GENERATIONAL INEQUALITIES AND WELFARE REGIMES

Louis Chauvel (University of Luxembourg, Luxembourg) louis.chauvel@uni.lu

Martin Schröder (Philipps-Universität Marburg, Germany) martin.schroeder@uni-marburg.de

Abstract

This paper uses a new age period cohort model to show that among cohorts born between 1935 and 1975, cohorts born around 1950 are significantly above the income trend in most countries. However, such inequalities between generations are much stronger in conservative, continental European welfare states, compared to social democratic and liberal welfare states. As we show, this is because conservative welfare states expose some cohorts to high youth unemployment and make lifetime earnings dependent on a favorable entry into the labor market. We thus demonstrate that conservative welfare states have put the burden of adjustment to the post-1975 economic slowdown on birth cohorts that could not get stable jobs before 1975, while similar cohort inequalities are much weaker in liberal and social democratic welfare states. In these latter two welfare regimes, the burden of adjustment to the post-1975 economic slowdown was not put on the shoulders of some cohorts relative to others. Our analysis is the first to show which welfare regimes are more conducive to such inequalities between cohorts and what mechanisms lead to these material cohort inequalities.

Acknowledgment

This research project received the support of the Luxembourg Fonds National de la Recherche (FNR). We would also like to thank Yinon Cohen, Sy Spilerman, Tom DiPrete and the Columbia University department of sociology, Janet Gornick, as well as the two anonymous referees for their useful suggestions.

INTRODUCTION

One of the least understood types of social inequality runs between social generations. This paper uses a new APC model to show the intensity of such inequalities between birth cohorts in advanced capitalist countries.[1] It then shows that conservative welfare states aggravate inequalities between different birth cohorts, compared to social democratic and liberal welfare states. While existing studies postulate that conservative welfare states have stronger insider-outsider cleavages, we extend this to a claim about "insider" and "outsider" generations, since conservative welfare states durably advantage generations that started their working lives when youth unemployment was low, and economic investments were high.

But what exactly do we define as generational inequalities? When members of a birth cohort are roughly between 16 and 30 years old, they transition between a phase of primary and secondary socialization (cf. Berger & Luckmann 1966, Parsons 1951: 166). They then become less shielded through their family, instead becoming influenced by the society around them, thereby forming attitudes based on their experiences during their formative years, which often last a lifetime. But members of birth cohorts not only develop similar attitudes based on the social environment of their formative years. They also develop cohort-specific earning opportunities during their time of socialization (cf. Mannheim 1928). If cohorts start their working life in a time of boom, they may monopolize lucrative positions, embarking on a high road to elevated lifetime earnings. However, some later generation has to establish itself during the slump that follows the boom, from which a preceding generation profited. This leads scholars to hypothesize about systematic cycles of "lucky and less lucky generations" (Myles 2002: 138). In purely economic terms, such generational inequalities might appear natural, as it may seem inevitable that some cohorts live through more favorable economic conditions, while others encounter less favorable ones. But types of welfare states can mitigate or aggravate such cohort inequalities. We are interested in precisely these welfare state effects. Notably, we want to know which types of welfare states aggravate and which types attenuate inequalities between birth cohorts.

In the present historical context, the pertinent question is whether generations that entered the labor market in the post-1975 economic slowdown are disadvantaged over cohorts that entered the working market earlier, under more favorable circumstances. In other words, our research questions are: Did the burden of post-1975 adjustment disproportionately fall on some birth cohorts? Or did it indiscriminately fall on all members of society? How do welfare states affect this? Two literatures generate hypotheses on these questions, while a third literature stops short answering them. The first literature is the historical institutionalist literature on how countries adapted to the end of the economic boom after 1975. Second, the literature on welfare regimes tells us how responses differed systematically between types of countries. Third, the literature on different life courses in different welfare states tackles some of our questions, but does not answer them. In the following, we briefly introduce how these three research traditions provide the foundation for our study, while leaving the questions open that we answer.

Since Esping-Andersen's (1990, also cf. 1996, 1999) seminal study, welfare states are classically separated into a continental European conservative, an English-speaking liberal and a Scandinavian social democratic welfare regime. Liberal welfare states limit themselves to poor relief. Social democratic countries follow a universal notion of social justice – almost everyone

pays into the welfare state and almost everyone profits from it. The conservative model of welfare follows an insurance logic: the more one pays in, the more one can get out. Thereby, conservative welfare states tend to keep men and (especially) women where they already are in the social hierarchy (cf. Palier 2010b). This takes an extreme form in Southern European welfare states. In the name of preserving social stability, these welfare states use employment protection and seniority rights to protect jobholding insiders against outsiders – everyone out of stable employment (Buchholz et al. 2009, Ferrera 1996, 2010, Lessenich 1994). Empirical studies document that conservative welfare states indeed have the strongest insider-outsider cleavages (Arts 2002, Ebbinghaus & Manow 2001, Estevez-Abe et al. 2001, Hicks & Kenworthy 2003, Mandel 2012, Schröder 2009, Starke et al. 2008). They also show that these insider-outsider cleavages extend to generational inequalities in the sense that present generations in Southern European countries have the longest average duration of unemployment, when trying to transition from school to work (Brzinsky-Fay 2007: 415, Vogel 2002: 284). One would thus assume that these countries, having the strongest separations between advantaged insiders and disadvantaged outsiders, also exhibit strong differences between cohorts that enjoyed favorable circumstances when entering the labor market (insiders) and cohorts that did not (outsiders).

While the literature on welfare regimes tends to look at static differences at a given point in time, the literature on historical institutionalism asks how welfare states develop over time, showing what are favorable time periods to enter the labor market and less favorable ones. This literature shows that not only welfare states themselves, but also their respective paths of liberalization, follow a policy style of conservatism, liberalism and social democracy (Scharpf & Schmidt 2000a, b, Schröder 2013, Thelen 2012). The consensus of this literature is that all types of welfare states stopped expanding in the 1970s, entering an era of stagnation or downright retrenchment (Pierson 1996, 2001). But liberalization meant something different in each welfare regime. Liberal welfare states resorted to full-scale deregeluation, exposing everyone to the vagaries of markets; social democratic welfare states used activation, exposing people to markets, but also enabling them to survive on markets, through an infrastructure of free education, continuous learning, free childcare and active labor market policy. Conservative welfare states reacted true to their conservative calling by protecting those that already had a stable job, while accepting that an increasing fringe of outsiders develops around them (Esping-Andersen 1996, Ferrera 1996, Palier 2010a, Thelen 2012). The ensuing insider-outsider dynamic became especially pronounced in the Southern European welfare states of Italy (Fargion 2001: 183ff., Jessoula & Alti 2010: 157, Lynch 2009: 97), Spain (Glatzer 2005, McVeigh 2005: 100, Molina & Rhodes 2007) and France (Ferrera 2010: 625, also cf. Karamessini 2008: 66, Palier 2010a: 96f.). This literature would thus lead one to assume that cohorts who try to enter the labor market after about 1975 are disadvantaged, and especially so in conservative welfare states and their Mediteranean variety, as these states protect those that have secured a job in better times against those that tried to get into stable employment later (Buchholz & Blossfeld 2012: 22, Buchholz et al. 2009: 57, Chauvel 2010a: 24f., Roberts 2012: 483, Tremmel 2010, Vogel 2002: 284).

However, while the literature on welfare regimes and the historical institutionalist literature on their development advance the above-mentioned hypotheses about what countries should advantage what generations, no study could test this across different welfare states, though some studies look at connected topics, while not giving an answert to whether some welfare regimes are systematically more cohort-unequal. Life course studies show that that the

conservative German welfare state protects people from falling into a lower class, while social democratic Sweden permits people to fall into a lower class, but it mitigates the effect of this; the US, as a liberal welfare state, neither does anything to prevent people from falling into a lower class, nor does it mitigate the effect of this (DiPrete 2002: 299f.). However, this may empirically illustrate how conservative welfare states conserve insider-outsider dynamics, while liberal and social democratic welfare states do not. But it remains unclear whether this also applies to insider-outsider dynamics between cohorts. Elzinga & Liefbroer (2007) show that among successive cohorts in Western countries between 1945 and 1964, women's life-trajectories into adulthood are increasingly destandardized. However, while transitions to adulthood in terms of family-life trajectories may change from one cohort to another, this is not very different between welfare regimes. But do similar family-life trajectories between welfare regimes translate into similar cohort inequalities between welfare regimes? Lars Osberg (2003) compares inequality on a cohort-by-cohort basis in the United States, the UK, Sweden, Germany and Canada. But while he documents that within-cohort inequality increases from cohort to cohort, especially in liberal welfare states, he does not focus on inequality between (instead of within) birth cohorts. Louis Chauvel (2010b, c) showes that cohorts born in France and Italy after 1960 are disadvantaged compared to cohorts born before 1960, with generational gaps approaching 20 percent of disposable incomes, when compared to a hypothetical trend where generations participated equally in long-run economic growth. Contrary to French and Italian cohorts, Danish and US-cohorts are not advantaged or disadvantaged in the sense that some cohort have incomes below, while others have incomes above the long-run income trend. But while Chauvel (2010a: 31) argues that "other typical countries could have been selected with consistent results", his study leaves unclear whether differences between the four studied countries indicate systematic differences between liberal, social democratic and conservative welfare regimes. Single-country studies about cohorts in Germany (cf. Antonczyk et al. 2010 for a US-German comparison, cf. Blossfeld 1986 for Germany), France (Baudelot & Gollac 1997, Peugny 2009) or the US (Bommier et al. 2010, Kopczuk et al. 2010) also leave unclear whether conservative countries systematically produce more inequalities between generations, as one might expect. Other studies stress that the pension systems of conservative welfare regimes advantage the old over the young, compared to other types of welfare regimes (Ebbinghaus 2001, 2006, Lynch 2006, Tepe & Vanhuysse 2009). But these studies address age-, not cohort effects, so they also leave the question open whether certain types of welfare states let some cohorts participate more in economic growth than others.

Thus, no study investigated which welfare states advantage what generations to the detriment of others. Life course researchers therefore urge to study "the impacts of institutional contexts and social policies across countries and political economies on life courses" (Mayer 2009: 424). Political scientists similarly complain that "political science as a discipline has lagged behind in developing an integrated body of knowledge to answer the question of which generations get what, when and how" (Goerres & Vanhuysse 2012: 1).

