The dynamics of lifetime earnings in France*

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Abstract

This paper examines the evolution of lifetime earnings in France, using data on the complete earnings histories for cohorts born between 1942 and 1962. The data show that after increasing for several cohorts, median incomes have been flat. When we consider men and women separately, we find that both men's and women's earnings show similar patterns. Mean's earnings grew moderately up to the 1948 cohort and were flat afterwards, while for women faster initial growth was followed by roughly constant median wages. This contrasts with evidence for the US where flat overall earnings profiles are the result of a decline for men and sharp growth for women. Lifetime earnings inequality exhibits small changes, following a U-shaped pattern but without the marked increase observed in the US. The stability of lifetime inequality seems to be the result of a period of declining dispersion in annual (cross-sectional) earnings and a subsequent decrease in earnings mobility. These results point towards both institutions, such as the minimum wage, and social norms related to female participation as important factors in shaping lifetime earnings dispersion and mobility. When we look at more recent cohorts, we find that mobility has fallen considerably, raising the question of whether an increase in lifetime earnings dispersion is starting to take place in France.

JEL Classification: *J16, J31, J62*

Key words*:* Lifetime earnings, income mobility, gender income gaps.

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1 Introduction

A vast literature has documented the increase in earnings inequality that has taken place in a number of Western economies over the past 40 years.[1] The bulk of this work uses cross-sectional data, taking a snapshot of distributions at different points in time. Although such evidence is of crucial importance to understand distributional changes, it has the drawback that if individuals switch their positions on the distribution of income over their lifetimes, the degree of inequality observed in annual data may be much greater than that in lifetime earnings. The growing interest in the distribution of lifetime earnings has been limited by the availability of data, yet recent work has started to use administrative data to consider lifetime incomes and mobility, with analyses having so far concentrated on the US; see Kopczuk et al. (2010) and Guvenen et al. (2021). The aim of this paper is to provide a comparable analysis for France.

France is an interesting case to study because, contrary to the US, cross-sectional earnings inequality has remained relatively stable over several decades, except for those at the very top (see Atkinson and Morelli (2014), Garbinti et al. (2018b), Bozio et al. (2020)), raising the question of whether life-cycle inequality and mobility patterns are similar to those observed across the Atlantic. Moreover, this stability in the distribution of earnings has been accompanied by an increase in the dispersion of labour costs, in line with that observed in the US, indicating that patterns of remuneration and public policies have been important in shaping the observed distribution of earnings (Bozio et al. (2020)). It is hence legitimate to ask whether such equalizing forces have also affected mobility.

Initial analyses on earnings over the life-cycle used relative short horizons, and a number of papers have proposed simulation techniques to overcome data limitations, notably Bowlus and Robin (2004) and Bowlus and Robin (2012). In contrast, the database that we use allows us to build long time series for individuals. It provides firm-level information from which we can compute labour income from 1967 onwards, giving a time span comparable to that used by Guvenen et al. (2021) for the US, with our core sample consisting of the cohorts born between 1942 and 1960 (and entering the labour market between 1967 and 1987). Our dataset presents an advantage as it crosses firm-level information with census data, which allows us to consider characteristics not present in their analysis, notably the role of education and marital status and their potential impact on earnings mobility.

Our analysis shows that the growth of median lifetime earnings for the first cohorts in our sample came to a halt, with a considerable flattening of median earnings for those born after 1948, a result that mimics the US experience. However, when we split our data between men and women, our results contrast markedly with evidence for the US where a flat profile for all workers is the result of strong lifetime earnings growth for women and sharply decreasing earnings for men. In fact, although in France women's earnings are lower than those of men and some catching up occurred during the period, all aspects of our data (median lifetime earnings, lifetime inequality, mobility ...) display a remarkable similarity between men and women. The stability of median lifetime earnings we observe hides, however, a change in the age profiles, with more recent cohorts facing lower earnings when young but faster growth during their careers than older cohorts.

We find that inequality indices for lifetime earnings exhibit overall stability, in line with

[1] See, for instance, Katz and Murphy (1992), Katz and Autor (1999), Alderson and Nielsen (2002), Atkinson (2003), and Atkinson et al. (2011).

existing cross-sectional evidence for France, although inequality amongst women grew over the period. This is likely to be the result of two phenomena, the lack of increase in cross-sectional inequality and greater mobility over the life-cycle. Mobility patterns show an increase in mobility for the older cohorts that comes to a halt for those born from 1960 onwards. The (incomplete) careers of cohorts born after 1960 indicate that the trend has reversed and mobility has started to fall. This reduction in mobility seems to be a combination of lower upwards mobility for those at the bottom and greater persistence at the top of the distribution.

An important novelty of our analysis it that our rich data-set allows us to study different demographic groups. In addition to gender differences, we look at the changing roles of family situation (single versus couple) and education. We find that role of "being married" as a signal of worker quality and labour-market commitment (positive for men, negative for women) has largely disappeared for recent cohorts. Regarding labour market returns to education, we find considerable changes both in terms of lifetime incomes and mobility. Those with secondary school degrees display flat lifetime earnings profiles across cohorts. For higher education, a gap has appeared between degrees that used to result in equivalent outcomes, a bachelor degree and a master degree. Younger cohorts display considerably higher (lower) lifetime earnings for those with a master (a bachelor) degree than the older cohorts. Similar changes appear when we consider mobility over the life-cycle, with the highest degree (master) leading, for younger cohorts, to a higher rank in the earning distribution after 20 years.

The paper is related to various strands in the literature. Our approach follows closely those employed by Kopczuk et al. (2010) and Guvenen et al. (2021) on US data. The former use social security data to examine the evolution of earnings mobility across cohorts, while the latter, using the same data, characterize lifetime earnings. When we compare our results with those for the US the most striking difference concerns gender patterns. The US results are characterized by diverging gender patterns. For example, stagnating median incomes for the whole population are due to a sharply decreasing median income for men and an increasing median income for women, while long-run mobility falls for men and rises for women. We find that in France, men and women exhibit rather similar earnings and mobility dynamics, albeit with some catching up of women in terms of income and a convergence in mobility patterns. The similarity across genders in France points towards common macroeconomics factors as being behind the wage dynamics across cohorts, while the U.S. dynamics are more likely to reflect structural changes such as a shift from manufacturing toward services, coupled with the decline of organised labour in the former sector. We also add to this literature by taking advantage of our rich data-set to study the dynamics of lifetime earnings and mobility for different demographic groups.

As we have argued, the analysis of intra-generational income mobility is limited by data availability, as comparable data that allows following individuals over a sufficiently long period of time is seldom available. An important contribution to the study of mobility has consequently been the use of simulation methods to compute mobility measures from relatively short data panels. Notably, Bowlus and Robin (2004) and Bowlus and Robin (2012) propose a method to estimate income and employment trajectories by supposing that individuals will be subject in the future to the same distributional shocks as older workers today. This allows the authors to calculate (imputed) lifetime incomes and compute measures of lifetime inequality which can then be compared to income dispersion at a point in time.[2] Using US data,

[2] An important contribution of this approach is that it allows to compute the relative importance of wage

Bowlus and Robin (2004) find that although lifetime income inequality is lower than that for annual earnings, both measures have experienced the same increase. Moreover, the changes in lifetime income inequality are mainly driven by changes in earnings mobility and earnings dispersion, with employment playing a minor role. Their companion paper, using data for five countries in the 1990s, provides a comparison between France and the US. Notably, they find that the US exhibits more income mobility than France. Our paper asks similar questions but relies on observed (rather than simulated) earnings histories to examine the dynamics of earnings.

The paper is also closely related to a small recent literature examining earnings dynamics in Europe. For example, Hoffmann et al. (2021), using Italian data (for a shorter period that the one we consider), find that earnings inequality increased while earnings mobility did not change much. These results contrast with our findings of moderate changes in cross-sectional inequality and a reduction in mobility. Given the similarities between these two large European economies, such differences highlight the potential importance of institutions in shaping distributional outcomes. Two papers use the same French data as this paper to address different questions. Magnac and Roux (2020) examine the importance of human capital investments for lifetime incomes in France. They focus on a single cohort of male wage earners observed over 30 years, and estimate individual specific parameters of a human capital investment model allowing for heterogeneity so as to describe the distribution of earnings. Their findings indicate that cross-section inequalities exceed life-cycle inequalities by about 20% at the start of the working life, and that this factor increases to around 80% at the end of it. Our approach differs from theirs, above all, in our interest in comparing income dynamics across cohorts and across genders. Closest to our paper is Kramarz et al. (2021), who use the same data to explore the dynamics of annual earnings inequality. They show that earnings inequality decreased in France between 1991 and the financial crisis and increased thereafter, and document the increase in women's earnings over the period. Our contribution lies in focusing on lifetime incomes and using cross-sectional inequality and mobility to try to understand the dynamics of the former.

The rest of the paper is organised as follows. Section 2 presents the data. We next examine the evolution of lifetime incomes before turning to mobility in section 4. In section 5 we consider different groups, either by marital status or education, and examine both how lifetime earnings and mobility differ across these groups. We then look at the importance of place of birth for determining earnings. Section 7 concludes.

2 Data

2.1 Data Sources

The Permanent Demographic Sample (échantillon démographique permanent or EDP) is a large socio-demographic panel designed to study fertility, mortality, family backgrounds, and salaries. We use the 2017 EDP which combines several data sources. The main one consists of an administrative data set obtained from firms that gives information on employees' salaries and firm characteristics, the *Déclaration annuelle des données sociales* or DADS, and which covers the period 1967-2015. These data are matched to other datasets. They are combined

and employment risks; see also Garnero et al. (2019) for a comparison of OECD countries.

with registry data indicating dates of birth, marriage, and death, and with census data (for 1968, 1975, 1982, 1990, 1999 and 2004, and annual from then onwards up to 2015). Fiscal data are available from 2011 (concerning 2010 incomes), notably the base 'Filosofi', as well as electoral lists. By virtue of its size, the EDP allows a detailed analysis which can take into account heterogeneity across generations and qualifications. Sample restrictions are driven by DADS coverage. The firm data-set initially covered only individuals born in even years, between the 1st and 4th of October. Individuals born in odd years are only covered by the EDP-DADS panel from 2002 onward, and from 2012 the sample includes individuals born between January 2-5, April 1-4, and July 1-4 as well as in October. The resulting samples correspond, roughly, to 0.5%, 1% and 4% of the population. The observations for 1981, 1983 and 1990 are missing as data were not collected on those years.[3]

An important advantage of these data is that there is no top-coding of earnings, in contrast with US data where the origin of the data implies that until 1978 earnings above the threshold for being subject to social-security contributions are not recorded and need to be imputed by researchers making assumptions on the upper tail of the distribution for much of the period under study.

The measure of earnings includes wage and salary income supplied by employers. Earnings are reported net of all social security contributions but not of income taxes. Since our data are provided by firms, we only have information on labour earnings, and not full incomes including capital income and public or private transfers. In an abuse of terminology, we will nevertheless use the terms earnings and income interchangeably. A large number of variables concerning the firm/plant in which they individual works are available in the DADS, but the dataset lacks individual information other than year of birth. The match between the DADS and other information, such as census data, allows us to retrieve information on aspects such as education or marital status.

2.2 Sample selection

The sample is selected across several dimensions in order both to ensure the reliability of our results and to be able to compare our conclusions with other studies. First, we restrict DADS observations by category of employment, keeping only those corresponding to people employed by private companies, individual entrepreneurs and public companies subject to private law. Those employed in the public sector or by natural persons are only included in the data base from 1988 and 2009, respectively.[4]. Also, following standard practice in the literature, we consider only prime-age workers, i.e. those aged 25 to 55 years. Given our focus on lifetime incomes, we restrict the sample to those still alive at 55.

The sample includes individuals born between 1912 (i.e. 55 in 1967) and 1990 (i.e. 25 in 2015) but we restrict our data in several ways. We build two main samples, used separately for the analysis of, on the one hand, lifetime incomes and, on the other, of mobility. Our lifetime (LT) sample further restricts the data because of the need to observe individuals over their entire lifetime. Full lifetime incomes, i.e. for the 31-year period between ages 25 and

[3] In what follows we will simply ignore those years when computing average lifetime earnings and divide by the number of years for which we have data.

[4] The difference in the category of employment included in the various years could potentially bias our results. Appendix H reports our key results when we exclude these two groups from our sample and show that there are no major differences.

55, are only available for those born between 1942 and 1960, and since we only observe those born in even years we have 10 cohorts spanning over 19 years.

One concern is that individual earnings may not be observed on certain years, as they leave the DADS data-set for various reasons: they became unemployed, are on sick or maternity leave, change type of employer or leave the labour force.From 1988, we have data on civil servants and from 2009 on those working for individual employers; hence after those dates we can see if the individual disappears from the sample because it switches jobs into those categories. Unfortunately, we cannot distinguish between being non-employed or self-employed. As a result, individual incomes may not be observed over the entire lifetime. We hence consider individuals for whom we have 'sufficient' data, following procedures common in the literature which impose restrictions on wages to mitigate sample bias. We follow Guvenen et al. (2021), GKSW from now onwards, and restrict wages to include only individuals earning at least a quarter of the minimum wage in at least half of the period we can observe them, which can be either 28, 29, or 30 years due to the three missing years.[5] This ensures that the individual displays sufficient attachment to the labour market. The final sample has about 1.15 million individual-year observations, consisting of 10 cohorts comprising between 76,000 and 145,000 individuals each.

One of the questions we will ask is whether lifetime incomes are distributed in the same way over the lifetime for difference cohorts. At this point we will consider an additional sample, denoted the extended lifetime sample (ELT), in which we include younger cohorts who have not reached age 55 in 2015 and for whom we have incomplete lifetime incomes. This will allow us to see if some of the dynamics we observe in our LT sample are also present for younger cohort. The sample is selected in a similar way as the LT sample: we keep those that are observed at least half of the time of their incomplete career and whose average wage is above the minimum wage threshold.

When we focus on mobility we construct a larger sample, termed the MB sample, that is not restricted to individuals observed over their entire career. For this part of the analysis we want to observe individuals for at least 11 years so as to examine their income dynamics over such a period, following Kopczuk et al. (2010), KSS from now onwards. We hence consider cohorts born between 1922 and 1982. That is, the oldest cohort was 45 in the first year for which we have earnings observations, while the youngest was 35 in the last year in our sample. We impose the restriction that earnings are larger than the same threshold used in the core sample, 507/455*0.25*the minimum hourly wage.[6] The resulting sample includes about 3.67 million individual-year observations with yearly observations ranging between 30,000 and 105,000 (with more observations in later years). Note that individuals present in one panel need not be present in the others.

[5] We use the restrictions, 507*0.25*the minimum hourly wage or 455*0.25*the minimum hourly wage. The figure 507 corresponds to a quarter of the legal annual working hours in France, which were 2028 until 1999, corresponding to a 39 hour working week. For subsequent years this number is adjusted to 455 as weekly hours were reduced to 35. GKSW consider a threshold of 520*0.5 because the legal working time in the US is 40 hours per week. We divide the yearly hours threshold by 4 to account for the fact that the labor market adjusts more slowly in France than in the US so that individuals can experience longer periods of unemployment spaced in-between short contracts. Further, although in France the minimum wage is mandatory, receiving a lower hourly wage is possible with certain types of contracts, notably for young workers and trainees.

[6] We impose this restriction on the average of 11-year earnings, but for figures based on annual earnings the restriction is made upon annual earnings.

2.3 Adjusting for inflation

To obtain real earnings, nominal earnings are deflated by an appropriate price index. The choice of deflator is important given the length of the period we consider. Two deflators are used. Most of our analysis employs the Personal Consumption Expenditure (PCE) deflator (referred to as "hh consumption" for household consumption in the graphs below), using the time series provided by the French statistical institute, Insee. As an alternative, we also construct earnings time series using the consumer price index, CPI.[7] Here we follow Guvenen et al. (2021) to keep our analysis comparable to theirs and use the PCE deflator, although a comparison between the two will be provided below.

3 Median lifetime earnings and earnings inequality

3.1 Trends in median lifetime earnings

We start by considering the trends in median lifetime incomes. In this section, we report three main findings. First, the median income in France initially increased, both for men and women, up to the cohorts entering in, respectively, 1973 and 1979. It then stagnated for men and kept increasing, although moderately, for women. Second while the increase takes place at different points in time for men and women and was largest for women, the overall pattern does not differ much between the two sexes. This contrasts with evidence for the U.S. where the median income of men decreased over the same period. Third, the life-cycle profiles of median income also differs from those observed in the U.S. In France, the relative stability of median lifetime incomes across recent cohorts of men hides a change in their earnings profiles over the life-cycle, with younger cohorts exhibiting lower incomes at the beginning of their career followed by faster growth at older ages.

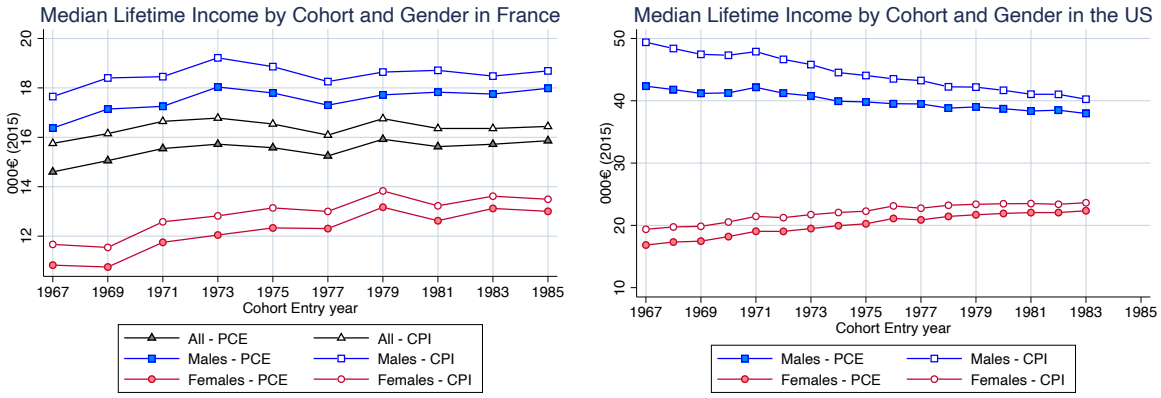
Figure 1 reports the evolution of median lifetime incomes. The left-hand panel reports our results for France with the two possible deflators. The data are reported by gender, with the year indicating the year of presumed entry into the labour market (age 25). For ease of comparison, the right-hand panel reports the results obtained by Guvenen et al. (2021) for the US.[8] To facilitate the comparison between the two countries, Figure 2 reports the same data normalised by initial income, that is, taking a value of 1 in 1967 for both countries and both sexes.

The first thing to note is that the overall patterns are not much affected by the choice of deflator. Incomes are slightly higher when we use the CPI rather than the PCE deflator, and growth is slightly faster with the latter. For example, for men and the population as a whole, if we compare the peak of 1973 with the last observation we find no change when using the PCE deflator while we see a slight decrease with the CPI. But the overall trends are remarkably similar. Hence in all further analysis we will focus on data deflated using the PCE deflator, partly because this is the measure chosen by Guvenen et al. (2021) with which we will systematically compare our results.

[7] Over the period, the CPI and the personal consumption expenditure (PCE) deflator have evolved similarly. The PCE is generally considered as taking into account a broader view of consumption. For instance, it includes spending on behalf of consumers by employers and government health agencies (see for instance Appendix, section A.6 in Piketty and Zucman (2014)).

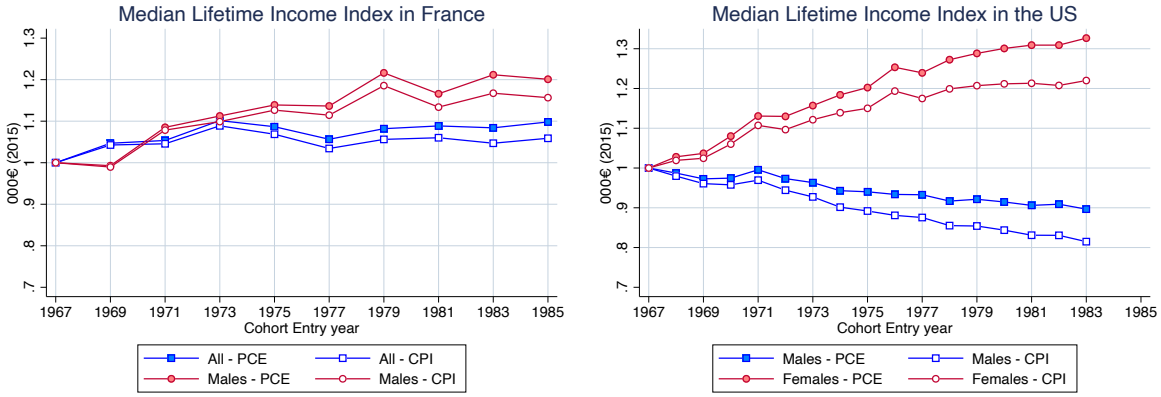
[8] In what follows we will refer to other results by either Guvenen et al. (2021) or Kopczuk et al. (2010). To facilitate the comparison to the reader, they have been reproduced in the appendix.

Figure 1: Median lifetime income by cohort and gender



Notes: Each marker/observation represents the median lifetime earnings of a cohort that turned age 25 (entered the labor market) in the year indicated on the x-axis. Only individuals in the LT sample (as defined in Section 2.2) are included. We separate each gender and show both the PCE and CPI price deflators. Values are displayed in thousands of 2015 euros, and 2013 US dollars. The left-hand graph depicts our own computations, while the right-hand side one reproduces the results in Guvenen et al. (2021).

Figure 2: Median lifetime income by cohort and gender



Notes: The figures represents the same series as Figure 1 except that all values have been divided by the median lifetime incomes of the 1967 cohort. Only individuals in the LT sample (as defined in Section 2.2) are included. We separate each gender and show both the PCE and CPI price deflators.

In France, annualized lifetime income for men rose from just over 16 000 € for the oldest cohort –entering the labour market in 1967- to 18 000 € for those in the 1985 cohort, an increase of 12% for cohorts that are 18 years apart. Note, however, that all of the gains accrued to the first cohorts, and that from 1973 we only observe small fluctuations around a flat trend. Women present somewhat different dynamics, with annualized lifetime income increasing from 11 000 € to 13 500 €, i.e. by 23%. Again, the increase occurs early on, with the cohorts from 1979 to 1985 exhibiting a flat trend. The dynamics for the entire population follow closely those of men's earnings, although the series exhibits a small increase between the 1973 and 1979 cohorts, clearly driven by women.

This overall increase in lifetime earnings across cohorts for both men and women is partly explained by the extensive margin: the number of years worked by individuals has increased, conditional on having worked 15 years out of the 31 years we consider, see Figure A.1 in Appendix A). This increase in participation is well documented (see Kramarz et al. (2021)) and, starting in the 1980s, is driven by women and those aged above 55 years of age (these latter are not included in our sample).

France and the U.S. exhibit different patterns regarding the evolution of median lifetime income across cohorts, mostly due to differences in the dynamics of men lifetime income between the two countries. Our data start later than those used by GKSW, hence we do not capture the increase in male lifetime earnings that they find for the US from their initial cohort (1957) to that of 1967 (i.e. those born between 1932 and 1942). However, the French data do display rising male earnings early on in the sample, increasing by 7% between our initial cohort (1967) and that of 1973 (birth years 1942 to 1948). American males experienced a considerable decline after 1967, losing 10% of their earnings between 1967 and 1983 (and 7% in the 10 years after 1973); in contrast French males experience a reduction of only 2% between the 1973 and 1979 cohorts, but recovered the loss so that lifetime earnings were virtually identical for those entering the labour market in 1973 and 1987, as can be clearly seen in Figure 2.

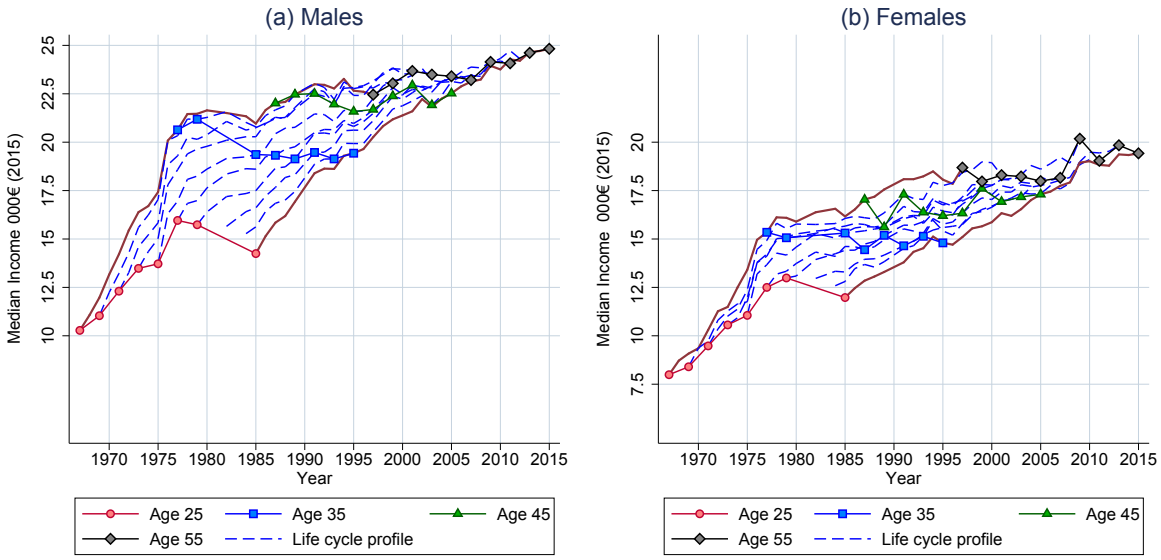
Second, the US data indicate marked gender differences which we do not find. In France, differences across genders, though significant, are more moderate, with the median lifetime income of women growing more than that of men but exhibiting a flattening out for the youngest cohorts. The increase is much milder than in the US, 18% versus 33% (these figures cover the 1967-1983 cohorts which are common to GKSW and our paper). The overall pattern for the entire population is similar in the US to that observed in France, a flat curve since the late 60s/early 70s, yet in the US it is the result of large losses for men and large gains for women, while in France it results from stagnant male earnings and a moderate increase for female incomes.

The flatness in lifetime earnings observed for recent cohorts of men can be due to no earning growth across cohorts throughout the individual's work-life. To see whether this is the case, we explore how life-cycle profiles of earnings have changed across cohorts. In Figure 3 we plot median earnings in each year for each of the 10 cohorts we observe, separately for males and females. The dashed lines guide us through a cohort's lifetime. The coloured marks (circles, squares, etc.) connect earnings at common ages across cohorts, thus showing how the median earnings of particular age groups have evolved over time.[9]

Consider first the patterns for men. GKSW find that in the US the shape of the life-cycle

[9]Note that missing data points are due to data not being collected in 1981, 1983 and 1990.

Figure 3: Age profiles of median income by cohort



Notes: Each observation represents the median earnings of men or women of a particular age in a particular year in the LT sample (see Section 2.2). For example, the 1967 cohort is represented by an age 25 observation in 1967, an age 35 observation in 1977, an age 45 observation in 1987, and an age 55 observation in 1997. The dotted lines (solid for the first and last cohort) connect all age-year observations for each cohort. Panel (a) displays the age profiles of male cohorts, and Panel (b) displays the age profiles of female cohorts. All values are displayed in thousands of 2015 euros and deflated using the PCE.

profile is similar for all cohorts (see Appendix G, Figure G.2(a)), with low initial earnings that rise sharply between ages 25 and 45, and then stabilize. What has changed is the magnitude of this increase which has become smaller for the post-1967 cohorts. In France we observe a rather different pattern. While the dynamics for age 25 (red circles) are similar to those in the US, first increasing and then declining, the downward trend is less marked at age 35 (blue squares). At age 45 (green triangles) we observe a rather flat curve (while it is decreasing in the US), and at age 55 median incomes increase for most cohorts, especially for the youngest ones, in contrast to the downward trend observed by GKSW. This implies that the stability in male median earnings that we observe in France is the result of considerable changes over the lifetime. For cohorts entering after 1977, lower initial earnings have been accompanied by faster growth between ages 35 and 45 and, notably, between ages 45 and 55, so that this late-career growth compensated the lower entry remuneration and led to stable lifetime incomes. More precisely, men in the 1967 cohort experienced an increase in wage growth of 100.8% between ages 25 and 35 and of 8.8% between ages 35 and 55. For the 1985 cohort these figures were respectively 36.4% and 27.8%. Interestingly, in the US recent cohorts also saw earnings falling at young ages, but no offsetting growth occurred, resulting in the observed decline over the lifetime. Despite the stability of lifetime incomes in France, the change in the age profile should not be seen as having no consequences. Notably, it could have important implications for access to the housing market as the reduction in earnings for the youngest cohorts is concentrated in the years in which individuals are likely to form a family.[10]

Women have, as we saw above, experienced lifetime earnings growth throughout the sample, and this rise may be attributed to higher earnings at young ages, higher earnings at older ages, or both. The data display a pattern relatively similar to that of men. Initial earnings first increased, with the magnitude being rather similar for women and men. Between the 1967 and the 1976 cohorts, they rose by 58% for women and by 60% for men. Starting with the 1977 cohort, initial female earnings fell, though only by 5% as compared to a decline of 12.5% for men. We find a flat profile at age 35 and increasing median earnings at older ages. This indicates that the source of the gains achieved by women differs across cohorts; the oldest ones experienced particularly rapid growth between ages 25 and 35, while for younger women growth has been fastest in the last two decades of their careers. More specifically, women in the 1967 cohort experienced a 92.1% increase in wage growth between ages 25 and 35, and an increase of 21.8% between ages 35 and 55. For the 1985 cohort these figures were respectively 23.6% and 31.2% (see table 3.1).

This is consistent with general trends observed in the literature on gender wage gaps. On the one hand, women were initially working in jobs with moderate wage growth (e.f. clerical jobs) and have over time gained access to careers with faster wage growth (such as lawyers and doctors). On the other, even within occupations, the returns to experience were extremely low for women in the 1960s and 1970s but the gap with those observed for men has been closing over time.

Overall three important differences appear when comparing France to the US. First, median incomes, which stopped increasing for Americans entering the labour market after 1967, rose for a few more cohorts in France. Second, the period of stagnant median earnings observed in the two countries hides major differences. In the US, it is the combination of

[10] See for instance Bonnet et al. (2018) for the rise in inequality among young households in getting on to the property ladder, and Garbinti and Savignac (2020), Garbinti and Savignac (2021) for the increasing role of parental wealth over time in accessing home-ownership.

Table 1: Annual median earnings growth by cohort, France & the U.S.

