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New Economic Thinking
AT THE OXFORD MARTIN SCHOOL

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Models, Regimes, and the Evolution of Middle Incomes in OECD Countries^{*}

Brian Nolan, Max Roser, and Stefan Thewissen[†]

Generating rising prosperity for middle-income households is now seen as a fundamental challenge for rich countries: when countries with similar institutional settings are grouped together, can a best-performing model in those terms be identified? This paper investigate how countries, and models or regimes, compare with respect to growth in real household incomes at the median, drawing on data from the two main comparative sources containing that information over recent decades, the Luxembourg Income Study and the OECD Income Distribution Database. It finds remarkably wide variation across OECD countries in recent decades in that respect, but this variation is also seen within the liberal and coordinated market economy models distinguished in the ‘varieties of capitalism’ literature, as well as within the welfare regimes commonly employed in welfare state analysis, with little difference between them in average growth rates. This remains true when one focuses on working-age households only. The average absolute increase in median income in real terms over time differs a great deal across countries but very much less across these economic models or regimes; the level attained at the most recent year for which data is available is also quite similar across the liberal and coordinated economies and across the social democratic, liberal and corporatist welfare regimes, with the Mediterranean and post-socialist countries/regimes then lagging behind. Many countries have seen growth in the median vary considerably over time, and understanding that variation may be more promising than the search for a consistently best-performing model.

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1. Introduction

Concern about stagnating living standards for “ordinary working families”, and associated debates about the “squeezed middle”, underpin the attention now being paid to increasing income inequality across the rich countries. In the USA in particular, increasing shares of income going to the very top have gone together with stagnation in real incomes for the rest of the distribution. Generating rising prosperity for middle and lower income households is now seen as a fundamental challenge for the rich countries and failure to do so as posing deep-seated risks, to the point that “inclusive growth” has now become a common rallying-cry for governments and multilateral organisations (see for example OECD/World Bank, 2012 and OECD, 2015a). Much of the related research and commentary focuses on the US experience or takes that as point of departure: however important, that experience may well not be representative, and there may be important lessons to learn from other rich countries about the institutions and policies that support inclusive growth.

This includes but goes beyond individual country experiences: when countries with similar institutional settings or growth models are grouped together, can a best-performing model be identified in terms of the capacity to generate rising living standards for those around the middle of the distribution? In the ‘varieties of capitalism’ literature, for example, both liberal and coordinated market economies are seen as capable of providing satisfactory levels of long-run economic performance in terms of GDP growth and unemployment, but with higher income inequality in the former. In the literature on welfare state models or regimes, the social democratic regime is seen as underpinning low levels of inequality via high employment rates and generous social provision, particularly compared with the liberal regime with its reliance on targeted benefits, while the corporatist regime with its emphasis on earnings-related social insurance occupies an intermediate position in terms of inequality.

The relative performance of these models has generally been assessed in terms of economic growth, employment, poverty and income inequality; these might be expected to have implications for the living standards of middle (and lower) income households, but those expectations are far from transparent – and may not be borne out in practice. Most obviously, economic growth that goes together with increasing income inequality might or might not lead to improving living standards for middle

income households, depending on the extent and nature of the increase in inequality (Thewissen et al., 2015). Less obviously, but as highlighted in recent research, aggregate national accounts-based indicators such as GDP per capita or household sector income may also diverge from direct measures of the incomes of ‘ordinary’ households for other reasons, due to subtle but important differences between national accounts and households surveys in the concepts and measures employed in measuring incomes and in how well they capture what they are seeking to measure (see for example Törmälehto, 2011, Atkinson, 2013, Atkinson , et al., 2015, Thewissen et al., 2015). The Stiglitz, Sen and Fitoussi Commission (2009) emphasised that micro as well as macro perspectives are essential, and bodies such as the European Commission and the OECD as well as academic researchers are actively investigating the relationship between national accounts aggregates and indicators of household income obtained from micro-data.

So here we employ such micro-data to ask how different countries have fared, and how different models compare, if one focuses directly on how successful they have been in generating high and improving real disposable household incomes around the middle of the distribution, individually and distinguishing varieties of capitalism and welfare regimes. The analysis goes back as close to 1980 as the data available for each country allows, so the length of the period covers varies across countries and datasets. We focus on what is increasingly seen as a key reference point or benchmark for “ordinary” or “typical” living standards, the median of the distribution (Aaberge and Atkinson, 2013). While income may not fully capture living standards for a variety of reasons, not least because services provided or subsidized by the state also contribute, it plays a central role.

We begin with a discussion of the models and regimes widely distinguished in the literature, the country groupings involved, and the way their performance is conventionally assessed. Section 3 describes the data, concepts and measures of income at the micro-level on which our analysis will rely. Section 4 then investigates how median incomes have evolved over time across countries and country clusters. Section 5 examines the variation across sub-periods in median income growth over time. Section 6 looks beyond percentage growth rates to incorporate absolute income changes and income levels at the median into the analysis. Finally, Section 7 brings together the findings and discusses their implications.

2. Models, Regimes and Performance

While we will be examining performance in generating real income growth on a country basis, a central aim is also to make comparisons across clusters of countries grouped in terms of their similarity in terms of core institutions. For this purpose we draw first on the ‘varieties of capitalism’ approach, which posits that advanced industrial economies differ systematically in how they organize the interaction between business, labour and the state. The core distinction drawn is between liberal market economies, in which firms coordinate their activities primarily via hierarchies and competitive market arrangements, and coordinated market economies, in which firms depend more heavily on non-market relationships and there is more strategic interaction between firms (see Hall and Soskice, 2001, ed. 2015).

Among the OECD countries, Australia, Canada, Ireland, Israel, New Zealand, the UK and the USA are categorized as liberal market economies, while Austria, Belgium, Denmark, Finland, Iceland, Germany, Japan, Luxembourg, Netherlands, Norway, Sweden and Switzerland are categorized as coordinated market economies. Another group comprising France, Greece, Italy, Portugal and Spain is more ambiguous and may constitute a Mediterranean cluster, with specific kinds of capacities for non-market coordination in the sphere of corporate finance but more liberal arrangements in the sphere of labour relations (Soskice, 2005; Hall and Soskice, 2015). The central and eastern European countries are not included in the standard categorisation: while there have been attempts to fit them within this framework, others emphasise their distinctive features and no clear consensus has emerged (see for example Nolke and Vliegenthart, 2009), so here we treat them as a separate grouping.