Advancing on this state of knowledge, our results first show that cohorts that started their working-life before 1975 have earnings above the long-run trend in almost all countries. However, this effect is stronger in conservative, and especially in Mediterranean welfare states. We then ask what mechanisms bring about these differences. We show that a cohort's youth unemployment – which we take as an indicator of how favorable the economic situation is when a cohort enters the working market – determines a cohort's lifetime earnings in conservative

and again especially in Mediterranean welfare states. Contrary to this, a cohort's youth unemployment is not strongly correlated to its lifetime earnings in liberal and social democratic welfare states. Third, we show that economic investments when a cohort's enters the labor market determine a cohort's lifetime earnings in conservative and again especially in Mediterranean welfare states. Conversely, economic investments when a cohort enters the labor market are inconsequential for a cohort's lifetime earnings in liberal and social democratic welfare states. Our data thus indicates that conservative and especially Mediterranean welfare states, are more cohort-unequal than liberal and social democratic welfare states because they make a cohort's lifetime earnings depend on how favorable the labor market is when that cohort enters the labor market. One can infer from this that a generation's lifetime income depends on becoming labor market insiders right when entering the labor market in conservative and Mediterranean countries, while initial conditions when a cohort tries to enter the labor market are inconsequential for a cohort's lifetime earnings in liberal and social democratic welfare states. Our results thus show – in a nuthshell – that the insider-outsider dynamic that the literature postulates for the conservative welfare regime, also applies to insider and outsider cohorts.

Why is it that this result has not been shown so far? One reason is the difficulty in disentangling the effects of age, period and cohort in international comparisons. This paper therefore isolates the effect of cohort membership on income from a) the effect of general economic growth, which mostly increases incomes on a period-to-period basis, from b) age, which typically lets incomes peak around the midpoint of a working carreer at age 45-50 (Brzinsky-Fay 2007, Heckman 1974, Thurow 1969: 328), and from c) control variables such as education and household composition, which change with age, period and cohort, but are not in themselves an age, period or cohort effect. To do so, we propose an age-period-cohort (APC) model that improves over existing attempts to show whether cohorts are above or below long-run income trends.

METHOD

Age-period-cohort analysis draws on a long tradition. Karl Mannheim (1928) claimed that birth cohorts can become permanently marked through social conditions during their formative years, which turns people that merely share the same year of birth into social generations, that carry attitudes or scars from their formative years through their lifecycle, and thereby through the historical time periods they live through. Norman Ryder (1965) developed statistical methods based on this idea. Since their inception, APC models aim to show cohort effects by separating the influence of an individual's age α_a, period (of measurement) π_p, and cohort (year of birth) γ_c on a dependent variable y (Mason et al. 1973, Mason & Fienberg 1985). This means that all APC models adapt the equation $y^{apc} = \mu + \alpha_a + \pi_p + \gamma_c$. Problematically however, every cohort has the same age at the same point in time. It is therefore impossible to know whether an effect results from cohort membership, or from a combination of an age and a period effect.

Three families of APC models propose solutions to this indetermination problem. The first family of models is the constrained APC (Mason & Wolfinger 2001), which Yang et al. (2004) call the "conventional generalized linear model." This model holds two coefficients equal, often the first and last coefficient of the cohort vector, but other choices are possible as well. However, depending on what strategy one adopts, results differ and are often impossible to compare

(Smith 2004: 113). In this sense, the arbitrary choice of what supplementary constraint one chooses, leads to non-interpretable linear trends in age, period and cohort. When the constraints are based on categories with few individuals, which is the case for the first and the last cohort, this model also increases the confidence intervals.

The second family of models is the APC-IE (intrinsic estimator) of Yang et al. (2004, 2008). It solves the indetermination problem by a Principal Component Analysis of the age, period and cohort vectors. This reduces the linear trend of the three variables to two dimensions. Yang et al. claim that this yields the intrinsic linear influence of each variable, so that the trends can be reliably interpreted. However, O'Brien (2011, also cf. Smith 2004: 117) in his critique of Yang et al. (2008) shows that this is an arbitrary solution, which fails to deliver substantive linear time trends (for a summary of these methods, cf. Smith 2008). One can argue that while the choice to hold two coefficients equal is an arbitrary but obvious one, the APC-IE arbitrarily reduces the three dimensions of age, period and cohort to two, but while this choice is just as arbitrary, it is not as obviously visible.

A third family of models is the hierarchical age-period-cohort (HAPC) model. It uses specific mixed multilevel models Yang and Land (2013, 2008) to conceptualize age as a continuous polynomial level-1 variable and period and cohort as categorical level-2 variables. The logic of this model is thus that people with a certain age are embedded in a certain cohort at a certain point in time. Cohort coefficients from this model may present a non-zero cohort slope, which is difficult to make sense of, while the non-linearity of the model can be meaningfully interpreted (cf. Pampel & Hunter 2012). However, the interpretation of the *linear* trend in terms of age, period and cohort is dangerous both in the case of APC-IE and HAPC, as an example may illustrate. When one looks at education levels in the Luxembourg Income Study over the last 30 years, both the APC-IE and the HAPC indicate that an individual's educational credentials steadily decline after age 30. However, this is not possible, as one cannot lose an educational degree with age (see online supplement "Annex: problems with APC-IE and HAPC" to replicate these results). This means that APC-IE and HAPC ascribe a linear trend to age, which in fact is a cohort effect: older people are less educated not because they lose their educational credentials with age, but because their cohort had fewer opportunities for getting an educational degree than younger cohorts. While this means that APC-IE and HAPC ascribe linear trends to an age effect that cannot be an age effect, existing studies nonetheless interpret the linear trend of APC models (Frenk et al. 2013, Reither et al. 2009).

While existing models cannot disentangle *linear* age, period and cohort effects – and we argue that this problem defies methodological solutions, it is intrinsic – it *is* possible to estimate non-linear fluctuations of age, period and cohort around a linear trend, a strategy we use together with few other researchers (namely, cf. Pampel & Hunter 2012: 427f.). We therefore suggest focusing on cohort-fluctuations around a linear trend of income-change. There are a number of reasons why this is a good strategy. First, to compare countries, we need a baseline. Neither ACP-IE, nor HAPC provide this baseline, since the slopes they estimate are inappropriate, as highlighted above. The Age Period Cohort Detrended (APCD) model that we propose has the baseline that the cohort effect is strictly linear. In that case, the APC model can be reduced to a standard AP model, with no loss of information. This model is thus closer to Mason & Wolfinger's (2001) APC model , but its constraints are designed to detect cohort non-linearities. Thus, the APCD delivers cohort-coefficients when cohorts diverge from a baseline linear-trend. As we explain how cohorts diverge from overall income trends, substantive reasons also exist

for focusing on fluctuations around a linear trend, instead of focusing on the linear trend itself. Namely, the linear trend that one generation gets born into a society that is richer than the same society at an earlier point in time would generally not be considered unfair, but inevitable. Immanuel Kant (1784) most prominently argued that we are accustomed to one generation profiting from the efforts of the preceding one, so that overall, a long-run cohort- (or period-based, one can never know) progression of living standards is the baseline to expect. Accordingly, contemporary scholars agree that "continuous improvement has been built into the expectations of all cohorts in the long baby-boomer generation" (Roberts 2012: 483). Based on this view, someone born into an economy that is – over that person's lifetime – 20 percent richer than the economy someone else was born into, is expected to have 20 percent higher lifetime incomes. Cohort incomes that increase with the general income trend are in this sense a natural null hypothesis.

We are therefore precisely interested in how cohort incomes *deviate* from the general income trend (the baseline) – and we want to know how this differs from one welfare state to another. We thus want to know whether some cohorts get more or less than what one would expect, given long-run income trends. Therefore, our APCD (Age Period Cohort Detrended) model absorbs linear trends, focusing instead on the non-linear effects of age, period and cohort. We consider a dependent variable y^{apc} (see above) and the independent variables age a, period p, and thus cohort membership c, as we impose the constraint c=p-a. To provide accurate controls, we consider j covariates x_j (which can be continuous or binary). Including constraints, the APCD model has the following expression:

$$\begin{cases} y^{apc} = \alpha_a + \pi_p + \gamma_c + \alpha_0 rescale(a) + \gamma_0 rescale(c) + \beta_0 + \sum_j \beta_j x_j + \varepsilon_i \\ \begin{cases} p = c + a \\ \sum_a \alpha_a = \sum_p \pi_p = \sum_c \gamma_c = 0 \\ Slope_a(\alpha_a) = Slope_p(\pi_p) = Slope_c(\gamma_c) = 0 \\ \min(c) < c < \max(c) \end{cases} \end{cases} \quad \text{(APCD)}$$

β_0 denotes the constant, β_j stands for the coefficients of control variables, α_a is the age effect vector, π_p is the period vector and γ_c is the cohort vector. These vectors exclusively reflect the *non-linear* effects of age, period and cohort, as we assign two sets of constraints: each vector sums up to zero and has a slope of zero.[2] The terms α_0Rescale(a) and γ_0Rescale(c) absorb the linear trends; Rescale is a transformation that standardizes the coefficients α_0 and γ_0: it transforms age from the initial code a_{min} to a_{max} to the interval -1 to +1. Since the first and last cohorts appear just once in the model (the oldest age group of the first period and the youngest of the last), their coefficients are less stable; we therefore exclude them. With these constraints, the model becomes identifiable; it provides a unique solution. The detrended cohort effect (DCE) coefficients γ_c are zero when cohort effects are absent. In this case, cohorts do not deviate from age and period characteristics; the APCD model provides no improvement compared to a simple age and period model (AP), which consists of:

$$\begin{cases} y^{ap} = \alpha_a + \pi_p + \alpha_0 rescale(a) + \pi_0 rescale(p) + \beta_0 + \sum_j \beta_j x_j + \varepsilon_i \\ \begin{cases} \sum_a \alpha_a = \sum_p \pi_p = 0 \\ Slope_a(\alpha_a) = Slope_p(\pi_p) = 0 \\ \min(c) < c < \max(c) \end{cases} \end{cases} \quad \text{(AP)}$$

If at least one γ_c coefficient is significantly different from zero however, then a simple AP model is insufficient. In this case, some cohorts received more or less than their expected share after accounting for period resources under the assumption of stable age structures.[3] It is these effects that we report on, as they indicate that cohorts get more or less than one would expect.

Different from an APCD that looks at cohort-deviations around a linear trend, we also ran a second model, which ascribes effects to cohorts, which could also pertain to periods. This makes sense in the case of incomes as – whether period or cohort effects – increasing incomes eventually come to be experienced by different cohorts. This additional model showed that there are some countries, namely Luxembourg and the UK, where incomes increased a lot during the time period that we are interested in, so that being above or below the incomes trend is less problematic. Notably in Italy however, late-born cohorts are not only disadvantaged, but overall income trends are unfavorable as well. However, while these results do not change our main argument, they have the disadvantage of not disentangling cohort and period effects, so we prefer to focus on fluctuations around linear trends in our results below.

