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Becker Friedman Institute
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5757 S. University Ave.
Chicago, IL 60637
Main: 773.702.5599
bfi.uchicago.edu

Lifetime Earnings in the United States over Six Decades*

Fatih Guvenen[†] Greg Kaplan[‡] Jae Song[§] Justin Weidner[¶]

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Abstract

Using panel data on individual earnings histories from 1957 to 2013, we document empirical facts about the distribution of lifetime earnings in the United States. First, from the cohort that entered the labor market in 1957 to the cohort that entered in 1983, median lifetime earnings of men declined by 10%–19%. Moreover, there was little-to-no rise in the lower three-quarters of the male lifetime earnings distribution during this period. Accounting for rising employer-provided health and pension benefits partly mitigates these findings but does not alter the substantive conclusions. For women, median lifetime earnings increased by 22%–33% from the 1957 to the 1983 cohort, but these gains were relative to the very low median lifetime earnings for the early cohorts. Much of the difference between newer and older cohorts comes from differences in median earnings at the time of labor market entry. Second, inequality in lifetime earnings has increased significantly within each gender group, but the closing lifetime gender gap has kept overall lifetime inequality virtually flat over the entire period. The increase among men is largely attributable to subsequent cohorts entering the labor market with progressively higher levels of inequality, and not so much to faster inequality growth over the life cycle for newer cohorts. Partial life-cycle earnings data for younger cohorts indicate that both the stagnation of median lifetime earnings and the rise in lifetime inequality are likely to continue.

JEL Codes: E24, J24, J31.
Keywords: Lifetime income, earnings, lifetime inequality, wage stagnation, gender earnings gap.

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[†]University of Minnesota, Federal Reserve Bank of Minneapolis, and NBER; `guvenen@umn.edu`

[‡]University of Chicago and NBER; `gkaplan@uchicago.edu`

[§]Social Security Administration; `jae.song@ssa.gov`

[¶]Deutsche Bank; `jsweidner@gmail.com`

1 Introduction

Since the 1970s, two main trends have characterized the U.S. labor market: (i) stagnating average earnings and (ii) rising earnings inequality. These twin trends, which have shown remarkable resilience, have spurred both active academic research into their primary causes and heated public debate over the appropriate policy responses. Yet, despite this intense attention, the vast body of available empirical evidence pertains almost entirely to point-in-time measures of earnings, with little evidence on trends in lifetime earnings.[1] This dearth of evidence is not because of an oversight on the part of researchers. Going back at least to the 19th century (Farr (1853)), researchers have been well aware that for many questions in the social sciences, lifetime earnings is the most relevant concept because it provides a more complete picture of an individual's lifetime resources. Lifetime earnings accounts for the transitory nature of point-in-time (often annual) earnings and long-run economic mobility, as well as the extensive margin of participation in the labor market. For many questions, the difference between lifetime and point-in-time measures can matter greatly.[2]

Rather, the lack of a systematic analysis of the distribution of lifetime earnings in the United States is due to the scarcity of micro data sets with sufficiently long individual earnings histories. Thus, to shed light on this topic, this paper begins by constructing measures of lifetime earnings for millions of individuals, using a 57-year-long panel (covering the period 1957–2013) of individual earnings histories from U.S. Social Security Administration (SSA) records. Our baseline lifetime earnings measure is based on 31 potential working years between ages 25 and 55, which allows us to construct lifetime earnings statistics for 27 year-of-birth cohorts. The oldest cohort turned age 25 in 1957, and the youngest one turned age 55 in 2013, the last year of our sample. Throughout this paper, we refer to cohorts by the year in which they turned 25.[3] To our knowledge, this paper provides the first analysis of lifetime earnings distributions for a large number of cohorts in the United States.

[1] We discuss exceptions in the literature review below. Because of the nature of our data set (discussed in Section 2), in this paper we exclusively focus on labor (wage/salary) earnings. We use "earnings" and "earnings" interchangeably throughout the paper. See Lemieux (2008) and Acemoglu and Autor (2011) for thorough surveys of trends in inequality in annual earnings.

[2] For example, a 30-year-old medical intern who earns $40,000 is close to the median worker in that year but will likely end up in the top 5% of the lifetime earnings distribution. Similarly, a 22-year-old rookie NFL player who makes $400,000 will be in the top 1% of the earnings distribution that year but may easily be out of the top 10% of the lifetime earnings distribution.

[3] As we explain in Section 2, we exclude individuals who participated in the labor market for less than 16years so as to focus on individuals with a relatively strong lifetime labor market attachment. An individual is considered a nonparticipant if s/he has negligible labor earnings in that year, as defined in Section 2.

Our main contribution is to document counterparts to the twin trends, but using lifetime earnings rather than annual earnings. Specifically, we ask three related sets of questions. First, in Section 3, we ask how the lifetime earnings of the median worker has changed from the first cohort (hereafter, the 1957 cohort) to the last one (hereafter, the 1983 cohort) and, given the remarkable changes in women's roles in the labor market over this period, whether these trends differ by gender. We find that the lifetime earnings of the median male worker declined by 10% to 19% (depending on the price deflator we use), from the 1967 cohort to the 1983 cohort. Perhaps more strikingly, more than three-quarters of the distribution of men experienced no rise in their lifetime earnings across these cohorts—the only rise took place from the 1957 cohort to the 1966 cohort.

In contrast, subsequent cohorts of female workers have seen robust and steady gains, on the order of 22% to 33% for the median female worker. However, because these gains started from a very low level of median lifetime earnings for the 1957 cohort, they were not large enough at the aggregate level to offset the losses by men. An important related trend during this period was the rise of non-wage benefits, dominated by employer-provided health insurance and retirement benefits. Our data set does not contain individual-level information on non-wage benefits, but we use the national income and product accounts (NIPAs) to obtain an upper bound on the growth of such benefits. Incorporating the growth in these benefits mitigates but does not overturn these findings.

To appreciate the magnitude of these trends, some dollar figures can be useful. When nominal earnings are deflated by the personal consumption expenditure (PCE) deflator, the annualized value of median lifetime wage/salary earnings for male workers declined by $4,400 per year from the 1967 cohort to the 1983 cohort, or $136,400 over the 31-year working period. Adding in an upper bound estimate of growth in non-wage benefits reduces this loss to $3,100 per year, or to $96,100 over the working life. Using the consumer price index (CPI) to deflate nominal earnings reveals an even bleaker picture: a loss of $9,150 per year, or $7,850 when estimated non-wage benefits are included. The corresponding total lifetime loss is $283,650 for wage/salary earnings and $243,350 when estimated benefits are included.

Second, in Section 4, we ask how the shape of life-cycle earnings profiles changed across cohorts. The answer to this question helps to identify which phase of the life cycle is most responsible for the decline in lifetime earnings. For men, the largest difference is in the early working years: each subsequent cohort after 1967 faced a lower median initial earnings (i.e., at age 25) relative to previous cohorts, but did not experience faster earnings growth over their life cycle to make up for the lower earnings early on. For example, median initial earnings fell from $33,300 for the 1967 cohort to $29,000 for the 1983 cohort (PCE adjusted). The analogous figures at age 55 were $55,900 for the former cohort and $54,100 for the latter, a decline of $1,800, showing no sign of catch-up over the life cycle.[4]

Looking ahead to more recent cohort who are currently in the labor market does not reveal a more optimistic picture: median initial earnings for men was only $24,400 in 2011, virtually the same level as in 1957. An analysis of recent cohorts with at least 10 years of data suggests that median lifetime earnings for men is likely to continue to stagnate. In these recent cohorts, median initial earnings for women tracks the median for men more closely, but women have experienced somewhat faster earnings growth in the early years of the life cycle, partly compensating for the fall in initial earnings.

Third, in Section 5, we examine inequality in lifetime earnings. We ask whether lifetime inequality has also increased alongside the well-documented increase in cross-sectional inequality. For the pooled sample of men and women, we find only a small rise in lifetime inequality, and measures of inequality that are not dominated by the top percentiles reveal little-to-no rise in lifetime inequality across these cohorts. For example, both the interquartile range and the 50-10 ratio (i.e. the ratio between the 50th and 10th percentiles of the lifetime earnings distribution) of lifetime earnings shrunk over this period. This finding might seem surprising in light of substantial increases both in cross-sectional earnings inequality and in lifetime earnings inequality within each gender group. The missing piece is the lifetime gender gap, which has shrunk throughout this period and did so more strongly than its well-documented annual counterpart. This has kept overall inequality virtually flat despite the relatively large rise in lifetime inequality within each gender group.

Related Literature

One of the earliest attempts to construct a measure of lifetime earnings was made by statistician and epidemiologist William Farr (1853).[5] The impetus for Farr's work—a report commissioned by the British Parliament—was the belief that an equitable tax system can

[4] Although a full analysis of the root causes of these trends is beyond the scope of this paper, we conducted a state-level panel regression analysis to provide a broad sense of potential drivers. Our results indicate that the decline in median lifetime earnings is closely linked to size of the entry cohort, which is consistent with imperfect substitution in production between workers of different ages as proposed by Card and Lemieux (2001) to explain the behavior of the college premium since the 1970s. Here, we find that the resulting downward pressure on earnings are persistent enough to depress the *lifetime* earnings for the median worker in larger cohorts. Further details are discussed in Appendix A.

[5] Since Farr (1853), a long list of studies attempted to obtain better estimates of lifetime earnings. Among these, Walsh (1935), Houthakker (1959) and Miller (1960), focused on computing the lifetime

only be built with the knowledge of the lifetime resources of individuals. This perspective is just as relevant today. Similarly, many major lifecycle decisions—such as investment in education/human capital, occupational choice, and fertility—require knowledge (or expectations) of lifetime resources. Lifetime earnings plays a central role in human capital theory (e.g., Mincer (1958) and Becker (1962)), which spawned a sizable empirical literature that attempted to obtain empirical measures of it. Estimates of lifetime earnings are also key inputs in other fields, for calculating compensation in personal injury lawsuits, for estimating indirect costs of wars and disasters, and for assessing the progressivity or regressivity of cigarette and alcohol taxes, among others.

The vast majority of empirical studies before the 1970s had access only to cross-sectional data by socio-economic groups. Survey-based panel data sets started to become available in the 1970s, which has allowed researchers to incorporate earnings dynamics when estimating lifetime earnings. However, the short time spans and the small sample sizes of most survey data sets made it infeasible to compute the distribution of lifetime earnings using only actual earnings histories.

To overcome these challenges, one literature estimates parametric econometric models for earnings dynamics from panel data, which can then be simulated to obtain the distribution of lifetime earnings. For example, Bowlus and Robin (2004) fit a search model to the moments of 1-year changes in wages and employment status using the matched Current Population Survey (CPS), which they then simulate to obtain the distribution of lifetime earnings. Dearden et al. (2008) use similar approach to study higher education reform in England. A number of papers use this approach to obtain estimates of lifetime earnings for studying questions related to the US Social Security pension system. Among these, Brown et al. (2009) and Coronado et al. (2011) use the Panel Study of Earnings Dynamics (PSID) data in combination with simulation models, whereas Gustman and Steinmeier (2001) and Liebman (2002) use the Health and Retirement Survey (HRS) and the Survey of Earnings and Program Participation (SIPP)) that are matched with (capped) Social Security earnings records.

Our paper differs from this literature in three main ways. First, the long time span of SSA data allows us to use 31-year-long actual earnings histories for each individual to compute lifetime earnings and document empirical patterns with minimal assumptions. The parametric econometric models necessitated by short survey panels often miss important

benefits of education, whereas Clark (1937), Friedman and Kuznets (1954), Wilkinson (1966), and others, computed the average lifetime earnings of various socioeconomic or occupational groups.

nonlinearities in individual earnings dynamics.[6] Furthermore, these models are typically estimated by targeting moments of short-run dynamics, whereas long-run dynamics and mobility of earnings matter greatly for the distribution of lifetime earnings. In this paper, we are able to avoid these challenges. Second, with a few exceptions, earlier papers mostly focused on lifetime inequality at point in time, a focus dictated partly by the short time span of available data and partly by the questions those papers were interested in. In contrast, our main focus is on documenting trends in lifetime incomes. A notable exception is Bowlus and Robin (2004) who study the rise in U.S. lifetime inequality from 1977 to 1997 by simulating econometric models fitted to moments of 1-year changes from the matched CPS.[7] Third, earlier papers focused mainly on inequality in lifetime earnings, while ignoring trends in median lifetime earnings, which is a main focus of this paper.