(a) France

Cohort	Women			Men		
	Median earnings growth between					
	25 and 35 yo	35 and 45 yo	45 and 55 yo	25 and 35 yo	35 and 45 yo	45 and 55 yo
1967	0.921	0.097	0.121	1.008	0.063	0.021
1977	0.168	0.212	0.141	0.121	0.273	0.080
1985	0.236	0.189	0.123	0.364	0.165	0.113

(b) United States

Cohort	Women			Men		
1967	0.267	0.256	0.056	0.511	0.125	-0.013
1977	0.352	0.191	0.115	0.451	0.119	0.051
1983	0.286	0.279	0.013	0.479	0.237	0.019

Notes: This table reports the cumulative growth rates in median earnings between ages 25-35, 35-45, and 45-55 for selected cohorts of the LT sample (see Section 2.2). We report growth rates for men and women separately using the PCE deflator. The figures from the US come from the results of Guvenen et al. (2021).

lifetime earnings that declined for men and rose rapidly for women; in France, males earnings stagnated while those of women grew but considerably more slowly than for their American counterparts. Lastly, the stagnation observed for males hides a change in lifetime earning profiles which has implied that younger cohorts have lower earnings when young but faster growth late in their careers than older ones.

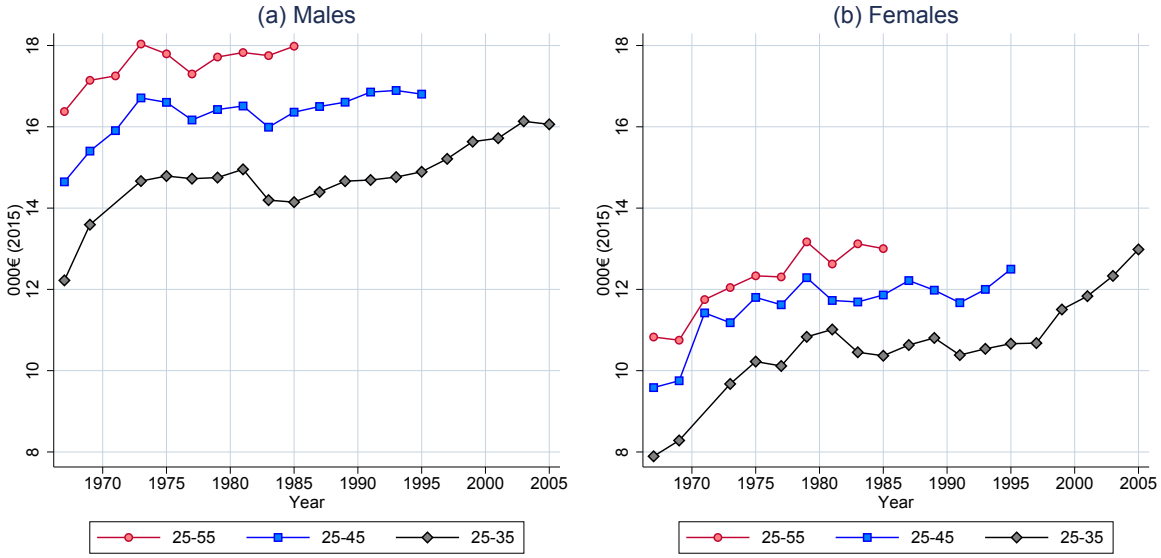
3.2 Recent cohorts

Our data on full careers indicates that starting in 1973, male lifetime earnings have stagnated. In this section we ask whether such a trend can be expected to continue for more recent cohorts. Figure 4 reports median incomes over different age ranges using our core sample as well as equivalent samples for cohorts whose lifetime incomes are computed over ages 25-45 and 25-35,[11] looking at men and women separately. The top curves (red circles) reproduce the values over the core 31-year period in Figure 1 above. The middle ones (blue squares) depict the evolution of the annualised earnings in the 21 years from age 25 to age 45, which allows us to consider cohorts entering up to 1995. Lastly, the bottom curves (grey diamonds) depict annualised earnings over the first 11 years of the individual's career, i.e. those entering up to 2005. Because the measures have been annualized they are comparable to each other and indicate, as expected, that including later years results in higher annualized earnings.

Consider first male earnings. Although the changes are small, the 21-year earnings curve indicates that growth has resumed after the 1985 cohort, displaying a steady increase of 4.1%

[11] In these two additional samples we include individuals born up to 1970 and 1980, respectively. Each sample contains individuals that earn at least the minimum wage threshold for half of the period of observation (less missing years): 15/14 years for the 25-55 sample, 10/9 years for the 25-45 sample, and 5/4 years for the 25-35 sample.

Figure 4: Median income by cohort, including younger cohorts



Notes: Each observation represents the median earnings of a cohort, measured over the first 11 years, first 21 years, or full 31 years of a cohort's working lifetime, for the year the cohort entered the labor market. Panel (a) displays the trends for male cohorts, and Panel (b) displays trends for female cohorts in the LT sample (see Section 2.2). We use the ELT sample. Values are displayed in thousands of 2015 euros and deflated using the PCE.

from the 1985 to the 1995 cohort. The 11-year figures show a decline from 1981 to 1985 consistent with the age profiles observed in Figure 3 above, but for all subsequent cohorts earnings grow, totalling a 13.3% gain over 19 cohorts.[12] When we compare these figures with those for the US (see Appendix G, Figure G.1) two aspects stand out. On the one hand, the gap between the 21- and the 31-year earnings measure are much larger in France than in the US (an increase of about 10% rather than 4%), indicating that wage growth does not stagnate as much in the final years of the career in France as in the US. On the other hand, in the US, the decline in lifetime earnings observed for the 31-year period is also apparent with the 11- and 21-year measures up to the 1990 cohort, subsequently increasing for 8 cohorts before declining again. These fluctuations tend to be considerable, in sharp contrast with the slow upward trend we find in France. Overall, between the 1967 cohort and the 2003 one, 11-year earnings declined by 16.6% in the US, while they increased by 28.2% in France.

Although earnings growth rates are higher, in France the trends for women are similar to those for men, notably the plateau we find for the 1981-1995 cohorts. This contrasts with the sharp differences found by GKSW for the US, where women's earnings grew consistently for all cohorts.[13] The stark differences seem to point to different factors behind these dynamics. In

[12] Although the data cover cohorts born 19 years apart, recall that because the data are collected for only those born in even years, we only observe 10 of those 19 cohorts.

[13] To better understand the dynamics of income growth at young ages, we extend Figure 3 to include the more recent cohorts. Figure A.2 in the appendix indicates that the decline in median income at age 25 stopped in 1997 for both men and women and the observed growth for recent cohorts has been mainly driven by fast growth between ages 25 and 35.

France, the similarity across the two gender groups points towards common macroeconomics factors accelerating or slowing down wage growth as the main force behind the differing experiences across cohorts. In the US the steady rise for women and marked decline for men point towards structural change, probably in the form of a shift from manufacturing toward services, coupled with the decline of organised labour in the former sector.

3.3 Inequality in Lifetime Earnings

The second aspect we want to explore are inequality trends in lifetime earnings, and notably whether the existing evidence on cross-sectional data also appears when we consider the distribution of lifetime earnings. The main findings are as follows. Overall, we find that inequality in lifetimes incomes is much lower in France than in the US. While GKSW report a steady increase in the U.S. across cohorts, the increase in France is moderate, displaying a U-shaped pattern, with inequality first falling and then increasing from the 1981 entry cohort onwards. We do not observe a large increase at the top in lifetime inequality as it is the case in cross-sectional data in France or in lifetime earnings in the U.S.. Gender differences are minor compared to those found in the US, as both overall inequality and that measured for each gender follow roughly similar pattern.

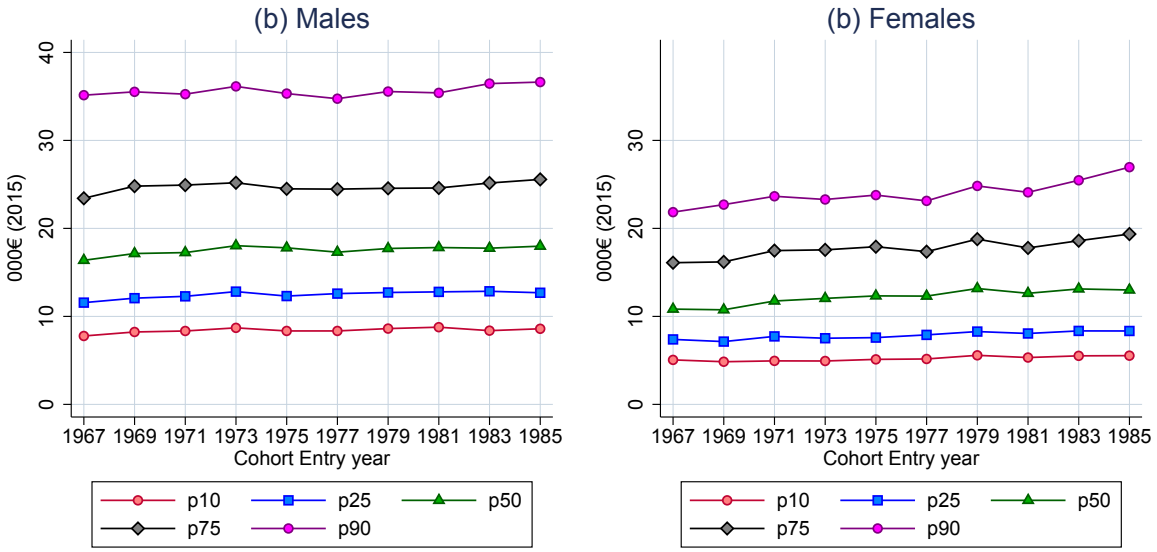
Before reporting measures of inequality, we compute the lifetime earnings of selected deciles, reported in Figure 5. The figure reports the lifetime income of those in the 10th, 25th, 50th, 75th and 90th percentile of the distribution of earnings, where the position in the distribution of an individual is computed within the distribution of her/his own gender group.[14] Table 2 reports the growth rates at various points of the distribution.

The first thing to note from Table 2 is that for both the entire population and for men, average earnings increased by less than median earnings, implying an improvement in the income share of those at the median. For men, median income rose by 10.12% but average income by only 8.08% between the 1967 and the 1985 cohorts. If we compare the figures with those for the US, considering the overlapping sample of 1967-1983 cohorts, the median French male saw an increase of 8.59%, while average income rose by 7.41%, but in the US average income grew by 1.46% and median income *fell* by 10.34%. For French women, the evolution of the mean and the median are very close, again a marked difference with the US where the former grew faster than the latter (44.76% for mean and 32.72% for median income).

These differences are reflected throughout the distribution, with lifetime incomes for the different percentiles in the US fanning out across cohorts, a pattern that is hardly present in France. We find that for men, lifetime earnings fell for the top 1% (-1.63%) and increased by 0.85% for the top 5%. All other men experienced considerable gains, ranging between 4.57% (p90) to 11.51% (p10). The gains below the median are consistently above 10 percent. As we have seen above, most of the growth in median income occurred for the early cohorts. The data across the distribution show a parallel pattern. When we divide our core sample into early cohorts –those entering between 1967 and 1973- and late cohorts – 1973 to 1985-, we find large gains for the earlier ones and small gains or losses for the later ones up to the 80th percentile. At the top of the distribution (p90 and p95) the gains are small throughout but evenly distributed across the cohorts, while at the very top (p99) the small overall loss we find is the combination of a large fall for the older cohorts (-8.62%) and a large gain for recent ones (7.65%). The overall dynamics contrast markedly with those for the US, where for the

[14] See Appendix G, Figure G.3 for the corresponding US figures in Guvenen et al. (2021).

Figure 5: Selected Percentiles of Lifetime Income, by Cohort and Gender



Notes: An observation represents a selected quantile of the lifetime earnings distribution of a cohort that entered the labor market in a given year for the LT sample (see Section 2.2). Panel (a) displays the distribution for men and panel (b) for women. Values are displayed in thousands of 2015 euros and deflated using the PCE.

1967-1983 cohort there were considerable earnings losses throughout the distribution up to the 80th percentile, and large gains at the top (17.48% for the p99). Yet the fact that for the younger cohort it is only the top of the distribution that experienced income gains, raises the question of whether France is on a similar path to the US albeit with a lag.

In the case of women, there are more pronounced differences across percentiles. The size of the increase in earnings from the 1967 to the 1985 cohorts is almost monotonically increasing across the distribution. Lifetime incomes rose by over 6 percent for the bottom 5 and 10%, and by three times as much for the top 95 and 99%, peaking at 22.21% for p90. This fanning-out of earnings is visible in the right-hand side panel of Figure 5, although the magnitudes are much smaller than those observed for the US where women in the top 10% of the distributions saw their earnings increase by almost 49% and those in the top 1% by an astounding 108% (1967 to 1983 cohorts, Guvenen et al. (2021), table 1). Rather surprisingly, the way in which the gains are spread across cohorts is rather different from those of men. For the early cohorts (1967-1973) we find considerable income losses at the bottom of the distribution (p5 and p10) and substantial gains from the median onwards, with the largest increase at p50. In contrast, for the younger cohorts, the largest gains are at the bottom of the distribution, with an increase of 19.26% for p5, the gains being smallest around the median, and increasing again for those at the top (16% for p90 and 11% for p99). These figures are comparable to those observed in the US at the bottom of the distribution, but are much lower than the increases experienced by women at the top of the distribution over the period 1967-1983, which amount to 49, 63 and 107 percent for p90, p95 and p99, respectively. Despite the much greater fanning out of earnings in the US, both countries share an increase in the earnings of all women that was particularly marked for those at the top. Interestingly,

Table 2: Growth rates of cohorts median lifetime incomes: Selected percentiles

		Averages		Selected percentiles							
		Mean	**Median**	**p5**	**p10**	**p25**	**p75**	**p80**	**p90**	**p95**	**p99**
Entire population											
67-73	Cumulative	4.14	7.13	-4.36	1.40	9.12	6.39	5.53	2.63	-0.14	-10.88
	Annualised	0.59	1.02	-0.62	0.20	1.30	0.91	0.79	0.38	-0.02	-1.55
73-85	Cumulative	1.67	0.84	4.14	3.88	-1.35	2.23	2.79	1.72	0.55	5.84
	Annualised	0.14	0.07	0.35	0.32	-0.11	0.19	0.23	0.14	0.05	0.49
67-85	**Cumulative**	**5.88**	**8.03**	**-0.40**	**5.34**	**7.65**	**8.76**	**8.47**	**4.40**	**0.41**	**-5.68**
	Annualised	0.33	0.45	-0.02	0.30	0.43	0.49	0.47	0.24	0.02	-0.32
67-83	Cumulative	6.08	7.12	-0.38	6.26	10.28	6.49	6.03	3.28	2.99	-3.63
	Annualised	0.38	0.45	-0.02	0.39	0.64	0.41	0.38	0.21	0.19	-0.23
Men											
67-73	Cumulative	6.57	10.15	8.26	12.88	10.93	7.53	7.08	2.83	0.21	-8.62
	Annualised	0.94	1.45	1.18	1.84	1.56	1.08	1.01	0.40	0.03	-1.23
73-85	Cumulative	1.42	-0.03	2.04	-1.21	-0.09	2.01	0.74	1.69	0.64	7.65
	Annualised	0.12	0.00	0.17	-0.10	-0.01	0.17	0.06	0.14	0.05	0.64
67-85	**Cumulative**	**8.08**	**10.12**	**10.48**	**11.51**	**10.83**	**9.69**	**7.87**	**4.57**	**0.85**	**-1.63**
	Annualised	0.45	0.56	0.58	0.64	0.60	0.54	0.44	0.25	0.05	-0.09
67-83	Cumulative	7.41	8.59	2.89	9.20	12.04	7.37	4.99	4.30	4.39	-1.07
	Annualised	0.46	0.54	0.18	0.57	0.75	0.46	0.31	0.27	0.27	-0.07
Women											
67-73	Cumulative	5.86	8.92	-10.92	-4.61	0.87	8.67	7.99	5.35	4.32	6.46
	Annualised	0.84	1.27	-1.56	-0.66	0.12	1.24	1.14	0.76	0.62	0.92
73-85	Cumulative	10.91	8.03	19.26	12.06	10.79	10.13	10.97	16.00	13.99	11.08
	Annualised	0.91	0.67	1.60	1.00	0.90	0.84	0.91	1.33	1.17	0.92
67-85	**Cumulative**	**17.41**	**17.66**	**6.24**	**6.89**	**11.76**	**19.68**	**19.84**	**22.21**	**18.92**	**18.25**
	Annualised	0.97	0.98	0.35	0.38	0.65	1.09	1.10	1.23	1.05	1.01
67-83	Cumulative	16.66	18.38	0.92	6.15	12.33	15.24	14.23	15.32	21.05	20.39
	Annualised	1.04	1.15	0.06	0.38	0.77	0.95	0.89	0.96	1.32	1.27

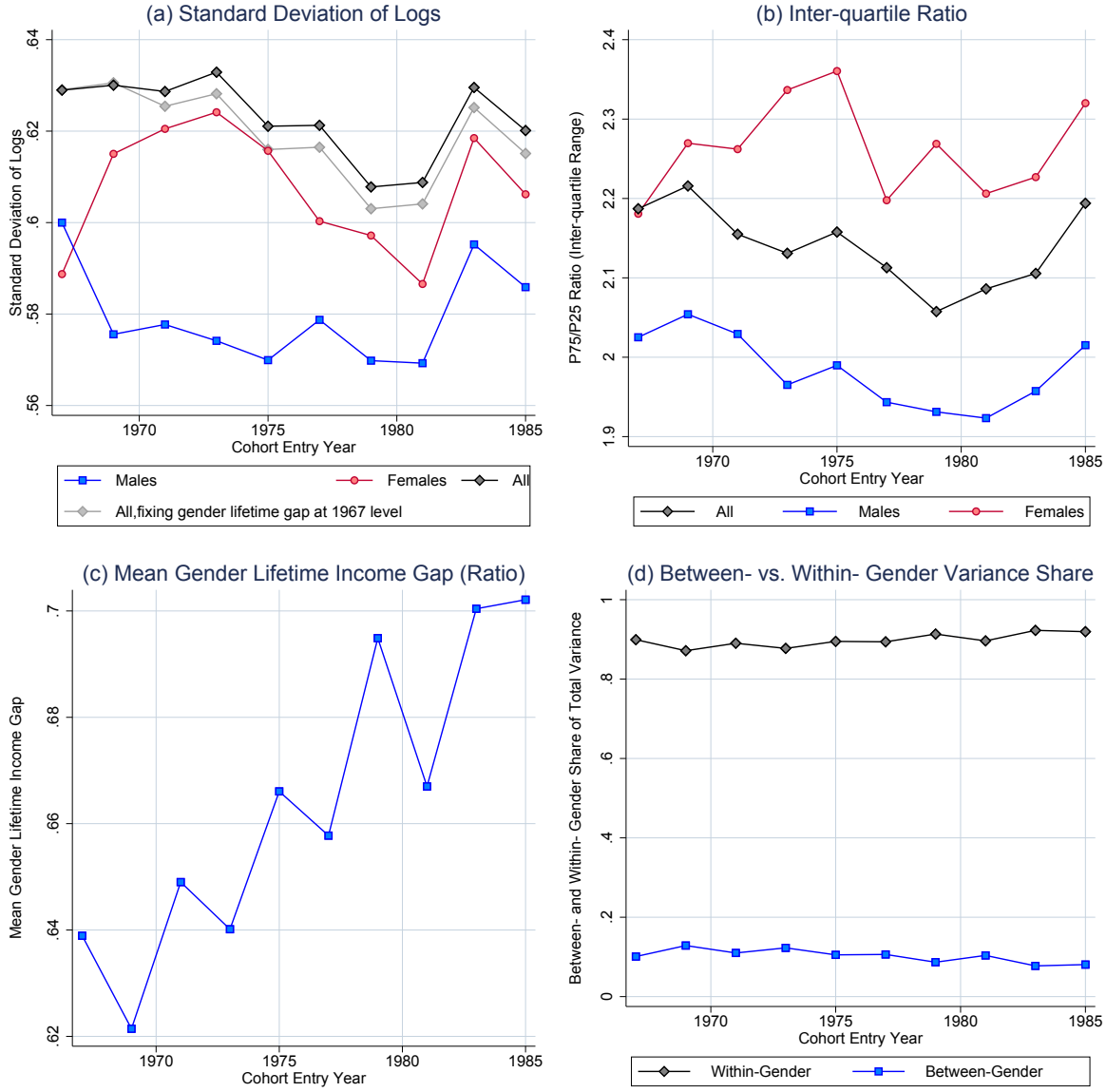
Notes: This table reports the cumulative growth and annualized growth rates in moments of the lifetime earnings distribution across cohorts for the LT sample (see Section 2.2). We report growth rates for the mean, median, and selected quantiles of the lifetime earnings distributions for men and women separately using the PCE deflator.

in France, for the first cohorts, women at the bottom experienced an earnings loss that is not present in the US and could be explained by different selection patterns. Notably, this is a period in which in the US female selection into the labour market started to shift from being negative to being positive, which could explain considerable growth at the bottom; see Mulligan and Rubinstein (2008). There is no evidence of such a shift in France, and it is possible that the reduction in lifetime incomes at the bottom of the distribution in the late 1960s/early 1970s is due to less positive selection as female labour market participation increased.[15]

The top two panels in Figure 6 plot two commonly-used measures of inequality. The left-hand side panel depicts the standard deviation of the log of lifetime earnings, while the right-hand one reports the inter-quartile ratio, i.e. the ratio of the 75th to the 25th percentile. We report these measures for women, men and the entire population. The blue lines marked

[15]Unfortunately, there is no comparable study for France that identifies whether or not there has been a change in the sign of selection.

Figure 6: Cohort Lifetime Inequality, Overall and by Gender



Note: This figure displays four measures of within-cohort inequality. Each observation represents the inequality in lifetime earnings among a cohort of workers that entered the labor market in a particular year in the LT sample (see Section 2.2). Panel (a) displays the standard deviation of the log lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. We additionally plot the trend in inequality in the total population holding the gender gap in lifetime earnings fixed at the level in 1967. Panel (b) displays the ratio of the 75th percentile to the 25th percentile of lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. Panel (c) displays the ratio of mean lifetime earnings of female cohorts to the mean lifetime earnings of the male cohort that entered the labor market in the same year. Panel (d) displays the result of decomposing the variance of within-cohort lifetime earnings into within-gender and between-gender components. Earnings are deflated using the PCE.

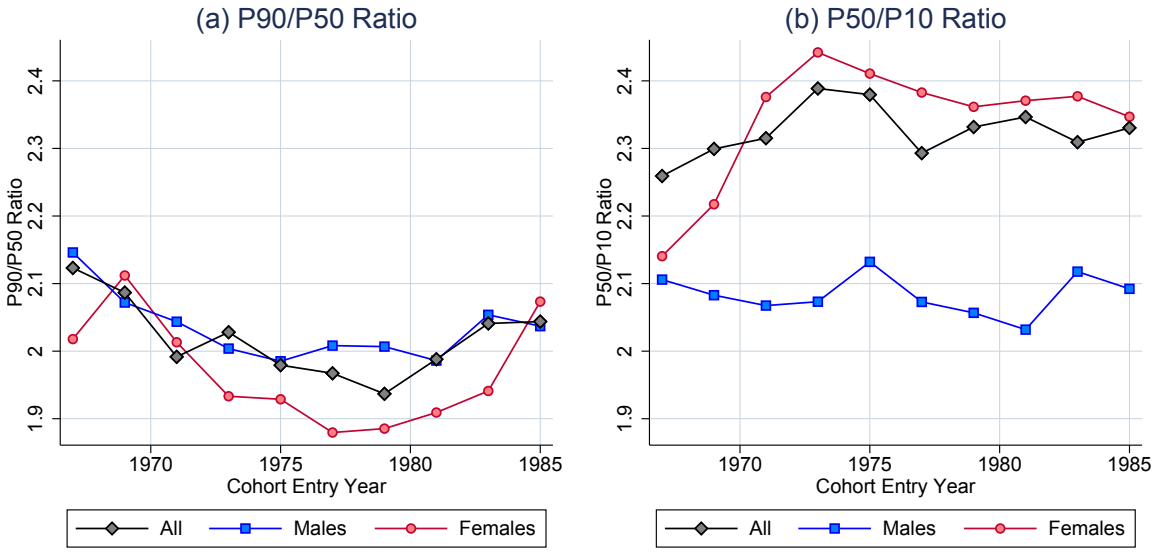
with squares correspond to lifetime inequality among men, the red lines (circles) correspond to lifetime inequality among women, and the grey ones (diamonds) correspond to the entire population. The standard deviation of log-income indicates that inequality in lifetime incomes is much lower in France than in the US. GKSW report figures ranging between 0.75 and 0.80 for the entire population and going down to 0.6 for women for the oldest cohorts. The dynamics are also very different (see Appendix G, Figure G.4). Rather than the steady increase for the three groups observed for American workers, we find a U-shaped pattern, with inequality initially falling and then increasing starting from the 1981 cohort. A similar pattern can be seen for the inter-quartile ratio. Interestingly, for the US, inequality measures for the population as a whole are rather flat (inter-quartile ratio) or increase moderately (SD of log-income) while measures for each gender rise sharply. As is the case with median lifetime incomes, a flat overall trend seems to be the result of sharp gendered dynamics and the very substantial catching up of women to men both in terms of level of earnings and their dispersion. In contrast, in France, both overall inequality measures and those for each gender follow roughly similar patterns.

To further explore inequality dynamics, the bottom left panel presents the ratio of mean lifetime income of women to that of men. The first thing to note is that for the 1967 cohort this ratio is significantly lower than 1 but at 65% is well above the 40.5% found by GKSW for the US for the same cohort (see GKSW, Figure 8). Relative female life time earnings in France grew over the period by about 7 percentage points to reach 71% of male earnings. Although this growth was moderate compared to the gain experienced by women in the US, women's lifetime earnings were nevertheless 10 percent points higher in France than in the US for the last (1983) cohort for which we have information on both countries.

This is an important aspect in understanding the different dynamics between the two countries. GKSW find that inequality in lifetime earnings increased only slightly despite the sharp rises observed for each gender group, and they show that the overall pattern is driven by a massive convergence of female earnings towards those of men. This effect plays hardly any role in France, where the gender gap in lifetime earnings for the 1967 cohort was already smaller than that observed in the US for the 1983 cohort. To confirm this, panel (d) in Figure 6 reports a variance decomposition of overall lifetime income inequality. The between-gender component accounted for only 9.8% of the overall dispersion for our first cohort, and declined to 7.8% for the last one. This is a negligible change when compared to the US where it fell from 31% to 9%.

Our data indicate that inequality did not display a large increase, yet recent work using cross-sectional data shows that the dynamics have been different when focusing on the very top of the distribution (see Garbinti et al. (2018b) and Garbinti et al. (2018a) for the evolution of the top 0.1% and above). To further understand inequality dynamics, we compute the ratios of the lifetime income of the 90th percentile to that of the median, as well as that of the median to the 10th percentile, both of which are reported in Figure 7. The left panel indicates that inequality at the top of the distribution follows a U-shaped pattern. For the population as a whole, inequality declines up to the cohorts entering the labour market in the second half of the 1970s, and then starts rising. This pattern is mimicked by the dynamics of inequality for women, which also exhibit a marked decline and then increase. In contrast, male inequality declined initially but by much less (8% rather than the 16% observed for the entire population), and barely rose in subsequent years. Interestingly, for males the P90-P50 ratio was slightly higher in France than in the US for the 1967 cohort (2.18 versus 2.03, see

Figure 7: Selected Percentiles of Lifetime Income, by Cohort and Gender

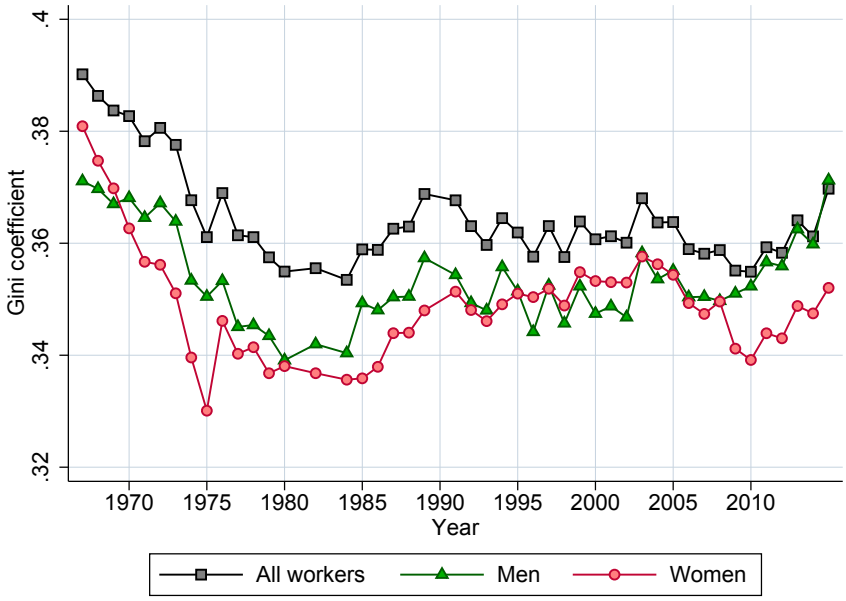


Note: This figure displays two measures of within-cohort inequality. Each observation represents the inequality in lifetime earnings among a cohort of workers that entered the labor market in a particular year in the LT sample (see Section 2.2). Panel (a) displays the ratio of the 90th percentile to the 50th percentile of lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. Panel (b) displays the ratio of the 50th percentile to the 10th percentile of lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. Earnings are deflated using the PCE.

Appendix G, Figure G.5) but by the 1983 cohort the ratio is over 20% higher in the US than in France. When we look at the population as a whole, the two countries start at similar levels but the US figure for the most recent cohort is 33% higher than in France. These figures indicate that while for the US the increase in inequality at the top observed in cross-sectional data appears when looking at lifetime incomes, this is not the case for France.

The right-hand panel depicts the dynamics of inequality in the bottom-half of the distribution. As far as males are concerned, the ratio fluctuates around a relatively flat trend. Inequality rose sharply for women for the older cohorts, consistent with our earlier observation that lifetime incomes fell at the bottom of the distribution. The increase was partly reversed from the 1975 cohort onwards as the bottom of the distribution experienced rapid growth. The combined effects imply that the overall measure fluctuates considerably and exhibits a moderate increase over the entire sample. The initial level and the increase are, nevertheless, much lower than those observed in the US.

Figure 8: Cross-sectional Gini coefficients - MB sample



The figure displays the Gini coefficients from 1967 to 2015 for earnings of individuals in the MB sample, men in the core sample, and women in the core sample (see Section 2.2 for details).

