Supplement to "Earnings dynamics and its intergenerational transmission: Evidence from Norway"

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Appendix A: After-transfer income between 1967–2017

Table A.1. Descriptive statistics for 1967–2017 sample.

Panel A: Sample statistics

	Obs. (1000s)		Mean earnings		Age shares %			Education shares %		
Year	Men	Women	Men	Women	[25, 35]	[36, 45]	[46, 55]	$<HS$	HS	$CD+$
1975	1122	1311	10,649	29,047	46.6	24.6	28.9	62.9	19.2	17.9
1985	1264	1579	12,155	21,334	45.3	32.4	22.3	49.5	26.4	24.1
1995	1470	1878	23,202	32,259	42.0	29.5	28.5	36.6	33.4	30.0
2005	1609	2039	32,543	41,649	37.2	32.8	30.0	27.1	36.7	36.2
2015	1577	1920	37,624	45,626	37.1	31.7	31.2	24.9	36.9	38.2

Panel B: Percentiles of the earnings distribution (2018 US$)

Year	P1	P5	P10	P25	P50	P75	P90	P95	P99	P99.9
1975	0	0	0	0	13,961	37,156	50,098	59,987	89,217	102,451
1985	0	0	0	0	13,606	29,677	40,059	48,071	71,395	121,291
1995	0	0	0	0	21,198	48,653	65,592	80,462	127,283	249,950
2005	0	0	0	0	29,637	62,079	84,843	106,318	176,355	392,924
2015	0	0	0	0	39,112	66,261	91,680	114,903	181,782	368,828

Note: Table A.1 shows summary statistics for the sample of individual covering the 1967 to 2017 period. All nominal values are deflated to their 2018 real values using the Consumer Price Index in Norway and converted to US dollars using the average exchange rate in 2018. In the right columns of panel A, we separate workers into three groups. $<HS$ are workers with less than a high school diploma, HS are workers with a high school degree, and $CD+$ are workers with a college degree or more advanced degrees.

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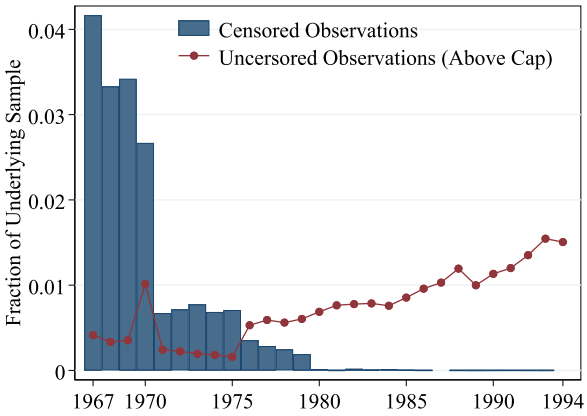

FIGURE A.1. Share of censored observation in 1967–2017 sample. Notes: Figure A.1 shows the share of observations subject to top coding (blue bars). The top coding was not applied uniformly across years and several observations that should have been top coded remained uncensored. The dotted line shows the share of those observations in the sample.

A.1 *Trends in after-transfers income inequality*

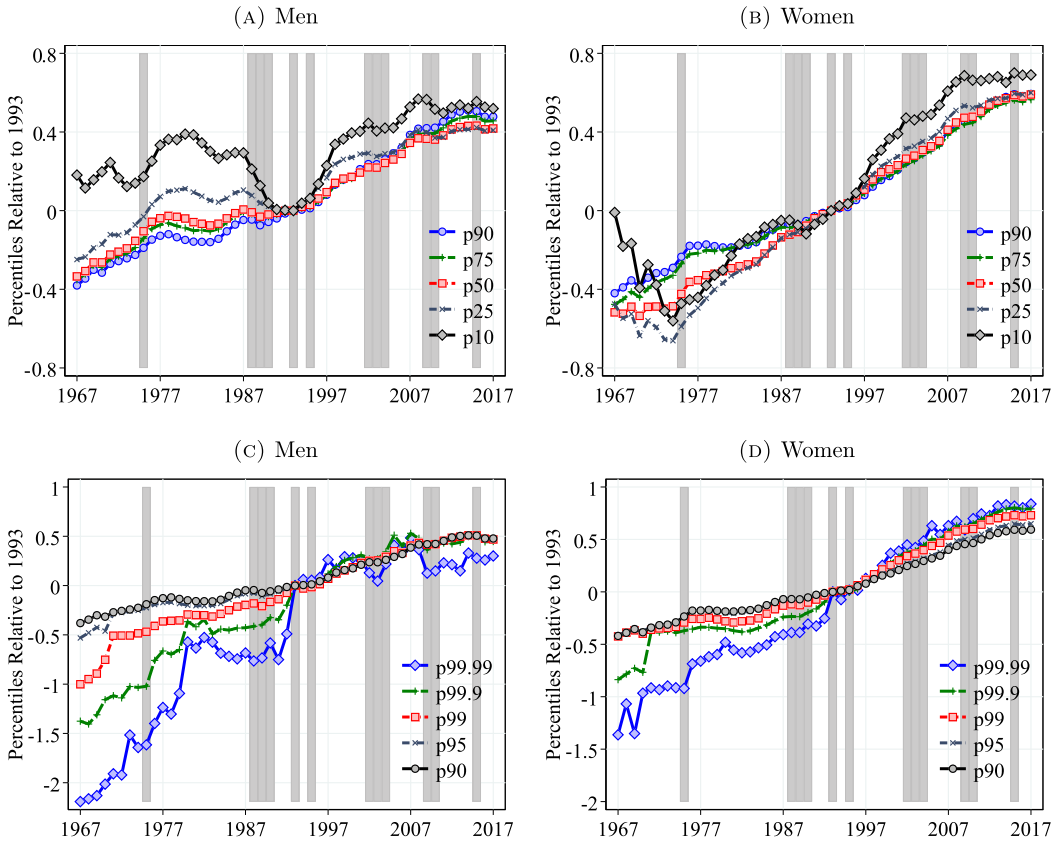

FIGURE A.2. Percentiles of the log real after-transfer income. Notes: Figure A.2 shows the evolution of the following variables: (a) men: P10, P25, P50, P75, P90 (b) women: P10, P25, P50, P75, P90, (c) men: P90, P95, P99, P99.9, P99.99, (d) women: P90, P95, P99, P99.9, P99.99. All percentiles are normalized to 0 in 1993. Shaded areas represent recession years, defined as years with an unemployment growth rate of 0.4 pp. or more and an output gap of −0.5 or less. See Section 2 for sample selection and definitions.

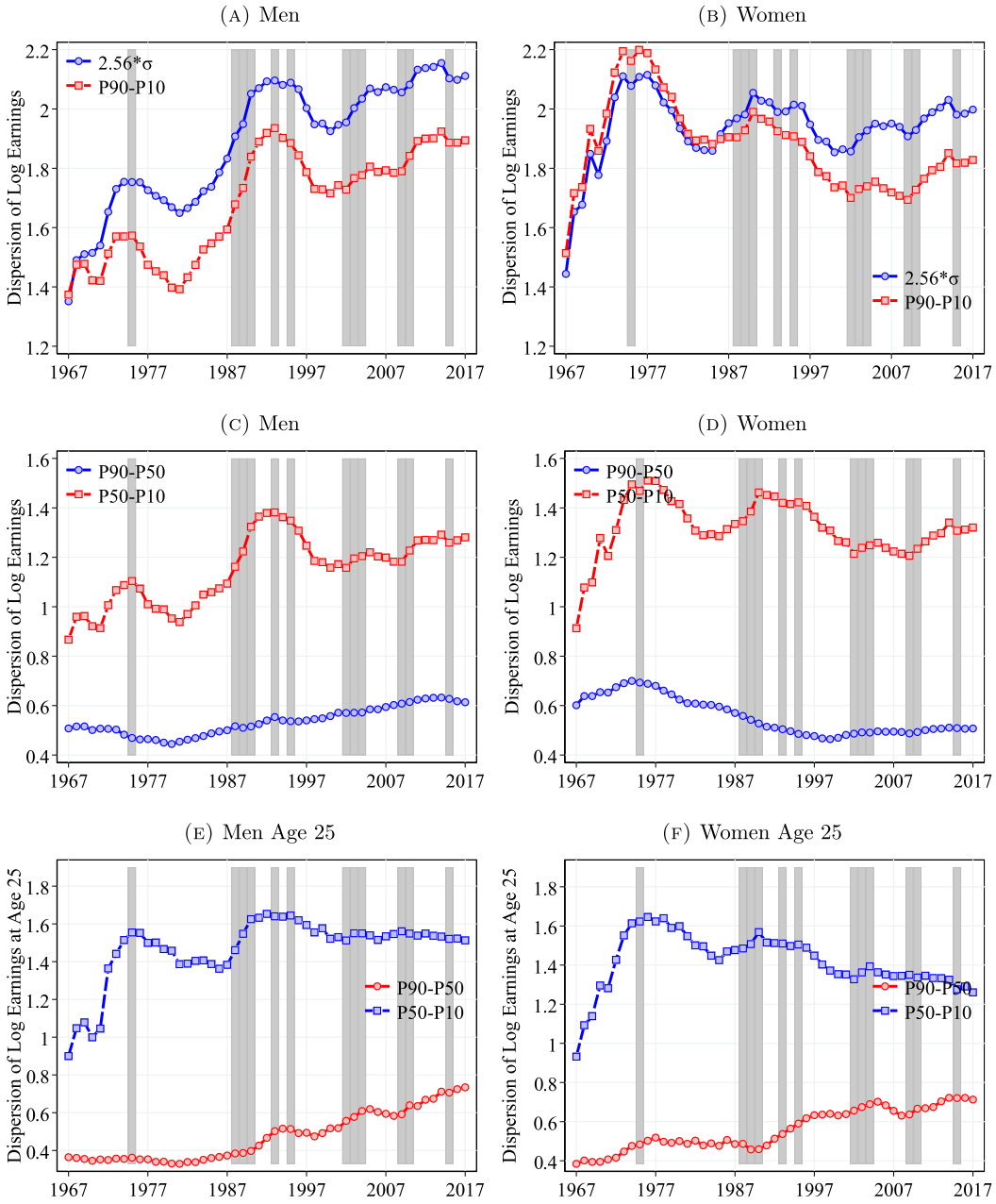

FIGURE A.3. After-transfer income inequality. Notes: Figure A.3 plots the following variables against time: (a) men: P90–P10 and 2.56*SD of log income (b) women: P90–P10 and 2.56*SD of log income, (c) men: P90–P50 and P50–P10, (d) Women: P90–P50 and P50–P10. Shaded areas are recessions. The value of 2.56*SD corresponds to the differential between the 10th and the 90th percentiles in a Normal distribution. Shaded areas represent recession years.

