

ADDITIONAL WEB APPENDIX

FOR

EARNINGS DYNAMICS OF IMMIGRANTS AND  
NATIVES IN SWEDEN 1985–2016

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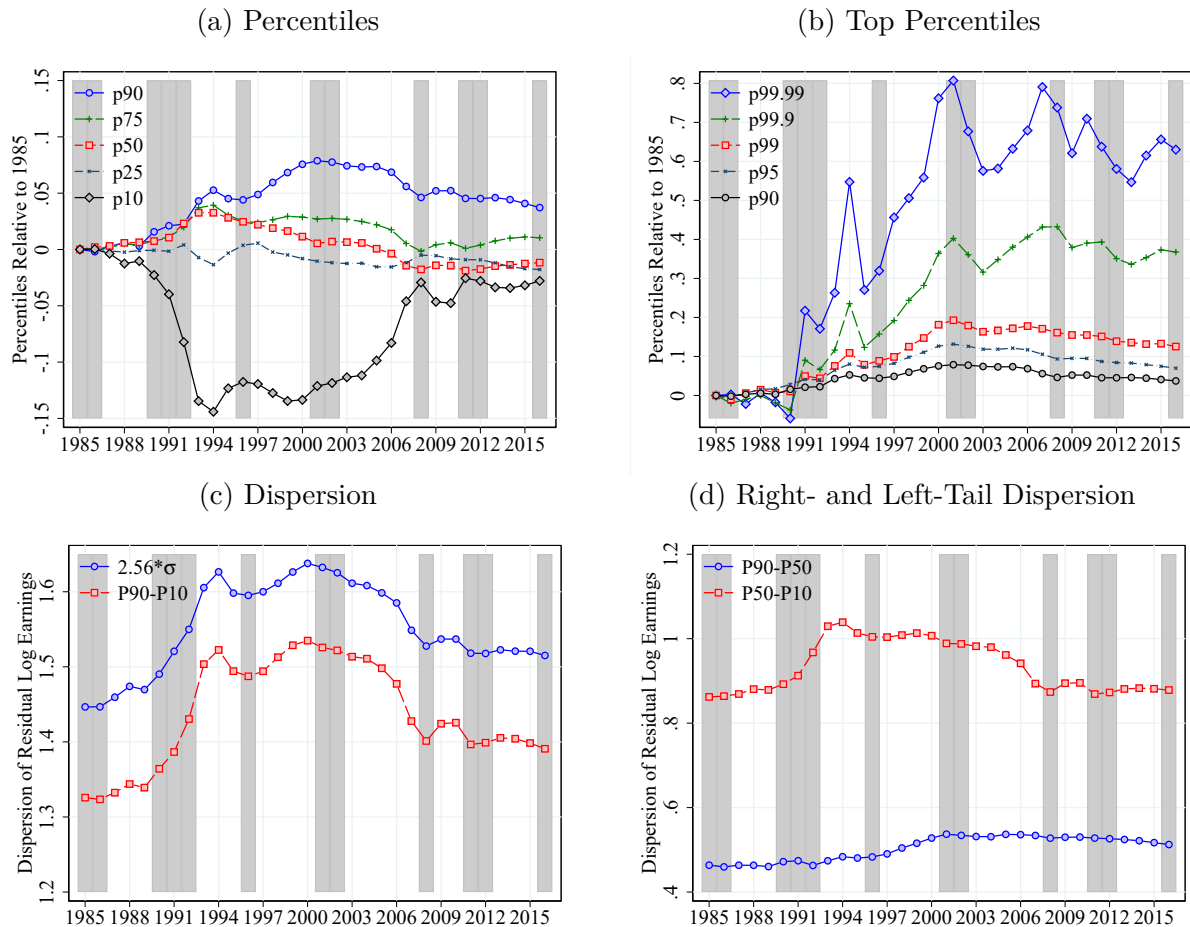
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# C Additional Results for Cross-Country Comparison

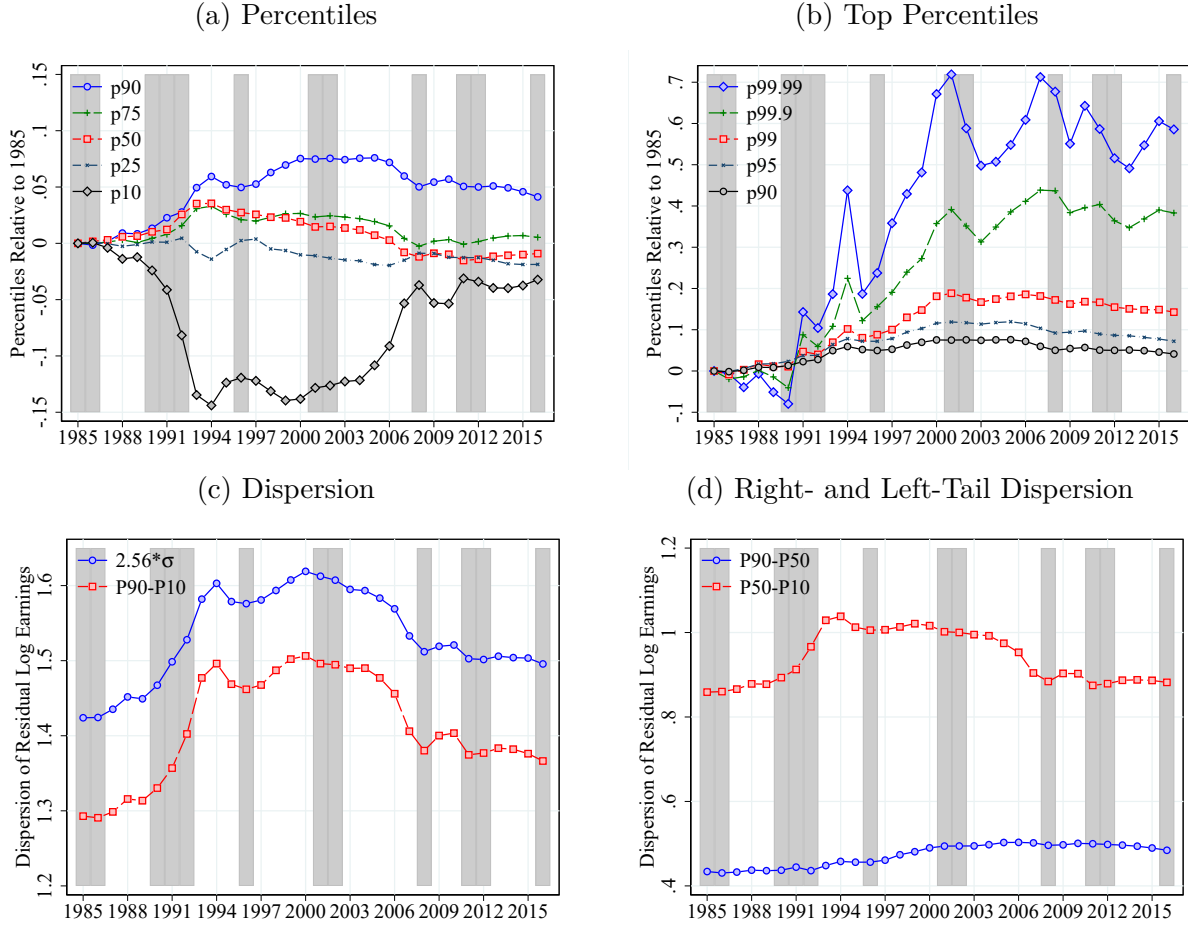
## C.1 Full Population

Figure A.1: Distribution of Residual Earnings in the Population after Controlling for Age



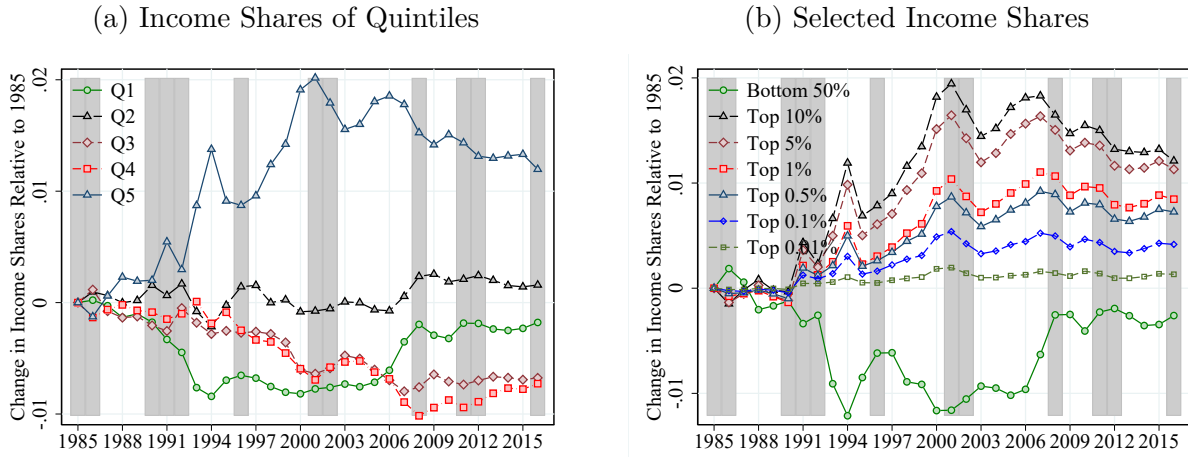
**Notes:** This figure reports results for the pooled sample of men and women. We residualize log earnings using  $\text{gender} \times \text{age} \times \text{year}$  fixed effects. Using these residual earnings and the CS sample, Figure A.1 pools men and women and plots against time the following variables: (a) P10, P25, P50, P75, P90, (b) P90, P95, P99, P99.9, P99.99, (c) P90–10 and  $2.56 \times \text{SD}$  of log income, (d) P90–50 and P50–10. In (a) and (b) percentiles are normalized to 0 in the first available year, 1985. Shaded areas are recessions.

Figure A.2: Distribution of Residual Earnings in the Population after Controlling for Age and Education



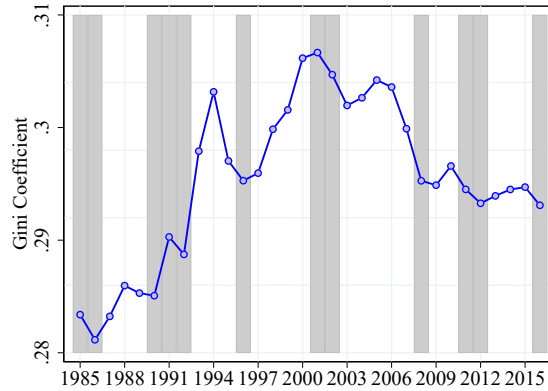
**Notes:** This figure reports results for the pooled sample of men and women. We residualize log earnings using  $\text{gender} \times \text{age} \times \text{education} \times \text{year}$  fixed effects, where education is measured by two groups (high school or less and at least some college). Using these residual earnings and the CS sample, Figure A.2 pools men and women and plots against time the following variables: (a) P10, P25, P50, P75, P90, (b) P90, P95, P99, P99.9, P99.99, (c) P90–10 and  $2.56 \times \text{SD}$  of log income, (d) P90–50 and P50–10. In (a) and (b) percentiles are normalized to 0 in the first available year, 1985. Shaded areas are recessions.

Figure A.3: Changes in Income Shares in the Population Relative to 1985



**Notes:** Using earnings and the CS sample for the full population, Figure A.3 plots against time the following variables: (a) share of total earnings accruing to each quintile of the earnings distribution, (b) share of total earnings accruing to the bottom 50%, top 10%, 5%, 1%, 0.5%, 0.1%, 0.01%. All income shares are normalized to 0 in the first available year, 1985. Shaded areas are recessions.

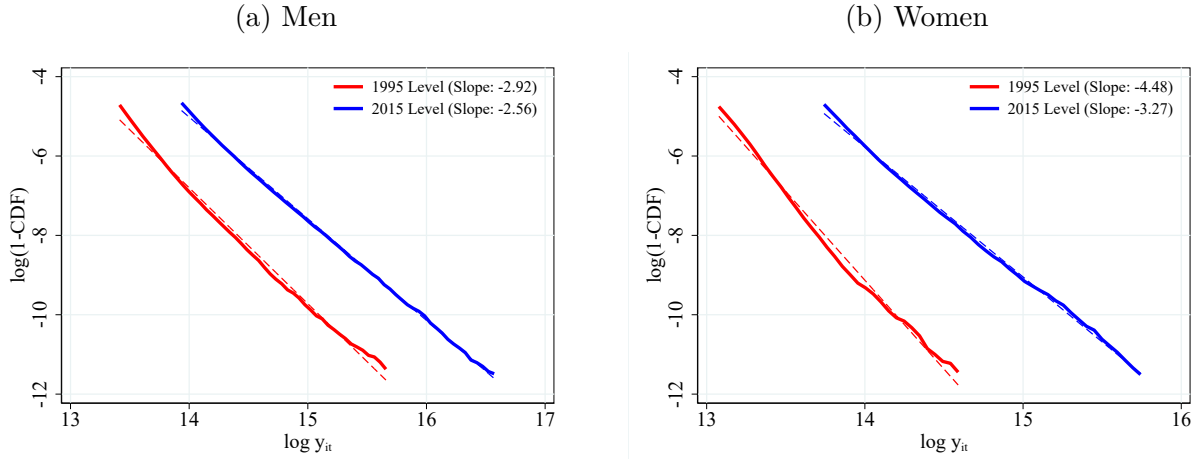
Figure A.4: Gini Coefficient for the Full Population



**Notes:** Using earnings and the CS sample for the full population, Figure A.4 plots against time the Gini coefficient. Shaded areas are recessions.