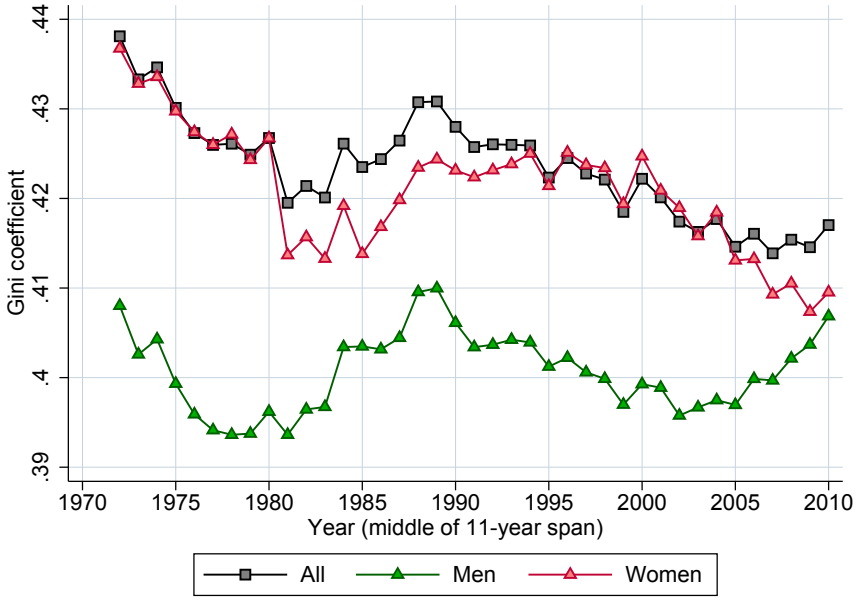
4 Mobility over the lifecycle

4.1 Long-term mobility

The results in the previous section imply moderate changes in lifetime income inequality for the 1967 to 1987 cohorts, that follow a U-shaped pattern. As we discussed earlier, the distribution of lifetime earnings results from the interaction between the cross-sectional distribution in each year during which the individual works and the extent to which she/he changes position in this distributing during her/his lifetime. To understand how these two aspects have shaped the patterns we have just identified, this section examines both the evolution of cross-sectional inequality and the degree of long-term mobility. As we will see, the Gini coefficients for long-term earnings display similar trends to those obtained on cross-sectional data for men, but there are considerable differences for women. The second striking result is related to the long-term mobility, which increased up to 1988, and steadily declined thereafter. The degree of mobility for all workers is similar to that found in the US. However, it does not differ much between men and women, in contrast to the evidence for U.S. which once again displays gendered dynamics.

Our analysis follows Kopczuk et al. (2010). Recall that their measure of long-term is an 11-year period, hence we will use their definition and apply it to the MB sample which, as discussed in section 2, includes more individuals since we do not need to observe their complete careers. We start by reporting in Figure 8 the Gini coefficient computed on cross-sectional data from 1967 to 2015. The figure shows well established trends, with cross-sectional earnings inequality declining between 1967 and 1987, increasing for about the next 5 years, stabilizing

Figure 9: Gini coefficients: Long-term Earnings



The figure displays the Gini coefficients from 1972 to 2010 for eleven-year average earnings for all workers, men only, and women only of the MB sample (see Section 2.2 for details). Gini coefficient in year t is based on average (indexed) earnings across the eleven-year span from year $t-5$ to $t+5$.

between 1990 and 2005, and growing again thereafter. When comparing the Gini coefficient in 2015 to that in 1967 we find that it was lower for both women and the population as a whole, but slightly higher for men. The changes are, nevertheless, smaller than those observed in the US (see Appendix G, Figure G.6).

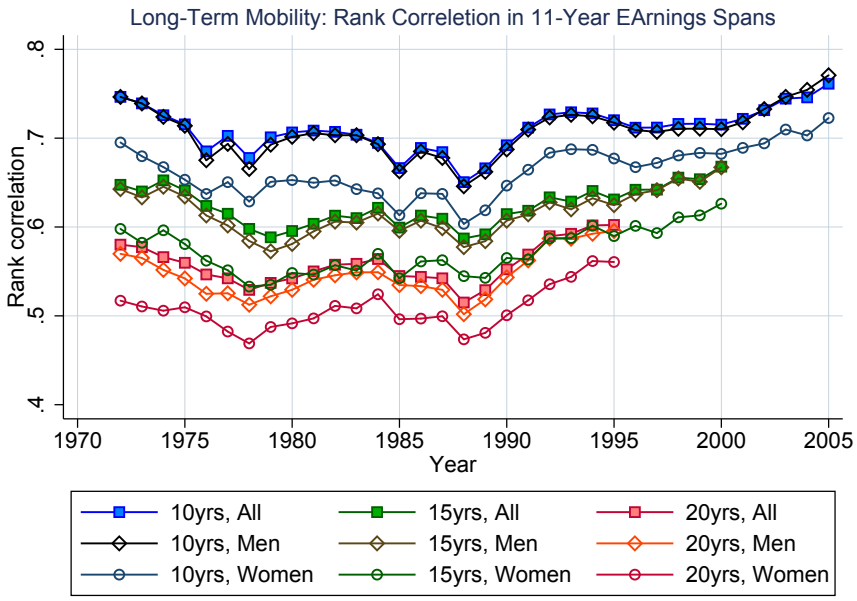
Figure 9 depicts the Gini coefficients of long-term earnings, where the 11-year measure consists of first averaging an individual's earnings over 11-years and then computing the Gini coefficient of these averages. The data are reported centred around the middle year in each 11-year period. The observations hence start in 1972 and end in 2010 but include data from 1967 to 2015. [16]

The trends are similar but not identical to those reported in Figure 8 for the cross-section. The cross-section displays similar dynamics for men, women and the population as a whole and rather similar levels,[17] while long-term inequality displays very different dynamics across

[16] We also looked at short-term mobility and computed Gini coefficients based on 5-year averages. Figure D.1 in Appendix D, reports the 5-year measure as well as that based on annual data using the same sample as for the 5-year measure (which hence differs slightly from the cross-sectional Gini coefficients in Figure 8). While the measure based on 5-year earnings results in less inequality than that based on annual earnings, as individuals' earnings rankings fluctuate over time, the 11-year Gini displays a higher level of inequality, as is the case in the US as shown by KSS; see Figures G.7 and G.8 in Appendix G. The reason for this is that when looking at the 11-year span we take into account years with zero earnings for an individual, while standard cross-sectional measures are based on positive earnings only.

[17] Overall inequality declined between 1967 and the mid-1980s (by 3.5 Gini points) and increased thereafter (by 1.5 points). For men the increase has been stronger, so that the 2015 Gini coefficient was about the same as the 1967 one, while women experienced a larger reduction than that observed for the entire population when

Figure 10: Long-term mobility: Rank-correlation



The figure displays in year t the rank correlation between eleven-year average earnings centered around year t and eleven-year average earnings centered around year t + X, where X = ten, fifteen, twenty. The sample is defined in Section 2.2. The series for men and women are constructed on separate samples including men and women only.

genders. For men, long-term inequality is somewhat higher than in the cross-section but shows the same decline up to the early-1980s, displaying an overall W-shaped pattern and similar levels of inequality at the start and the end of the period. The Gini coefficient for women is much higher, clearly capturing the difference in the intensive margin as women have many more years with no earnings. This could be due to exit from the labour market or to women becoming civil servants –something that, conditional on employment, they are more likely to do than men- and not appearing in our data.

Figure 10 reports a mobility measure, the rank correlation, a widely used measure where lower values of the index imply greater mobility. We compute the rank correlation between the eleven-year earnings spell centered in year t and the 11-year earnings spell after T years (i.e., centered in year $t+T$). Three choices of T are used: ten years, fifteen years, and twenty years. Since we have restricted the sample to individuals aged 25 to 55, for $T = 20$, the sample in year t is aged 25 to 35 (and the sample in year $t + 20$ is aged 45 to 55), implying that we are capturing mobility from early to late career. We provide the time series for men only and for the population as a whole.

As expected, the rank correlation is higher for shorter T. A striking feature of the data is how close the series for men and the entire population are, indicating that mobility patterns are similar for men and women. This contrasts with the findings by KSS (figure G.9) that indicate that in the US mobility is greater for men than for the population as a whole, so

considering the entire period.

that gender effects play a major role in shaping the overall dynamics of inequality. The evidence on mobility for France implies, once again, a remarkable similarity between males and females. The degree of mobility in France is similar to that in the US when we consider the entire population, but substantially lower when looking only at men. For example, the 20-year measures for 1970 are 0.43 and 0.52 in the US, for men and overall, respectively, and 0.50 and 0.51 in France. That is, while American men exhibit more earnings mobility than their French counterparts, once we consider the entire population the magnitudes observed are similar across the two countries. The dynamics are however very different. Figure 10 indicates that mobility increased up to 1988, after which it declined steadily. By 2005 the index had reached a value slightly above (i.e mobility was slightly below) that observed in 1972. This pattern contrasts with that observed in the US, where mobility increased for the entire population through the same period but declined for men, with this decline being considerably larger than that observed in France.

To relate the observed mobility patterns to our earlier evidence, note that the individuals in our core sample entered the labour market at the latest in 1987, hence their first 11-year mobility measure is centered at 1990. This is the year for which we observe the highest mobility. This implies that the lifetime earnings dynamics captured in section 3 correspond to a period in which mobility was increasing. That is, the combination of increasing mobility and falling inequality (as measured by the Gini coefficient) are behind the flat profile for lifetime earnings and the rather stable distributional patterns in lifetime incomes (as measured by the standard deviation of logs). The reversal of mobility trends raises concerns about future lifetime dynamics. While the Gini coefficient has not increased, mobility over the life-cycle has dropped considerably. This raises the question of whether such an increase in the correlation of individual incomes over the life-cycle is going to result in increasing lifetime earnings inequality and, potentially, a decline in median earnings.

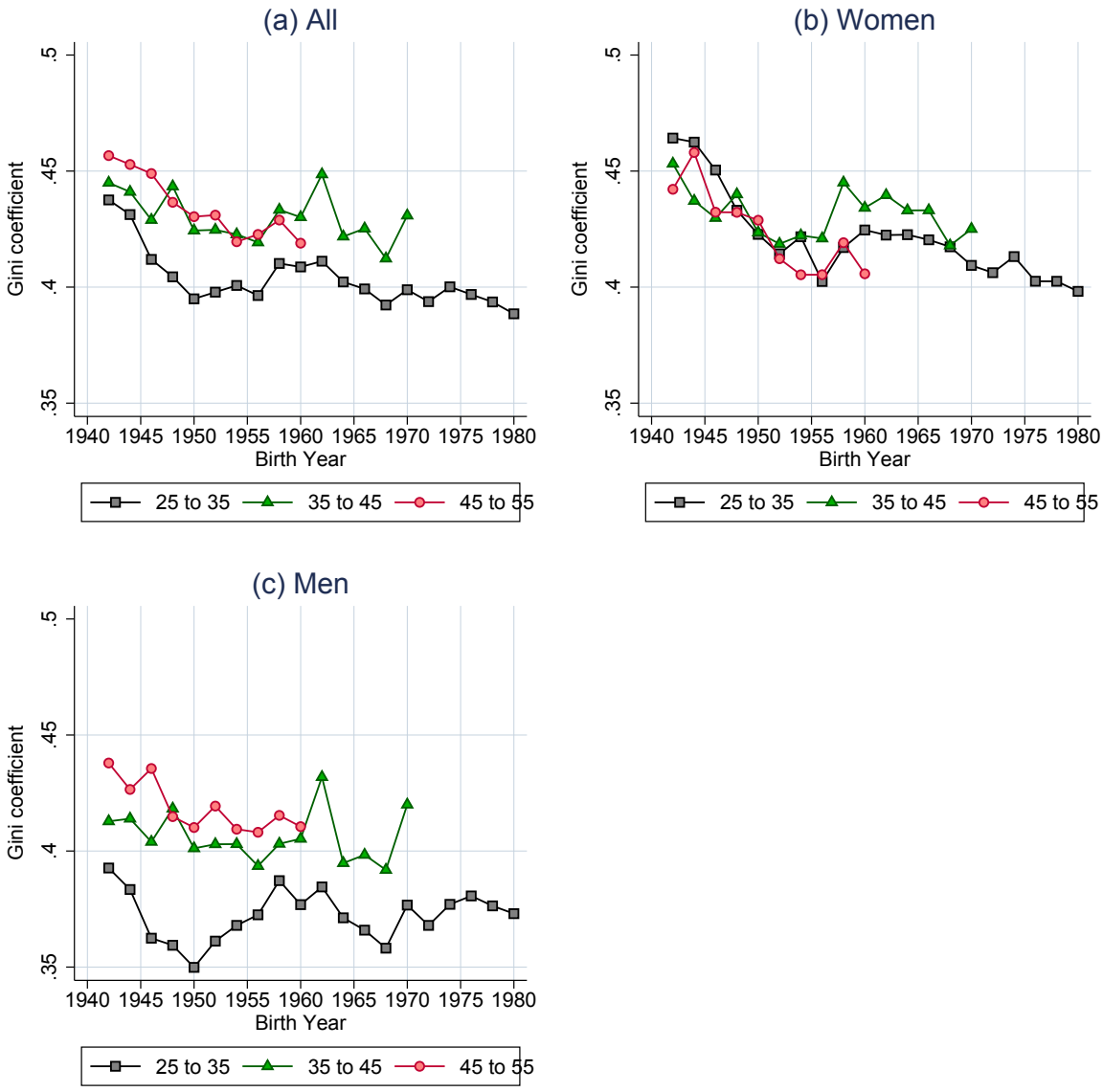
4.2 Cohort-based long-term inequality and mobility

To further delve into the dynamic of long term inequality and mobility, Figure 11 presents data by birth cohort. We divide working life into three stages: age 25-35 is consider the early career, 45-35 is defined as middle career, and 45-55 as late career. For our oldest cohort, those born in 1942, the early career are calendar years 1967–1977, the middle career is 1977–1987, and the late career 1987–1997. Figure 11 reports the Gini coefficients by year of birth for the three career stages, for men, women and the entire population. The time series display the U-shaped pattern found before, with inequality first declining and then increasing again although without reaching its initial level.

Three results are notable. First, inequality is much higher in late than in early career for men and the entire population, but not for women for whom there is roughly no difference between the three measures. This is consistent with the fact that those cohorts were characterised by large gender gaps in the return to experience. Second, late-career inequality (as measured by the Gini) declined for all the cohorts we observe (born between 1942 and 1960, with entry between 1967 and 1987). This pattern appears for all three groups, but is particularly strong for women, implying that although the initial level of inequality is about the same for men and women, the latter exhibit less late-career dispersion in more recent cohorts.

Third, this pattern is only partly mirrored for young individuals for whom there is a

Figure 11: Long-term earnings Gini coefficient by birth cohort



The figure displays the Gini coefficients from 1972 to 2010 for eleven-year average earnings for workers in three different age categories : 25 to 55, 25 to 45, and 25 to 35 of the MB sample (see Section 2.2 for details). Gini coefficient in year t is based on average (indexed) earnings across the eleven-year span from year $t-5$ to $t+5$.The figure displays the Gini coefficients from 1972 to 2010 for eleven-year average earnings for workers in three different age categories : 25 to 55, 25 to 45, and 25 to 35 of the MB sample (see Section 2.2 for details). Gini coefficient in year t is based on average (indexed) earnings across the eleven-year span from year $t-5$ to $t+5$.

reversal in the downward inequality trend for those born in the mid-1950s (entry in the late 1970s) or even earlier for me (the trend reverses for the 1950 cohort). Early-career inequality increases up to the early-1960s cohort to then stabilize. The series for mid-career inequality indicates particularly sharp increases for men born between 1960 and 1970 (entry in 1987-95). Data availability does not allow us to say whether this increase will halt to reveal a flat profile, as with early-career inequality, or if differential earning growth will result in growing inequality at latter stages and hence an increase in the dispersion of lifetime earnings.

4.3 What type of mobility?

In this section we further analyse mobility across the lifetime earning distribution, examining upwards and downwards mobility using several measures of transition probabilities. To start with, we follow KSS, and define upwards mobility as the probability of moving from the bottom two quintile groups to the top quintile group after twenty years. Figure 12 presents the times series. As is the case in the US (see KSS, Figure G.10) men have much higher levels of upward mobility than women. Their mobility is higher in France than in the US for most of the period, reaching almost 14% in France, while in the US it has remained below 8% for the same time period.

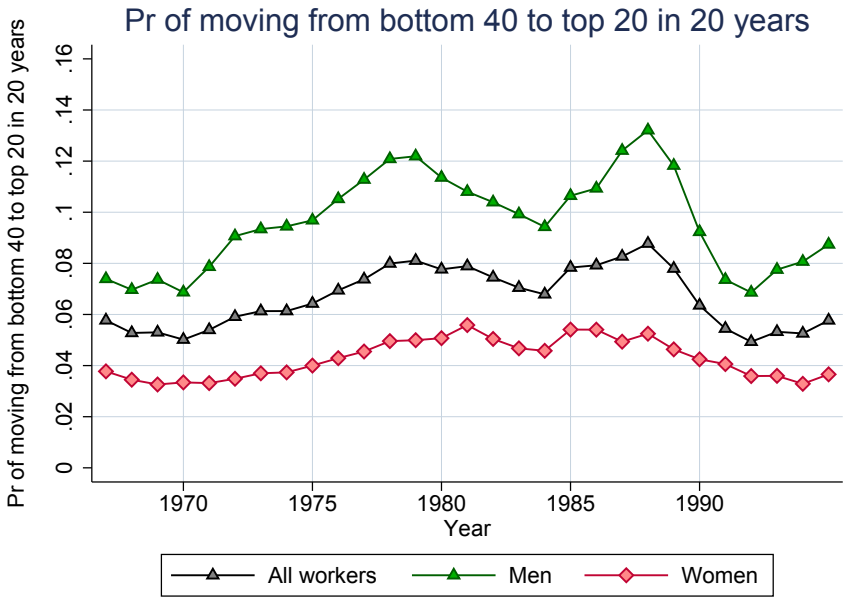
The gender mobility gap has remained roughly stable over time. We do not observe the sharp reduction in the gap present in US data, with France having in 1967 already higher female mobility (about 1.5 times as high as that for the US). The overall trend is the same for men, women and all workers, although the magnitude of the changes is greatest for men. We observe an M-shaped pattern in upward mobility, with a particularly sharp decline in the late-1980s/early-1990s.

To examine upwards and downwards mobility in a more complete way, we provide an alternative approach. We have divided the data into three income groups: the top 20%, the middle 60% and the bottom 20%. Individuals are allocated to one of these groups according to their 11-year earnings, and we then compute the probability of staying in that group or moving to one of the other two twenty years later. Figure 13 plots the transition probabilities for those in the bottom third of the distribution, separately for men, women and the population as whole. Over half of men move to the middle third of the distribution, in line with the career progression we have seen earlier on, with the probability of remaining in the bottom income group being typically around one third and that of moving to the top under 10%.

Despite considerable stability of the transition probabilities, observed patterns change from the mid-1980s onwards. The probability of remaining in the bottom earnings group increases from 30 to 36% between 1985 and 1992, a reduction in mobility that is accompanied by a decline of the probability of moving into either of the other two categories. Notably, that of moving to the top almost halved during the same period, going from 10 to 6%. This change is reflected when we look at the entire population. The transition probabilities of women fluctuate more, probably reflecting changes over time in selection into employment. The decrease in mobility into the top category mimics that observed for men, but women have experienced an increase in mobility into the middle category, notably from 1980s onwards, which has been compensated by lower persistence at the bottom.

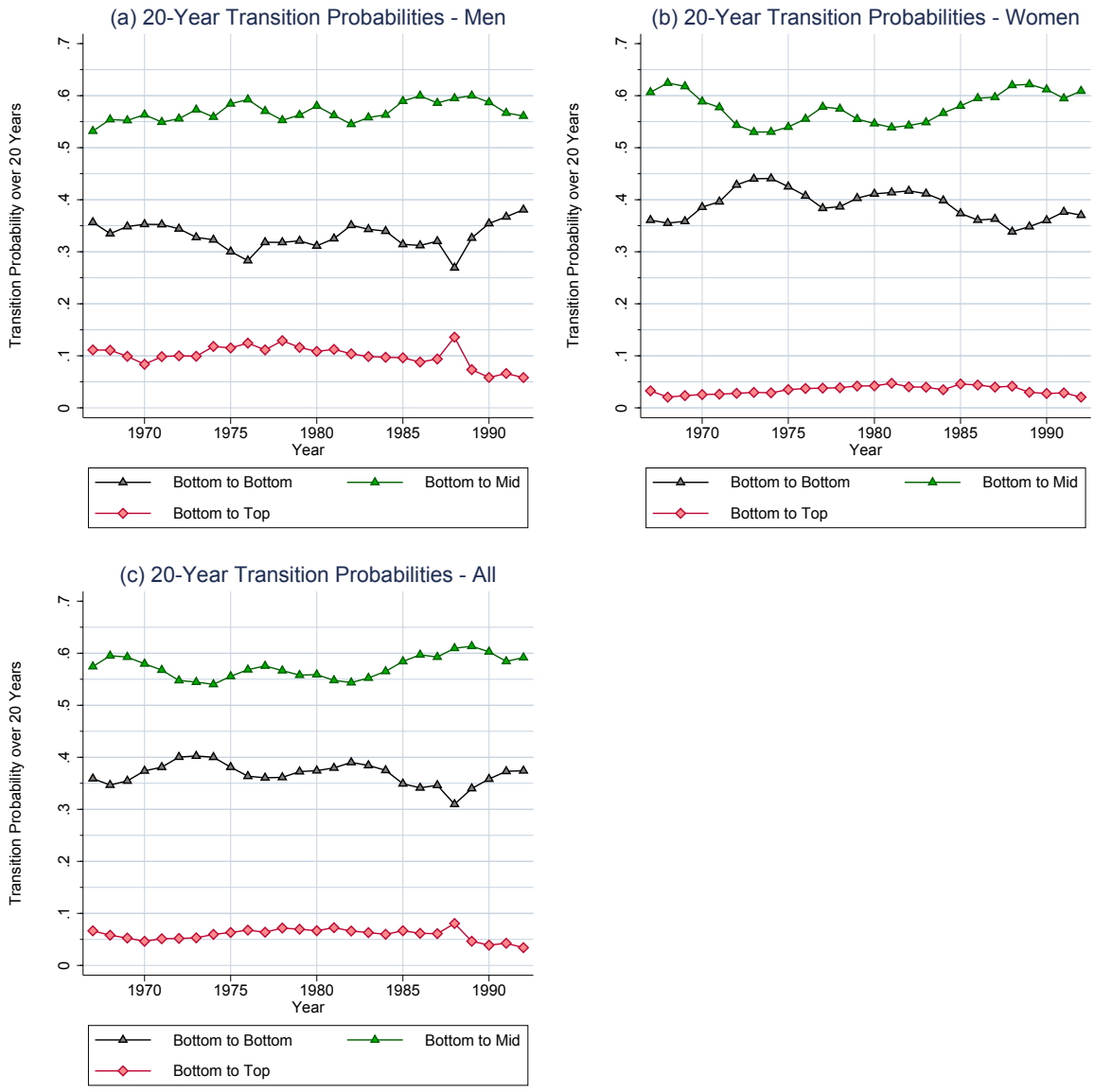
Figure 14 displays the transition probabilities for those in the middle earnings category. Over 70% of those individuals stay in the category, with the probabilities of upward and downward mobility being both around 15%. The data for men display remarkable stability,

Figure 12: Upwards mobility: Bottom 40 to top 20



The figure displays in year t the probability of moving to the top quintile group (P80–100) for eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom two quintile groups (P0 to P40). The sample is defined in Section 2.2. The series are reported for all workers, men only, and women only. In all three cases, quintile groups are defined based on the sample of all workers.

Figure 13: Mobility for those starting at the bottom of the distribution



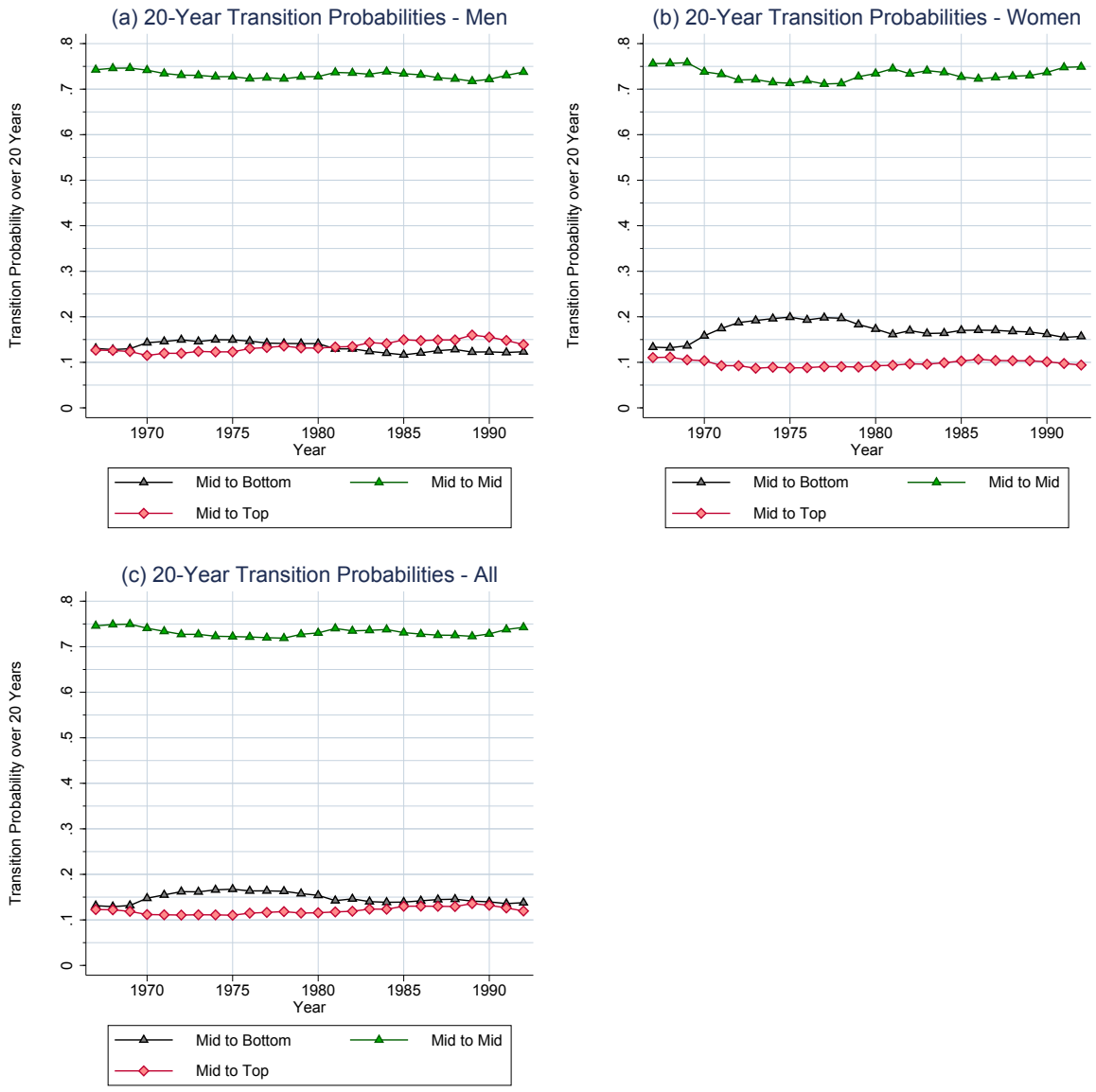
The figure displays in year t the probability of moving to the bottom quintile (P0 to P20), mid quintiles (P20 to P80), and top quintile (P80 to P100) for eleven-year average earnings centered around year $t+20$ conditional on having eleven-year average earnings centered around year t in the bottom quintile group (P0 to P20). The sample is defined in Section 2.2. The series are reported for all workers, men only, and women only. In all three cases, quintile groups are defined based on the sample of all workers.

as does that for the entire population. There is nevertheless an increase in the probability of downwards mobility during the 1970s which is driven by female earnings patters. A possible explanation for this is that this was a period in which female participation was increasing but there were strong gender roles associated with child-rearing, hence we may be capturing women who started with middling paying jobs but who reduced work hours following motherhood.

Lastly, figure 15 reports the transition probabilities for those at the top of the distribution. Persistence is high (around 60%) and moving down to the bottom third of the distribution unlikely (a 5% probability). All three figures display the same pattern, top-to-bottom mobility has hardly changed, while top-to-middle mobility increased (persistence decreased) between 1967 and 1978 and then decreased (increased) markedly. For men, the likelihood of top-to-middle mobility fell from 39% in 1978 to just 30%, while for women it went from 45 to 35%. As a consequence, the probability of remaining in the top of the distribution exhibits a U-shaped pattern and, by the end the the period, returns to its all-time high.