DATA

Two substantive interests guide our choice of data. First, we want to know which time periods and welfare states produce cohort incomes above or below what one would expect, given long-run trends. Second, we want to explain these cohort differences. We therefore need an individual-level dataset that is comparable between countries, in that it uses the same definition of income and identical control variables. We therefore use the Luxembourg Income Study Database (LIS 2012, years 1985-2005), focusing on the dependent variable "dpi" (cash disposable household income).[4] We divide cash disposable household income by the square root of household members and log it. We calculate the dpi of each cohort member as deviation from the mean country income at each period of measurement. This tells us how much members of different birth cohorts earn, relative to what is typical for a country at a given point in time. By focusing on household-equalized incomes after taxes and transfers, we try to get as close as possible to measuring actual living standards, rather than mere monetary incomes.

To understand whether some cohorts increased their living standard above or below the trend due to a better education, by moving into dual-earner households, or by having fewer children, we control for the effects of education on living standards, using dummy variables that follow the International Standard Classification of Education (ISCED) codes (Andersen & Werfhorst 2010), where the reference category is lower secondary education or below. We therefore introduce one dummy for secondary and one for tertiary education. We also control for the effect of sex, using a dummy variable (reference is male); we further control for the effect of living with a partner in the same household (reference is no partner), for the effect of number of children (reference is no child, a dummy each for one, two and more than two children) and for

immigrant- or minority-group status.[5] We use a non-control and a control-condition for each country, to understand how much certain cohorts are above or below the general incomes trend before and after accounting for their education and other variables.

We include all countries from the Luxembourg Income Study that contain data from wave II (around 1985) to wave VI (around 2004). We therefore analyze Austria, Germany, France, Italy and Spain as conservative welfare states, Finland, Norway, Denmark and Sweden as social democratic welfare states and the US, the UK, Australia and Canada as liberal welfare states. We also include the Netherlands, Israel, Luxembourg and Poland as unclear welfare states.[6] We restrict our analysis to the population between age 25 and 60. Below age 25, we get biased results, as people in different countries start their working careers at different times. For the population above 60, country-biased mortality rates become problematic. However, we have both used wider (20-64) and more restricted (25-54) age groups and the results do not change significantly.[7] Using LIS data from the mid-1980s to the mid-2000s, our age limitations enable us to focus on cohorts born between 1935 and 1975. It is among these cohorts that we measure whether a) some are more advantaged than others in terms of disposable income, before and after controls, and b) how these cohort effects vary between countries pertaining to different welfare regimes. Using OECD youth unemployment rates, we then check whether the changing fate of cohorts is correlated to youth unemployment when that cohort entered the labor market and whether youth unemployment at entry into the labor market predicts a cohort's lifetime earnings more in some countries than in others. We then check c) in what countries lifetime cohort incomes depend on intensity of investments, defined as the real GDP per capita multiplied by the share of investments of GDP at time of entry into the labor market of a cohort.[8] We then again measure how this d) differs between welfare regimes. Thus, with youth unemployment and investments, we measure whether a cohort's lifetime earnings depend on initially favorable conditions at entry into the labor market and how a more or less favorable entry into the labor market predicts a cohort's lifetime income more in some welfare regimes than in others.

RESULTS

To understand whether some welfare states favor some cohorts more than others, we calculated 1) models for age-controlled cohort effects on disposable (post-tax, post-transfer household-adjusted) incomes for each country and 2) models that adjust these cohort effects for the control variables named above. We then calculated these same two regressions with the dependent variable of market incomes, instead of disposable incomes, for each country. Using 17 countries, we therefore have 68 regressions. In Figure 4 (see annex at the end of this paper), we graph the cohort effects relative to detrended disposable incomes, before and after controls. We have uploaded the code that we used to obtain our results and the complete output of the 68 regressions as supplementary files. The plotted cohort effects in Figure 4 show how much cohorts born at a certain time are above or below the long-run income trend in each country. The grey lines are 95% confidence intervals of cohort effects on income. The left graphs show cohort effects on living standards before controls. The right graphs show cohort effects after controls are introduced; so they show how cohorts with a similar educational level, ratio of immigrants, and household composition fared over time.

As the graphs of Figure 4 illustrate, belonging to an advantaged cohort, mostly the one born around 1950, typically increases disposable incomes by about 5 percent – though countries vary in how much they favor the cohort born around 1950. Conversely, being born into an unfortunate birth cohort, such as the one born around 1935, typically decreases incomes about 5 percent below the trend – though again this depends on the country. The strongest effect exists in France, where being a member of the most privileged 1950-cohort increases incomes 7.5 percent above the trend, while being a member of the least privileged 1935-cohort decreases incomes 9.4 percent below the trend. In the controls condition in France, the 1935-cohort is even 10.5 percent below the trend, while the most privileged 1950-cohort cohort is 6.7 percent above the trend. Comparing this to the control variables for France (cf. for the supplementary online files), reveals that this effect on income of 17.2 percent, the difference between being a member of the most fortunate versus the most unfortunate birth cohort, is about as strong as the effect on income of having two children versus none (minus 17.6 percent), of having a secondary versus no education (plus 18.0 percent) or of being an immigrant (minus 15.2 percent). Thus, the mere coincidence of being born 15 years later roughly changes incomes above or below the general incomes trend as much as having two children, a secondary education, or as being an immigrant.

The left-sided no-control graphs of Figure 4 (see annex at the end of this paper) show that in all countries except Canada, the best-off generation is always born between 1945 and 1955. This may not come as a surprise. People born in the ten years after the Second World War got born into a world of peace and mostly established their working career before the economic turmoil of post-1975. Including controls (right graphs), the advantage of the 1945-1955 generation declines in most countries, compared to the no-controls condition. This indicates that the incomes of cohorts born between 1945 and 1955 are partly higher because these cohorts have a better education, live in dual earner households more often, have fewer children and are less frequently immigrants. But even net of these controls, a sizeable cohort effect remains that privileges those that were born in 1945-1955.

However, the specific size of this cohort effect, and thus how much the 1945-1955 – generation is advantaged, is country-specific. It is these differences that we are interested in, since we want to understand whether some welfare states are more cohort-unequal than others. A visual inspection of the graphs in Figure 4 suggests that in the controls and no-controls condition, France, Spain, Italy, Germany and the Netherlands (in that order) advantage mid-20th century cohorts the most. Social democratic, liberal and non-classified welfare states appear to have smaller cohort effects than conservative welfare states. Just how much this is the case can be measured by the standard deviation of the detrended cohort effects per country. The more the detrended cohort effects of a country deviate from zero, the stronger the corresponding cohort effects in that country. Using this measure, the following scatterplot compares the intensity of cohort effects before (x-axis) and after controls (y-axis).

[Figure 1 about here]

The more an average cohort in the 17 countries diverges from the incomes trend before controls, the more an average cohort in that country also diverges from the incomes trend after

controls (r=.75, p<.001). As the figure shows, France, Italy and Spain (together with Germany in the no-controls condition) have the strongest cohort inequalities both before and after controls. Contrary to this, countries with liberal and social democratic welfare states have the lowest average inequalities between birth cohorts. Birth cohorts in these countries increase their income commensurately with the changes in general income; thus, successive birth cohorts in liberal and social democratic welfare states neither earn significantly more or less than would be expected, given the general incomes trend. There are some exceptions to this however. Austria is a conservative welfare state, but nonetheless has small cohort-inequalities. Poland, interestingly, also has small cohort-inequalities, which means that the change from communism to capitalism did not advantage some generations to the detriment of others. Israel and Germany show strong cohort inequalities before, but weak cohort inequalities after controls. This means that cohort inequalities exist in these countries, but are largely explained through the education and household structure of the different cohorts.

Overall, this measure indicates that conservative welfare states tend to have twice or thrice the generational inequalities of social democratic and liberal welfare states. As the graphs in Figure 4 show, these cohort effects advantage cohorts that entered the labor market before the post-1975 economic slowdown. Thus, it appears that conservative welfare states managed the economic turmoil of post-1975 by advantaging cohorts that were already established on the working market at that time, to the detriment of others. The graphs do not indicate a similar dynamic in social democratic and liberal welfare states. In these countries, the burden of adjustment to the post-1975 economic slowdown did not seem to disproportionately fall on specific cohorts.

In practical terms, a cohort that is, say, 1 percent below the income trend in a country where general incomes increase by, say, seven percent every year, is still significantly better off than a cohort that is 1 percent below the incomes trend in a country where overall incomes increase by only, say, 1.5 percent. We therefore use a second condition in our calculations, where we do not constrain the incomes trend to zero. Instead, we ascribe all changes in income to successive cohorts (thus merging period and cohort effects). The results indicate that in some countries, such as the UK and Luxembourg, strong overall increases in incomes indeed buffer the effect that late-born cohorts are below the trend. However, especially in Italy, not only are late-born cohorts below the trend, but the overall trend in deflated incomes is negative as well. Overall, no conservative country has a strong positive income trend that would make it invaluable to look at fluctuations around the linear trend however.[9]

We also replicated the analysis above with the variable "pi" (personal market income) from the Luxembourg Income Study.[10] Looking at market income before and after controls, almost the same cohorts, those born around 1945 in conservative countries and Luxembourg, are favored to the detriment of others in terms of being above the incomes-trend. Again, while these cohort effects are very pronounced in conservative welfare states (plus Israel and Finland), they weaker in social democratic and liberal welfare states (cf. the uploaded supplementary files that contain the regressions). Thus, whether looking at post-tax, post-transfer disposable or market income, the image remains the same: conservative welfare states exhibit more generational inequality than liberal and social democratic ones and this inequality takes the concrete form that the generation born from 1945 to 1955 is advantaged, relative to other generations.

These cohort effects may be due to the insurance-logic of conservative welfare states, which protects those that could accumulate job protection rights and welfare benefits. Cohorts that found a good job right away might have become insiders in the insurance-based system of these countries, while cohorts that did not have a favorable entry into the labor market and thus started with an "outsider" position remained outsiders forever. If this is the case, then lifetime incomes of cohorts in conservative countries should correlate with the labor market situation when a cohort entered the labor market. To test this, we correlate how much each cohort is above or below the income trend with the youth unemployment rate of that cohort when it entered the labor market. For this, we use unemployment of the age group 20-24 at the time when each cohort had that age (since we look at cohorts in five-year steps, members are in five-year age brackets).[11] The following figure shows how a cohort's lifetime disposable income diverges from the trend in incomes, relative to the unemployment rate of that cohort when it was 20-24 years old and thus presumably entered the labor market.