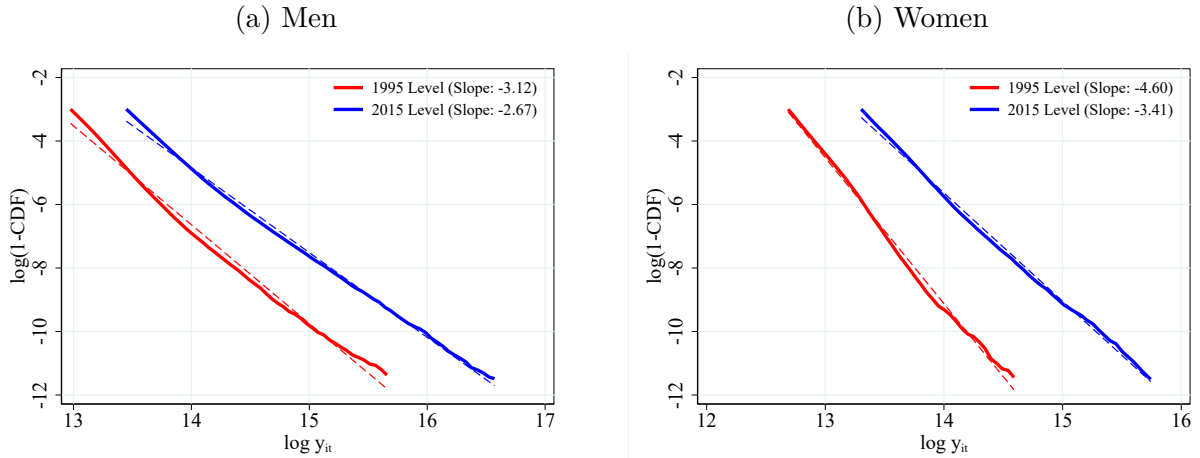
## C.2 By Gender

Figure A.5: Top Income Inequality: Pareto Tail at Top 1%



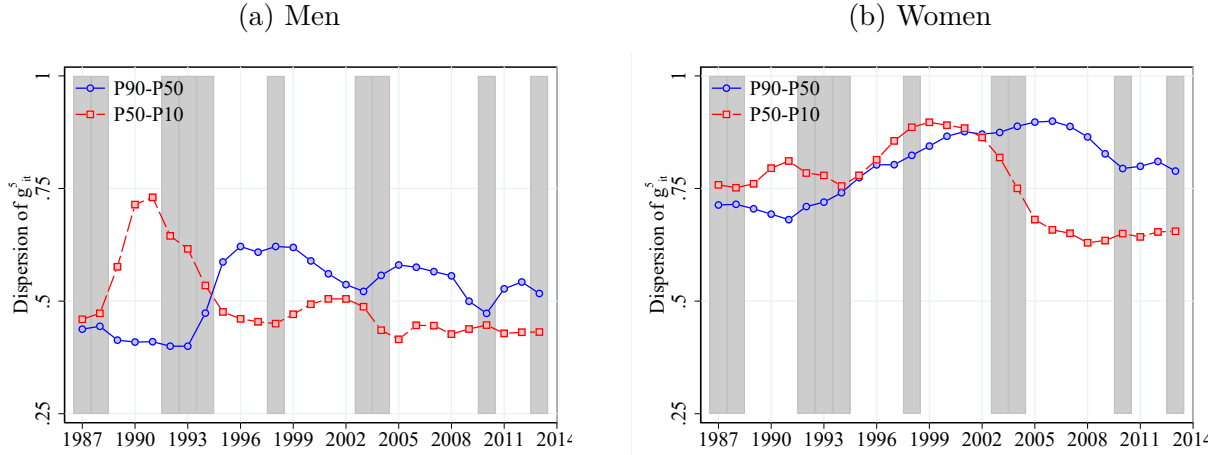
**Notes:** Using the top 1% of the CS sample, Figure A.5 plots the log empirical density ( $\log(1-CDF)$ ) of log earnings in a log-log plot. We provide the linear fitted line and report the slope measuring the Pareto tail index in 1995 and 2015, separately for men and women.

Figure A.6: Top Income Inequality: Pareto Tail at Top 5%



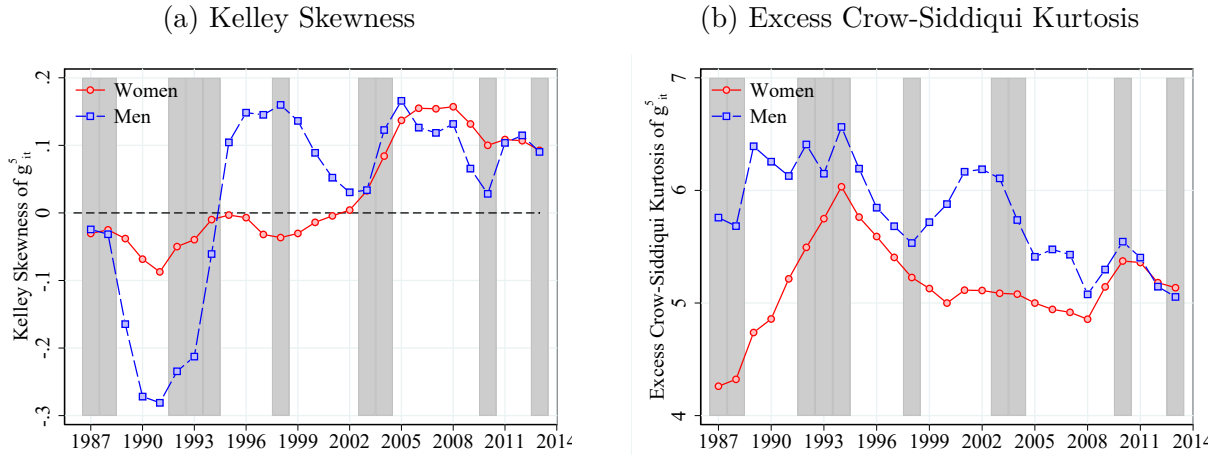
**Notes:** Using the top 5% of the CS sample, Figure A.6 plots the log empirical density ( $\log(1-CDF)$ ) of log earnings in a log-log plot. We provide the linear fitted line and report the slope measuring the Pareto tail index in 1995 and 2015, separately for men and women.

Figure A.7: Dispersion of Five-Year Earnings Change



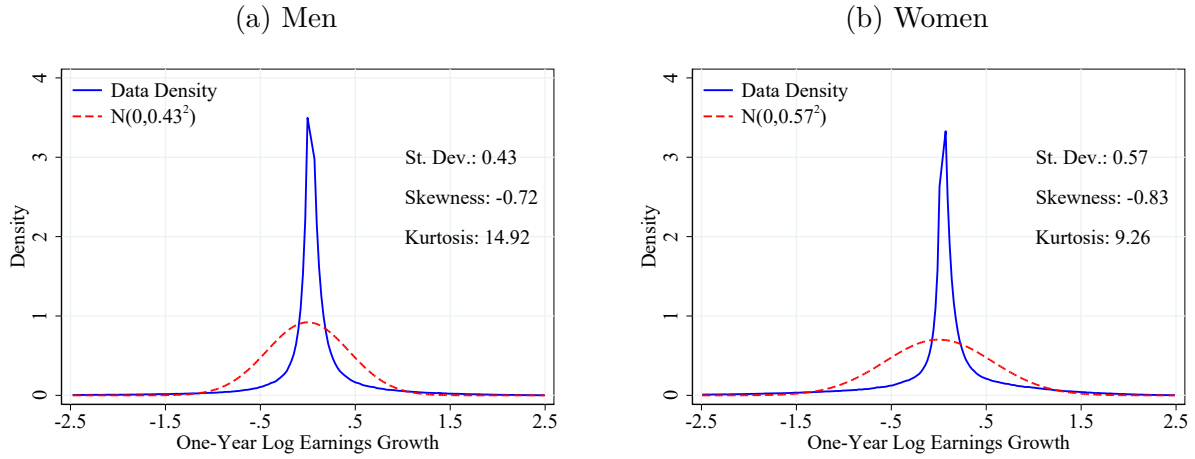
**Notes:** Using residual five-year earnings changes and the LX sample, Figure A.7 plots against time the P90–50 and P50–10 gaps for (a) Men, (b) Women. Shaded areas are recessions.

Figure A.8: Skewness and Kurtosis of Five-Year Earnings Change



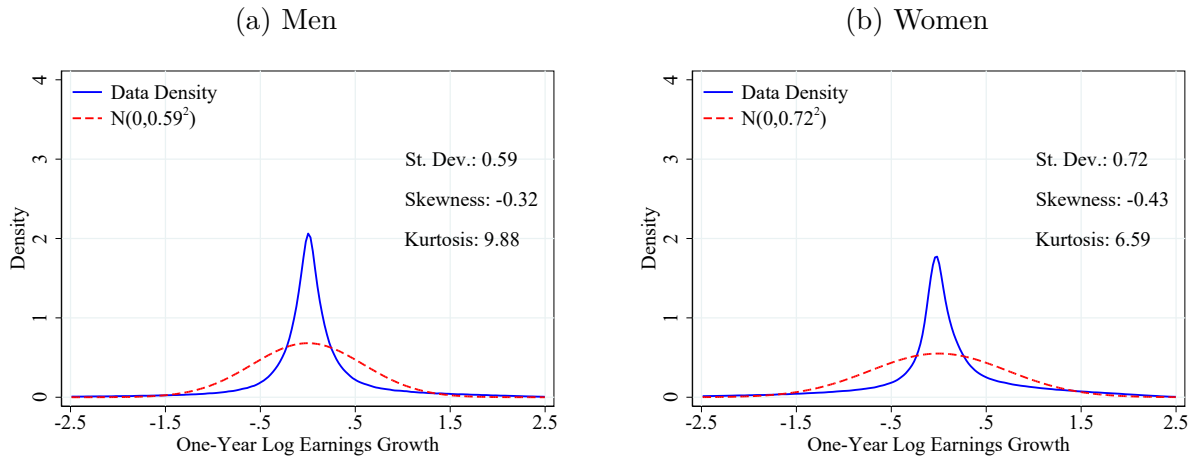
**Notes:** Using residual five-year earnings changes and the LX sample, Figure A.8 plots against time the following variables: (a) Men and Women: Kelley skewness, defined as  $\frac{(P90-P50)-(P50-P10)}{P90-P10}$ , (b) Men and Women: Excess Crow-Siddiqui kurtosis calculated as  $\frac{P97.5-P2.5}{P75-P25} - 2.91$  where the first term is the Crow-Siddiqui measure of Kurtosis and 2.91 corresponds to the value of this measure for a Normal distribution. Shaded areas are recessions.

Figure A.9: Empirical Densities of One-Year Earnings Growth



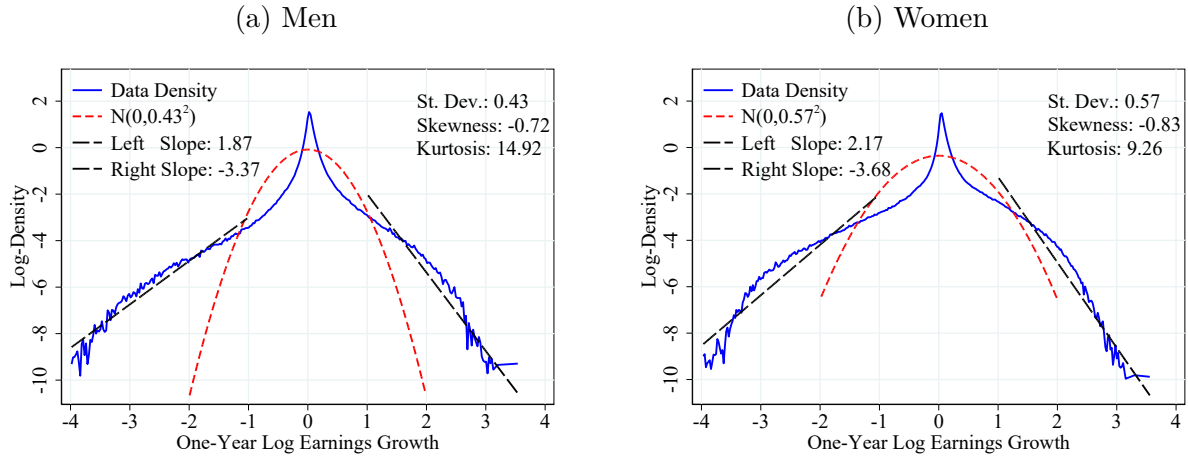
**Notes:** Using the LX sample in 2005, Figure A.9 plots the density of residual one-year earnings changes and the best fit using a normal distribution, separately for (a) Men and (b) Women.

Figure A.10: Empirical Densities of Five-Year Earnings Growth



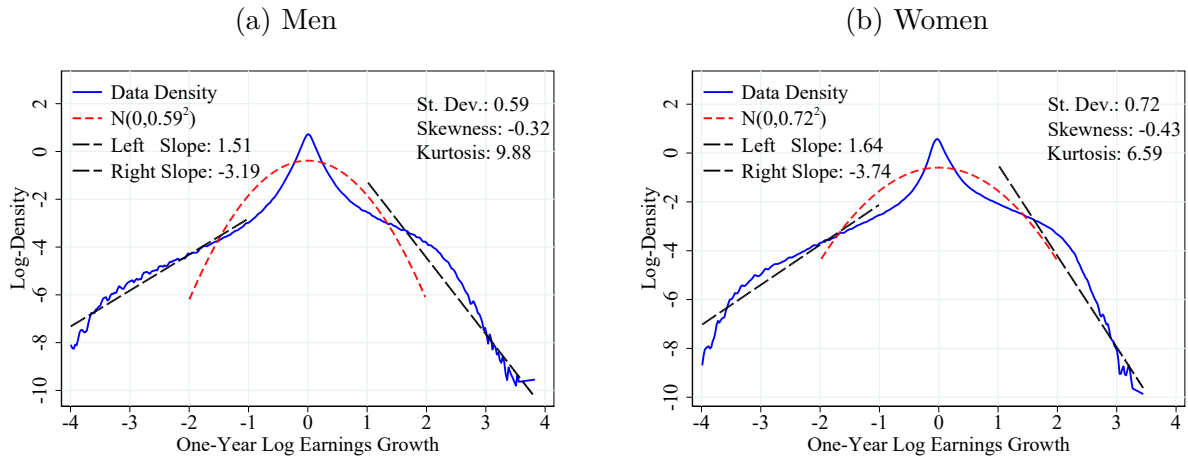
**Notes:** Using the LX sample in 2005, Figure A.10 plots the density of residual five-year earnings changes and the best fit using a normal distribution, separately for (a) Men and (b) Women.