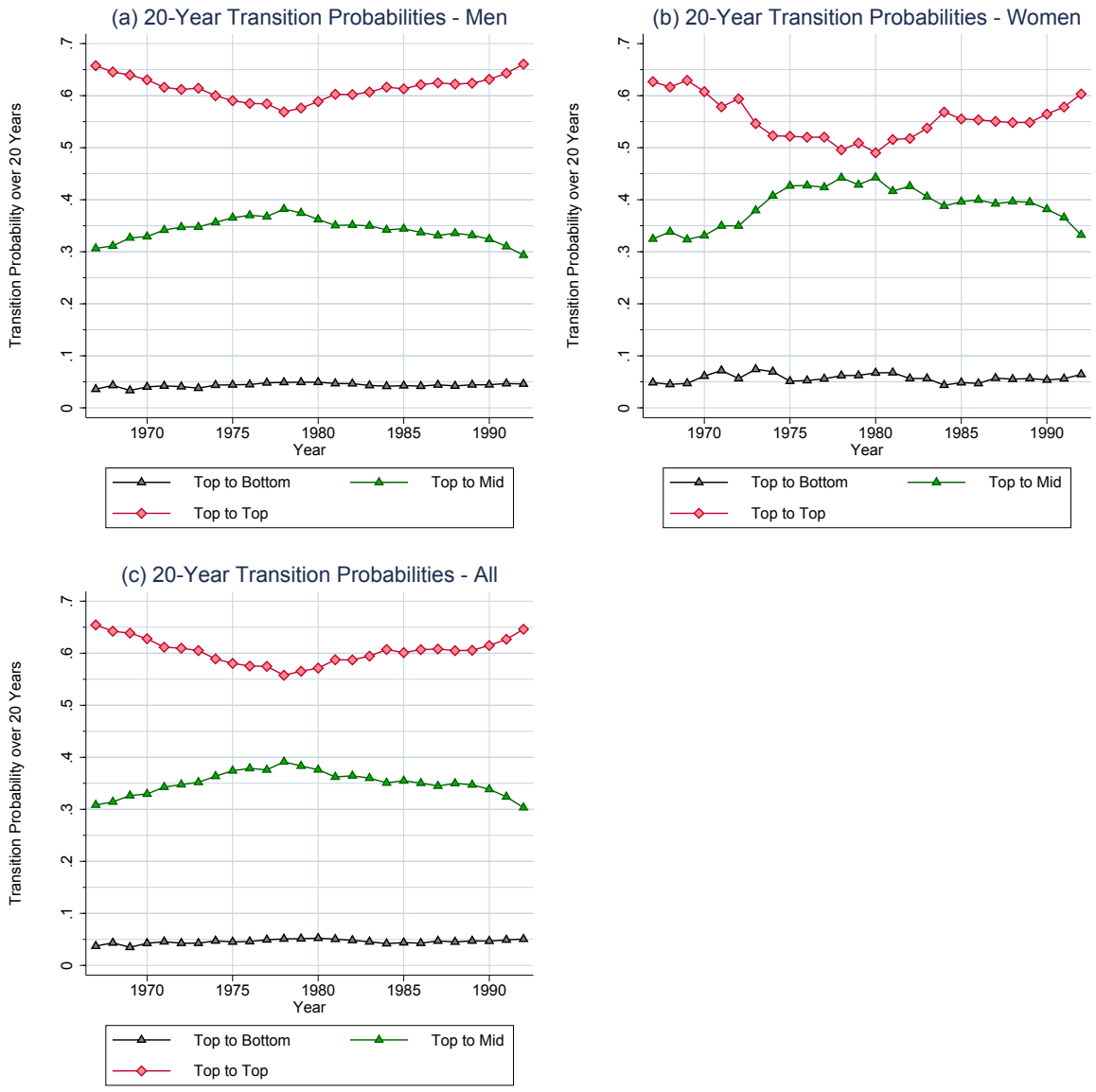
The evidence indicates that there are two developments behind the decline in mobility identified in the previous section. First, downwards mobility has declined since the late-1970s, with those at the top of the distribution becoming more likely to remain there, an effect observed for both men and women. Second, since the mid-1980s men at the bottom of the distribution have exhibited more persistence, indicating a decline in upwards mobility. This raises again the question of what changes we can expect for cohorts which have not yet completed their careers. The increase in persistence observed in recent years tends to suggest the possibility of an increase in inequality in lifetime earnings.

Figure 14: Mobility for those starting in the middle of the distribution



The figure displays in year t the probability of moving to the bottom quintile (P0 to P20), mid quintiles (P20 to P80), and top quintile (P80 to P100) for eleven-year average earnings centered around year $t+20$ conditional on having eleven-year average earnings centered around year t in the mid quintiles group (P20 to P80). The sample is defined in Section 2.2. The series are reported for all workers, men only, and women only. In all three cases, quintile groups are defined based on the sample of all workers.

Figure 15: Mobility for those starting in the top of the distribution



The figure displays in year t the probability of moving to the bottom quintile (P0 to P20), mid quintiles (P20 to P80), and top quintile (P80 to P100) for eleven-year average earnings centered around year $t+20$ conditional on having eleven-year average earnings centered around year t in the top quintile group (P80 to P100). The sample is defined in Section 2.2. The series are reported for all workers, men only, and women only. In all three cases, quintile groups are defined based on the sample of all workers.

5 Demographic groups

We take advantage of our rich data-set to examine income dynamics and mobility for different demographic groups. In addition to gender differences, two aspects seem to us particularly interesting - marital status and educational achievement. We will consider separately whether or not the individual has ever been in a couple[18] and those who have always been single. A large literature indicates that household composition has different effects on men and women. Married women tend to perform worse in the labour market than their single counterparts, with lower earnings and fewer promotions. This is largely due to the so-called child penalty, but also to the expectation that wives -even without children- would be home-makers and work short hours. In contrast, for men marriage is associated with earnings growth and greater probabilities of employment.[19] Since, as we have discussed, the period we consider displays a considerable improvement in the economic position of women, it is interesting to examine whether the gains we observe for women occurred for all women or only for one of the marital groups.

The second aspect we consider is the changing role of education. Education is obviously a key determinant of income at the start of the career but also affects the degree of income mobility, whether through wage increases or the probability of being in employment.[20] We consider two broad educational categories. The first consists of lower-level diplomas, which include two categories, individuals with only an elementary education diploma (i.e. who left school at age 11) and those with a junior high school degree, termed *brevet de college* in France, which requires a national examination at age 15. The second category consists of those with a higher education diploma, defined as at least a bachelor degree or equivalent.[21]. The data can then be split between those with only a bachelor degree or equivalent and those that have obtained at least a master. Obviously, the share of the population with higher-education degrees has increased consistently across the cohorts we consider, and within this category, the share of those with at least a master has risen.

We will start by looking at the dynamics of lifetime incomes for different groups across these two dimensions, education and marital status, and then consider the changing roles of family situation (single versus couple) and education for mobility. We report two main findings. On the one hand, the role of marital status has diminished over time, with the penalty for being married (in the case of women) and unmarried (in the case of men) having declined over time. On the other, we find that, as far as education is concerned, there have been major changes in the returns to higher-education diplomas. Those with only a bachelors or equivalent degree display a decline in lifetime incomes across cohorts and lower upwards mobility; in contract, those with at least a masters have seen improvements both in incomes and mobility.

[18] These are individuals who have at some point been married or have declared living in couple in at least one wave of the census.

[19] The literature tends not to see this as a causal effect, but rather that men with better characteristics are both more likely to be married and to be employed/earn higher wages.

[20] Magnac and Roux (2020) use the same data to examine how, for a single cohort of men, the dynamics of earnings are shaped by education.

[21] Many of these not university degrees but professional 2 to 3 year degrees called *BTS* and *DUT*

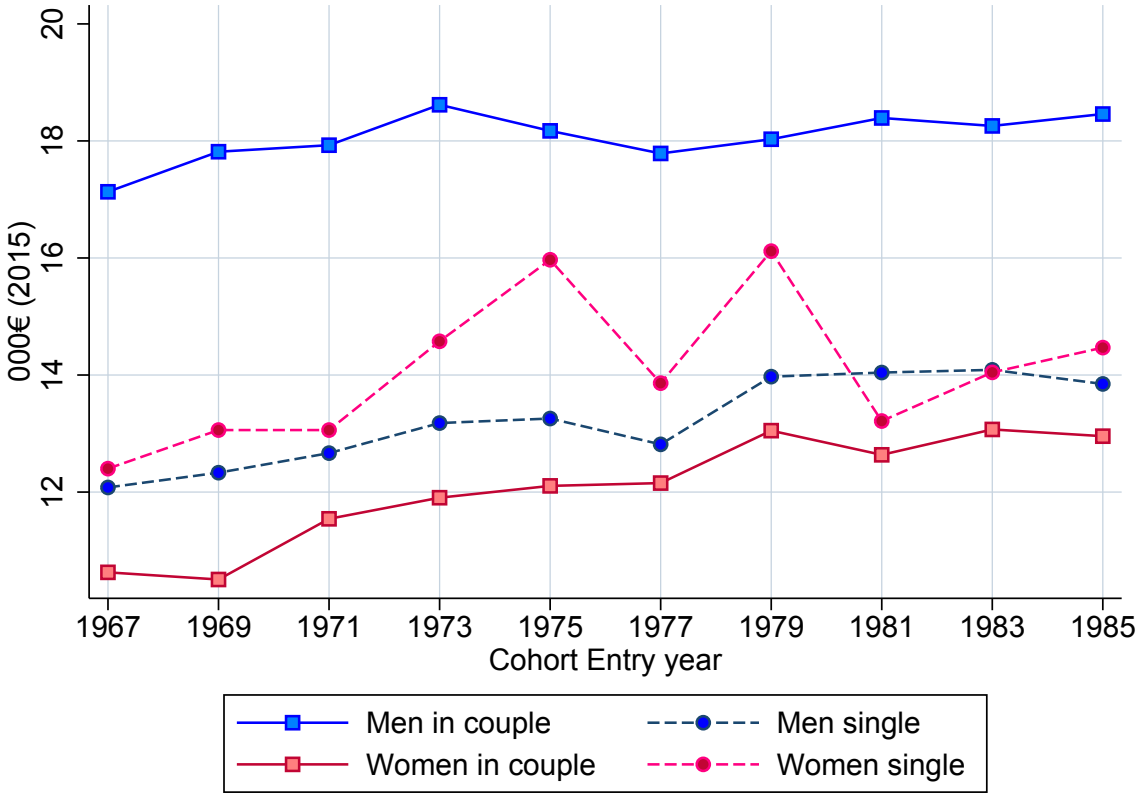
5.1 Lifetime earnings for different groups

Figure 16 depicts median lifetime incomes for the cohorts entering the labour market between 1967 and 1987 and splits the data for both men and women by whether or not the individual has ever been in a couple. As expected, single women have higher earnings than those in couples, while the opposite holds for mes. Two novel findings emerge. First, except for one cohort (that entering the labour market in 1981), single women have higher median earnings than single men. We have not computed the standard errors, and it may be that the two groups have lifetime incomes that are not statistically significantly different from each other, but it is interesting to see how marital status can trump gender effects. Second, most of the growth in earnings across cohorts has occurred for those initially with lower earnings, i.e. single men and married women, indicating that the disappearance of stereotypes has been an important force in improving labour market outcomes for these groups. For women, there is a considerable narrowing of the gap between married and single individuals, and although both groups experienced income growth, it was larger for those in couples.

We turn next to differences across education groups. The dynamics for the various cohorts are reported in Figure 17, with lifetime incomes for men displayed in the left-hand panel and those for women on the right-hand one. Consider the early cohorts. As expected, there is a large difference in the lifetime incomes of those in either low-education or high-education categories, but only a moderate gap between the sub-categories for each of these groups. Yet the dynamics display very different patterns. For those with a primary education degree, different cohorts display a stable pattern, while for those with secondary education there has been a slight decline in incomes for younger cohorts. The result is that within the low-skilled category the incomes of these two groups have converged, although the changes are small. For high-skilled individuals the two subgroups -those with a bachelor or equivalent degree, and those with a masters- display large change of opposite sign. The former have seen their incomes decline up to the 1981 cohort (with a slight gain for subsequent ones), while the latter have experienced large gains. As a consequence the income ratio went from 1.12 for those in the 1967 cohort to 1.41 for the 1985 one. These figures have two implications. First, those at the bottom of the educational distribution display roughly flat dynamics, implying that this group has neither gained nor lost across cohorts. Second, the main "losers" seem to be those with a three-year higher education degree; while for the 1967 cohort such a degree resulted in a large income advantage relative to those with low-education, much of this gain was eroded across cohorts. Higher-education hence seems to be a too broad category that groups diplomas that have over time become more valuable in the labour market and others that have lost earning potential (both in relative and absolute terms).

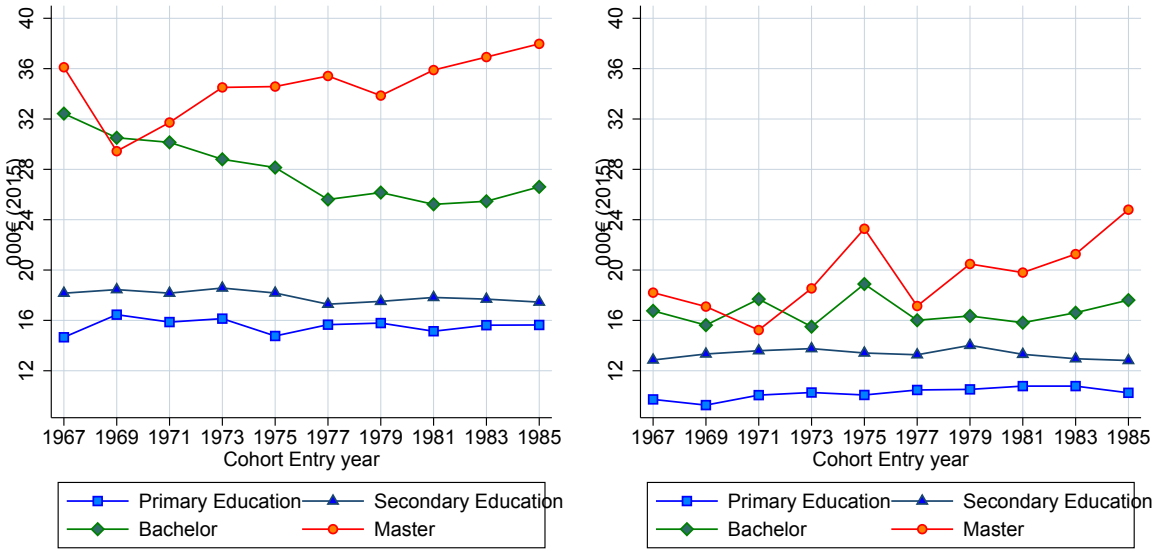
Two main difference can be observed for women. First, the gap in lifetime incomes between those with low-diplomas and those with higher-education diplomas is considerably lower than for men. This is likely partly explained by the lower attachment to the labour market of women which tends to narrow differences. Second, those with a higher education degree display an increase in income across cohorts, although the increase is much larger for women with at least a masters than for those without.

Figure 16: Lifetime income by cohort and household status



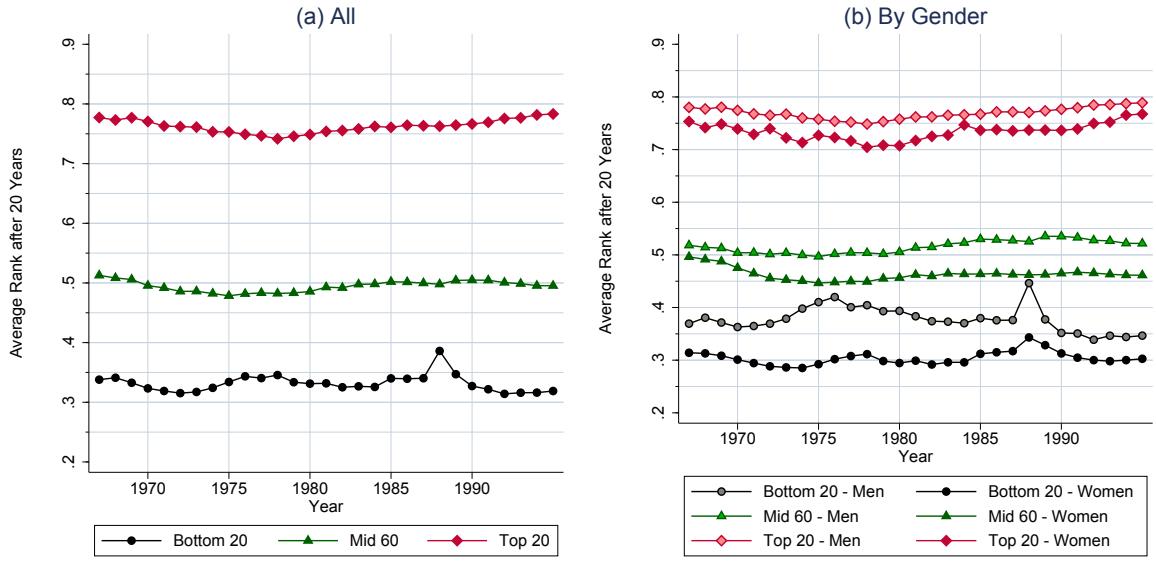
Notes: The figure depicts lifetime incomes for different household status. Each marker/observation represents the median lifetime earnings of a cohort that turned age 25 (entered the labor market) in the year indicated on the x-axis. Only individuals in the LT sample are included. We split the data by gender and household status, where an individual is defined as being "in couple" is s/he has ever been married or reported being in a civil partnership; otherwise they are considered as being single.

Figure 17: Lifetime income by cohort and diplomas



Notes: The figures depict lifetime incomes for different education levels. Each marker/observation represents the median lifetime earnings of a cohort that turned age 25 (entered the labor market) in the year indicated on the x-axis. Only individuals in the LT sample are included. The left-hand panel displays the lifetime incomes for men, the right-hand one for women. We split the data by education level into four categories, the first three are individuals with at most primary education, secondary education, or bachelors degree (or equivalent professional qualification), the fourth are those with at least a masters.

Figure 18: Average Rank after 20 Years by Gender



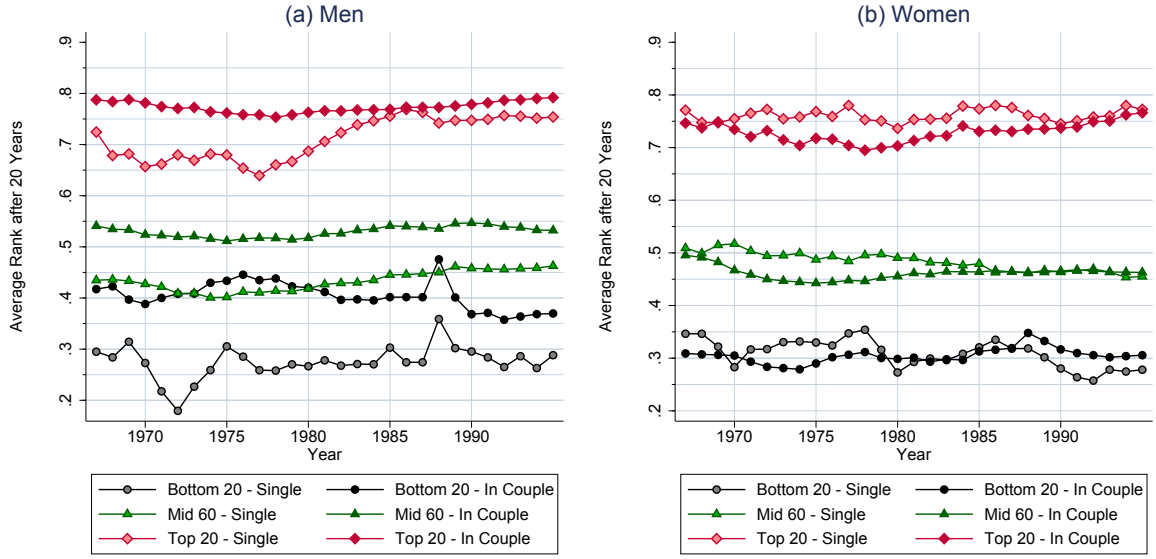
The figure displays in year t the average rank of eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom (P0 to P20), mid (P20 to P80), and top (P80 to P1000 quintile groups. The sample is defined in Section 2.2. The series are reported for all workers, men only, and women only. In all three cases, quintile groups are defined based on the sample of all workers.

5.2 The demographics of mobility

We next look at mobility for different demographic groups. To do so, we use an alternative measure of mobility to those in section 4. For each year, we divide the population into top, middle and bottom earners and we compute the average rank of that group after 20 years. This provides smoother time series than when looking at transitions across groups as we did above. Figure 18 displays the data for all workers, men and women.The left panel shows the stability of these measures over time for the entire population. For example, those who started in the middle 60% of the distribution were, on average, on the 50th percentile 20 years later. At the top, there is a slight decrease of the average rank, indicating some downward mobility, up to the late 1970s, and an increase thereafter. We next compare the patterns by gender, placing individuals according to their ranking in the overall (not the gendered) distribution. We see that men tend to fare better than women and that at the middle of the distribution (lines marked with triangles) the gap has been increasing.

Figure 19 displays the data when we split our sample into individuals who have ever been in couple and those who have always been single. The left-hand side graph, depicting time trends for men, indicates that household composition has become less important over time. This is particularly clear for those at the top of the distribution. There, we find that in the early years of our sample single men have a considerably lower rank after 20 years than those in couple (with the largest difference being 10 percentage points, in 1977). This difference falls between the mid-1970s and the mid-1980s to reach 2 percentage points. Although the change is less marked for the other two earnings groups, some convergence has also occurred for

Figure 19: Average Rank after 20 Years by Household type



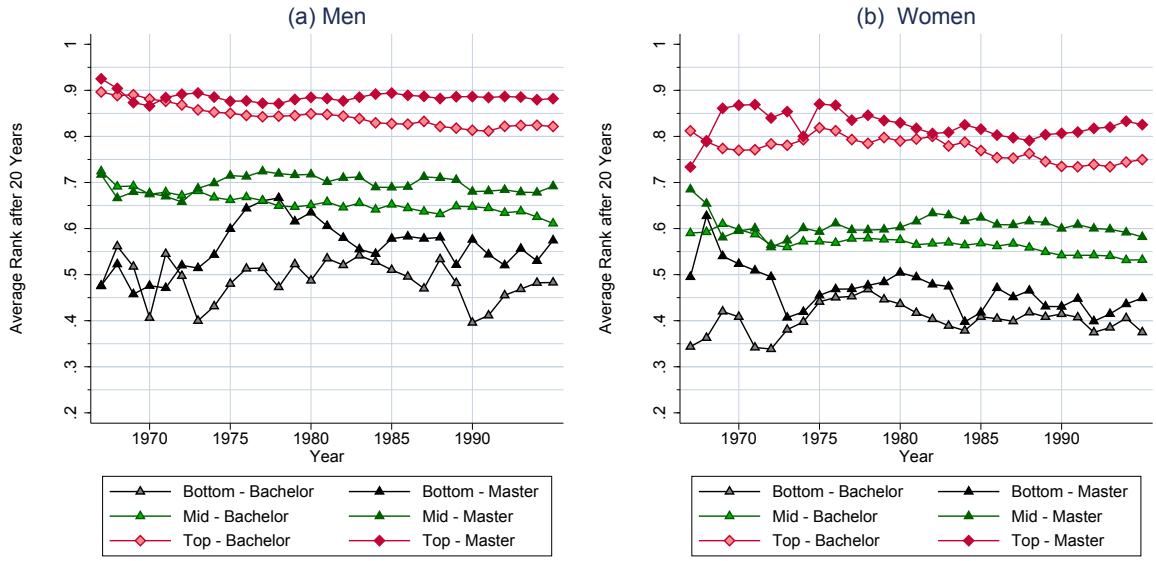
The figure displays in year t the average rank of eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom (P0 to P20), mid (P20 to P80), and top (P80 to P1000 quintile groups based on gender and household status of individuals. The sample is defined in Section 2.2. Single individuals are those that have never been married throughout their lives, and that have responded being single in all the successive waves of censuses. Individuals in couple are those that have not been categorized as being single. In all cases, quintile groups are defined based on the sample of all workers.

those in the middle and bottom of the distribution. The panel for women shows the opposite dynamics. Women at the top and bottom of the distribution displayed initially lower mobility if they were in couples than if single, although the gaps were smaller than for men. These gaps have been eroded over time, equalizing the rank after 20 years for women in the two types of household.

Figure 20 displays the average rank after 20 years for those with high educational attainment, defined as at least a bachelor degree or equivalent. The data are split between those with only a bachelor degree or equivalent and those that have obtained at least a master. The interesting aspect in these time series is that the type of degree has become increasingly important. This pattern is particularly clear for men. Early on we find that both qualifications result in the same rank after 20 years, yet over time a gap has emerged between the two, with those with a masters being between 5 and 10 percentiles above those with only a bachelor degree.

We repeat the same exercise looking at the low diplomas, splitting individuals between those with only an elementary education diploma and those with a *brevet de college*. The two panels indicate that the rank of those individuals after 20 years has declined over time, although the effect is weaker for those who already started at the top of the earnings distribution. Moreover, for those initially in the middle and top earnings groups, the advantage conferred by the brevet has substantially eroded over time. For men in the middle earn-

Figure 20: Average Rank after 20 Years by Education: Top Diplomas

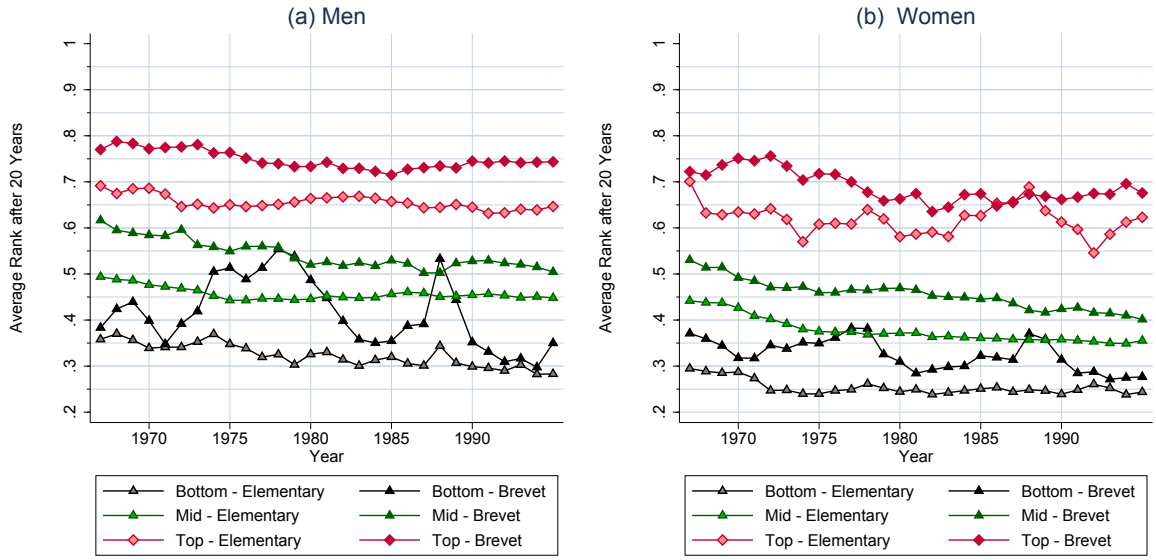


The figure displays in year t the average rank of eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom (P0 to P20), mid (P20 to P80), and top (P80 to P1000 quintile groups based on gender and the diploma of individuals. The sample is defined in Section 2.2. In all cases, quintile groups are defined based on the sample of all workers.

ings category in 1967, a brevet increased the rank by 12 percentage points as compared to elementary education. By 1995, the advantage was only of 5 pp.

These results indicate that the dynamics of mobility patterns are strongly affected by the way in which markets reward individual characteristics. On the one hand, being married used to be seen as a strong signal of a worker's 'value' to the firm (positive for men, negative for women), but its role has largely disappeared. Such change could be the result simply of the erosion over time of prejudice or reflect a deeper change in the sharing of household responsibilities across genders, or a combination of both. On the other, we have seen that the labour market returns to education in terms of mobility have changed as the composition of the labour force has evolved. Degrees that were giving an advantage in the 1970s have lost its value and those holding them no longer fare better than those who do not. In other cases, notably, for those with higher education, degrees that used to result in equivalent outcomes now lead to different degrees of mobility over the lifecycle.

Figure 21: Average Rank after 20 Years by Education: Low Diplomas



The figure displays in year t the average rank of eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom (P0 to P20), mid (P20 to P80), and top (P80 to P1000 quintile groups based on gender and the diploma of individuals. The sample is defined in Section 2.2. Individuals in the "Brevet" group are those that have obtained the French *Brevet* diploma that corresponds to completion of Junior High School. In all cases, quintile groups are defined based on the sample of all workers.

6 The geography of lifetime incomes

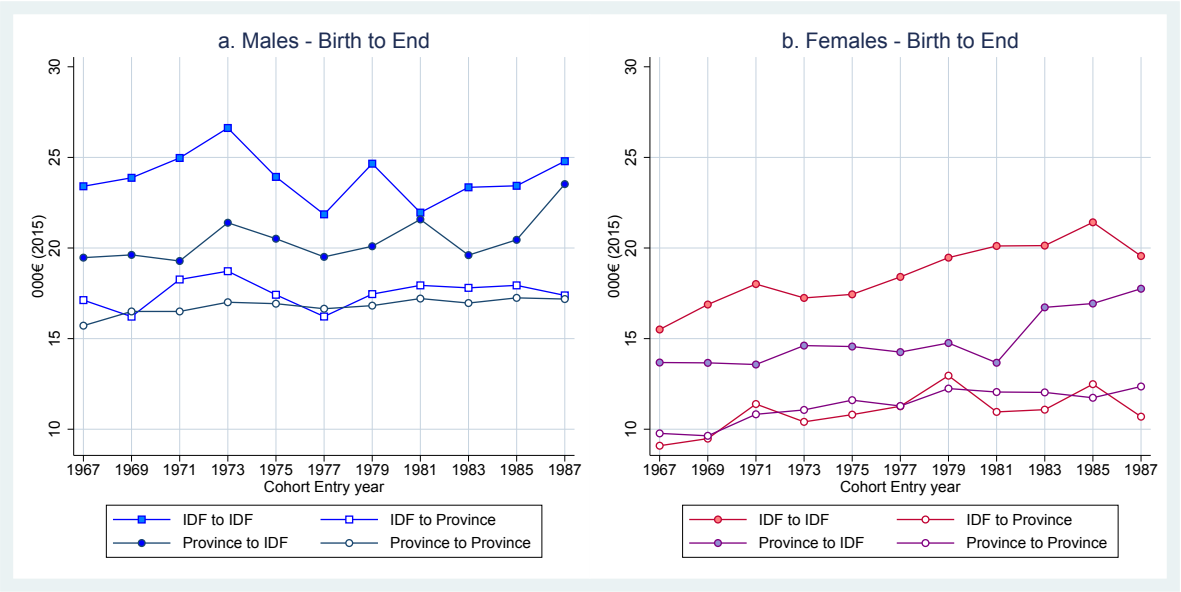
PRELIMINARY RESULTS - TO BE COMPLETED

A recent literature has examined the importance of geographical location for inter-generational mobility, and identified the effect that an individual's birth place has on their likelihood to move up the income scale. Because we can link our firm data with the census, we can identify an individual's place of birth and consider the effect it has on their lifetime earnings. Moreover, we can also observe location at different points in their career and hence distinguish the effect of place of birth and, for example, the location where the individual ended their careers.

Given the importance of Paris and its surrounding region, the so-called Ile-de-France or IDF, in terms of employment and labour productivity, we consider two possible locations: Ile-de-France and the provinces. Individuals are then classified into four groups, according to whether or not they were born in IDF and to whether or not they ended in their careers in IDF. We computed the lifetime earnings for each of these groups, and depict them in Figure 22.

Not surprisingly, those who ended their careers in the Paris region have considerably larger earnings than those who did not, and this is the case for both men and women. But controlling for end-of-career location, place of birth is also important. Notably, while place of birth makes no difference for those who end their career in the provinces, it does imply a considerable difference for those who end their careers in Paris, indicating a considerable advantage stemming from geographical origin other than through were the individual's career ends.

