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Institute for International Political Economy Berlin

Income inequality and the welfare state – How redistributive is the public sector?

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Working Paper, No. 29/2013

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Income inequality and the welfare state - How redistributive is the public sector?*

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Abstract

This paper explores the nexus between the phenomenon of increasing income inequality and redistributive effects of the public sector. In an empirical analysis of seven OECD countries the redistributive effect will be examined by measuring the difference between inequality of market incomes and disposable incomes. Moreover, this paper will try to estimate the redistributive effect of public goods. The period of investigation is between the mid 1980s and the mid 2000s. The paper suggests that the public sector still reduces market income inequality significantly but to a lower extent than in the previous decades and with greater variation across different welfare regimes. Public goods further reduce income inequality considerably. However, the estimation and allocation process of these in-kind benefits involves several methodological issues that need to be taken into account when evaluating the empirical results. Furthermore, the empirical analysis indicates that market forces drove greater income inequality until the mid 1990s, and structural changes in tax and transfer systems reinforced this trend from the mid 1990s onwards.

Keywords: Income inequality, welfare state, public sector, redistribution, tax and transfer systems, public goods, market and disposable income

JEL Classification: H23, H41, H53

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Introduction

Policy debates are increasingly characterised by concerns about widening income gaps. In the past three decades, most of the OECD member countries area experienced rising income inequality. Taking a look at one standard measure of inequality, the Gini coefficient, one can observe a substantial increase between the mid 1980s and the mid 2000s (OECD 2011). Income inequality is significantly higher in English-speaking countries but it has also occurred in countries with lower income inequality more recently.

The welfare state has been challenged by global competition (Salverda et al. 2009). The outbreak of the financial crisis in 2008 turned into a crisis for the public sector with a perceived necessity for the consolidation of public finances (Andersen 2012). It is therefore discussed how the welfare state will or should look like after the great recession. Outcomes will be determined by whether the welfare state is regarded as an anathema to economic competitiveness or social policy can be seen as a productive factor. Economic literature tends to focus on the efficiency function of the welfare state and hence neglect social policy goals as well as its redistribution function (Barr 2012). Many economists thus propose a leaner and more efficient welfare state (Atkinson 2001)¹. Therefore, we have seen two parallel developments: Increasing income inequality on the one hand, and a dismantling of the welfare state on the other hand.

In this context, a comparative analysis of the distributive effect of different welfare regimes on income inequality is of central relevance. Analysis of income redistribution allows governments to learn what works ‘best’ in altering income disparities (OECD 2008). This working paper intends to address two questions: Starting with the main question of ‘how redistributive is the public sector?’ the purpose is to compare different welfare regimes and their redistributive outcomes. The difference between inequality of market and disposable income will thereby serve as one indicator of the redistributive effect of tax and transfer systems. The second question is: How does the government affect income distribution of disposable household income through the provision of *public goods*? As a result, the analysis will be based on three channels of income redistribution: Tax and transfer systems as well as public goods. This is an extension of the existing literature, which tends to begin and stop by comparing the difference in inequality levels before and after taxes and transfers (Esping-Andersen and Miles 2009). Whereas we might observe a more equalising effect in some countries, others produce less equality. Esping Andersen and Miles (2009, p. 639) state:

¹ However, already in the 1990s, welfare states began to restructure with a shift away from passive social protection and job security to employment security and a social investment strategy that aimed at reinforcing human capital (Cantillon 2011; Hemerijck and Vandenbroucke 2012).

“Because it taxes and spends, the welfare state is by definition redistributive, but the degree to which this is associated with more equality is an open empirical question.“

The standard typology of the three welfare states developed by Esping-Andersen (1990) will be applied to broadly cluster different OECD states for comparison. The channels of income redistribution will be first theoretically discussed and the redistribution performance of the three welfare regimes indicated. The period of investigation will be between the mid 1980s and mid 2000s for tax and transfer systems and 2007 for public goods which is related to the issue of data availability and comprehensiveness of datasets among different countries. Furthermore, the research is related to high-income countries since the developing world differs in fundamental ways and therefore should be treated separately (Salverda et al. 2009, S. 3–4).

The selection of the seven OECD states applied in the empirical part of this working paper can be justified on two major aspects: First, all chosen countries report their country statistics to the OECD database which is recognised in the academic literature as providing harmonised data sets, thereby overcoming shortages of earlier studies (Salverda et al. 2009). Second, the chosen countries illustrate welfare regimes that have been established over a long time.

Many authors include the aim of restoring full employment or increasing labour productivity into welfare state analysis (Esping-Andersen 1990; Barr 2012; Dingeldey 2007). Employment and labour market policies play a significant role in reducing market income inequality but due to reasons of space this pillar of the welfare state will be only briefly discussed. Moreover, the focus is on the impact of the welfare state on household income inequality and thus on the empirical study of personal income distribution. The goal is to get the ‘big picture’. Therefore, this working paper does not focus on the detailed characteristics of the various tax and transfer programs of the chosen OECD countries.

First, this working paper will discuss the concept of the welfare state and narrow it down to the locus of the analysis as well as introduce the theoretical framework developed by Esping-Andersen. Second, the development of market and disposable income will be illustrated and driving forces briefly mentioned. Third, the redistributive effect of tax and transfer systems as well as public goods will be estimated. Finally, this paper will draw conclusions and highlight policy challenges.

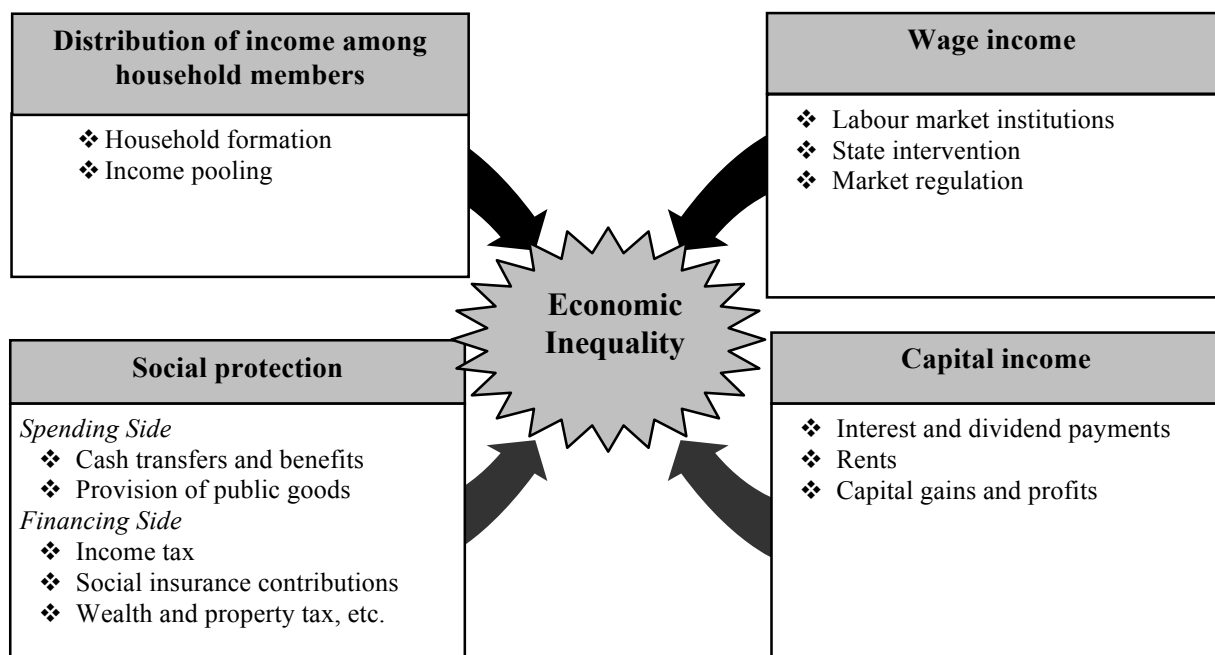
A. Theoretical debate of the welfare state

Barr (2012, p. 7) states that: “The concept of the welfare state...defies precise definition”. In his view, welfare derives from at least four sources: labour market (wage income and occupational welfare provided by firms), private provision (private insurance and savings); voluntary welfare (family and outside) and the state. Therefore, he extends state activities to a broader concept of welfare sources in an economy and shows that it is difficult to draw a line on such encompassing activities. Broadly speaking, the welfare state exists to enhance the welfare of people (a) who are weak and vulnerable, by providing social care (b) are poor, through redistributive transfers, (c) by organising cash benefits for people who are neither poor nor vulnerable but providing insurance and consumption smoothing over the life cycle, and accommodate medical care as well as education (Barr 2012, p. 8). This definition of the welfare state is comprehensive and looks at the various sources of individual welfare as well as defines the objectives in a precise manner. It also indicates its role in reducing income inequality.

The role of the welfare state in economic inequality

Salverda et al. (2009, pp. 10-12) sketch out starting points of an analytical framework of economic inequality that includes the important role of the welfare state. The pillars of this framework are illustrated in Figure 1.

Figure 1: Analytical framework of economic inequality



Source: Figure based on Salverda et al. (2009, pp. 10-12). Own illustration.

Figure 1 considers various aspects of economic inequality. Despite the static appearance, the four pillars are all intertwined, which makes it highly difficult to identify and allocate single influences. At the core of economic inequality is the distribution of income among and also within households. Here, income pooling and household formation play an important role. The main income source for the household is obtained through the labour market. Labour market institutions, with trade unions and employer associations as the key actors, are an important institutional factor that impacts on the dispersion of wages and salaries. The state can also significantly change the distribution of income by implementing a certain legal framework regulating the market. Another important component of household income is derived as a return on capital. This includes dividend and interest payments but also rents and profits. All these components primarily affect the distribution of market income.

Salverda et al. (2009) find that social protection is particularly relevant in household income inequality, which they define as cash transfers distributed by the government. In addition, the provision of public goods, foremost health and education are key influences on human capital and therefore has an impact on income inequality. As Salverda et al. (2009, p.12) state: "...and the relationship between these social goods and economic inequality at individual and aggregate level is an increasingly important part of the picture". Both points illustrate what kind of scope governments have on the spending side. On the financing side, the structure of the income tax and social insurance contributions levied on families or individuals will determine the level of potential redistribution through the state. Here, the progressivity of which income tax is raised will influence the shape of the income distribution. In addition, the state can gain tax revenues by implementing taxes on wealth and property etc. Therefore, two factors are of crucial importance: How is the redistribution system financed and how are benefits structured.