[Figure 2 about here]

As the figure shows, the more youth unemployment a cohort faced when entering the labor market, the more its earnings are below the incomes trend ($r=-.39$, $p<.001$). Thus, unfavorable conditions at entry into the labor market scar cohorts in terms of lifetime disposable incomes. When the initial situation at entry into the labor market is dire, the cohort that tried to enter the labor market at that time must face decreased earnings over a lifetime, so it seems.

However, a visual inspection of the graph indicates that this correlation seems to be driven by a handful of countries, namely countries with a conservative welfare state. Cohort youth unemployment and lifetime income is highly correlated in the Mediterranean countries ($r=-.77$, $p<.001$), it is still very significantly correlated in conservative welfare states overall ($r=-.6$, $p=.0019$). But the correlation only borders on significance in non-conservative welfare states ($r=-.27$, $p=.0502$). A visual inspection of Figure 2 also reveals that almost all country-years with high youth unemployment and below-trend cohort incomes (lower-right corner) are from conservative countries, especially from Italy, France and Spain (Sweden, Finland and Poland also have disadvantaged 1975-birth cohorts). Twelve out of fifteen country-years where youth unemployment hovers around or above 20 percent come from Mediterranean countries. Cohorts born in France, Italy and Spain after 1960 thus had both very high youth unemployment and below-trend incomes. In the upper-left part of the graph, one finds country-years from France, Italy and Spain. This means that pre-1960 birth cohorts in these countries were different from post-1960 birth cohorts in two regards: they had unusually low youth unemployment and unusually high lifetime incomes. Thus, it appears that unfavorable conditions, measured as youth unemployment at time of entry into the labor market, have a stronger scarring effect in conservative welfare states, and especially in their Mediterranean sub-variety, while favorable conditions, measured as low youth unemployment at entry into the labor market, have a stronger effect of increasing lifetime incomes in conservative and especially Mediterranean countries, compared to countries with social democratic and liberal welfare states, where a difficult situation at time of entry into the labor market does not determine lifetime-incomes (cf. Ellwood 1982, Gangl 2004).

However, youth unemployment is a problematic indicator to gauge how favorable conditions are at entry into the labor market. This is the case for two reasons: First, we do not have internationally comparable data on youth unemployment for cohorts born before the 1950s. Some of our countries even have no internationally comparable data on youth unemployment at all. Second, it may be unsurprising that youth unemployment correlates with lifetime incomes, as unemployment itself contributes to low incomes (but then one would still have to explain why the correlation does not exist in social democratic and liberal welfare states). To cross-check our finding with a second indicator, we look at investments per capita when a birth cohort is between 20 to 24 years old (real GDP per capita, multiplied by share of GDP invested, relative to the country-trend).[12] Whether a country invests more or less than what is typical for that country when a birth cohort is between 20 and 24 years old should not in principle be correlated to a cohort's lifetime income, as investments are not in principle geared to people at a certain age. However, an economy with a high rate of investment might be the only type of economy where outsiders can gain a foothold, and possibly especially so in conservative countries. The following scatterplot shows the relationship between investments when a cohort enters the labor market and that cohort's lifetime incomes.

[Figure 3 about here]

For the 142 country-years at our disposal, a cohort's lifetime earnings and investments at that cohort's entry into the labor market are strongly correlated ($r=.48$, $p<.001$). The more a country invests compared to what is typical for that country when a cohort is 20-24 years old, the higher the lifetime earnings of that cohort, relative to long-run income trends. However, similar to youth unemployment, this link is much stronger for the country-years from the Mediterranean countries France, Italy and Spain ($r=.85$, $p<.001$, $n=27$). Cohort incomes are somewhat less determined by investments when a cohort is 20-24 in the group of conservative welfare states, which also includes Germany and Austria ($r=.75$, $p<.001$, $n=45$). Most interestingly, the correlation between cohort-incomes and investments at a cohort's entry into the labor market is barely significant in non-conservative welfare states ($r=.28$, $p=.0048$, $n=97$). The most extreme points (lower left and upper right) are also almost exclusively from Mediterranean countries. The lower left part of the graph shows cohorts born in 1935 in France and Spain, which have incomes below the trend, together with few investments when that cohort entered the labor market. In the upper right corner are the 1950-cohort of France and Spain, which experienced high investments when it entered the labor market and high lifetime cohort incomes.

On the level of individual countries (when looking at a correlation of within-country years), the strongest correlations between cohort-incomes and investments when that cohort entered the labor market are in France ($r=.94$), Spain ($r=.83$), Italy ($r=.88$), the Netherlands ($r=.76$), Germany ($r=.72$), Finland ($r=.70$) and Norway ($r=.67$, $p<.05$ for all correlations). In all other countries (Austria, Australia, Canada, Denmark, Ireland, Luxembourg, Sweden, Poland, the UK and the US), investments at a cohort's typical entry into the labor market are not correlated significantly (below the .05-level) to the lifetime earnings of that cohort. Thus, using this second indicator confirms that it is again in conservative and especially Mediterranean countries that a

cohort's lifetime earnings depend on favorable conditions when that cohort entered the labor market. However, in liberal welfare states and most social democratic ones, a cohort's lifetime incomes are unaffected by the specific economic situation when it entered the labor market. We discussion the implications of these results in the following.

DISCUSSION

We showed that cohorts born between 1945 and 1955 are privileged in virtually all countries. However, these cohort inequalities are much more pronounced in countries with conservative welfare states, and especially in their Mediterranean variety. It is no surprise that cohorts born between 1945 and 1955 are the most privileged. They grew up in a time of prosperity and established their working careers before labor markets tightened in 1975. But the exact story depends on welfare regimes. Our data indicates that (especially) the Mediterranean countries of France, Italy and Spain exposed cohorts born after 1960 to high youth unemployment. To make things worse, the insurance-based welfare states of these countries make lifetime earnings dependent on a favorable entry into the labor market. The lower the youth unemployment rate – or the more a country invests when a cohort enters the labor market – the more that cohort earns over a lifetime. But while this link is very strong in conservative and especially Mediterranean countries, it hardly exists in liberal and social democratic welfare states.

These findings answer questions of the existing literature. The literature on the life courses of generations asks whether the differential fate of generations coincides with types of welfare regimes (Goerres & Vanhuysse 2012, Mayer 2005: 48, 2009: 424). Our data clearly indicates that this is the case. Conservative welfare states favor the generation born in the 10 years after the Second World War, to the detriment of early- and late-born cohorts. This is much less the case for social democratic and liberal welfare states.

The existing literature argues that conservative welfare states privilege the old over the young (Lynch 2006, Tepe & Vanhuysse 2009). We showed that this is not due to an age, but due to a cohort effect. Favored cohorts (those born in 1945-1955) are now between 57 and 68 years old. But our data indicate that presently younger cohorts – judging from their income trajectory until this point – will not be similarly advantaged when they reach a similar age.

Our finding that the conservative welfare states have stronger cohort effects substantiates hypotheses in the welfare state literature that conservative – and especially Mediterranean welfare states – protect labor market insiders against outsiders (cf. Buchholz et al. 2009, Palier 2010b). Our data adds a new aspect to this argument, namely that post-1960 birth cohorts are treated as outsiders in these welfare states, similar to e.g. women, immigrants and precarious workers (cf. Roberts 2012: 487ff.). The data on liberal welfare states tells a different story. Liberal countries may have retrenched their welfare states and increased class inequalities. But we do not observe that this strengthened generational inequalities. In other words: whatever reforms these countries undertook, they did not advantage some generations to the detriment of others.

While it can be argued that liberal countries are cohort-equitable because no generation is specifically protected (against another), social democratic countries seem cohort-equitable, as every cohort enjoys a high degree of protection (cf. Buchholz et al. 2009: 58). Thus, in terms of achieving intergenerational equality, states seem to have a choice: either they refuse most social

transfers, following the liberal model. When there is not much solidarity in the first place, no specific generation is disadvantaged. However, for societies that do cherish some form of solidarity, the social democratic welfare regime seems to be the only way to avoid intergenerational inequalities, while limiting overall inequalities. Contrary to this, cohorts born after or before the middle of the 20th century in conservative – and especially Mediterranean – welfare states, live in the worst of all worlds. They were a) exposed to high youth unemployment and low investments, and such unfavorable conditions when they entered the labor market determine b) a cohort's lifetime income more than in liberal or social democratic welfare states. This paper has thus shown, for the first time to our knowledge, that the conservative welfare regime, with its dualization into protected insiders and unprotected outsiders, is the most cohort-unequal. An APC analysis showed that this is an effect of cohort, not of age. So far, disadvantaged cohorts were unable to catch up with age; they remain durably disadvantaged.

Our data thus indicates that conservative countries, most notably France, Italy and Spain, shifted from seeing new cohorts as something to be invested in, to seeing them as a danger, from which established cohorts have to be protected. However, in trying to protect older cohorts, these countries may well sacrifice their future, as they seem to have durably scarred younger generations.

[Figure 4 about here]

Literature

Andersen, Robert, and Herman G. van de Werfhorst. 2010. "Education and Occupational Satus in 14 Countries: The Role of Educational Institutions and Labour Market Coordination." *British Journal of Sociology* 61(2):336-355.

Antonczyk, Dirk, Thomas DeLeire, and Bernd Fitzenberger. 2010. "Polarization and Rising Wage Inequality: Comparing the U.S. and Germany." in *Centre for European Economic Research Discussion Paper No. 10-015*.

Arts, Wil. 2002. "Three Worlds of Welfare Capitalism or More? A State-of-the-Art Report." *Journal of European Social Policy* 12(2):137-158.

Baudelot, Christian, and Michel Gollac. 1997. "Le salaire du trentenaire : question d'âge ou de génération ?" *Economie et statistique*:17-35.

Berger, Peter, and Thomas Luckmann. 1966. *The Social Construction of Reality*. Anchor.

Blossfeld, Hans-Peter. 1986. "Career Opportunities in the Federal Republic of Germany: A Dynamic Approach to the Study of Life-Course, Cohort, and Period Effects." *European Sociological Review* 2(3):208-225.

Bommier, Antoine, Ronald Lee, Tim Miller, and Stéphane Zuber. 2010. "Who Wins and Who Loses? Public Transfer Accounts for US Generations Born 1850 to 2090." *Population and Development Review* 36(1):1-26.

Brzinsky-Fay, Christian. 2007. "Lost in Transition? Labour Market Entry Sequences of School Leavers in Europe." *European Sociological Review* 23(4):409-422.

