INEQUALITY, REDISTRIBUTION AND MOBILITY

RESEARCH ON ECONOMIC INEQUALITY

Series Editors

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Emerald Publishing Limited
Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2021

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN: 978-1-80043-040-2 (Print)
ISBN: 978-1-80043-039-6 (Online)
ISBN: 978-1-80043-041-9 (Epub)

ISSN: 1049-2585 (Series)

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INTRODUCTION

Research on Economic Inequality: Inequality, Redistribution and Mobility begins with an overview of rich countries' income growth and transfer programs. In the opening chapter, Nolan and Thewissen caution that the US experience cannot be generalized to all rich countries. While it is true that the vast majority of these countries experienced Gini type increase in inequality, income growth at the bottom and middle show that there is a diversity of experiences across these countries. They reject the "Grand Narrative" approach that suggests that all rich countries experienced extreme polarization.

In the second chapter, Causa and Hermansen investigate the changing role of tax and transfer policy in income leveling across OECD countries. Like Noland and Thewissen, they note that OECD averages "mask a great deal of heterogeneity." Also, like the previous chapter, they provide results for the important working-age population. One important finding is that the results vary by base year. Choosing the 1990s as the base shows consistent declines in redistribution; however, this conclusion is mitigated if they begin in the 1980s. The decline from the 1990s has many causes, although the decline in cash transfers is most noteworthy.

Chapters 3 and 4 ask us to reconsider our methodological approaches to mobility measurement. Chakravarty, Chattopadhyay, Lustig, and Aranda begin with the well-known Bartholomew mobility index, which in its current form "encompasses both downward and upward moments." The objective of their paper is to reinterpret the Bartholomew index in terms of directional mobility. They provide a partial ordering of intergenerational mobility "using the algebraic equivalent of generalized Lorenz curve." This methodological approach is employed to study directional mobility by race in the United States. The paper also includes an addendum applying a Bayesian approach to the Prais–Bibby index.

In Chapter 4, Kosny, Silber, and Yalonetzky use the absolute Lorenz curve to provide a partial ordering of intragenerational mobility. They begin by defining immobility as the case where for all individuals and time periods their observed income share is identical to their expected share. While this definition of immobility is identical to that of Shorrocks (1980), it allows them a unique way to derive new measures of multi-period mobility. To examine the usefulness of the new measures the authors study income mobility in Europe between 2005 and 2012. The focus on two interesting cases, mobility in "old EU" member versus "new EU" members, and secondly, on the effects of the financial crisis on income mobility.

Different circumstances in childhood such as family background lead to different levels of education and different occupational categories which, in turn, contribute to generate different levels of income during adulthood. In chapter 5, Andreoli, Lefranc, and Prete examine whether increasing educational attainment

allows equalizing opportunities for earnings acquisition. To this end, they evaluate the effect of rising compulsory schooling requirements in secondary education. Focusing on the French case they find that such education expansion equalizes opportunity among groups of students defined by family background circumstances, although it has a limited re-distributive effect on students' earnings distribution.

In Chapter 6, Fusco and Islam investigate the effect that the number of children of different age groups has on poverty. For this task, they apply static and dynamic probit models to control for endogeneity and to account for unobserved heterogeneity and state dependence. Using Luxembourg longitudinal data, they find that the number of children of different age groups significantly affects the probability of being poor. Moreover, they obtain strong evidence of poverty persistency due to past experience.

The purpose of Chapter 7 is to provide a link between the allocation advocated by Rawls in *A Theory of Justice* and a set of economic ground principles of welfarism and utilitarianism. Assume that the social stress of a population can be measured by the population's aggregate relative deprivation. Then, Oded Stark proves that a social planner who seeks to allocate a given sum in order to reduce efficiently the social stress of a population pursues a disbursement procedure that is identical to the procedure adhered to by a Rawlsian social planner who seeks to allocates the same sum in order to maximize the Rawlsian maximin-based social welfare function. Therefore, an economics-based rationale for the philosophy-based constrained maximization of the Rawlsian social welfare function is a constrained minimization of aggregate relative deprivation.