Another widely-used categorization of countries in terms of their institutional arrangements distinguishes ‘welfare regimes’, differing in the extent and nature of ‘de-commodification’ (Esping-Andersen 1990). As Esping-Andersen and Myles (2009) put it, each has its own redistributive logic and this influences life-course risks, intergenerational risks and class risks. Initially three distinct regimes were identified by Esping-Andersen:

- The *social democratic regime*, characterised by a high level of universalism, employment flexibility and generous social welfare benefits and covering Denmark, Finland, Iceland, Norway and Sweden; the appropriate allocation

for the Netherlands is debated but some (e.g. Muffels and Luijkx, 2006) would also include it in this rather than the next regime.

- The *corporatist regime*, where the dominance of social insurance implies more emphasis on horizontal redistribution, with entitlements depending primarily on long-term employment; this includes Austria, Belgium, France, Germany, Japan (Lee and Ku, 2007) and Luxembourg.
- The *liberal regime*, where high levels of labour market flexibility are combined with substantial reliance on means-testing; Australia, Canada, Ireland, New Zealand, Switzerland, the UK and the USA are generally allocated here.

A further group suggested in subsequent research (see especially Ferrara, 1996; Gal, 2010) is now widely adopted:

- The *southern European regime*, distinguished by the crucial role of family support with the benefit system being uneven and under-developed, and including Greece, Israel, Italy, Portugal and Spain.

The appropriate treatment of the post-socialist countries is debated in the literature, with a number of authors (including Bukodi and Róbert, 2007) suggesting that a post-socialist corporatist regime including the Czech Republic, Hungary, Poland, Slovenia and Slovakia should be distinguished from a post-socialist liberal regime including Estonia, Latvia and Lithuania. However, since only data for Estonia are available, we are not able to make this distinction and treat it as a cluster of post-socialist countries.

There is some commonality between the welfare regime and varieties of capitalism approaches in the grouping of countries, despite their quite different theoretical starting-points, but the treatment of the Scandinavian countries, Belgium, France, Germany and the Netherlands is quite different while the treatment of Japan and Switzerland has been debated (Bonoli and Kato, 2004). Alternative typologies to Hall and Soskice's 'varieties of capitalism' have been advanced by other scholars such as Ebbinghaus, Crouch and Streeck (see also Hancké, 2009), and there have been attempts to combine such perspectives with welfare regimes into a unified typology (e.g. Arts & Gelissen, 2002; Schröder, 2012). Our interest here is not to enter into these debates – nor indeed to discuss the value of such typologies and whether countries can consistently be assigned to one rather than another over time - but rather

to employ the most widely-used typologies in order to look at the performance of countries and country clusters in a new light.

The relative performance of such models or regimes has been much debated, generally focusing on the rates of economic growth, levels of employment and unemployment, rates of poverty (measured in relative or more ‘absolute’ terms) and levels of income inequality. For example, when Hall and Soskice (2001) discuss the performance of liberal versus coordinated market economies, they present rates of growth in GDP and GDP per capita and the unemployment rate for different time periods, and conclude that both liberal and coordinated market economies seem capable of providing satisfactory levels of long-run economic performance in terms of those indicators. They then go on to argue that both the extent of paid employment and income inequality are higher in the liberal model, with important implications for the distribution of well-being. So their claim is that there is no one best route to superior economic performance, countries have often been able to secure substantial rates of growth in different ways, but some do so with more egalitarian distributions of income than others (see also Hall, 2015). In assessing the relative performance of the competing models Kenworthy (2006) also focused on variation in economic growth and employment growth, while inequality has also been to the fore in more recent studies.

In a similar vein, the literature on welfare state models or regimes has focused heavily on relative success in terms of poverty and inequality, and on the relationship between welfare state institutions and generosity and macroeconomic performance (as well as on a wide range of other topics as illustrated by the *Journal of European Social Policy*’s recent Special Issue marking 25 years from the publication of Esping-Andersen book, introduced by Emmenegger et al, 2015). As generally presented in that literature, the social democratic regime is seen as underpinning low levels of inequality via high employment rates and generous social provision, particularly compared with the liberal regime with its reliance on targeted benefits, while the emphasis in the corporatist regime is on social insurance with lower employment rates for women, the southern regime has relatively underdeveloped social transfer systems, and the post-communist countries have widely varying trajectories. The relationship between welfare state institutions/generosity and economic and employment growth (including the ‘quality’ of jobs) is particularly hotly disputed, in both academic and policy debates, and it is well beyond the scope of this paper to attempt a summary or

assessment of the state of knowledge in that respect. (For succinct summaries see for example the chapter by Saunders on poverty and inequality and Mares on macroeconomic outcomes in the Oxford Handbook of the Welfare State edited by Castles *et al.*, 2010). Instead, we ask how these regime clusters, and varieties of capitalism models, compare if we focus directly on the evolution of real income for middle and lower income households.

3. Measuring Median Income Across the OECD

The central focus of our analysis is on disposable household income, equivalised by dividing by the square root of household size to take differences in household size and composition into account (Buhmann *et al.*, 1988). To capture circumstances around the middle we focus on the median – the income level separating the top and bottom halves of the distribution. In order to reflect the purchasing power of a given nominal amount we use national consumer price indices (CPI) to deflate household income to a common base year for each country, and we convert those incomes in various currencies to 2010 US dollars by applying purchasing power parities (PPP) for actual individual consumption to household incomes, both sourced from OECD National Accounts.

Our analysis is based on the two sources that provide data on income in a standardised way across countries and time and that have featured prominently in seminal studies on inequality and poverty – the Luxembourg Income Study (LIS) database (used for instance in Atkinson *et al.*, 1995; Gornick and Jannti, 2013), and the OECD Income Distribution and Poverty database (used in OECD, 2008; 2011; 2015). We briefly describe these datasets here; detailed information is provided on the relevant websites, and the LIS and OECD datasets have also been the subject of recent in-depth reviews by Ravallion (2015) and Gasparini and Tornarolli (2015) respectively. The LIS database allows the micro data to be accessed (remotely to safeguard confidentiality), so the median can be derived directly and consistently from the underlying data. The OECD database, on the other hand, comprises a substantial set of variables, including the median, collected from member countries using a standardised questionnaire. LIS has assembled data for most of the countries it covers in “waves” for occasional years around 1975, 1980, 1985 and so on, at approximately 5-year intervals. The OECD database also presents 5-year interval data for the earlier period but contains a good deal of annual data for recent years. LIS

allows one to go back as far as around 1980 for rather more countries than the OECD database, but the latter has information on New Zealand and Portugal which are not in LIS, as well as Japan for which LIS has data for only one year.[‡] Each of these databases is widely used in comparative research, so we draw on both to see whether they support the same conclusions. We start our analysis around 1980 where possible, since neither source has many observations before that, but for many countries we have to start later – sometimes much later.