Figure A.11: Empirical Log-Densities of One-Year Earnings Growth



**Notes:** Using the LX sample in 2005, Figure A.11 plots the log-density of residual one-year earnings changes and the best fit using a normal distribution, separately for (a) Men and (b) Women.

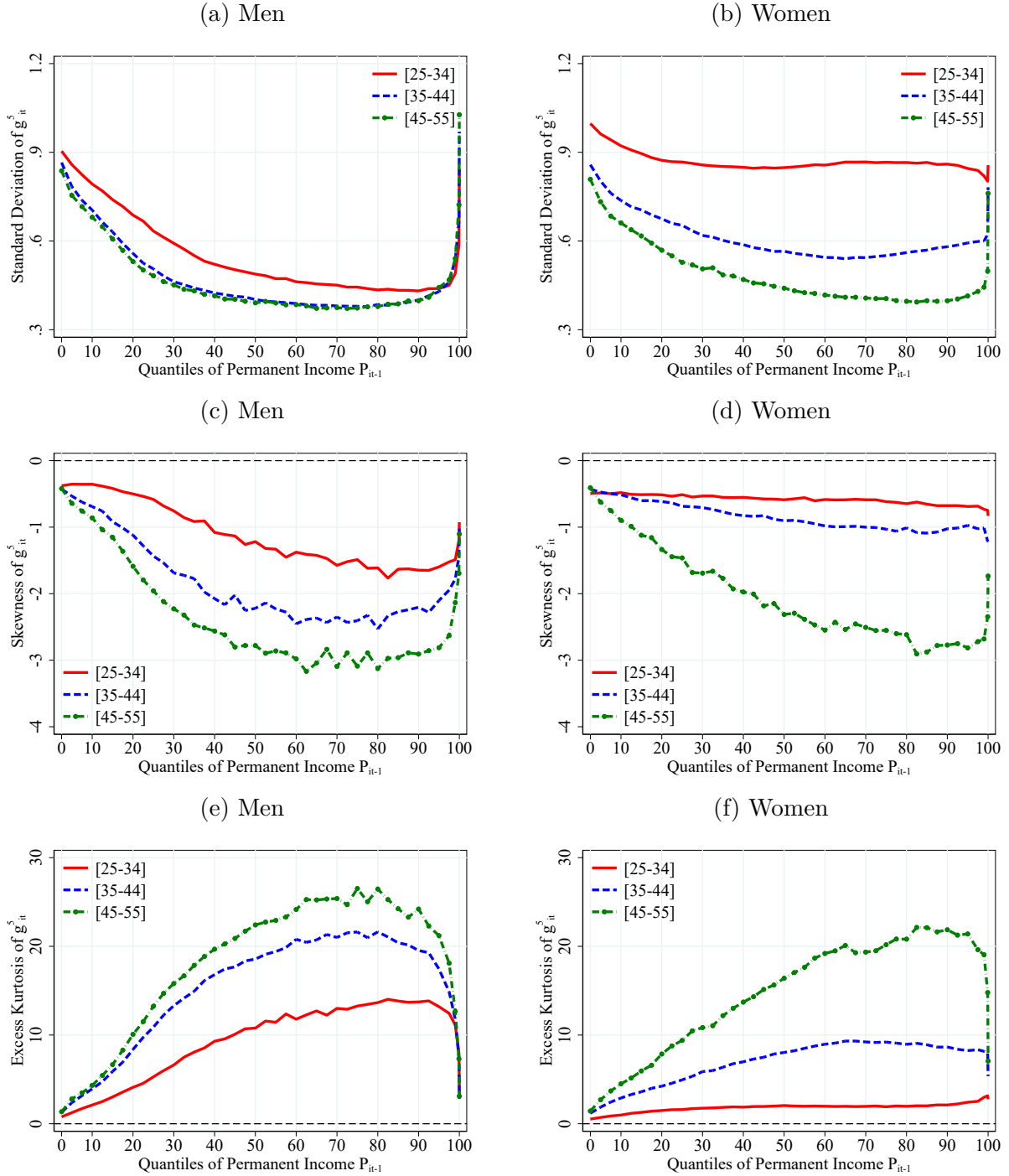
Figure A.12: Empirical Log-Densities of Five-Year Earnings Growth



**Notes:** Using the LX sample in 2005, Figure A.12 plots the log-density of residual five-year earnings changes and the best fit using a normal distribution, separately for (a) Men and (b) Women.

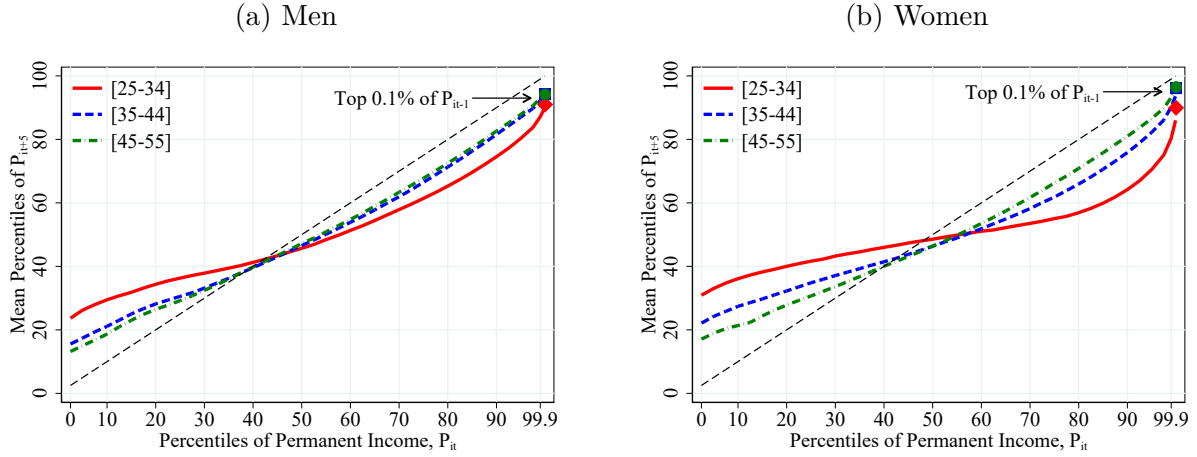


Figure A.13: Standardized Moments of 5-Year Log Earnings Changes



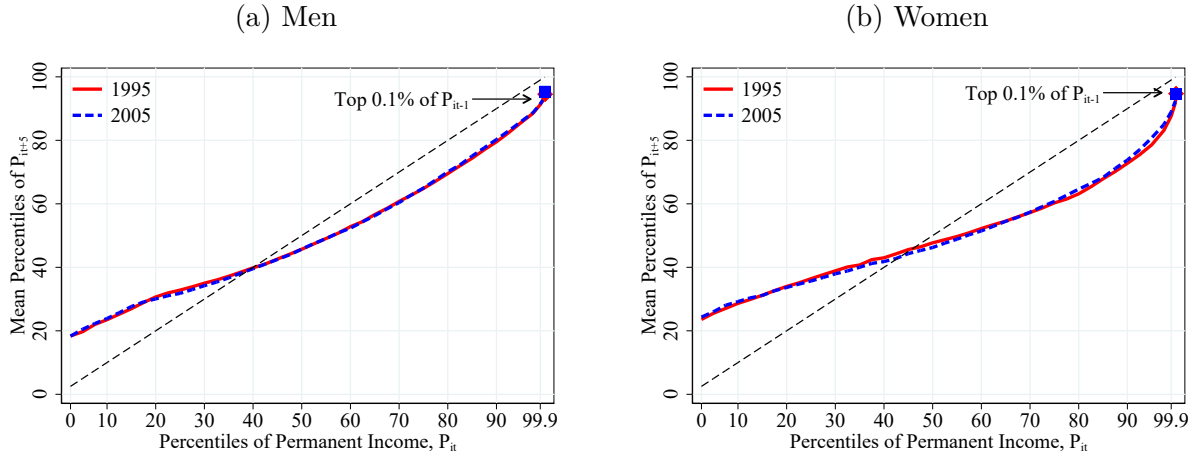
**Notes:** Using residual five-year earnings changes and the LX-H sample, Figure ?? plots against permanent income quantile groups the following variables for the 3 age groups: (a) Men: Standard deviation, (b) Women: Standard deviation, (c) Men: Coef of Skewness, (d) Women: Coef of Skewness, (e) Men: Excess Kurtosis, (f) Women: Excess Kurtosis. Excess kurtosis equals the coefficient of kurtosis minus 3, the coefficient of kurtosis for the Normal distribution. Each figure averages the respective outcome across years over the period 1997–2011.

Figure A.14: Evolution of 5-Year Mobility Over the Life Cycle



**Notes:** Figure A.14 shows average rank-rank mobility over 5 years by computing average percentiles of permanent income,  $P_{t+5}$  five years later for workers in each permanent income percentile in the base year. The figure separately plots mobility for workers in age groups 25–34 and 35–44 in the base year and averages over the results for each available base year 1985–2005.

Figure A.15: Evolution of 5-Year Mobility Over Time



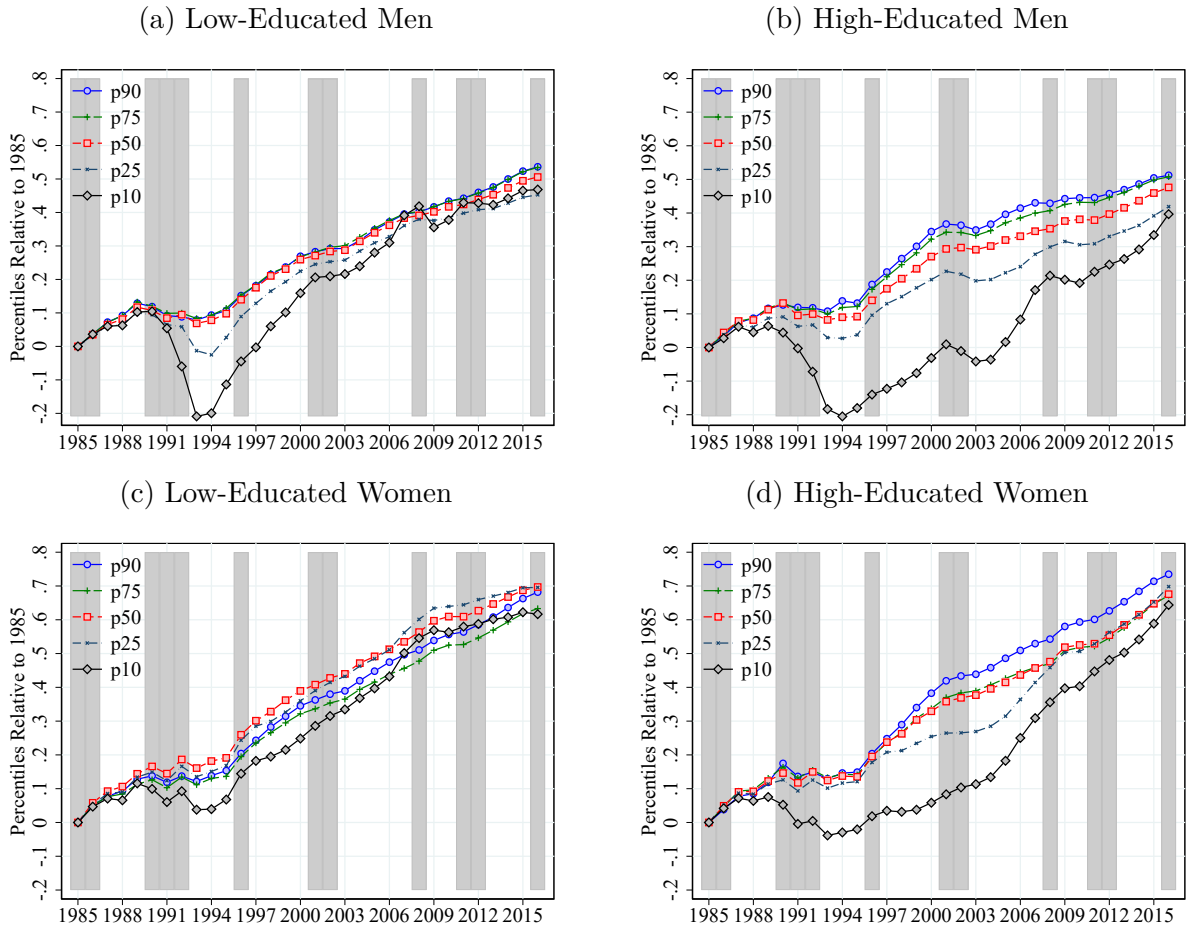
**Notes:** Figure A.15 shows average rank-rank mobility over 5 years by computing average percentiles of permanent income,  $P_{t+5}$  five years later for workers in each permanent income percentile in the base year, using two alternative base years 1995 and 2005 and averaging over all age groups.