In the final chapter, Prieto, Rodríguez, and Salas analyze the measurement of wage discrimination when information is imperfect. Traditionally, wage discrimination studies assume a priori which workers are suffering from discrimination. However, when antidiscrimination laws mean that severe penalties can be imposed on discriminatory employers or when unobserved heterogeneity is significant, this may not be a good assumption. These authors develop a wage discrimination model in which workers are not classified a priori. It is a probabilistic generalization of the standard empirical framework, whereas the Oaxaca–Blinder model appears as an extreme case. To estimate the probabilities of being a discriminated or a non-discriminated worker, they propose a finite mixture model and illustrate their proposal with the estimation of wage discrimination in Germany and the United Kingdom.

CHAPTER 1

INEQUALITY AND REAL INCOME GROWTH FOR MIDDLE- AND LOW-INCOME HOUSEHOLDS ACROSS RICH COUNTRIES IN RECENT DECADES

Brian Nolan and Stefan Thewissen

ABSTRACT

This paper places what has happened to income inequality in rich countries over recent decades alongside trends in median and low incomes in real terms, taken as incomplete but valuable indicators of the evolution of living standards for "ordinary working families" and the poor. The findings demonstrate first just how varied country experiences have been, with some much more successful than others in generating rising real incomes around the middle and toward the bottom of the distribution. This variation is seen to be only modestly related to the extent to which income inequality rose, which itself is more varied across the rich countries than is often appreciated. The extent to which economic growth is transmitted to the middle and lower parts of the distribution is seen to depend on a range of factors of which inequality is only one. Sources of real income growth around the middle have also varied across countries, though transfers are consistently key toward the bottom. The diversity of rich country experiences should serve as an important corrective to a now-common "grand narrative" about inequality and stagnation based on the experience of the USA.

Keywords: Inequality; poverty; living standards; growth; stagnation; distribution

Inequality, Redistribution and Mobility
Research on Economic Inequality, Volume 28, 1–28

ISSN: 1049-2585/doi:10.1108/S1049-258520200000028001

1. INTRODUCTION

The USA has seen a dramatic rise in income inequality from an already high base since the late 1970s: the share of total income (before tax) going to the top 1% has approximately doubled from around 10% to 20%, according to estimates in the World Inequality Database, and the Gini coefficient measuring inequality in disposable income across the entire distribution has also risen markedly. This has gone together with stagnation in real incomes for much of the distribution: median income was only about 10% higher in real terms in the mid-2000s than it had been around 1980 (Proctor, Semega, & Kollar, 2016), and a substantial proportion of that very modest gain was then lost in the Great Recession and only recovered slowly. At the same time, poverty measured either in purely relative income terms or vis-à-vis the official US poverty threshold fixed in real terms is at a similar level now to in the early 1980s (Chaudry et al., 2016).

The contrast between the reasonably strong levels of aggregate economic growth that the USA achieved over this period and stagnation in household incomes across much of the distribution has been highlighted (e.g., Economic Report of the President, 2015; Fixler & Jaditz, 2002; Fixler & Johnson, 2014; Jorgenson & Slesnick, 2014). This has been central to a "grand narrative" that has emerged linking stagnating ordinary living standards and a "squeezed middle" to rising inequality, taking the USA as exemplar but often now applied across the rich countries more generally in current debates about inequality, stagnation, and their economic, social, and political consequences (see, e.g., Tóth, 2014 on the narrative about rising inequality, Boushey, 2019; OECD, 2015a; Reich, 2015; Stiglitz, 2012, 2015 on its economic impacts, and Nolan & Valenzuela, 2019 for an overview of and references to the wide-ranging literature on social and political impacts). It is noteworthy that the implications for poverty, on the other hand, have not featured prominently in these debates.