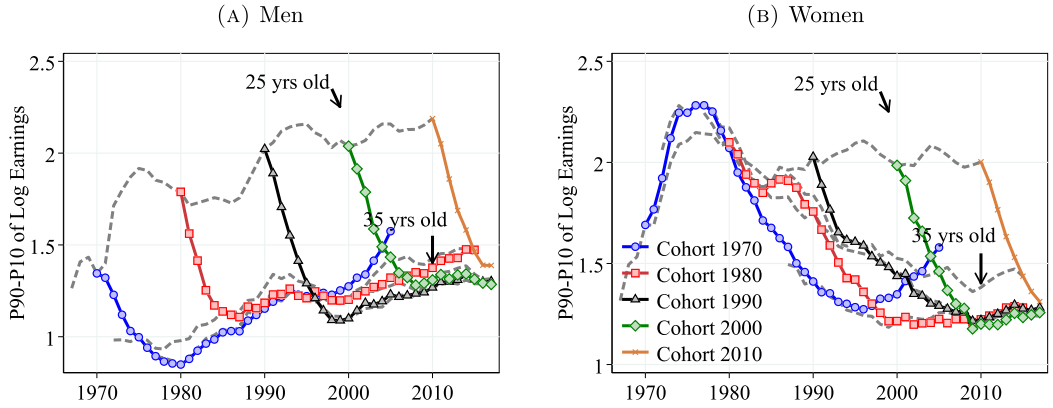

FIGURE A.4. Evolution of after-transfer income inequality by cohorts. Notes: Figure A.4 uses the log earnings from the CS sample and shows: (a) men: P90–P10 over the life cycle for selected cohorts and (b) women: P90–P10 over the life cycle for selected cohorts. A cohort is defined by the year in which the cohort turns 25. Dashed lines connect individuals of the same age. The plot consider cohorts born between 1969 and 1986 and turn 25 from 1993 to 2010, respectively. See Section 2 for sample selection and definitions.

A.2 *Distribution of after-transfer income growth*

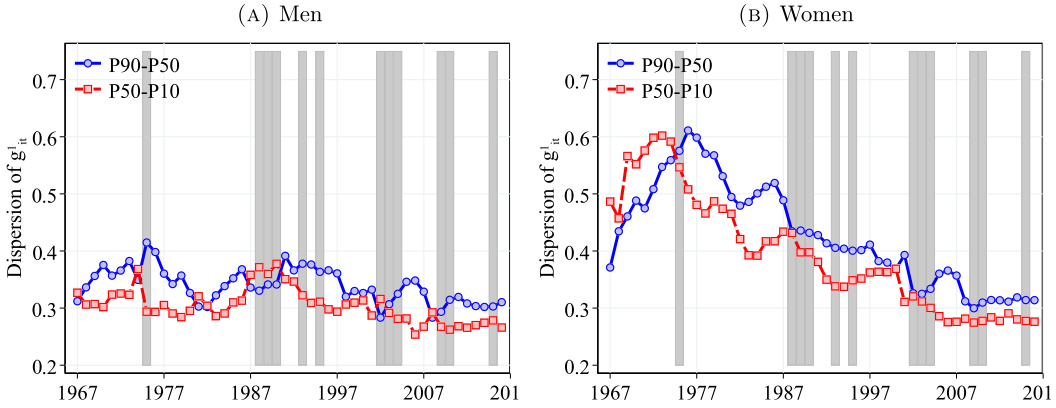

FIGURE A.5. Dispersion of after-transfer income growth. Notes: Figure A.5 shows the 90th–to-50th and 50th-to-10th percentiles differential of earnings growth for men and women. The shaded areas represent recession years, defined as years with: (i) growth in the unemployment rate of 0.4 pp. or more and (ii) an output gap of −0.5 or less. See Section 2 for sample selection and definitions.

TABLE A.2. Cyclicality of after-transfer income changes.

	Dispersion		Skewness		Kurtosis	
	P90–P10	Std. Dev.	Kelley	Third.	Crow–Siddiqui	Kurtosis
	(1)	(2)	(3)	(4)	(5)	(6)
				Men		
ΔGDP_t	−0.01	−0.01**	0.03**	0.09	−0.16	0.06
	(0.00)	(0.01)	(0.01)	(0.10)	(0.11)	(0.32)
				Women		
ΔGDP_t	−0.04	−0.02**	0.02	−0.01	0.27	0.21**
	(0.01)	(0.01)	(0.01)	(0.03)	(0.09)	(0.08)
				Men		
$\Delta Unemp_t$	0.01**	0.01*	−0.04	−0.03	0.22	−0.29
	(0.00)	(0.00)	(0.01)	(0.05)	(0.16)	(0.21)
				Women		
$\Delta Unemp_t$	0.02**	0.00	−0.02*	0.01	−0.12	−0.18**
	(0.01)	(0.00)	(0.01)	(0.03)	(0.12)	(0.07)
N	24	24	24	24	24	24

Note: Table A.2 shows the coefficients from regressions of different moments of log earnings growth on either GDP or unemployment growth for men and women. The growth rate of unemployment (real GDP) is calculated as the (log) difference of the average unemployment rate (real GDP) between years t and $t+1$. Notice each regression is run separately. The unemployment rate is obtained from Statistics Norway and real GDP is obtained from the Federal Reserve Economic Data, FRED. Newey–West standard errors are in parentheses, estimated using one lag. In each regression, we standardize the right-hand-side variable so that the coefficient can be directly interpreted as the impact of a one-standard-deviation change on the dependent variable. * $p < 0.1$, ** $p < 0.05$, $p < 0.01$.

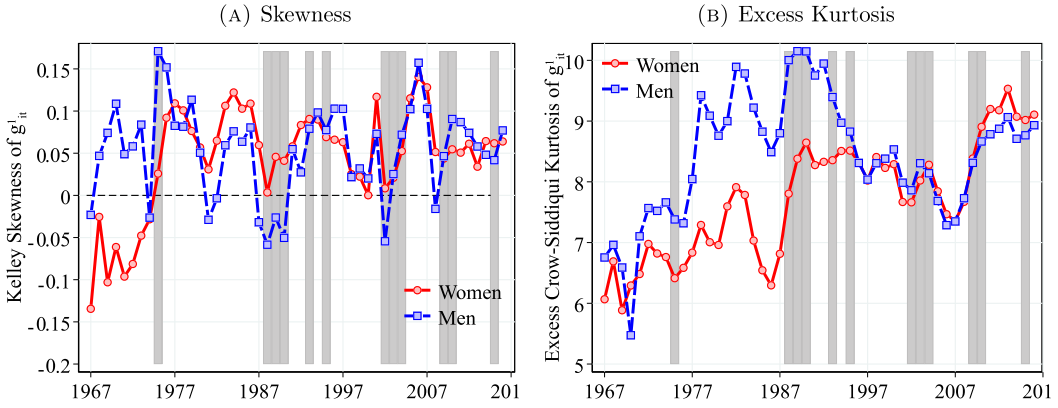

FIGURE A.6. Skewness and kurtosis of after-transfer income changes. Notes: Figure A.6 shows the Kelley skewness and excess Crow–Siddiqui kurtosis of earnings growth for men and women. The shaded areas represent recession years, defined as years with: (i) growth in the unemployment rate of 0.4 pp. or more, and (ii) an output gap of −0.5 or less. The excess Crow–Siddiqui kurtosis is defined as the annual Crow–Siddiqui measure minus 2.91, which is the corresponding value of Crow–Siddiqui for a Normal distribution. See Section 2 for sample selection and definitions.