Views and functions of the welfare state

According to Esping-Andersen (1990) there are two views on the welfare state. The broad view sets the welfare state into the bigger picture of the political economy of a given state. It thus focuses on the role of the state in managing and organising the economy as a whole. This may include price regulation, housing policies, regulation of the work environment, job-security legislation etc.

The narrow view restricts its analysis on social amelioration policies such as income transfers and social services. According to Lindbeck (2008) this comprises two types of government spending: Cash benefits to households and subsidies or direct government

provision of human services. Figure 2 illustrates some (but not all) of the various functions of the welfare state:

Figure 2: Three pillars of the welfare state

Employment	Regulation	Economic Inequality
<ul style="list-style-type: none"> ❖ Policies are targeted at restoring or achieving full employment ❖ Public employment ❖ Policies aim at enhancing labour productivity ❖ The government subsidises strategically important industries (e.g. renewable energy) 	<ul style="list-style-type: none"> ❖ The government introduces a legal wage floor ❖ Policies are targeted to maintain decent conditions for employees ❖ The government initiates rules for including certain target groups (women, elderly) into the labour market 	<ul style="list-style-type: none"> ❖ The public sector directly intervenes in the income distribution through tax and transfer systems (equality of outcomes) ❖ The government provides public goods such as health or education (equality of opportunities) ❖ Indirect taxes on transactions, energy usage etc.
<i>Income redistribution</i>		

Source: Figure based on Esping-Andersen (1990) and Lindbeck (2008). Own illustration.

Figure 2 shows three pillars of the welfare state, which encompasses employment, regulation as well as economic inequality. In all three areas the welfare state intervenes through policy making, strategic planning, distributing its given budget to stimulate the economy or finance social transfers. The first pillar of employment is a very important area where the welfare state can reduce income inequality among the working age population. For instance, increasing employment rates can effectively offset widening wage dispersion. The second pillar of regulation expresses how the welfare state can set a framework for the economy to support the participation of target groups in the labour market or to establish wage compression from below by setting a suitable minimum wage.

This working paper takes a narrow view on the welfare state and hence primarily considers the third pillar of how the welfare state can affect income distribution. The public sector² is thereby defined as the tax and transfer system of a given country. However, social amelioration policies also include the provision of public goods. Conclusively, analysis of the redistributive effect of the welfare state should examine all three channels.

² Stiglitz (2000, pp.16-18; 27) defines the public sector as all myriad activities the government is engaged in, for instance the redistribution of income or the production of public goods.

1. Channels of redistribution

Esping-Andersen (1990, pp. 18-21) cites the first comparative studies which assume that the size of social expenditure equally reflect a state's commitment to welfare³. This pure quantitative approach can be highly misleading. The redistributive effect will also depend on the overall set up of social policies and target groups. Esping-Andersen (1990, p. 1) thus states: "The existence of a social program and the amount of money spent on it may be less important than what it does". In this context, it is important to crystallise different channels of redistribution. Figure 3 gives an overview of different channels.

Figure 3: Channels and Determinants of income redistribution



Source: Based on Salverda et al. 2009, Stiglitz (2000), OECD (2008, 2011). Own illustration.

The channels of redistributing income in a given welfare regime are diverse and the overall effect of reducing income inequality will be determined by the distributional profile of governmental policies. On the spending side, the government can redistribute income through transfer payments⁴ as well as through in-kind benefits⁵.

Social insurance contributions and income taxes can be levied on individuals to finance redistribution. They illustrate the financing side of the welfare state. Other income sources or tax revenues are property tax, wealth tax, or indirect taxes such as value added tax. They are, however, not accounted for in the redistribution analysis of this paper. OECD revenue statistics show that wealth and property taxes became less important and revenues

³ In fact, often it is assumed that countries are dressed in this single dimension. Little research has been done about how market regulation and income inequality relate to each other (Hopkin and Blyth 2011).

⁴ Stiglitz (2000, p. 27) defines transfer payments as "payments that transfer money from one individual to another – but not in return for the provision of goods or services". They include for instance pension or unemployment payments.

⁵ In-kind benefits are public services such as medical care or food supply in schools. Thus, these benefits are not handed out in cash but received as a good or commodity (Stiglitz 2000, pp. 33-34).

from value added tax have increased over the last decades (OECD 2011, p. 267). Therefore, already at this stage of the process changes in income redistribution might have occurred⁶.

How (to what extent) these channels of redistribution will affect income inequality depends on their distributional profile. Transfer payments as well as benefits can be targeted at poorer households' or universally provided to all income groups. The impact of both is not straightforward and depends on size and progressivity⁷. A distinct welfare regime might only provide a minimum basic level of social protection. However, since these benefits are provided universally they might achieve a more equal income distribution. Under a means-tested system, benefits paid to those with fewer economic resources might be greater but also tend to be more restrained and hence are less stabilising in case of an unexpected income loss. Countries with targeted programmes tend to spend less than others (OECD 2008, pp. 99-102).

Examining social insurance contributions one must make a distinction between interpersonal redistribution and intertemporal redistribution. Barr (2012) labels them horizontal and vertical redistribution. The latter one includes a progressive tax system and social benefits aimed at benefiting the least well off. Therefore, it has also been coined 'Robin Hood' function. One example is policies that are characterized by universal provision, with entitlement based on residence or need and are financed through general taxation. Horizontal redistribution is rather concerned with reallocating income across the life cycle through social insurance. It has been called 'Piggy Bank' function. Earnings-related social contributions, for instance, are based on social insurance principles with entitlement based on contribution and funding through employer and employee social security contributions. They are thus generally more concerned with maintaining living standards or status rather than redistributing income between the rich and the poor.

An equalising effect of redistribution will thus primarily occur in the vertical or interpersonal redistribution⁸ rather than in the intertemporal or horizontal redistribution. In this context, welfare states can have different objectives and hence achieve different outcomes of redistribution.

⁶ Whereas it is generally assumed in public debate that tax-benefit systems reduce inequalities by transferring resources from richer to poorer households, a progressive tax system in itself is redistributive without necessarily spending the proceeds on transfer payments (OECD 2011).

⁷ Progressivity refers to the profile of benefits in comparison to the distribution of market or disposable incomes (OECD 2008, p. 100). The underlying question is to what extent they are received by different income groups – do low income households receive more than high income households?

⁸ From a macro-economic perspective, any transfer that is not matched by a counter-transfer within the same time period constitutes an interpersonal transfer (Becker 2003, p. 30). Redistribution can be distinguished as 'pure' redistribution between rich and poor done by tax and transfer systems and 'quid pro quo transfers' via the social insurance system consisting of a mixture of interpersonal and intertemporal redistribution with a focus on the latter one (Hauser and Becker 2003, p. 2).

2. Standard typology of different welfare regimes by Esping-Andersen

In 1990, Esping-Andersen laid down an encompassing standard typology of three different welfare states that he called 'the three worlds of welfare capitalism'. The main difference lies in the diverse arrangements of the three cornerstones of the welfare state triangle: state, market and family (Esping-Andersen 1990). His analysis is based on extensive empirical research examining welfare regime variation and has been widely applied, discussed and criticised in a vast body of literature. According to his analysis, there are: (1) Social Democratic; (2) Liberal; (3) Corporatist or Conservative⁹ (Esping-Andersen 1990, pp. 26-29). Each of these welfare regimes developed in a historically unique path and hence follows its own logic in organizing and arranging social policy (Schmid 2010, pp. 99-103). They create welfare schemes, entrance barriers and inequality to a different extent. The main features¹⁰ of each type can be seen in table 1 below which compares the three different welfare regimes according to four characteristics: De-commodification¹¹, Residual Welfare, Private Welfare and Re-distribution.

Table 1: Types and dimensions of the standard welfare states by Esping-Andersen

Feature	Liberal	Conservative	Social Democratic
De-commodification	Weak	Moderate	Strong
Residual Welfare	Strong	Strong	Weak
Private Welfare	High	Low	Low
Re-distribution	Weak	Weak	Strong
Countries	US, UK	Germany, France	Sweden, Denmark

Source: Schmid (2010, pp. 99-102). Own illustration.

In a liberal welfare regime, it is generally assumed that the government should rather support market outcomes than protect its citizens from it. It favours minimal public interventions due

⁹ Later on, Esping-Andersen renamed the conservative / corporatist regime 'Continental Europe' because these countries are somewhat more heterogeneous (Esping-Andersen and Miles 2009).

¹⁰ The three distinct welfare regimes also pursue different labour market policies regarding employment, wage setting, etc. which are not considered here.

¹¹ A concept that relates to Karl Polanyi's (1944) argument that labour, land and money are 'fictitious commodities' because they do not illustrate commodities in the meaning of being produced to be sold. Nevertheless, they are commoditized to make capitalism work. He argued for a de-commodification which meant that these three have to be protected from the market by the social welfare state.

to the implicit assumption that the majority of citizens are able to obtain adequate welfare from the market. One example includes the subsidisation of private welfare schemes via tax deduction, another one public benefits targeted at the neediest (which are usually based on tight eligibility requirements) to alleviate poverty. As a result, de-commodification is weak; the role of social programmes only residual; privatisation of welfare schemes favoured; and a central role is given to the market. The implications for re-distribution might be the following: (A) There is little redistribution, pro-market bias and targeting should lead to weak distribution outcomes; (B) Redistribution might occur through providing public goods at a minimum level rather than through an encompassing tax and transfer system. This model is presumably best fitting countries like the US or the UK.

In a social-democratic regime, the emphasis is on universal inclusion and a comprehensive definition of social entitlements. The role of private welfare markets is marginalized and targeted social assistance is not playing a crucial role. The government is given a central role. It is committed to equalise living conditions of the highest standard and unique in its approach to 'de-familiarising' welfare responsibilities. It achieves strong de-commodification. The implications for redistribution might be regarded as such: (A) Strongest re-distributional effects expected; (B) Taxes play a major role in financing a comprehensive redistribution system. This model is presumably existent in countries such as Sweden or Denmark.