Figure 22: Median lifetime earningg by place of birth and work



The figure displays.the LTE of individuals according to both place of birth and location where they end their career. The two possible locations are the Paris region (Ile-de-Rance or IDF) and the provinces.

7 Conclusions

Our analysis has shown that the rapid growth of median lifetime incomes for the first cohorts in our sample came to a halt, with a considerable flattening of median earnings for those born after 1948, a result that mimics the US experience. A decomposition by gender, however, indicates marked differences across the two countries. In the US, the flat trajectory of the overall median is the result of sharply declining lifetime earnings for the median male and sharply increasing ones for the median female. In France, women experienced gains relative to men, but both groups exhibit roughly similar patterns. A parallel difference appears when we consider inequality in lifetime incomes, which in the US grew considerably for each gender group but remained stable for the entire population because of the catch up by females. Inequality indices for France exhibit a U-shaped pattern overall and for men. Inequality amongst women grew, but less than in the US.

Mobility patterns show an increase in mobility for the older cohorts that comes to a halt for those born from 1960 onwards. Three key results appear. First, contrary to the US, mobility patterns are relatively similar for French men and women. In particular, the sharp increase in mobility experienced by female Americans has not taken place in France. Second, at the bottom of the income distribution American men have witnessed a sharp decline in mobility, which has not occurred for the French. Labour market institutions, notably minimum wages, can explain this difference, with the decline in demand for low-skilled male dominated occupations having affected unemployment rather than wages in France. At the very top of the distribution we find large persistence, with those that started in the top 1 percent having a large probability of remaining there. This probability exhibits nevertheless a U-shaped pattern, having declined for the older cohorts before rising again for the younger

ones.

When we consider differences amongst demographic groups, two important findings appear. First, although individuals with higher education have experienced an increase in lifetime earnings across cohort, once we split this group between those with only a bachelor's degree and those with at least a master, we find that the results are driven by the latter. In fact, for those with only a bachelor's degree, earnings have fallen markedly across cohorts, indicating a declining return to such degrees. Our data also indicates that geographical location is a key aspect when considering lifetime earnings. Where an individual ends their career is important, as we would expect from a large literature on economic geography. However, we find that were they were born is important even once we control for end-of-career location, indicating that place of birth is key in shaping earning possibilities.

References

Alderson, A. S. and F. Nielsen (2002). Globalization and the great u-turn: Income inequality trends in 16 oecd countries. *American Journal of Sociology 107*(5), 1244–1299.

Atkinson, A. B. (2003). Income inequality in oecd countries: Data and explanations. *CESifo Economic Studies 49*(4), 479–513.

Atkinson, A. B. and S. Morelli (2014). Chartbook of economic inequality. ECINEQ WP 324.

Atkinson, A. B., T. Piketty, and E. Saez (2011, March). Top incomes in the long run of history. *Journal of Economic Literature 49*(1), 3–71.

Bonnet, C., B. Garbinti, and S. Grobon (2018). Rising inequalities in access to home ownership among young households in France, 1973-2013. *Economie et Statistique / Economics and Statistics* (500-501-5), 117–138.

Bowlus, A. J. and J.-M. Robin (2004). Twenty years of rising inequality in us lifetime labour income values. *The Review of Economic Studies 71*(3), 709–742.

Bowlus, A. J. and J.-M. Robin (2012). An international comparison of lifetime inequality: How continental europe resembles north america. *Journal of the European Economic Association 10*(6), 1236–1262.

Bozio, A., T. Breda, and M. Guillot (2020). The contribution of payroll taxation to wage inequality in france. IZA Discussion Paper.

Bozio, A., B. Garbinti, J. Goupille-Lebret, M. Guillot, and T. Piketty (2020, October). Predistribution vs. Redistribution: Evidence from France and the U.S. CEPR Discussion Papers 15415, C.E.P.R. Discussion Papers.

Garbinti, B., J. Goupille-Lebret, and T. Piketty (2018a, March). Income Inequality in France, 1900-2014: Evidence from Distributional National Accounts (DINA). CEPR Discussion Papers 12799, C.E.P.R. Discussion Papers.

Garbinti, B., J. Goupille-Lebret, and T. Piketty (2018b). Income inequality in france, 1900–2014: Evidence from distributional national accounts (dina). *Journal of Public Economics 162*, 63 – 77. In Honor of Sir Tony Atkinson (1944-2017).

Garbinti, B. and F. Savignac (2020). Accounting for Intergenerational Wealth Mobility in France over the 20th Century: Method and Estimations. Working Papers 2020-16, Center for Research in Economics and Statistics.

Garbinti, B. and F. Savignac (2021). Intergenerational Homeownership in France over the 20th Century. In *Measuring Distribution and Mobility of Income and Wealth*, NBER Chapters. National Bureau of Economic Research, Inc (forthcoming).

Garnero, A., A. Hijzen, and S. Martin (2019). More unequal, but more mobile? earnings inequality and mobility in oecd countries. *Labour Economics 56*, 26–35.

Guvenen, F., G. Kaplan, J. Song, and J. Weidner (2021). Lifetime incomes in the united states over six decades. Technical report, mimeo.

Hoffmann, E. B., D. Malacrino, and L. Pistaferri (2021). Labor market reforms and earnings dynamics: the italian case. working paper 21/142, IMF.

Katz, L. and D. Autor (1999). Changes in the wage structure and earnings inequality. ashenfelter, o. and d. card (eds), handbook of labor economics., 3a: 1463–1555.

Katz, L. F. and K. M. Murphy (1992). Changes in relative wages, 1963–1987: supply and demand factors. *The quarterly journal of economics 107*(1), 35–78.

Kopczuk, W., E. Saez, and J. 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.

Kramarz, F., E. Nimier-David, and T. Delemotte (2021). Inequality and earnings dynamics in france: National policies and local consequences. mimeo, CREST.

Magnac, T. and S. Roux (2020). Heterogeneity and wage inequalities over the life cycle. CEPR Discussion Paper No. DP15083.

Mulligan, C. B. and Y. Rubinstein (2008). Selection, investment, and women's relative wages over time. *The Quarterly Journal of Economics 123*(3), 1061–1110.

Piketty, T. and G. Zucman (2014). Capital is Back: Wealth-Income Ratios in Rich Countries 1700–2010. *The Quarterly Journal of Economics 129*(3), 1255–1310.

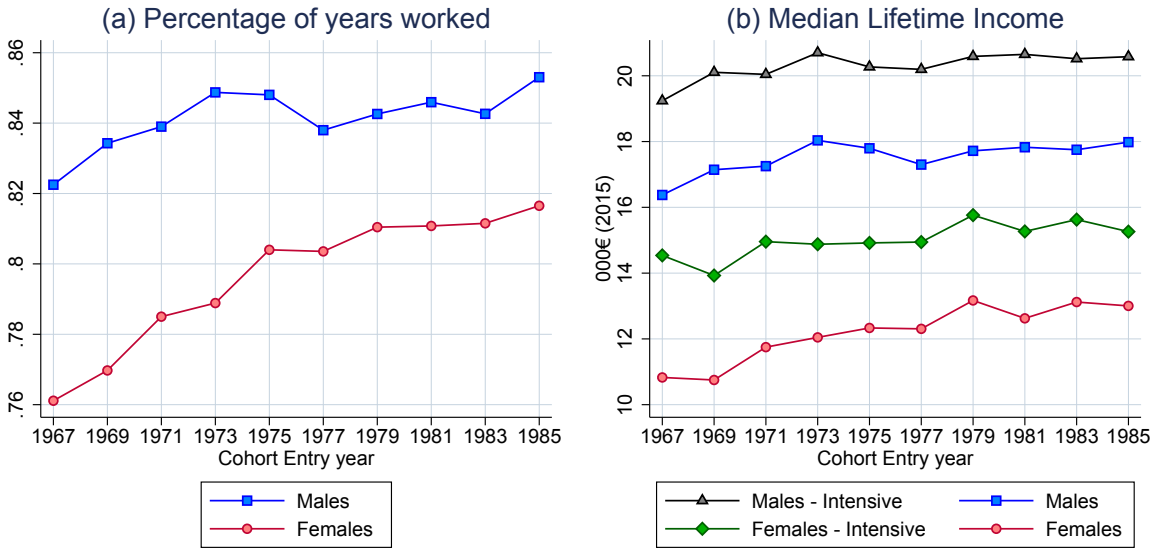
Appendices

A Working years and age profiles

This and the remaining appendices present additional results.

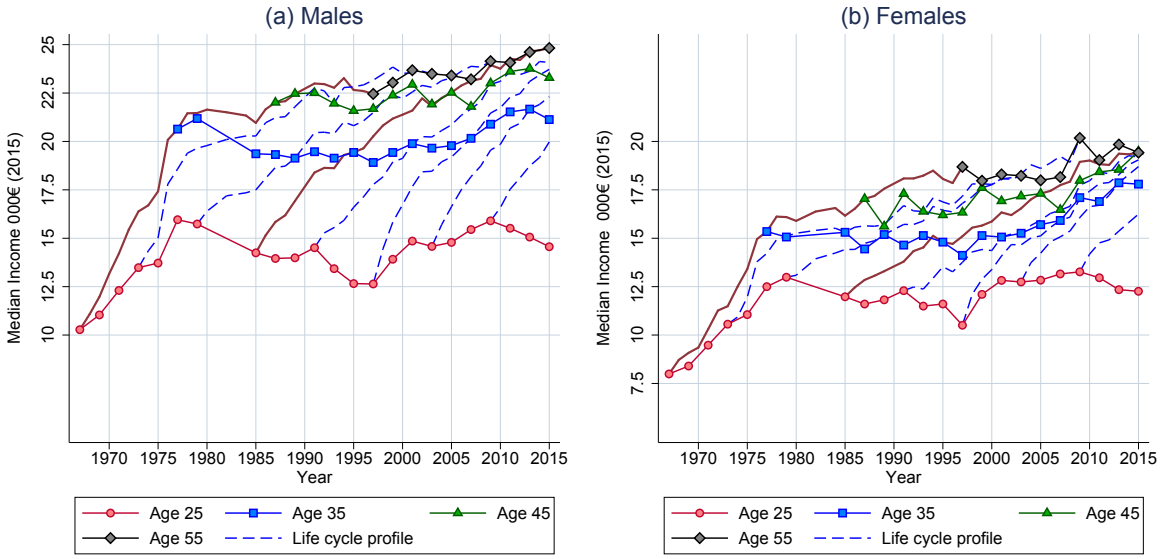
Changes in lifetime earnings can be due to cohorts earning more per year of work (the intensive margin) or working more years (the extensive margin). Figure A.1 displays, on the left-hand panel the mean number of years worked by individuals in each cohort (conditional on having worked 15 years out of the 31 years we consider). The data indicate that younger cohorts worked more years: almost 3 more years for men, compare to a small decline in the US, and 3 more years for women, compared to 1 years in the US over an equivalent. Following GKSW (see figure 2), we construct an alternative measure of lifetime earnings in which we divide an individual's total earnings by the number of years in which he or she has earnings above the minimum threshold, rather than by 31. This measure yields by construction higher annualised earnings, but the two measures depict equivalent trends.

Figure A.1: Lifetime income by cohort, intensive and extensive margin



Notes: Panel (a) displays the percentage of years worked over the lifetime (either 28 29 and 30 years depending on the number of missing years) for a cohort of each gender that entered the labor market in a given year. Panel (b) displays the median lifetime earnings each gender-cohort as in Figure 1 (blue and red lines), as well as the median of the intensive margin of lifetime earnings for a gender-cohort that entered the labor market in a given year (blue and green lines) as defined as the average lifetime income per year worked. All statistics calculated using the LT sample (see Section 2.2). Values are displayed in thousands of 2015 euros and deflated using the PCE.

Figure A.2: Age profiles of median income by cohort, including younger cohorts



Note: This figure displays two measures of within-cohort inequality. Each observation represents the inequality in lifetime earnings among a cohort of workers that entered the labor market in a particular year in the LT sample (see Section 2.2). Panel (a) displays the ratio of the 90th percentile to the 50th percentile of lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. Panel (b) displays the ratio of the 50th percentile to the 10th percentile of lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. Earnings are deflated using the PCE.

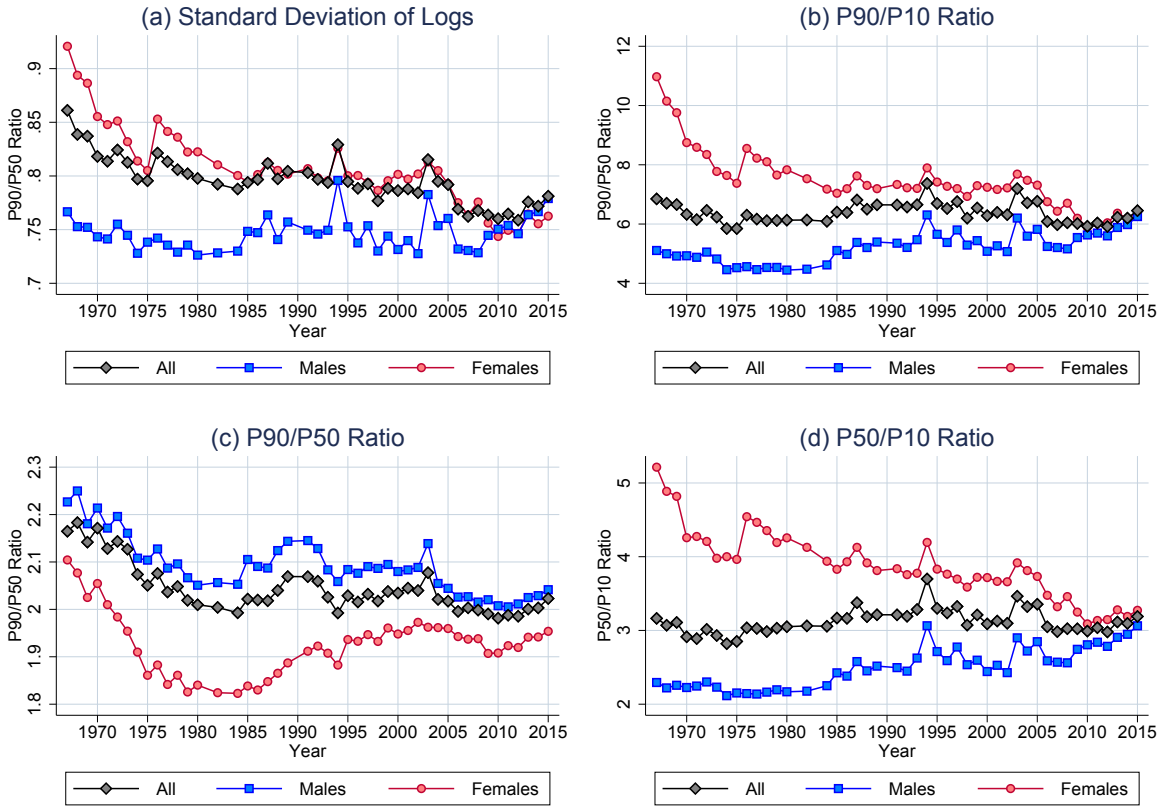
B Cross-sectional Inequality

We can compare the figures obtained for lifetime with those obtained with our data but looking at a cross section reported in Figure B.1. The comparison is not straight forward given that they are conceptually different measures but it illustrates the importance of considering both types of measures. In particular, one of the problems of using our sample is that in the early years we have only young individuals and in the late years only old ones. They hence represent a somewhat distorted view of cross-sectional inequality.

Earnings inequality as measured by the standard deviation of log income rose between 1967 and the mid-1980s and has since remained relatively stable. This pattern is consistent with the one found by Garbinti et al. (2018b) who show a decrease in pretax labor income inequality (as measured by the share of the top 10% and top 1% richest individuals) between the mid-60s and the mid-80s, and a stability afterwards.[22] Moreover, inequality at the top (P90-P50 ratio) rose considerably, growing steadily from a value of 1.6 to 2.2 between 1967 and 2015. These trends contrast to those reported for lifetime incomes in Figures 6 and 7. In particular, lifetime inequality fell for the cohorts entering the labour market between 1967 and 1981 (and exiting between 1998 and 2012) despite the fact that cross-sectional inequality rose for much of their working lives. Similarly, our results for top income inequality in lifetime earnings do not display the upwards trend that appears in the cross-section.

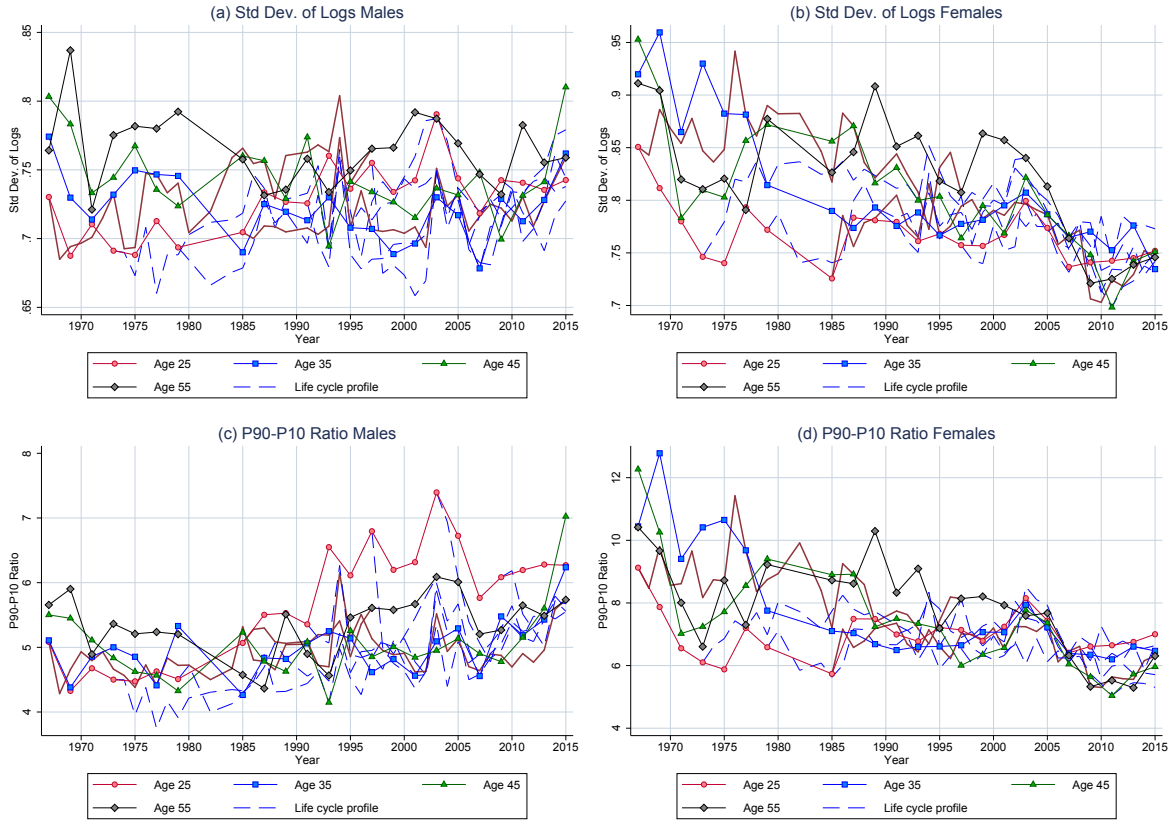
[22] See Figures 6 and 7 in Garbinti et al. (2018b). Note that they focus on total income rather then labour earnings.

Figure B.1: Cross-sectional inequality



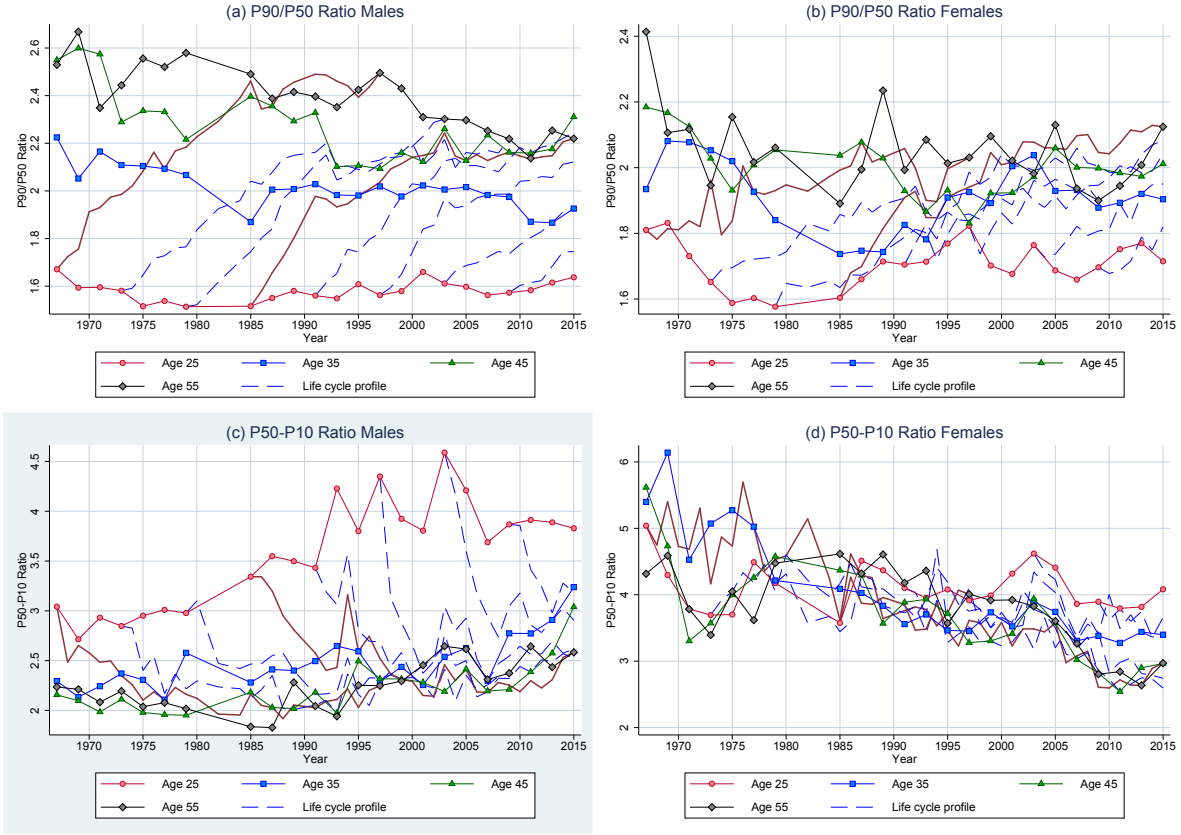
Note: This figure displays four measures of cross-sectional inequality, across all individuals working in a given year. Each observation represents earnings inequality in a given year in the LT sample (see Section 2.2). Panel (a) displays the standard deviation of the log earnings in each year, separated by men, women, and both genders combined. Panel (b) displays the ratio of the 90th percentile to the 10th percentile of earnings in each year, separated by men, women, and both genders combined. Panel (c) and Panel (d) display the analogous trends in Panel (b) for the ratio of the 90th to the 50th percentile and the ratio of the 50th to the 10th percentile, respectively. Earnings are deflated using the PCE.

Figure B.2: Age Profiles of Cross Sectional Inequality, by Cohort



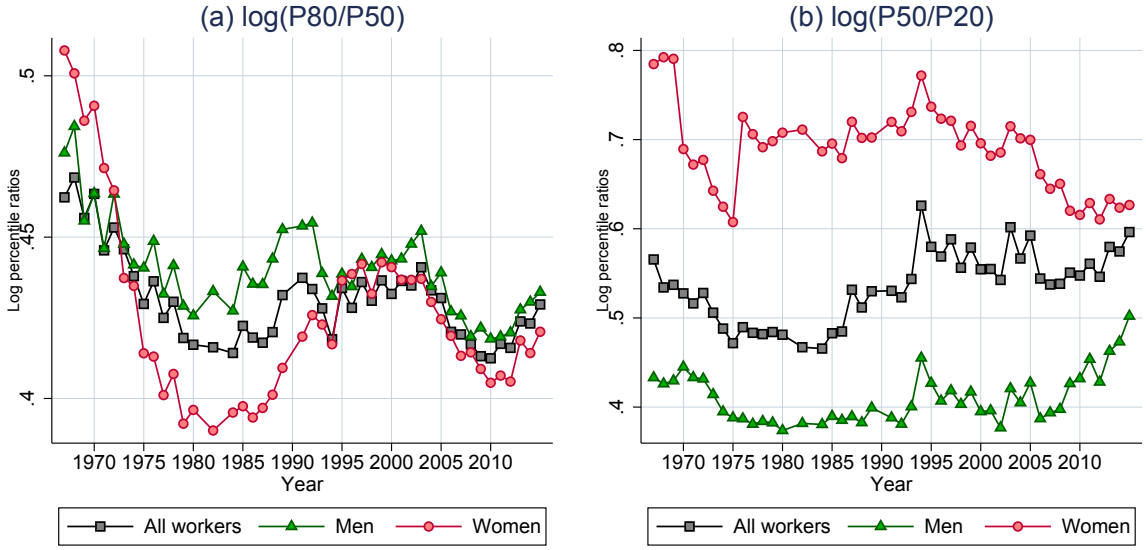
Notes: Each observation represents the earnings inequality within men or women of a particular age in a particular year in the LT sample (see Section 2.2). For example, the 1967 cohort is represented by an Age 25 observation in 1967, an Age 35 observation in 1977, an Age 45 observation in 1987, and an Age 55 observation in 1997. The dotted lines (solid for the first and last cohort with full life cycle profiles) connect all available age-year observations for every fifth cohort. Panel (a) displays the standard deviation of the log of earnings for men within each age-year group. Panel (b) displays the same for women. Panel (c) displays the ratio of the 90th percentile to the 10th percentile of earnings for men within each age-year group. Panel (d) displays the same for women. Earnings are deflated using the PCE.

Figure B.3: Age Profiles of Cross Sectional Inequality, by Cohort, cont.



Notes: Each observation represents the earnings inequality within men or women of a particular age in a particular year in the LT sample (see Section 2.2). For example, the 1967 cohort is represented by an Age 25 observation in 1967, an Age 35 observation in 1977, an Age 45 observation in 1987, and an Age 55 observation in 1997. The dotted lines (solid for the first and last cohort with full life cycle profiles) connect all available age-year observations for every fifth cohort. Panel (a) displays the ratio of the 90th percentile to the 50th percentile of earnings for men within each age-year group. Panel (b) displays the same for women. Panel (c) displays the ratio of the 50th percentile to the 10th percentile of earnings for men within each age-year group. Panel (d) displays the same for women. Earnings are deflated using the PCE.

Figure B.4: Cross-sectional percentile ratios - LT sample

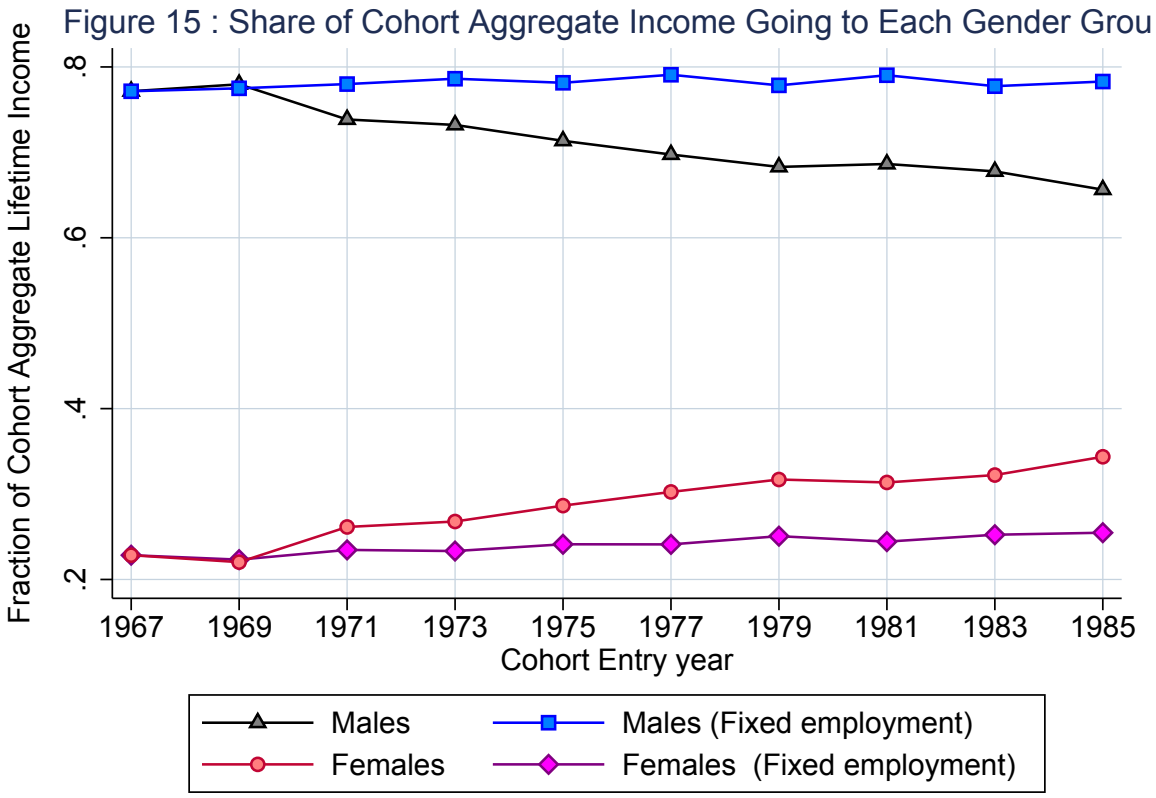


The figure displays the log of the 80th to 50th percentile earnings ratio (panel a) and the log of the 50th to 20th percentile earnings ratio (panel b) among all workers, men only, and women only, based on the MB sample (see Section 2.2 for details.)