A vast parallel literature studies differences between short- and long-run earnings mobility, which are closely to the related to the extent to which lifetime inequality deviates from annual earnings inequality. Among the recent and most closely related papers, Kopczuk et al. (2010) use the same data extract from the SSA that we use in this paper but over a different and longer period, from 1937 to 2004. They document how the patterns in long-run earnings mobility changed over this period. Because of their different focus, they restrict attention to earnings measures that are computed for 11-year periods over the life cycle. Furthermore, although mobility patterns certainly contain information about annual vs lifetime earnings, the link is not straightforward, and one cannot infer the statistics on one from the other except in special cases. In that sense, the contributions of the two papers on the distribution of lifetime earnings complement each other. Another important difference is the analysis of trends in median lifetime earnings, which is not studied in that paper.[8]

Finally, a few recent papers use administrative panel data to study lifetime inequality in Europe. Aaberge and Mogstad (2015) compare lifetime inequality and cross-sectional inequality in Norway using population data on earnings histories over individuals' working life. They do not examine trends over time. Bönke et al. (2015) study changes in lifetime inequality in Germany over 15 cohorts using career-long earnings histories.

[6]See Guvenen et al. (2015) and Arellano et al. (2017) for empirical evidence on these nonlinearities.

[7]Another interesting paper is by Bonhomme and Robin (2009) who study changes in lifetime inequality in France from 1990 to 2012 by modeling earnings dynamics with copulas fitted to earnings from 3-year panels.

[8]Some other papers used short averages of earnings (over 5 to 10 years) as a proxy for lifetime earnings, see, e.g., Aaronson (2002) and Leonesio and Del Bene (2011). These papers also focus on inequality and do not analyze the trends in median lifetime earnings.

2 Data

2.1 Data Sources

Our data come from the Continuous Work History Subsample (CWHS), which is a research extract from the U.S. Social Security Administration's (SSA) Master Earnings File (MEF). The CWHS is a 1% representative sample of U.S. workers whose jobs were covered by the Social Security system. The primary advantage of the CWHS is the long span of time covered, starting in 1957. For the 1957–2004 period, we use the sample constructed and cleaned by Kopczuk et al. (2010); further details can be found in that paper. We extend their sample to the years 2004–2013 by using the underlying data from the MEF for those years. Our final data set covers 57 years from 1957 to 2013, which allows us to compare lifetime earnings (31 years) for 27 birth cohorts.

During this period, the SSA has increased the set of industries that it covers, which poses a challenge for defining a sample whose representativeness is stable over time. We thus follow Kopczuk et al. (2010) by restricting our attention to workers employed in "commerce and industry," a group of sectors that was continuously covered by the SSA during this period.[9] Workers in commerce and industry accounted for approximately 70% of private sector employment in 2004. We have compared annual earnings in the Current Population Survey (CPS) for workers in all sectors with workers in commerce and industry. Figure D.5 in Appendix D shows that the level and time trends of median annual earnings at different ages are virtually identical for the two groups of workers. (In Appendix D.1, we provide a detailed comparison of our data set with the CPS). Further details on the CWHS can be found in Panis et al. (2000), and further details on its coverage can be found in Kopczuk et al. (2010).

The measure of labor earnings recorded in the CWHS is wage and salary earnings.[10] From 1957 to 1977, labor earnings data are from quarterly reports of wage and salary earnings supplied by employers to the SSA. From 1978 onward, labor earnings data come directly from individual W-2 forms (Box 1) and include wages and salaries, bonuses, and exercised stock options.[11] To avoid possible privacy issues, we do not report any statistics

[9]Following Kopczuk et al. (2010), we define "commerce and industry" workers to include all SIC codes, except for agriculture, forestry and fishing (01–09), hospitals (8060–8069), educational services (82), social service (83), religious organizations and non-classified membership organizations (8660–8699), private households (88), and public administration (91–97).

[10]From 1978, the CWHS also includes data on self-employment earnings from Schedule SE. We do not include it in our measure of earnings, since it is not available in earlier years and is top-coded until 1994.

[11]Quarterly compensation reports were subject to top-coding at the taxable ceiling for Social Security

for demographic cells (for example, a gender-year-earnings group) that contain fewer than 30 individuals. Because of the large size of the CWHS, such cells are rarely encountered. In addition to earnings, the CWHS contains information on date of birth and gender.

2.2 Adjusting for Inflation

In order to convert nominal earnings in the CWHS into real values, we need to choose an appropriate price index. Since our data span nearly six decades, this choice of price index matters. The two most commonly used price indexes are (i) the personal consumption expenditure (PCE) deflator from the Bureau of Economic Analysis (BEA) and (ii) the consumer price index (CPI) from the Bureau of Labor Statistics's (BLS). The (older) CPI and the (newer) PCE differ in several ways that are by now well understood.[12]

The PCE is generally accepted to be the superior index for measuring the *overall* price level and its evolution over the business cycle. It is thus the standard choice in aggregate (macro) economic analyses. However, for more micro work, such as the analyses in this paper, the CPI has some advantages. In particular, the CPI aims to capture the price level faced by the typical household for its *out-of-pocket* expenses and is thus based on a detailed survey of U.S. household expenditures, whereas the PCE is based on business surveys and also includes purchases made by others on behalf of households. Consequently, relative to the PCE, the CPI places a lower weight on health care prices (since a large fraction of total expenditures is paid by Medicare/Medicaid and insurance companies) and a much higher weight on housing and transportation. Because of this close connection to household living expenses, many government transfer programs (including the SSA pension and disability benefits systems) use the CPI to adjust for inflation. Existing academic studies of heterogeneity and inequality have used both series.[13]

In our empirical analysis, we choose the PCE as our baseline measure for deflating nominal earnings because it implies a lower cumulative inflation over this period than the CPI. We report all values in 2013 dollars. As we shall see in the next section, one of our main findings is a large slowdown in the growth rate of lifetime earnings, and this point is

contributions. Annual earnings above the taxable ceiling is imputed based on the pattern of quarterly earnings reports. For a detailed description of this imputation procedure, see Kopczuk et al. (2010). W-2 forms, which are the source of earnings data from 1978 onward, are not top-coded.

[12]For a comparison between the two indexes, see, for example, US Bureau of Labor Statistics (2011), McCully et al. (2012) and Furth (2017).

[13]For example, Card and Lemieux (2001); Lemieux (2006); Kopczuk et al. (2010); Aguiar and Hurst (2013); Aguiar and Bils (2015); Saez (2016) use the CPI, whereas Katz and Murphy (1992a); Autor et al. (2008) use the PCE.

made more forcefully with the conservative choice of the PCE. That said, we also report some key statistics using the CPI-adjusted figures, which, together with the PCE-adjusted figures, provides useful bounds on the effects of inflation adjustments for our findings.[14]

2.3 Baseline Sample

From the CWHS, we select a baseline sample of individuals based on their age and a measure of lifetime attachment to the workforce. An individual is included in the baseline sample if he or she: (i) was alive from ages 25 to 55 during the panel period (1957–2013); (ii) had earnings that is larger than a year-specific threshold-level earnings, denoted by $\underline{Y}_t$, in at least 15 years between the ages of 25 and 55; and (iii) had total lifetime earnings of at least $31 \times \underline{Y}$ where $\underline{Y}$ is the average level of $\underline{Y}_t$ for their cohort. The threshold, $\underline{Y}_t$, is the earnings level that corresponds to working at least 520 hours at one-half of the legal minimum wage for that year. For 2013, this threshold was $1,885. Imposing an annual minimum earnings threshold of this type is common practice in the literature on measuring annual earnings inequality and dynamics (see, e.g., Abowd and Card (1989), Meghir and Pistaferri (2004), and Storesletten et al. (2004)). Requiring that the minimum earnings threshold is met on average over the ages 25 to 55 (condition (iii)) is a natural extension of this criterion to a lifetime context. Requiring that an individual satisfies the annual minimum earnings threshold in at least half of their possible working years (condition (ii)) ensures that we restrict attention only to individuals who have had a relatively strong attachment to the labor market during their lives.[15]

2.4 Measure of Lifetime Earnings

We define annualized lifetime earnings as the sum of real annual labor earnings from ages 25 to 55, divided by 31:

$$\overline{Y}^i \equiv \frac{1}{31} \times \sum_{t=25}^{55} Y_t^i.$$

[14] We do not present results using the CPI-U-RS series becasuse it is only available from 1978 onwards, and is essentially identical to CPI-U after 2000. Appending CPI-U data before 1978, would generate estimates of lifetime earnings that lie in between our CPI and PCE estimates that we document. For a detailed discussion of the effects of these different price indexes on earnings trends, see Kaplan (2019).

[15] Because we are unable to distinguish between emigrants and individuals with zero earnings, and because our measure of earnings includes only earnings from commerce and industry, it is necessary to impose *some* minimum earnings criteria. We have experimented with varying these minimum earnings thresholds and minimum years of labor market participation. Doubling or halving the required minimum has little impact on our results. We have also analyzed alternative ages ranges (30–60, 20–55, and 25–60) and obtained similar results.

Since we have 57 years of earnings data, we can thus construct full lifetime earnings for 27 year-of-birth cohorts. We label these cohorts by the year they turned 25. The oldest cohort for which we have 31 years of data is the one that turned 25 in 1957; the youngest cohort is the one that turned 25 in 1983.

We do not discount future earnings when computing lifetime earnings. First, there is no single figure that is a natural choice as the appropriate discount rate for human capital. The rates of return used in the literature to discount future financial flows (dividends, profits, etc.) range from 1%–2% (often used for short-term risk-free assets) to 6%–8% (corresponding to long-term risky assets). Moreover, human capital is different from these financial assets because it is not tradable, so there are no market prices to discipline the discount rate used. It also has a risk structure that depends on many features of the institutional and redistributive environment, such as the tax and benefit system and the tightness of borrowing constraints, that can alleviate or amplify such risks. Proper discounting thus requires the use of an appropriate stochastic discount factor that accounts for these complex features of earnings dynamics and risk-sharing possibilities.[16]

Second, seemingly innocuous differences in the choice of interest rate can make a large difference in the level of lifetime inequality, how it evolves over time, and especially how it compares with cross-sectional inequality. This is because of the steep observed rise in both the level and dispersion of earnings in the first decade after a cohort enters the labor market. Higher interest rates effectively put more weight on earnings earned at younger ages. We prefer to treat earnings earned at all ages equally and focus on the most transparent possible measure of lifetime earnings. Furthermore, we note that most of the trends that we document are driven by changes across cohorts that have taken place at young ages so adopting a positive discount rate would only exacerbate these trends.

3 Trends in Average Lifetime Earnings

We begin by analyzing how average lifetime earnings has evolved across cohorts for males and females separately, and the extent to which these differential patterns were driven by changes in lifetime labor market participation versus earnings growth conditional on working. We then examine the impact that these differential trends have on the population

[16] For example, Huggett and Kaplan (2011) and Huggett and Kaplan (2016) show that in the presence of tight borrowing constraints, the average return on human capital implied by correctly computed discount factors can be very high early in the working life, often above 30% or 40%, but in the absence of borrowing constraints, discount factors are very close to the risk-free rate.

Table 1: Growth rates of cohort lifetime earnings, by gender

Cohorts		Averages		Selected Percentiles							
		Mean	Median	p5	p10	p25	p75	p80	p90	p95	p99
				Males – PCE							
57–67	Cumulative	21.93	12.27	14.12	11.46	10.94	15.84	17.25	22.75	28.73	57.56
	Annualized	2.00	1.16	1.33	1.09	1.04	1.48	1.60	2.07	2.56	4.65
67–83	Cumulative	1.46	–10.34	–20.32	–19.77	–15.77	–1.33	2.29	9.98	13.22	17.48
	Annualized	0.09	–0.68	–1.41	–1.37	–1.07	–0.08	0.14	0.60	0.78	1.01
57–83	Cumulative	23.71	0.66	–9.07	–10.57	–6.55	14.29	19.93	35.00	45.76	85.11
	Annualized	0.82	0.03	–0.36	–0.43	–0.26	0.52	0.70	1.16	1.46	2.40
				Males – CPI							
57–67	Cumulative	15.89	7.19	9.68	6.30	5.98	10.26	11.80	16.91	21.57	48.98
	Annualized	1.49	0.70	0.93	0.61	0.58	0.98	1.12	1.57	1.97	4.07
67–83	Cumulative	–7.54	–18.52	–27.46	–26.91	–23.58	–9.84	–6.61	0.06	3.56	6.99
	Annualized	–0.49	–1.27	–1.99	–1.94	–1.67	–0.65	–0.43	0.00	0.22	0.42
57–83	Cumulative	7.15	–12.65	–20.44	–22.31	–19.01	–0.58	4.40	16.98	25.90	59.40
	Annualized	0.27	–0.52	–0.88	–0.97	–0.81	–0.02	0.17	0.61	0.89	1.81
				Females – PCE							
57–67	Cumulative	23.44	19.58	19.42	16.62	17.36	20.88	23.06	22.87	26.32	37.15
	Annualized	2.13	1.80	1.79	1.55	1.61	1.91	2.10	2.08	2.36	3.21
67–83	Cumulative	44.76	32.67	12.05	16.31	25.06	39.19	40.35	49.04	63.32	107.57
	Annualized	2.34	1.78	0.71	0.95	1.41	2.09	2.14	2.53	3.11	4.67
57–83	Cumulative	78.69	58.64	33.81	35.64	46.76	68.25	72.71	83.12	106.31	184.68
	Annualized	2.26	1.79	1.13	1.18	1.49	2.02	2.12	2.35	2.82	4.11
				Females – CPI							
57–67	Cumulative	17.34	14.23	13.04	10.98	11.86	15.03	16.93	16.95	20.16	31.89
	Annualized	1.61	1.34	1.23	1.05	1.13	1.41	1.58	1.58	1.85	2.81
67–83	Cumulative	32.82	22.01	2.32	7.05	15.59	27.79	28.79	36.63	48.80	88.13
	Annualized	1.79	1.25	0.14	0.43	0.91	1.54	1.59	1.97	2.52	4.03
57–83	Cumulative	55.85	39.37	15.66	18.81	29.29	47.00	50.60	59.79	78.79	148.11
	Annualized	1.72	1.29	0.56	0.67	0.99	1.49	1.59	1.82	2.26	3.56

Notes: This table reports the cumulative growth and annualized growth rates in moments of the lifetime earnings distribution across cohorts for the baseline sample (see section 2.3). We report growth rates for the mean, median, and selected quantiles of the lifetime earnings distributions for men and women separately using both the PCE and CPI price deflators. For example, the top left cell indicates that the mean lifetime earnings of the the cohort of men that entered the workforce in 1967 was 21.93% greater than the cohort of men that entered the workforce in 1957.

as a whole.