## D Additional Results on Mechanisms

### D.1 Education

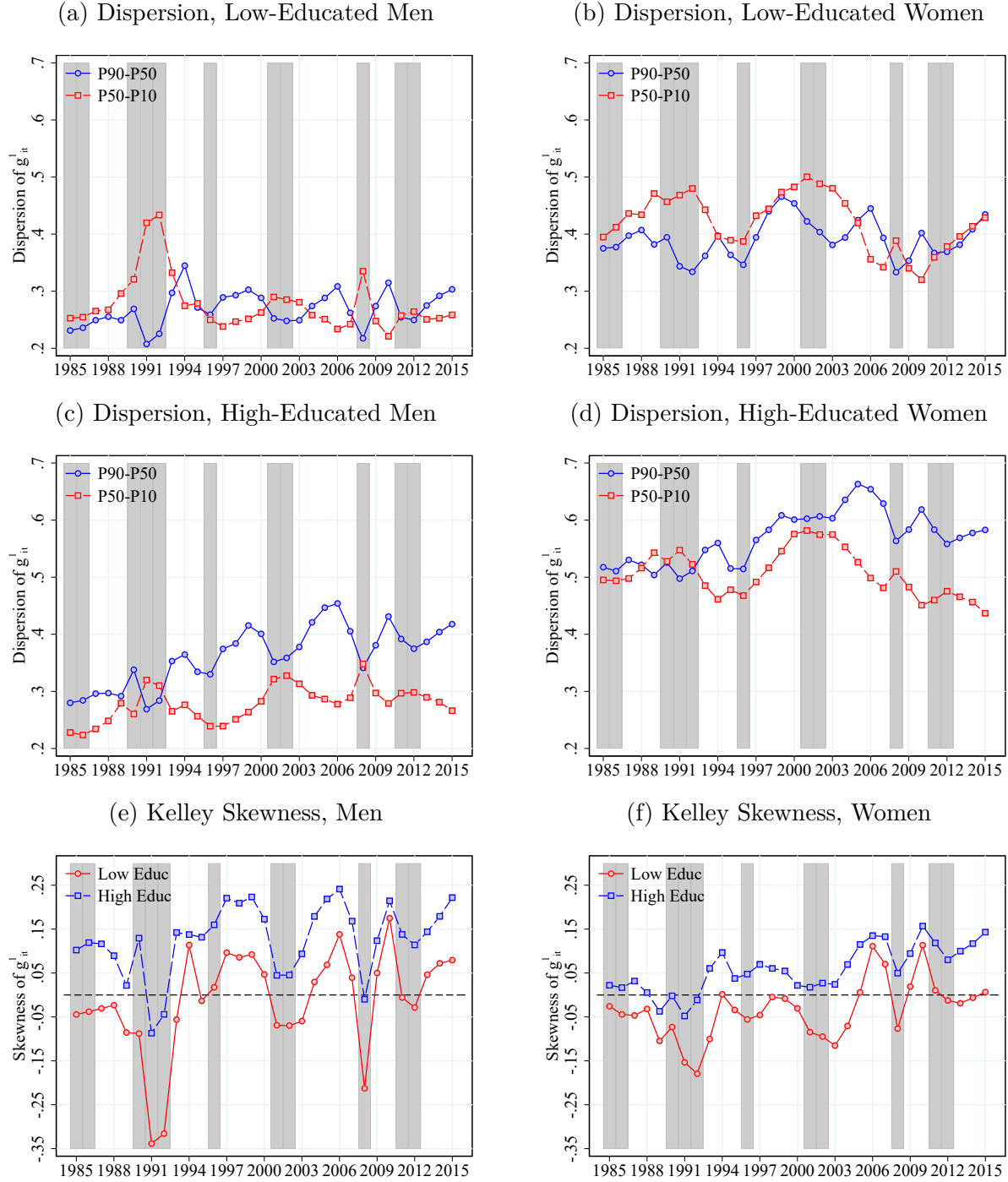
Education level for each individual is determined by the maximum level achieved during the observation period. We divide individuals into two broad education groups, where *Low-Educated* consists of individuals with elementary or high school education and *High-Educated* consists of individuals with at least some college education.

Figure A.16: Income Percentiles by Gender and Education



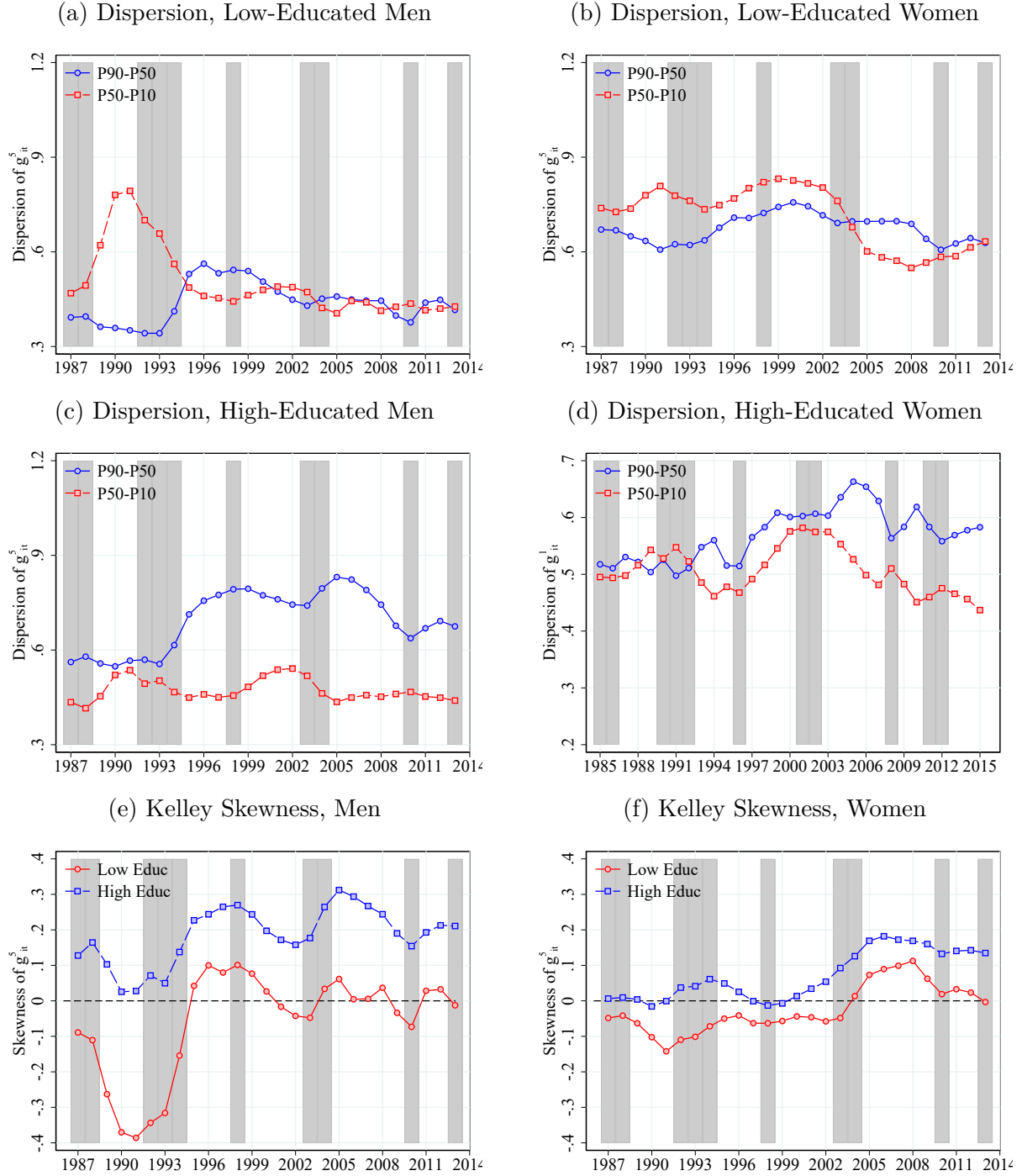
**Notes:** Using raw log earnings and the CS sample, Figure A.16 plots against time  $P_{10}$ ,  $P_{25}$ ,  $P_{50}$ ,  $P_{75}$ ,  $P_{90}$ , separately by gender and education group. All percentiles are normalized to 0 in the first available year, 1985. Shaded areas are recessions.

Figure A.17: Dispersion and Skewness of 1-Year Log Earnings Changes by Gender and Education



**Notes:** Using residual one-year earnings changes and the LX sample, Figures A.17a–A.17d plot the P90-50 and P50-10 differential against time by gender-education group. Figures A.17e and A.17f show Kelley skewness by education for men and women, respectively. Shaded areas are recessions.

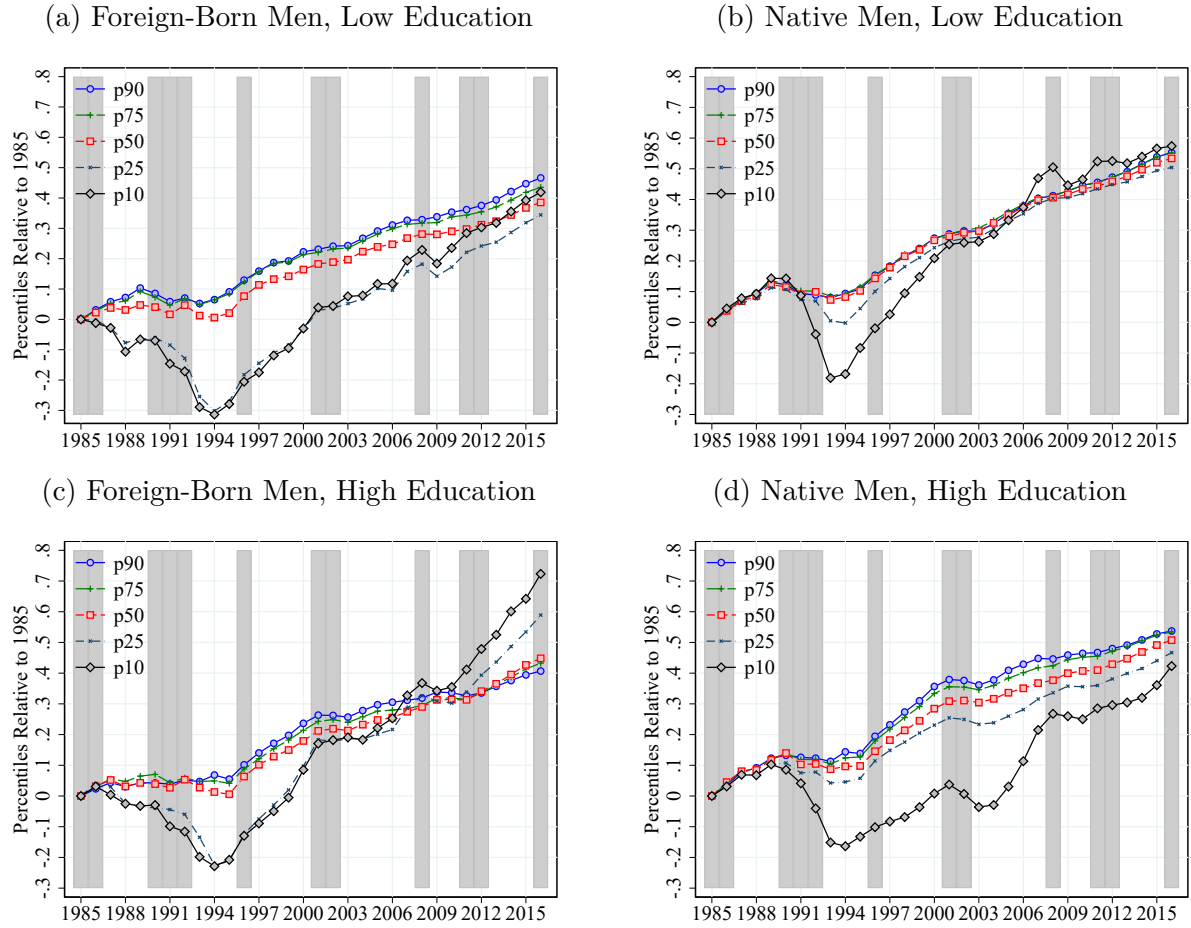
Figure A.18: Dispersion and Skewness of 5-Year Log Earnings Changes by Gender and Education



**Notes:** Using residual five-year earnings changes and the LX sample, Figures A.18a–A.18d plot the P90-50 and P50-10 differential against time by gender-education group. Figures A.18e and A.18f show Kelley skewness by education for men and women, respectively. Shaded areas are recessions.

## D.2 Immigration

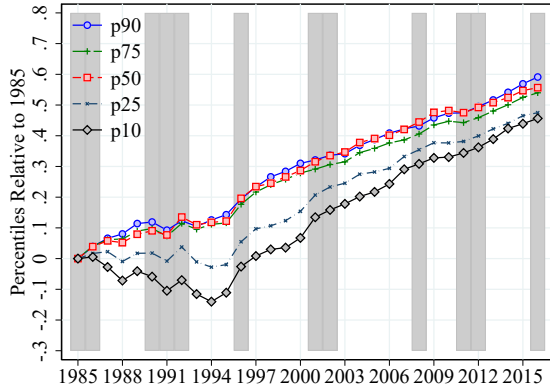
Figure A.19: Income Percentiles for Men by Education and Origin



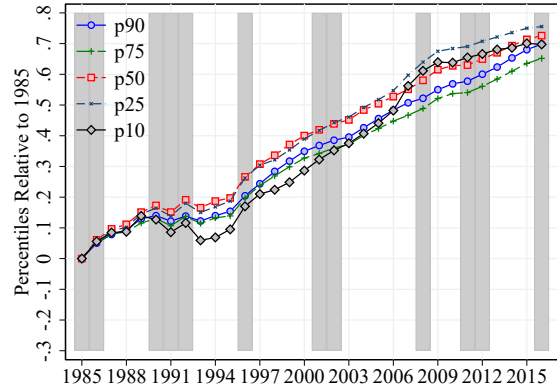
**Notes:** Using the CS sample, Figure A.19 plots  $P_{10}$ ,  $P_{25}$ ,  $P_{50}$ ,  $P_{75}$ ,  $P_{90}$  of log earnings for men against time, separately by education and origin. The figures distinguish foreign-born and native men, and workers with and without college education (low vs high education). All percentiles are normalized to 0 in the first available year, 1985. Shaded areas are recessions.