C Trends in the share of the pie

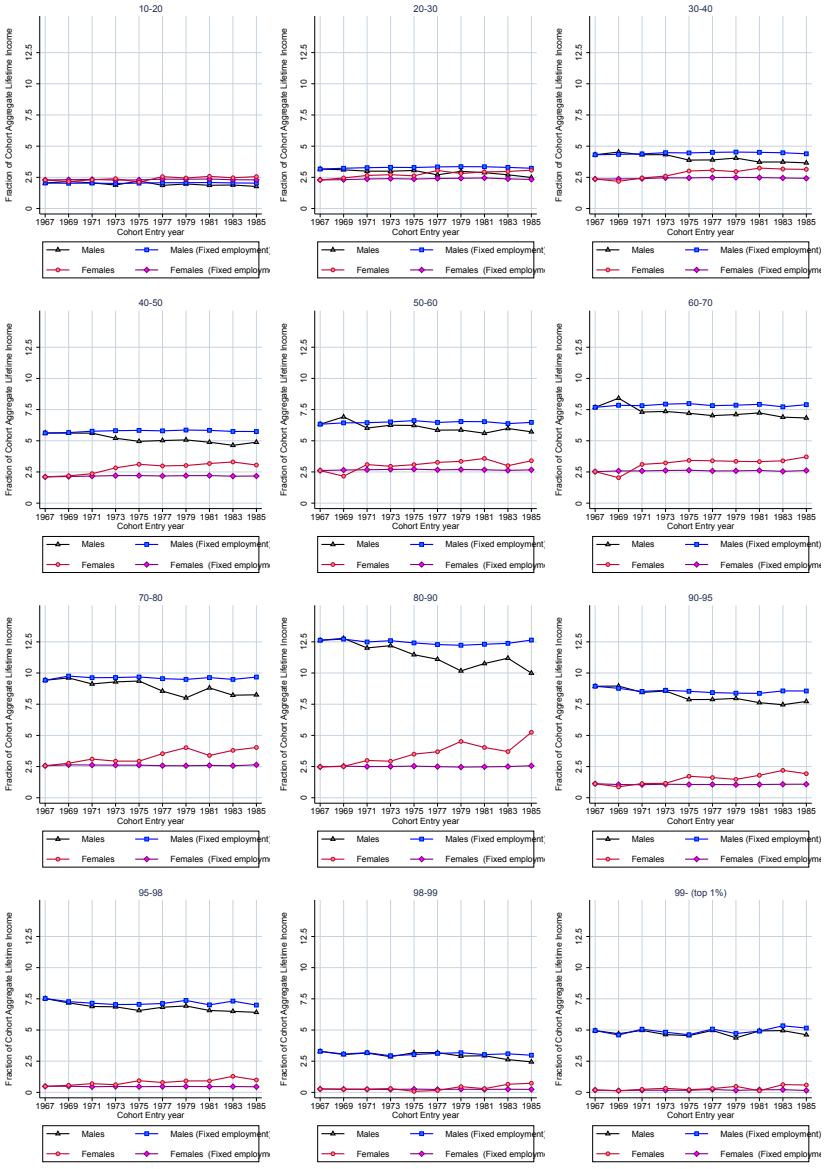
This section reports results showing how the aggregate lifetime income of each cohort, i.e. "the pie" is shared across genders or individuals at different points of the distribution.

Figure C.1: Age profiles of median income by cohort, including younger cohorts



Notes: Each observation represents the share of aggregate lifetime earnings of each cohort that was earned by a particular gender in the LT sample (see Section 2.2). The figures shows the trends for men and women, plotted by the year each cohort entered the labor market, as well as counterfactual trends for men and women assuming that the gender gap in lifetime years worked remained fixed at the 1967 level. Male and female shares for the actual and counterfactual trends add to one in each year. Earnings are deflated using the PCE.

Figure C.2: Age profiles of median income by cohort, including younger cohorts



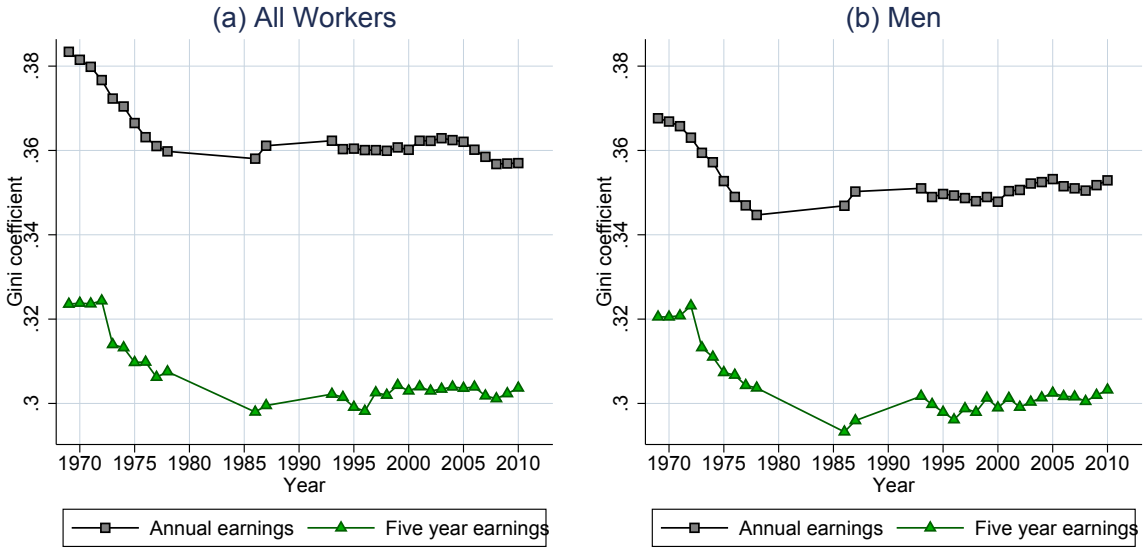
Notes: Each observation represents the share of aggregate lifetime earnings of a cohort that was earned by a particular gender and earnings percentile group in the LT sample (see Section 2.2). Each panel displays the analogous trends to Figure C.1 for a particular earnings group defined by the earnings percentiles above each panel. For example, the top left panel displays the share of aggregate lifetime earnings of each cohort earned by men and women between the 10th and 20th percentile of the lifetime earnings distribution for each cohort (as well as the counterfactual fixed employment trends). Earnings are deflated using the PCE.

D Short-term mobility

We follow Kopczuk et al. (2010), KSS from now onwards, and start by examining short-term mobility. Figure D.1 depicts both annual inequality and multi-year inequality. Annual inequality is computed for each year and averaged over five years, while the 5-year measure consists of first averaging an individual's earnings over 5-years and then computing the Gini coefficient. The data are reported centred around the middle year in each 5-year period. Inequality exhibits a downward trend up to the mid-1980s and then stabilizes consistent with standard measures (see Figure 8 in the appendix). As expected, the measure based on 5-year earnings results in less inequality than that based on annual earnings, as individuals' earnings rankings fluctuate over time, but the two series follow the same pattern over time. The gap between the two indices has fallen slightly from 6 points to 5.5 (for all workers), and the dynamics for men are very similar to those of the overall population albeit with a slightly lower level of inequality. Compared to the evidence for the US in KSS (figure G.7), inequality is lower in France and does not exhibit the upwards trend observed in the US.

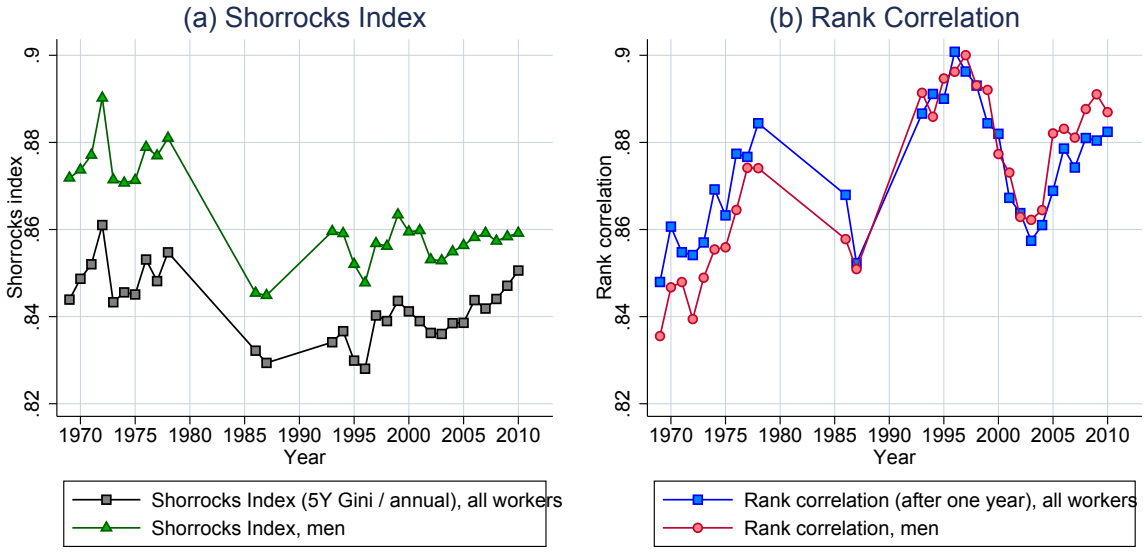
Figure D.2 reports short-term mobility measures, the Shorrock's index and rank correlation. The former is the ratio of the five-year Gini coefficient to (the average of) the annual Gini, and lower values imply greater mobility. The data indicate that mobility was low during the 1970s and then increased, exhibiting the lowest values of the index (highest mobility) between 1986 and 1996; mobility declined from 1996 but without reaching the initial level. The second measure of mobility, the rank correlation, also implies that higher values of the index are associated with lower mobility. Although the index fluctuates considerably, there is a notable reduction in mobility between 1967 and 1995.

Figure D.1: Gini coefficients: Annual vs. Five-year Earnings



The figure displays the Gini coefficients for annual earnings and for earnings averaged over five years from 1969 to 2010. In year t, the sample for both series is defined as all individuals aged 25 to 55 in year t, with commerce and industry earnings above the minimum threshold in all five years $t-2$, $t-1$, t, $t+1$, $t+2$. Earnings are averaged over the five-year span using the average earnings index. The Gini coefficient for annual earnings displayed for year t is the average of the Gini coefficient for annual earnings in years $t-2$,..., $t+2$. The same series are reported in green for the sample restricted to men only.

Figure D.2: Short-term mobility: Shorrock's index and Rank-correlation

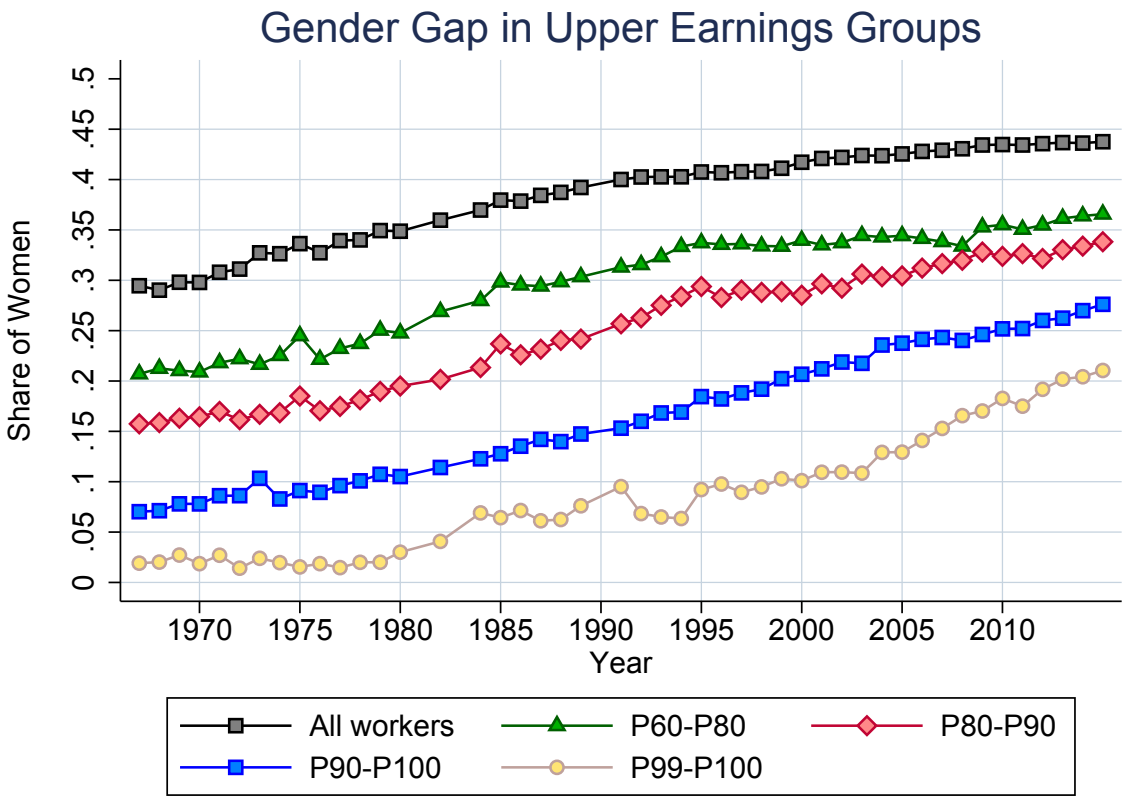


The figure displays the Shorrocks mobility coefficient based on annual earnings Gini vs. five-year average earnings Gini and the rank correlation between earnings in year t and year $t+1$. The Shorrocks mobility coefficient in year t is defined as the ratio of the five-year earnings (from $t-2$ to $t+2$) Gini coefficient to the average of the annual earnings Gini for years $t-2$,..., $t+2$ (those two series are displayed in Figure D.1). The rank correlation in year t is estimated on the sample of individuals present in the MB sample (see Section 2.2) in both year t and year $t+1$. The same series are reported in green for the sample restricted to men only.

E Gender differences

Figure E.1 displays time trends in the share of women in various upper earnings groups: the fourth quintile group (P60–80), the ninth decile (P80–90), the top decile (P90–100), and the top percentile (P99–100), as well as in the population as a whole. The latter trend line shows the well established increase in the share of women in the working population, that has reached about 45% in recent years, in line with the evidence for the US and a number of other high-income countries. At all levels, the share of women has been growing. In contrast to the US, the trends are roughly linear, rather than exhibiting the sharp acceleration reported by KSS from the mid-1980s, but both at the start and by the end of the period the shares are of comparable magnitude in the two countries. Overall, the figure indicates that the considerable differences between France and the US in the role played by gender cannot be attributed to differences in female participation. It is hence likely to be due to the structure of remuneration.

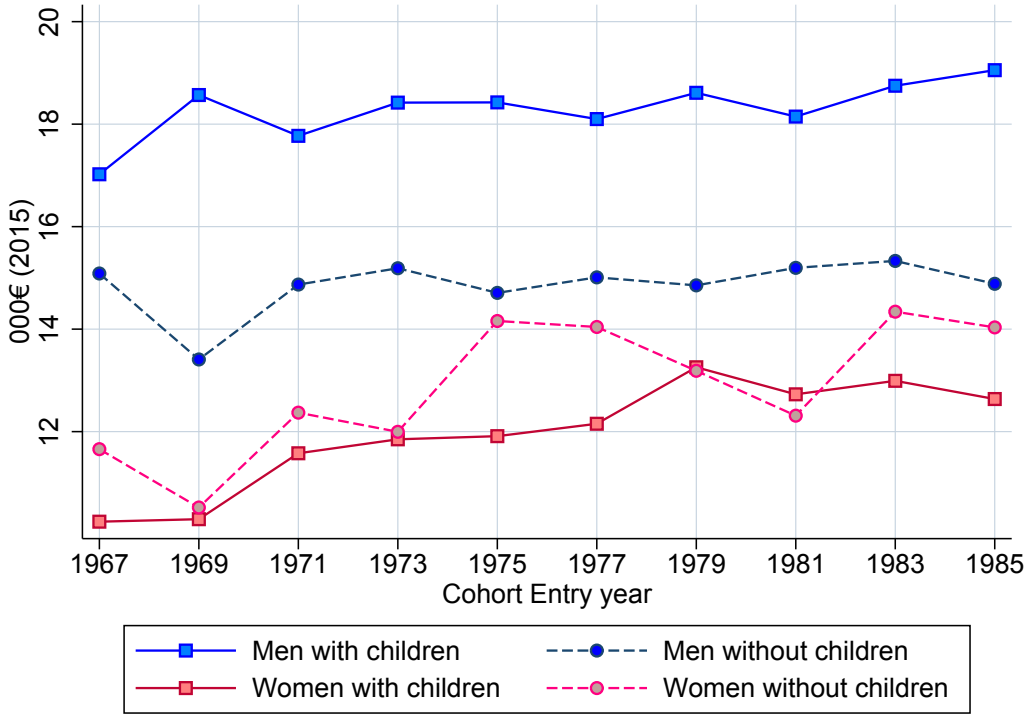
Figure E.1: Gender gaps in upper earnings groups



The figure displays the fraction of women in various groups. P60–80 denotes the fourth quintile group from percentile 60 to percentile 80, P90–100 denotes the top 10%, etc. The sample is the MB sample (see Section 2.2 for details.)

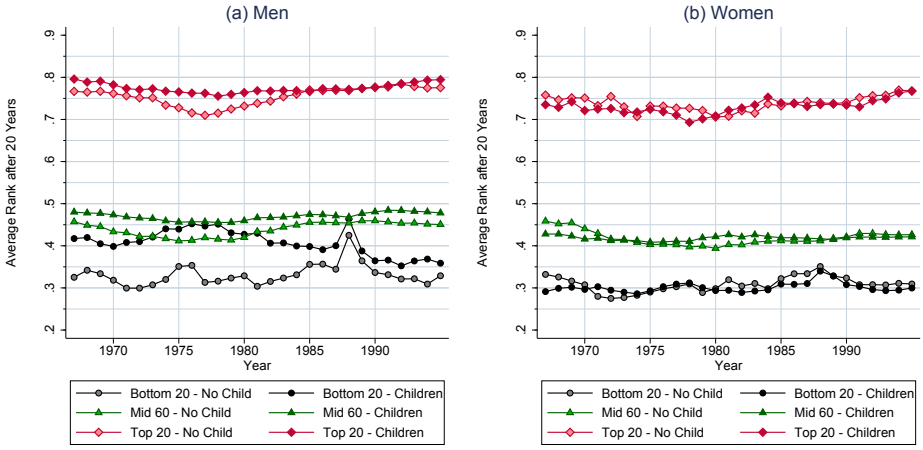
F Lifetime Incomes and Mobility by Children

Figure F.1: Median Lifetime Incomes by Gender and Children



Notes: Each marker/observation represents the median lifetime earnings of a cohort that turned age 25 (entered the labor market) in the year indicated on the x-axis. Only individuals in the LT sample are included. We split the data by gender and whether individuals have had children throughout their lives.

Figure F.2: Average Rank After 20 Years by Gender and Children



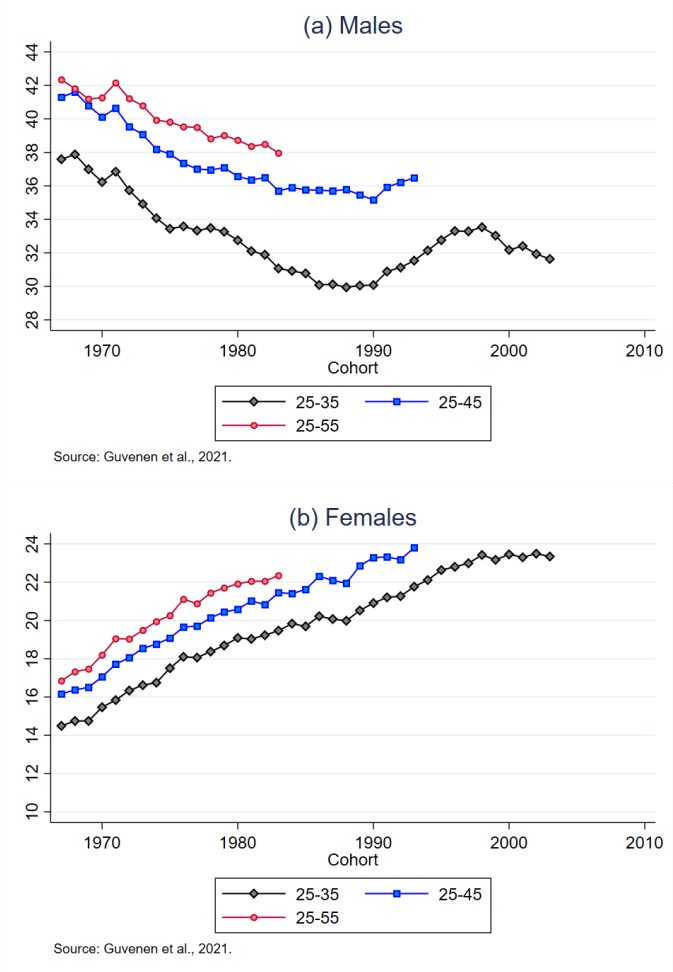
The figure displays in year t the average rank of eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom (P0 to P20), mid (P20 to P80), and top (P80 to P1000 quintile groups based on gender and whether individuals have had children throughout their lives. The sample is defined in Section 2.2. In all cases, quintile groups are defined based on the sample of all workers.

G Existing evidence for the US

This appendix reproduces the figures from Guvenen et al. (2021) and Kopczuk et al. (2010) that we discuss in our comparisons with US data.

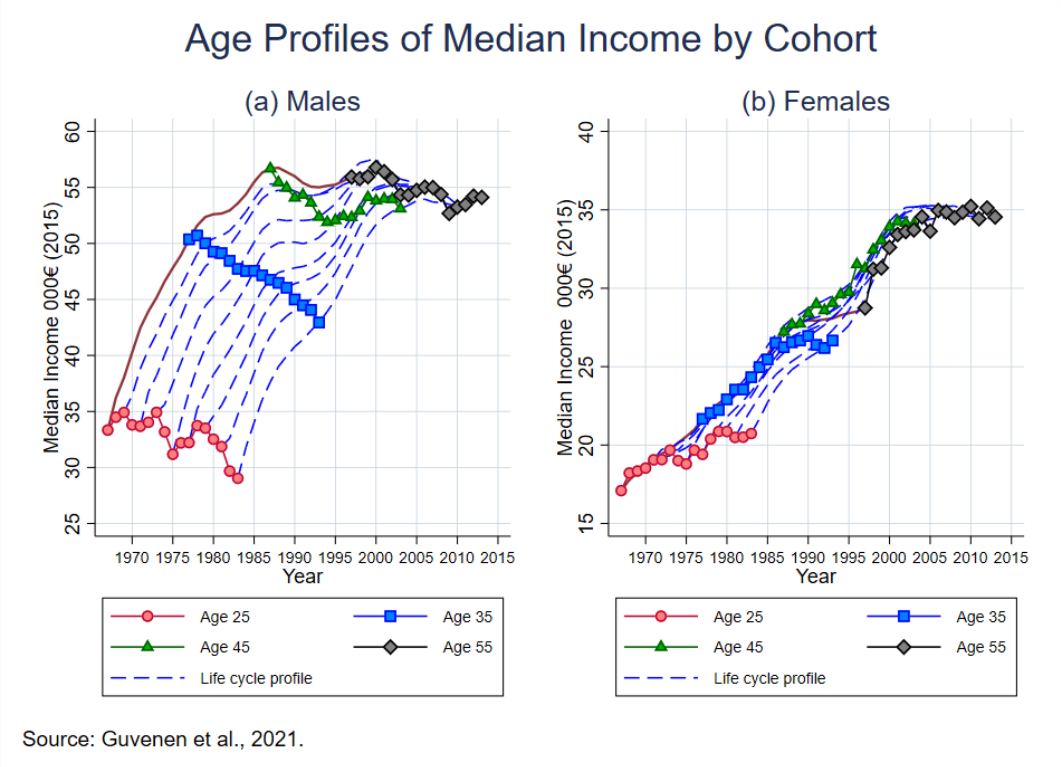
(To be completed)

Figure G.1: Median Earnings by Cohort, Including Younger Cohorts



Notes: Each observation represents the median earnings of a cohort, measured over the first 10 years, first 20 years, or full 30 years of a cohort's working lifetime, for the year the cohort entered the labor market. Panel (a) displays the trends for male cohorts, and Panel (b) displays trends for female cohorts in the baseline sample (see section 2.3 of Guvenen et al. (2021)). Values are displayed in thousands of 2013 US dollars and deflated using the PCE.

Figure G.2: Age Profiles of Median Earnings by Cohort

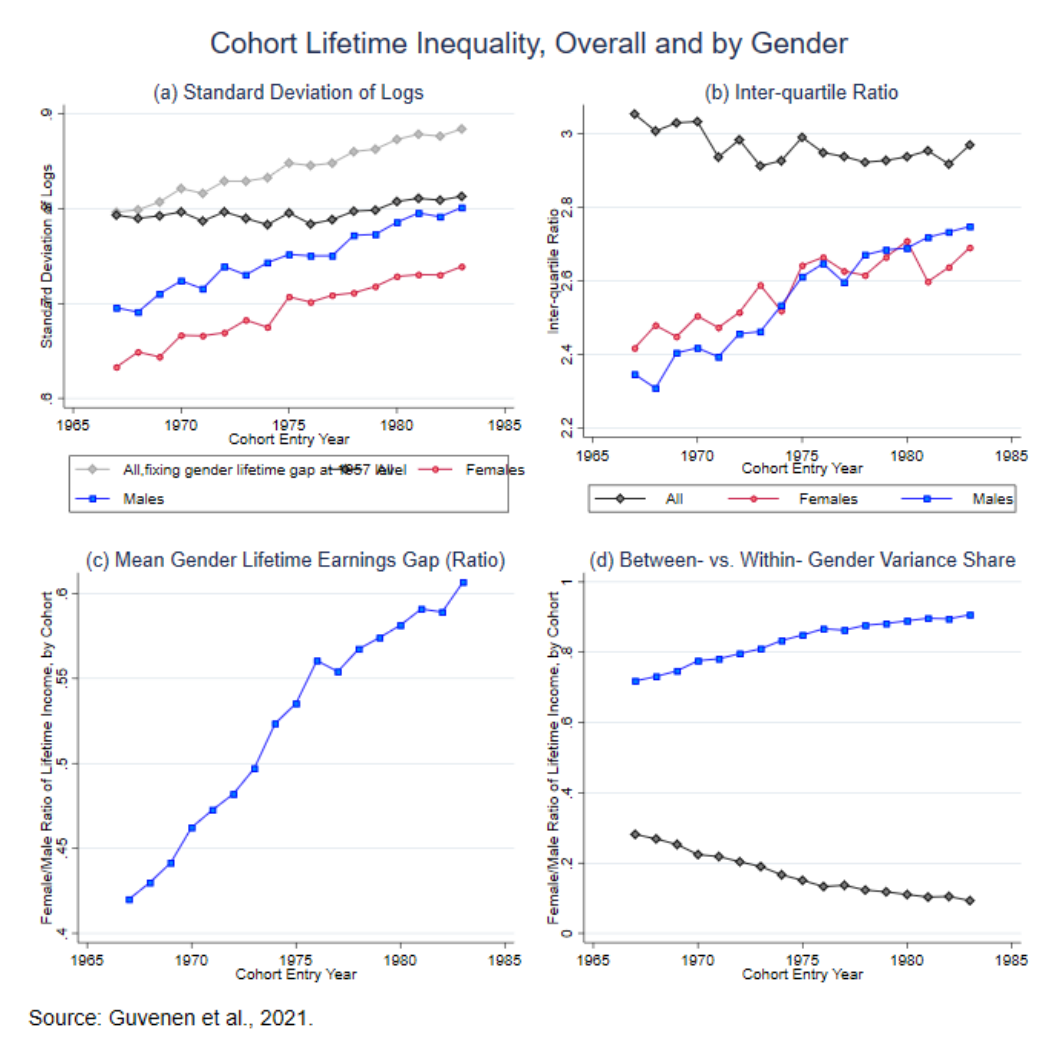


Notes: Each observation represents the median earnings of men or women of a particular age in a particular year in the baseline sample (see section 2.3 of Guvenen et al. (2021)). For example, the 1967 cohort is represented by an Age 25 observation in 1967, an Age 35 observation in 1977, an Age 45 observation in 1987, and an Age 55 observation in 1997. The dotted lines (solid for the first and last cohort) connect all 30 age-year observations for each cohort. Panel (a) displays the age profiles of male cohorts, and Panel (b) displays the age profiles of female cohorts. All values are displayed in thousands of 2013 dollars and deflated using the PCE.

Figure G.3: Selected Percentiles of Lifetime Earnings, by Cohort and Gender

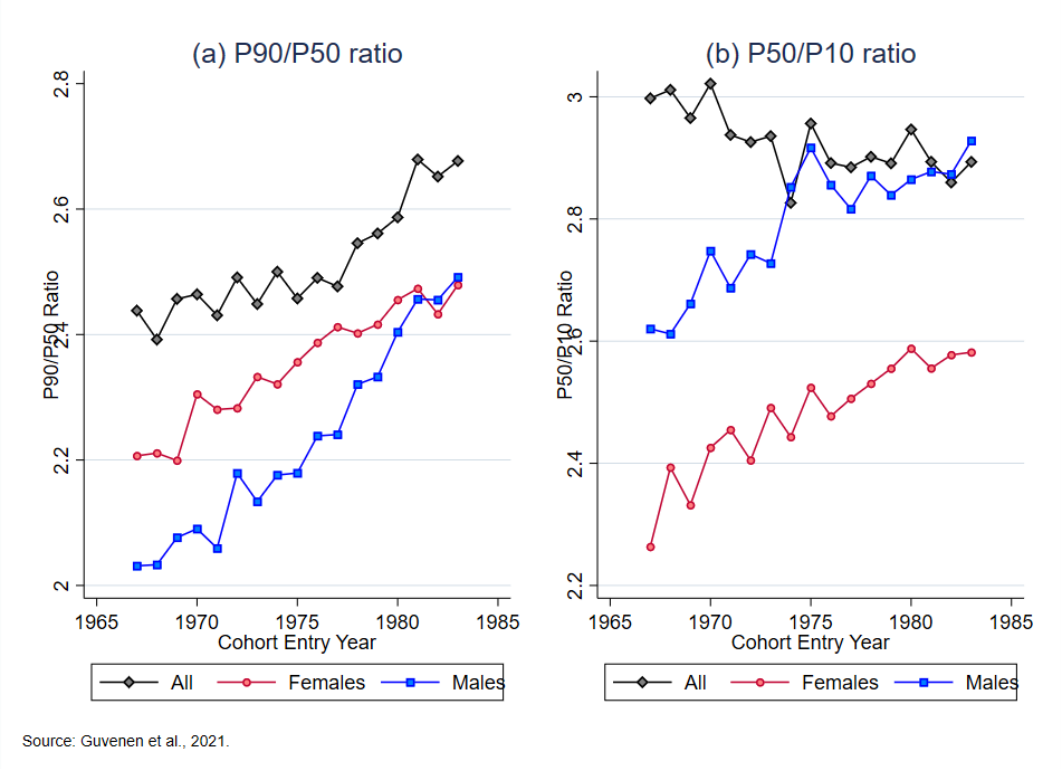
Notes: An observation represents a selected quantile of the lifetime earnings distribution of a cohort that entered the labor market in a given year for the baseline sample (see section 2.3 of Guvenen et al. (2021)). Panel (a) displays the distribution for men and panel (b) for women. Values are displayed in thousands of 2013 US dollars and deflated using the PCE.