Buchholz, Sandra, and Hans-Peter Blossfeld. 2012. "Changes in the Economy, the Labor Market, and Expectations for the Future: What Might Europe and the United States Look Like in Twenty-five Years?" *New Directions for Youth Development* 2012(135):17-25.

Buchholz, Sandra, Dirk Hofäcker, Melinda Mills, Hans-Peter Blossfeld, Karin Kurz, and Heather Hofmeister. 2009. "Life Courses in the Globalization Process: The Development of Social Inequalities in Modern Societies." *European Sociological Review* 25(1):53-71.

Chauvel, Louis. 2010a. "Comparing Welfare Regime Changes: Living Standards and the Unequal Life Chances of Different Birth Cohorts." Pp. 23-36 in *A Young Generation Under Pressure?*, edited by Joerg Tremmel. Springer Berlin Heidelberg.

—. 2010b. *Le Destin des générations : structure sociale et cohortes en France du XXe siècle aux années 2010*. PUF.

—. 2010c. "The Long-Term Destabilization of Youth, Scarring Effects, and the Future of the Welfare Regime in Post-Trente Glorieuses France." *French Politics, Culture & Society* 28(3):74-96.

DiPrete, Thomas A. 2002. "Life Course Risks, Mobility Regimes, and Mobility Consequences: A Comparison of Sweden, Germany, and the United States." *American Journal of Sociology* 108(2):267-309.

Ebbinghaus, Bernhard. 2001. "When Labour and Capital Collude: The Political Economy of Early Retirement in Europe, Japan and the USA." Pp. 76-101 in *Varieties of Welfare Capitalism*, edited by Bernhard Ebbinghaus, and Philipp Manow. Routledge.

—. 2006. *Reforming Early Retirement in Europe, Japan and the USA*. Oxford University Press.

Ebbinghaus, Bernhard, and Philipp Manow (eds.). 2001. *Varieties of Welfare Capitalism*. Routledge.

Ellwood, David. 1982. "Teenage Unemployment: Permanent Scars or Temporary Blemishes?" in *The Youth Labor Market Problem, Its Nature, Causes, and Consequences*, edited by Richard B. Freeman, and David A. Wise. University of Chicago Press.

Elzinga, CeesH, and AartC Liefbroer. 2007. "De-standardization of Family-Life Trajectories of Young Adults: A Cross-National Comparison Using Sequence Analysis." *European Journal of Population / Revue européenne de Démographie* 23(3-4):225-250.

Esping-Andersen, Gøsta. 1990. *The Three Worlds of Welfare Capitalism*. Polity Press.

—. 1996. *Welfare States in Transition. National Adaptations in Global Economies*. Sage.

—. 1999. *Social Foundations of Postindustrial Economies*. Oxford University Press.
Estevez-Abe, Margarita, Torben Iversen, and David Soskice. 2001. "Social Protection and the Formation of Skills: A Reinterpretation of the Welfare State." Pp. 145-183 in *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*, edited by Peter Hall, and David Soskice. Oxford University Press.
Fargion, Valeria. 2001. "Italy: Moving from the Southern Model." Pp. 183-202 in *International Social Policy. Welfare Regimes in the Developed World*, edited by Pete Alcock, and Gary Craig. Palgrave.
Ferrera, Maurizio. 2010. "The South European Countries." Pp. 616-629 in *The Oxford Handbook of the Welfare State*, edited by Francis G. Castles, Stephan Leibfried, Jane Lewis, Herbert Obinger, and Christopher Pierson. Oxford University Press.
Ferrera, Maurozio. 1996. "The 'Southern Model' of Welfare in Social Europe." *Journal of European Social Policy* 6(1):17-37.
Frenk, Steven M., Yang Claire Yang, and Kenneth C. Land. 2013. "Assessing the Significance of Cohort and Period Effects in Hierarchical Age-Period-Cohort Models: Applications to Verbal Test Scores and Voter Turnout in U.S. Presidential Elections." *Social Forces* 92(1):221-248.
Gangl, Markus. 2004. "Welfare States and the Scar Effects of Unemployment: A Comparative Analysis of the United States and West Germany." *American Journal of Sociology* 109(6):1319-1364.
Glatzer, Miguel. 2005. "Revisiting "Embedded Liberalism." Globalization and the Welfare State in Spain and Portugal." Pp. 106-129 in *Globalization and the Future of the Welfare State*, edited by Miguel Glatzer, and Dietrich Rueschemeyer. University of Pittsburgh Press.
Goerres, Achim, and Pieter Vanhuysse. 2012. "Mapping the Field: The Comparative Study of Generational Politics and Policies." Pp. 1-22 in *Ageing Populations in Post-industrial Democracies*, edited by Achim Goerres, and Pieter Vanhuysse. Routledge/ECPR Studies in European Political Science.
Heckman, James. 1974. "Life Cycle Consumption and Labor Supply: An Explanation of the Relationship between Income and Consumption Over the Life Cycle." *The American Economic Review* 64(1):188-194.
Heston, Alan, Robert Summers, and Bettina Aten. 2012. "Penn World Table Version 7.1." edited by Income and Prices at the University of Pennsylvania Center for International Comparisons of Production.
Hicks, Alexander, and Lane Kenworthy. 2003. "Varieties of Welfare Capitalism." *Socio-Economic Review* 1(1):27-61.
Jessoula, Matteo, and Tiziana Alti. 2010. "Italy: An Uncompleted Departure from Bismarck " Pp. 157-181 in *A Long Goodbye to Bismarck? The Politics of Welfare Reforms in Continental Europe*, edited by Bruno Palier. Amsterdam University Press.
Kant, Immanuel. 1784. "Idee zu einer allgemeinen Geschichte in weltbürgerlicher Absicht." *Berlinische Monatsschrift*:385-411.
Karamessini, Maria. 2008. "Continuity and Change in The Southern European Social Model." *International Labour Review* 147(1):43-70.
Kertzer, D I. 1983. "Generation as a Sociological Problem." *Annual Review of Sociology* 9(1):125-149.
Kopczuk, Wojciech, Emmanuel Saez, and Jae Song. 2010. "Earnings Inequality and Mobility in the United States: Evidence from Social Security Data Since 1937." *The Quarterly Journal of Economics* 125(1):91-128.
Lessenich, Stephan. 1994. "Three Worlds of Welfare Capitalism – oder vier? Strukturwandel arbeits- und sozialpolitischer Regulierungsmuster in Spanien." *Politische Vierteljahresschrift* 35(2):224-244.
LIS. 2012. "Luxembourg Income Study Database, waves for 1985-2005." LIS.
Lynch, Julia. 2006. *Age in the Welfare State: The Origins of Social Spending on Pensioners, Workers, and Children*. Cambridge University Press.

—. 2009. "Italy: A Christian Democratic or Clientelist Welfare State?" Pp. 91-118 in *Religion, Class Coalitions, and Welfare States*, edited by Kees van Kersbergen, and Philip Manow. Cambridge University Press.
Mandel, Hadas. 2012. "Winners and Losers: The Consequences of Welfare State Policies for Gender Wage Inequality." *European Sociological Review* 28(2):241-262.
Mannheim, Karl. 1928. "Das Problem der Generationen." *Kölner Vierteljahreshefte für Soziologie* 7(2):157-185, 309-330.
Mason, Karen Oppenheim, William M. Mason, H. H. Winsborough, and W. Kenneth Poole. 1973. "Some Methodological Issues in Cohort Analysis of Archival Data." *American Sociological Review* 38(2):242-258.
Mason, William M., and Stephen E. Fienberg. 1985. *Cohort Analysis in Social Research: Beyond the Identification Problem*. Springer-Verlag.
Mason, William M., and Nicholas H. Wolfinger. 2001. "Cohort Analysis." Pp. 2189-2194 in *International Encyclopedia of the Social & Behavioral Sciences*, edited by J. Smelser Neil, and B. Baltes Paul. Pergamon.
Mayer, Karl Ulrich. 2005. "Life Courses and Life Chances in a Comparative Perspective." Pp. 17-55 in *Analyzing Inequality: Life Chances and Social Mobility in Comparative Perspective*, edited by Stefan Svallfors. Stanford University Press.
—. 2009. "New Directions in Life Course Research." *Annual Review of Sociology* 35(1):413-433.
McVeigh, Paul. 2005. "Embedding Neoliberalism in Spain: From Franquismo to Neoliberalism." Pp. 90-105 in *Internalizing Globalization: The Rise of Neoliberalism and the Decline of National Varieties of Capitalism*, edited by Susanne Soederberg, Georg Menz, and Philip Cerny. Palgrave.
Molina, Óscar, and Martin Rhodes. 2007. "The Political Economy of Adjustment in Mixed Market Economies. A Study of Spain and Italy." Pp. 223-252 in *Beyond Varieties of Capitalism*, edited by Bob Hancké, Martin Rhodes, and Mark Thatcher. Oxford University Press.
Myles, John. 2002. "A New Social Contract for the Elderly?" Pp. 130-172 in *Why we need a new welfare state*, edited by Gøsta Esping-Andersen. Oxford University Press.
O'Brien, Robert M. 2011. "Constrained Estimators and Age-Period-Cohort Models." *Sociological Methods & Research* 40(3):419-452.
Osberg, Lars. 2003. "Long Run Trends in Income Inequality in the United States, UK, Sweden, Germany and Canada: A Birth Cohort View." *Eastern Economic Journal* 29(1):121.
Palier, Bruno. 2010a. "The Dualizations of the French Welfare System." Pp. 73-99 in *A Long Goodbye to Bismarck? The Politics of Welfare Reforms in Continental Europe*, edited by Bruno Palier. Amsterdam University Press.
— (ed.). 2010b. *A Long Goodbye to Bismarck? The Politics of Welfare Reforms in Continental Europe*. Amsterdam University Press.
Pampel, Fred C., and Lori M. Hunter. 2012. "Cohort Change, Diffusion, and Support for Environmental Spending in the United States." *American Journal of Sociology* 118(2):420-448.
Parsons, Talcott. 1951. *The Social System*. The Free Press.
Peugny, Camille. 2009. *Le déclassement*. Grasset.
Pierson, Paul. 1996. "The New Politics of the Welfare State." *World Politics* 48(2):143-179.
—. 2001. *The New Politics of the Welfare State*. Oxford University Press.
Raftery, Adrian. 1986. "Choosing Models of Cross-Classification." *American Sociological Review* 51(1):145-146.
Reither, Eric N., Robert M. Hauser, and Yang Yang. 2009. "Do Birth Cohorts Matter? Age-period-cohort Analyses of the Obesity Epidemic in the United States." *Social Science & Medicine* 69(10):1439-1448.
Roberts, Ken. 2012. "The End of the Long Baby-boomer Generation." *Journal of Youth Studies* 15(4):479-497.
Ryder, Norman B. 1965. "The Cohort as a Concept in the Study of Social Change." *American Sociological Review* 30(6):843-861.