Rising income inequality could affect the growth of middle incomes via several different routes. If those in the upper-middle or at the top receive an increasing share of total income, there must be a compensating decline in shares elsewhere; however, this could of course still represent a real increase in middle and lower incomes, depending on the overall rate of economic growth. A second potential channel is via the impact of inequality on economic growth itself. For many years, the prevailing wisdom held that higher inequality provides the incentives required to drive economic growth. More recently, though, Stiglitz (2012, 2015), IMF and OECD studies (Cingano, 2014; OECD, 2015b; Ostry, Berg, & Tsangarides, 2014), and some prominent financial sector commentaries (Morgan Stanley, 2015; Standard and Poor's, 2014), among others, have suggested that rising income inequality may instead be damaging to growth. A wide range of different causal channels, with varying time-lags and dynamics, may be implicated (for an overview, see Boushey, 2019). Rising top income shares may hold back consumer demand, since rich people save more. Middle- and lower-income households may then borrow beyond their means to maintain consumption, fueling boom-bust economic cycles. The shift in managerial reimbursement has also focused CEOs on short-term earnings targets and higher dividends or shares

buybacks, so despite high profits, firms are reluctant to invest. Higher inequality may reinforce the capacity of firms and their owners that dominate particular sectors to protect their excess profits and stifle competition and innovation. Greater inequality may also impede the capacity of middle and lower earners to invest in their own education and skill upgrading, and also lead to under-investment in the education of poorer children and increase barriers to socio-economic mobility between generations. Inequality may also undermine institutions that are critical for sustained growth, by increasing the voice of the wealthy and undermining trust in those institutions in the general population, undermining social cohesion, reducing voter turnout and increasing support for "populist" parties. Concern about such damaging economic, social, and political effects underpins the focus of the OECD and other multilateral organizations on "inclusive growth" and "shared prosperity" (de Mello & Dutz, 2012; IMF, 2017; OECD, 2015b; World Bank, 2016).

Here, the core aim is to bring together what has happened to inequality in the distribution of income across households with trends in median and low incomes in real terms, to see how these have evolved and the extent to which they appear to be related. In pursuing this aim we draw on key findings from the recently published volume *Generating Prosperity for Working Families in Affluent Countries* (Nolan, 2018b), and develop its investigation of low incomes in particular. Section 2 describes the comparative data to be employed. Section 3 sets out what these show about how income inequality has evolved. Section 4 correspondingly presents key findings on how real incomes around the middle of the distribution have, or have not, grown over time. Section 5 then examines the relationship between the two, and whether rising inequality appears to be associated with slower real income growth around the middle. Section 6 probes the transmission of GDP growth to "ordinary" incomes in greater depth, to identify the most important "leakages" in that transmission. Section 7 focuses on real incomes in the lower reaches of the distribution, examining how these have moved over time and how this relates to trends in the median, inequality, and economic growth. Finally, we discuss in Section 8 the implications for monitoring societal progress and for promoting prosperity.

2. MEASURING INCOME INEQUALITY AND INCOME GROWTH ACROSS RICH COUNTRIES IN RECENT DECADES

While living standards and prosperity broadly conceived are the underlying concern, here we focus on household income as the best available proxy to capture variation across the rich countries over recent decades. Income has well-documented limitations as a measure of living standards, but crucially for comparative purposes, it is available on a consistent basis across rich countries for recent decades. We take growth in real disposable income at the median as key reference point or benchmark for the evolution of "middle" living standards. We then take real

income growth at the 10th percentile (the income dividing the bottom 10% from the rest of the distribution, conventionally labeled P_{10}) as an indicator of trends in the purchasing power of incomes among the poor (with the rationale for doing so to be brought out below). For comparative purposes, we also look at the income cutting off the bottom 30%, P_{30}, as an indicator of how real incomes have evolved for households well below the middle but not in poverty. With much of the generalized concern focused on the situation of "ordinary working people," the particular emphasis is placed on how working-age households, as distinct from older people, have fared, both around the middle and toward the bottom.

The measure of household disposable income from household surveys available over this span does not capture capital gains (or losses) on assets, or impute an income for the use value that home-owners obtain from owner-occupation. It also does not include the value of the services made available free or in subsidized form by the state, notably in education and health care, which are crucial to household living standards and quality of life, and affect how changes in household incomes are felt. While estimates of the value of these services to households at different points in the distribution have been made for some countries and time-points (see, e.g., Aaberge, Langorgen, & Lindgren, 2013; Garfinkel, Rainwater, & Smeeding, 2006; Marical, Mira d'Ercole, Vaalavuo, & Verbist, 2006; Paulus, Sutherland, & Tsakloglou, 2010; Smeeding, Tsakloglou, & Verbist, 2008; Verbist, Förster, & Vaalavuo, 2012), this has not been done on a consistent basis across the rich countries over time, so this very important aspect of living standards cannot be directly incorporated into our analysis.

