\).

Contrary to this perspective, Myrdal’s (1957) cumulative causation theory predicts the opposite effects of economic growth on regional disparities. As Myrdal himself noted, economic growth and development are spatial and cumulative, why some areas are better equipped at producing certain goods and services. As the process is cumulative, the developmental process will benefit some regions and areas more relative to others over time. Underlining this prediction is the argument of agglomeration benefits. Hence, this perspective predicts rising disparities as growth soars\(^2\). Petrakos et al. (2005: 1838) explain it in the following manner:

> “economic growth has a tendency to be associated with some sort of agglomeration and requires a minimum threshold of resources and activities in order to take place. Once it starts however, it is likely (...) to be self-sustained, spatially selective and cumulative in nature”

Applying Kuznets (1955) theory on development and inequality on regional disparities, Williamson (1965), moreover, argues in his seminal study that there is an inverted U-shaped relationship between regional development and regional disparities. Williamson (1965: 4) first notes: “Given that significant economic growth first appears in one region or state, it should occasion no surprise that the absolute differential between rich a poor regions (...) should persist or even increase”. Williamson explains differences in regional disparities by a host of factors such as labor migration, capital migration, central government policy and natural resources. However, over the long run regions are expected to converge, as he formulates it in the following thesis:

> “the early stages of national development generate increasingly large North–South income differentials. Somewhere during the course of development, some or all of the disequilibrating tendencies diminish, causing a reversal in the pattern of interregional inequality. Instead of divergence in interregional levels of development, convergence becomes the rule, with the

\(^1\) In later work Solow (1994), however, warns that this is not always the case, since returns to capital can be diminishing.

\(^2\) Somewhat similar arguments can be derived from the new economic geography school (Krugman, 1991).
backward regions closing the development gap between themselves and the already industrialized areas” (Williamson, 1965: 9).

Hence in the Kuznets-Williamson model, regional disparities are expected to diminish as nations develop their economies.

Results from empirical studies, however, varies quite a lot. In a time-series cross-section framework including 24 OECD countries, Kyriacou et al. (2015) find that GDP per capita tends to be negatively associated with regional disparities. In a similar econometric set-up, Rodríguez-Pose & Ezcurra (2010) find the opposite: GDP per capita tends to be positively correlated with regional disparities. Lessmann (2009) find a positive association using OLS and IV estimation but insignificant effect using GMM estimation techniques. Focusing on a broader set of countries Lessmann (2014) finds an inverted U-shaped relationship between economic growth and regional disparities. At low levels of development GDP growth seems to increase regional disparities, but at later more developed stages GDP growth lowers disparities between regions. Lessmann (2014) however notes that GDP growth in highly developed nations seems to increase disparities once again – essentially finding a N-like relationship between the level of development and regional disparities. Petrakos et al. (2005) furthermore nuances the debate by stating that developed regions grows more during a boom, but less during a recession. The empirics are therefore, to say the least, contradictory. We can, therefore, propose two contradicting theses:

H1: Higher levels of GDP per capita will decrease regional disparities

H2: Higher levels of GDP per capita will increase regional disparities

[something about the time horizon – Myrdal’s theory is medium-term Solow’s is long-term; Williamson and Myrdal agree in the medium-term; what’s the applicability of the theories to developed democracies?]
'Globalization’ has furthermore been identified as a structural trend driving inequalities – both in national level studies (Dreher & Gaston 2008; Alderson & Nielsen, 2002; Mahler, 2004; Stiglitz, 2002) as well as in regional studies (Ezcurra & Rodríguez-Pose, 2013). One way of thinking about the effects of ‘globalization’ on spatial inequalities is to compare the traditional Heckscher-Ohlin model with the new economic geography (NEG) model (Rodríguez-Pose & Gill, 2006). The theoretical disagreement is, however, present both within and between the two theoretical frameworks. One can derive both positive and negative effects of the two frameworks on disparities, depending on the modeling of the economy (i.e. the assumptions of the model). In the Heckscher-Ohlin model, trade can both result in higher or lower disparities. As Rodríguez-Pose & Gill (2006: 1201-1202) formulate it:

“the traditional Heckscher–Ohlin (H–O) based models of trade might well lead, on the one hand, to declining disparities as trade evolves, if capital and investment look for the areas with the lowest cost base and if labor migrates to higher salary zones. Another possible outcome, on the other hand, is rising disparities, since the owners of abundant factors in trading countries will profit and scarce resource owners experience falling returns, at least in the medium term”

Similar divergent predictions can be derived from NEG model. Krugman & Elizondo (1996) and Paluzie (2001) for example disagree on the role of agriculture, which lead them to derive opposite predictions of the effects of trade (Rodríguez-Pose & Gill, 2006): the former argue that trade lowers disparities whereas the latter argues that trade increases disparities. It is therefore somewhat theoretically unclear what effect ‘globalization’ has in regional disparities.