The conservative or corporatist model is influenced by its conservative origins. Here, foundations are built around mandatory social insurance but often with the aim to maintain status differentials or preserve accustomed living standards. Social insurance payments are earnings-related and hence require life-long employment. Therefore, this welfare regime provides rather low benefits for those outside the insurance system (insider-outsider problem). The preservation of family-hood has played a vital role in this regime and led to the principles of subsidiarity and solidarity. The role of private welfare is marginal and de-commodification only achieved on a moderate level. For re-distribution the implications might be the following: (A) Re-distributional effects expected, in between the liberal and social democratic model; (B) Dominance of earnings-related mandatory insurance implies a focus on horizontal distribution. This model is supposedly present in countries such as Germany or France.

However, countries that are clustered under the same welfare regime might still differ significantly in their performance of certain policy areas (Schmidt 2010). Also, the standard typology of the three welfare states was criticized for not including countries of

south Europe adequately (Arts and Gelissen 2002). Italy or Spain should be rather viewed as a rudimentary welfare state instead of being conservative or corporatist.

To sum up, Esping-Andersen delivered a very broad framework to cluster countries into different welfare regimes and it has been widely applied in welfare state research. It can be expected that liberal welfare regimes will reduce income inequality to a lesser extent. In contrast, the mix of policies existent in the Nordic countries can be regarded to produce most equality. The continental European model remains in the middle. Nevertheless, the framework of Esping-Andersen is too broad to explain specific changes and redistributive outcomes. This is due to two reasons: First, the concept does not equally integrate policy areas but is primarily based on differences in unemployment and welfare benefits. As soon as one analyses health care (for instance in the UK), the standard typology does not hold true. Second, the standard types are based on analysis that does not take into account structural changes of the welfare state over the last two decades or so. For the purposes of this paper it is useful to cluster the different OECD states broadly, admittedly ideal types. As mentioned beforehand, the aim is to analyse the ‘big picture’ without being able to focus on policy details.

B. Rising income inequality in OECD countries since the 1980s

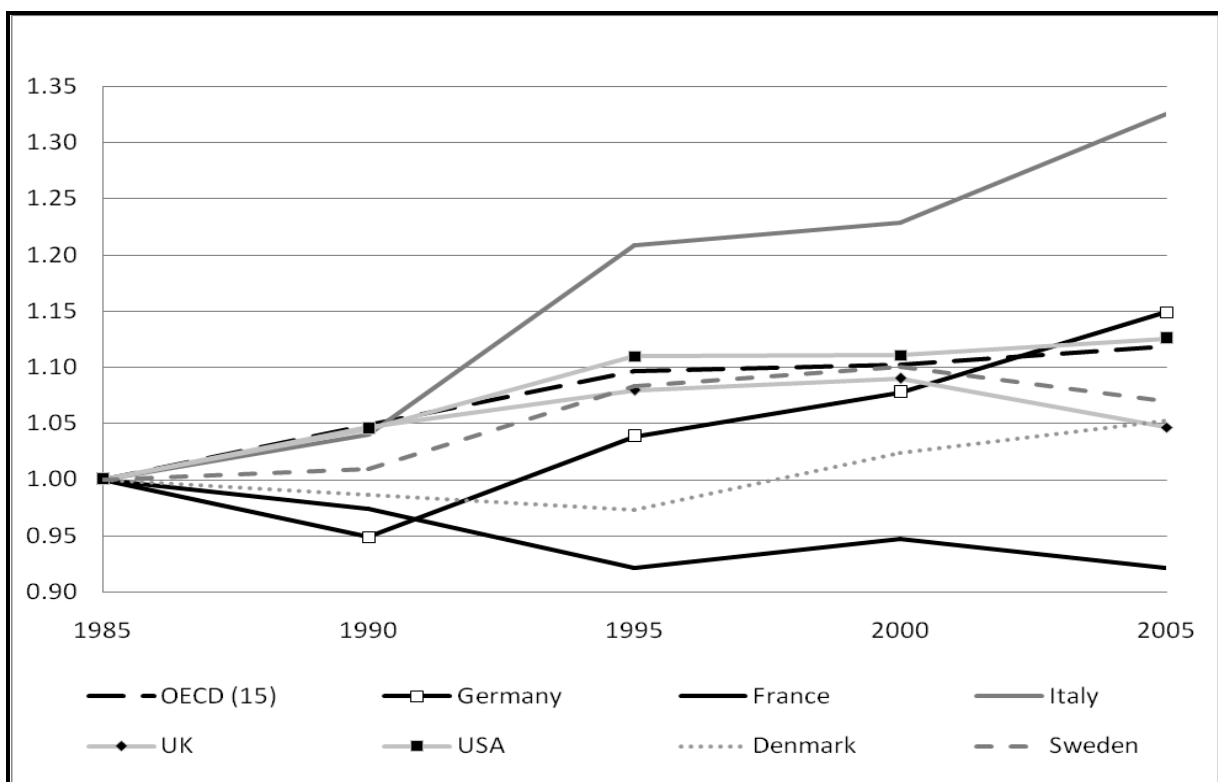
According to Hauser (2003, pp. 10-13) the main aim of distribution analysis of economic welfare is to estimate the personal income distribution. This is done in a multistage process. Market income is defined as gross income before taxes and transfers (OECD 2008). According to the recommendations made by the Canberra Group¹² market income should include all types of gross earnings such as gross income from dependent employment, gross income from self-employment, and gross income from private pensions or capital income (including rents, dividends or interest payments). Disposable income takes market income as the basis, subtracts direct taxes as well as employee’s contribution to social insurance and then adds back social security benefits, income transfer or other cash income. Figure 4 below illustrates the Gini coefficient¹³ in market income between 1985 and 2005 for seven OECD

¹² This is an international expert group on household income statistics (cited in Brandolini and Smeeding 2009, p. 74).

¹³ The Gini coefficient (Stiglitz 2000, pp. 120-124; OECD 2008) is a concentration coefficient of income that ranges from zero (perfect equality - when each share of the population gets the same share of income) to one (perfect inequality - when all income goes to the individual with the highest income). It is defined as the area between the Lorenz curve (which plots cumulative shares of the population against the cumulative share of income they receive) and the 45-degree line with perfect income equality.

countries¹⁴. It thus outlines the effect of market forces and changes in labour market institutions on income inequality. The development of absolute values for the individual countries between the mid 1980s and mid 2000s can be seen in table 2. In our chosen sample, the US and UK represent liberal welfare regimes, Sweden and Denmark illustrate the social democratic regime and Germany and France the conservative regime. Italy is a particular case that technically belongs to the conservative regime but rather illustrates a rudimentary welfare state due to the strong role of family provision instead of comprehensive governmental transfer payments.

Figure 4: Changes of Gini coefficient in market income, 1985-2005, Index 1985=1



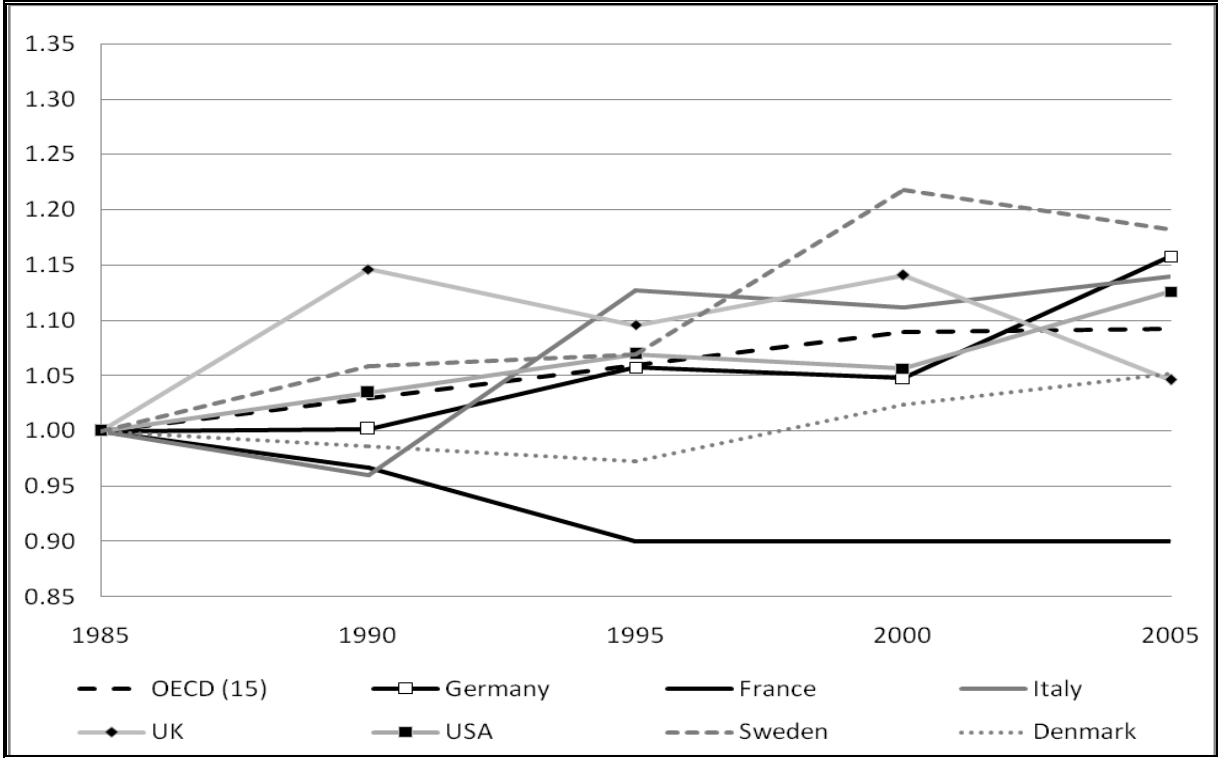
Source: OECD (2008). Own illustration.

On OECD average, market income inequality rose markedly by approximately eleven index points between 1985 and 2005. This development is particularly pronounced in Italy: The Gini coefficient accelerated by over 30 index points between 1985 and 2005. Since the 1990s, market income inequality also rose rapidly in Germany and Denmark. In the US and UK market income inequality rose only until the mid 1990s. After that time period the Gini coefficient in market income remained stable or declined moderately. In the US, the Gini

¹⁴ The analysis is restricted to this time period to leave out any changes in income distribution due to the financial and economic crisis starting in 2007. However, the observed developments have continued in most advanced countries during the crisis (ILO 2013, p. 27).

coefficient of market incomes rose nonetheless by more than ten index points between 1985 and 2005. France is an exception showing a declining trend since the mid 1980s. According to this brief analysis, a first conclusion is that greater income inequality was mainly caused by market developments until the mid 1990s. Figure 5 looks at the distributional effect of government policies (OECD 2008).