The income concept employed is total income of the household from all sources, including wages, self-employment income, income from capital, pensions, social transfers, net of direct tax, and employee social insurance contributions. In using household income as an indicator of trends in living standards, adjustment has to be made for differences in household size and composition, and for that purpose, we employ the commonly used square root of household size equivalence scale; while the choice of scale is somewhat arbitrary, it does not generally affect measured patterns of overall income growth over time. To capture changes in the purchasing power of nominal incomes over time, these are deflated using consumer price indices to produce changes in "real" incomes. In using income to compare (absolute) living standards across countries, the purchasing power parity (PPP) conversion factors produced by the International Comparison Program for 2011 are employed; while such estimates are subject to considerable debate, here the primary interest is in comparing real income growth across countries over time rather than levels at a point in time.

The nature of the data available for this analysis has major implications for the form it takes. The two core sources are the Luxembourg Income Study (LIS) and the OECD Income Distribution Database (Atkinson, Rainwater, & Smeeding, 1995; Gasparini & Tornarolli, 2015; Gornick & Jäntti, 2013; OECD, 2008, 2011, 2012, 2015a; Ravallion, 2015). Both provide data on household incomes standardized, insofar as possible, across countries and over time, which is critical for this comparative analysis. The LIS database brings together micro-datasets from surveys for each country, whereas the OECD database comprises various measures

related to incomes, inequality, and poverty drawn from such surveys. LIS mostly has data in "waves," for years around 1975, 1980, 1985, etc.; the OECD database also has figures at intervals for around 1980, 1985, etc, but has more annual data, especially from the mid-2000s. Most of the OECD countries are covered in both sources, but LIS allows one to go back as far as 1980 for more countries. Whereas most comparative studies on household incomes, inequality, etc. rely entirely on one or the other of these data sources, here we draw on both to cover the longest period, and come up as far as possible, for each country. This means we mostly employ data from LIS, but use data from the OECD database for eight countries.[1] While we go back as close to 1980 as possible, for quite a few countries we have to start later: for two-thirds of the countries covered it goes back at least as far as the mid-/late-1980s, but for the remainder only a shorter period can be covered, sometimes considerably shorter. This varying coverage in terms of time-period maximizes the span of countries and years included in the analysis but must be kept in mind in interpreting the differing growth rates then observed across countries. We exclude countries that are in the LIS database but are not OECD members and countries that are OECD members but generally categorized as middle income (Chile, Mexico, and Turkey).

3. WHAT HAS HAPPENED TO INCOME INEQUALITY?

We first set out what happened to income inequality for these countries over the period covered for each, in the data source we are using for each.[2] Table 1 shows the period covered for each country, the Gini coefficient at the beginning and the end, and the overall change in the Gini; since the length of period covered varies across countries, the average annual change in the Gini is also shown. We see that some increase in the Gini coefficient was the most common experience across these rich countries in recent decades. However, there has been very wide variation in both the extent and timing of that increase. Some countries have seen little or indeed no increase, while others have seen rapid rises. Sweden, the UK, and the USA had the most pronounced increases in inequality. Australia, the Czech Republic, Finland, and New Zealand also saw marked increases, while Canada had a smaller but still substantial increase. Japan, Germany, and the Netherlands saw some increase in inequality. Norway had a more modest rise, as did Italy and Spain. Austria, Denmark, France, and Ireland were among the minority of countries for which little or no increase in the Gini was seen. For the formerly state socialist and low-inequality countries, the picture is mixed, with some seeing large increases from their initially low levels of inequality. Overall, about two-thirds of the countries saw an increase in the Gini over the period covered by the data being used here for each. Focusing on working-age households only, one sees a similar pattern overall but a greater increase in inequality in some countries, notably Spain and the UK.

While a simple summary along the lines of "Income inequality increased in most rich countries in the decades up to the Crisis" is valid as far as it goes, it risks obscuring major, consequential differences in country experiences. The scale of

Table 1. Gini Coefficient from 1980 (or Nearest Available Year) to 2013 (or Nearest Available Year), Total Population.