The spatial implications of ‘globalization’ has, however, until recently gained scant empirical testing in the literature (Brühart, 2011). One the one hand, studies tend to find a negative relationship between aspects of globalization and regional disparities. For the US case, Silva & Leichenko (2004) find that trade impact interstate disparities negatively through import and export prices. In a number of case studies, Rodríguez-Pose & Gill (2006) likewise find that trade tends to increase regional disparities. Comparing 47 countries using Dreher’s (2006) KOF index, Ezcurra & Rodriguez-Pose (2013) also find that globalization is negatively correlated with regional
disparities. On the other hand, some scholars argue that trade is not directly causing a rise in regional disparities, but is conditional. Comparing 28 countries using a dynamic panel estimation framework, Rodríguez-Pose (2012) finds that trade is not directly related to higher regional disparities, but is conditioned by a number of country-specific factors. Including up to 172 countries Lessmann & Seidel (2017) also find that the effects of trade on regional disparities are conditional. The empirics, therefore, tend to be more clear-cut relative to the theoretical predictions: globalization seems to increase regional disparities, although the effects can be conditional upon other factors. We can, therefore, expect that aspects of globalization to be positively correlated with regional disparities:

H3: Globalization will increase regional disparities

Finally, the deindustrialization process can drive disparities. A common interpretation is that deindustrialization increases inequality as manufacturing jobs, in general, tend to be more stable and better paying (Huber & Stephens, 2014). As the political economy transforms into a knowledge economy based on service production, low-end and high-end service jobs alike tend to increase. [maybe introduce Fisher & Baumol’s famous deindustrialization theories]. As the location of certain types of jobs – such as industry and service – tend to be concentrated in certain areas, the process of deindustrialization can be expected to have adverse effects on regional disparities, as industry-heavy regions can be more directly affected by the transition towards the knowledge economy. Moreover, high-end service jobs also tend to be located in urban areas, increasing spatial inequalities. To the best of our knowledge, no one has measured the effects of deindustrialization on regional disparities cross-sectionally. Hence, one can derive the following hypothesis.

H4: Deindustrialization will increase regional disparities

[Harrison & Bluestone, 2018]
Institutions and actors

It has become common to view institutions as important for regional development and the role of institutions have gained much attention in fostering regional development – in particular in developing countries (Rodríguez-Pose, 2013). But what role do national institutional arrangements play for regional disparities? One of the most robust findings in the welfare state literature is that the welfare state and social policy is crucial for explaining inequality in the developed democracies (Korpi & Palme, 1998; Bradley et al. 2003; Huber & Stephens, 2014, Hacker & Pierson, 2010; OECD, 2008; Pontusson, 2005). Many of these scholars, often writing from a Power Resource approach, argues that the generosity of social policy and the size of the public sector is determined by the power resources of labor relative to capital (Stephens, 1979; Korpi, 1983). In countries with strong labor unions and well represented leftist parties in government, the welfare state will tend to be bigger and more encompassing, according to this perspective. As the welfare state redistributes money – through either taxes or transfers – a big and encompassing welfare state is, therefore, argued to be an effective guarantor of equality. Taxes\(^3\) equalizes the distribution of wages directly, whereas transfers (such as unemployment and sickness benefits) indirectly equalizes consumption levels through income maintaining. But the welfare state can also affect the distribution of income prior to state intervention – namely by improving the productive capacity of the workforce through education and reskilling. Where taxes and transfers tend to reduce inequality through an equal redistribution of resources education can reduce inequality through a more equal (market) distribution of resources.