3.1 Lifetime Earnings for Men and Women

From the 1957 to the 1983 cohort, annualized mean lifetime earnings ($\overline{Y}^i$) for men rose by around $10,000, from $42,200 to $52,200. This rise corresponds to a cumulative increase of 23.7%, or an average increase of 0.82% between two consecutive cohorts—see the first data column in Table 1. However, the bulk of these gains—21.9% of the total 23.7%—accrued to only the first 10 or so cohorts. From the 1967 to the 1983 cohort, mean lifetime earnings increased by only 1.5% cumulatively.[17]

Median lifetime earnings for men has barely changed from the 1957 cohort to the 1983 cohort, increasing by only about $250—or less than 1%. As with the mean, there are two distinct sub-periods: one from the 1957 to the 1967 cohort, where median lifetime earnings cumulatively rose by about 12.3%, and one from the 1967 to the 1983 cohort, where median lifetime earnings *fell* by over 10 percent. We will see that for almost all of the trends in lifetime earnings that we analyze, these two sub-periods—cohorts entering between 1957 and 1967 versus those entering between 1967 and 1983—represent two distinct phases. These findings for cumulative growth and average annualized growth in mean and median lifetime earnings are reported in the first panel of Table 1, along with the corresponding growth rates at selected percentiles of the lifetime distribution. We report lifetime earnings growth over the full period, as well as for the 1957 to 1967 cohorts and 1967 to 1983 cohorts separately.[18]

Table 1 shows that the stagnation of lifetime earnings for the cohorts since 1967 extends well beyond the median. Across almost the entire distribution of males, there have been either trivial, or even negative, gains in lifetime earnings. As far up the distribution as the 75th percentile, real lifetime earnings for males fell between the 1967 and 1983 cohorts. The only part of the distribution to see significant lifetime earnings gains was the top 10% of the distribution, and even for that part, growth was much faster over the first 10 cohorts as compared with the latter 16 cohorts. This paints a bleak picture of male lifetime earnings stagnation for the vast majority of the distribution.

Women, on the other hand, have seen increases in lifetime earnings throughout the entire distribution. Median lifetime earnings increased nearly monotonically from $14,100 for the 1957 cohort to $22,300 for the 1983 cohort. This steady increase in lifetime earnings

[17] In Section C.1 we compare growth in mean lifetime earnings with various measures of growth in mean cross-sectional earnings from the SSA data, the CPS and NIPA.

[18] In Table C.6 and Table C.7 in Appendix C, we report mean and median lifetime earnings, together with selected percentiles of the lifetime earnings distribution for each cohort separately, for males and females respectively.

for women has been broad-based, with all parts of the distribution experiencing consistent lifetime earnings growth across cohorts. Median lifetime earnings for women grew at an average rate of 1.8% per cohort for the 27 cohorts from 1957 to 1983, with almost the exact same annualized growth rates for the 10 cohorts from 1957 to 1967 and the 16 cohorts from 1967 to 1983. The 10th percentile of the lifetime earnings distribution grew only slightly slower over this period, at an average of 1.2% per cohort, while the 90th percentile grew slightly faster, at an average of 2.4% per cohort. At the very top of the distribution, lifetime earnings for women grew extremely fast – from the 1957 to 1983 cohorts, the 99th percentile nearly tripled (from $50,400 to $143,600), with an average increase of 4.1% per cohort.

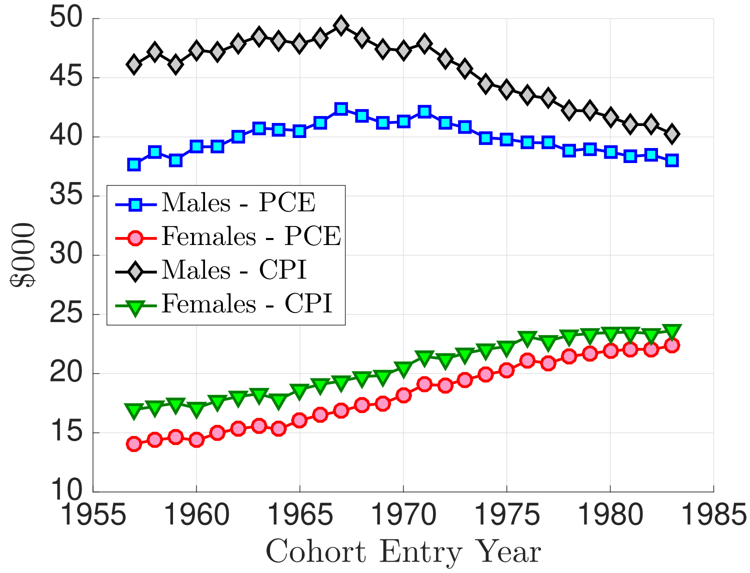
Using the CPI rather than the PCE to convert nominal earnings to 2013 dollars lowers lifetime earnings growth for both men and women. The blue and black lines in Figure 1 show median lifetime earnings for males by cohort using the PCE and the CPI respectively, while the red and green lines show analogous figures for women. Using the PCE shows that lifetime earnings for males increased up until about the 1967 cohort and then declined. However, with the CPI, median lifetime earnings is largely flat until the 1957 cohort and then begins a steep decline. The second panel of Table 1 presents the changes between males' lifetime earnings across cohorts after deflating with the CPI for the other percentiles of the distribution. As with the median, deflating with the CPI reduces the lifetime gains experienced by the first 10 cohorts, and exacerbates the lifetime earnings losses felt by the second set of cohorts across the distribution: even the 99th percentile of males experienced about half a percent of lifetime earnings growth by cohort. For women, deflating with the CPI reduces the growth rates but does not erase the broad gains in lifetime earnings.[19]

3.2 Extensive and Intensive Margins

Lifetime earnings growth from one cohort to another can come from either an increase in lifetime labor market participation (the extensive margin) or an increase in earnings while working (the intensive margin) or both. For women, the growth in lifetime earnings from the 1957 cohort to the 1983 cohort was driven by both margins. The changes in lifetime participation across these cohorts can be seen in Figure 3a, which displays the mean number of years worked for individuals in each cohort. Recall that an individual is included in the sample only if his/her annual earnings exceed $\underline{Y}_t$ in at least 15 of the 31 possible years; so, we are already conditioning on people with at least some attachment to the labor force. Even among these women who work at least 15 years, the average number of years worked

[19] Tables C.8 and C.9 in Appendix C show the selected moments of the lifetime earnings distribution by individual cohort for males and females, respectively, using the CPI.

Figure 1: Median Lifetime Earnings by Cohort and Gender



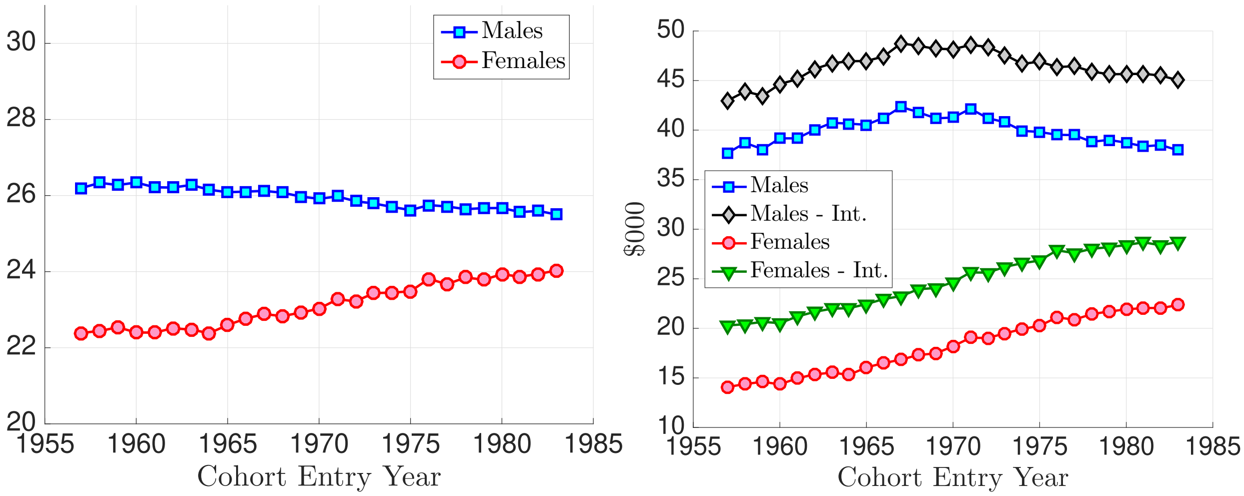
Notes: Each marker/observation represents the median lifetime earnings of a cohort that turned age 25 (entered the labor market) in the year indicated on the x-axis. Only individuals in the baseline sample (as defined in Section 2.3) are included. We separate each gender and show both the PCE and CPI price deflators. Values are displayed in thousands of 2013 US dollars.

between the 1957 and 1983 cohorts increased by about 1.6 years. Most of this increase comes from an increase in the number of years worked at young ages. From the 1957 to the 1983 cohorts, women in our sample worked an average of 1.8 additional years between the ages of 25 and 34, 0.2 additional years between the ages of 35 and 44, and 0.4 fewer years between the ages of 45 and 54.

Conditional on working, lifetime earnings for women also increased dramatically.[20] We measure the importance of this intensive margin by constructing 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. The median of the intensive margin of lifetime earnings for each cohort is shown by the black (diamond marker) and green (triangle) lines in Figure 3b. For comparison, the blue (square) and red (circle) lines in Figure 3b show overall median lifetime earnings by cohort.

[20]Since our data measure only annual earnings, we cannot measure workforce participation *within* a year. Changes in weeks or hours worked within a year are necessarily captured by the intensive margin in our data. We also cannot distinguish changes in average hours worked from changes in average wages per hour.

Figure 2: Lifetime Earnings by Cohort, Extensive and Intensive Margins



(a) Number of years worked by cohort and gender

(b) Median lifetime earnings by cohort and gender, extensive and intensive margins

Notes: Panel (a) displays the average number of years worked over the lifetime 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). All statistics calculated using the baseline sample (see section 2.3). Values are displayed in thousands of 2013 US dollars and deflated using the PCE.

Median lifetime earnings conditional on working is mechanically higher than overall median lifetime earnings, by around $5,000 per year, and increases roughly in parallel to overall lifetime earnings. Expressed as growth rates, this finding implies that between the 1957 to 1983 cohorts of women, median lifetime earnings conditional on working grew by less (42%) than median total lifetime earnings (59%). The comparison between growth in the intensive margin versus the overall measures of lifetime earnings is similar in other parts of the distribution. These growth rates are reported in Table C.10 in Appendix C, which is analogous to Table 1 but is based only on earnings conditional on working. We also report mean and median lifetime earnings conditional on working, together with selected percentiles of the intensive margin of the lifetime earnings distribution, for each cohort individually in Table C.11 in Appendix C.

For men, the decline in lifetime earnings conditional on working is much more important than the decline in the number of years worked for explaining the stagnation of lifetime earnings since 1967. Figure 3a shows that the average number of years worked declined by less than half a year from the 1957 cohort to the 1983 cohort, while Figure 3b shows that for the cohorts since 1967, the decline in median lifetime earnings at the intensive margin is roughly similar to the overall decline in median lifetime earnings. From the 1967 to 1983 cohorts, median lifetime earnings declined by 10.3% (Table 1), while median lifetime earnings conditional on working declined by 7.2% (Table C.10 in Appendix C).

This decomposition of the decline in lifetime earnings for men is interesting in the context of the well-documented decline in male employment and labor force participation as documented, for example, by Aguiar et al. (2021). However, these recent findings mostly pertain to younger cohorts that do not overlap with the cohorts and time period covered by our data (for example, Aguiar et al. (2021) focus on 21 to 30 year-olds since 2001). Knowles (2013) documents trends in labor supply over the last half centure and finds that male hours were roughly constant from 1970 to the early 2000's.