Figure 5: Changes of Gini coefficient in disposable income, 1985 – 2005, Index 1985 = 1



Source: OECD Report 2008. Own Illustration.

On average, disposable income inequality rose by roughly nine index points indicating a weakened redistribution effect of the public sector among OECD countries. Particularly Sweden has experienced a pronounced increase of disposable income inequality since the mid 1990s but shows a declining trend more recently (in accordance with declining market income inequality shown above). Germany shows a continuous increase in disposable income inequality of up to 15 index points, particularly pronounced since the early 2000s. It takes the second position behind Sweden. In contrast, France shows a declining Gini coefficient. Since 1995, the Gini coefficient in disposable income remains stable at a low level. The Anglo-Saxon countries show opposite trends. Disposable income inequality in the UK has risen strongly between 1985 and 1990 but declined recently (in accordance with declining market income inequality) remaining at a small increase of five index points since 1985. The US shows a stronger increase of up to 13 index points between 1985 and 2005. As a result, one

can assume that tax and transfer systems were not able to compensate for rising market income inequality. Tax and transfer systems themselves might have caused greater income inequality.

A more detailed illustration of trends in market and disposable income among twelve different OECD countries can be seen in Figure 6 (for some countries the analysis starts in 1975). The outlined trends within the sample of seven OECD countries can generally be confirmed. Income inequality increased substantially in Canada, Norway, Finland and Japan. The most notable exception is the Netherlands with almost unchanged market income inequality. However, Canada was able to offset rising market income inequality to a large extent until 1995.

This brief analysis has shown that in almost all OECD countries where data is available for market as well as disposable income inequality, Gini coefficients have risen markedly between the mid 1980s and mid 2000s. This trend started in the liberal welfare regimes first but also spread to conservative welfare regimes with traditionally low-income inequality. Despite overall lower income inequality levels in the mid 2000s, the social democratic welfare regimes could also not prevent it from rising. France is the only country that could actually lower income inequality. These findings are alarming and have brought attention to the driving forces of this phenomenon.

Table 2: Development of Gini coefficients in OECD countries, mid 1980s to mid 2000s

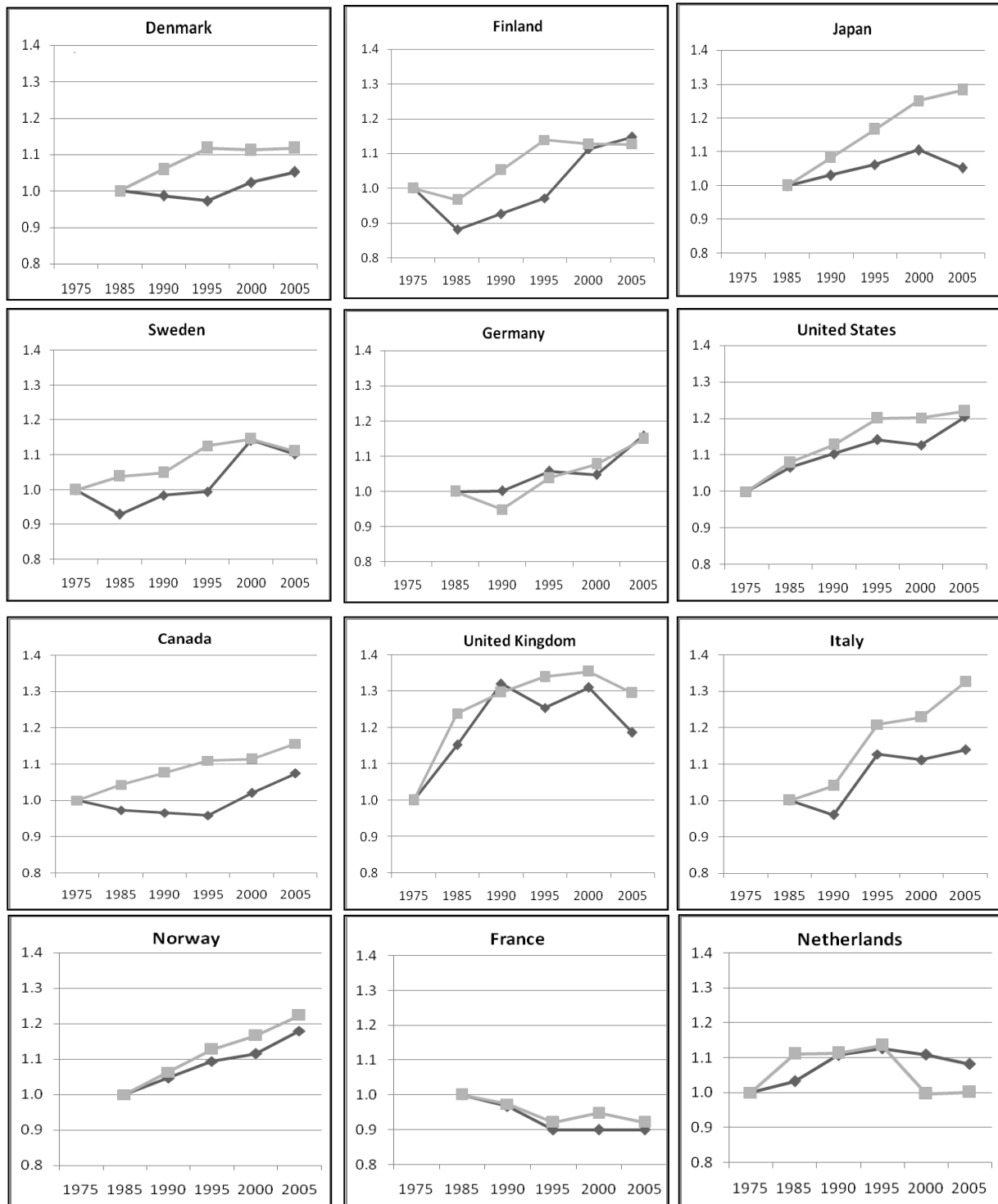
	Market Income				Disposable Income			
	Mid 1980s	Mid 1990s	Mid 2000s	Change	Mid 1980s	Mid 1990s	Mid 2000s	Change
Germany	0.36	0.387	0.416	0.06	0.246	0.267	0.288	0.04
France	...	0.43	0.43	0.00	0.3	0.28	0.288	-0.01
Italy	0.394	0.467	0.49	0.09	0.31	0.348	0.348	0.04
UK	0.413	0.45	0.445	0.03	0.305	0.334	0.331	0.03
USA	0.399	0.438	0.452	0.05	0.326	0.351	0.373	0.05
Sweden	0.316	0.374	0.369	0.05	0.195	0.216	0.236	0.04
Denmark	0.324	0.367	0.374	0.05	0.209	0.206	0.228	0.02
OECD*	0.409	...	0.293	0.310	0.313	0.02

Note: Data refers to working-age population (18 to 65 years old) based on equivalised household income (square root of household size).

* In mid 1980s and mid 1990s the value refers to OECD 24 and in mid 2000s to OECD 30 for disposable income.

Source: OECD (2013).

Figure 6: Trends for market and disposable income inequality, 1975-2005



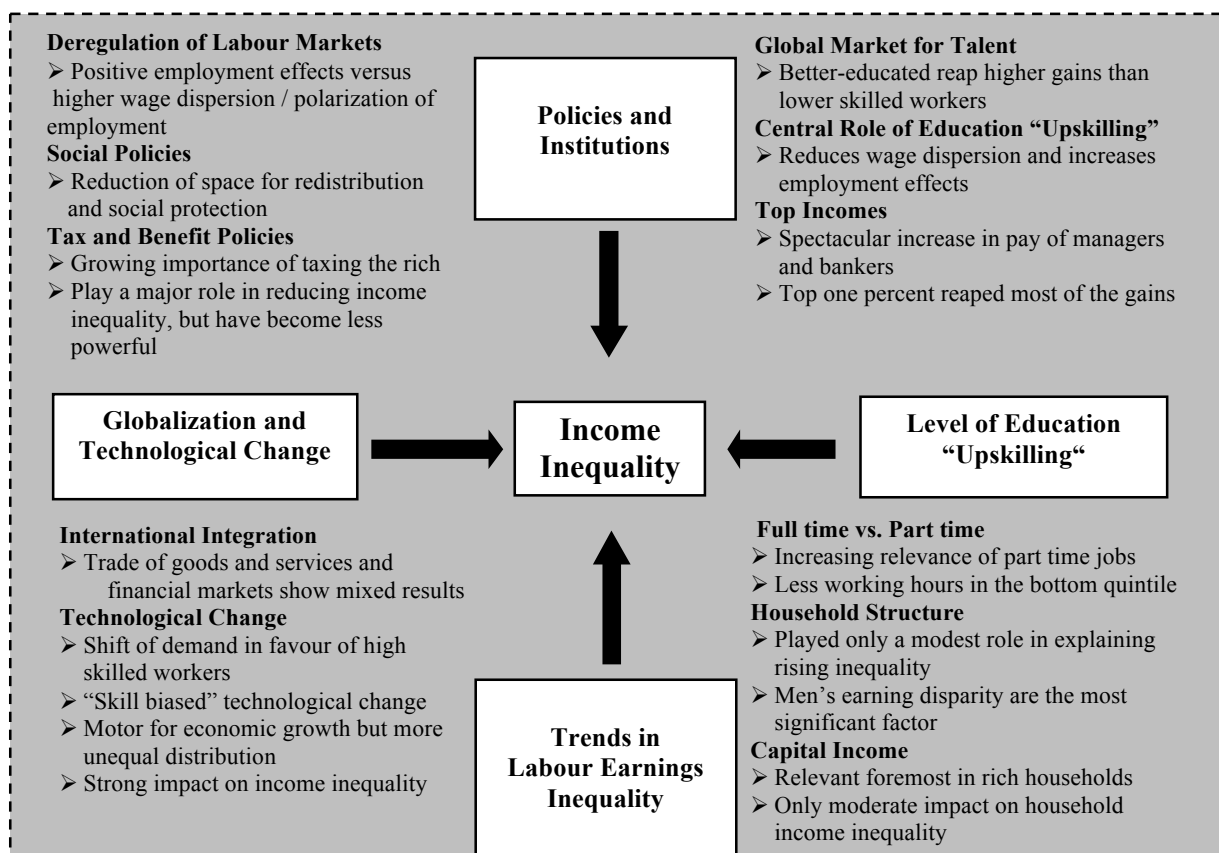
* Grey line with squared marks illustrates market income inequality. Black line with triangle marks illustrates disposable income inequality.