4. The Evolution of Median Incomes

We now examine our central performance indicator, how median equivalised household income in real terms evolved over time in the two datasets. Table 1 shows the overall change for each country from the LIS and OECD datasets from the earliest available year from 1980 onwards up to the most recent year covered by each. Since the length of time this covers varies widely between countries and differs between the two sources, with the period covered in each case also shown in the table, we also present the average annual growth rate, which is more readily comparable.

[‡] We have dropped a small number of observations in LIS where breaks in series have given rise to substantial changes in definitions or coverage, based on information provided about the underlying data sources and patterns in the data.

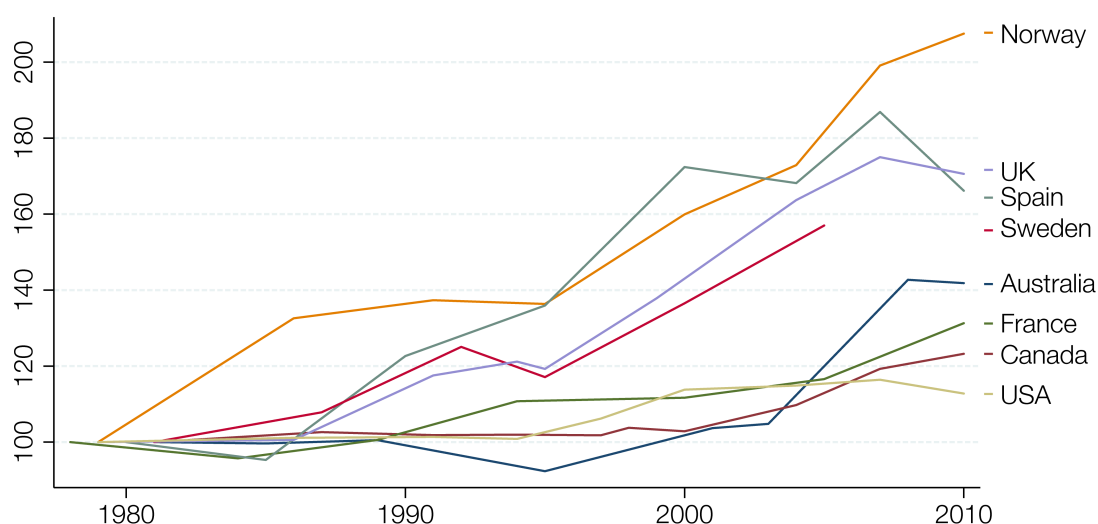
Table 1: Growth in Median Equivalised Household Income in Real Terms by Country, LIS and OECD Data, Longest Period Covered from About 1980

Country	LIS			OECD		
	Overall increase	CAGR	Years covered	Overall increase	CAGR	Years covered
	%	%		%	%	
Australia	41.8	1.2	1981-2010	59.1	2.8	1995-2012
Austria	9.6	0.9	1994-2004	4.6	0.6	2004-2011
Belgium	33.7	2.0	1985-2000	9.1	1.5	2004-2010
Canada	23.2	0.7	1981-2010	17.7	0.5	1980-2011
Czech Republic	65.6	2.8	1992-2010	48.3	2.1	1992-2011
Denmark	21.8	0.9	1987-2010	25.1	0.9	1985-2011
Estonia	81.6	6.1	2000-2010	44.4	5.4	2004-2011
Finland	38.3	1.4	1987-2010	46.2	1.5	1986-2012
France	31.3	0.9	1978-2010	16.1	1.0	1996-2011
Germany	15.2	0.5	1984-2010	20.4	0.7	1985-2011
Greece	34.6	2.0	1995-2010	4.1	0.2	1986-2011
Hungary	-4.8	-0.2	1991-2012	3.7	0.2	1991-2012
Iceland	-1.1	-0.2	2004-2010	-6.9	-1.0	2004-2011
Ireland	105.8	3.2	1987-2010	-13.0	-2.0	2004-2011
Israel	46.2	1.6	1986-2010	70.1	2.1	1985-2011
Italy	21.9	0.8	1986-2010	14.1	0.5	1984-2011
Japan				1.4	0.1	1985-2009
Luxembourg	99.9	2.8	1985-2010	52.5	1.7	1986-2011
Netherlands	25.4	1.3	1993-2010	26.5	0.7	1977-2012
New Zealand				22.3	0.8	1985-2011
Norway	107.5	2.4	1979-2010	65.7	2.0	1986-2011
Poland	31.9	1.6	1992-2010	62.3	7.2	2004-2011
Portugal				-2.1	-0.3	2004-2011
Slovak Republic	48.8	2.2	1992-2010	102.6	10.6	2004-2011
Slovenia	28.6	2.0	1997-2010	11.4	1.6	2004-2011
Spain	66.1	1.7	1980-2010	-3.4	-0.5	2004-2011
Sweden	57.0	1.9	1981-2005	65.6	1.8	1983-2011
Switzerland	2.3	0.6	2000-2004	4.7	2.3	2009-2011
United Kingdom	70.6	1.7	1979-2010	46.8	1.5	1985-2011
United States	12.8	0.4	1979-2010	13.1	0.4	1984-2012
Average	41.3	1.6	.	27.8	1.6	.