3.3 Lifetime Earnings in the Overall Population

Looking at the population as a whole, we find that the trends for men and women combine in sometimes offsetting ways. As with men separately, we still see larger increases in the mean of lifetime earnings in the first sub-period, with nearly three-quarters of the lifetime earnings growth from the 1957 to 1983 cohorts occurring among the first 10 cohorts. These findings for cumulative growth and average annual growth in mean, median, and selected percentiles of lifetime earnings for the full period, as well as for the 1957 to 1967 cohorts and the 1967 to 1983 cohorts separately, are reported in Table 2. As seen here, the stagnation of lifetime earnings for the post-1967 cohorts extends up to the 75th percentile. Even at the 90th percentile, average growth was only around 0.59% per cohort, compared with growth of 1.49% per cohort for the preceding cohorts. For over three-quarters of the distribution, lifetime earnings growth was essentially flat or declining across these 17 cohorts.[21]

The general stagnation of lifetime earnings for the majority of the distribution results from a combination of the opposing trends for men and women, together with their general positions in the overall population's lifetime earnings distribution. Given that men largely experienced losses in lifetime earnings over this time period while women experienced large gains, there has been a narrowing of the lifetime earnings gap.

Comparing the median earnings of males and females from Figure 1, we see that the difference between the median male and female lifetime earnings has narrowed over time,

[21] In Table C.12 in Appendix C, we also report mean and median lifetime earnings, together with selected percentiles of the lifetime earnings distribution, for each cohort individually.

Table 2: Growth rates of cohort lifetime earnings

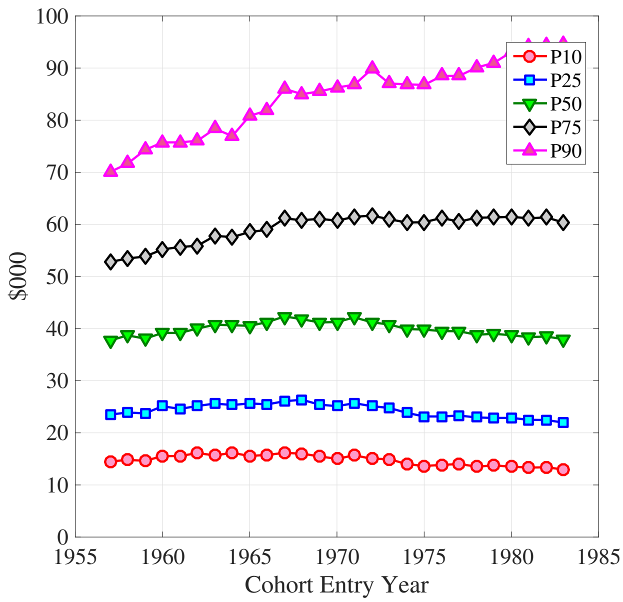
		Averages		Selected Percentiles							
Cohorts		Mean	Median	p5	p10	p25	p75	p80	p90	p95	p99
PCE											
57–67	Cumulative	17.90	9.02	13.62	11.81	10.20	11.56	12.25	15.98	21.33	51.91
	Annualized	1.66	0.87	1.29	1.12	0.98	1.10	1.16	1.49	1.95	4.27
67–83	Cumulative	6.53	0.12	2.01	3.73	2.10	–0.72	1.30	9.92	14.05	10.67
	Annualized	0.40	0.01	0.12	0.23	0.13	–0.04	0.08	0.59	0.83	0.64
57–83	Cumulative	25.60	9.15	15.90	15.98	12.51	10.76	13.71	27.49	38.37	68.12
	Annualized	0.88	0.34	0.57	0.57	0.45	0.39	0.50	0.94	1.26	2.02
CPI											
57–67	Cumulative	12.04	3.73	8.48	6.19	4.66	6.33	6.77	10.40	15.53	44.49
	Annualized	1.14	0.37	0.82	0.60	0.46	0.62	0.66	0.99	1.45	3.75
67–83	Cumulative	–2.78	–8.95	–6.49	–4.17	–6.34	–9.80	–7.77	0.08	3.95	0.57
	Annualized	–0.18	–0.58	–0.42	–0.27	–0.41	–0.64	–0.50	0.01	0.24	0.04
57–83	Cumulative	8.92	–5.56	1.44	1.77	–1.98	–4.10	–1.52	10.49	20.10	45.32
	Annualized	0.33	–0.22	0.05	0.07	–0.08	–0.16	–0.06	0.38	0.71	1.45

Notes: This table reports the cumulative growth and annualized growth rates in moments of the lifetime earnings distribution across cohorts for the baseline sample (see section 2.3). We report growth rates for the mean, median, and selected quantiles of the lifetime earnings distributions for total cohort population (men and women together) using both the PCE and CPI price deflators.

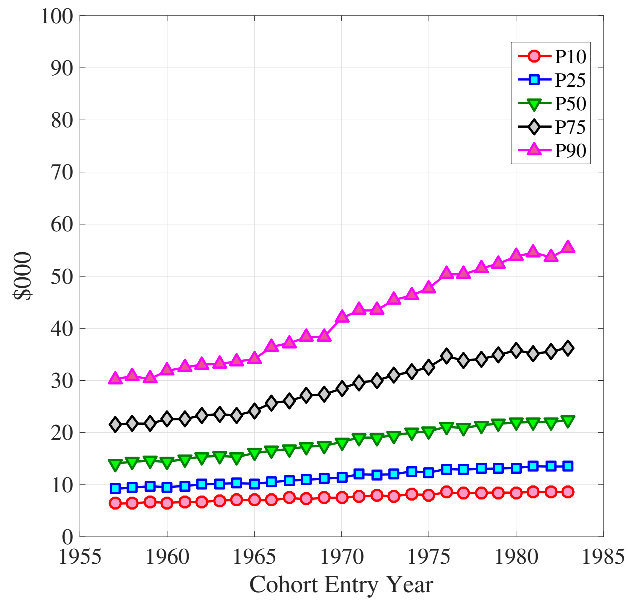
from the 1957 cohort in which the median female's earnings were 37% of the earnings of the median male, to the 1983 cohort in which the median female's earnings were almost 60% of the earnings of the median male. We see similar trends comparing other points of the gender-specific distributions over these cohorts. These comparisons can be seen in Figure 3. However, given that women started from such low levels of lifetime earnings (for example, almost 95% of females in the 1957 cohort earned less in lifetime earnings than the median male), gains in female lifetime earnings across cohorts largely serve to shore up the bottom of the distribution.

Using the CPI rather than the PCE to convert nominal earnings to 2013 dollars paints an even bleaker picture of lifetime earnings growth for the population as a whole. Figure 4 displays median lifetime earnings for each cohort using the two deflators. Whereas deflating with the PCE results in median lifetime earnings rising until around the 1967 cohort and remaining flat thereafter, deflating with the CPI results in median lifetime earnings being essentially flat even before 1967 and then declining by around 9% between the 1967 and 1983

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



(a) Males



(b) Females

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). 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.

cohorts. In the bottom panel of Table 2, we report cumulative lifetime earnings growth for the two sub-periods using the CPI at other percentiles of the lifetime earnings distribution. Real lifetime earnings deflated with the CPI declined between the 1967 and 1983 cohorts for nearly 90% of the distribution, with even the top decile of the distribution experiencing single-digit cumulative earnings gains over these 16 cohorts.

3.4 Non-wage Benefits from Employment

During the period studied in this paper, employer-provided health care and pension benefits have risen substantially. Thus, it is reasonable to ask whether this increase has partly offset the decline in wage and salary earnings documented above, in which case the trends in *total* employee compensation (i.e., wage plus non-wage) might look different from the trends in wage compensation.[22] Since the SSA data do not include non-wage benefits for

[22] Two related trends during this period could be offsetting these increasing benefits (or could perhaps be driving the increase). First, because life expectancy was rising during this period, an increase in pension

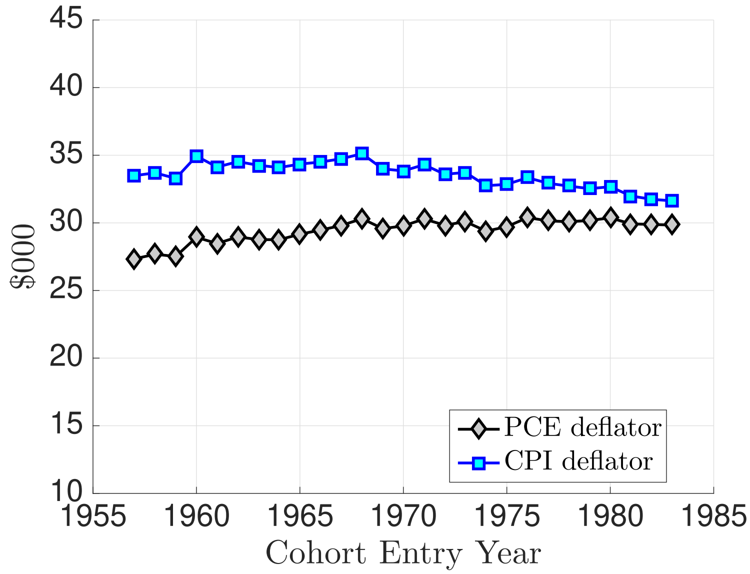


Figure 4: Median Lifetime Earnings by Cohort

Notes: Each observation represents the median lifetime earnings of a cohort (men and women together) that entered the labor market in a given year for the baseline sample (see section 2.3). Values are displayed in thousands of 2013 US dollars and deflated using both the PCE and CPI.

employees, we cannot undertake a full analysis of this question. Instead, we use aggregate data from the national income and product accounts (NIPAs) to estimate an upper bound on the effect of non-wage benefits for the trends we have documented for the median worker. Our approach is to measure the mean lifetime non-wage benefit per worker for each cohort over this period. A number of empirical studies have documented that *inequality* in non-wage benefits across employees has *increased* since at least the early 1980s, implying that the increase in mean benefits per worker is an upper bound for the increase in benefits for the median worker.[23]

benefits is necessary simply to prevent the consumption of retirees from declining. Second, some evidence suggests that, because of rising health care costs, the inflation rate is higher for the elderly than is implied by the CPI. Therefore, not all the rise in non-wage benefits constitute additional lifetime resources for newer cohorts as assumed in the calculations that follow.

[23]The rise in benefit inequality was partly systematic: benefits rose more for high-wage workers and less for low-wage workers, reinforcing the rise in inequality measured by only wages. See, for example, Pierce (2001) and Gruber and McKnight (2003). An important driver of this increase in inequality of non-wage benefits is the decline in the take-up rate of employer-provided insurance for low-earnings employees starting in the 1980s. One caveat is that these calculations exclude public insurance (medicare and medicaid). Burkhauser and Simon (2010) find that the latter actually mitigated the rise in inequality, though the effect they report is modest (see their Table 2B) and their analysis covers 1995 to 2008, so it is not clear how the effect would be for the longer period we study.

For comparability with our SSA baseline sample, which excludes public sector employees, we use data on health care and pension benefits provided by employers in private industries as reported in the NIPAs.[24] Since 1957 the relative benefit mix has shifted strongly toward health care, with its share rising from 15% of total employer-provided non-wage benefits in 1957 to 52% in 2013, and away from pension contributions whose share fell from about 70% to 40% during the same period.[25] The sum of these two components has consistently made up about 90% of total non-wage benefits, which suggests that our analysis based on these two components should provide a good benchmark for the effects of all non-wage benefits.

We compare lifetime average benefits across cohorts by computing average benefit amounts over the 31-year life cycle of each cohort, as measured by the NIPA variable "real employer contributions to employee pension funds and group health insurance for private industries" divided by the annual average number of private industry workers from the BLS Employment Situation. We find ifetime benefits have risen from about \$3,300 per year for the 1957 cohort to about \$5,800 per year for the 1983 cohort. The increase from the 1967 to 1983 cohorts was slower, from an annualized value of about \$4,500 to \$5,800 per worker, for a gain of approximately \$1,200. A back-of-the-envelope calculation demonstrates that including the increase in non-wage benefits mitigates the decline in lifetime earnings but does not overturn the conclusions from the previous sections. Specifically, using the PCE-deflated earnings measures, the annualized value of median lifetime wage and salary earnings for male workers declined by \$4,400 per year from the 1967 cohort to the 1983 one, equivalent to \$136,400 over the 31-year working period (Table C.6). With our estimates of mean non-wage benefits included, this decline falls to \$3,100 per year, equivalent to \$96,100 over the 31-year working period.. Using the CPI-deflated measures reveals an even bleaker picture: a loss of \$9,150 per year in wage and salary earnings (Table C.8), equivalent to \$283,650 over the 31-year working period, or \$7,850 when mean non-wage benefits are included, equivalent to \$243,350. Recalling that the added benefit amount is likely to be an upper bound becuase of the increase in benefits inequalty noted above suggests that the true loss falls

[24]Since health care services have experienced faster inflation than the overall economy during this period, we would ideally deflate the health-care component of this series using a price deflator that is specific to health services. However, for private industries, NIPA reports only the combined value of both health care and pension benefits. We thus deflate the total value of benefits with a composite price deflator that is constructed as a weighted average of the PCE deflator and the health care price deflator, with weights that correspond to the relative shares of each component in total benefits (public sector plus private industries), with 2013 as the base year.