Country	First Year	Last Year	Gini in First Year	Gini in Last Year	Change in Gini (in 'Gini points')	Average Annual Change in Gini
Australia	1981	2010	28.19	33.38	5.19	0.18
Austria	1994	2013	28.18	28.07	−0.12	−0.01
Belgium	1985	2013	22.79	26.19	3.40	0.12
Canada	1980	2013	28.88	32.36	3.49	0.11
Czech Republic	1992	2013	20.58	25.87	5.29	0.25
Denmark	1987	2013	25.71	25.16	−0.56	−0.02
Estonia	2000	2013	36.41	35.37	−1.04	−0.08
Finland	1987	2013	20.70	26.11	5.41	0.21
France	1978	2010	31.86	29.17	−2.69	−0.08
Germany	1984	2013	26.60	29.48	2.89	0.10
Greece	1986	2013	35.20	34.38	−0.82	−0.03
Hungary	1991	2012	28.86	29.26	0.40	0.02
Iceland	2004	2010	25.71	24.60	−1.12	−0.19
Ireland	1987	2010	32.96	29.61	−3.35	−0.15
Israel	1986	2012	31.01	37.32	6.30	0.24
Italy	1986	2014	30.95	33.25	2.30	0.08
Japan	1985	2012	30.45	33.00	2.55	0.09
Luxembourg	1985	2013	23.60	28.36	4.76	0.17
Netherlands	1977	2014	26.30	28.30	2.00	0.05
New Zealand	1985	2012	27.10	33.30	6.20	0.23
Norway	1979	2013	22.56	25.26	2.71	0.08
Poland	1992	2013	26.22	32.20	5.98	0.28
Portugal	2004	2013	38.19	34.51	−3.69	−0.41
Slovak Republic	1992	2013	18.94	26.96	8.02	0.38
Slovenia	1997	2012	22.93	27.11	4.17	0.28
South Korea	2006	2014	30.60	30.24	−0.36	−0.05
Spain	1980	2013	32.05	34.55	2.50	0.08
Sweden	1983	2013	19.75	28.08	8.33	0.28
Switzerland	2000	2013	28.54	29.61	1.07	0.08
United Kingdom	1979	2013	26.71	33.37	6.66	0.20
United States	1979	2013	31.15	38.28	7.13	0.21
Average			27.73	30.41	2.68	0.11

Source: LIS except OECD for Canada, Greece, Japan, the Netherlands, New Zealand, Portugal, South Korea, and Sweden, and for Belgium from 2004.

increase in the Gini seen in the UK or the USA versus Norway or Italy represents very different realities. Furthermore, a very substantial increase from a very low initial base level relative to other countries, as in the case of the Czech Republic, Finland, or Sweden, may be very different in terms of how it makes itself felt to an increase of a similar scale from an already high level, as in the case most notably of the USA.

This emphasis on the diversity of experiences is reinforced when one looks at the timing of inequality increases, which were often concentrated in specific sub-periods rather than smooth and consistent over time, as captured by Atkinson, (2015) and Tóth (2014) highlighting their "episodic" nature. The impact of the

Great Recession on income inequality also varied widely across the rich countries, with inequality rising sharply in some but little changed in others.

The (mostly) survey-based figures on overall income inequality in LIS and the OECD IDD may not adequately capture what has been happening at the very top, but the now widely cited estimates of top income shares based on tax data and the national accounts, brought together in the World Inequality Database, provide a very valuable complement in that regard. These estimates cover only some of the rich countries being studied here, but for them, Table 2 shows an increasing concentration of pretax income at the top in most in the decades up to the financial crisis. However, the scale of that increase again varied widely. It was greatest for the UK and the USA, followed by Canada and Australia, and Portugal and Sweden saw large rises. Finland, France, Germany, Italy, Japan, Korea, Norway, and Spain also saw quite substantial increases, with smaller ones in the Netherlands, Switzerland, and New Zealand. The crisis is generally seen to have interrupted this upward trend, reflecting its impact on profits, top executive reimbursement, and the financial sector. For the USA, though, while the top 1% share fell quite sharply at the onset of the Crisis, it was back to its 2007 level by 2014. The trends shown by these estimates of top 1% shares do not always align with the measured changes in overall inequality across countries, for a variety of reasons explored elsewhere (including differences in income concept, income recipient unit, and data source) on which we cannot dwell here.