We see first that there is a very wide range of variation in the degree to which different countries have achieved substantial improvements in living standards as reflected in this measure of purchasing power at the middle of the distribution. Focusing on the results derived from LIS, the average annual growth rates range from marginally negative up to over 5%, while in the OECD data the range is even wider, from an average decline of 2% per annum to an increase of 7%. The implications of such differences for growth over a prolonged period are brought out in Figure 1, which graphs the evolution of the median over time for the countries where we have data going back as far as about 1980 from LIS, and setting the value at that point to

100. We see at one extreme that Norway, which had an average annual increase of 2.4% per year over the period, saw median income more than double over the 30 years covered. At the other extreme, the USA, with annual average growth of only 0.4%, saw an overall increase of only 13% in median income. In between those extremes, Spain, Sweden and the UK saw median income rise by about two-thirds, though with a sharp decline in Spain towards the end of the period, while Canada and France saw much more modest growth – though still considerably more than the USA – and Australia saw limited growth up to the early 2000s but then a very substantial pick-up.

Figure 1: Growth in Median Income in Real Terms, Countries Available in LIS from About 1980



For the countries where our earliest observation in LIS is not as far back as 1980, there is similar variation. Ireland and Luxembourg with an average annual growth of about 3% from the mid-1980s saw median income double over 25 years, for example, whereas Germany saw average growth of only 0.5% and an overall increase of only 15% from about 1985. Countries experiencing the upheaval of the post-communist transition, for which data is available only from 1990 or later, also saw striking differences: for Hungary the median in 2012 was below where it was in 1990 in purchasing power terms, whereas Poland saw a 30% increase over that period. For the countries for which LIS data is available only from the mid-1990s, Greece achieved rapid growth up to the recession, while the Netherlands and Austria saw more modest growth. (We look in Section 6 at how growth varied over different sub-

periods for each country, concentrating at this stage on overall growth in the median across the longest period covered.)

It would clearly be both reassuring and convenient if the two sources of data, LIS and OECD, showed a consistent picture for each country over time. In that case the option of concentrating on one or the other, or indeed combining them to cover the longest period possible for each country and maximize the number of country/year observations, could be pursued. It is clear though from Table 1 that it will make a significant difference to how we regard certain countries if we focus on the OECD rather than LIS data: for example, the average growth rate for Australia from the OECD data is more than twice as great as the one we have seen in LIS, while Greece by contrast would have much lower growth in the OECD data. This may most obviously be because one data source covers a longer/different period to the other: to take those examples, for Australia LIS covers a rather longer period than the OECD, whereas for Greece the opposite is the case. This in itself serves to underline the important point that our picture of a country's relative performance may be substantially influenced by the period on which one focuses, which in turn will be affected by the years for which data happens to be available.

However, that is not the only reason the two data sources sometimes tell a different story. In Table 2 we show the percentage change in median income from the LIS and OECD for each country over the longest period for which we can employ the same start and end years for that country. We see that the difference between the two sources is quite often non-negligible and in some cases substantial. This, somewhat surprisingly, arises even when a common data source has been used. While it will be an important task for the future to investigate in depth the factors contributing to this divergence, the implication for our analysis – and for other users of these datasets - at this stage is that the robustness of conclusions from analysis of one of the comparative datasets may need to be tested against the other.

Table 2: Growth in Median Disposable Equivalised Household Income in Real Terms by Country, LIS and OECD Data, Longest Period Covered by Both

Country	Increase		Years Covered	Difference
	LIS	OECD		
	%	%		Ppt
Australia	53.6	52.3	1995-2010	1.3
Canada	23.2	19.6	1981-2010	3.7
Czech Republic	65.6	50.7	1992-2010	15.0
Denmark	17.5	16.9	1995-2010	0.6
Estonia	37.1	41.3	2004-2010	-4.2
Finland	38.3	41.1	1987-2010	-2.8
France	17.6	10.7	2000-2010	6.8
Germany	-0.3	2.1	2000-2010	-2.4
Greece	-1.5	-6.7	2004-2010	5.2
Hungary	-4.8	3.7	1991-2012	-8.4
Iceland	-1.1	-4.8	2004-2010	3.7
Ireland	-5.8	-5.6	2004-2010	-0.1
Israel	12.2	15.5	2005-2010	-3.3
Italy	-1.2	3.3	1991-2010	-4.5
Luxembourg	-1.5	0.5	2004-2010	-2.0
Netherlands	-1.4	-0.5	2007-2010	-0.9
Norway	56.5	60.4	1986-2010	-3.9
Poland	41.3	62.5	2004-2010	-21.2
Slovak Republic	41.5	90.4	2004-2010	-49.0
Slovenia	15.4	12.7	2004-2010	2.7
Spain	-1.2	4.5	2004-2010	-5.7
Sweden	16.6	13.6	1995-2000	2.9
United Kingdom	40.8	30.2	1994-2010	10.6
United States	-0.9	-4.2	2000-2010	3.3
Average	19.1	21.3	.	-2.2

It is now helpful to categorise countries in terms of the pace of their growth in median incomes over the longest period covered in the LIS data, and then note countries for which the OECD database suggests a different picture. For this purpose we employ a set of (necessarily somewhat arbitrary) cut-offs to distinguish:

- those achieving exceptionally strong growth of 2% per annum or more in median income in real terms;
- those where growth was at or above 1.6% - the arithmetic average annual growth rate across the countries with LIS data - but less than 2%;
- those where growth was at least 1% but below 1.6%;
- those where it was between 0.5% and 1%, and those where growth on average was less than 0.5% (including where it was negative).

The figures from LIS, together with those for Japan, New Zealand, Portugal and Switzerland from the OECD since these are not included in LIS, produce the grouping of countries shown in Table 3.

Table 3: Annual average growth in median income by country over the longest period covered by LIS back to 1980

Average growth per year	Country
<i>Very strong growth</i> (> 2%)	Czech Republic, Estonia, Greece, Ireland, Luxembourg, Norway, Slovak Republic
<i>Strong growth</i> (1.5%-2%)	Belgium, Israel, Poland, Slovenia, Spain, Sweden, UK
<i>Some growth</i> (1%-1.5%)	Australia, Finland, Netherlands
<i>Modest growth</i> (0.5%-1%)	Austria, Canada, Denmark, France, Germany, Italy, Switzerland, New Zealand
<i>Little or no growth</i> (< 0.5%)	Hungary, Iceland, Japan, Portugal, USA

Note: Japan, New Zealand, Portugal and Switzerland are from OECD data rather than LIS.