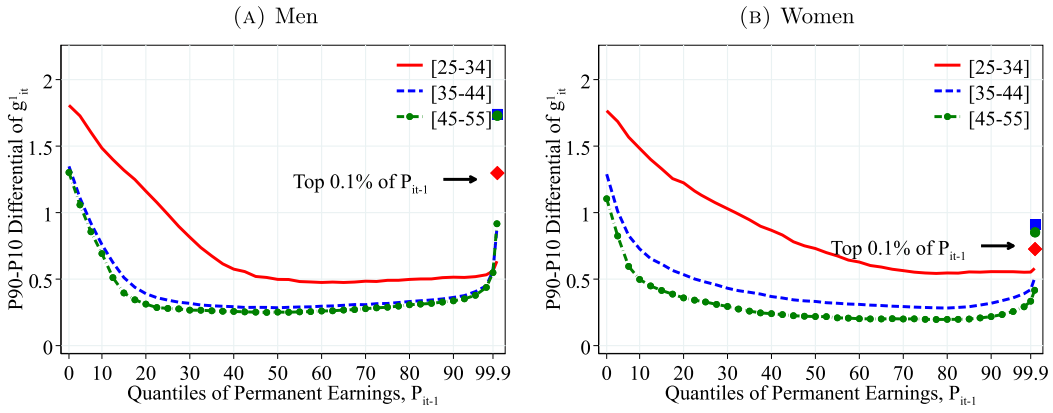

FIGURE A.7. After-transfer income growth dispersion by PE and age. Notes: Figure A.7 shows the P90–P10 of the log growth rate of residual earnings for men and women within quantiles of the permanent income distribution, P_{it-1}. In each plot, the solid markers represent P90–P10 for those workers at the top 0.1% of the permanent income distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old). See Section 2 for sample selection and definitions.

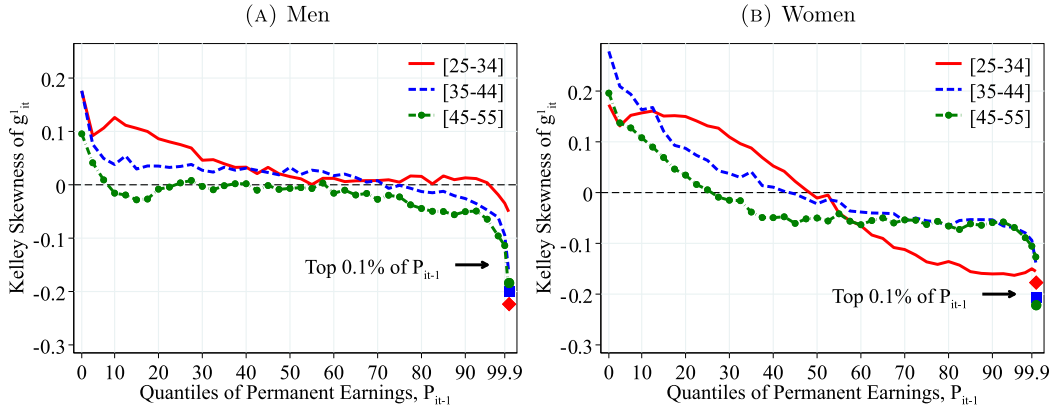

FIGURE A.8. Skewness of after-transfer income growth by PE and age. Notes: Figure A.8 shows the Kelley skewness of the log growth rate of residual earnings for men and women within quantiles of the permanent income distribution, P_{it-1}. Kelley skewness is defined as $\mathcal{S}_{\mathcal{K}} = ((\text{P90–P50}) - (\text{P50–P10}))/(\text{P90–P10})$. In each plot, the solid markers represent the Kelley skewness for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old).

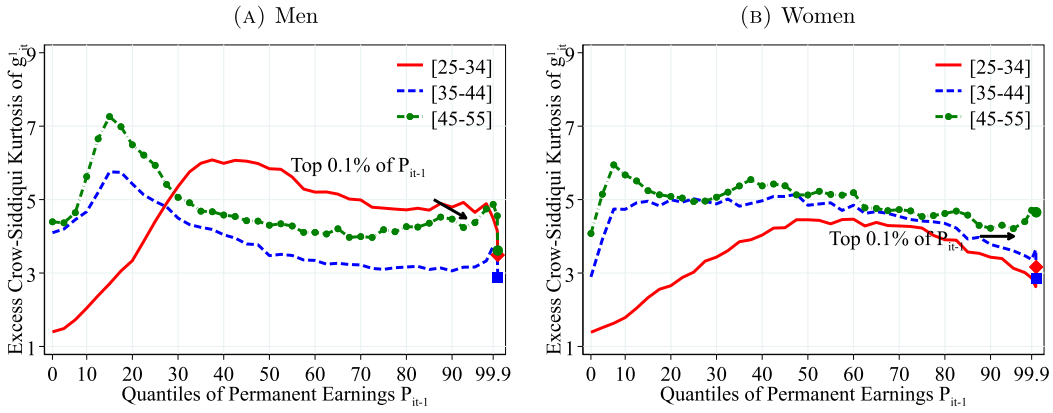

FIGURE A.9. Kurtosis of after-transfer income growth by PE and age. Notes: Figure A.9 shows the excess Crow–Siddiqui kurtosis of the log growth rate of residual earnings for men and women with quantiles of the permanent income distribution, P_{it-1}. Excess Crow–Siddiqui kurtosis is defined as $\mathcal{C}_{\mathcal{K}} = (\text{P97.5–P2.5})/(\text{P75–P25}) - 2.91$ where 2.91 is the value of the Crow–Siddiqui measure for a Normal distribution. In each plot, the solid markers represent the corresponding measure of kurtosis for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old).

Appendix B: Additional figures

B.1 *Moments of the earnings distribution*

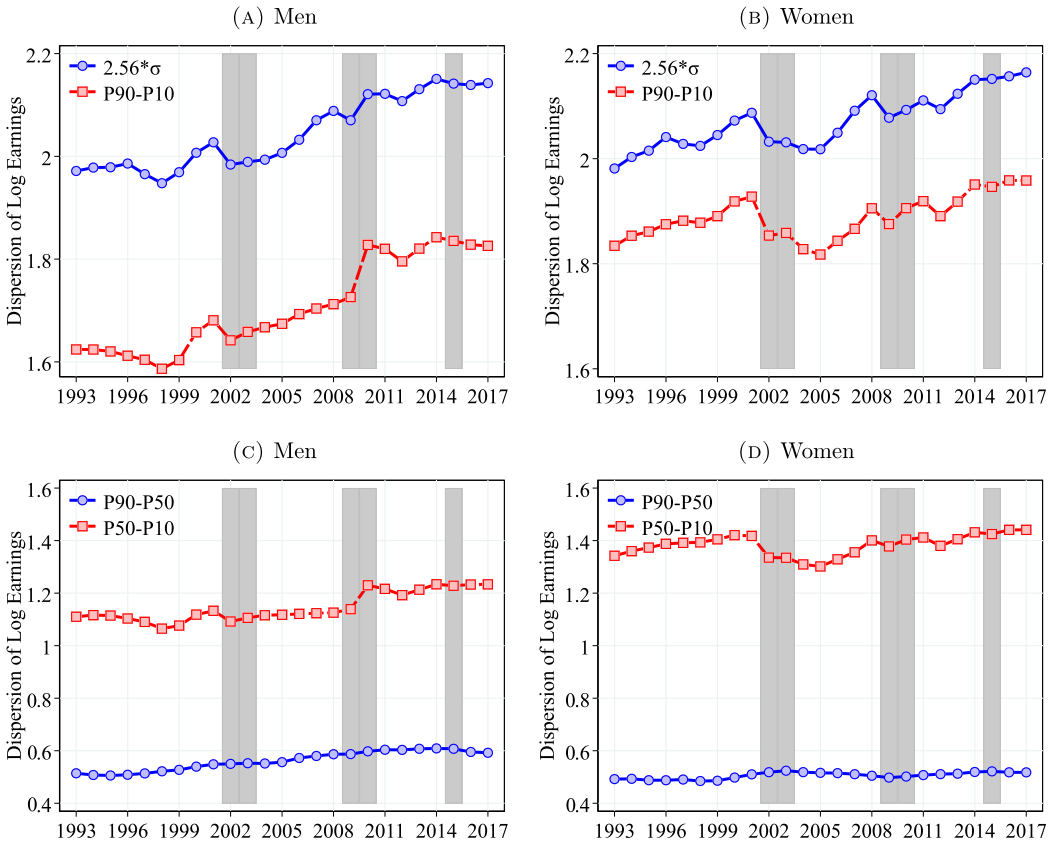

Figure B.1. Income inequality. Notes: Figure B.1 plots the following variables against time: (a) men: P90–P10 and 2.56*SD of log income (b) women: P90–P10 and 2.56*SD of log income, (c) men: P90–P50 and P50–P10, (d) Women: P90–P50 and P50–P10. Shaded areas are recessions. The value of 2.56*SD corresponds to the differential between the 10th and the 90th percentiles in a Normal distribution. Shaded areas represent recession years, defined as years with an unemployment growth rate of 0.4 pp. or more, and an output gap of −0.5 or less. Results based on the CS sample. See Section 2 for sample selection and definitions.

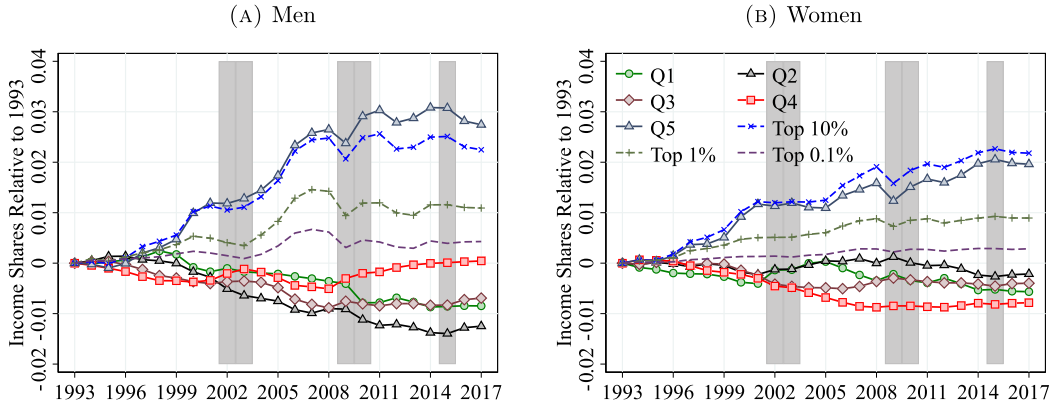

FIGURE B.2. Income shares relative to 1993. Notes: Figure B.2 shows the share of income accrued to five income quintiles and top income groups for men and women normalized to 0 in 1993. The shaded areas represent recession years. See Section 2 for sample selection and definitions.