[25]Pension plans include both private and government employee pension plans. However, since we include only contributions from private industry employers, government employee pension plans are a very small component.

between these two values. Appendix C.2 contains further details of these calculations and figures illustrating these trends.

3.5 Comparison with Aggregate Earnings Growth

From 1957 to 2013, real US GDP grew by a factor of nearly five-and-a-half, and real aggregate wage and salary earnings recorded in NIPA grew by a factor of four. How can we reconcile this strong cumulative growth in aggregate earnings from 1957 to 2013 with the stagnant lifetime earnings for the cohorts of individuals who were in the labor market over this same period? In Appendix C.1we compare average earnings growth in our sample with publicly available data from NIPA and the CPS, and show that there is nothing particularly unusual about the time-series for our earnings measure or sample. Rather, it is the lifetime perspective that drives the different conclusion about earnings growth over this period. The growth in mean cross-sectional earnings masks large shifts in how earnings gains are split between people of different ages (and hence cohorts) and between people in different parts of the earnings distribution. Much of the increase in aggregate earnings has accrued to older workers in older cohorts. In the remaining three sections of the paper we delve into these distributional shifts in more detail.

4 Trends in Life-Cycle Earnings Profiles

The decline in lifetime earnings for recent cohorts of men documented in Section 3 could in principle be attributed to lower earnings at young ages, lower earnings at older ages, or both. Similarly, the rise in lifetime earnings for females may be attributed to higher earnings at young ages, higher earnings at older ages, or both. In order to dissect these changes, in this section we explore how life-cycle profiles of average earnings have changed over time.

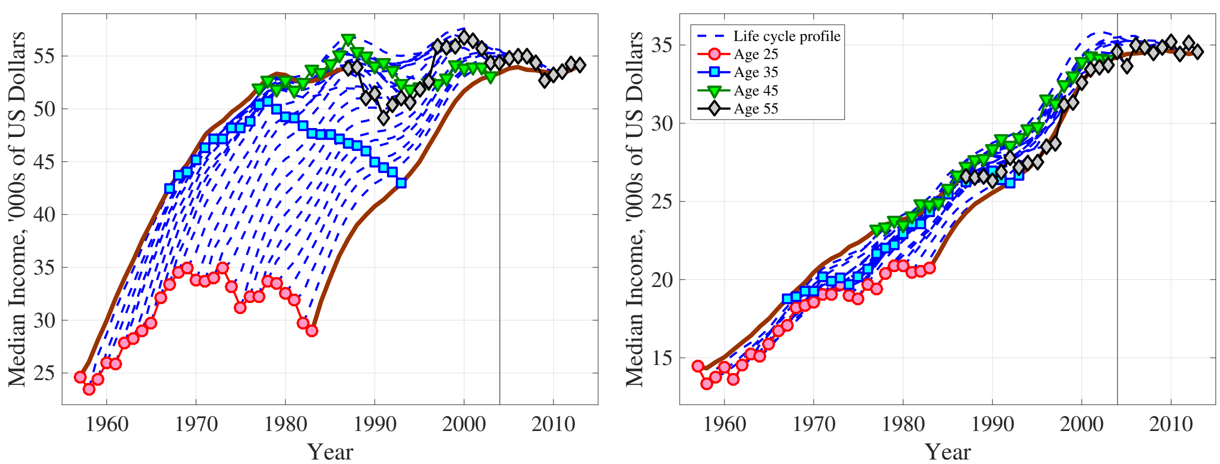
4.1 Changes in the Life-Cycle Profile of Earnings for Men

In Figure 5, we plot median earnings in each year for each of the 27 cohorts of workers, separately for males and females.[26] The colored dots connect earnings at common ages across cohorts, thus showing how the median earnings of particular age groups has changed over time. In Figure D.1 in Appendix D, we report analogous plots of the profiles of mean

[26] The life-cycle profiles of median earnings in Figure 5 and Figure 7 are not the same as the life-cycle profile of earnings for the individual at the median of the lifetime earnings distribution. In practice, however, the two are very similar.

Figure 5: Age Profiles of Median Earnings by Cohort

(a) Males (b) Females



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). For example, the 1957 cohort is represented by an Age 25 observation in 1957, an Age 35 observation in 1967, an Age 45 observation in 1977, and an Age 55 observation in 1987. 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.

log earnings for each cohort.

For men, the general shape of the life-cycle profile is similar for all cohorts (Figure 5a). Median earnings start low and rise sharply from ages 25 to 45, and then remain roughly constant from ages 45 to 55. Remarkably, however, the magnitude of this increase in earnings between ages 25 and 45 has declined sharply for the post-1967 cohorts. There has been a steady decline in median earnings at ages 25 and 35 (see the path of red circles and blue squares), without any offsetting increase in median earnings at ages 45 and 55 (see the path of green triangles and gray diamonds). Thus, the decline in lifetime earnings for these recent cohorts is almost entirely attributed to earnings falling at young ages rather than at older ages. Moreover, the decline in median earnings at young ages was substantial. Using the PCE deflator, median earnings at age 25 has declined from $33,300 for the 1967 cohort to $29,000 for the 1983 cohort. At age 35, median earnings has dropped from $50,600 for the 1967 cohort to $42,400 for the 1983 cohort. Using the CPI as a measure of inflation, these declines are even larger.

Table D.1 in Appendix D reports the cumulative growth in median earnings between ages 25 and 35, 35 and 45, and 45 and 55 for each cohort. As Figure 5a suggests, the biggest changes in these growth rates were for the first 10 years in the labor market, from ages 25 to 35. For the 1957 cohort, cumulative growth in median earnings between ages 25 and 35 was 71%; for the 1967 cohort, cumulative growth was 52%; and for the 1983 cohort, it was 46%. The drop in earnings growth over this age range between the 1957 and 1967 cohorts (71% to 52%) was more than compensated for by the sharp rise in median earnings at age 25, so that lifetime earnings grew substantially between these two cohorts, as we have already seen. However, between the 1967 and 1983 cohorts, when median initial earnings was sharply declining, earnings growth during early years was also slowing down (from 52% to 46%). This combination of declining initial earnings and weak subsequent growth jointly account for the stagnation of median lifetime earnings for men since the 1967 cohort.[27]

One might have thought that the overall stagnation of lifetime earnings for men is simply a reflection of weak labor market conditions in the 2000s, since the post-1967 cohorts that experienced little or negative growth in lifetime earnings all have in common that they spent part of their working lives during the 2000s. It is well documented that aggregate earnings growth was anemic in the early 2000s and declined substantially in the wake of the Great Recession and subsequent slow recovery. But these changes in the life-cycle profile of median earnings suggest that the declining lifetime earnings for recent cohorts of males do not simply reflect the poor economic conditions in the 2000s.

4.2 Changes in the Life-Cycle Profile of Earnings for Women

For women, life-cycle profiles are more linear than for men, particularly for earlier cohorts who were in the labor market at a time when women's earnings was growing rapidly. For the 1957 cohort, for example, median earnings grew by 28% between ages 25 and 35 (from $14,500 to $18,500), by 25% between ages 35 and 45 (from $18,500 to $23,100), and by 15% between ages 45 and 55 (from $23,100 to $26,600). For later cohorts of women, the shape of the life-cycle profile looks more similar to the typical male profile, with a significant leveling off at older ages. For the 1983 cohort, median earnings also grew by 29% between ages 25 and 35 (from $20,700 to $26,700), by 29% between ages 35 and 45 (from $26,700 to $34,300), but by less than 1% between ages 45 and 55 (from $34,300 to $34,500). These growth rates are reported for all cohorts in Table D.1 in Appendix D. They show that while earnings growth at young ages has remained roughly constant for women, there has been

[27] In a precursor to our paper, Kambourov and Manovskii (2009) analyzed US survey data and found a flattening of lifecycle profiles for low-skill men, which is consistent with our finding. However, the smaller sample size required them to model lifecycle profiles parametrically, which did not allow them to distinguish which part of the lifecycle the flattening took place.

a steady decline in earnings growth at older ages, concentrated mostly among the cohorts entering from 1978 onward. This changing shape of the median life-cycle earnings profile for women can also be seen in Figure 5b by comparing the sustained earnings growth at ages 25 and 35 (see the path of red circles and blue squares) with the decelerating growth at ages 45 and 55 (see the path of green triangles and gray diamonds). For the youngest cohort of women for whom we have full data, the shape of the life-cycle profile closely resembles the profile for men, at a substantially lower level.

4.3 Looking Ahead to Recent Cohorts

So far we have examined only those cohorts that are old enough for us to observe the full 31 years of earnings from ages 25 to 55. The recent picture we have painted for these cohorts is bleak: lifetime earnings have been stagnant for men, and lifetime earnings growth for women has slowed. Are these trends likely to reverse or to continue for younger cohorts of workers? The previous section argued that understanding earnings at young ages, between 25 and 35, is particularly important for understanding lifetime earnings. We can use this connection to gain insight into the likely path of lifetime earnings for future cohorts, by looking at the early labor market experience of younger cohorts for whom we cannot observe the full 31 years of earnings but can observe earnings at younger ages.

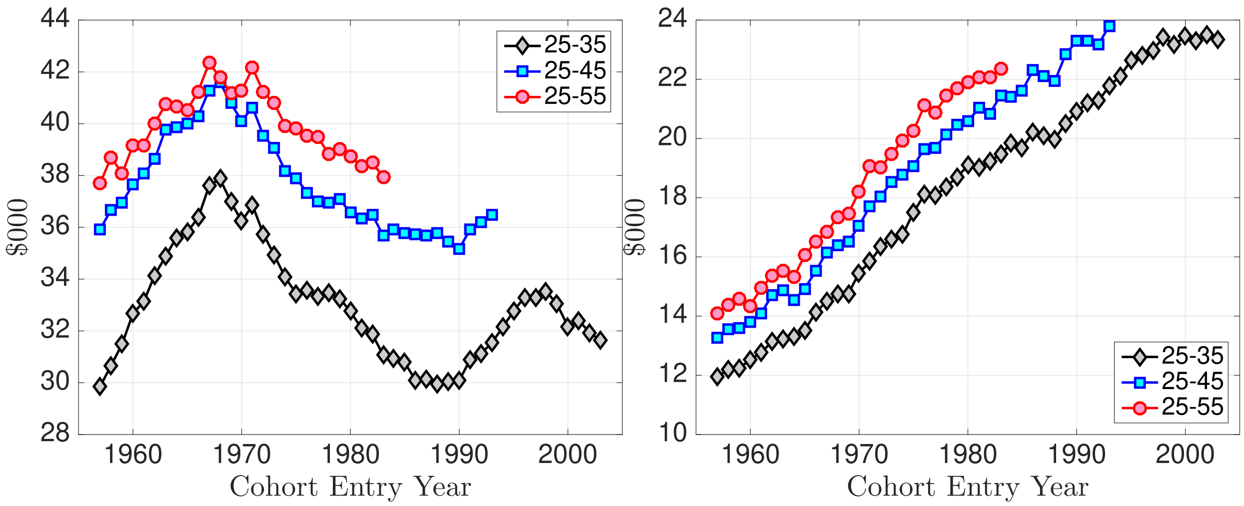
Figure 6 shows median total earnings over the 11 years from ages 25 to 35, the 21 years from ages 25 to 45, and the 31 years from ages 25 to 55 for each cohort from 1957 to 2003.[28] For the more recent cohorts, only the younger age ranges are available. For each age range, we annualize the earnings by dividing by the number of years in the age range; hence the 25- to 55-year measure is the same as in our baseline measure of lifetime earnings. For the cohorts where all three measures are available, the trends in median total earnings are very similar for all three age ranges.

For men, median total earnings earned in the 11 years from ages 25 to 35 follows a trend across cohorts that is similar to the trend in lifetime earnings, but is substantially more pronounced (Figure 6a). Between the 1957 and 1967 cohorts, median total earnings in these early labor market years increased by 26% (from $29,900 to $37,600), and then declined by 17% from the 1967 to 1983 cohorts (from $37,600 to $31,100). These swings

[28]When analyzing full cohorts, we restricted the sample to individuals that met the minimum earnings criteria in at least 15 of the 31 possible years. This is not possible when analyzing younger cohorts. In order to maintain comparability, we include an individual from one of the partial cohorts if he or she meets the minimum earnings criterion in at least half of the specified age range. For example, for the 25-35 age range, the sample is restricted to those that met the minimum earnings criterion in at least 6 of the 11 possible years.

Figure 6: Median Earnings by Cohort, Including Younger Cohorts

(a) Males (b) Females



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). Values are displayed in thousands of 2013 US dollars and deflated using the PCE.