Figure A.20: Percentiles of Log Earnings for Women by Education and Origin

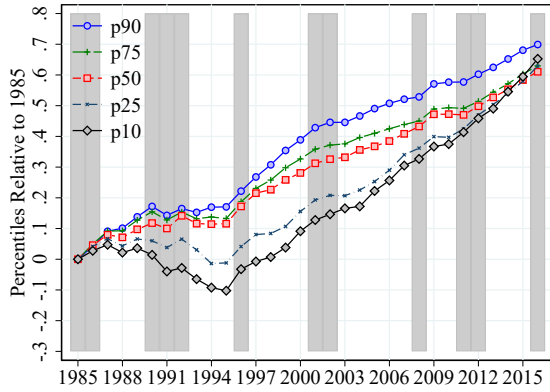
(a) Foreign-Born Women, Low Education



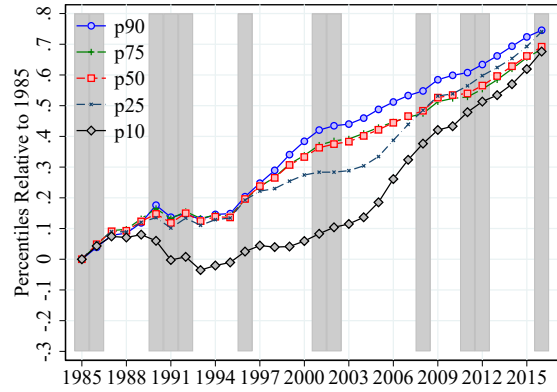
(b) Native Women, Low Education



(c) Foreign-Born Women, High Education

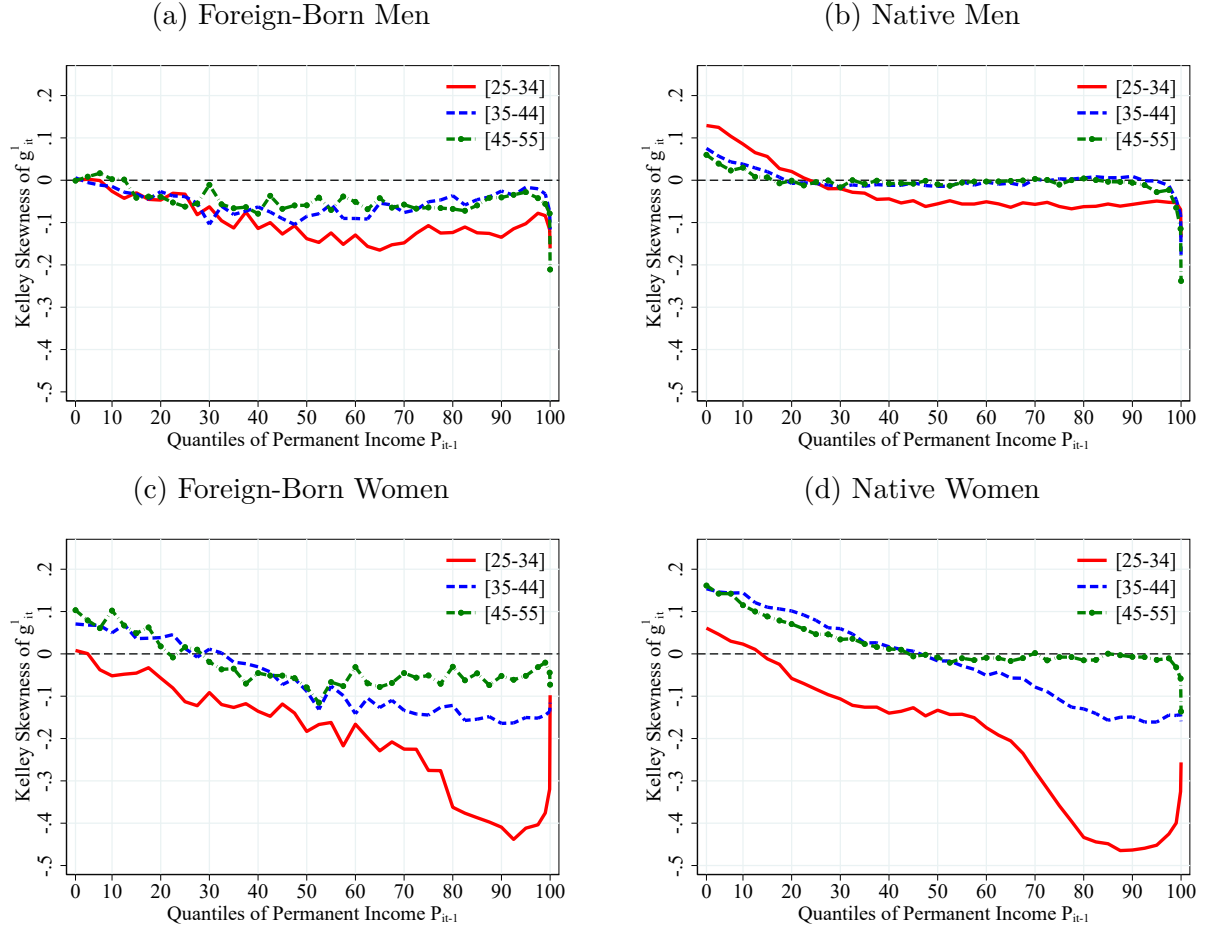


(d) Native Women, High Education



**Notes:** Using the CS sample, Figure A.20 plots P10, P25, P50, P75, P90 of log earnings for women against time, separately by education and origin. The figures distinguish foreign-born and native women, and workers with and without college education (low vs high education). All percentiles are normalized to 0 in the first available year, 1985. Shaded areas are recessions.

Figure A.21: Kelley Skewness of 1-Year Earnings Growth by Gender, Origin, Age, and Income

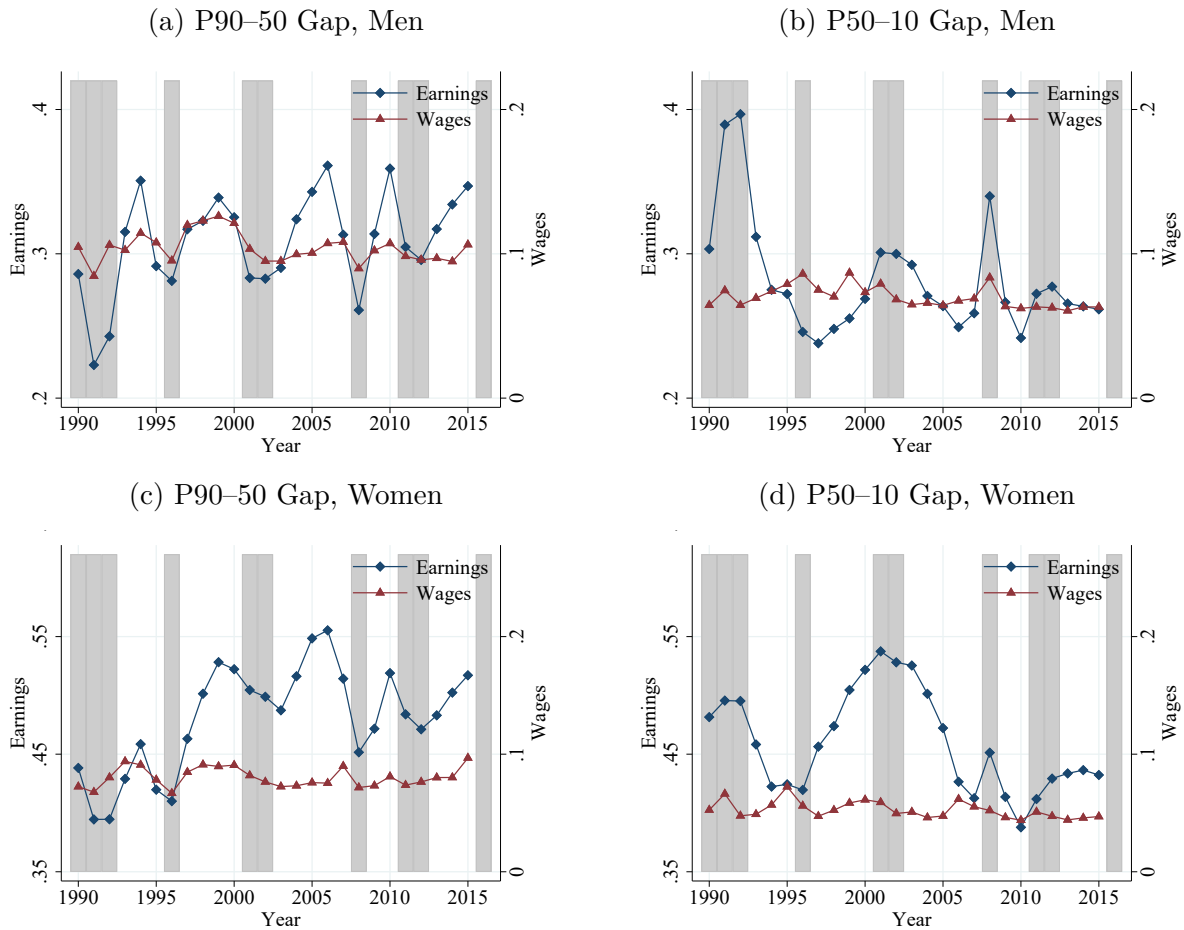


**Notes:** Using residual one-year earnings changes and the LX-H sample, Figure A.21 plots Kelley Skewness against permanent income quantile groups for the 3 age groups, separately by gender and origin (foreign-born and natives). Kelley Skewness is defined as  $\frac{(P_{90}-P_{50})-(P_{50}-P_{10})}{P_{90}-P_{10}}$ . Each figure averages Kelley skewness in each bin across years over the period 1988–2011.



### D.3 The Role of Hours and Wages

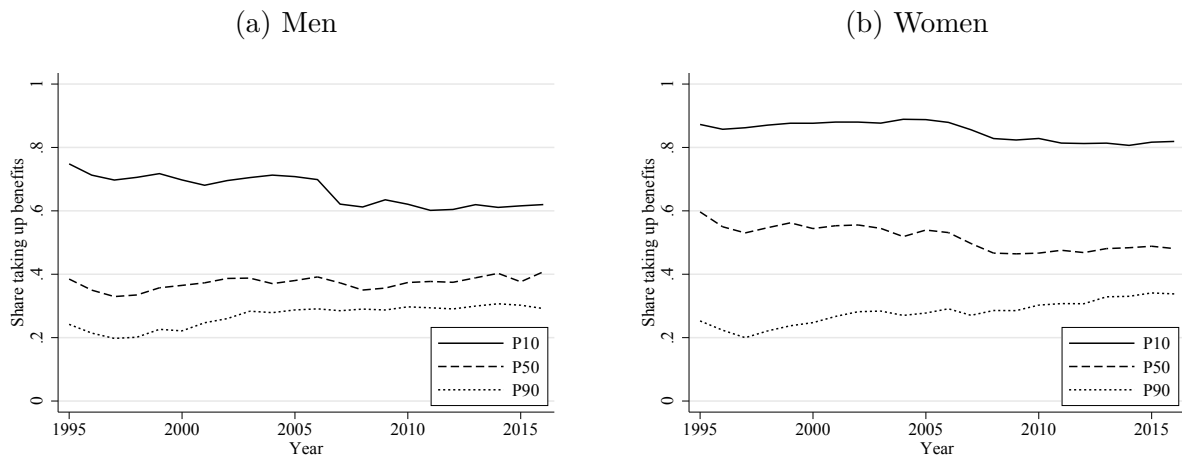
Figure A.22: Level and Trend in Volatility: Wages and Earnings



**Notes:** Using the wage survey sample, Figure A.22 plots the P90-50 gap and P50-10 gap in 1-year changes of residualized earnings and residualized monthly wages against time, separately for men and women. Shaded areas are recessions.