These insights, however, tend to be applied to aggregated individual level data and therefore overlooks the regional dimension. The power resources theory can, at least theoretically, also have implications for regional disparities. If a country has developed generous and encompassing social policies, one could then expect lower regional disparities as the welfare state redistributes money between regions through taxation and transfers. If region A in Country x has a higher percentages of unemployed relative to region B in the same country, generous (national) unemployment benefits would then minimize disparities through the two regions by spending

\(^3\) This is particular true for progressive taxation.
relative more on Region A. Countries with big and encompassing welfare states also tend to redistribute more money between regions (Shah, 2007). Take Sweden and United States as an example. If a local government in Sweden runs a structural deficit, a relatively high percentage of that deficit will be equalized through the Swedish inter-municipal equalization system. Not so in the US (or at least to a much lower degree). We can, therefore, expect countries with big and encompassing welfare states to achieve relatively lower degrees of regional disparities.

Some evidence also suggests that countries with bigger welfare states (operationalized as spending) also tend to decrease regional disparities relative to countries with smaller welfare states (Rodriges-Pose & Ezcura, 2010; Kyriacou et al. 2015). As welfare state scholars argue, the welfare state is not only about spending, but also about social rights or “decommodification” in Esping-Andersen’s (1990) terminology. As social rights more directly relate to what the population receives from the welfare state, high levels of welfare generosity are, therefore, also expected to be correlated with lower levels of regional disparities. Applying the welfare state literature to regional disparities, one can, therefore, deduce two hypotheses:

H5: High levels of welfare spending is negatively correlated with levels of regional disparities

H6: More generous social (welfare) rights are negatively correlated with levels of regional disparities

Being a member of the EU and/or the EMU could also affect regional disparities. Kyriacou & Roca-Sagalés (2012), for example, argue that the EU structural and cohesion funds minimize regional disparities in the member countries by alleviating poorer regions through financial support. One could, therefore, expect members of the EU to achieve relatively lower regional disparities. The EMU could likewise affect regional disparities. If a country enters the EMU it can access the benefit of trade within the union. If a region has trouble gaining access to export either within national borders (i.e. exporting goods or services from one region to another with the same country) or through the international market, entering the EMU could increase demand for exportable goods and services in that region improving its overall growth. However, better access to more trade
could also benefit the richest regions in a country, as their comparative advantages would strengthen. The expected effects of entering the EMU is, therefore, somewhat similar to the above-mentioned predictions of the effects of ‘globalization’. We can, therefore, formulate the following hypothesis:

H7: Member countries of the EU will achieve lower regional disparities

H8: Countries participating in the EMU will achieve lower regional disparities

H9: Countries participating in the EMU will achieve higher regional disparities

[more about the importance of the EU – there is a few studies showing diverging results]

Political actors have, moreover, been identified as important for the development of inequalities. In the regional science literature the role of (political) actors, however, tend to be absent⁴. Two prominent schools have dominated in this field: PRT and employer-centered schools. In line with the PRT arguments of the welfare state’s and social policies’ effects on inequality, the PRT school also argues that leftist parties tend to combat inequality relatively more to other political parties (conservative and liberal) (Bradley et al., 2003). As the left historically has tended to represent voters who have stronger preferences for redistribution and equality, left parties can also be expected to pursue equality enhancing policies. It is, however, somewhat unclear if the effect of the partisan variable is directly correlated with equality or if the effect runs through welfare policies enacted by the left. If strong leftist parties are expected to lower inequality in general, one could also expect countries with strong leftist parties to pay more attention to regional inequalities – either through planning acts, housing, investment in infrastructure and the like. Employer-centered models will, however, stress the importance of employers in the development of social policies (Swenson, 2002; Mares, 2003; Hall & Soskice, 2001; Martin & Swank, 2012). Employers pursuing high-end quality production is, in the perspective, dependent on social security to secure cooperation and coordination amongst actors in the economy. As it takes

⁴ [insert footnote on Oates and co.]
considerable coordination amongst employers to push for generous social policies, employers’ endeavors, therefore, have to be coordinated if they want to sustain generous social policy. In countries with strong employer organizations – such as the northern European countries – one could, therefore, expect employers to pursue more generous social policies and hence more equality enhancing policies. If one applies this model to regional disparities, we would then expect countries with highly coordinated employers to pursue more regional equality as it would complement high-end quality production across regions in the same country. Based on these familiar insights one can, therefore, derive the following hypothesis:

H7: Strong leftist parties will lower regional disparities

H8: Highly organized employers will lower regional disparities

[institutional environment is important for firms in CMEs – hence employers have an interest in creating good conditions for cooperation locally].