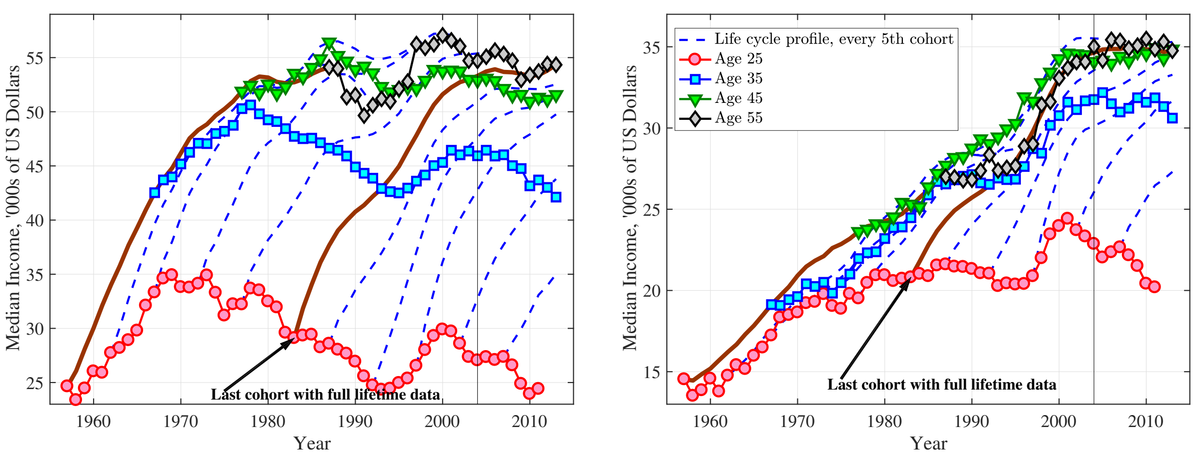
are consistent with the inference of the previous section that trends in earnings at young ages are particularly informative about trends in lifetime earnings. For more recent cohorts entering the labor market after 1983, the stagnation in earnings during the early labor market years has continued. Median total earnings from ages 25 to 35 hit a low of $29,900 for the 1988 cohort, after which time the trend started to reverse. However, the resurgence was cut short with the onset of the 2007-8 recession, and for the cohorts from 1998 onward, median total earnings over this age range has again been declining. For the 2003 cohort, which is the most recent cohort for which we have data, median total earnings over ages 25-35 is still 16% below the level of the 1967 cohort.

For women, Figure 6b shows that the approximately linear increase in lifetime earnings between the 1967 and 1983 cohorts is echoed in the average earnings earned between ages 25 and 35. This growth continued for more recent cohorts, up until the cohort entering in 1998, after which time the median early career earnings have flattened. It is difficult to know whether this flattening is part of a trend or is a temporary consequence of the 2008-9 recession and slow recovery.

In Figure D.2 in Appendix D, we report the mean, median, and selected percentiles of

Figure 7: Age Profiles of Median Earnings by Cohort

(a) Males (b) Females



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). For example, the 1957 cohort is represented by an Age 25 observation in 1957, an Age 35 observation in 1967, an Age 45 observation in 1977, and an Age 55 observation in 1987. 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 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.

the distribution of total earnings over ages 25 to 35 for each cohort individually, for men and women, respectively. The stagnation of male earnings during the first decade in the labor market extends across the entire distribution. Lower down the distribution, the declines are even larger than at the median: the 25th percentile of the distribution of ages 25 to 35 earnings is 28% lower for the 2003 cohort than it was for the 1967 cohort. Further up the distribution, early career earnings has increased, although the gains have been modest: the 90th percentile of the distribution increased by 28% across these 36 cohorts, equivalent to an increase of just 0.70% per cohort.

We can obtain a more complete picture of median earnings growth at young ages by extending the median earnings profiles from Figure 5 to include all cohorts for whom we have any data. These profiles are shown in Figure 7a for men and in Figure 7b for women. In both figures, the most important features are the pattern of median earnings for young workers. For men, the decline in median earnings at age 25 continued until 1993, after which time there was a brief resurgence followed by another period of decline. In 2009, median earnings for 25 year old males was at its lowest point since 1958. For women, the median earnings at age 25 was essentially flat from 1979 until 1997, after which time it briefly increased but by 2011 had returned to its 1979 level.

We can obtain a more complete picture of median income at young ages by extending the median income profiles from Figure 5 to include all cohorts for whom we have any data. The profile for men in Figure 7a contains one of the most striking results of the paper: median earnings for a 25 year old men in 2011 was about $10,500 lower than in 1969 cohort. This fall from $34,900 to $24,400 corresponds to a 30% decline during a 42 year period that saw growth in both GDP per capita and average real wages for the US economy. Put differently, median earnings for a 25 year old man was virtually the same in 2011 as it was 54 years earlier in 1957. Although there are some compensating factors that we discussed earlier, such as non-wage benefits, the magnitude of these gains for the median worker was not nearly large enough to compensate for the decline in earnings.

The picture is somewhat different for women. After rapid growth from 1957 to 1973, median entry earnings was roughly flat until 1997. Despite a brief surge in the late 1990's, median earnings for 25 year old women declined to its 1997 level (and hence 1973 level). Given the lack of an increase in entry earnings for for the post-1983 cohorts, what explains the continued growth in female median lifetime earnings that we saw in Figure 6b? Unlike for the pre-1983 cohorts, the key factor was the faster growth rates of median earnings over the life cycle, which made up for the stagnnating entry earnings. This can be seen by comparing the blue line with square markers (age 35) income for red life with circle markers (age 25) in Figure 7. Whereas the two lines are more or less parallel for men, the gap between the two lines starts to grow for women starting in the early 1990s. Part of this faster growth of female earnings in the 1990's is due to the well document trend of rising work hours for women.

4.4 Comparison with the CPS

The lifecycle profiles discussed in this section make only limited use of the panel dimension of the SSA data. Were it not for the the fact that our minimum earnings sample selection criterion is based on lifetime earnings rather than on annual earnings, it would be possible to produce analogues of these figures with only cross-sectional data, allowing a comparison of our SSA data with other sources of micro data on earnings. To this end, Appendix D.1 contains a detailed comparison of the results in this section with data from the Current Population Survey (CPS). The main findings are that (i) the restriction to Commerce and Industry Workers has a negligible effect; (ii) at older ages, the CPS and SSA data give near identical median earnings, provided the SSA data is treated cross-sectionally like the CPS; (ii) at younger ages, the CPS overstates median earnings relative to the SSA data, even when treated cross-sectionally; (iv) selecting individuals based on lifetime earnings leads to higher median earnings than selecting based on annual earnings. Despite these differences in levels, the trends are the same in the different data sets.

5 Trends in Lifetime Earnings Inequality

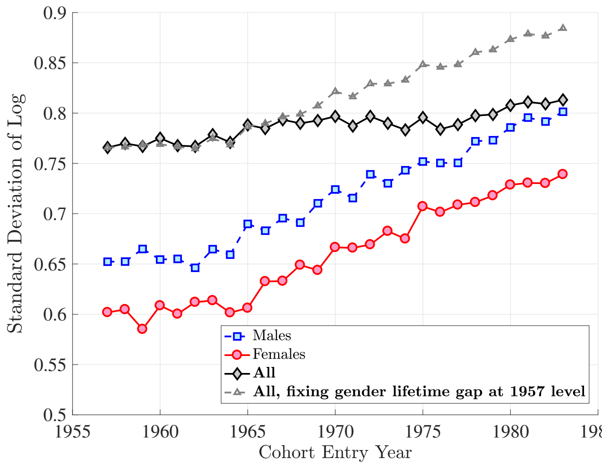
The second of the twin trends is an increase in cross-sectional earnings inequality. We now examine whether this trend extends to changes in lifetime earnings inequality across cohorts, and how lifetime inequality has changed within and across gender groups.

5.1 Lifetime Inequality across and within Genders

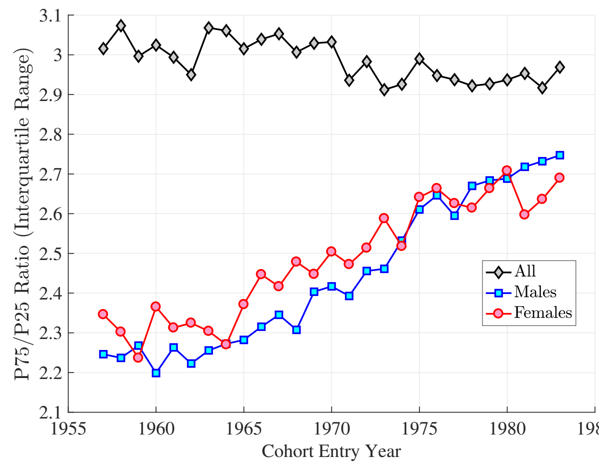
The top two panels of Figure 8 plot two common measures of lifetime inequality: the standard deviation of log lifetime earnings (8a) and the interquartile ratio (i.e., P75/P25, hereafter IQR) of lifetime earnings (8b) for each of the 27 cohorts. The blue lines marked with squares correspond to lifetime inequality among men, the red lines (circles) correspond to lifetime inequality among women, and the black lines (diamonds) correspond to the combined population of men and women.

The first observation is that lifetime earnings inequality – as measured by these two statistics – showed little to no rise in the whole population despite rising significantly *within* each gender group. Specifically, for the whole population, the standard deviation of lifetime earnings increased modestly, from about 0.77 to about 0.81 from the 1957 cohort to the 1983 cohort, whereas the IQR was mostly flat at a value of around 3. In contrast, inequality rose strongly within each gender group (and by very similar magnitudes): the standard deviation rose by about 15 log points within each gender group, and the IQR rose from about 2.3 to 2.7.

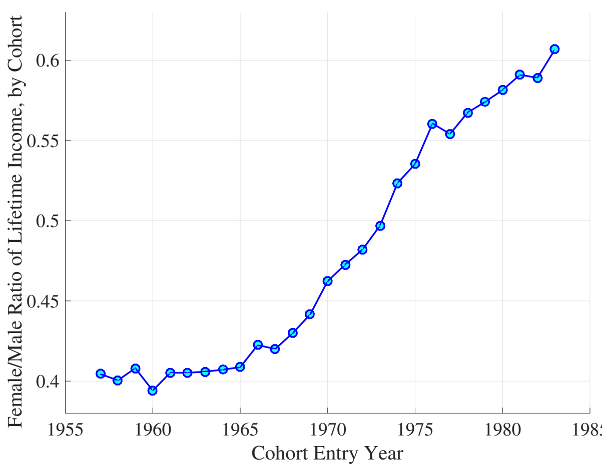
How do we reconcile these contrasting results? The answer lies in the closing of the gender gap in *lifetime* earnings. This can be seen in Figure 8c, which plots the ratio of the mean lifetime earnings of females to that of males for every cohort during this period. For entry cohorts before 1965, the gender gap was stable, with women in these cohorts earning on average 40% of the lifetime earnings of men. After 1965, the gap started to close quickly (showing an almost linear trend), and by the 1983 cohort, the lifetime earnings of women



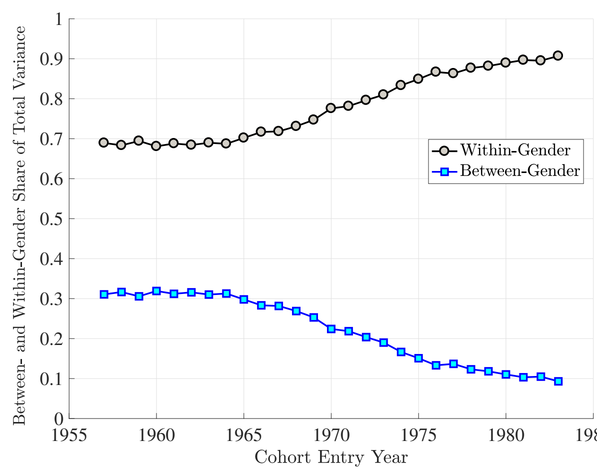
(a) Standard Deviation of Logs



(b) Inter-quartile Ratio



(c) Mean Gender Lifetime Earnings Gap (Ratio)



(d) Between- vs. Within- Gender Variance Share

Figure 8: 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). 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 1957. 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.

reached more than 60% of their male counterparts.[29]

To quantify the contribution of this trend to mitigating the rise in overall lifetime inequality, a simple variance decomposition is helpful. Let $\overline{y}_t^{i,g} = \ln \overline{Y}_t^{i,g}$ denote the log lifetime earnings of individual i of gender $g = m$ or f, and π_t^g denote each gender's population share in cohort t. We have

$$\text{var}(\overline{y}_t^i) = [\sum_{g=m,f} \pi_t^g \times \text{var}(\overline{y}_t^{i,g})] + [\sum_{g=m,f} \pi_t^g \times ((E(\overline{y}_t^{i,g}) - \overline{\overline{y}}_t)^2],$$

where $\overline{\overline{y}}_t$ is the average of $\overline{y}_t^{i,g}$ taken over the two gender groups. The first term is the average variance of log lifetime earnings within each gender group. This component has grown strongly, as seen in Figure 8. The second term captures the dispersion in the mean log lifetime earnings across gender groups, which has shrunk over time, as seen in Figure 8c, thereby offsetting the increase in the (within-gender group variance) terms in the first set of brackets.