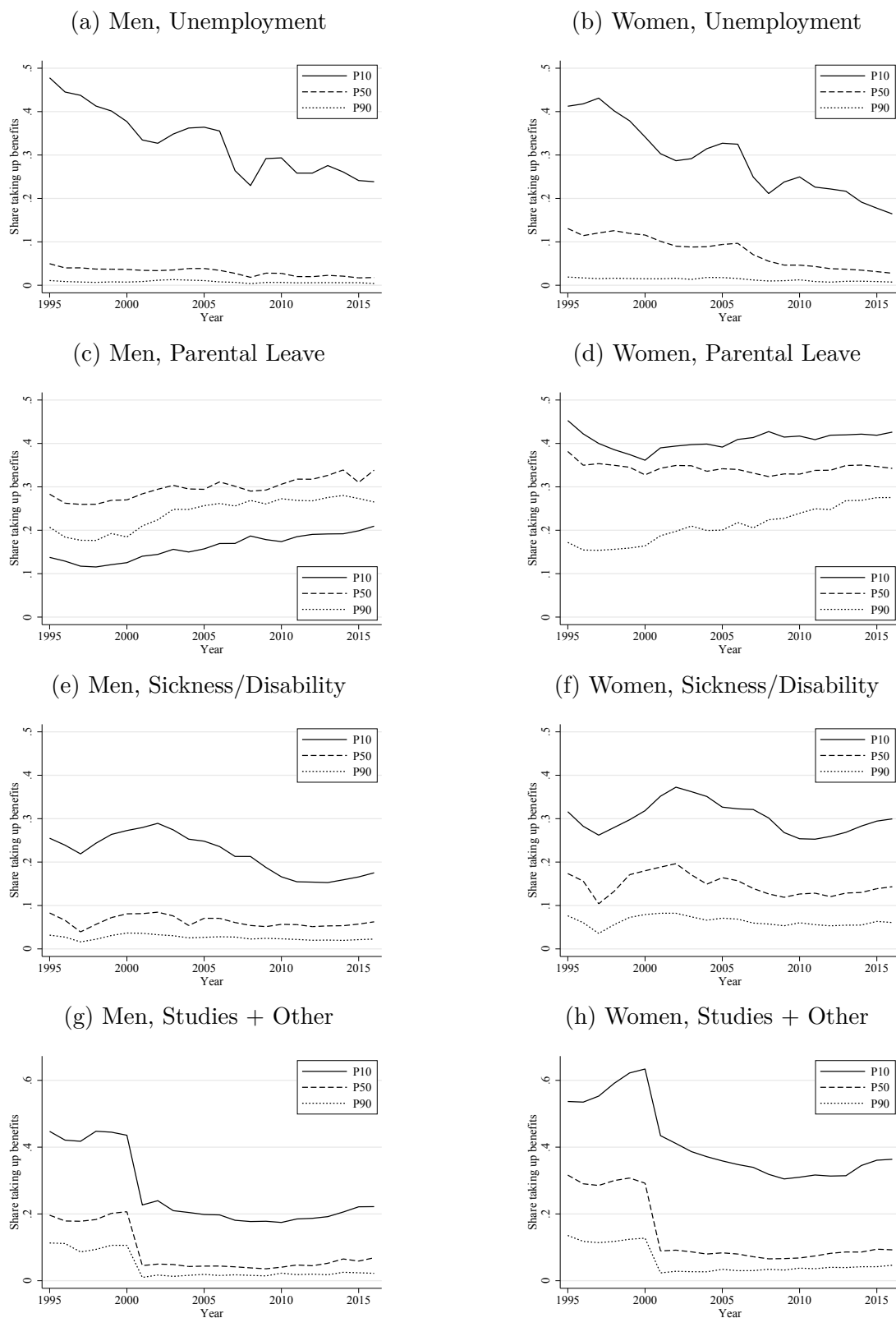
## D.4 Work-Related Benefits

Figure A.23: Benefits Take-Up across Percentiles of the Earnings Distribution



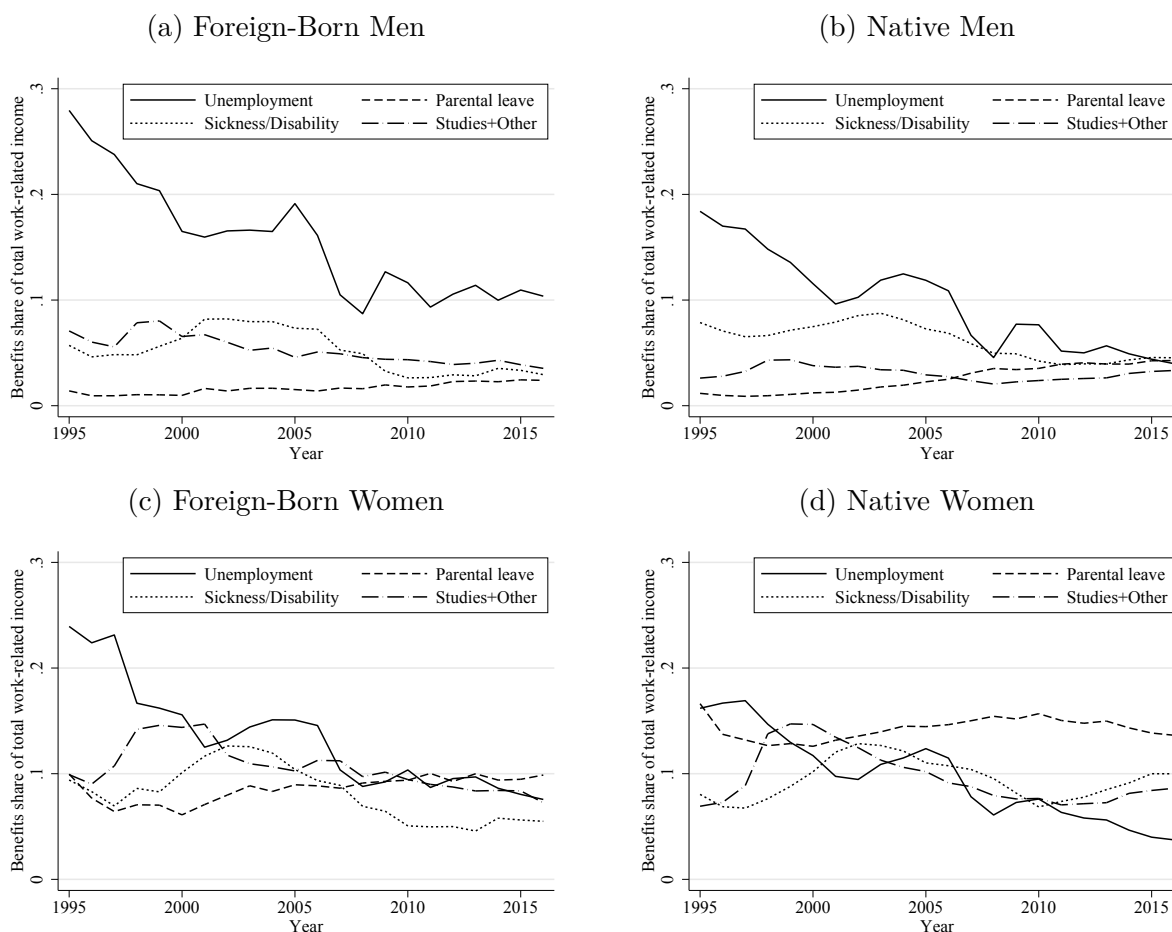
**Notes:** Using the CS sample, Figure A.23 shows the share of employed in ages 25–55 taking up work-related benefits, as defined in section ??, at different percentiles of the earnings distribution, by gender.

Figure A.24: Benefits Take-Up by Benefit Type across Percentiles of the Earnings Distribution



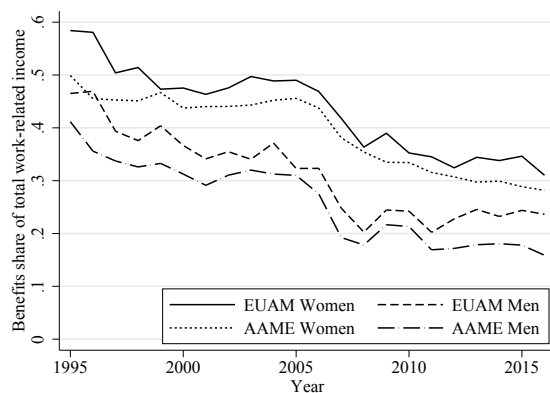
**Notes:** Using the CS sample, Figure A.24 shows the share of employed in ages 25–55 taking up different types of work-related benefits at different percentiles of the earnings distribution, by gender.

Figure A.25: Benefits Usage by Origin at the 10th Percentile of the Earnings Distribution



**Notes:** Using the CS sample, Figure A.25 shows the share of different types of work-related benefits in total work-related income among employed in ages 25–55 at the 10th percentile of the earnings distribution by gender and origin.

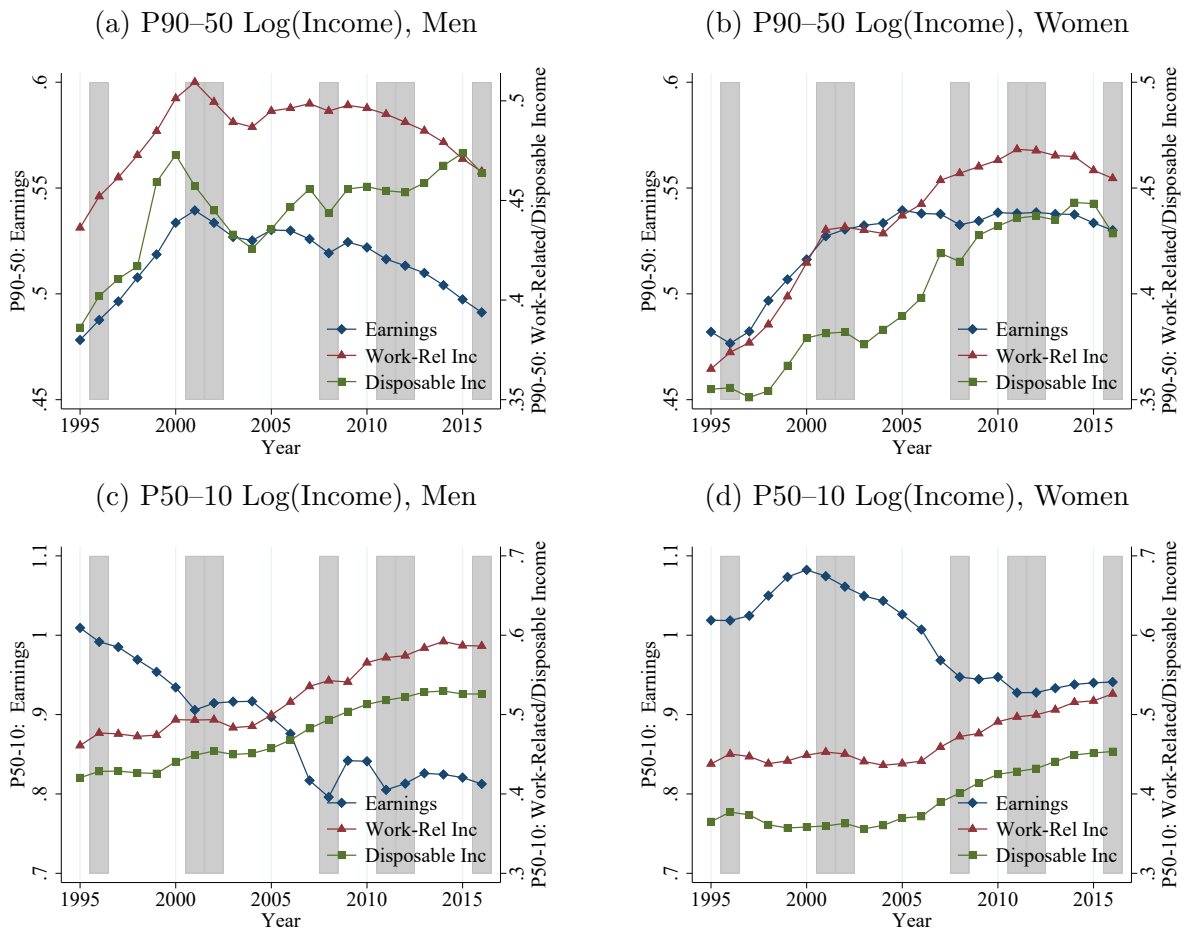
Figure A.26: Benefits Usage by Region of Origin at the 10th Percentile of the Earnings Distribution



**Notes:** Using the CS sample, Figure A.26 shows the share work-related benefits in total work-related income among employed in ages 25–55 at the 10th percentile of the earnings distribution by gender and region of origin.