Figure G.4: Cohort Lifetime Inequality, Overall and by Gender



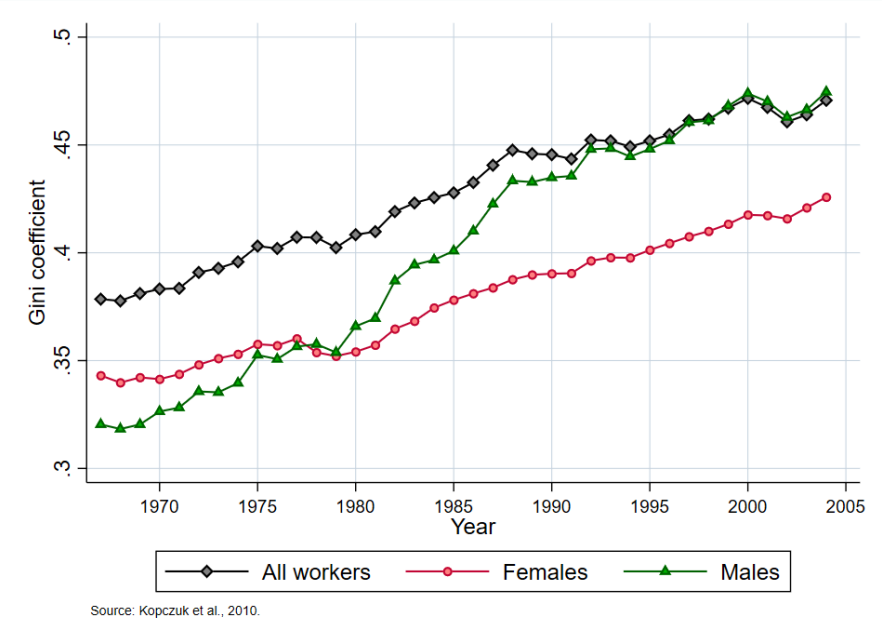
Note: This figure displays four measures of within-cohort inequality. Each observation represents the inequality in lifetime earnings among a cohort of workers that entered the labor market in a particular year in the baseline sample (see section 2.3 of Guvenen et al. (2021)). Panel (a) displays the standard deviation of the log lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. We additionally plot the trend in inequality in the total population holding the gender gap in lifetime earnings fixed at the level in 1967. Panel (b) displays the ratio of the 75th percentile to the 25th percentile of lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. Panel (c) displays the ratio of mean lifetime earnings of female cohorts to the mean lifetime earnings of the male cohort that entered the labor market in the same year. Panel (d) displays the result of decomposing the variance of within-cohort lifetime earnings into within-gender and between-gender components. Earnings is deflated using the PCE.

Figure G.5: Lifetime Inequality by Cohort



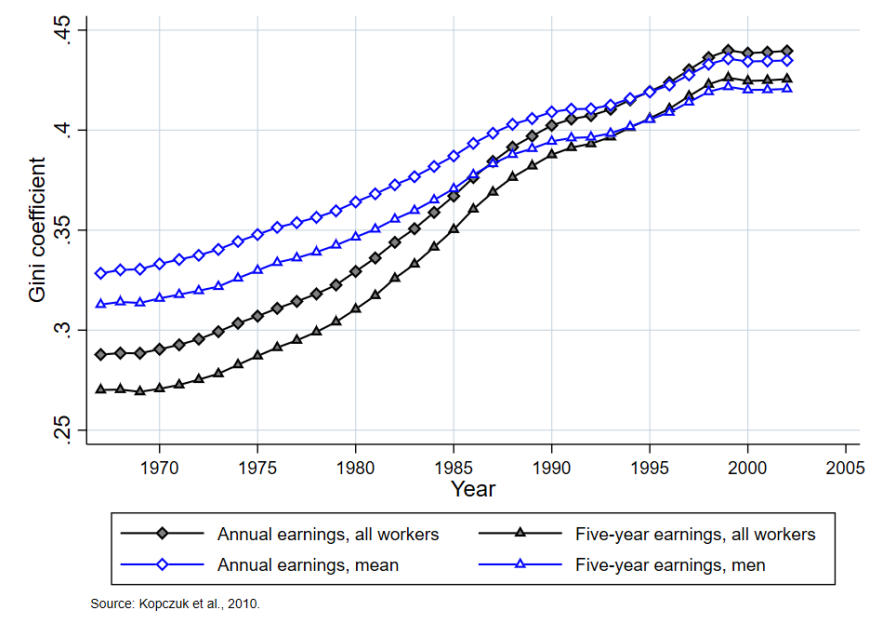
Note: This figure displays two measures of within-cohort inequality. Each observation represents the inequality in lifetime earnings among a cohort of workers that entered the labor market in a particular year in the baseline sample (see section 2.3 of Guvenen et al. (2021)). Panel (a) displays the ratio of the 90th percentile to the 50th percentile of lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. Panel (b) displays the ratio of the 50th percentile to the 10th percentile of lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. Earnings is deflated using the PCE.

Figure G.6: Annual Gini Coefficients



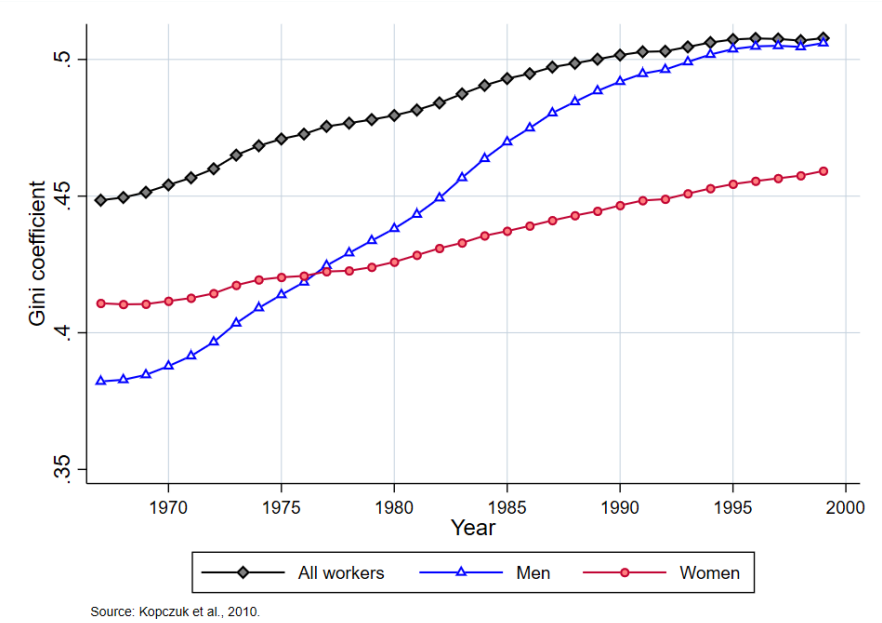
The figure displays the Gini coefficients from 1967 to 2004 for earnings of individuals in the core sample, men in the core sample, and women in the core sample. The core sample in year t is defined as all employees with commerce and industry earnings above a minimum threshold ($2,575 in 2004 and indexed using average wage for earlier years) and aged 25 to 60 (by January 1 of year t). Commerce and industry are defined as all industrial sectors excluding government employees, agriculture, hospitals, educational services, social services, religious and member- ship organizations, and private households. Self-employment earnings are fully excluded. Estimations are based on the 0.1% CWHS data set for 1937 to 1956, the 1% LEED sample from 1957 to 1977, and the 1% CWHS (matched to W-2 data) from 1978 on. See the Online Appendix for complete details.

Figure G.7: Gini Coefficients: Annual Earnings vs. Five-Year Earnings



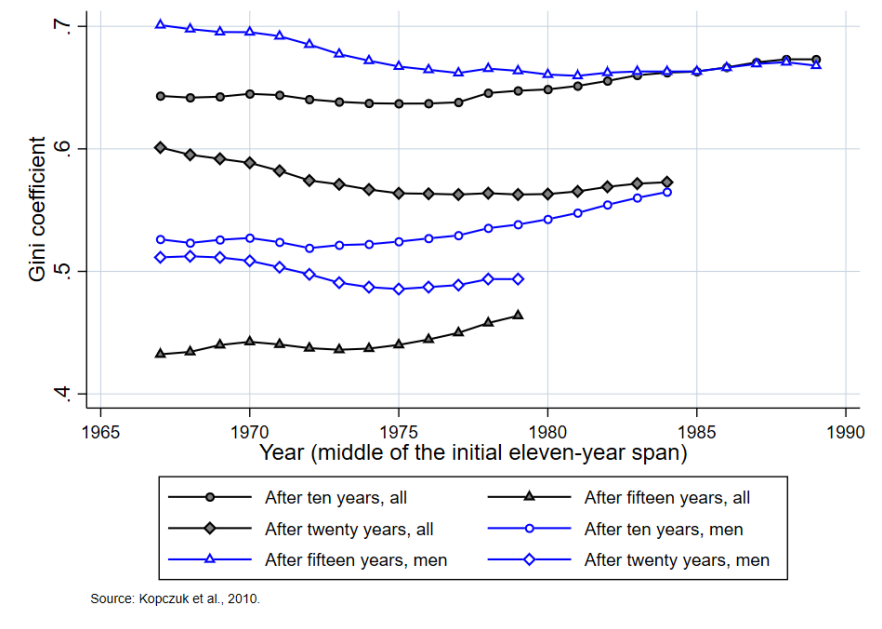
The figure displays the Gini coefficients for annual earnings and for earnings averaged over five years from 1967 to 2002. In year t, the sample for both series is defined as all individuals aged 25 to 60 in year t, with commerce and industry earnings above the minimum threshold in all five years $t-2$,$t-1$,t,$t+1$,$t+2$. Earnings are averaged over the five-year span using the average earnings index. The Gini coefficient for annual earnings displayed for year t is the average of the Gini coefficient for annual earnings in years $t-2$,...,$t+2$. The same series are reported in blue for the sample restricted to men only.

Figure G.8: Long-Term Earnings Gini Coefficients



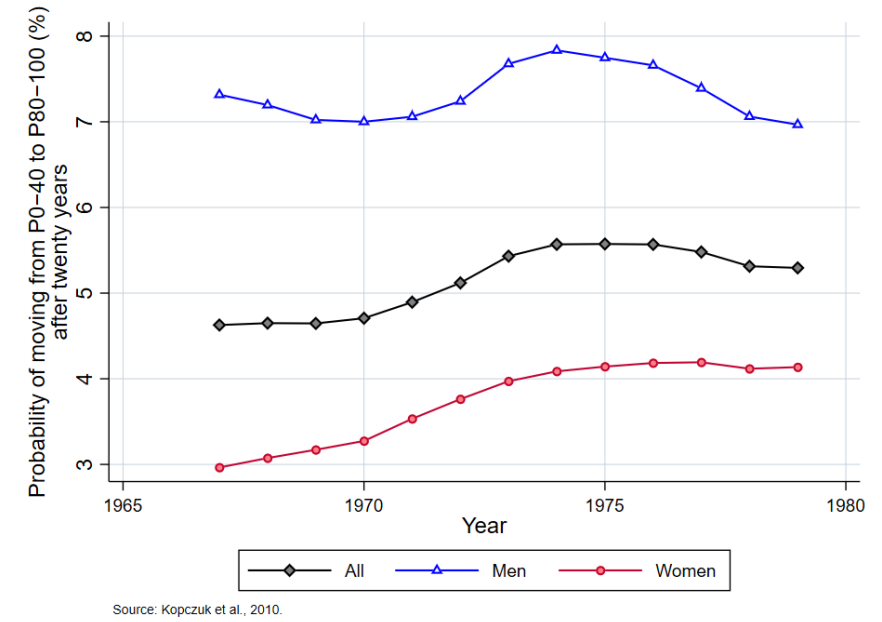
The figure displays the Gini coefficients from 1967 to 1999 for eleven-year average earnings for all workers, men only, and women only. The sample in year t is defined as all employees aged 25 to 60 in year t, alive in all years $t-5$ to $t+5$, and with average commerce and industry earnings (averaged using the average wage index) from year $t-5$ to $t+5$ above the minimum threshold. Gini coefficient in year t is based on average (indexed) earnings across the eleven-year span from year $t-5$ to $t+5$.

Figure G.9: Long-Term Mobility: Rank Correlation in Eleven-Year Earnings Spans



The figure displays in year t the rank correlation between eleven-year average earnings centered around year t and eleven-year average earnings centered around year $t + X$, where X = ten, fifteen, twenty. The sample is defined as all individuals aged 25 to 60 in year t and $t + X$, with average eleven-year earnings around years t and $t + X$ above the minimum threshold. The same series are reported in blue for the sample restricted to men only (in which case, rank is estimated within the sample of men only).

Figure G.10: Long-Term Upward Mobility: Gender Effects

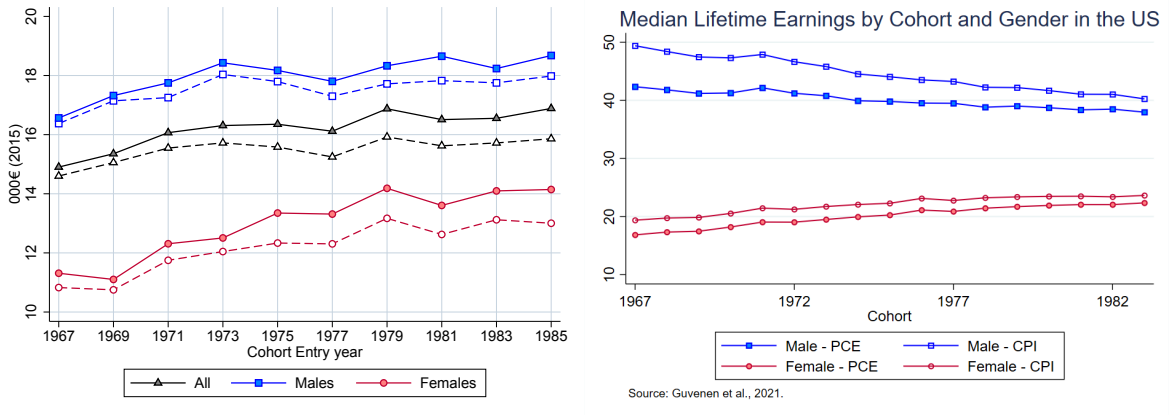


The figure displays in year t the probability of moving to the top quintile group (P80–100) for eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom two quintile groups (P0–40). The sample is defined as all individuals aged 25 to 60 in year t and $t + 20$, with average eleven-year "commerce and industry" earnings around years t and $t + 20$ above the minimum threshold. The series are reported for all workers, men only, and women only. In all three cases, quintile groups are defined based on the sample of all workers.

H Main Graphs Without Individuals that Have Worked in the Public Sector

We reproduce in this section the graphs of the main analysis on a different sample where any individual that has worked in the public sector is excluded. This allows to focus individuals that have spent their career in the private sector and to alleviate concerns related to differences between men and women in employment rates in the public sector. The caveat of this analysis is that civil servants are included in the sample only from 1988 onward. Thus for earlier cohorts some individuals who have worked in the public sector will not be excluded of the sample if they have definitively switched to the private sector after a few years of working as civil servants (ranging from 19 years for the 1967 cohort to 3 years for the 1985 cohort). This is likely to be a small number of individuals as suggested by Table H.1 because working as a civil servant in France requires commitment and sunk costs in the form of examinations and training, however their presence is likely to under estimate life time incomes for early cohorts and bias their analysis, which is why we put these graphs in the Appendix.

Figure H.1: Median lifetime income by cohort and gender



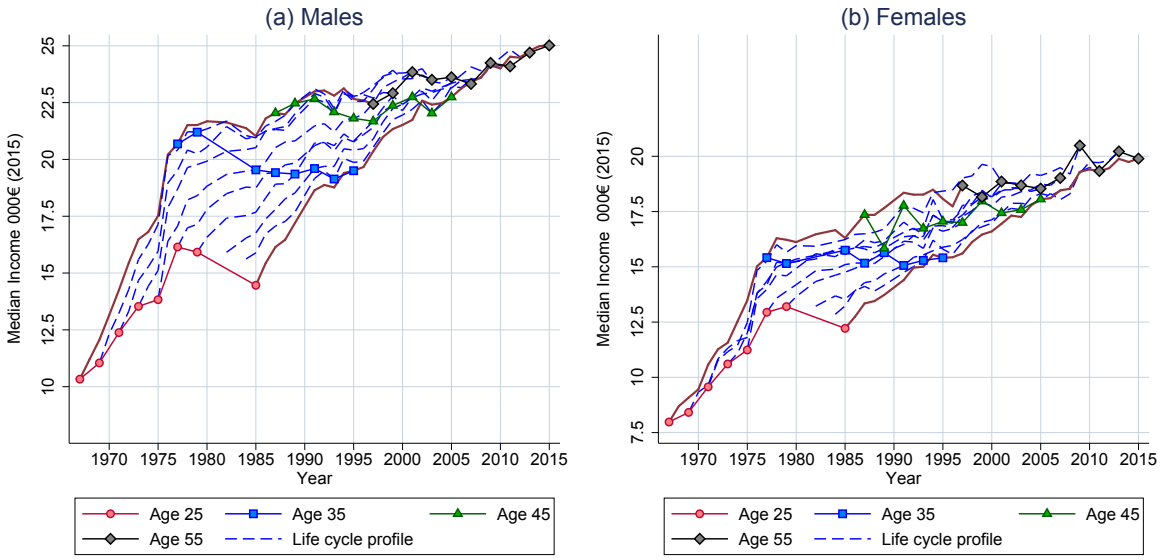
Notes: Each marker/observation represents the median lifetime earnings of a cohort that turned age 25 (entered the labor market) in the year indicated on the x-axis. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. Values are displayed in thousands of 2015 euros, and 2013 US dollars. The left-hand graph depicts our own computations, while the right-hand side one reproduces the results in Guvenen et al. (2021).

Table H.1: Percentage of Workers in the Public Sector that Switch to the Private Sector the Year After, Depending on Age and Years Spent in the Public Sector

Age	Percentage that Switch	Years in Public Sector	Percentage that Switch
27	0.080	1	0.138
28	0.054	2	0.122
29	0.044	3	0.061
30	0.043	4	0.050
31	0.043	5	0.034
32	0.042	6	0.020
33	0.033	7	0.018
34	0.026	8	0.013
35	0.032	9	0.018
36	0.032	10	0.011
37	0.036	11	0.009
38	0.028	12	0.013
39	0.031	13	0.008
40	0.029	14	0.009
41	0.021	15	0.014
42	0.025	16	0.006
43	0.025	17	0.010
44	0.049	18	0.014
45	0.027	19	0.007
46	0.024	20	0.020
47	0.029	21	0.004
48	0.021	22	0.014
49	0.015	23	0.009
50	0.013	24	0.000

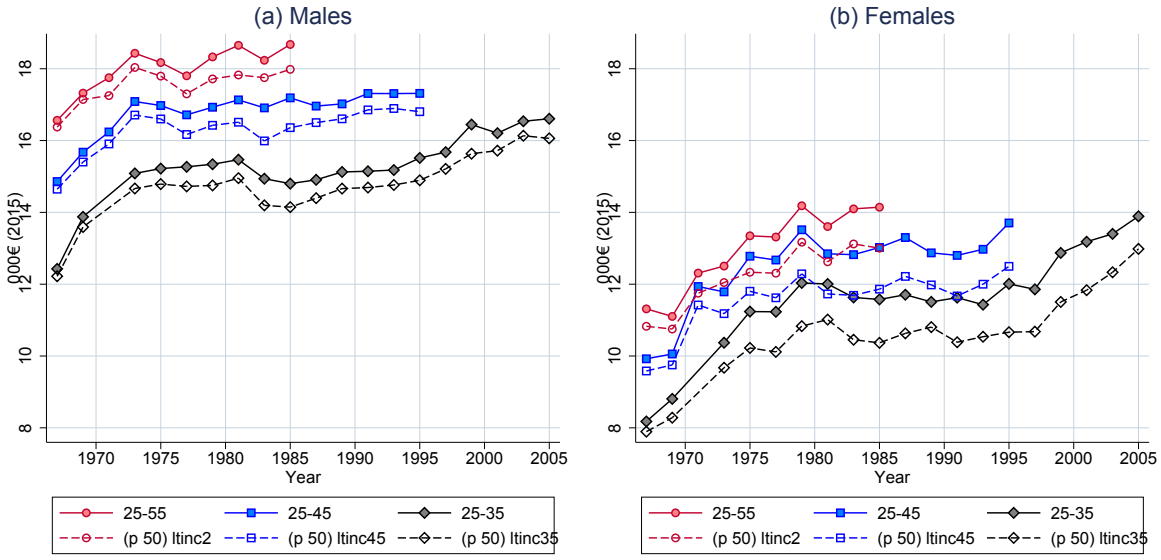
Notes: The table displays the proportion of individuals who do not work in the public sector in year $t+1$ while working in the public sector in year t. The left panel displays the statistic by age, while the right panel displays it by consecutive years spent in the public sector. The sample is the LT sample (see Section 2.2 for details) restricted to individuals born between 1964 and 1974.

Figure H.2: Age profiles of median income by cohort



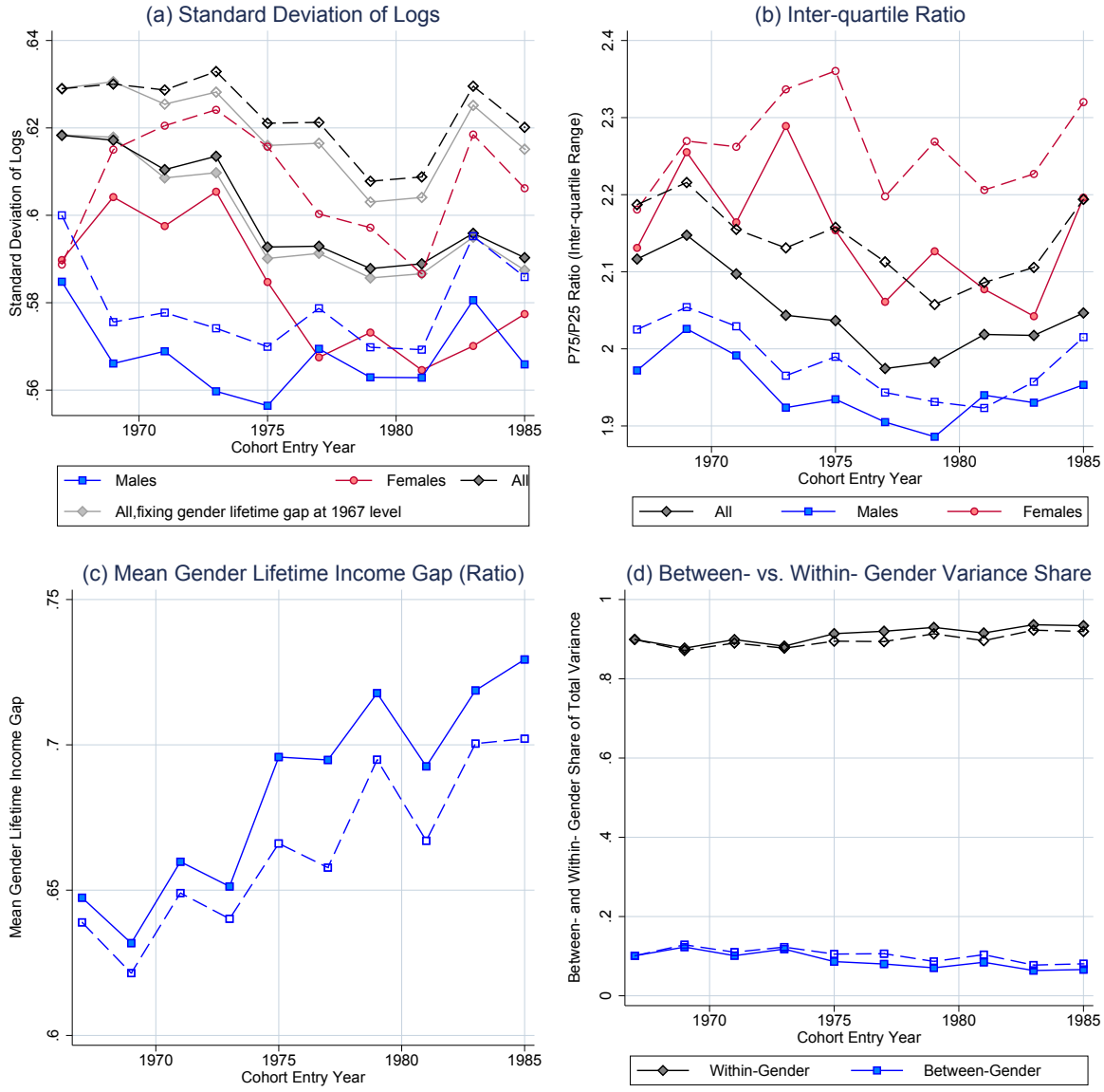
Notes: Each observation represents the median earnings of men or women of a particular age in a particular year. For example, the 1967 cohort is represented by an age 25 observation in 1967, an age 35 observation in 1977, an age 45 observation in 1987, and an age 55 observation in 1997. The dotted lines (solid for the first and last cohort) connect all age-year observations for each cohort. Panel (a) displays the age profiles of male cohorts, and Panel (b) displays the age profiles of female cohorts. All values are displayed in thousands of 2015 euros and deflated using the PCE.

Figure H.3: Median income by cohort, including younger cohorts



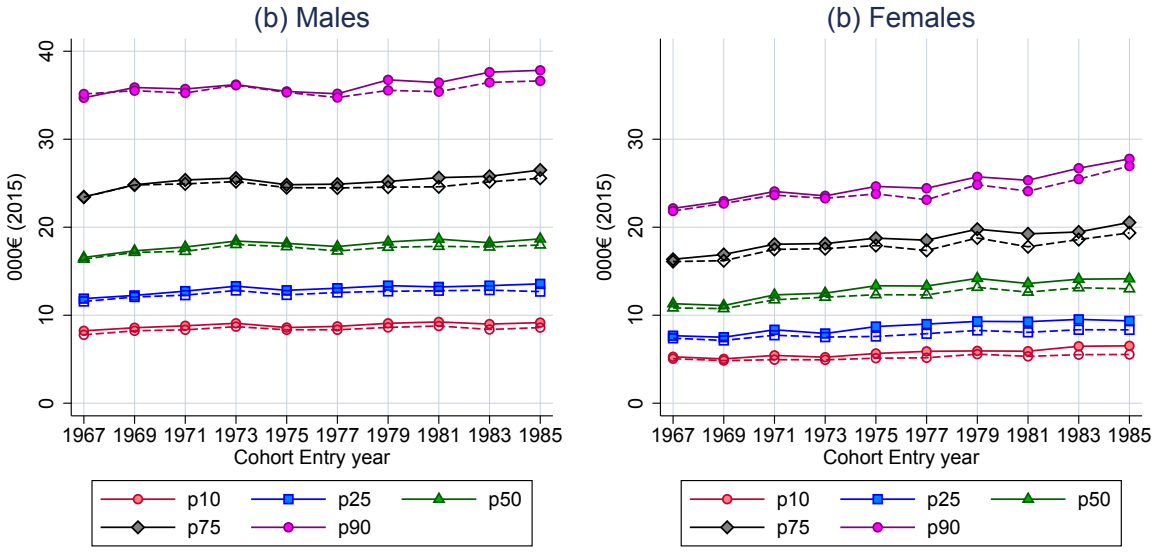
Notes: Each observation represents the median earnings of a cohort, measured over the first 11 years, first 21 years, or full 31 years of a cohort's working lifetime, for the year the cohort entered the labor market. Panel (a) displays the trends for male cohorts, and Panel (b) displays trends for female cohorts. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. We use the ELT sample. Values are displayed in thousands of 2015 euros and deflated using the PCE.

Figure H.4: Cohort Lifetime Inequality, Overall and by Gender



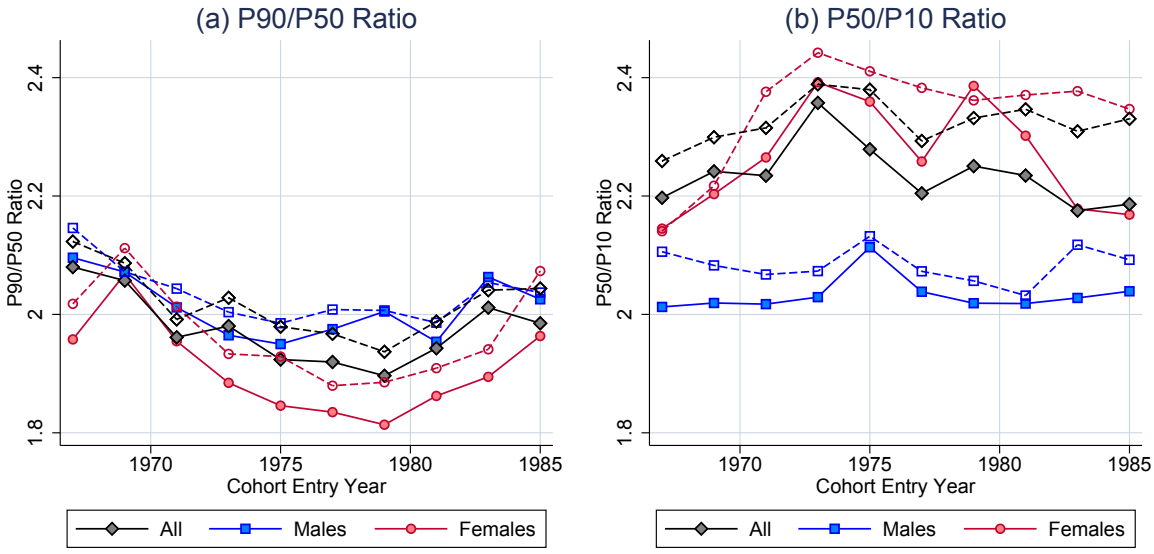
Note: This figure displays four measures of within-cohort inequality. Each observation represents the inequality in lifetime earnings among a cohort of workers that entered the labor market in a particular year. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. Panel (a) displays the standard deviation of the log lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. We additionally plot the trend in inequality in the total population holding the gender gap in lifetime earnings fixed at the level in 1967. Panel (b) displays the ratio of the 75th percentile to the 25th percentile of lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. Panel (c) displays the ratio of mean lifetime earnings of female cohorts to the mean lifetime earnings of the male cohort that entered the labor market in the same year. Panel (d) displays the result of decomposing the variance of within-cohort lifetime earnings into within-gender and between-gender components. Earnings are deflated using the PCE.