If we relied instead on the average growth rates from the OECD database, then this categorisation would still hold for about half the countries (specifically, Australia, Austria, Canada, Czech Republic, Denmark, Estonia, Finland, Germany, Iceland, Italy, Norway, Slovak Republic, Sweden, and the USA). Marginal differences would just suffice to move France up and the UK down a category, but LIS data cover a longer period, while the Netherlands would also move down a category and the OECD data covers the longer period. For Belgium, Ireland, Poland, Slovenia and Spain growth is much lower in the OECD database, but it covers only from 2004 onwards, whereas LIS goes back much further and better represents longer-term experience (though for Belgium LIS only goes up to 2000). Israel has even stronger growth but Luxembourg lower growth in the OECD data although the periods covered by the two sources are similar. Greece appears the most problematic: the average growth rate is only 0.2% in the OECD data covering 1986 to 2011 compared with 2% in LIS, which covers 1995-2010.

While this grouping of countries in terms of median income growth is not entirely consistent or robust, we can still ask how it fits with the clustering into

varieties of capitalism or welfare regimes described earlier. Countries from the various clusters are distributed across the growth categories we have employed in Table 3. Liberal market economies, and those in the liberal welfare regime, for example, are to be seen in all five categories ranging from the USA at the bottom through to Ireland at the top. In a similar vein, some coordinated market economies achieved very little (Japan) or only modest growth (including France and Germany) but others did much better (including Belgium, Luxembourg and Norway). The social democratic welfare regime includes strong performers in Norway and to a lesser degree Sweden, but Finland and even more so Denmark did much less well. The Mediterranean countries once again feature across the categories: even if one disregards Greece, Spain saw much more growth than Italy for example. There is also wide variation across the post-socialist countries, with Hungary at one extreme seeing little real income growth and the Czech and Slovak Republics, Slovenia and Estonia at the other with rapid growth in median incomes.

If we simply average the growth rates for the median shown in Table 1 across the countries in each cluster, with the data from LIS the average annual growth rate for liberal market economies is 1.4% while for coordinated market economies it is 1.3%. The OECD data cover a shorter period for many countries and show lower growth on average, with the cross-country average for the liberal market economies now 0.7%, compared with 1% for the coordinated market economies. In terms of welfare regimes, with LIS data the cross-country average growth rate is remarkably similar, at 1.3% for the social democratic countries, 1.4% for both the liberal and corporatist regimes, and 1.5% for the southern/Mediterranean countries; OECD data shows lower growth of about 1% on average for the first three regimes, and very much lower growth for the Mediterranean countries (partly) because the period covered is more concentrated. The average rate of increase for the post-socialist corporatist countries is 1.6% in the LIS data, but much higher in the OECD data covering a much shorter period; since we only have data for Estonia among the Baltic countries, it is our only observation from the post-socialist liberal regime.

These averages are based on different time-periods for individual countries and thus regimes/models, but make maximum use of the data available; each of the clusters contain countries with longer and shorter periods covered, so this should not produce a systematic bias in the comparisons across them. Using a common time-period would restrict us to a much narrower time window, in which case differences

across countries in the extent and timing of macroeconomic cycles and thus in growth in the median from one sub-period to the next (discussed in the next section), would loom even larger. Overall, then, the variation within the country clusters is the most striking feature of the patterns observed, with no cluster consistently achieving higher real income growth around the middle.

It is also interesting to note how this pattern comes about, in terms of the changes in economic growth and in income inequality that underlie it. Focusing on liberal versus coordinated market economies, over the periods covered by the LIS data for each country Gross National Income (GNI) per head rose somewhat more rapidly on average in the liberal countries, but so did income inequality (as reflected in either the Gini coefficient or the ratio of the top to the bottom decile), such that the outcomes for the median were quite similar between the two. Over the (often shorter) periods covered by the OECD income distribution data, on the other hand, there was little difference in either growth in GNI per head or change in inequality, once again underpinning similar outcomes in terms of the median. Across the welfare regimes, average GNI growth was relatively rapid in the post-socialist countries but so was inequality growth, whereas both were relatively modest in the social democratic and southern countries. However, the changes in GNI and inequality does not fully align with or predict those in the median, bringing out the importance of pursuing the divergences between national accounts and survey-based indicators of household income highlighted in the introduction.

5. Variation in Median Income Growth Within Countries Over Time

While overall change in median income over the entire period for which we have data is a key indicator, in comparing performance it is also very important to recognize the extent to which growth in the median varies over time within countries. This is brought out by examination of the average annual growth rates for the (approximately) 5-year sub-periods that can be distinguished in the LIS data, which are shown in Table 4. We see that for Australia, for example, where the overall growth in the median over the 30 years was substantial at over 40%, there was very little growth or even a decline in the median in the sub-periods from 1980 to 1995, and strong growth only from 1995 to 2000 and especially from 2005 to 2010. For Canada growth was concentrated in the period from 2000 onwards. Germany experienced a decline in median income from 1990 to 1995 followed by some

recovery but then stagnation from around 2000. Finland and Sweden saw substantial growth for much of the period but sharp declines from 1990 to 1995, when they were hit by financial crises and recession, while for Norway this was also a period of more modest decline. The Netherlands had strong growth in median incomes from 1995 to 2000, followed by a decline and subsequent recovery. For the UK, the substantial overall growth seen over the period as a whole was the product of sharply contrasting experiences of stagnation (from 1980 to 1985, 1990 to 1995, and 2005 to 2010) versus strong growth (from 1985-1990, 1995-2000 and 2000-2005). The USA saw stagnation for most sub-periods but from 1995 to 2000 had substantial growth with an annual average increase in the median of 2%.