Scharpf, Fritz, and Vivien Schmidt (eds.). 2000a. *Welfare and Work in the Open Economy. Vol. I: From Vulnerability to Competitiveness*. Oxford University Press.
— (eds.). 2000b. *Welfare and Work in the Open Economy. Vol. II: Diverse Responses to Common Challenges*. Oxford University Press.
Schröder, Martin. 2009. "Integrating Welfare and Production Typologies. How Refinements of the Varieties of Capitalism Approach Call for a Combination with Welfare Typologies." *Journal of Social Policy* 38(1):19-43.
—. 2013. *Integrating Varieties of Capitalism and Welfare State Research: A Unified Typology of Capitalisms*. Palgrave.
Smith, Herbert L. 2004. "Response: Cohort Analysis Redux." *Sociological Methodology* 34(1):111-119.
—. 2008. "Advances in Age-Period-Cohort Analysis." *Sociological Methods & Research* 36(3):287-296.
Starke, Peter, Herbert Obinger, and Francis G. Castles. 2008. "Convergence Towards Where: In What Ways, If Any, Are Welfare States Becoming More Similar?" *Journal of European Public Policy* 15(7):975-1000.
Tepe, Markus, and Pieter Vanhuysse. 2009. "Are Aging OECD Welfare States on the Path to Gerontocracy?" *Journal of Public Policy* 29(01):1-28.
Thelen, Kathleen. 2012. "Varieties of Capitalism: Trajectories of Liberalization and the New Politics of Social Solidarity." *Annual Review of Political Science* 15:137-159.
Thurow, Lester C. 1969. "The Optimum Lifetime Distribution of Consumption Expenditures." *The American Economic Review* 59(3):324-330.
Tremmel, Jörg (ed.). 2010. *A Young Generation under Pressure?* Springer.
Vogel, Joachim. 2002. "European Welfare Regimes and the Transition to Adulthood: A Comparative and Longitudinal Perspective." *Social Indicators Research* 59(3):275-299.
Yang, Yang, Wenjiang J. Fu, and Kenneth C. Land. 2004. "A Methodological Comparison of Age-Period-Cohort Models: The Intrinsic Estimator and Conventional Generalized Linear Models." *Sociological Methodology* 34(1):75-110.
Yang, Yang, and Kenneth Land. 2013. *Age-Period-Cohort Analysis: New Models, Methods, and Empirical Applications*. Chapman and Hall/CRC.
Yang, Yang, and Kenneth C. Land. 2008. "Age-Period-Cohort Analysis of Repeated Cross-Section Surveys: Fixed or Random Effects?" *Sociological Methods & Research* 36(3):297-326.
Yang, Yang, Sam Schulhofer Wohl, Wenjiang J. Fu, and Kenneth C. Land. 2008. "The Intrinsic Estimator for Age-Period-Cohort Analysis: What It Is and How to Use It." *American Journal of Sociology* 113(6):1697-1736.

FIGURES

Figure 1: Standard deviation of cohorts from disposable incomes trend before and after controls

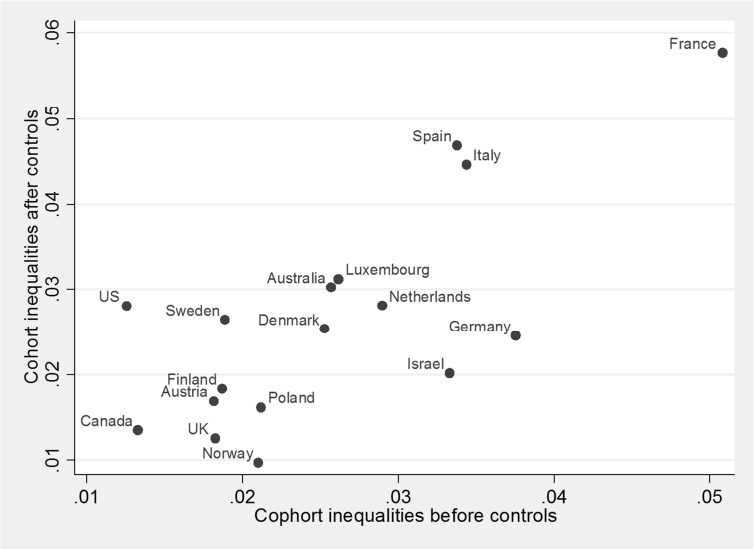


Figure 2: Cohort lifetime incomes and youth unemployment at entry into labor market

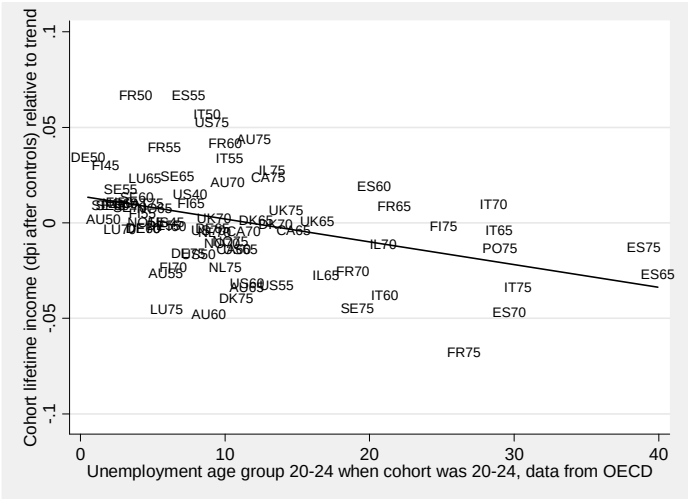


Figure 3: Cohort lifetime incomes and investments at entry into the labor market

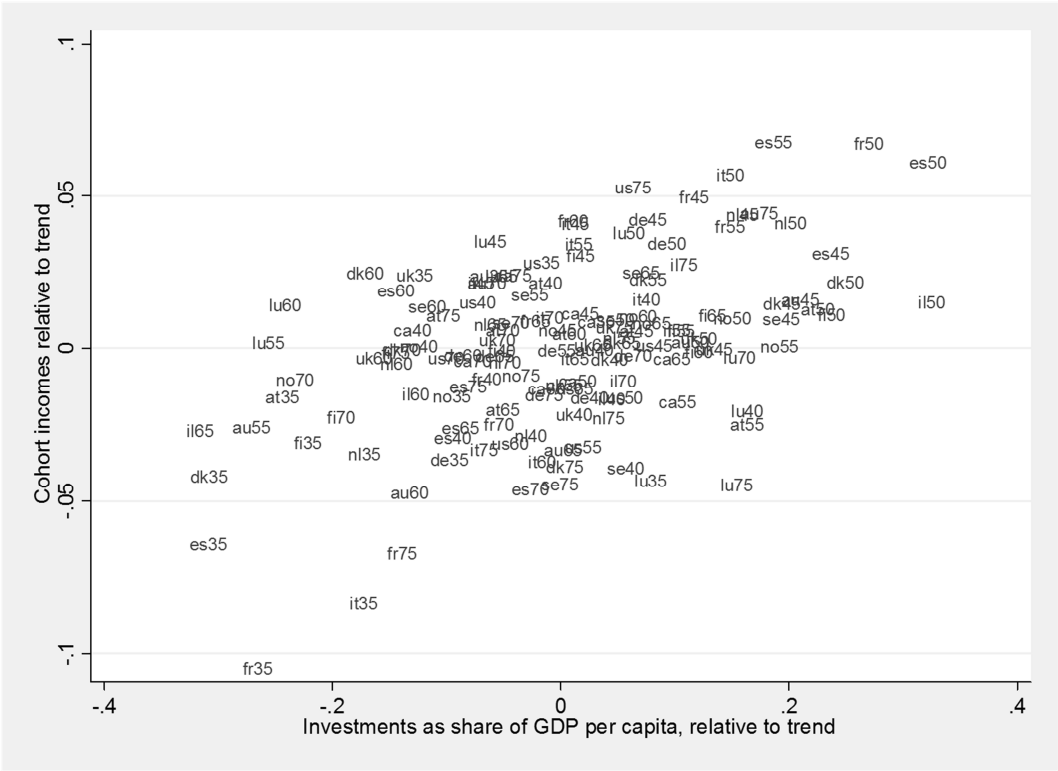
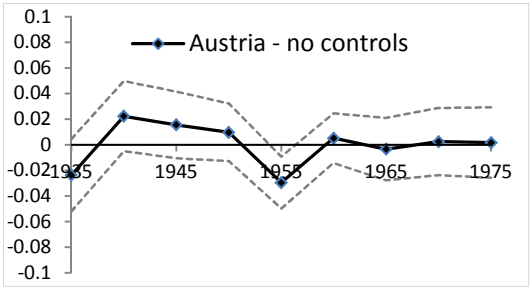
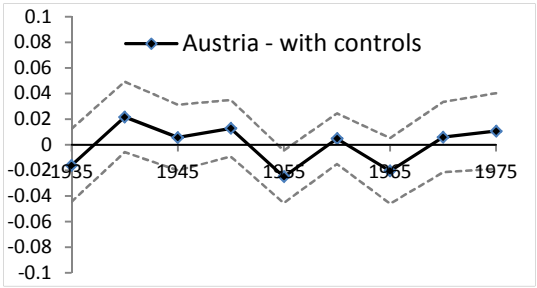
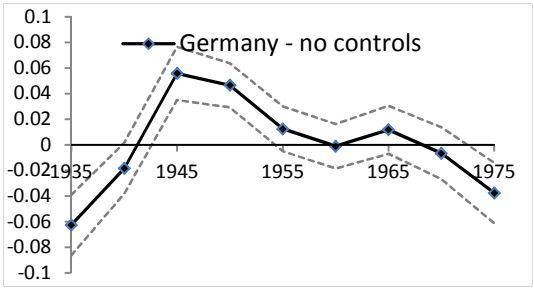
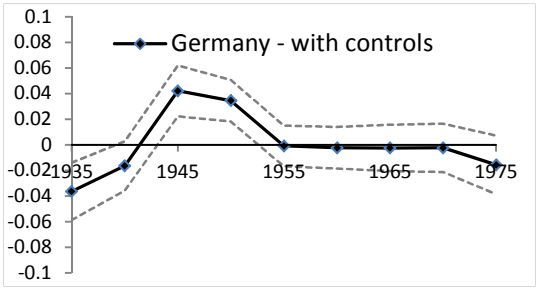