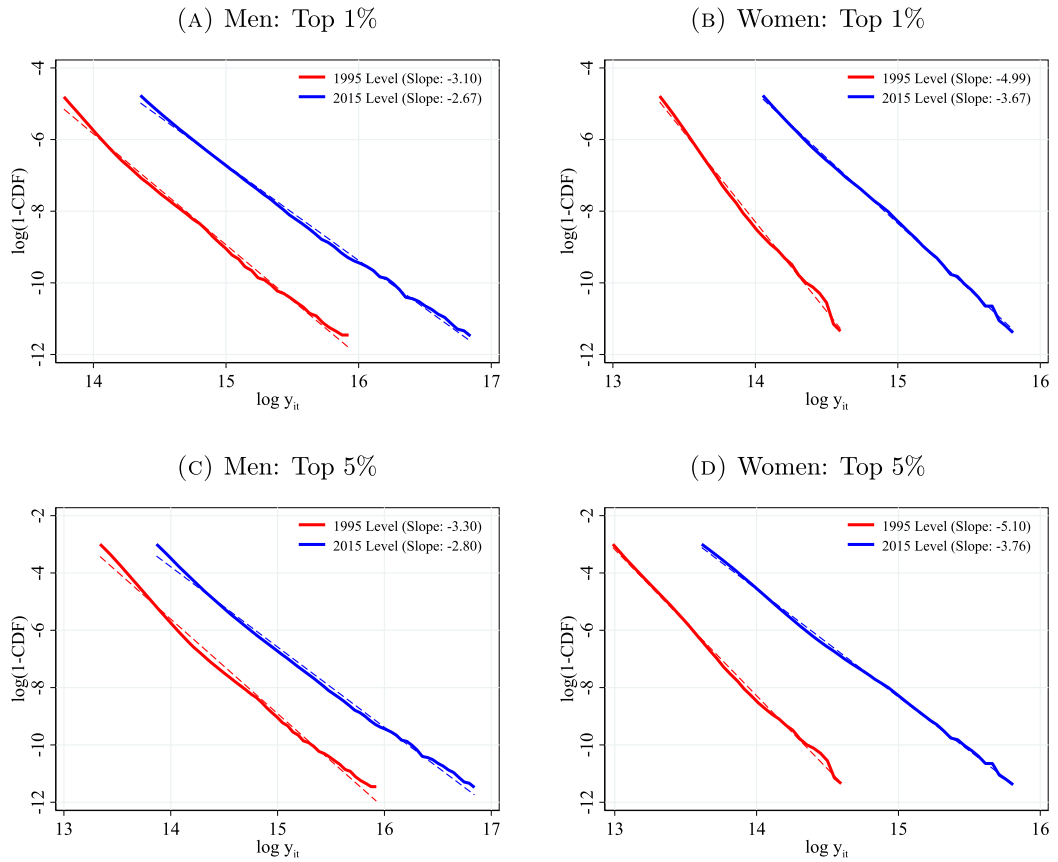

FIGURE B.3. Top income inequality: pareto tails at the top 1%. Figure B.3 shows the tail of the distribution of log-earnings above the 99th percentile of the distribution (panels A and B) and above the 95th percentile (panels C and D).

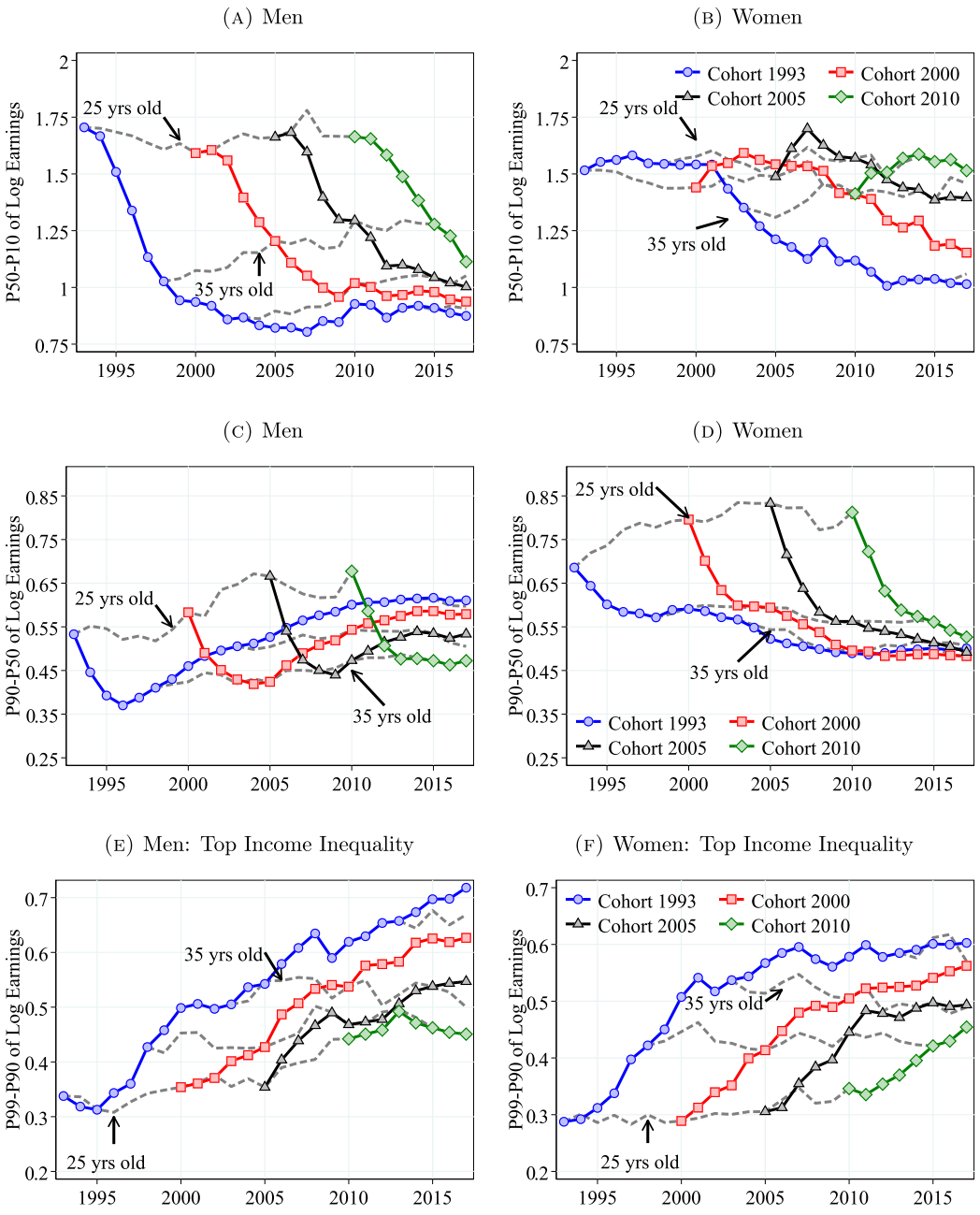

FIGURE B.4. Evolution of inequality by cohorts. Notes: Figure B.4 shows the life-cycle inequality within cohorts. Lines with markers show inequality within a cohort. The dashed line shows inequality within an age group across different cohorts. See Section 2 for sample selection and definitions.