Source: Figure based on OECD (2008, p. 33).

Driving forces

The OECD (2011) suggests that changes in inequality are driven by joblessness and less generous social benefits on the lower tail of the income distribution and by capital incomes and tax policy on the upper bound¹⁵. Figure 7 clusters the variety of explanatory variables into four categories: (1) Policies and Institutions, (2) Globalization and Technological Change, (3) Trends in Labour Earnings Inequality, (4) Level of Education. It is beyond this paper to explain these variables in detail and debate on the underlying theoretical framework¹⁶. Nevertheless, some general explanations can be given.

Figure 7: Main arguments provided by the OECD



Source: Figure based on main findings of the OECD (2011, pp. 28-40). Own illustration.

¹⁵ In fact, analysis indicates that those redistribution systems in most countries were more successful at offsetting growing income gaps at the bottom than at the top. Benefits tended to be more responsive to growing income disparities than taxes (OECD 2011, pp. 274-275).

¹⁶ The backbone of neoclassical theory is the marginal product of labour but Keynesian economists reject that theory. Whereas Neoclassical models emphasizes skill-biased technological change, international trade and new international division of labour, Keynesian economists focus on structural changes in labour market institutions, weakened trade union power and a lack of wage bargaining coordination, together with deregulation of financial markets, stronger shareholder value orientation and outsourcing (Herr and Ruoff 2013, forthcoming).

It is noteworthy that according to the OECD findings (2011, p. 22), increases in household income inequality have been largely driven by changes in the distribution of wages and salaries that account for almost 75 per cent of household income among the working-age population (category 3). In this context, a declining share of the lower half of the income distribution paralleled the substantial increase in top incomes. A series of literature analysed the increasing relevance of the ‘top 1 per cent’ (Atkinson and Piketty 2010; Saez 2008) and finds an evolution of top incomes since the 1980s for the US and the UK in particular but the same developments can be observed in other OECD states such as Germany (Bach et al. 2007). This development has been reinforced by beneficial tax policies particularly relieving high incomes (OECD 2011, pp. 38-41). The wage share¹⁷ declined simultaneously in most countries with a shift towards capital income.

Changes of labour market institutions (category 1) led to mixed results. Greater deregulation of labour markets (e.g. loosened employment protection) affected the ways in which globalisation and technological change translated into distributional changes (OECD 2011, pp. 30-31). But whereas employment levels could be increased, many countries experienced greater wage dispersion and hence the overall effect is indeterminate. The structural change in employment forms (with a shift towards atypical employment), however, led to declining shares of the bottom half of the income distribution¹⁸. According to the OECD (2011, pp.28-29), closer integration into the global economy and rapid technological change (category 2) brought greater rewards to high-skilled than to low-skilled workers. Whereas neither rising trade integration nor financial openness had significant impacts, financial flows and technological change appeared to have an impact on market income inequality, particularly on the upper half of wage dispersion. Conclusively, a skill-biased technological change was the main driving force behind greater income inequality and ‘upskilling’ (increase in the level of education) is the main remedy (category 4). In terms of category 1, focusing on social, tax and benefit policies the OECD finds that the stabilizing effect of tax and transfer systems has become less effective since the mid 1990s. This part will be examined in more detail below.

¹⁷ The wage share refers to compensation of employees as a share of GDP or value added.

¹⁸ Cantillon (2011, pp. 437-39) finds that less adequate social protection for those who are outside the labour force and a decline of the redistributive capacity of the welfare state contributed to a standstill in poverty rates reduction. Increasing employment rates did not contribute to lower poverty due to strong work intensification in employment-rich households and an employment rise that encompassed too many precarious jobs or jobs of low quality.

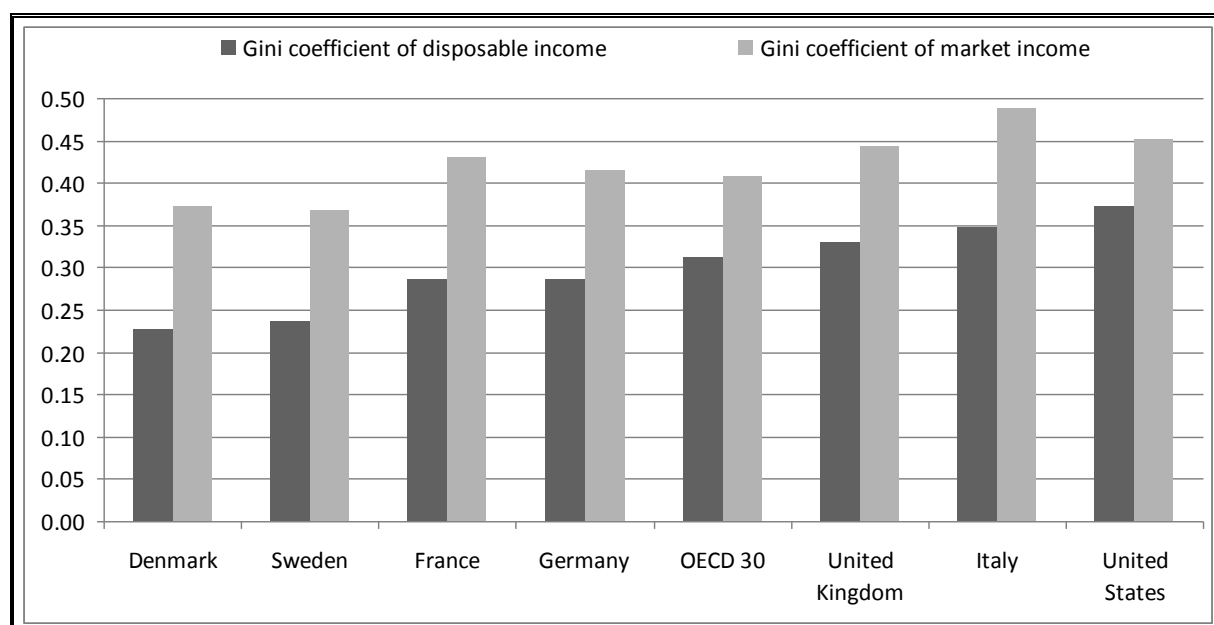
C. Development of government redistribution – tax and transfer systems

The difference between the Gini values for market and disposable incomes serves as a summary measure for comparing the overall redistributive effect of the tax and transfer system in different countries (OECD 2011)¹⁹. In the following section this paper will compare income redistribution among different welfare regimes in the mid 2000s and then assess the inequality-reducing effects of taxes and transfers over time. In this context, redistribution implies a reduction of household income inequality.

From market to disposable income

OECD countries differ significantly in how much income they redistribute through public cash transfers or household taxes²⁰. Countries in figure 8 are ranked, from left to right, in increasing order of the Gini coefficient of disposable income. The absolute value for individual countries for the mid 2000s can also be found in Table 2 above.

Figure 8: Gini coefficient of market and disposable income, mid 2000s



Note: Gini coefficient refers to working-age population (18 to 65 years) based on equivalised household income (square root of household size).

Source: OECD (2013).

On OECD average, tax and transfer systems reduce inequality among the working age population by almost one quarter. The redistributive effect, however, varies among the

¹⁹ In 2011, the OECD restricted their analysis to the non-elderly population aged between 15 and 64 trying to avoid some issues inherent to comparisons of people at different stages of their lives (OECD 2011, p. 262). One issue of old-age pensions is that they redistribute income primarily intertemporally over the life cycle.

²⁰ The OECD analysis includes public cash transfers, income taxes and social security contributions.

different countries presented here. In accordance with the previously indicated redistributive capacity of the three different welfare regimes the social democratic countries can be associated with 'very low' income inequality. In the mid 2000s, Denmark and Sweden displayed a Gini coefficient of roughly 0.23 in disposable income, which is more than 0.08 points (25 per cent) below OECD average. They reduced market income inequality considerably by 0.14 points (39 per cent).

Following are the conservative regimes with Italy being an outlier²¹. Germany and France both have a Gini coefficient of 0.288 in disposable income, which is slightly below OECD average (8 per cent). These countries reduce market income inequality moderately by more than 30 per cent. Italy achieves a reduction in income inequality of 29 per cent but its level of disposable income inequality (0.348) is 11 per cent above OECD average.

The third group is constituted by the US and the UK that were clustered as liberal welfare regimes beforehand. However, only the US with a value of 0.373 in disposable income inequality is well above OECD average (29 per cent). The UK, with a value of 0.331, is in between OECD average and Italy. In the US, market income inequality was reduced by 0.08 points (17 per cent). In the UK, the reduction is significantly higher with 0.11 points (26 per cent). As a result, all the chosen OECD states show redistributive effects²² but with significant variations among different welfare regimes.

Changes in redistribution since the mid 1980s

As we have seen in the analysis above, market forces as well as governmental distribution policies might have caused greater income inequality. In Table 3, general country trends of redistribution are given. First of all, the table confirms that market and disposable incomes have become more unequal in most OECD countries over the last 30 years (column 1 and 3). Market income inequality increased more strongly during the first half of the two observed decades (column 2). It is important to note that inequality in disposable household income is foremost driven by this significant increase in inequality of market incomes. One can also observe that between the mid-1980s and the mid-1990s, redistribution systems compensated nearly three quarters of the increase in market income inequality (column 7).

²¹ It was argued beforehand that Italy rather illustrates a rudimentary welfare state than a conservative regime.

²² Exceptions to the observed redistribution pattern among the chosen OECD states are foremost Turkey, Chile or Mexico. Here, market income inequality translates almost unchanged into disposable income inequality (OECD 2011).