[insert summary table with all hypotheses]

**Data and Method**

The hypotheses will be tested using time-series cross-sectional (TSCS) data containing 15 developed democracies\(^5\) from 1980-2004. The analysis is based on the unique collection of data on regional disparities collected by Lessmann (2014). The inclusion of countries and timeframe have, therefore, be chosen based on the availability of data in the dependent variables. As the Lessmann dataset only pertains to 1980-2004\(^6\), so this analysis is conducted within the same timeframe. Australia and New Zealand have, furthermore, been dropped from the analysis, as there are too many observations missing on the dependent variables in the two countries if one wants to obtain a strongly balanced dataset.

\(^5\) These are [insert 15 countries here: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Sweden, United Kingdom, United States]

\(^6\) [well some data goes to 2009, but not systematically, explain in footnote]
The main objective of this study is to explain changes in regional disparities over time. As the dependent variable one, therefore, needs a measure that can be used to compared developed nations’ regional disparities. Several measures can be applied. First, OECD (2013) uses the relative difference between the poorest and richest region (measured in GDP) to assess regional disparities. This measure gives a rough measure of extreme regional disparities, however, is also misses important aspects of the development of all the regions in between the poorest and richest regions. Another drawback of this measure is that it does not take different population sizes into account. This is problematic when comparing nations with many and size heterogeneous regions and nations with relative size homogeneous regions (compare e.g. regions in Germany with regions Norway). A second measure is to use the standard deviation of regional GDP (Barro & Sala-i-Martin, 1992). However, this measure is also less optimal when comparing countries with heterogeneous regions and population sizes. Third, some scholars also use a regional Theil-index to capture differences in regional disparities. This measure has several advantages as data, in general, more easily can be acquired, however, a clear disadvantage is that the measure is not good for comparisons, as Theil-values in two different regions is not comparable (Hale, 2003; Lessmann, 2014). A fourth measure is the coefficient of variation (CV) in GDP per capita. This measure is arguably the most widely used in the regional science literature (Williamson, 1965; Lessmann, 2014). Compared with the three other measures, the CV adjusts for differences in the number of units (regions) between nations. The CV measure can be written as follows:

\[
CV = \frac{1}{\bar{y}} \left[ \frac{1}{n} \sum_{i=1}^{n} (\bar{y} - y_i)^2 \right]^{1/2}
\]

Where \(\bar{y}\) is county x’s average GDP per capita, \(y_i\) is the GDP per capita in region i in country x, n is the number of regions. A drawback with the CV measure is that it does not account for differences in population sizes in the regions. Calculating a population weighted measure therefore goes a long way in handling some of these problems. A weighted CV (WCV) measure can be written as follows:
\[ WCV = \frac{1}{y} \left( \sum_{i=1}^{R} p_i (\bar{y} - y_i)^2 \right)^{1/2} \]

Where \( p_i \) is the population in region i. Contrary to the other measures the WCV therefore handles some of the problems related to heterogeneous population sizes in and between the regions in the developed democracies analyzed. Moreover, an advantage of the (W)CV measure is that it satisfies the Pigou-Dalton principle, which simply says that a transfer from a rich to a poor region will result in lower spatial inequality (Lessmann, 2009). The WCV measure has, therefore, been chosen as the dependent variable as it overcomes some of the most central problems in measuring regional disparities between regions in a (time-series) cross-sectional framework.

Lessmann (2014) has also calculated an adjusted Gini coefficient based on the CV measure. This measure is a nice complement to the CV measure, as the Gini measure focuses on regional income inequality\(^7\), whereas the CV measure focuses on disparities in production output (GDP). Using both measures, one can, therefore, differentiate between regional disparities in production and income. As the data in Lessmann’s data set is available in TSCS format it, furthermore, allows one to track the changes in these two measures over time, which is crucial for understanding long-term developments in regional disparities. The WCV\(^8\) and Gini measures have, therefore, been chosen as measures for regional disparities.

As explanatory variables, measures for structural trends, institutions, and actors are furthermore included. The three main structural trends are measured as follows:

\textit{Economic growth} is measured as the logarithm of GDP per capita. This measure catches the long-run level of development in the economy. The percentage of GDP growth per capita from year \( t_{-1} \) to \( t_0 \) has also been included to incorporate short-term effects of GDP on regional disparities, however, this measure proves insignificant in all model and is therefore not included in the presented models.

\(^7\) The usual critique of Gini index, however, also applies to this measure.