B.2 *Figures for the combined sample (men and women)*

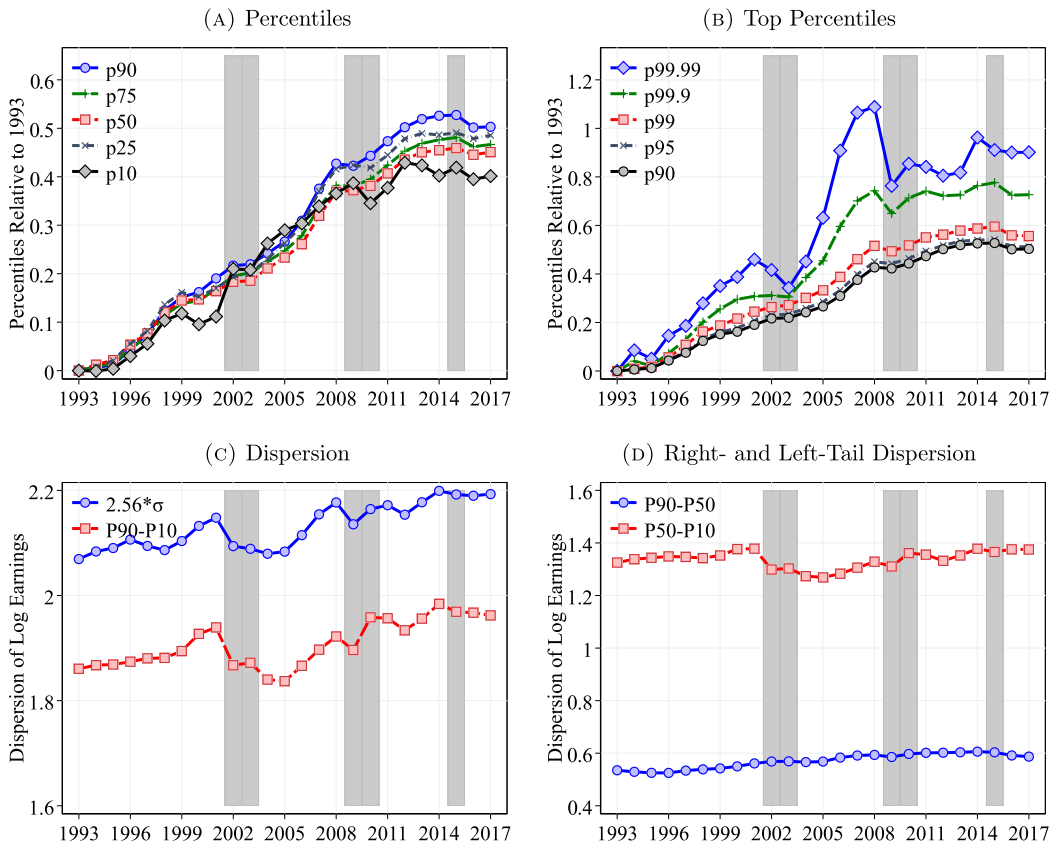

FIGURE B.5. Distribution of earnings in the population. Figure B.5 shows the evolution of the following variables: (a) P10, P25, P50, P75, P90 (b) P90, P95, P99, P99.9, P99.99, (c) P90–P10 and 2.56*SD of log income, (d) P90–P50 and P50–P10. Percentiles in (a) and (b) are normalized to 0 in 1993. Shaded areas represent recession years as defined as years with unemployment rate growth 0.4 pp. or more and an output gap of −0.5 or less. In all figures, we consider a joint sample of men and women. See Section 2 for sample selection and definitions.

B.3 *Figures for residual earnings*

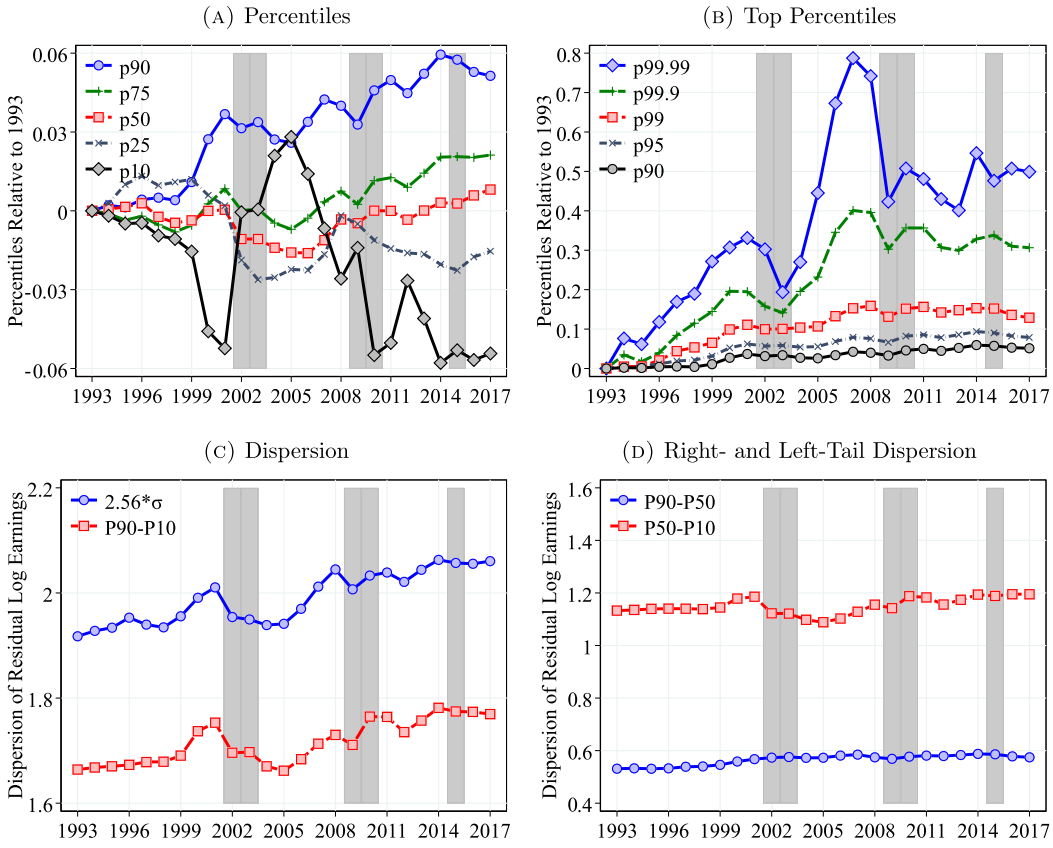

FIGURE B.6. Residual earnings controlling for age. Figure B.6 shows the evolution of the following variables: (a) P10, P25, P50, P75, P90 (b) P90, P95, P99, P99.9, P99.99, (c) P90–P10 and 2.56*SD of log income, (d) P90–P50 and P50–P10. Percentiles in (a) and (b) are normalized to 0 in 1993. Shaded areas represent recession years as defined as years with unemployment rate growth 0.4 pp. or more and an output gap of −0.5 or less. In all figures, we consider a joint sample of men and women. We residualize log-income from age fixed effects by year and gender. See Section 2 for sample selection and definitions.

Appendix C: Appendix for the distribution of earnings growth

C.1 *Moments of 5-years earnings growth*

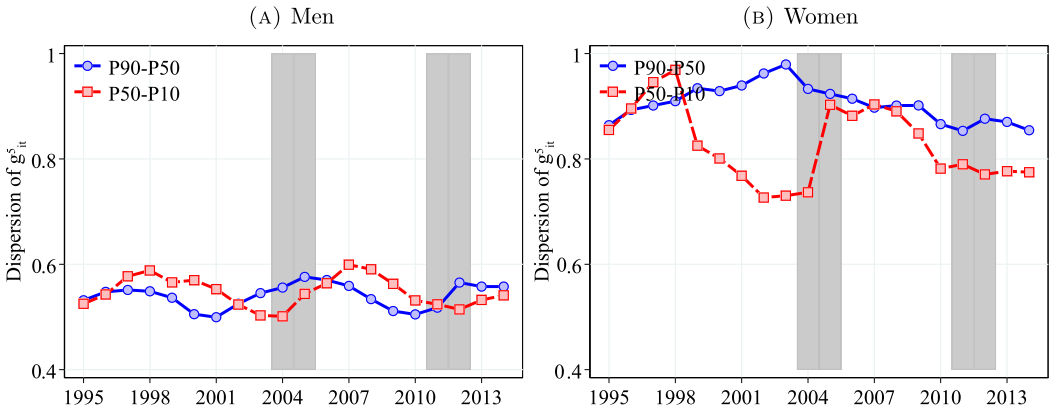

Figure C.1. Dispersion of 5-years earnings changes. Figure C.1 plot against time the following variables: (a) Men: P90-10 differential, (b) Women: P90-10 differential. Shaded areas are recessions.

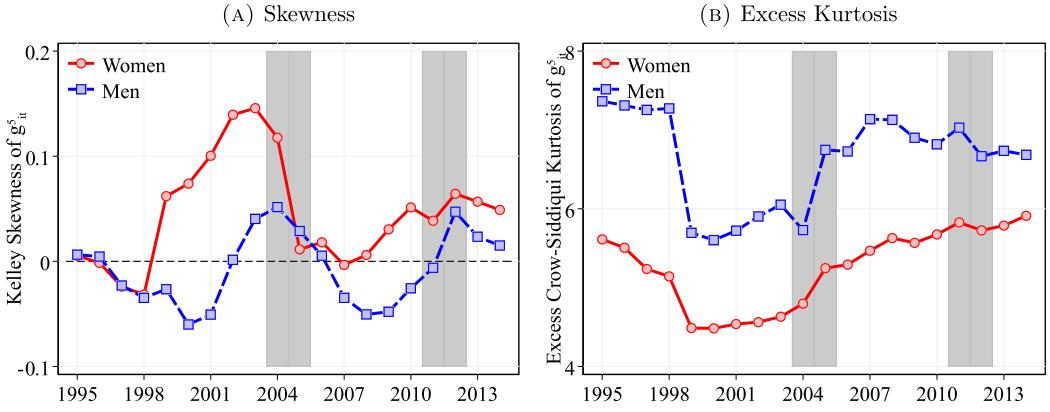

Figure C.2. Skewness and kurtosis of 5-years earnings changes. Figure C.2 plot against time the following variables: (a) Men and Women: Kelley skewness, (b) Men and Women: Crow–Siddiqui kurtosis. Shaded areas are recessions.