Table 3: Redistribution – general country trend since the mid 1980s

		Market income		Disposable income	Redistribution			
		Gm	Change, % of base period	Gd	Gm-Gd	% of Gm [4] / [1]	Change, % of base-period Gm	[6] / [2]
		[1]	[2]	[3]	[4]	[5]	[6]	[7]
12-country average	mid-1980s	36.2		26.7	9.5	26.4		
	mid-1990s	39.2	8.2	27.4	11.7	29.9	6	73
	mid-2000s	39.8	9.8	28.3	11.4	28.7	5	53

Note: Gm = Gini coefficient of inequality of market income. Gd = Gini coefficient of inequality of disposable income. Gm includes private transfers. Gd is market income plus cash benefits minus taxes. All measures are based on equivalised household income using the square-root equivalence scale.

Source: Figure based on OECD (2011, table 7.2, p. 268).

Since the mid 1990s, however, this was significantly reduced to only one-half. Although the rise in market-income inequality slowed down since the mid 1990s (column 2), government redistribution became less effective at offsetting increasing income inequalities. In absolute terms, the public sector reduced the Gini coefficient of market incomes by 11.4 in the mid 2000s compared to 11.7 and 9.5 in the previous decades (column 4). Tax and transfer systems today lower market income inequality by nearly 29 per cent, which is more than in the mid 1980s but less than in the mid 1990s (column 5)²³. These findings illustrate the changing role of government redistribution through tax and transfer systems and require a closer look at the driving forces that led to a weakened redistributive effect of the public sector.

Drivers of governmental redistribution

In order to gauge what drove the presented changes in overall redistribution it is useful separate and analyse individual components of the tax and transfer system. Three instruments of cash redistribution can alter the market outcome: social transfers, income taxes and social security contributions (OECD 2011, pp.36-40). Social security contributions, because of their flat-rate structure redistributed very little. Where contributions ceilings were in place, such as in Germany, they may have been regressive. Income taxes have played a relatively minor role. Tax systems have become more progressive simply because of greater market income inequality that magnifies tax-burden differences between high and low income households

²³ In some countries (e.g. Germany, Sweden) there is a positive link between greater levels of market income inequality and stronger redistribution. This can be explained by policy reforms or because of the progressivity built into tax and transfer systems that automatically strengthen the equalising effect such as experienced in the UK in the mid 1980s (OECD 2011, pp. 270-272).

(OECD 2011, pp. 292-293). On the other side, the effective income tax-rate has declined in most countries. As a result, these two developments cancel each other out.

Changes in social transfers (receipt patterns and generosity) are found to be the main driving force. This is an interesting point because social expenditure levels²⁴, as well as total government revenues have increased in most OECD countries between 1985 and 2005 (OECD 2011, pp. 264-267). However, since the mid 1990s, when most countries recovered from an economic downturn and cyclical income-support was high, a drop in the share of non-elderly benefit expenditure to total spending occurred. Cash-support for the non-elderly was reduced from 26.5 per cent in 1985 down to 21.4 per cent in 2005. In particular, cash benefits for families and unemployed were contracted. This means, that despite overall growing public social expenditure, this drop translated into a significant reduction of non-elderly benefit expenditure relative to GDP (from 5.3 per cent to 4.5 per cent) between 1995 and 2005. The main driving forces behind these developments were tighter eligibility rules and a sizeable increase of non-standard workers. The degree of benefit progressivity has changed less in most countries. In some countries such as the UK they became less redistributive despite being targeted towards the poor. In contrast, in Germany the progressivity of benefits has remained almost unchanged which means that benefit size is the main driver of redistribution.

D. Development of government redistribution - public goods and services

In a previous study (OECD 2008), it was shown that public goods can significantly lower income inequality leading to a reduction in differences of inequality between different welfare regimes. Transmission channels are not clear-cut and therefore difficult to estimate quantitatively. Taking education as an example one can look at the potential relationship between this initial social investment and future outcomes on labour market participation (equal opportunities).

The OECD (2011, pp. 309-341) estimates the distributive impact of publicly provided goods and services on disposable household income. The provision of public transport subsidies or public utilities (e.g. energy supply) is not included but can have large distributive effects (OECD 2011, p. 313). Public transport subsidies can directly reduce costs of mobility and hence indirectly extend labour market opportunities for beneficiaries. Also,

²⁴ These include cash-support for the non-elderly population such as unemployment benefits, family benefits, incapacity related, housing, and other social policy areas (OECD 2011, pp. 300-301).

the government at below market prices can provide utilities like energy supply. However, the OECD categorizes five types: Family services, services to the elderly, other social services, health services and education services. These taken together constitute public social expenditure²⁵. They represent social spending flows controlled by the general government and exclude pure public goods such as national defence and justice (OECD 2011, p. 312). The data set used by the OECD also excludes private mandatory spending. The coverage of social spending shown might be limited since programmes and services are often provided or co-financed through local governments. A monetary value of the different services is estimated as well as allocated and the distributive effect on disposable household income measured (see appendix 1). It is shown how disposable income is extended by including public goods, and to what extent the Gini coefficient is reduced.

There are several conceptual and methodological issues in the applied analysis (see appendix 1). One issue refers to the estimation of the value of public services and the allocation of this value to individuals in households. Depending on the approach applied, redistributive outcomes might change significantly. For instance, using an actual consumption approach in terms of health care (which was done in the OECD study of 2008) considerably lowers the distributive effect than using an insurance value approach. Furthermore, it is common practice to correct household income with an equivalence scale to take account of economies of scale (see appendix 1). However, problems arise when non-cash income is associated with needs that are unmeasured in common equivalence scales. Depending on the equivalence scale applied, the redistributive effect of public services can change. The OECD uses the square root of household size as a ‘middle-of-the-road-solution’ (OECD 2011, pp. 337-339) and hence makes no distinction between cash and in-kind benefits. Finally, household income surveys include only limited information and individual use of services therefore had to be partially estimated which can lead to over- or underestimation of redistributive effects. These issues need to be kept in mind when interpreting the results below. The analysis can thus only provide rough estimates.

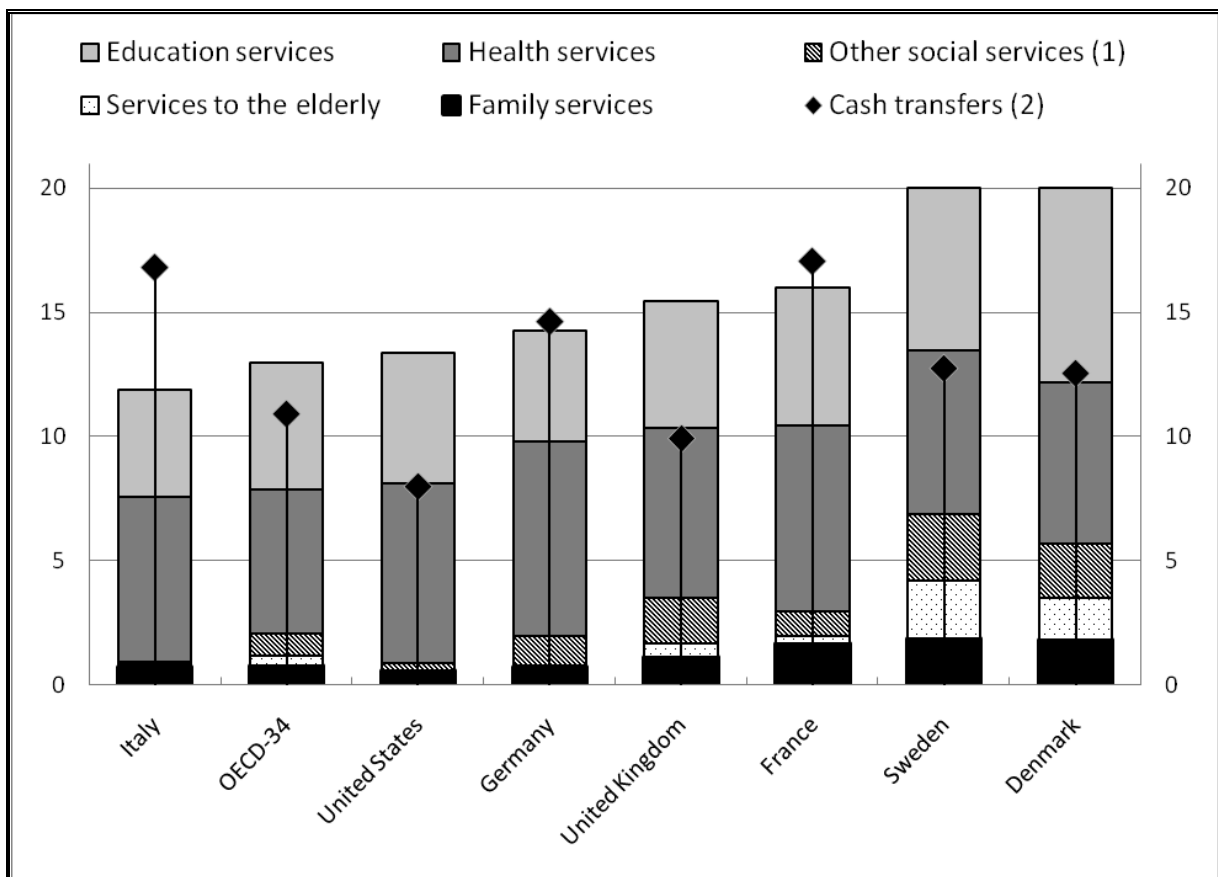
Constellation of public expenditures for in-kind benefits

Focusing on public social expenditure one can observe that education and health are by far the most significant pillars accounting for five or six percentage points each (see Figure 9 below).

²⁵ Public social expenditure is defined as the following: “The provision by public and private institutions of benefits to, and financial contributions targeted at, households and individuals in order to provide support during circumstances which adversely affect their welfare, provided that the provision of the benefits and financial contributions constitutes neither a direct payment for a particular good or service nor an individual contract or transfer” (Adema and Ladaique 2009, cited in OECD 2011, p. 331).

Among other categories only ‘other social services’ comprise a significant part of public expenditure. The effect of social housing is not accounted for due to missing internationally comparative estimates (OECD 2011, p. 312). This may provide a misleading picture as the scale of social housing²⁶ and conditions of access²⁷ vary considerably. Services to families refer to a large extent to early childhood education and care. Elderly care refers to provision of goods and services to perform daily routines. Figure 9 also gives a comparison between the volume of public expenditures and cash transfers (which is part of tax and transfer systems).