\(^8\) Using the CV measure instead of the WCV, however, does not change the main conclusions reach.
Globalization is trickier to measure as the concept is multidimensional (e.g. Held, 1999). Here two approaches are followed. One is to use Dreher’s (2006) often used measure of economic globalization – the so-called KOF index – which is a composite index including measures for restrictions (tariffs and the like) and actual flows (trade and the like). This measure has been widely used in the comparative political economy literature (Busemeyer, 2009; Jensen, 2011), as well as in the regional disparity literature (Rodriguez-Pose, 2012). The other approach is to measure ‘globalization’ as total trade (as the percentage of GDP) or as capital account openness (Quinn & Toyoda, 2008). This approach has figured most commonly in the comparative political economy literature until recently and has also been widely used in the regional science literature (Takahashi & Takatsuka, 2013). The two approaches have different strengths and weaknesses. Measuring economic globalization using Dreher’s KOF index allows one to assess the overall effects of ‘globalization’ on regional disparities. As such, this measure is highly useful for understanding the combined effects of ‘globalization’. However, as some aspects of globalization are quite different – such as trade and capital mobility – the advantages of the second approach is that it allows one to differentiate between particular effects. A number of studies have for example argued that increases in trade and capital mobility have vastly different effects on the political economy (Garrett, 1998; Busemeyer, 2009).

Deindustrialization is conventionally measured, as formulated by Iversen & Cusack (2000), by “100 minus the percentage of agricultural and industrial employment as a percentage of the working-age population”. This measure captures the overall transformation of labor markets and is, therefore, suitable for analyzing the structural effects of labor market changes on the political economy (Iversen, 2001).

The institutional variables are divided into measures that capture the effects of the welfare state and measures that catch the effects of the EU and EMU.

The welfare state is operationalized using two different measures. The first set of measures captures dimensions of welfare rights and include unemployment benefits and a slightly modified
measure of Esping-Andersen’s (1990) decommodification index (Scruggs et al, 2014). [Insert exact measure of the two variables here] The second measure is a classical spending variable that measures public social spending as a percentage of GDP. The EU and EMU variables are simply constructed as dummy variables: year of membership is coded as 1 if not 0.

The actor-oriented variables are leftist parties and employer organizations. Left parties are measured as the cumulative number of left parties in government since 1946 [exact definition]. The employer organization variable is taken from Martin & Swank (2008) who have developed an employer organization index that captures some of the most central aspects of how private interest is organized. The variable is a standardized composite measure measuring employer organization as the “presence of national employers’ federation, the peak federation’s powers over members, and policy-process integration of employers into national policy-making”. The measure is therefore ideal for testing claims derived from employer-centered models.

Two controls are, furthermore, included: The old-age dependency ratio and the unemployment rate. The old-age dependency ratio can impact or distort changes in disparities as the elderly population cannot be assumed equally distributed across regions. The effects of the old-age dependency are however debatable. On one hand, having a high number of old people in the region can increase regional disparities as there is a higher cost involved with housing an elderly in the region. On the other hand, some elders have high savings which can provide capital investment for the area or region and hence stimulate production. What effect is strongest is theoretically unclear. The unemployment rate can also impact regional disparities as some regions suffer from more sticky unemployment. If region A on average has higher unemployment than region B, a fair assumption would be that region A, all else equal, would be poorer.

[insert table with summary statistics for all explanatory variable right about here]
**Econometric framework**

As shown in figure xx [not yet shown] regional disparities have been on the rise since the 1990s in the developed democracies, which could indicate problems with trend stationarity in the data. An augmented Dickey-Fuller test testing for trend stationarity, however, shows no problems with non-stationarity – the same procedure testing for drift indicates similar non-problems with unit roots. One can, therefore, proceed with caution and use a static level set-up, which is ideal for analyzing long-term structural trends (Huber & Stephens, 2001). Static level models, however, tend to suffer from multicollinearity. A Variance Inflation Factor test indicates no major inflated values in the variables in the current set-up.

A Wooldridge test moreover indicates problems with serial correlation in the error term, why all regressions are run with panel corrected standard errors (Beck & Katz, 1995) [Prais-Winsten transformation?]. A lagged dependent variable, is, however, not included, as it in the current set-up is to closely correlated with the dependent variable and hence eliminates much of the explanatory power of the other independent variables (Achen, 2000).