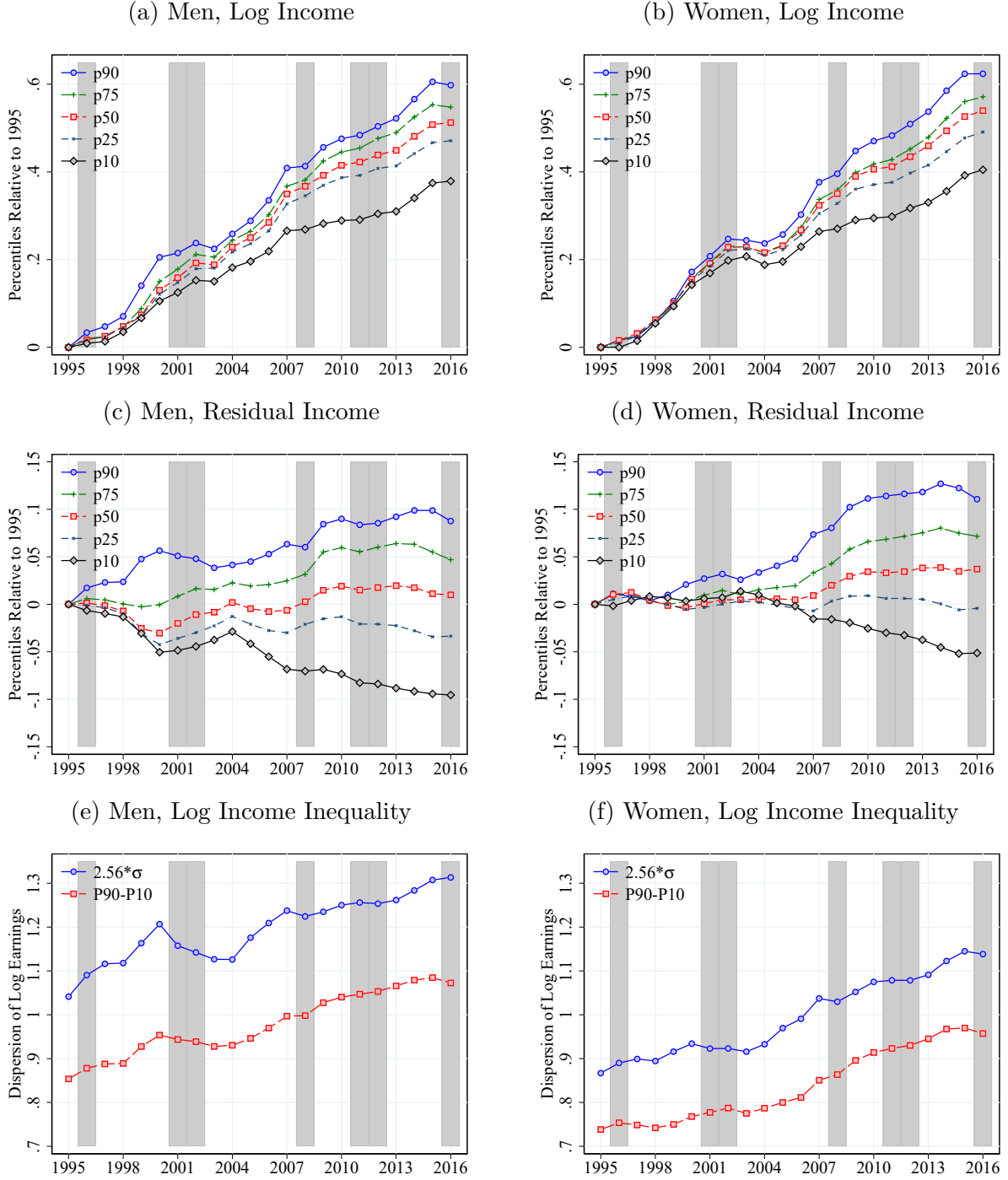
## D.5 Social Insurance

Figure A.27: Income Inequality: Earnings, Benefits, and Disposable Income



**Notes:** Using the CSB sample over 1995–2016, Figure A.27 plots the P90–50 and P50–10 differentials in log income against time, separately for men and women. Each figure distinguishes three income concepts; log earnings, log total work-related income, and log disposable income, see section ?? . Shaded areas are recessions.

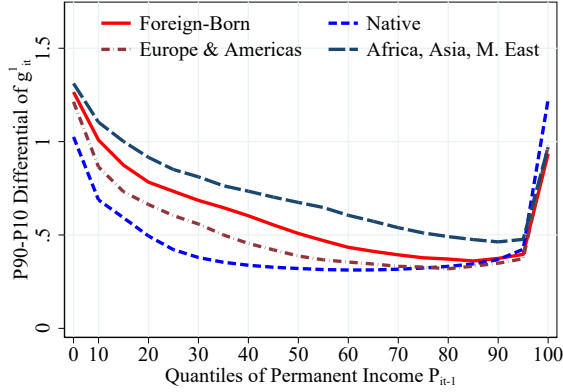
Figure A.28: Trends in Disposable Income Inequality



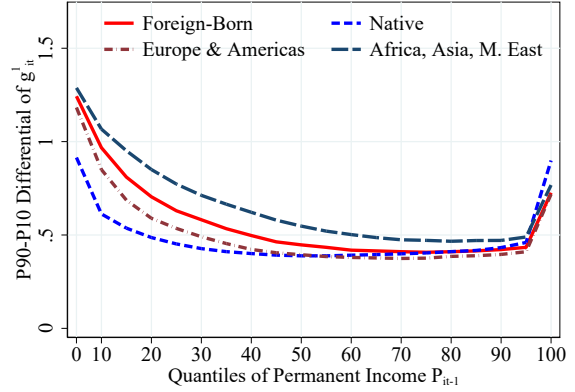
**Notes:** Using the CSB sample, Figures (a)-(d) plot P10, P25, P50, P75, P90 by gender, using log disposable income in panels (a) and (b) and residualized disposable income in (c) and (d). All percentiles are normalized to 0 in the first available year, 1995. Figures (e) and (f) show  $2.56 \times \text{Standard deviation}$  and the P90-P10 gap in log disposable income by gender over time. Shaded areas are recessions.

Figure A.29: 1-Year Disposable Income Volatility by Income and Origin

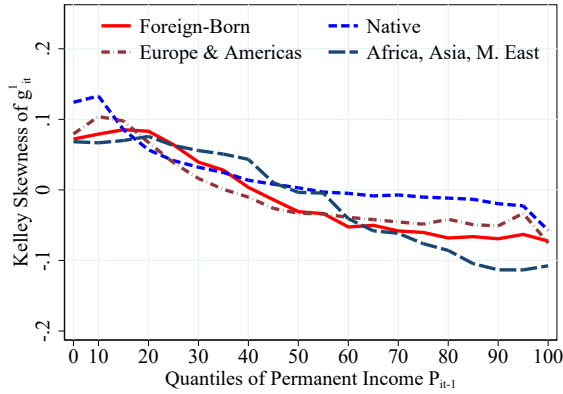
(a) P90–P10 Income Growth, Men



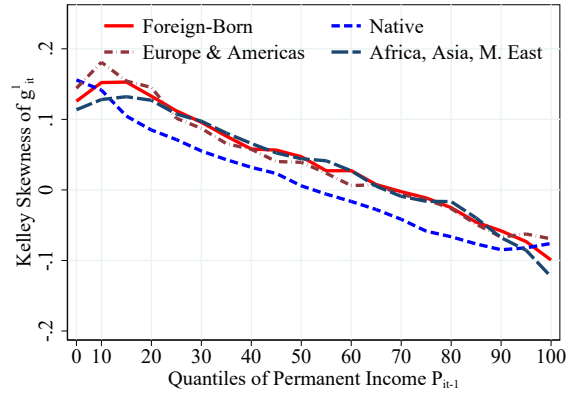
(b) P90–P10 Income Growth, Women



(c) Kelley Skewness, Men



(d) Kelley Skewness, Women

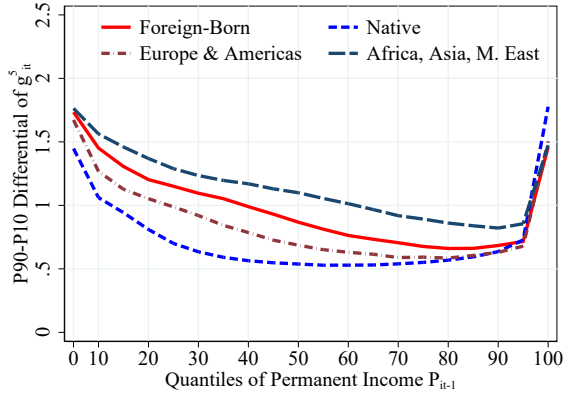


**Notes:** Using residual one-year changes in disposable income and the LXB-H sample over 1995–2011, Figure A.29 plots against permanent income quantile groups the following variables: (a) Men: P90–P10, (b) Women: P90–P10, (c) Men: Kelley Skewness, (d) Women: Kelley Skewness. Each figure distinguishes foreign-born and native workers, and further splits the immigrant sample by two regions of origin (Europe & Americas, and Africa, Asia, Middle East). Kelley Skewness is defined as  $\frac{(P90 - P50) - (P50 - P10)}{P90 - P10}$ . Each figure averages the outcome in each bin across years over the period 1998–2011.