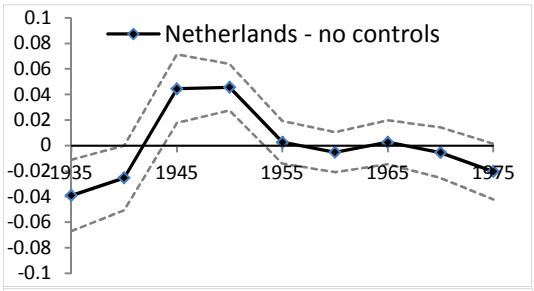
Figure 4: Cohort inequalities in terms of disposable incomes

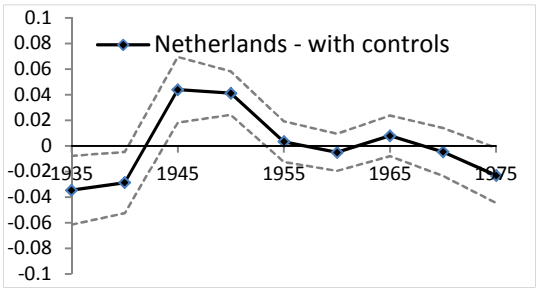

Austria - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

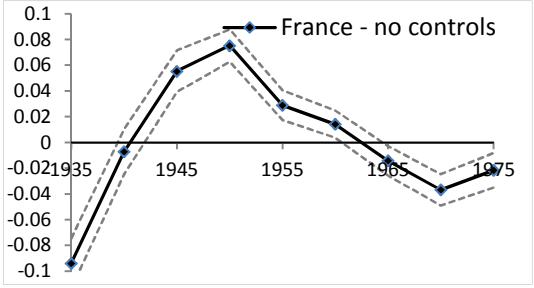

Austria - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

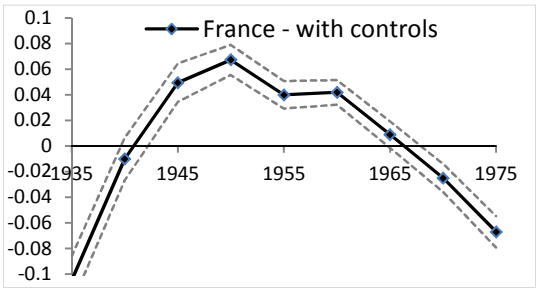

Germany - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

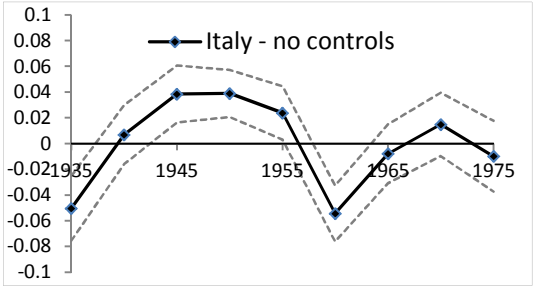

Germany - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

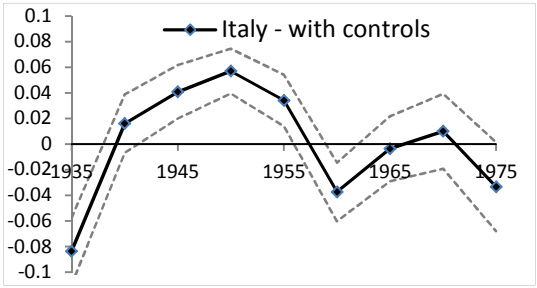

Netherlands - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

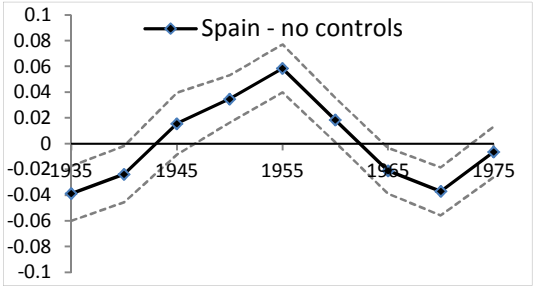

Netherlands - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

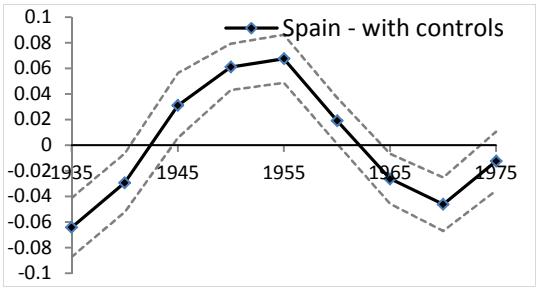

France - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

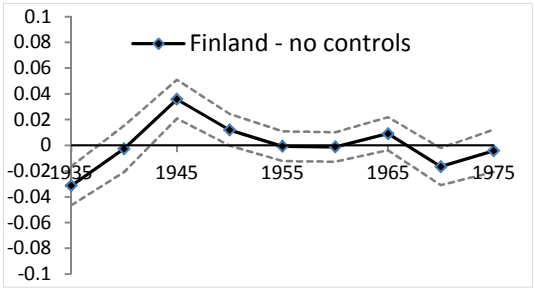

France - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

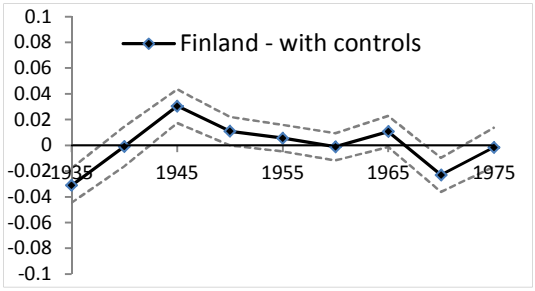

Italy - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

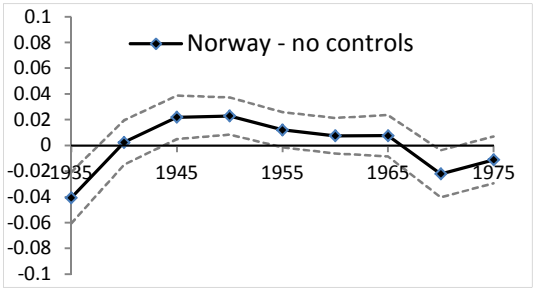

Italy - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

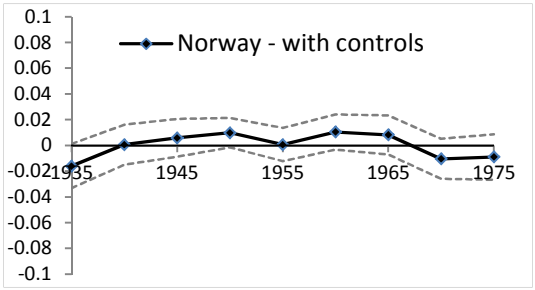

Spain - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

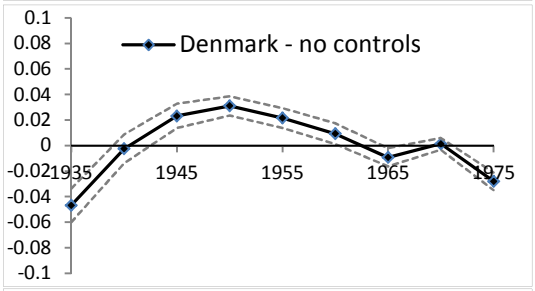

Spain - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

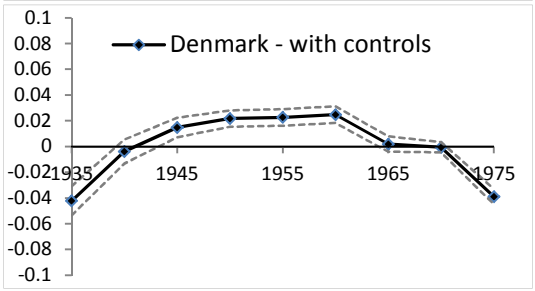

Finland - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

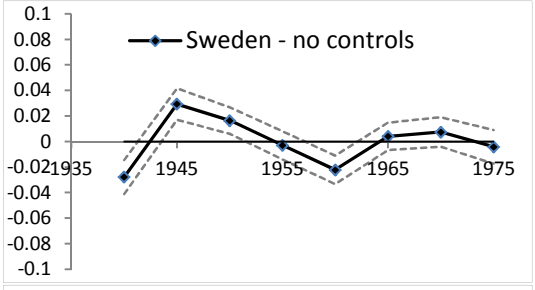

Finland - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

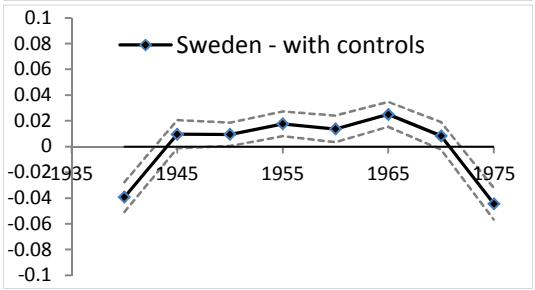

Norway - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

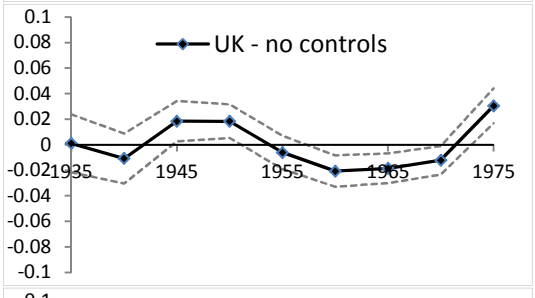

Norway - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

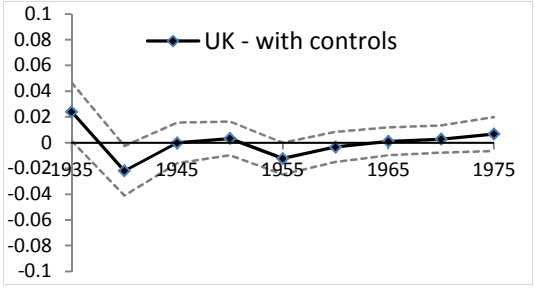

Denmark - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

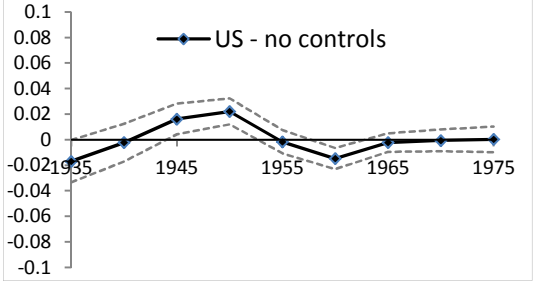

Denmark - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

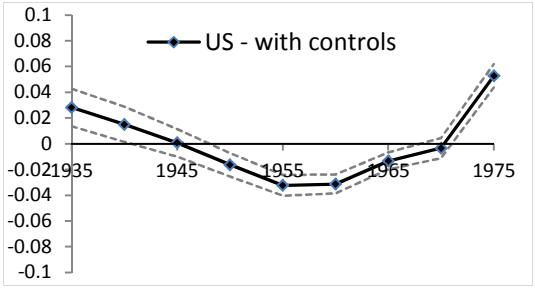

Sweden - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

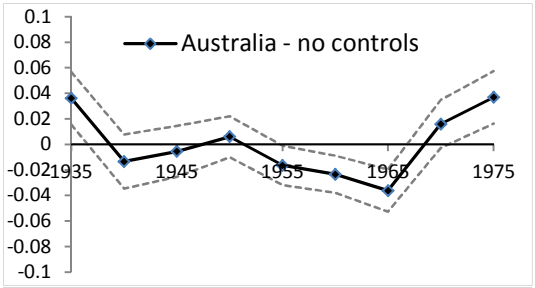

Sweden - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

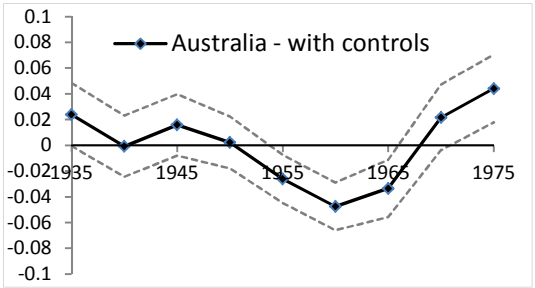

UK - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

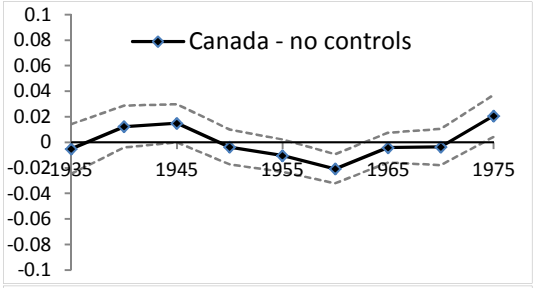

UK - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

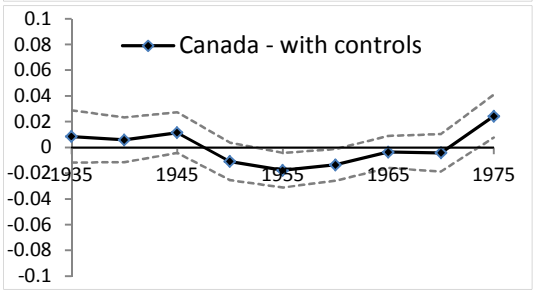

US - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

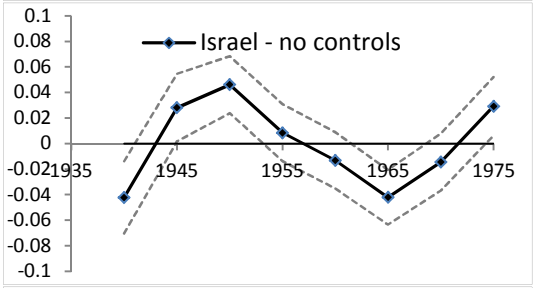

US - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

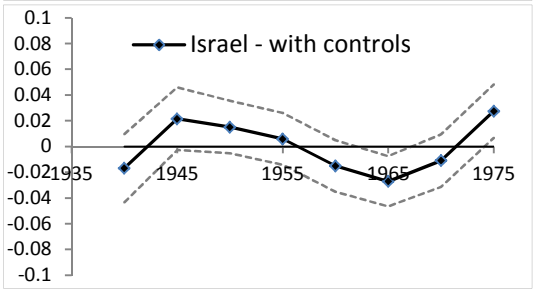

Australia - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

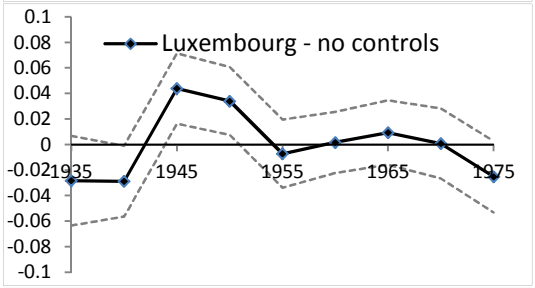

Australia - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

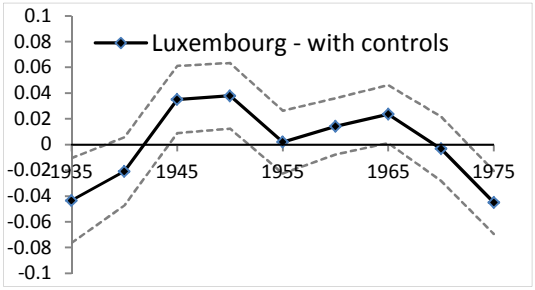

Canada - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

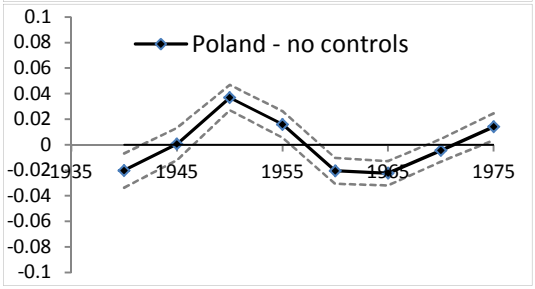

Canada - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

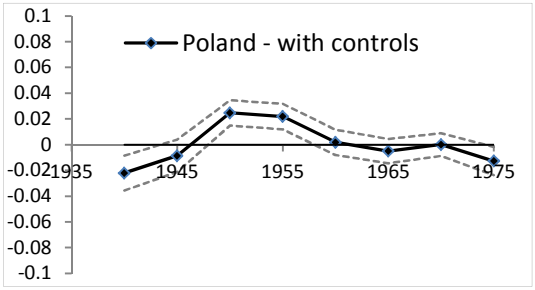

Israel - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975


Israel - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975


Luxembourg - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975


Luxembourg - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975


Poland - no controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975


Poland - with controls
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
1935
1945
1955
1965
1975

ENDNOTES

[1] For American sociologists, 'generation' tends to refer to issues of kinship and family, while 'cohort' (or 'birth cohort') describes people born in the same year (Kertzer 1983, Ryder 1965). We will use the term 'generation', for cohorts that are structurally different from others in terms of earnings, our variable of interest.

[2] The constraint $Slope_a(\alpha_a)=0$ means the trend of the age effect is zero and is true only if $\Sigma_a [(2a - a_{min} - a_{max}) \alpha_a] = 0$. This constraint is easily expressed as a linear equation of coefficients.