Table 2. Top 1% Shares in Selected OECD Countries, 1980 Onwards.

	1980	2007	Change 1980–2007	Post-2007 Value (Year)
	%	%	ppt.	%
Australia	4.61	9.09	+4.48	9.10 (2014)
Canada	8.88	15.63	+6.75	13.62 (2010)
Denmark	5.47	6.12	+0.65	6.41 (2010)
Finland	4.32	8.26	+3.94	7.46 (2009)
France	8.17	11.69	+3.52	10.80 (2014)
Germany	10.72	14.04	+3.32	12.98 (2011)
Ireland	6.65	11.64	+4.99	10.50 (2009)
Italy	6.90	9.86	+2.96	9.38 (2009)
Japan	8.36	11.35	+2.99	10.44 (2009)
Korea	7.47	11.28	+3.61	12.33 (2012)
Netherlands	5.85	7.57	+1.72	6.33 (2012)
New Zealand	5.65	7.83	+2.18	8.09 (2014)
Norway	4.60	8.54	+3.94	7.80 (2011)
Portugal	4.32	9.77	+5.45	
Spain	7.63	11.24	+3.61	8.58 (2012)
Sweden	4.13	9.95	+5.82	8.73 (2013)
Switzerland	8.40	10.91	+2.51	10.62 (2010)
United Kingdom	6.67	15.44	+8.77	13.88 92014)
USA	11.05	19.87	+8.82	20.20 (2014)

Source: World Inequality Database.

The factors driving income inequality upwards, albeit at differing rates, across many rich countries have been reviewed in Förster and Tóth (2015), Nolan and Förster (2018), and Nolan (2018a). These include increasing earnings dispersion among employees, primarily reflecting the widening in economic returns to education and skills, with globalization and skill-biased technological change interacting with one other. Institutions and policies with respect to minimum wages and labor and product market deregulation, and declining union density and power, are also important. Changes in top executives' pay and the expanded role of finance were very important in the growth in top incomes. Income from self-employment and capital has grown in importance and become more unequally distributed, with a shift from wages to profits common. Changes in household structures due to population aging and the trend toward smaller households have also contributed. Assigning weights to specific factors in terms of their relative importance is extremely challenging, giving the limited data available and range of potential contributory factors (as brought out effectively by Förster and Tóth (2015); this also makes it very difficult to robustly identify the factors accounting for differences across countries in the way inequality has evolved, though contexts, institutions, and policies clearly play a central role.

4. GROWTH IN MIDDLE INCOMES

Against this background, what happened to real incomes around the middle of the distribution? Table 3 repeats for each country the years covered by the data employed, and then shows the overall increase in the median in real terms and the annual average growth rate over that period. The most striking feature of these figures is the very wide range of variation across countries in real income growth at the median. For countries where the data covered at least several decades, the (compound) average annual growth observed over those decades ranges from as high as 3% down to a modest decline. The average growth rate across all the countries/time-periods covered is about 1%. The USA, where the data cover all the way from the late 1970s to 2013, had an average annual growth rate of only 0.3%. It is not unique in that respect: Japan did even worse, seeing essentially no overall increase in the median (measured from 1985), while Italy (measured from 1986) saw as little overall growth as the USA. However, these countries were amongst the poorest performers in the OECD. The USA is far from typical in terms of this key indicator: to highlight just one contrast, the UK is often categorized alongside the USA as a "liberal/Anglo-Saxon" economy, but the US median was only 12% higher in real terms in 2013 than it had been in 1979, whereas the UK median went up by almost 70% over the same period. These represent very different realities for middle-income households.

As well as varying across countries, median income growth varied widely over time for most countries. There were certain periods of reasonably healthy growth even for the poorest performers overall. The USA had the "Clinton boom" in the 1990s, Japan some growth in the early 1990s, and Italy and Germany saw