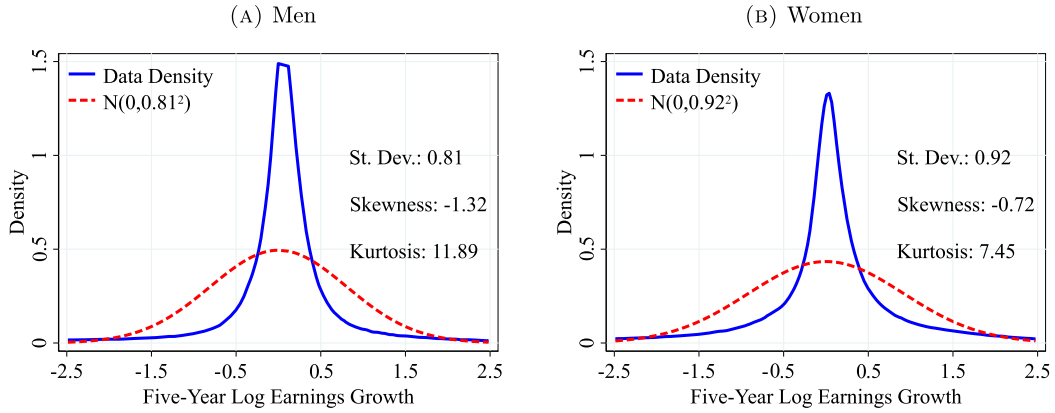

FIGURE C.3. Empirical log-densities of 5-year earnings growth. Notes: Figure C.3 shows the empirical density and corresponding cross-sectional moments of the distribution of 5-year log earnings growth for men and women in 2005. See Section 2 for sample selection and definitions.

C.2 *Moments of 1-year earnings growth*

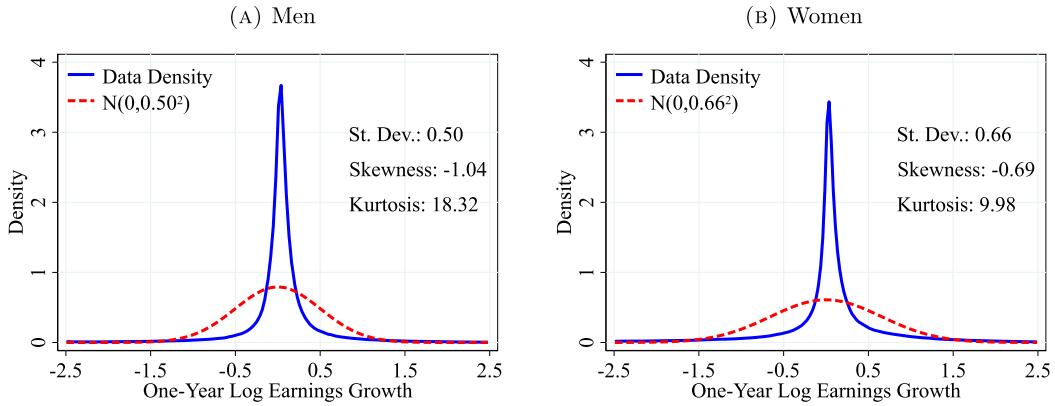

FIGURE C.4. Empirical density of 1-year log earnings change. Notes: Figure C.4 shows the empirical density and corresponding cross-sectional moments of the distribution of 1-year log earnings growth for men and women in 2005. See Section 2 for sample selection and definitions.

TABLE C.1. Share of workers at selected ranges of log earnings changes.

Range	(1) $\Delta\varepsilon_t^1$	(2) $\mathbb{N}(0, 0.58)$	(3) Ratio	(4) $\Delta\varepsilon_t^5$	(5) $\mathbb{N}(0, 0.81)$	(6) Ratio
$(-\infty, -3\sigma]$	2.2	0.1	16.0	1.8	0.1	13.6
$(-3\sigma, -2\sigma]$	1.8	2.1	0.8	1.9	2.1	0.9
$(-2\sigma, -\sigma]$	3.8	13.6	0.3	4.6	13.6	0.3
$(-\sigma, -0.05]$	26.3	30.7	0.9	34.5	31.7	1.1
$(-0, 05, 0.05]$	31.8	6.8	4.7	15.3	4.9	3.1
$(0.05, \sigma]$	27.9	30.7	0.9	34.1	31.7	1.1
$(\sigma, 2\sigma]$	4.6	13.6	0.3	5.6	13.6	0.4
$(2\sigma, 3\sigma]$	1.7	2.1	0.8	2.3	2.1	1.1
$(3\sigma, +\infty]$	1.1	0.1	7.8	0.9	0.1	7.0

Note: Figure C.1 shows the fraction of individuals in different cuts of the 1- and 5-year distribution of log earnings growth for a sample of men in 2005. Columns (2) and (5) show the corresponding moments from a normal distribution.

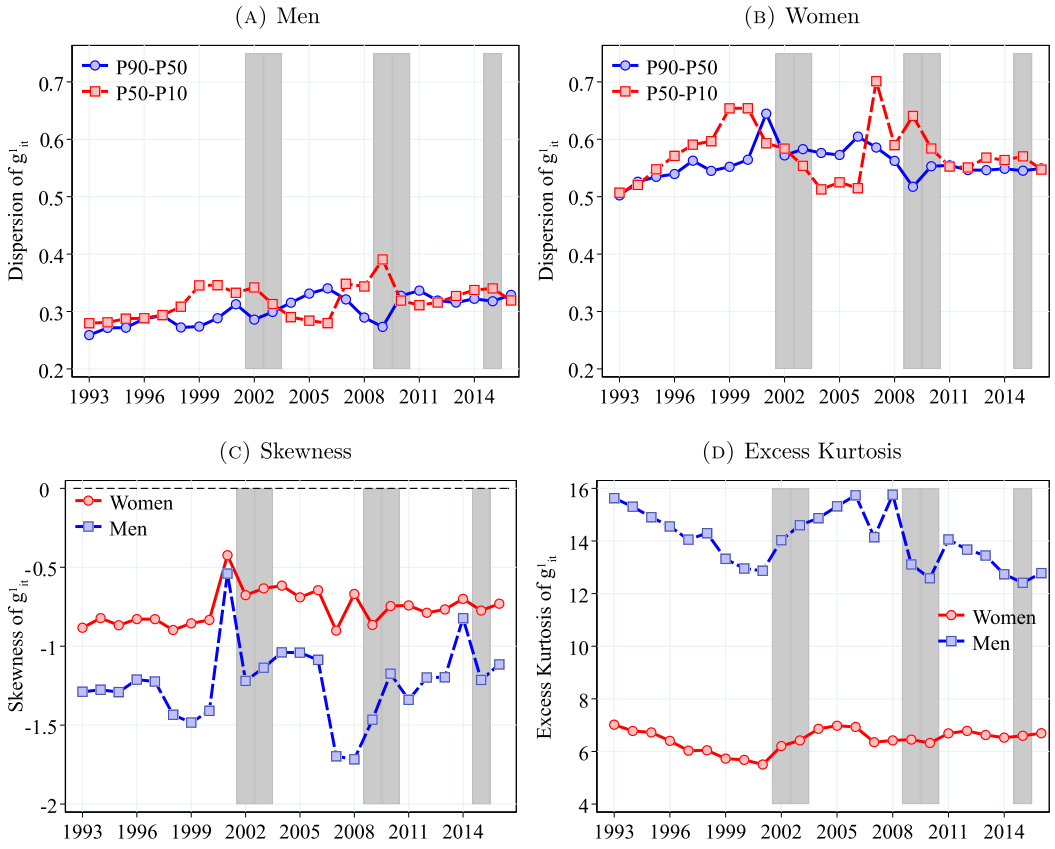

FIGURE C.5. Volatility, skewness, and kurtosis of earnings changes. Notes: Top panels of Figure C.5 show the 90th-to-50th and 50th-to-10th percentiles differential of earnings growth. The bottom panels shows the third and fourth standardized moments. The shaded areas represent recession years, defined as years with: (i) growth in the unemployment rate of 0.4 pp. or more, and (ii) an output gap of −0.5 or less. See Section 2 for sample selection and definitions.

TABLE C.2. Cyclicality of earnings changes.

	Dispersion		Skewness		Kurtosis	
	P90–P10	Std. Dev.	Kelley	Third.	Crow–Siddiqui	Kurtosis
	(1)	(2)	(3)	(4)	(5)	(6)
				Men		
ΔGDP_t	−0.01	−0.01**	0.03**	0.09	−0.16	0.06
	(0.00)	(0.01)	(0.01)	(0.10)	(0.11)	(0.32)
				Women		
ΔGDP_t	−0.04	−0.02**	0.02	−0.01	0.27	0.21**
	(0.01)	(0.01)	(0.01)	(0.03)	(0.09)	(0.08)
				Men		
$\Delta Unemp_t$	0.01**	0.01*	−0.04	−0.03	0.22	−0.29
	(0.00)	(0.00)	(0.01)	(0.05)	(0.16)	(0.21)
				Women		
$\Delta Unemp_t$	0.02**	0.00	−0.02*	0.01	−0.12	−0.18**
	(0.01)	(0.00)	(0.01)	(0.03)	(0.12)	(0.07)
N	24	24	24	24	24	24

Note: Table C.2 shows the coefficients from regressions of different moments of log earnings growth on either GDP or unemployment growth for men and women. The growth rate of unemployment (real GDP) is calculated as the (log) difference of the average unemployment rate (real GDP) between years t and $t+1$. Notice each regression is run separately. The unemployment rate is obtained from Statistics Norway and real GDP is obtained from the Federal Reserve Economic Data, FRED. Newey–West standard errors are in parentheses, estimated using one lag. In each regression, we standardize the right-hand side variable so that the coefficient can be directly interpreted as the impact of a one-standard-deviation change on the dependent variable. * $p < 0.1$, ** $p < 0.05$, $p < 0.01$.