[33] Comparing the BIC (cf. Raftery 1986) of the (AP and APCD) models offers another criterion for or against including cohort effects.

[4] For this variable, see the documentation of the Luxembourg Income Study: http://www.lisdatacenter.org/resources/faq/#general9

[5] Our aim is to control by a meaningful correlate to "deprived minority group". In most countries this is immigrants compared to non-immigrants. But this variable is lacking in the United States for the years we are interested in, so we recoded it for the US as African-American versus other population. For Israel, we compare the non-Jewish to the Jewish population. For the Netherlands and Canada, we code the variable as zero for all cases, as the pertinent information is missing.

[6] Due to missing data in the LIS database, we had to create a simulated 1985-dataset for Spain, by taking the average of 25 % of the respondents of the 1980 and 1990 datasets. For Austria, which missed wave II, but had three surveys in wave IV, we used a 1994-survey from wave IV to compensate for the missing wave. Australia, the Netherlands, Israel and Canada are missing the variable "number of children in household", so we estimated it by the number of household members minus respondent and partner. For Germany, we only look at West Germany and for the UK, where education is not coded in a harmonized way, we equated less than fourteen years of schooling with less-than-secondary schooling, between 15 and 18 years of schooling as secondary, 19 to 21 years of schooling as post-secondary and more than 21 years of schooling as tertiary education. We ran all models stepwise with and without these changes and noticed no distortion in the results.

[7] See the online annex with the heading "ANNEX: RESULTS WHEN WE REPLICATE THE CALCULATIONS OF THE PAPER WITH MORE AGE GROUPS (20-64)" and with the heading "ANNEX: RESULTS FROM LISSY THAT REPLICATE THE RESULTS OF THE PAPER WITH MORE CONSTRAINED AGE GROUPS (25-54)" for these results. Under similar headings, we have also uploaded the Stata code we used to obtain these results, see the supplementary online files with the headings "* ANNEX: STATA CODE USED FOR LISSY TO REPLICATE THE RESULTS OF THE PAPER WITH MORE CONSTRAINED AGE GROUPS (25-54)" and "* ANNEX: STATA CODE USED FOR LISSY TO REPLICATE THE RESULTS OF THE PAPER WITH MORE AGE GROUPS (20-64)"

[8] For this measure, we use the Penn World Tables, which provide harmonized national accounts on investment as a share of GDP (Heston et al. 2012).

[9] See the uploaded supplementary file with the heading "ANNEX: COHORT EFFECTS WHEN THE LONG-RUN TREND IS NOT CONTROLLED FOR: COHORT EFFECTS THAT ABSORB LONG-RUN PERIOD TRENDS"

[10] We restrict ourselves to males here, since we would otherwise compare early cohorts with almost half of the population (females) in non-employment, to later cohorts where a sizeable part of the female population is employed. Ideally, we would have wanted to restrict our analysis to male and female full-time working individuals, but this variable is unavailable in most of the LIS datasets. Looking at labor market wages, we also do not adjust for household size.

[11] We use data from the OECD labor force statistics by sex and age, making use of the unemployment rate for all those aged between 20-24, twenty years after the birth of the first member of each five-year cohort. Not all country-years are in the OECD database, so some are missing in the scatterplot. For France, we added three more country-years from the US Bureau of Labor Statistics.

[12] We retrieve this information from the Penn World Tables (Heston et al. 2012). We measure investment as a cohort-by-cohort deviance from the overall trend in investment, by suppressing the national trend

and by looking at the residuals from this trend. This shows us how much more or less a country invests at a given point, relative to that country's general trend in investments.