Figure H.5: Selected Percentiles of Lifetime Income, by Cohort and Gender



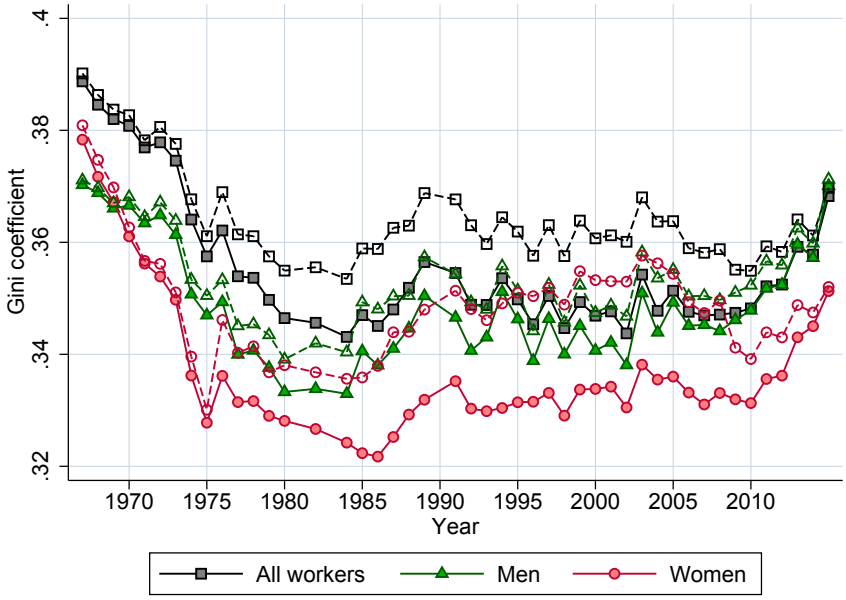
Notes: An observation represents a selected quantile of the lifetime earnings distribution of a cohort that entered the labor market in a given year. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. Panel (a) displays the distribution for men and panel (b) for women. Values are displayed in thousands of 2015 euros and deflated using the PCE.

Figure H.6: Selected Percentiles of Lifetime Income, by Cohort and Gender



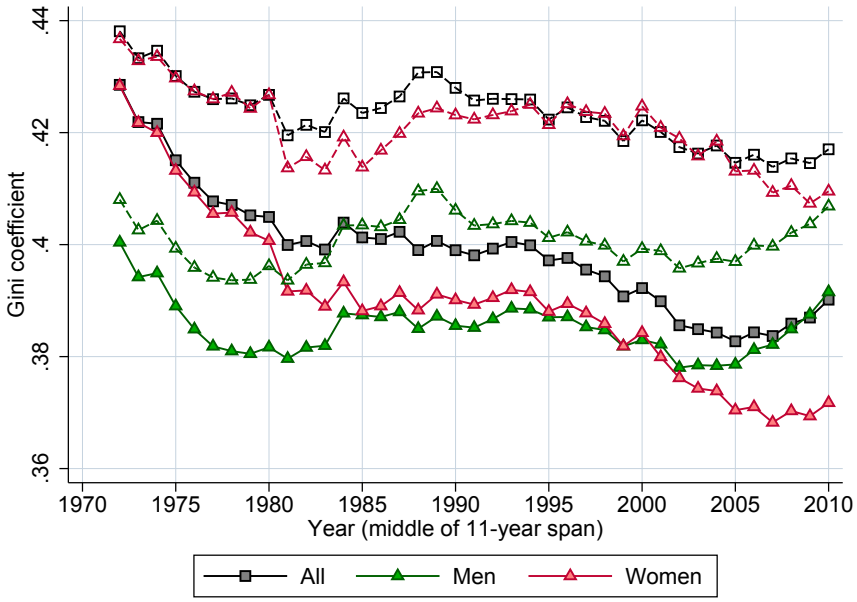
Note: This figure displays two measures of within-cohort inequality. Each observation represents the inequality in lifetime earnings among a cohort of workers that entered the labor market in a particular year. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. Panel (a) displays the ratio of the 90th percentile to the 50th percentile of lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. Panel (b) displays the ratio of the 50th percentile to the 10th percentile of lifetime earnings within each cohort, separated by male cohorts, female cohorts, and men and women combined. Earnings are deflated using the PCE.

Figure H.7: Cross-sectional Gini coefficients - Enlarged sample



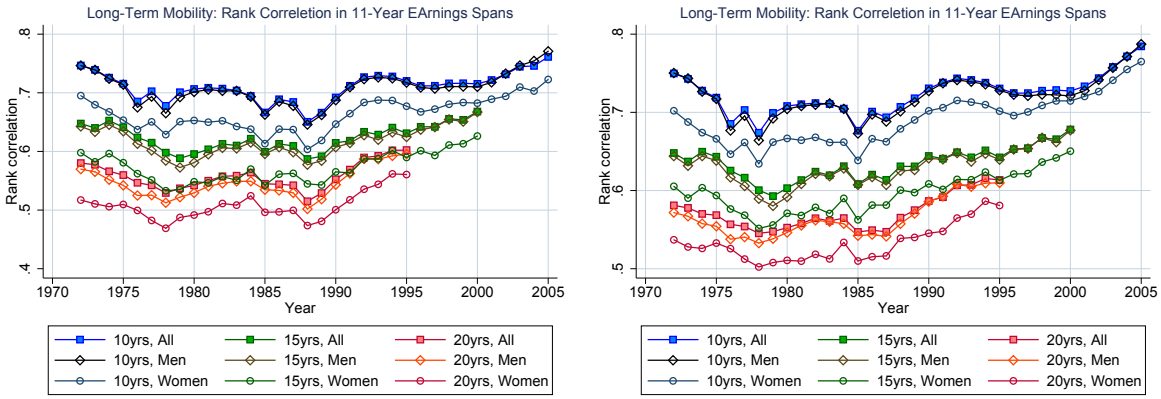
The figure displays the Gini coefficients from 1967 to 2015 for earnings of all individuals, men, and women. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector.

Figure H.8: Gini coefficients: Long-term Earnings



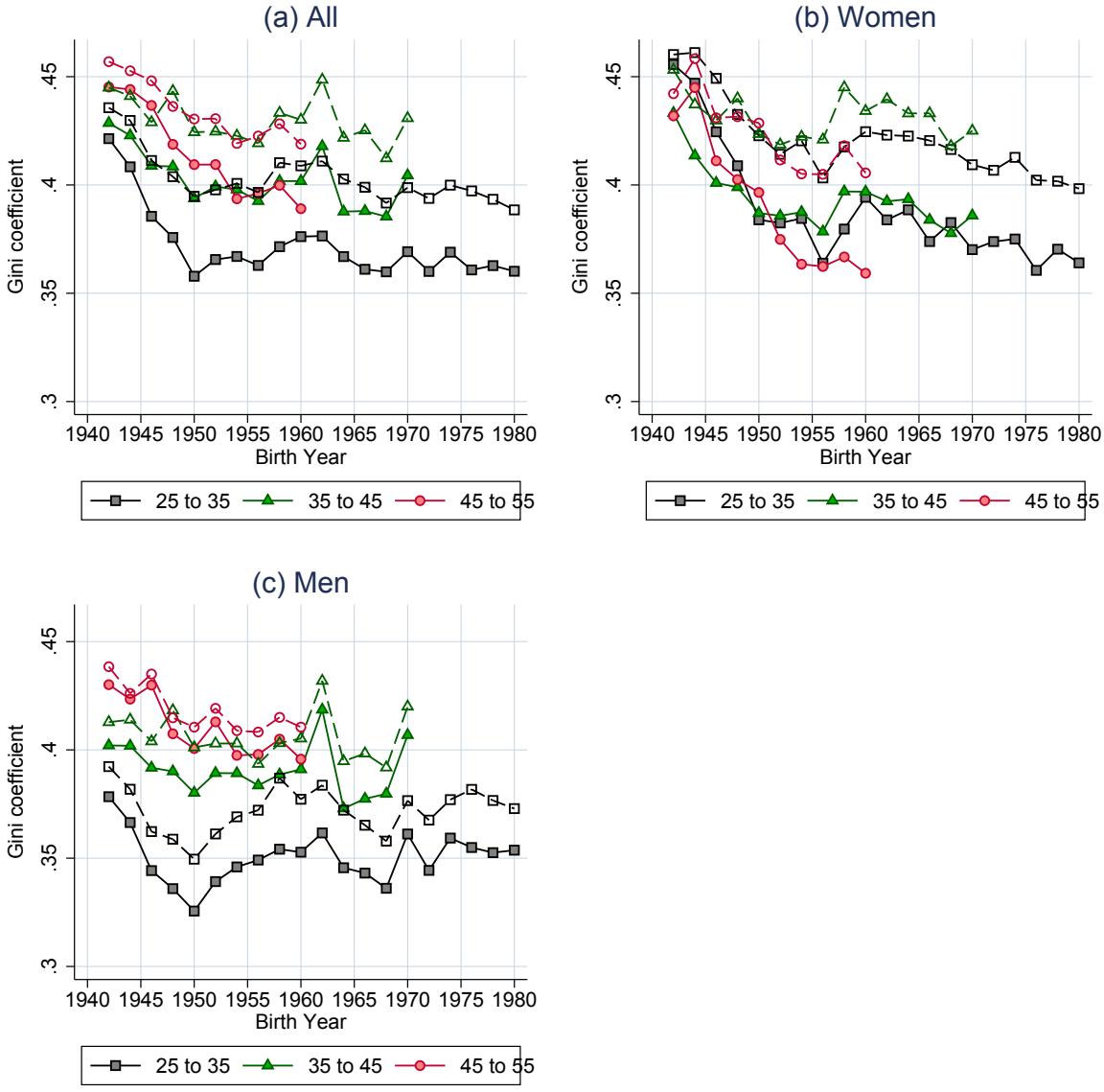
The figure displays the Gini coefficients from 1972 to 2010 for eleven-year average earnings for all workers, men only, and women only. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. Gini coefficient in year t is based on average (indexed) earnings across the eleven-year span from year $t-5$ to $t+5$.

Figure H.9: Long-term mobility: Rank-correlation



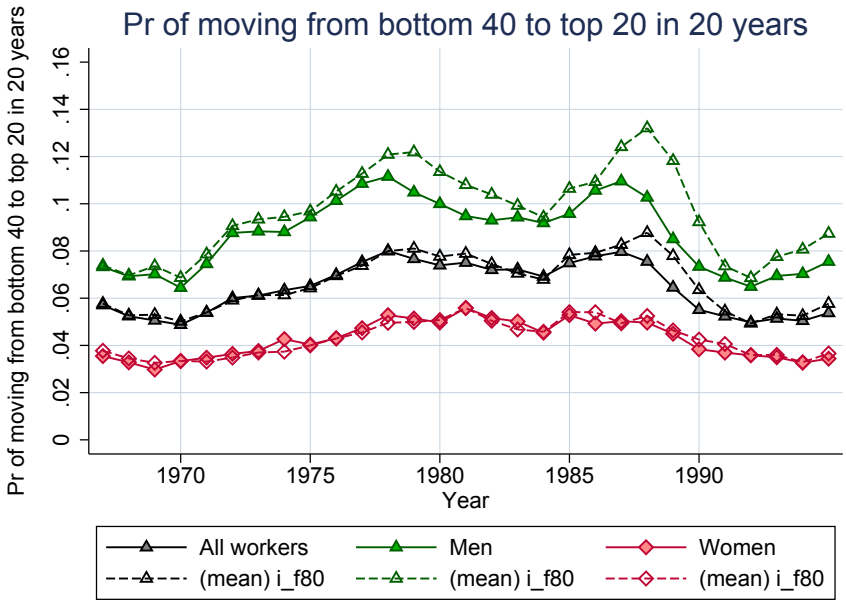
The figure displays in year t the rank correlation between eleven-year average earnings centered around year t and eleven-year average earnings centered around year t + X, where X = ten, fifteen, twenty. The sample is defined in Section 2.2. The series for men and women are constructed on separate samples including men and women only. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector.

Figure H.10: Long-term earnings Gini coefficient by birth cohort



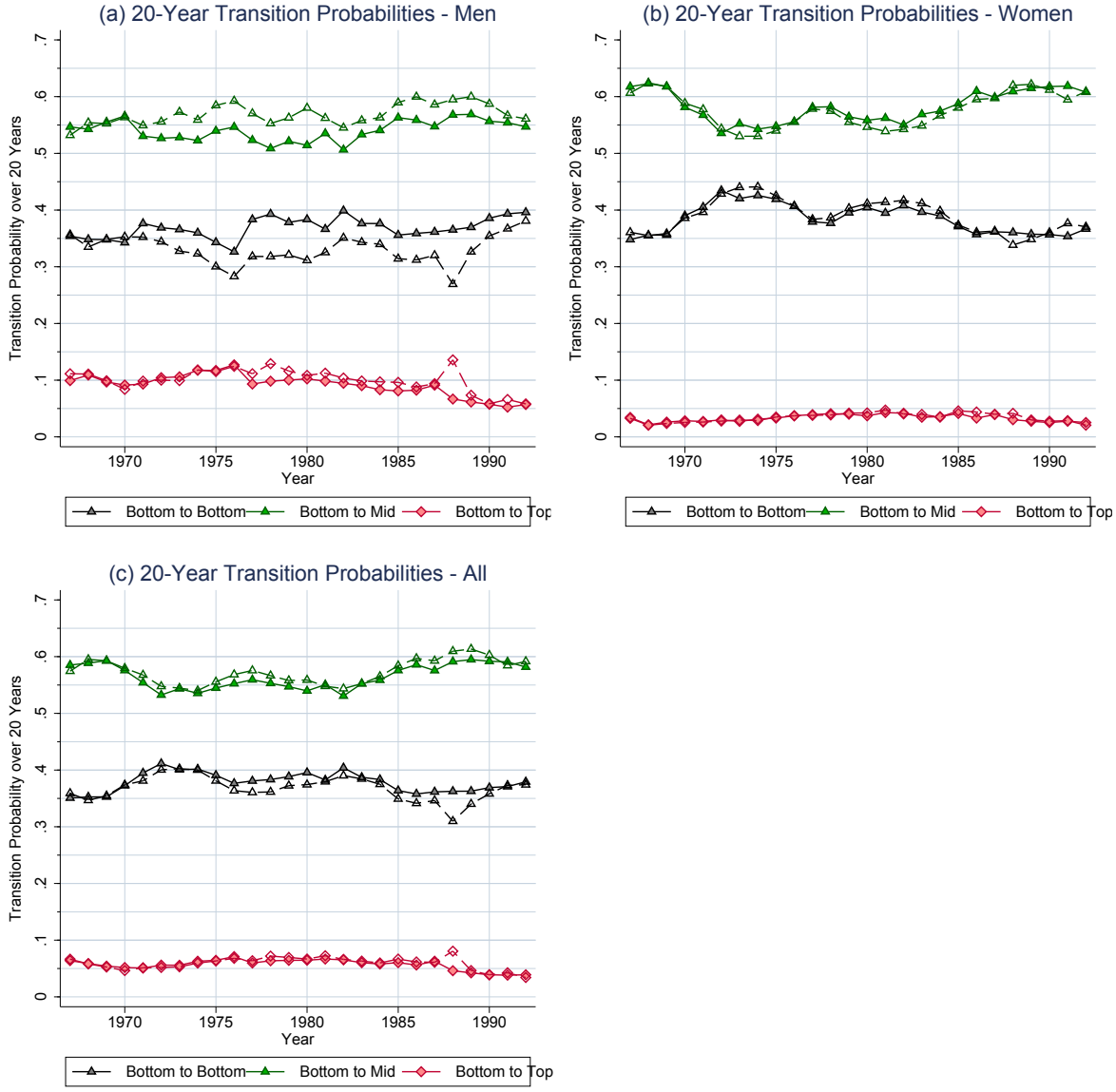
The figure displays the Gini coefficients from 1972 to 2010 for eleven-year average earnings for workers in three different age categories : 25 to 55, 25 to 45, and 25 to 35. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. Gini coefficient in year t is based on average (indexed) earnings across the eleven-year span from year $t-5$ to $t+5$.

Figure H.11: Upwards mobility: Bottom 40 to top 20



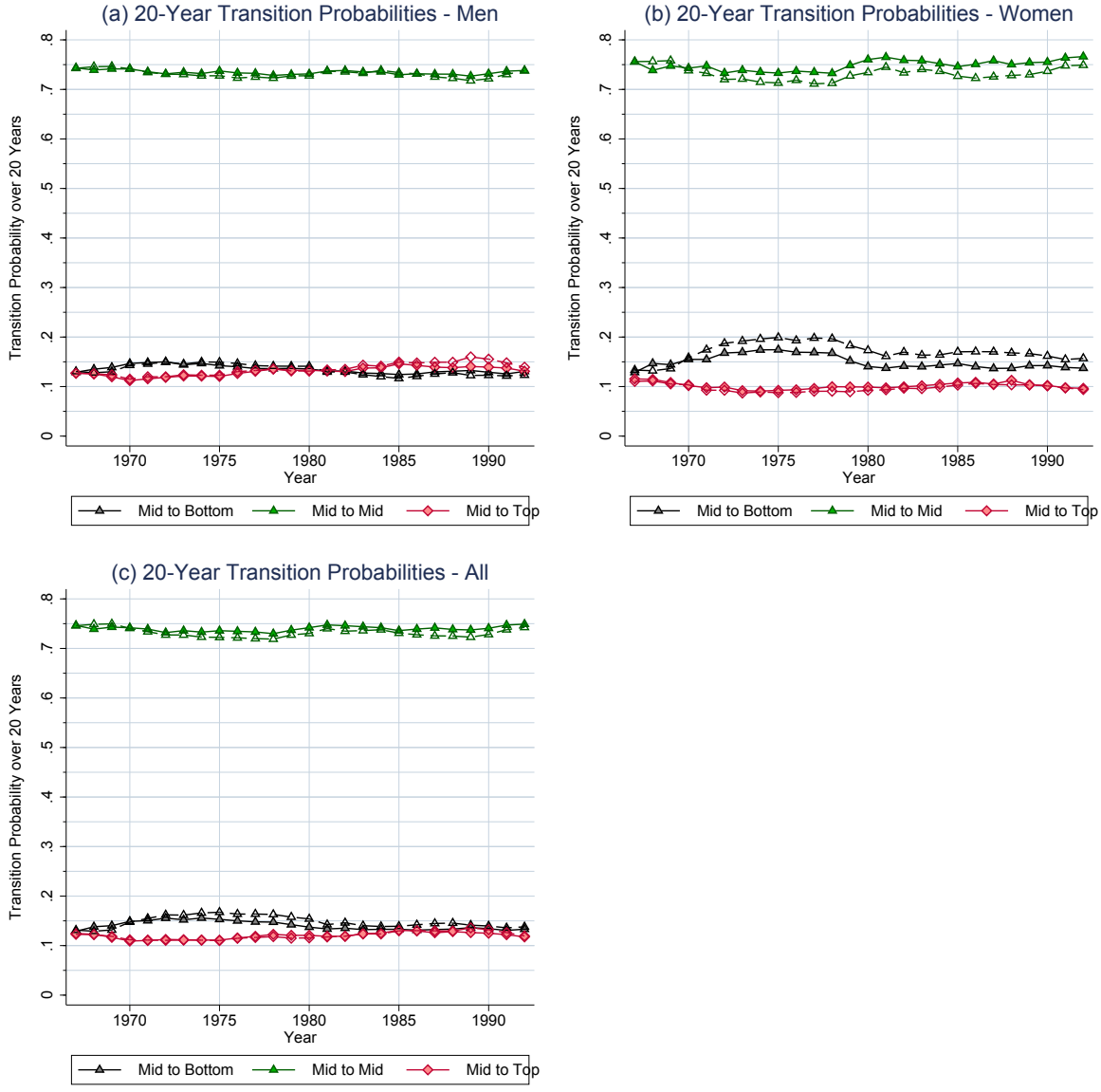
The figure displays in year t the probability of moving to the top quintile group (P80–100) for eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom two quintile groups (P0 to P40). In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. The series are reported for all workers, men only, and women only. In all three cases, quintile groups are defined based on the sample of all workers.

Figure H.12: Mobility for those starting at the bottom of the distribution



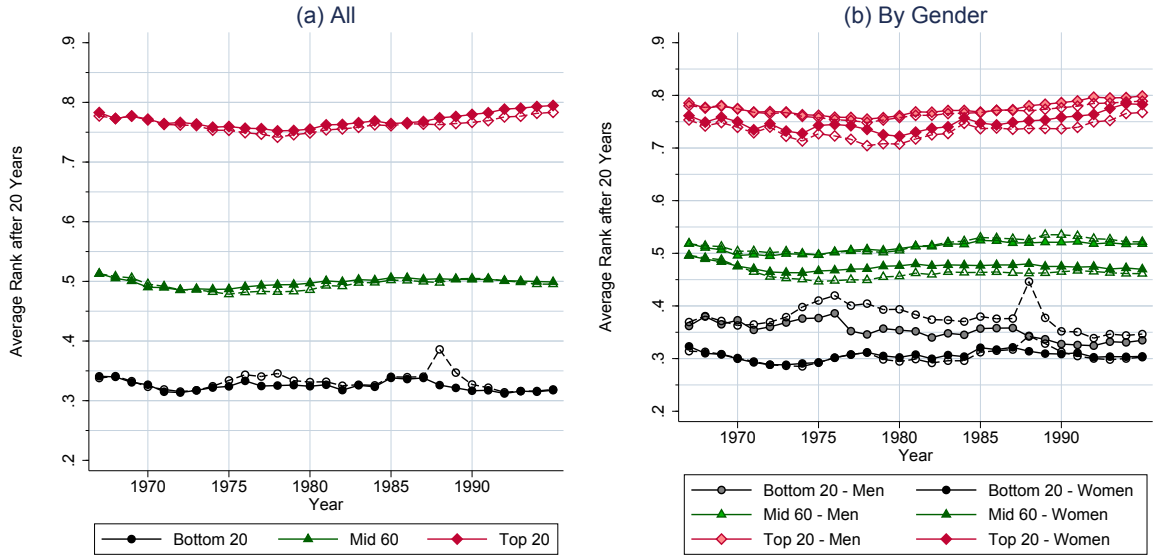
The figure displays in year t the probability of moving to the bottom quintile (P0 to P20), mid quintiles (P20 to P80), and top quintile (P80 to P100) for eleven-year average earnings centered around year $t+20$ conditional on having eleven-year average earnings centered around year t in the bottom quintile group (P0 to P20). In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. The series are reported for all workers, men only, and women only. In all three cases, quintile groups are defined based on the sample of all workers.

Figure H.13: Mobility for those starting in the middle of the distribution



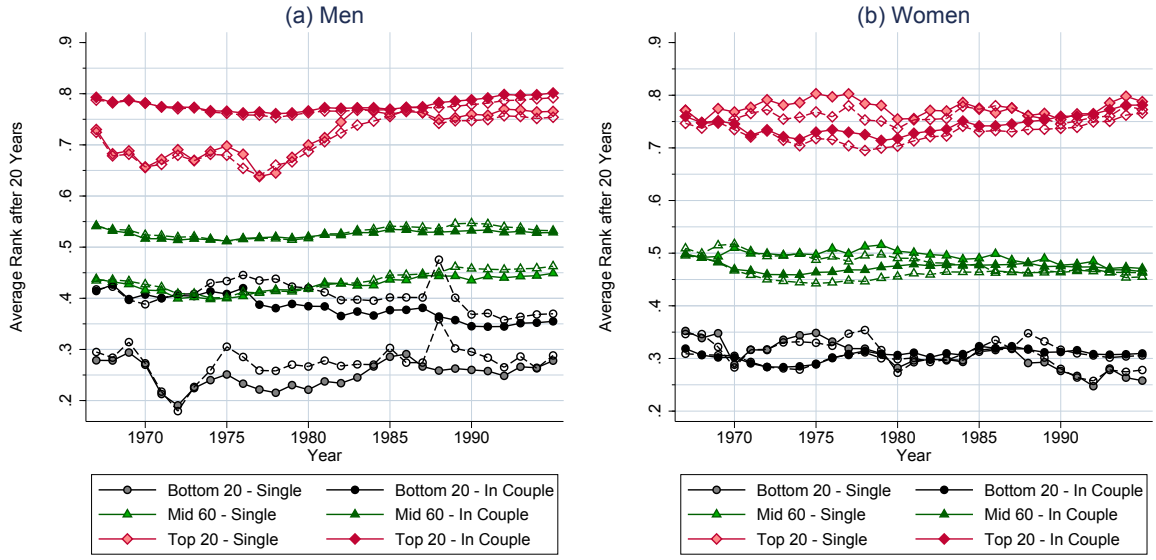
The figure displays in year t the probability of moving to the bottom quintile (P0 to P20), mid quintiles (P20 to P80), and top quintile (P80 to P100) for eleven-year average earnings centered around year $t+20$ conditional on having eleven-year average earnings centered around year t in the mid quintiles group (P20 to P80). In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. The series are reported for all workers, men only, and women only. In all three cases, quintile groups are defined based on the sample of all workers.

Figure H.14: Average Rank after 20 Years by Gender



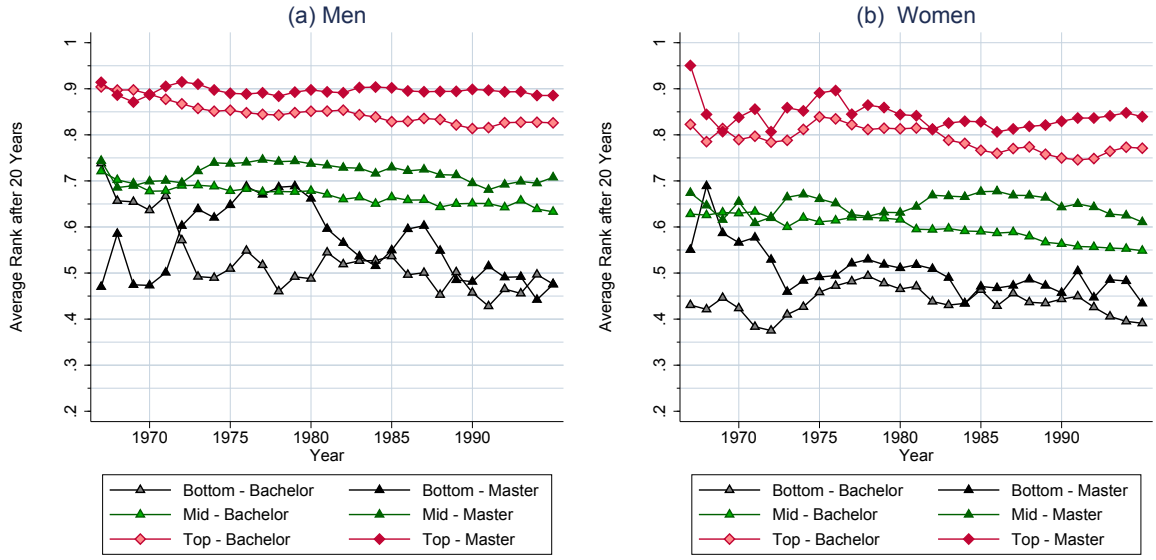
The figure displays in year t the average rank of eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom (P0 to P20), mid (P20 to P80), and top (P80 to P1000 quintile groups. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. The series are reported for all workers, men only, and women only. In all three cases, quintile groups are defined based on the sample of all workers.

Figure H.15: Average Rank after 20 Years by Household type



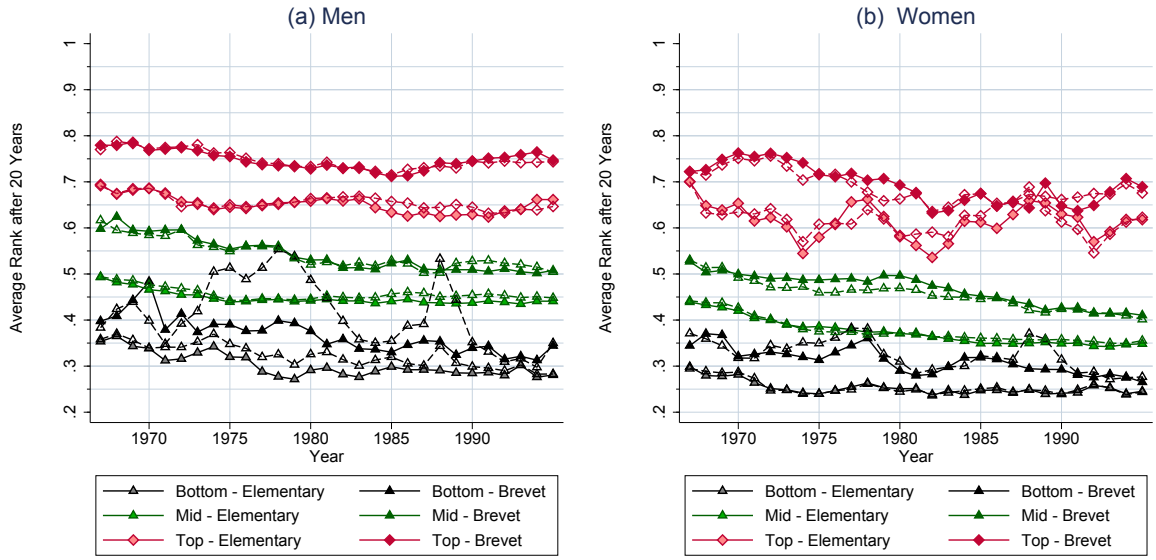
The figure displays in year t the average rank of eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom (P0 to P20), mid (P20 to P80), and top (P80 to P1000 quintile groups based on gender and household status of individuals. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. Single individuals are those that have never been married throughout their lives, and that have responded being single in all the successive waves of censuses. Individuals in couple are those that have not been categorized as being single. In all cases, quintile groups are defined based on the sample of all workers.

Figure H.16: Average Rank after 20 Years by Education: Top Diplomas



The figure displays in year t the average rank of eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom (P0 to P20), mid (P20 to P80), and top (P80 to P1000 quintile groups based on gender and the diploma of individuals. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. In all cases, quintile groups are defined based on the sample of all workers.

Figure H.17: Average Rank after 20 Years by Education: Low Diplomas



The figure displays in year t the average rank of eleven-year average earnings centered around year $t + 20$ conditional on having eleven-year average earnings centered around year t in the bottom (P0 to P20), mid (P20 to P80), and top (P80 to P1000 quintile groups based on gender and the diploma of individuals. In light and dotted lines are the series of the main text, which include individuals that have been in the public sector. Individuals in the "Brevet" group are those that have obtained the French *Brevet* diploma that corresponds to completion of Junior High School. In all cases, quintile groups are defined based on the sample of all workers.