The share of each of the two terms in the overall variance is plotted in the bottom right panel (Figure 8d): the lifetime gender gap was responsible for 31% of the total variance in the population for cohorts before 1965, but this fraction dropped to 9% by the 1983 cohort. In the top left panel (Figure 8a), we plot the counterfactual standard deviation for the whole population (gray dashed line marked with triangles) if the gender gap had remained at its 1957 level throughout the sample period. As seen here, the standard deviation would have risen by 12 log points rather than 4.7 points observed in the data.[30]

5.2 Lifetime Inequality: A Tale of Two Tails

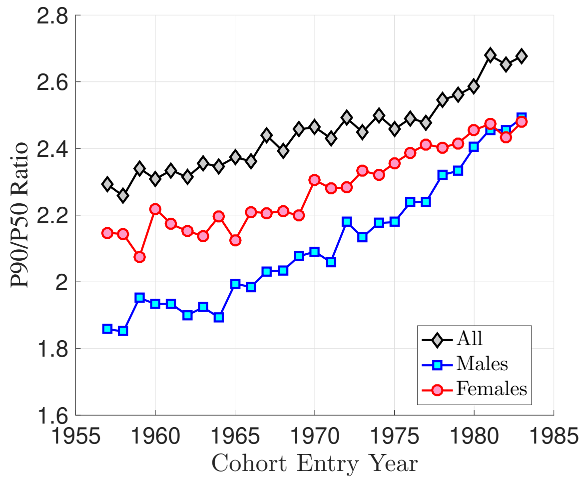
The two broad statistics that we have focused on so far (the standard deviation of log and the IQR) measure inequality over the entire distribution, which can mask interesting patterns within different parts of the population. Delving deeper, Figure 9a plots the P90-P50 ratio, which measures inequality above the median. Figure 9b plots the P50-P10 ratio, which measures inequality below the median. Starting with the trends for the

[29]Recall that our baseline sample only includes men and women who work at least 15 years during their lifetime, so the extensive margin of female employment has a more limited impact.

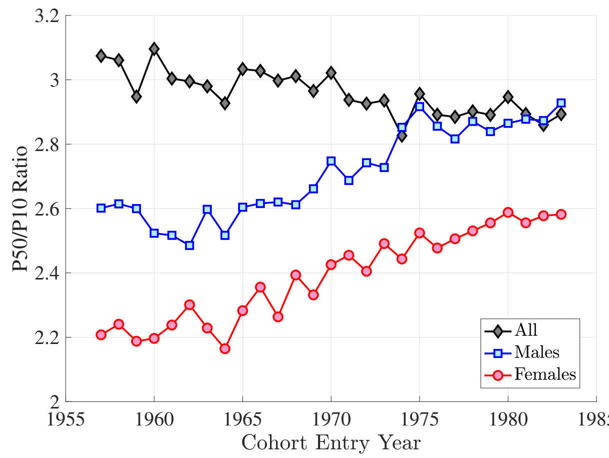
[30]Loosely speaking, changes in the gender gap in lifetime earnings stem from two sources: from changes in the gender gap in annual earnings and from changes in the number of years worked. Recall from Figure 3a that the average number of years worked was flat at 26 years (and slightly declining) for men and increasing from 22 to 24 years (or by 9%) for women. Consequently, the gap in lifetime earnings declined by more than its cross-sectional counterpart, which in turn mitigated the rise in lifetime inequality more so than what we see in the cross section. We return to this point in the Section 5.3.

Figure 9: Lifetime Inequality by Cohort

(a) P90/P50 ratio



(b) P50/P10 ratio



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). 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.

whole population (gray line with diamonds), the P90-P50 ratio of the lifetime earnings distribution increased throughout the period, rising from 2.3 for the 1957 cohort to 2.7 for the 1983 cohort. In contrast, the P50-P10 ratio fell throughout the period, from 3.1 to 2.9. Hence, the relatively stable overall inequality in the whole population we saw in Figure 8 resulted from falling inequality in the bottom half of the distribution offsetting rising inequality in the top half.

Turning to inequality within gender groups, the P90-P50 ratio was higher for women than for men in the early cohorts, but lifetime inequality rose more among men, so that by the 1983 cohort, the P90-P50 ratio was the same (around 2.5) for both genders. At the bottom end, the P50-P10 ratio *rose* for both genders (despite the *fall* in the same statistic for the combined population—the gray line) and did so by similar magnitudes, but arguably slightly more for women than for men (from 2.2 to 2.6 for women and from 2.6 to 2.9 for men). These last two results are yet another manifestation of the empirical finding from Figure 3: the gender gap in lifetime earnings closed most strongly below the median (of the combined population), which in turn kept the P50-P10 ratio from rising in the whole population despite the strong rise within each gender group. The gender gap closed to a smaller extent above the median, so its effect on the P90-P50 ratio of the whole population was smaller.

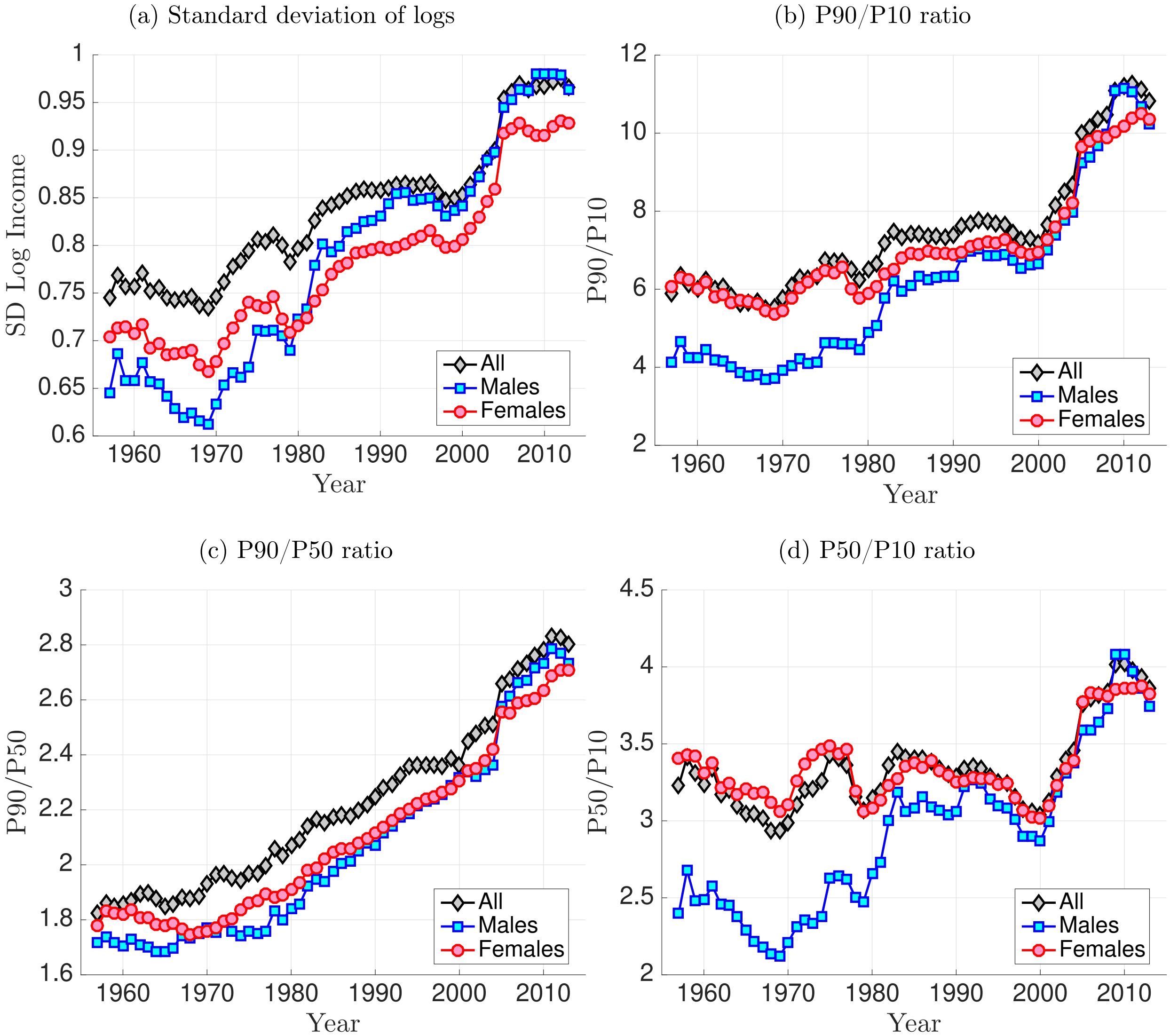
5.3 Trends in Lifetime Inequality versus Cross-Sectional Inequality

Before concluding this discussion, we compare the statistics on lifetime inequality with cross-sectional inequality to better understand some of the results we documented in previous sections. The comparison requires some care given that the two measures are conceptually different—one evolves from cohort to cohort whereas the other evolves from cross section (or year) to the next. With that caution, Figure 10 plots four measures of *cross-sectional* inequality analogous to those in Figures 8 and 9.

Two remarks are in order. First, notice that cross-sectional inequality in the whole population rises strongly throughout this period, unlike the flat trend in lifetime inequality, which suggests that the closing of the gender gap in cross-sectional earnings has a smaller impact than its lifetime counterpart. Second, notice the remarkable convergence after 1990 of two of the inequality measures—P90-P10 ratio and P50-P10 ratio—between the male and female populations. Further, the P90-P50 ratio for men (which measures in inequality in the top half of the distribution) almost perfectly overlaps with the P90-P50 ratio for women, thought the entire sample period. The standard deviation of annual earnings is also similar for men and women, but has increased by about 10 log points more for men than for women. This larger increase for men could be due to the faster increase in the thickness of the right tail of the earnings distribution for men than for women.[31]

[31] Bowlus and Robin (2004) studied the rise in lifetime earnings inequality by fitting a search model to the moments of 1-year changes (of wages and employment) from the matched CPS covering 1977 to 1997. Using data simulated from the estimated model, they concluded that while the *level* of lifetime inequality (as measured by the log 90-10 differential) is about 40% lower than its cross-sectional counterpart, both measures rose by similar amounts over the 20-year period they studied. The numbers we report here are not directly comparable to theirs because, as we noted at the beginning of this subsection, comparing lifetime and cross-sectional measures requires additional assumptions about the timing between cohorts lifetime earnings measured over 31 years and yearly cross sections. One option is to compare the average over 31 years of cross-sectional inequality to the lifetime inequality of the cohort who lived through the same period. Under that assumption, one can compare the average from 1957 to 2013 of cross-sectional P90/P10 reported in Figure 10b to the average of lifetime P90/P10 in Appendix Figure E.3 over the same period. Both measures are around 7, showing little difference between the two measures. This result depends a bit on selection criteria and time period. Table F.3 in Appendix F reports calculations with a slightly different sample for post-1978 cohorts and finds the P90/P10 of lifetime earnings to be 27% lower than its cross-sectional counterpart. Interestingly, all the difference is below the median: the P90-P50 is virtually identical for the two measures. Appendix F reports more detailed statistics for this post-1978 sample.

Figure 10: Cross-sectional Inequality over Time



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 baseline sample (see section 2.3). 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 is deflated using the PCE.

To sum up our findings so far, the stability of lifetime inequality over this period is a powerful manifestation of the closing *lifetime* gender earnings gap, which is more clearly evident than is revealed by cross-sectional analysis. At the same time, all measures of lifetime inequality have been increasing within both gender groups. Some of these trends look quite different from their cross-sectional counterparts, which show rising overall inequality in the population.

5.4 Dissecting the Rise in Lifetime Inequality

Why did lifetime inequality among men and among women increase across subsequent cohorts during this period? To shed light on this question, it is helpful to examine the timing of the rise in within-cohort cross-sectional inequality over the life-cycle of a cohort. To understand why this is useful, consider the following two hypothetical scenarios. In one case, each subsequent cohort enters the labor market (at age 25) with a progressively higher level of initial inequality, after which within-cohort inequality rises with age at the same rate as for previous cohorts. In the second case, the opposite happens: each subsequent cohort enters with the same level of inequality as previous ones, after which within-cohort inequality rises at progressively faster rates. Both scenarios would result in a rise in lifetime inequality across cohorts, but each points toward different underlying structural factors that might account for the changes. In Appendix E.1, we outline a simple statistical model to clarify this distinction. Of course, these two scenarios do not exhaust all the possible ways in which lifetime inequality might increase, but they provide useful benchmarks that turn out to be the most relevant cases, which we now document.