The hypotheses are tested following two different strategies. First, when assessing the structural factors both country and year fixed effects are included. Country fixed effects control away a number of unobservable heterogeneity between countries and therefore eliminates some bias (Wooldridge, 2014). Year fixed effects moreover control away common shocks affecting all countries in the same year (e.g. an economic crisis) – effects that cannot be attributed to the structural or institutional variables. The equation estimating the effects of the structural hypotheses can be written as follows:

\[
y_{it} = \beta_0 + \beta_1 x_{it} + \cdots + \beta_k x_{ki,t} + D_i + \varnothing_t + e_{it}
\]

Where \( y \) is the dependent variable, \( x \) the independent variable(s), \( D_i \) is the unit dummies, \( \varnothing_t \) is the year dummies, \( e \) is the error term.
Second, when estimating the effects of the institutional and actor-oriented hypotheses, including country fixed effects are, however, not a viable solution as most institutional variables tend to be either time-invariant or only slowly changing over time. As country fixed effects control away differences in the variables, most of the variance in the institutional variables are eliminated (Plümper et al., 2005; Beck & Katz, 2001). This is, in particular, true for dummy variables, where it is silly to include country fixed effects, but also with the welfare measures (Beck & Katz, 2001). As we moreover are most interested in the differences between the institutional variables one cannot include country fixed effects. The institutional models are therefore only run with year fixed effects to control away common chocks. The equation estimating the institutional and actor-oriented models can be written as follows:

\[ y_{it} = \beta_0 + \beta_1'x_{it} + \cdots + \beta_k'x_{k, it} + \phi_t + e_{it} \]  

Where the unit dummies are eliminated. All independent variables are lagged by one year, as one can expect time-wise transitory effects.

**Findings**

Table 1 shows the results from estimating the structural models (i.e. H1-H5). First, increases in GDP per capita seems to increase regional disparities, as the variable is positively associated with both disparity measures. This renders support to the predictions derived from Myrdal’s cumulative process theory – and hence to H1. Trade openness is furthermore insignificantly correlated with both measures, indicating that there is no direct effect of trade on regional disparities. Capital mobility, however, seems to drive disparities – both in GDP and the Gini measure. Finally, the overall process of economic globalization is negatively positively with regional disparities – but only in GDP. The effects of ‘globalization’ on regional disparities, therefore, depend on the aspect of globalization as well as the measure for regional disparity. Deindustrialization is also systematically and positively correlated with regional disparities rendering support to H3. The old-age dependency ratio is furthermore negatively correlated with disparities in GDP. Unemployment
is somewhat surprisingly insignificant in most models, although the estimate is positive as expected.

### Table 1. Structural determinants of regional disparities in developed democracies.

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<td>Gini</td>
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<td>(0.240)</td>
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</table>

| N        | 360       | 360       | 360       | 360       |
| Year fixed effects | Yes  | Yes  | Yes  | Yes  |
| Country fixed effects | Yes  | Yes  | Yes  | Yes  |
| $R^2$    | 0.858     | 0.820     | 0.883     | 0.824     |

Note: Standard errors are in parenthesis. * 0.1; ** 0.05; *** 0.01.
Table 2. The effects of institutions and actors on regional disparities in developed democracies.

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Moving on to the test of the institutional and actor-oriented models, table 2 shows the results from estimating equation 2. First, the welfare theses seem to be supported. Political economies with high levels of unemployment generosity and decommodified welfare states tend to have lower regional disparities in Gini relative to countries with lower levels. This also seems to be the case for the spending variable, although it is only statistically significant at the 0.1 level. None of the welfare variables are, however, significantly correlated with regional disparities in GDP.

The EU is moreover insignificantly correlated with both measures if disparity. Being a member of EMU, however, tend to lower regional disparities in GDP.

Stronger left parties in government seem to lower the level of regional disparities in Gini, relative to countries with weak left parties. The same seems to be true for the organization of employers. Political economies with well-organized employer organizations seem to lower regional disparities in Gini relative to countries with more fragmented private interest. In sum, generous social policies, strong leftist parties, and well-organized employers seem to lower regional disparities in Gini – but not in GPD. Members of the EMU, however, tend to have lower levels of regional GDP.

How robust are these results? The models seem capable of explaining a substantial part of the changes in regional disparities in the developed democracies when controlling for a host of factors, as is already done. None of these models, however, take the issue of past levels of disparities into account. An important robustness test is therefore to include past levels of regional disparities. As a number of scholars have argued, regional disparities tend to be persistent over time (Blanchard & Katz, 1992). One, therefore, needs to take persistent in regional disparities into account. A strong robustness test is, therefore, to assess if the models can explain the development in since 1980 when controlling for persistence.