Figure 9: Public expenditure for in-kind and cash transfers, in percentage of GDP, 2007



(1) Other social services include services to survivors, disabled persons, unemployed, as well as those in respect of housing and social assistance (estimates of social housing are not included).

(2) Cash transfers to the elderly, survivors, disabled persons, families, unemployed, as well as those in respect of social assistance.

Source: Figure based on OECD (2011, figure 8.1. p. 311).

In 2007, in-kind benefits accounted for roughly 13 per cent of GDP on average across the 34 OECD countries. In comparison, cash transfers accounted for eleven per cent. However, there are significant differences among the chosen sample countries. The ‘Continental Europe’

²⁶ In the UK or Denmark they make up for almost 20 per cent of total housing.

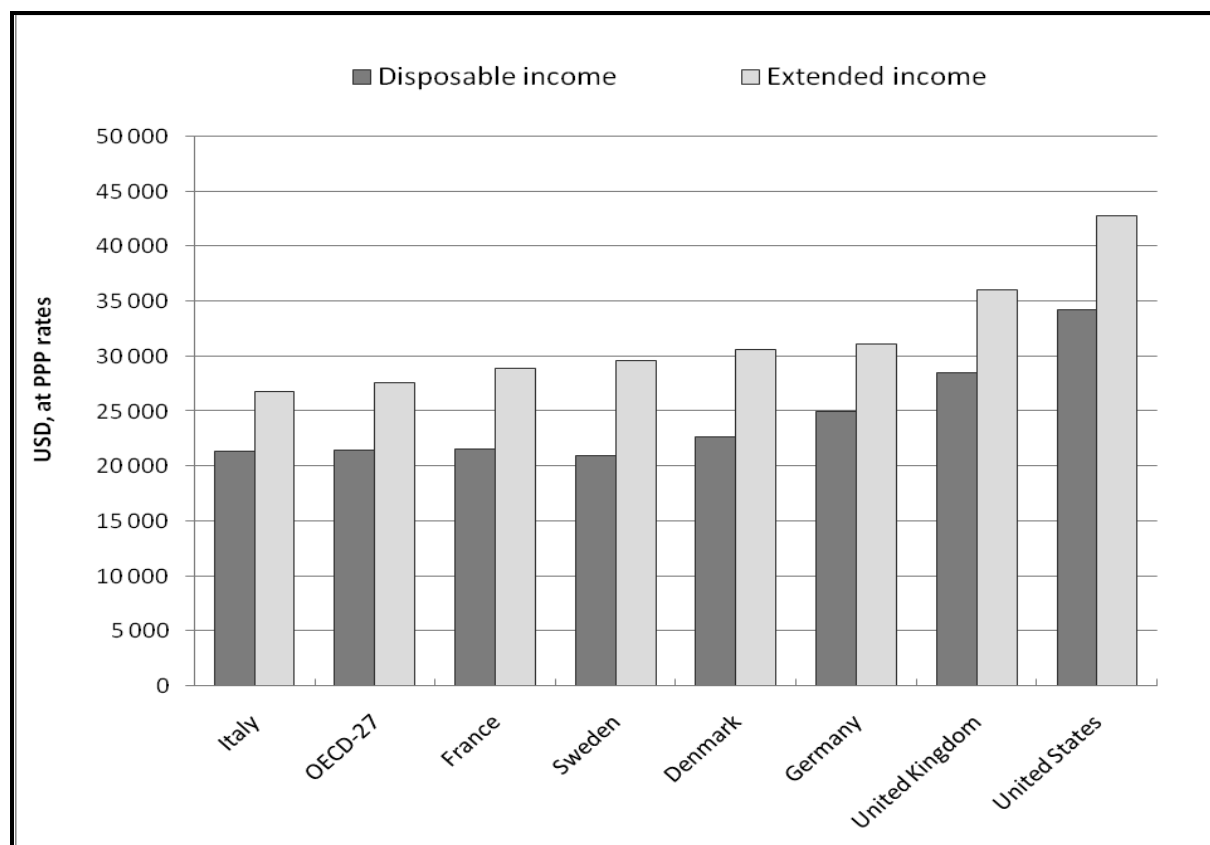
²⁷ In Sweden access to social housing is not explicitly linked to individuals’ resources, while in Germany means-tested access prevails.

countries such as Germany, France or Italy spend more on cash transfers than on public goods. The difference is particularly significant in Italy with 17 per cent spend on cash transfers and only 12 per cent on public goods. This is contrasted by the US and the UK. In these liberal welfare regimes a much higher emphasis is put on in-kind benefits. Public expenditure levels are slightly above OECD average. In the UK, they are higher than in Germany and only slightly below the levels of France. The Nordic Countries have the highest levels, spending roughly 20 per cent of GDP on public goods each as well as roughly 14 per cent on cash transfers. After having obtained a general picture of the spending side on the provision of public goods among OECD countries the question is of how and to what extent they change income distribution. As we have seen above, some countries rely more on cash transfers and others focus on in-kind benefits. This has two implications for redistribution (OECD 2011, p. 310): First, the difference in these spending approaches does not show up in traditional income statistics. Second, taxes that are raised to pay for the funding of public goods reduce households' income. Also, another important aspect is whether policies are targeted at low-income groups or rather equally distributed.

Income increasing effect of in-kind benefits

In order to quantify the distributive impact of publicly provided goods and services on income distribution the OECD estimates the monetary value of the mentioned five types of in-kind benefits. These monetary values are allocated to households and added to the disposable cash income of households. Afterwards, the Gini coefficient in disposable and extended income is compared to analyse whether this has led to a further reduction of income inequality (in addition to the redistributive effect of tax and transfer systems). As Figure 10 below shows, public goods significantly extend disposable household income.

Figure 10: Income-increasing effect of in-kind benefits from public services, 2007



Source: Based on OECD (2011, figure 8.2, p. 316).

Publicly provided goods and services would add as much as 29 per cent to disposable income (on average) in the OECD measured in power purchasing parities (PPP). The income increasing effects are mainly caused by health care and education. These are followed by services for early childhood education and childcare that increases household income by two per cent on average (OECD 2011, p. 314). In line with the figures on public expenditures provided, disposable income is extended most significantly in the Nordic countries (roughly 37 per cent) but also in the US as well as the UK where they provide a considerable income source for households (roughly 25 per cent). Particularly social housing extends disposable household income in the UK (by 2.5 per cent compared to an average of 0.4 per cent). Among the conservative welfare regimes, France extends disposable income most considerably by 35 per cent.

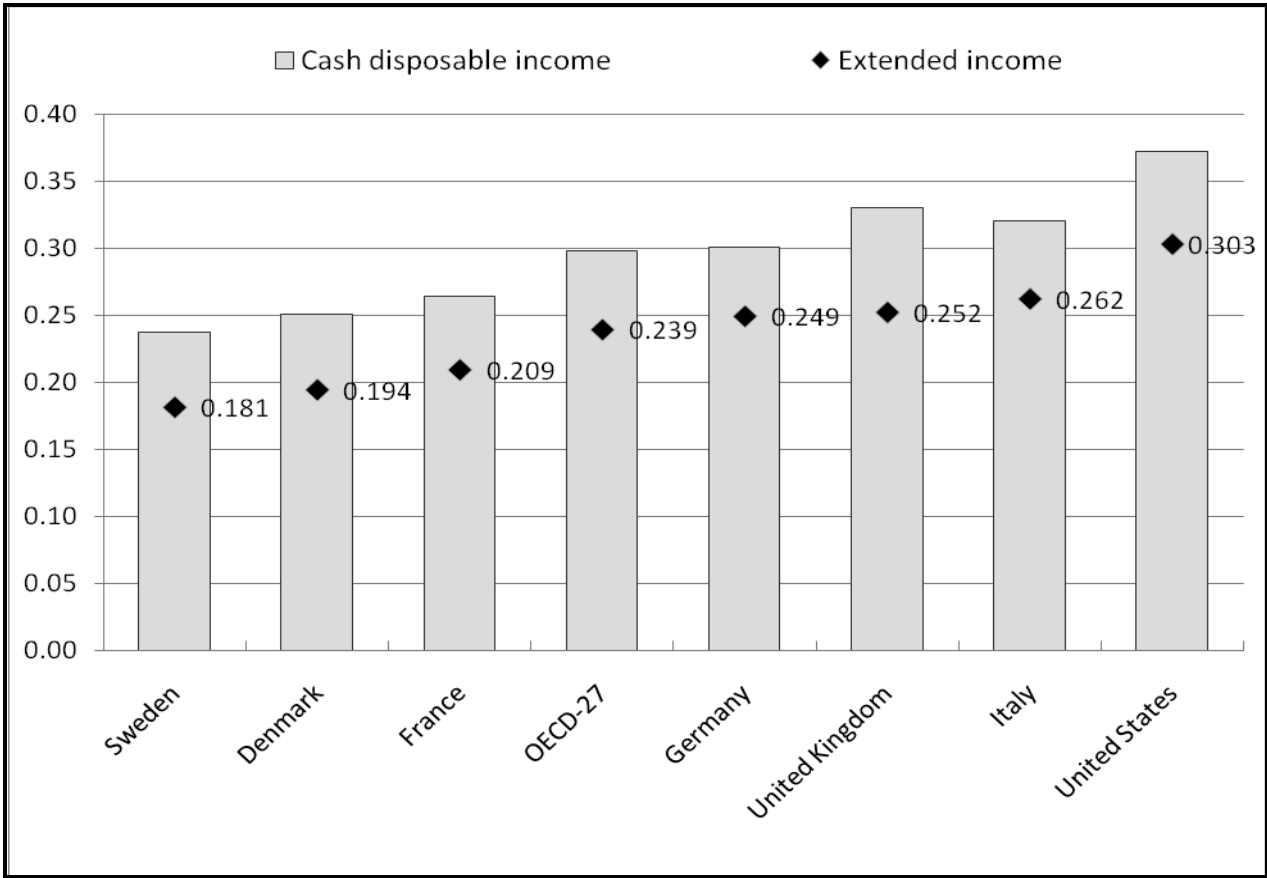
In-kind benefits are quite evenly distributed over different income groups. They are somewhat more targeted towards lower income groups only in the UK and the Nordic countries. As mentioned in the theoretical part, universal benefits, *ceteris paribus*, lead to larger proportional increases in the incomes of poorer households. Indeed, all types of public goods analysed above account for a much higher share of disposable income among lower

income (75 per cent for the poorest 20 per cent) than among higher income households (14 per cent for the richest 20 per cent) (OECD 2011, pp. 314-317). Therefore, one can assume that they lower income inequality considerably.