Table 4: Growth in Median Equivalised Disposable Household Income in Real Terms by Country and Sub-Period*, LIS Data

	CAGR of median					
	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
	%	%	%	%	%	%
Australia	-0.1	0.2	-1.4	1.9	0.5	5.2
Austria				1.0	1.5	
Belgium		1.5	2.6	1.6		
Canada	0.4	-0.2	0.0	0.4	1.6	1.6
Czech Republic			4.0	0.9	5.1	2.7
Denmark		-0.6	2.3	1.1	1.3	0.8
Estonia					10.0	1.6
Finland		2.3	-2.7	2.2	3.1	1.5
France	-0.7	1.0	1.9	0.1	0.9	2.4
Germany		2.4	-0.9	1.2	-0.2	0.2
Greece				2.4	4.4	-1.2
Hungary			-7.1	-0.2	3.1	-0.7
Iceland						-2.2
Ireland			4.2	6.7	3.3	-2.5
Israel		2.8	0.2	2.7	0.5	1.9
Italy		4.8	-2.0	0.8	0.8	0.4
Luxembourg		7.7	1.5	1.4	2.5	-0.3
Netherlands				2.6	0.6	0.7
Norway	4.1	0.7	-0.2	3.2	2.8	2.5
Poland			-8.2	5.3	1.2	5.7
Slovak Republic			-0.3		2.2	4.6
Slovenia				0.3	2.3	2.2
Spain	-1.0	5.2	2.1	4.9	0.5	-1.5
Sweden	1.3	3.0	-2.2	3.1	2.8	
Switzerland					-0.2	
United Kingdom	0.1	3.2	0.6	3.1	3.2	0.2
United States	0.2	0.0	0.5	2.1	0.3	-0.6

Note: from/to nearest available year in the LIS data for the country in question

The implication is that the period on which one focuses can have a major impact on how well a particular country is seen to have performed. We have seen, for example, that Australia and Canada would have been regarded as very poor performers indeed, as bad or worse than the USA, if we were looking back from 1995 at the preceding 15 years. The UK, by contrast, would have been an obvious example for others to learn from – with annual average growth rates in the median of 3.5% - if one was looking back from 2005 over the previous decade, but did much less well from that point on. For the transition countries this is even more dramatic: a comparison across them starting in 1990 would look quite different to one starting in 2000. The fact that we have observations back to 1980 for some countries and only to 2000 for others is clearly a serious obstacle in assessing their relative performance, but even for the subset of countries where we can go as far back as 1980, their comparative performance might well be different if we were able to go even further back.

We can use all the waves available for the LIS and OECD datasets for a more formal test whether there are differences in average growth rates for median income, inequality, and GNI per capita between the different groups for the varieties of capitalism and welfare regime classification. As our statistical method, we use chi-squared tests for equality of multivariate group means, where we allow for heterogeneity in variances across groups which is present in this case and poses difficulties for regression-based tests (see Appendix 1 for further details and results). For the LIS data we do not find that median incomes, GNI per capita, or inequality grew systematically faster in any varieties of capitalism or welfare regime group. For the OECD data, however, we find that median incomes grew significantly faster in Central and Eastern European countries than in any other group in both the varieties of capitalism and welfare regime classification. Thus, for this sample we find signs of catching up for the Eastern European countries, but no diverging patterns between the “classic” country groups. For GNI per capita we find signs that the Mediterranean and Southern European clusters grew less fast.

It is also worth noting that, while the results presented so far refer to all households, much of the commentary and debate about ‘ordinary’ or ‘middle’ living standards has focused on the situation of ‘*working families*’. The living standards of the elderly are determined by a distinctive set of factors, and it is of interest to look at trends in real incomes for working-age households only. (There are of course strong dynamic links between the incomes of working-age families and those in retirement,

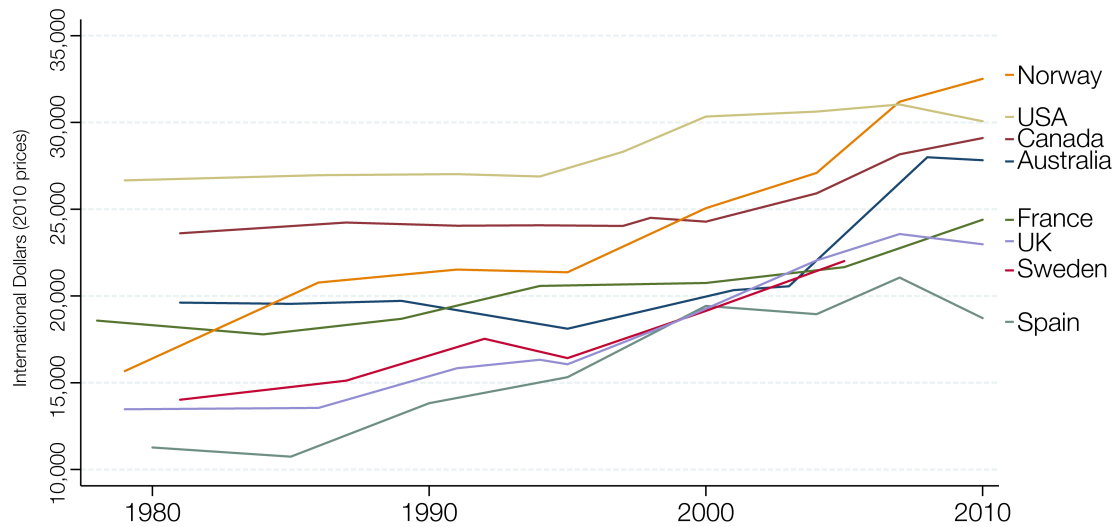
and they sometimes live in the same household). If we take households where the main income recipient is aged under 65, and compare growth in median incomes over time for them with the patterns we have already described for all households, the relative performance of different country clusters is not substantially affected: the same conclusions apply as we have set out for the entire population.

6. Median Income Levels Reached

So far, we have focused on income growth over time at and below the middle as the criterion for judging a country's performance, which seems appropriate when one is focused on "inclusive growth". In thinking about living standards for middle and lower income households, though, these countries varied greatly in their point of departure, in terms of income level at the beginning of the observation period. Some of the countries seeing little growth in median incomes from 1980 – notably the USA - had already achieved high levels of income by that point, while some of the fastest-growing started from low levels of average income and GDP. This is relevant here in a number of distinct though related respects: achieving a given absolute increase in income will represent lower growth in percentage terms for countries already at a high average level, countries starting from a low base have more scope for rapid catch-up growth than those closer to the frontier, and the actual level of income achieved as well as the pace of growth may be relevant in assessing performance.

With these considerations in mind, it is also informative to look at the absolute increase in median income in purchasing power terms seen across the OECD countries over time. Figure 2 shows the evolution in the level of the median in the countries for which LIS data goes back to around 1980, and we see the USA at the start of the period had median income considerably higher than any of the other countries covered, of which Canada was the closest. By 2010 all these countries had narrowed the gap in median incomes with the USA, with Canada reaching almost the same level, while Norway exceeded it.