C.3 *Arc-percent earnings growth distribution*

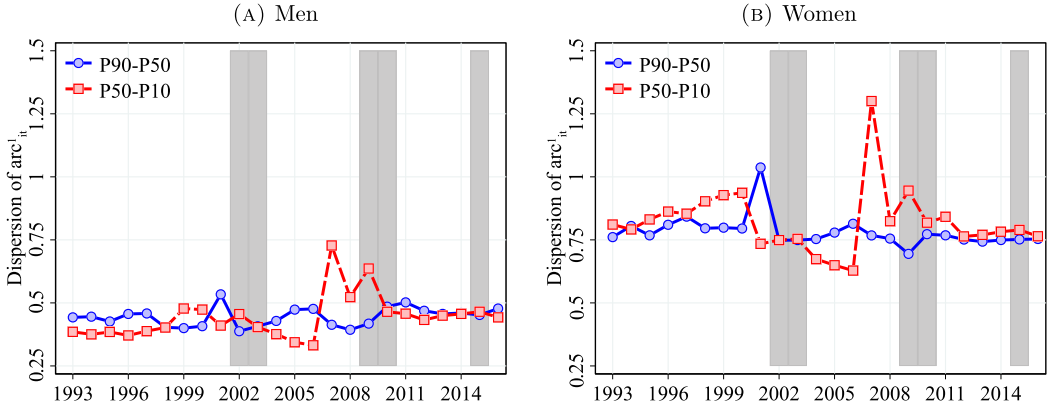

FIGURE C.6. Dispersion of 1-year arc-percent earnings changes. Figure C.6 plot against time the following variables: (a) Men: P90-10 differential, (b) Women: P90-10 differential. Shaded areas are recessions.

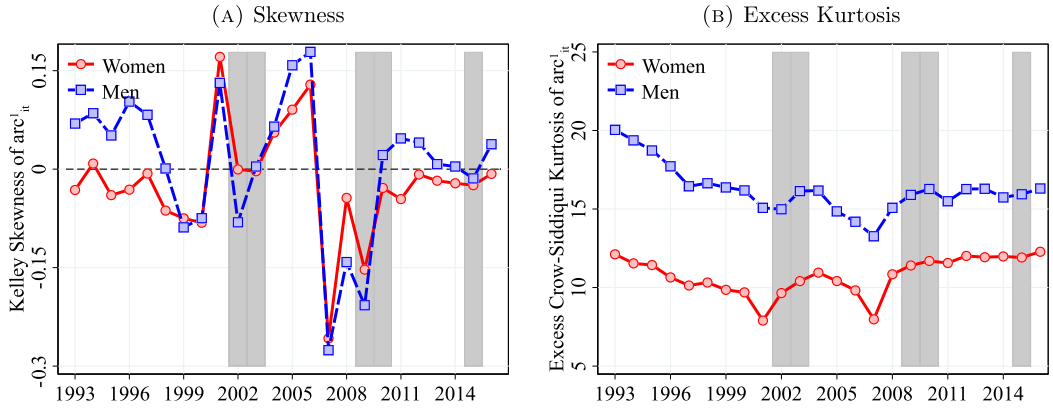

FIGURE C.7. Skewness and kurtosis of 1-year arc-percent changes. Figure C.7 plot against time the following variables: (a) Men and Women: Kelley skewness, (b) Men and Women: Crow–Siddiqui kurtosis. Shaded areas are recessions.

C.4 *Heterogeneity in idiosyncratic earnings changes*

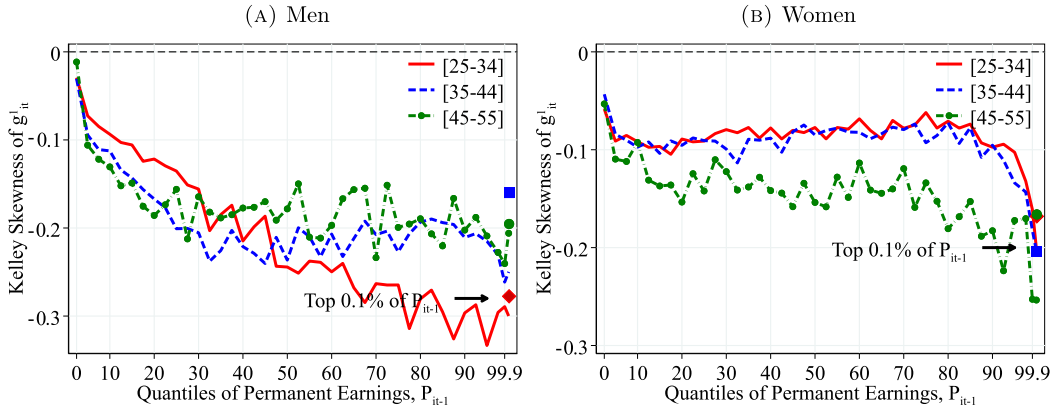

FIGURE C.8. Kelley skewness (P99/P1) of earnings growth by PE and age. Notes: Figure C.8 shows the Kelley skewness of the log growth rate of residual earnings for men and women within quantiles of the permanent income distribution, P_{it-1}. Kelley skewness is calculated as $\mathcal{S}_{\mathcal{K}} = ((\text{P99–P50}) - (\text{P50–P1}))/(\text{P99–P1})$. In each plot, the solid markers represent the Kelley skewness for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old).

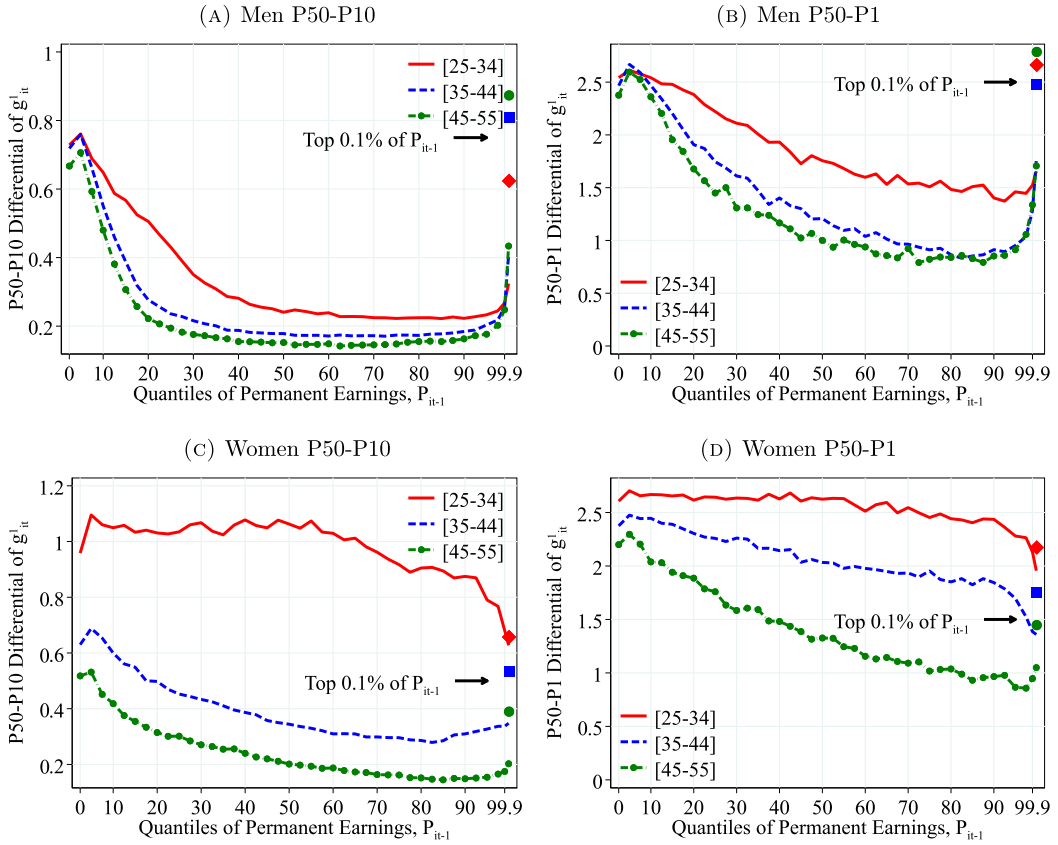

FIGURE C.9. Left-tail dispersion: P50–P10 and P50–P1. Notes: Figure C.9 shows different measures of the dispersion in the left tail of the distribution of the log growth rate of residual earnings for men and women within quantiles of the permanent income distribution, P_{it-1}. In each plot, the solid markers represent the value of the moment corresponding moment for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old).