From disposable to extended income

Figure 11 below shows (new) estimates for the Gini coefficient in cash disposable and extended income. Countries are ranked, from left to right, in increasing order of the new Gini coefficient in extended income.

Figure 11: Reduction of Gini coefficient in cash and extended disposable income, 2007



Source: Based on OECD (2011, table 8.2., p. 317). Own illustration.

In 2007, income inequality was reduced significantly by 20 per cent among 27 OECD countries. The highest value of 24 per cent was found in the UK. Also, in the US a 23 per cent reduction of income inequality is remarkably high. Countries that rather focus on cash transfers, such as Germany or France, reduce income inequality to a lower extent through the channel of public goods. The Nordic countries significantly reduce income inequality by 22 per cent in the case of Denmark and 23 per cent in the case of Sweden. In general, reduction

rates are more uniform across countries than inequality reduction achieved through cash transfers and taxes as considered above. After all, the Gini coefficients are much closer than expected by the theoretically distinct welfare regimes according to Esping-Andersen. Particularly the liberal welfare regimes achieve significant redistributive effects by emphasizing the provision of public goods. The most striking result in this analysis relates to the Gini coefficient of Germany and the UK. They achieve very similar results after including public goods. Germany and France achieve somewhat different results even though they belong to the same welfare regime. As expected, the Nordic countries achieve the lowest income inequality values after extending disposable income.

E. Conclusion

The welfare state encompasses a variety of tasks. Two major objectives are to reallocate income across the life cycle by providing social insurance and to lower economic inequality through redistribute transfers between rich and poor. In this context, the applied channels of income redistribution as well as the distributional profile of social policies will determine the overall performance of a given welfare regime. It was illustrated that clustering ‘ideal types’ helps in order to gain an understanding of different welfare regimes. The standard types of welfare capitalism developed by Esping-Andersen in 1990 show distinct constellations that impact on their performance in income redistribution. In reality, however, there will be rather ‘mixed types’. Also, there seems to be space for manoeuvre within a given welfare regime. Therefore, the implications are rather vague. The analysis of specific policy areas in individual countries is preferable to make profound statements about distributive outcomes. Due to reasons of space, the presented analysis in this paper could only investigate the broad picture and give general insights into the redistributive impact of tax and transfer systems as well as public goods.

The analysis has illustrated the substantial increases of market and disposable income inequality in most OECD countries, with variation across countries. In line with the expected distributive outcomes under the standard typology of different welfare states, the liberal welfare regimes presented by the US and UK compensated a relatively small part of the increase of market income inequality over the whole period. The Nordic countries show the best performance in the mid 2000s. France is a showcase for a conservative welfare regime containing income inequality on both income levels. Surprisingly, traditionally egalitarian countries such as Sweden and Germany showed trends of fast and substantial

increases in income inequality more recently. In the context of rising market income inequality, tax and transfer systems became more redistributive but they were not able to prevent it from rising. Whereas changes in market income distribution account for most of the rise in income inequality until the mid 1990s, government redistribution became less effective afterwards and hence was the main source of widening income gaps until 2005.

Broadening the income concept to the provision of in-kind benefits it appears that they significantly affect households' economic resources. In-kind benefits extend disposable household income considerably on OECD average. In countries where they are equally distributed among all income groups they make up a bigger portion of disposable income in poor households. The liberal welfare regimes emphasize this channel of income redistribution. Therefore, we can observe a correlation of Gini coefficients among different welfare regimes. Striking are the results for Germany and the UK that show almost identical Gini coefficients after including in-kind benefits. However, due to several methodological issues these results have to be interpreted with caution. Future research should nonetheless take into account the distributive effects of public goods in order to better understand the functioning of different welfare regimes.

Open questions remain about the individual weighting of the impact of tax and transfer systems, public goods and driving forces of market income inequality. It can be generally said that developments in the labour market – particularly wage dispersion – significantly alter market income inequality that impacts on disposable income inequality. The 'buffer' function of the public sector appears to be mainly constituted by the transfer system in place. A progressive personal income tax with sufficient marginal tax rates in itself is redistributive and thus can serve to achieve more equality among disposable household incomes. It is, however, not guaranteed that these additional financial funds are benefiting the lower income groups in particular. Given the higher impact of cash benefits on income inequality, compared to taxes and social security contributions, one of the implications for policy makers is that maintaining redistribution will be very difficult under the context of declining budgets for social spending. Increasing income inequality has become a permanent issue in many OECD countries. In addition, the recent economic crisis implemented tight budget rules in the European Union that poses strong challenges on the welfare state. Given this, it is likely that the trend of increasing income inequality will continue. Policy makers discuss the 'rolling back of the welfare state'. This implies further retrenchment of social benefits and will therefore lower the redistributive effect of the public sector.

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Appendix 1: Conceptual and Methodological Issues in measuring the overall distributive impact of publicly provided services on the distribution of income

1. How to estimate the monetary value of public goods?

The OECD applies the production cost approach. This means that the transfers to the beneficiaries are assumed to equal the average cost of providing or producing the public service. They assume that one-dollar spent equally represents the value that this service is worth to households or individuals. This approach thus neglects differences of quality and efficiency of providing these services among different OECD countries and the user's value of the service since it cannot easily be exchanged for other goods.

2. How to allocate in-kind benefits to individuals in households?

Estimates can be calculated in two approaches:

Actual consumption approach

Allocate the value of public services to the individuals that are actually using the service. More appropriate since its actual beneficiaries can be identified.

Insurance value approach

Allocate an equal amount of a service to everybody sharing the same characteristics, for instance age, gender or socio-economic position. This implicitly assumes that individuals benefiting from these services are aware of the potential access they have to it.

Table: Overview of allocation methods applied for different public services by the OECD

Public service	Allocation method	Beneficiaries
Education	AC	Pupils and students
Health care	IV	All individuals covered by public health sharing the same characteristics (age, gender etc.)
Social housing	AC	Residents of social housing unit
Early childhood education and care (ECEC)	AC	Young children in public childcare and pre-primary education
Long-term elderly care	IV	All elderly people covered by the system (gender, age etc.)

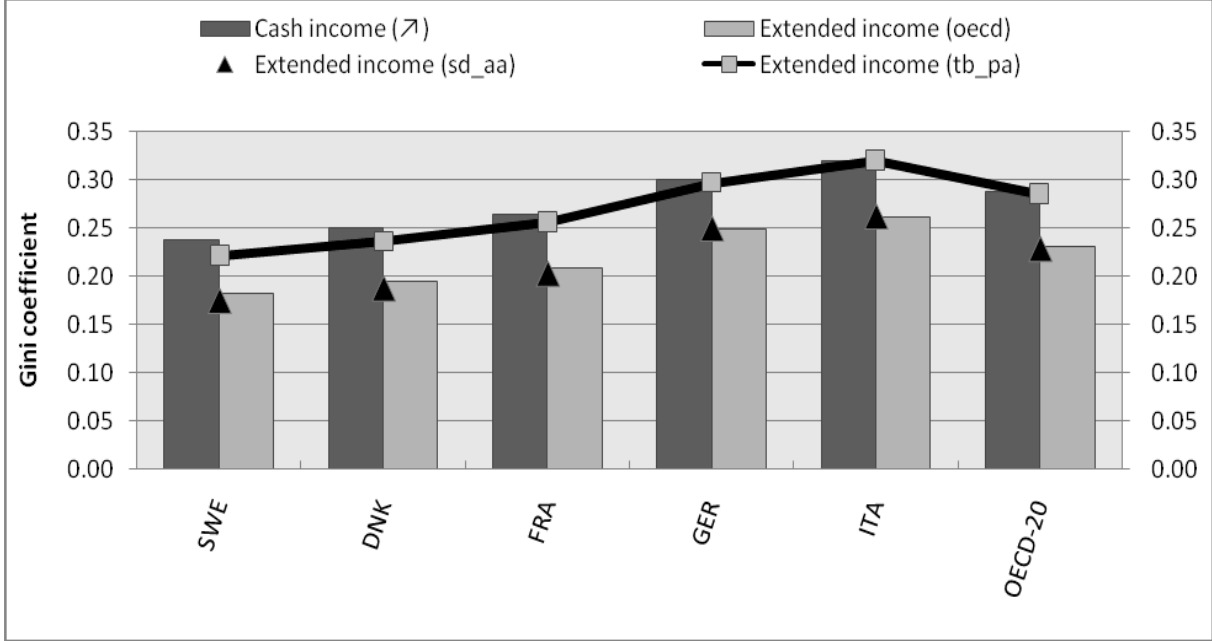
Source: OECD (2011).

Furthermore, there is only limited information on the extent to which individuals and households' benefit from services complicates which complicates the estimations. In case of education for instance, no distinction can be made between enrolments in publicly or privately funded education institutions. In terms of the UK it has to be mentioned that in estimating the monetary value for early childhood education and care (as part of family services), double counting might occurred (OECD 2011, p. 336). The differentiation between public and private services was not possible and thus in some cases public money was allocated to

people purchasing private services. In the UK, many parents pay for private childcare and are partly reimbursed via the tax system.

Two more issues stand out: First, that taking the actual consumption approach for health insurance significantly lowers the distributive effect of health care expenditures (OECD 2011, p. 339). Second, that using different equivalence scales for households receiving in-kind benefits could change the results considerably:

Figure: Gini coefficient before and after inclusion of all types of public services, comparing three equivalence scales for extended income



Source: Based on OECD 2011, figure 8.A1.1, p. 339.

According to this figure, the equivalence scale applied by the OECD (light grey column) remains robust when introducing the equivalence scale (sd_aa). However, introducing a different equivalence scale proposed (tb_pa) the results can change significantly. According to this scale, Gini coefficients are only slightly reduced through the inclusion of in-kind benefits. For a discussion of the different scales see OECD (2011, pp. 337-339).

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