Figure 2: Median Income in PPP terms, Countries Available in LIS from About 1980



A more comprehensive picture across the OECD can be seen from Table 5, which shows the level of median income in \$PPP terms at the start and end of the period covered for each country, together with the overall and annual average change, from both of the datasets. We see that the average annual increase in the median was indeed high in some countries that had relatively low levels at the outset, such as Ireland and Spain (and also Estonia over the short period for which data are available), but also in Luxembourg and Norway that started with intermediate median levels. The average annual increase in the median in the USA is among the lowest seen, much lower than in other countries with relatively high initial income levels. This meant that by 2010, Luxembourg as well as Norway had higher medians than the USA, and countries such as Australia, Canada, Denmark, Finland, Iceland and the Netherlands were close to it. The UK, despite achieving relatively strong increases and narrowing the gap, remained further behind the USA and had not reached the levels of Germany or France by 2010.

So a focus on absolute levels and changes rather than percentage growth rates may indeed alter our perspective on how well or badly specific countries have done. However, it does little to change an assessment of the liberal versus coordinated market economies. Averaging the country average annual increases across the countries included in each model, based on LIS data the average increase per annum is \$283 for liberal versus \$297 for coordinated market economies. Across the welfare regimes the corresponding averages are \$275 for the social democratic regime, \$283

for the liberal regime, and \$321 for the corporatist regime; Luxembourg's very high absolute increase has a substantial impact on the average across the six corporatist countries: for the other five the average would be about \$250. The Mediterranean cluster has an average increase of \$234 and the post-socialist coordinated countries an average of \$205 in the LIS data, so in welfare regime terms the main impact of focusing on growth in absolute rather than percentage terms is that their performance would rank behind rather than marginally ahead of the other regimes, reflecting their low initial average income levels.

Finally, one might argue that the level of income achieved, as well as the rate of growth in percentage or absolute terms, should be taken into account in assessing competing models; whether one should do so raises many issues, given the differences in initial conditions and the lengthy period over which the models/regimes evolved, that we will not attempt to elucidate here. Instead we simply look at the average level of the median across each of the models/regimes taking the latest observation available for each country. The LIS data then show the liberal market economies having an average level for the median in \$PPP terms of \$26,715, very close indeed to the corresponding figure for the coordinated market economies that is \$27,172. The averages for the social democratic, liberal and corporatist welfare regimes are also very similar at \$26,625, \$26,715 and \$26,825 respectively. The average for the Mediterranean regime is much lower at \$18,645, and for the post-socialist coordinated economies a good deal lower again at \$14,420. So even if one takes the level of income attained for households in the middle of the distribution into account, as well as the increase achieved over recent decades, there seems to be little to choose between the two 'varieties of capitalism' or the three central 'worlds of welfare'.

Table 5: Levels and Changes in Median Equivalised Household Income in Real Terms by Country, LIS and OECD Data, Longest Period Covered from 1980

Country	LIS				OECD			
	Initial value	Overall increase	Annual average increase	Years covered	Initial value	Overall increase	Annual average increase	Years covered
Australia	19616	8205	283	1981-2010	18307	10818	636	1995-2012
Austria	24262	2335	234	1994-2004	26332	1221	174	2004-2011
Belgium	17174	5787	386	1985-2000	22671	2070	345	2004-2010
Canada	23613	5488	189	1981-2010	23879	4229	136	1980-2011
Czech Republic	9761	6407	356	1992-2010	10287	4965	261	1992-2011
Denmark	22673	4948	215	1987-2010	20973	5259	202	1985-2011
Estonia	6582	5371	537	2000-2010	8193	3638	520	2004-2011
Finland	18297	7015	305	1987-2010	17332	8015	308	1986-2012
France	18580	5814	182	1978-2010	20869	3365	224	1996-2011
Germany	22160	3379	130	1984-2010	20634	4213	162	1985-2011
Greece	13518	4676	312	1995-2010	13179	536	21	1986-2011
Hungary	11492	-547	-26	1991-2012	10689	393	19	1991-2012
Iceland	26924	-296	-49	2004-2010	26246	-1799	-257	2004-2011
Ireland	11472	12139	528	1987-2010	24992	-3252	-465	2004-2011
Israel	11814	5456	227	1986-2010	9679	6786	261	1985-2011
Italy	15599	3420	143	1986-2010	19070	2686	99	1984-2011
Japan					21660	314	13	1985-2009
Luxembourg	17328	17309	692	1985-2010	22156	11622	465	1986-2011
Netherlands	20466	5198	306	1993-2010	19394	5132	147	1977-2012
New Zealand					19287	4307	166	1985-2011
Norway	15669	16844	543	1979-2010	20258	13303	532	1986-2011
Poland	9387	2996	166	1992-2010	8346	5202	743	2004-2011
Portugal					13595	-281	-40	2004-2011
Slovak Republic	10220	4985	277	1992-2010	7737	7940	1134	2004-2011
Slovenia	15154	4341	334	1997-2010	18158	2068	295	2004-2011
Spain	11269	7454	248	1980-2010	17827	-597	-85	2004-2011
Sweden	14020	7992	333	1981-2005	15314	10049	359	1983-2011
Switzerland	28630	672	168	2000-2004	31703	1500	750	2009-2011
United Kingdom	13470	9508	307	1979-2010	14650	6862	264	1985-2011
United States	26660	3407	110	1979-2010	25964	3408	122	1984-2012
Average		5937	275			4132	250	

While in an increasingly interlinked global economy, countries also faced major differences in the environment in which they operated, influencing – for better or worse – the trajectory of living standards they could achieve. This is most obvious in the case of the transition countries of eastern and central Europe, which underwent such a fundamental restructuring of their economies that it would be hazardous to generalize beyond them any lessons to be drawn from their comparative performance. Countries such as Norway, Canada and Australia, and to some extent the UK, benefitted in particular periods from oil or mineral resources not available to others, while Germany had to cope with the incorporation of its lower-income East. Nonetheless, the marked differences in performance across and within countries clearly still represent an opportunity to explore the extent to which periods of strong growth in median incomes share common features distinguishing them from periods where there was little or no growth.