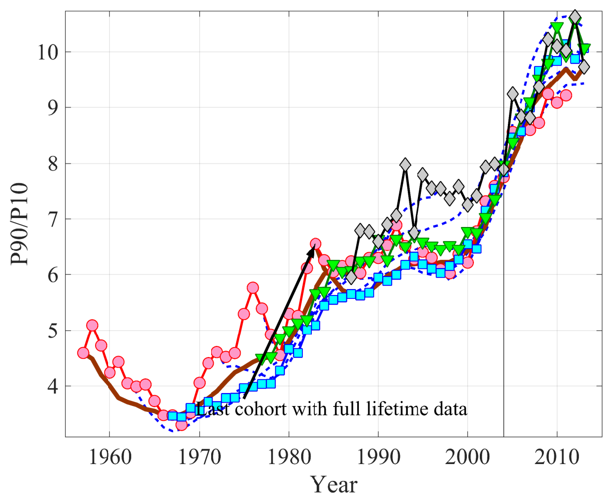
In Figure 11, plots the P90-P10 differential in log earnings separately by cohort in each year.[32] For readability, the figure only shows values at ages 25 (red circles), 35 (blue squares), 45 (green triangles), and 55 (gray diamond) for each cohort. Cohorts that entered after 1983 have only partial life-cycle data, so not all data points are available for them. For every fifth cohort, the figure also plots the entire age profile.

Figure 12a shows that initial inequality for men at age 25 has increased substantially from a value of P90-10 ratio of around 3.3 for the 1968 cohort to over 9 for the 2011 cohort. This is a 2.7-fold rise in the P90-P10 ratio, which is similar to the total rise in the cross-sectional P90-P10 ratio for men of all ages, which rose from 4 to 10, a 2.5-fold rise.[33] The

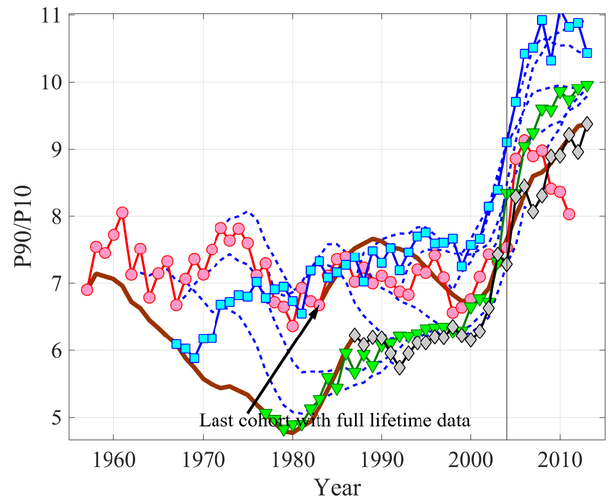
[32] Although the simple additive decomposition applies only to the variance, percentile ratios have other advantages, such as allowing us to focus on different parts of the distribution and having interpretations that are easy to understand. Figure E.2in Appendix E contains analogous figures for the cross-sectional standard deviation of log earnings by age from the 1957 cohort to the 2012 cohort, which tell a similar story.

[33] Clearly, the two numbers are not directly comparable as the cross-sectional dispersion is a mixture of 31 cohorts, so the P90-P10 ratio for all men in 2011 mixes up all cohorts from those who entered in 1981 to 2011.

Figure 11: Age Profiles of Cross-Sectional Inequality, by Cohort



(a) P90-10 ratio, Men



(b) P90-10 ratio, Women

Notes: Each observation represents the earnings inequality within men or women of a particular age in a particular year in the baseline sample (see section 2.3). For example, the 1957 cohort is represented by an Age 25 observation in 1957, an Age 35 observation in 1967, an Age 45 observation in 1977, and an Age 55 observation in 1987. 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 10th percentile of earnings for men within each age-year group. Panel (b) displays the same for women. Earnings is deflated using the PCE.

evolution of inequality at older ages coincides closely with initial inequality.

To understand what these patterns imply, observe that if the four lines that connected inequality points across cohorts (circles, squares, triangles, and diamonds) were parallel to each other throughout the period we analyze, this would imply that the rise in inequality *over the life* cycle did not change from cohort to cohort (the first scenario described above). Since this is indeed what we find, the patterns suggest that the increases in both lifetime inequality across cohorts and cross-sectional inequality over time stem from the rise in initial dispersion for newer cohorts . In other words, newer cohorts enter with much higher inequality than older cohorts, which is the main force behind rising earnings inequality.

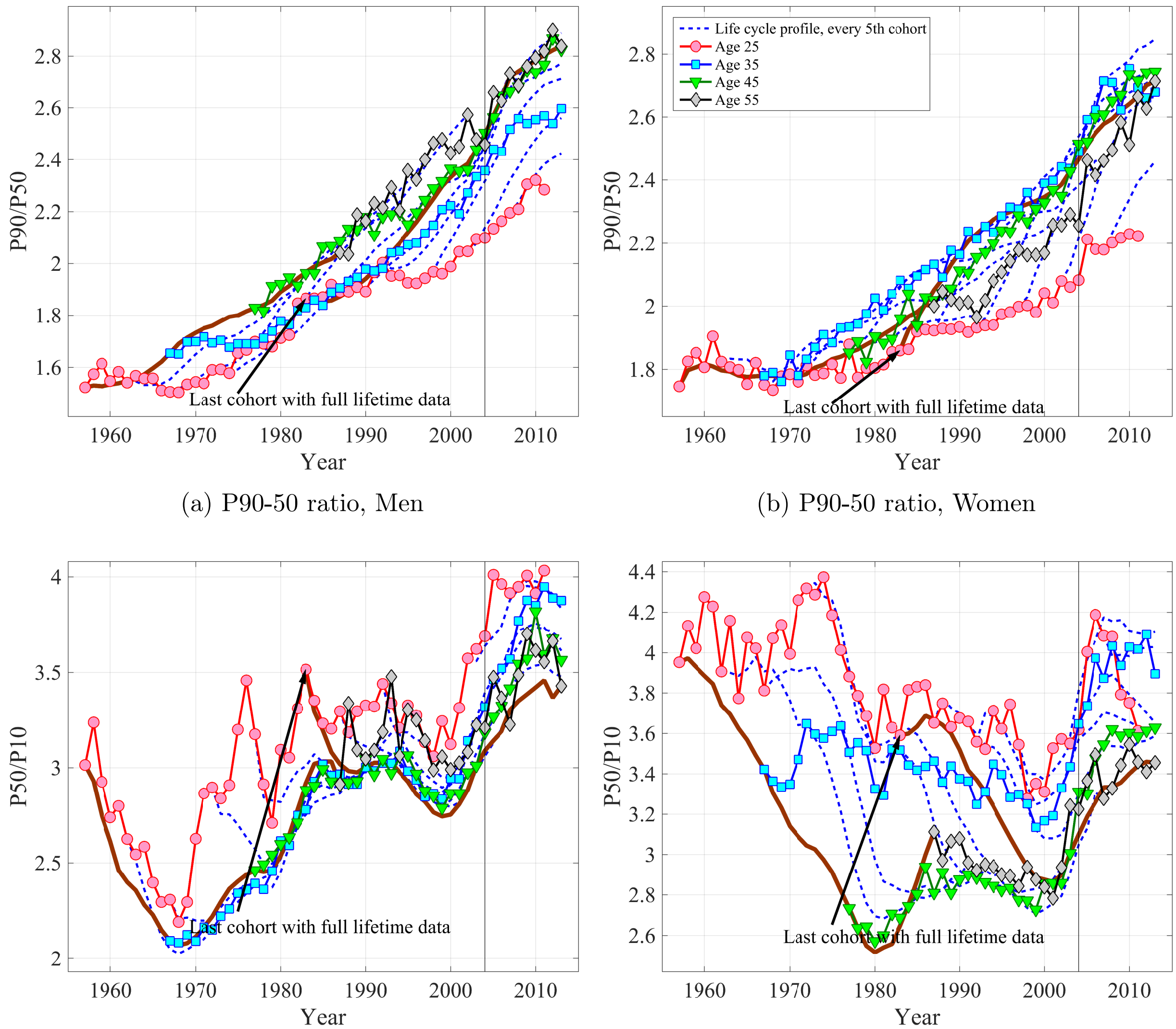
Our finding that cohort level factors play a dominant role in explaining the trend in cross-sectional inequality is consistent with the emphasis that Card and Lemieux (2001) place on the relative supplies of labor by age and skill in their study of the evolution of the skill premium. Our findings suggests that similar cohort-level supply forces might also play a role in explaining the broader notion of earnings inequality that we focus on this paper. To our knowledge, the fact that a substantial fraction of the rise in cross-sectional and lifetime inequality for men can be attributed to a rise in inequality at age 25 has not been emphasized in previous work and we think deserves a more central place in discussions of rising inequality in future week.

Turning to women, we see a very different pattern in Figure 12b. Inequality at age 25 is completely flat from the 1957 cohort to the 2000 cohort, and then rises briefly and falls in the 2000s. Furthermore, for the early cohorts, inequality falls strongly with age for the first 20 years or so of the life-cycle, is U-shaped for middle cohorts (falling for the first 10–15 years and then rising in the second half of the life-cycle), and only starts to rise after 2000—and does so strongly for age groups 35 and older. Therefore, for women the main driver of rising lifetime inequality is not the rise in age 25 dispersion but a much more complex pattern of life-cycle inequality profiles, which twist and change shape for subsequent cohorts. These different drivers of rising inequality are surprising in light of Figure 8, which revealed very similar patterns and magnitudes of rising lifetime inequality for both genders.

Digging deeper into these trends, in Figure 12 we plot analogous profiles for the P90-50 and and P50-10 ratios, which decompose the P90-P10 profile into measures of top- and bottom-end inequality. In the top panel, we see that the rise in inequality above the median, P90-P50, is actually quite similar for men and women. What is different is the change in the P50-P10 ratio, which measures inequality below the median. For men, inequality below the median rises for all ages but displays a more complicated pattern for women. Moreover, for both men and women, we a shrinking P50-P10 ratio over the life cycle for almost all cohorts. These differences between men and women in their life-cycle profiles of inequality, as well as how the differences vary from cohort to cohort, deserve a fuller analysis that is beyond the scope of this paper. We leave these topics for future research.

6 Conclusions

The analysis in this paper has revealed two main findings. First, the majority of US men who entered the US labor market since the late 1960s have seen little-to-no gains in lifetime earnings relative to earlier cohorts, despite the fact that the US economy has grown significantly during the same period. Accounting for rising employer-provided health and retirement benefits partly mitigates these findings but does not overturn them. Much of this stagnation for men can be traced to the conditions during the labor market entry of a cohort: newer cohorts of men faced declining or stagnant median initial earnings relative to previous cohorts and did not experience faster earnings growth over their lifecycle to make



(a) P90-50 ratio, Men

(b) P90-50 ratio, Women

(c) P50-10 ratio, Men

(d) P50-10 ratio, Women

Figure 12: Age Profiles of Inequality, by Cohort, Continued

Notes: Each observation represents the earnings inequality within men or women of a particular age in a particular year in the baseline sample (see section 2.3). For example, the 1957 cohort is represented by an Age 25 observation in 1957, an Age 35 observation in 1967, an Age 45 observation in 1977, and an Age 55 observation in 1987. 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 is deflated using the PCE.

up for the lower entry earnings. Women experienced a sustained in increase in median lifetime earnings from one cohort to the next, but starting from very low levels in the early cohorts.

The second finding is that since 1970, inequality in lifetime earnings increased significantly within each gender group but remained virtually flat in the combined population—thanks largely to the closing lifetime gender gap. The bulk of the rise in lifetime inequality among men was also driven by a substantial rise in initial inequality from one cohort to the next. For example, the P90/P10 ratio for 25 year old men rose from 3.3 in the 1969 cohort to 9 in the 2011 cohort. The slope of the lifecycle profile of inequality remained relatively unchanged across cohorts. We also analyzed the partial lifecycle data of more recent cohorts and found the similar patterns for both median earnings and earnings inequality during the period they are observed, suggesting that both the stagnation of median lifetime earnings and the rise in inequality is likely to continue.

An important substantive conclusion we draw from these findings is that newer cohorts were already different from older ones by age 25. Once in the labor market, the earnings distribution for these newer cohorts has evolved similarly to those of older cohorts. This finding is especially pertinent for men, which is interesting, given that earnings inequality among males has been extensively studied, yet this finding does not seem to have been previously emphasized. Our findings thus suggest that the sources of the dramatic changes we have witnessed in the U.S. earnings distribution over the last 50 years may be found in the experiences of newer cohorts during their youth (and possibly earlier), and how those experiences differed from those of older cohorts.[34]

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[34]We provide additional statistics on lifetime earnings and how they are related to the number of unique jobs held by workers, by the state they live in, among other variables of interest. These statistics use a 10% extract from the MEF from 1978 to 2013, which covers all individuals in the economy and provides non-top coded earnings. These statistics are computed both for the baseline sample and for a broader sample that does not impose any minimum threshold for lifetime earnings. See Appendix F.

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