Including a one year lagged variable does not allow for sensible estimation of the effects of the independent variables on the dependent variable as it can “suppress” too much of the independent variables explanatory power (Achen, 2000). One way of controlling for persistence in regional disparities would then be to include a 5-year lagged dependent variable, to account for
medium-term persistence. Another strategy is to include the logarithm of the dependent variable in the year 1980 and extrapolate it throughout the analyzed period\(^9\) to assess the long-term effect of past levels of regional disparities. Both strategies are followed, largely giving the same results.

The robustness test is all included in the auxiliary material [not yet shown]. First, the conclusions reached from the structural models is similar when controlling for past levels of regional disparities. Deindustrialization, GDP growth, and capital mobility still seem to drive changes in regional disparities. The structural models, therefore, seem rather robust towards the inclusion of past levels of regional disparities.

The institutional and actor-oriented models are, however, less robust. The EMU variable becomes insignificant. The left parties and employer variable also become insignificant indicating no direct effects on changes in regional disparities when controlling for persistence in regional disparities. The results from the welfare models, however, remains similar. Generous social policies seem to explain differences in the development of regional disparities between the developed democracies. Countries with relatively strong and generous social policies also seem to combat regional disparities in Gini relatively better than countries with less generous social policy. Most of the institutional and actor-oriented models, therefore, seem less robust. The most consistent finding, therefore, is that a big and encompassing welfare state, in general, tends to lower regional disparities in income.

The results, therefore, seem to indicate that the actor-oriented models are unable to explain changes in regional disparities. This is most likely true if one interprets the results as direct effects of left parties and employers on the change in regional disparities. However, as left parties and coordinated employers have been crucial for the development of the welfare state, the effect from the actor variables may go through the effects of the welfare state. It then becomes a question about the effects of the mobilization of left parties and employers on the welfare state. This is a highly debated and complex question (Svensson, 2002; Korpi, 2006). A more fine-grained

\(^9\) This variable can however not be calculated in the models with unit fixed effects, due to the time invariant nature of this variable.
assessment would then be to state that the effects of left parties and employer organization run through the welfare state. Actors can therefore arguably be crucial for the creation and development of social policies, but once social policies are in place, actors do not seem to have any direct effects on regional disparities.

[the effects of the welfare state on inter-personal inequality may actually run through the regional level – some studies even find that 1/3 of personal income inequality is explained by regional disparities!]

Conclusion

This study finds support for the claim that regional disparities in the developed democracies, by and large, are driven by structural trends. However, not all structural trends commonly assumed to increase inter-personal inequalities also increase regional disparities. First, although economic globalization, in general, seems to increase regional disparities in GDP, increasing trade between nations does not seem to drive changes in regional disparities. Instead, capital mobility has a negative impact on regional disparities in GDP and income. Increases in the level of GDP per capita, furthermore, seems to impede differences in production and income between regions in the developed democracies. Finally, the deindustrialization process also seems to drive changes in regional disparities. The rise in regional disparities in the developed nations since 1980 can, therefore, to a large extent be explained by structural factors.

Behind these depressing structural trends towards increasing regional disparities, however, seems to be a less bleak story in some of the developed democracies. In the study, it is argued that some of these adverse effects on regional disparities can be mitigated by the welfare state. In nations with generous welfare rights and high welfare spending, regional disparities in the Gini measure have grown relatively less aggressively since 1980 compared to nations with lower spending levels and less generous welfare states. In particular, unemployment generosity seems to counter some of the adverse effects from the structural trends on regional disparities.
The article moreover finds little support for the claim that members of the EU or EMU can minimize their regional disparities.

Likewise, only scant support is found for the claim that strong leftist governments and coordinated employer organizations can mitigate rising regional disparities. Instead, it is argued that the effects of these actors run through the welfare state, as they arguably are crucial for understanding the generosity of the welfare state.

In sum, the rise in regional disparities in the developed democracies since 1980 has largely been driven by structural trends, but a generous and encompassing welfare state can mitigate some of the adverse effects from the structural trends. Generous social policy, however only seems, to lower the level of regional disparities in income.

[something about the importance human capital and investment in education]
References