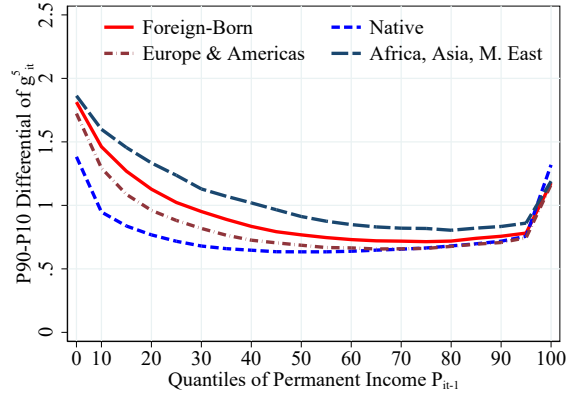


Figure A.30: 5-Year Disposable Income Volatility by Income and Origin

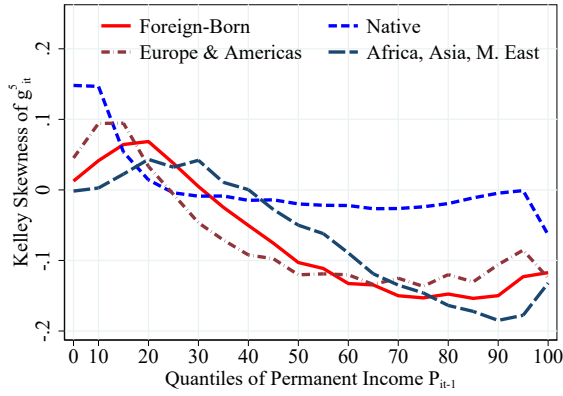
(a) P90–P10 Income Growth, Men



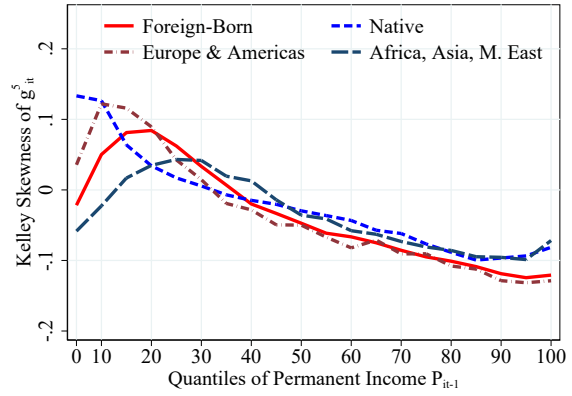
(b) P90–P10 Income Growth, Women



(c) Kelley Skewness, Men

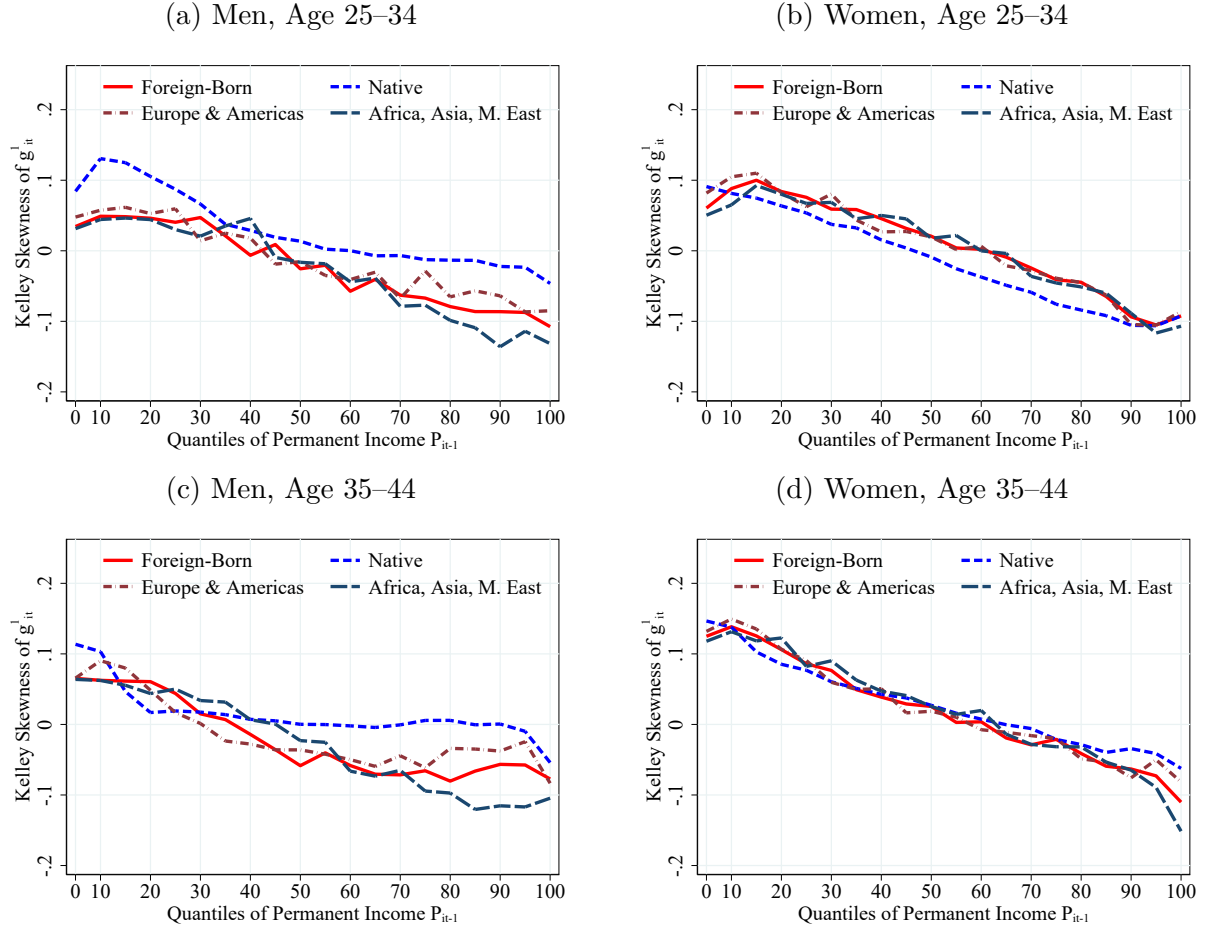


(d) Kelley Skewness, Women



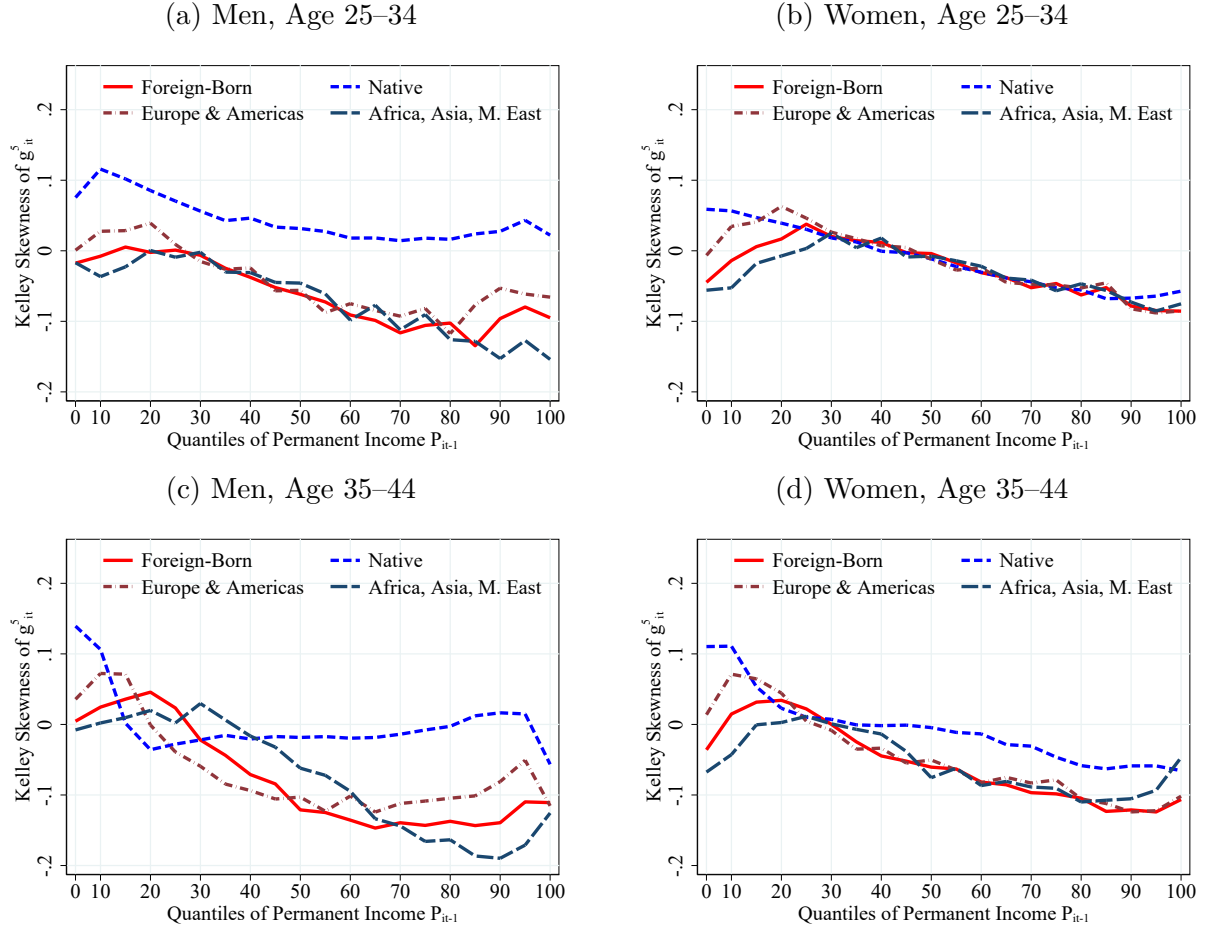
**Notes:** Using residual five-year changes in disposable income and the LXB-H sample over 1995–2011, Figure A.30 plots against permanent income quantile groups the following variables: (a) Men: P90–P10, (b) Women: P90–P10, (c) Men: Kelley Skewness, (d) Women: Kelley Skewness. Each figure distinguishes foreign-born and native workers, and further splits the immigrant sample by two regions of origin (Europe & Americas, and Africa, Asia, Middle East). Kelley Skewness is defined as  $\frac{(P90 - P50) - (P50 - P10)}{P90 - P10}$ . Each figure averages the outcome in each bin across years over the period 1998–2011.

Figure A.31: Kelley Skewness of 1-Year Disposable Income Changes by Age, Income, and Origin



**Notes:** Using residual one-year changes in disposable income and the LXB-H sample over 1995–2011, Figure A.31 plots Kelley Skewness against permanent income quantile groups for: (a) Men, Age 25–34, (b) Women, Age 25–34, (c) Men, Age 35–44, (d) Women, Age 35–44. Each figure distinguishes foreign-born and native workers, and further splits the immigrant sample by two regions of origin (Europe & Americas, and Africa, Asia, Middle East). Kelley Skewness is defined as  $\frac{(P_{90} - P_{50}) - (P_{50} - P_{10})}{P_{90} - P_{10}}$ . Each figure averages Kelley skewness in each bin across years over the period 1998–2011.

Figure A.32: Kelley Skewness of 5-Year Disposable Income Changes by Age, Income, and Origin



**Notes:** Using residual five-year changes in disposable income and the LXB-H sample over 1995–2011, Figure A.32 plots Kelley Skewness against permanent income quantile groups for: (a) Men, Age 25–34, (b) Women, Age 25–34, (c) Men, Age 35–44, (d) Women, Age 35–44. Each figure distinguishes foreign-born and native workers, and further splits the immigrant sample by two regions of origin (Europe & Americas, and Africa, Asia, Middle East). Kelley Skewness is defined as  $\frac{(P_{90} - P_{50}) - (P_{50} - P_{10})}{P_{90} - P_{10}}$ . Each figure averages Kelley skewness in each bin across years over the period 1998–2011.

## D.6 Capital Income

This section considers the role of capital income in overall income inequality. Most Swedish taxpayers report negative capital income based on mortgage payments, for example, reducing their gross income. Figure A.33a shows that including capital income implies slightly lower income for the bottom 90 percent of the distribution, compared to focusing only on labor income. In contrast, average income among the top 10 percent of the distribution in Figure A.33b increases substantially more, especially during boom periods, when including capital gains.

Figure A.33: Labor and Capital Income Across the Earnings Distribution

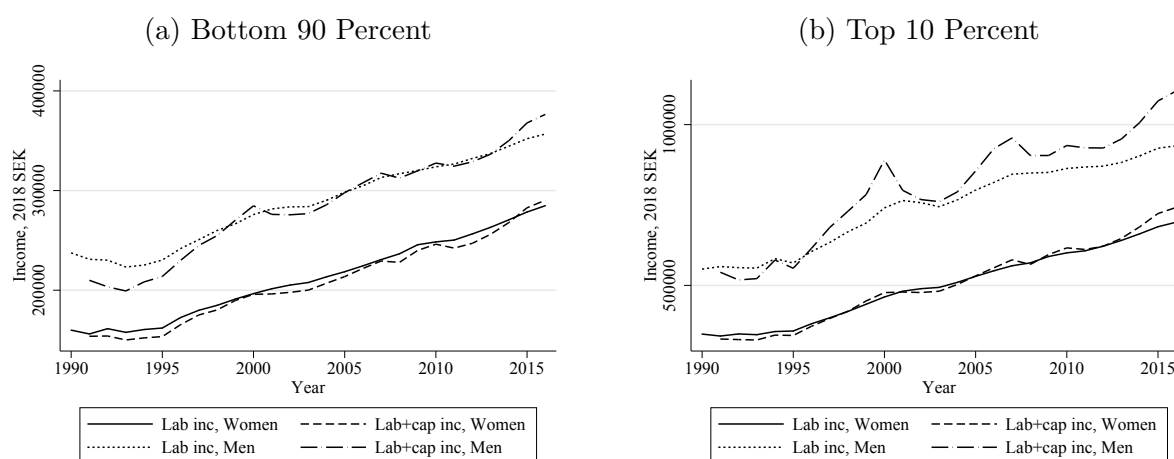
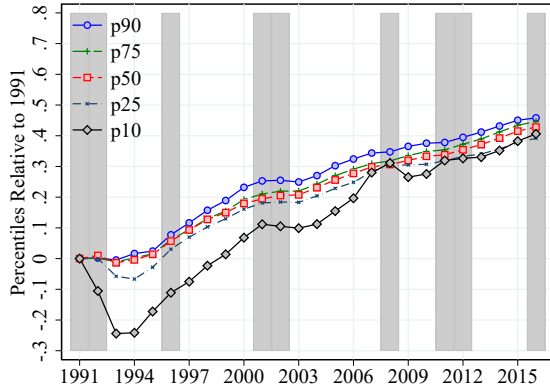


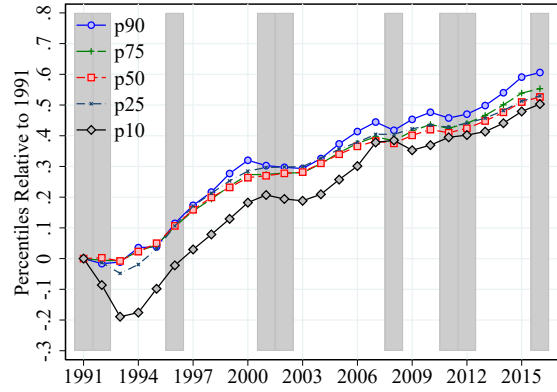
Figure A.34 plots the time series of income percentiles from 1991–2016 for earnings and earnings plus capital income. Here, we find that real gains were larger when including capital gains. These differences are largest at the 90th percentile of the distribution, but they also exist throughout the income distribution, with about 10 percent larger real gains over 1991–2016 at the median income when including capital income.

Figure A.34: Income Inequality: The Role of Capital Income

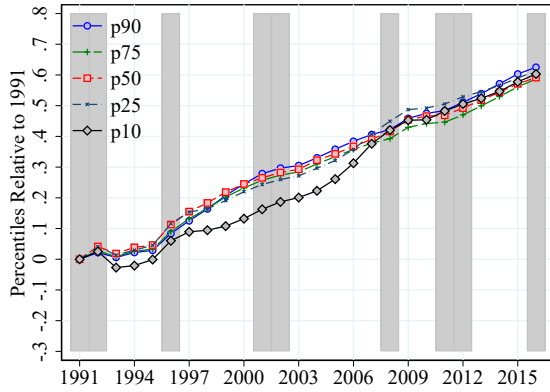
(a) Earnings, Men



(b) Earnings + Capital Income, Men



(c) Earnings, Women



(d) Earnings + Capital Income, Women

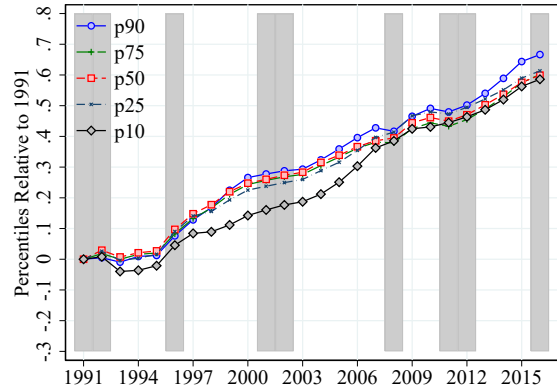
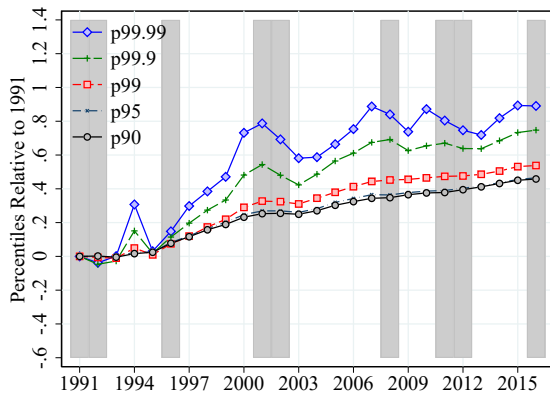


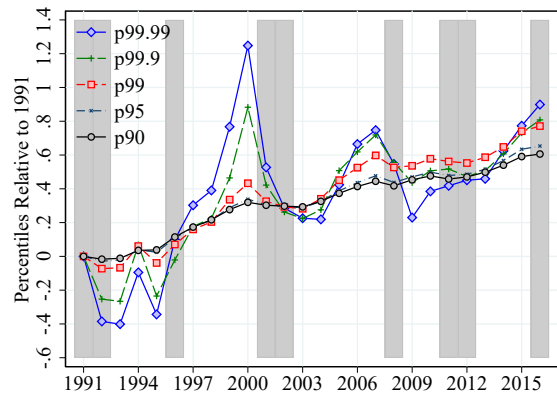
Figure A.35 plots the time series of top income percentiles from 1991–2016 for earnings and earnings plus capital income. We document that capital income yields much more volatile patterns over time, whereas top earnings increase steadily and substantially over time.

Figure A.35: Top Income Inequality: The Role of Capital Income

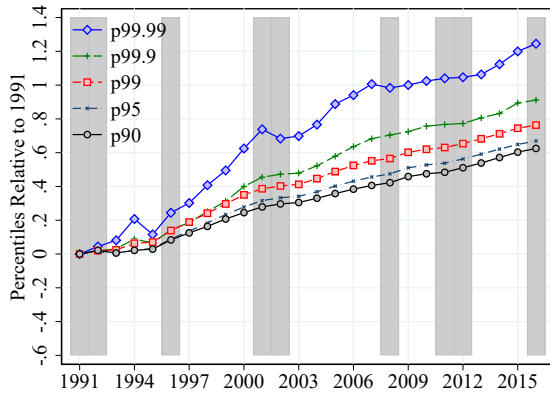
(a) Earnings, Men



(b) Earnings + Capital Income, Men



(c) Earnings, Women



(d) Earnings + Capital Income, Women