7. Conclusions

Generating rising prosperity for middle and lower income households is now seen as representing a fundamental challenge for the rich countries, reflecting both the severity of the economic crisis and stagnating wages and living standards for middle and lower income households over a much longer period in the USA in particular. To understanding the nature of this challenge and frame productive responses, however, one must look at the range of experiences across the rich countries, so this paper has across the OECD countries. A central question in seeking to learn from such comparative analysis is whether, when countries with similar institutional settings or growth models are grouped together, a best-performing model can be identified. Such comparisons are often based on indicators such as economic growth, employment rates and income inequality, and these certainly have implications for the living standards of middle (and lower) income households. Here, though, we have investigated how countries, and models or regimes, compare when one focuses directly on the evolution of real incomes for middle-income households, drawing on data from the two main sources containing that information.

We have shown that there has been remarkably wide variation across OECD countries in recent decades in the rate of growth in median disposable income in real terms. This variation is also seen within the liberal and coordinated market economy

models distinguished in the ‘varieties of capitalism’ literature, as well as within the welfare regimes commonly employed in welfare state analysis. By contrast, the average growth rate across the liberal market economies is very similar to the average for the coordinated market economies, and there is also quite limited variation in those terms across the welfare regimes. This remains true when one focuses on working-age households only. The average absolute increase in median income in real terms over time, rather than the percentage increase, once again differs a great deal across countries but very much less across these economic models or regimes; the level attained at the most recent year for which data is available is also quite similar across the liberal and coordinated economies and across the social democratic, liberal and corporatist welfare regimes, with the Mediterranean and post-socialist countries/regimes then lagging behind.

So if one focuses directly on the income of households in the middle of the income distribution as a core indicator of performance, there is little to choose between the two ‘varieties of capitalism’ or the three central ‘worlds of welfare’: there is no clear, consistently best-performing model. It is also worth emphasizing the very substantial variation that most countries have seen in median income growth between different sub-periods: some countries have seen only relatively short periods of significant growth, others have achieved marked improvements in incomes around the middle but often in an uneven rather than consistent fashion over time. This serves to highlight the importance of context and dynamics as well as institutions and policies. Some countries have been much more successful than others in generating inclusive growth over a twenty or thirty year period, and many have seen periods of growth interspersed with stagnation, and there are lessons to be learned from both types of variation. The identification of factors common to periods of strong growth in incomes for the middle (and lower) parts of the distribution can make a substantial contribution to framing policies that will effectively underpin such growth for the future: this is a more promising research strategy than the search for a best-performing model.

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Appendix 1: Statistical tests

We test whether there are differences in average growth rates for median income, inequality, and GNI per capita across the different groups for the varieties of capitalism and welfare regime classification. For these tests we use the pooled dataset, both for LIS and OECD data separately. We calculate compound average growth rates (CAGR) for the median income and GNI per capita, and average annual growth rates for the Gini index (results do not change when we use a CAGR for the latter as well). Tables A1 and A2 report the group means for each variable for both classifications for the LIS and OECD data respectively.

Table A1: Means per group for the pooled LIS data

	Obs	CAGR median income		Annual avg diff Gini		CAGR GNI per capita	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Varieties of Capitalism							
Liberal market economy	45	1.40	2.32	0.14	0.47	2.15	2.28
Coordinated market economy	53	1.40	2.25	0.08	0.57	1.63	2.54
Mediterranean	27	1.24	2.78	0.07	0.89	1.50	1.84
Central and Eastern European countries	27	2.18	4.86	0.17	0.74	3.00	3.26
Welfare regimes							
Liberal	41	1.31	2.42	0.09	0.49	2.02	2.42
Conservative	27	1.29	1.94	0.12	0.63	1.82	2.50
Social democratic	30	1.46	2.35	0.05	0.51	1.51	2.39
Southern European	27	1.43	2.83	0.16	0.88	1.71	1.92
Central and Eastern European countries	27	2.18	4.86	0.17	0.74	3.00	3.26

Table A2: Means per group for the pooled OECD data

	Obs	CAGR median		Annual avg diff		CAGR GNI per	
		income		Gini		capita	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Varieties of Capitalism							
Liberal market economy	82	0.68	2.84	0.06	0.50	1.37	2.59
Coordinated market economy	106	0.90	2.74	0.11	0.77	1.15	4.86
Mediterranean	40	-0.46	4.80	0.01	0.68	0.06	2.73
Central and Eastern European countries	44	4.58	6.66	-0.25	1.23	2.80	4.63
Welfare regimes							
Liberal	75	0.58	2.86	0.04	0.52	1.25	2.64
Conservative	42	0.59	1.63	0.11	0.71	0.91	5.91
Social democratic	69	1.03	3.16	0.14	0.79	1.27	4.00
Southern European	42	-0.16	4.85	0.00	0.65	0.39	2.78
Central and Eastern European countries	44	4.58	6.66	-0.25	1.23	2.80	4.63

We conduct the Levene's test for equality of variance between groups, which indicates the presence of heterogeneity in variances across groups for most of our dependent variables and classifications. Moreover, both classifications contain more than two groups and these groups have very different sample sizes. Due to this data structure, we conduct chi-squared tests for equality of multivariate group means, where we allow for heterogeneity in variances across groups.

In Table A3, we show the James approximated p values for the chi-squared tests for LIS and OECD data. For the LIS data none of the p -values lead to the rejection of the null hypothesis at any level of statistical significance, thus we do not find evidence that the groups have unequal means for any variable. For the OECD data we see significant group differences for the median and GNI per capita. To test which group means are statistically different from each other, we conduct post-estimation tests, using the same estimation techniques, where we apply a Bonferroni correction by multiplying the p values by the number of post-estimation tests we run (6 for the varieties of capitalism and 10 for the welfare regime classification). The post-estimation tests indicate that median incomes grew faster in Central and Eastern European countries, but there are no significant differences between the other groups, both for the varieties of capitalism and welfare regime classification. For GNI per capita, we find that it grew less fast in Mediterranean countries vis-à-vis liberal

countries and Central and Eastern European countries, and that for the welfare regime typology GNI per capita grew faster in Central and Eastern European countries than in the Southern European cluster. Again, we do not find other significant mean differences between the other groups.

Table A3: *P* values for differences across group means

Variable	Classification	LIS	OECD
CAGR median income	Varieties of Capitalism	0.8594	0.0013***
	Welfare Regime	0.9322	0.0030***
Annual difference GNI	Varieties of Capitalism	0.9138	0.3585
	Welfare Regime	0.9532	0.4335
CAGR GNI per capita	Varieties of Capitalism	0.1574	0.0079***
	Welfare Regime	0.3963	0.0733**