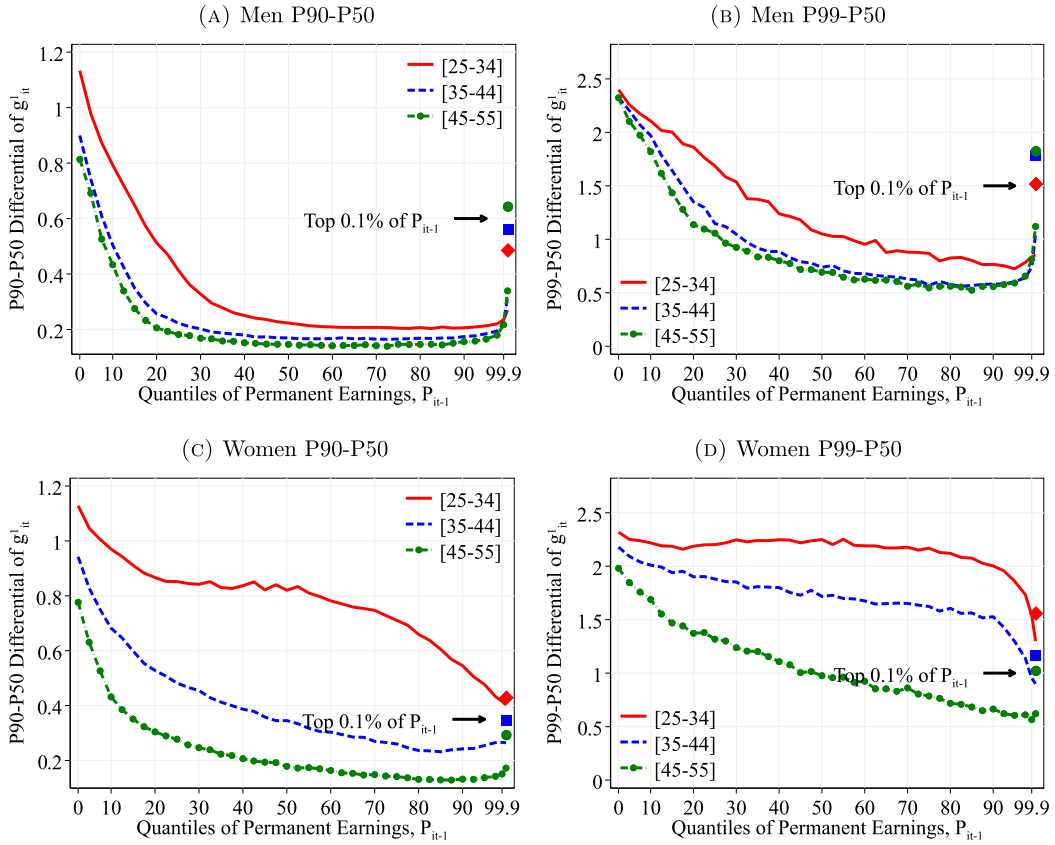

FIGURE C.10. Right-tail dispersion: P90–P50 and P99–P50. Notes: Figure C.10 shows different measures of the dispersion in the right tail of the distribution of the log growth rate of residual earnings for men and women within quantiles of the permanent income distribution, P_{it-1}. In each plot, the solid markers represent the value of the moment corresponding moment for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old).

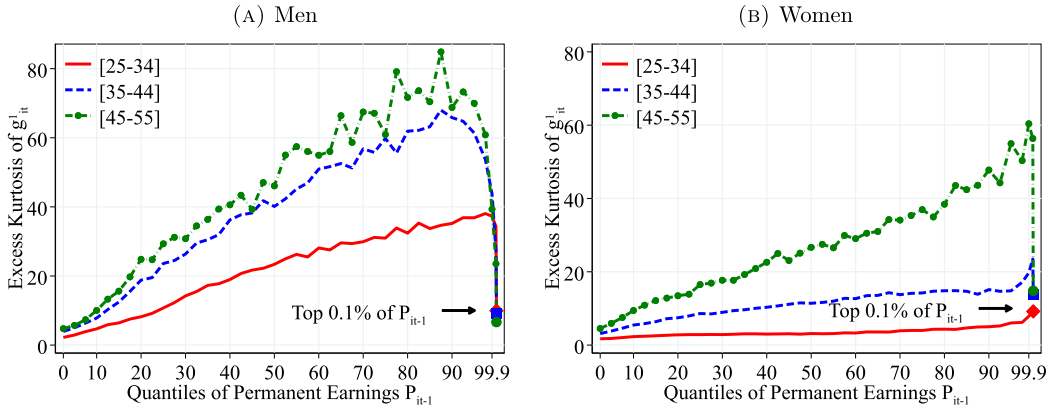

FIGURE C.11. Kurtosis of earnings growth by earnings level and age. Figure C.11 shows the excess fourth standardized moment of log earnings changes for men and women with quantiles of the permanent income distribution, P_{it-1}. Excess kurtosis is defined as the value of kurtosis minus 3, which is the corresponding value for a Normal distribution. In each plot, the solid markers represent the corresponding measure of kurtosis for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old).

C.4.1 *Heterogeneity of idiosyncratic earnings for 5-year changes*

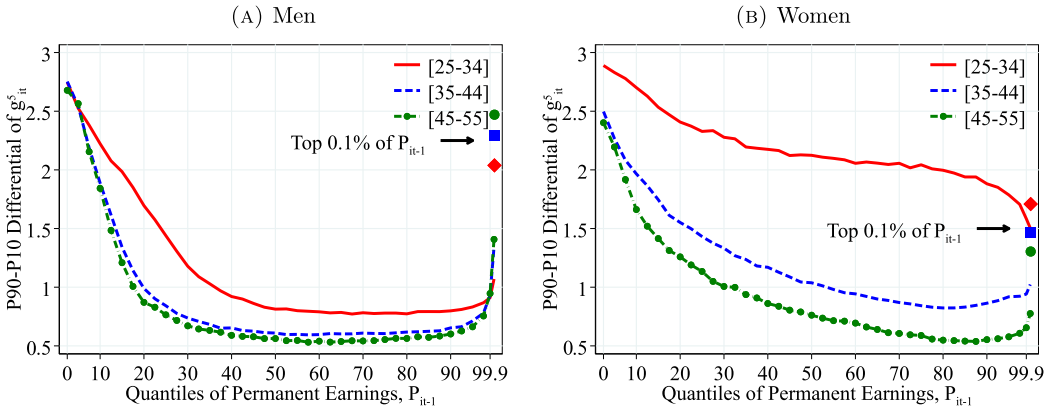

FIGURE C.12. Dispersion of earnings growth by permanent income and age. Notes: Figure C.12 shows the P90–P10 of log growth rate of residual earnings for men and women within quantiles of the permanent income distribution, P_{it-1}. In each plot, the solid markers represent P90–P10 for those workers at the top 0.1% of the permanent income distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old). See Section 2 for sample selection and definitions.

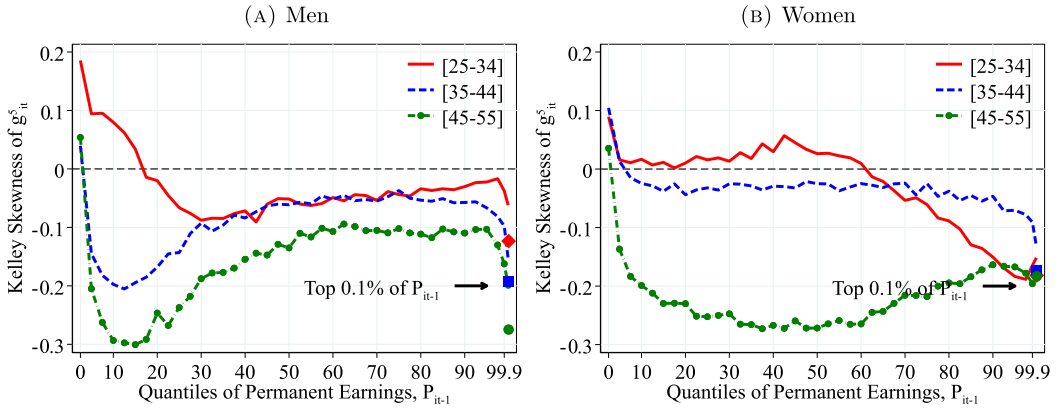

FIGURE C.13. Kelley skewness of earnings growth by earnings level and age. Notes: Figure C.13 shows the Kelley skewness of log growth rate of residual earnings for men and women within quantiles of the permanent income distribution, P_{it-1}. Kelley skewness is defined as $\mathcal{S}_{\mathcal{K}} = ((\text{P90–P50}) - (\text{P50–P10}))/(\text{P90–P10})$. In each plot, the solid markers represent the Kelley skewness for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old). See Section 2 for sample selection and definitions.

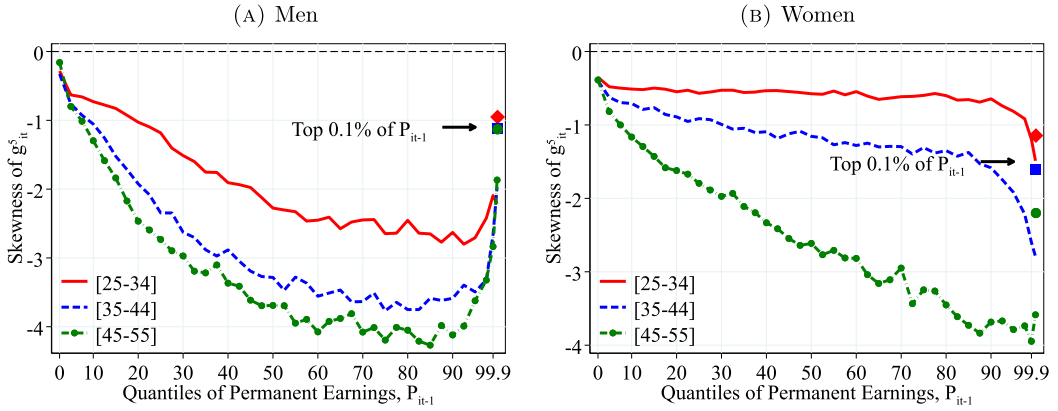

FIGURE C.14. Skewness of earnings growth by earnings level and age. Notes: Figure C.14 shows the third standardized moment of log growth rate of residual earnings for men and women with quantiles of the permanent income distribution, P_{it-1}. In each plot, the solid markers represent the corresponding measure of kurtosis for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old). See Section 2 for sample selection and definitions.

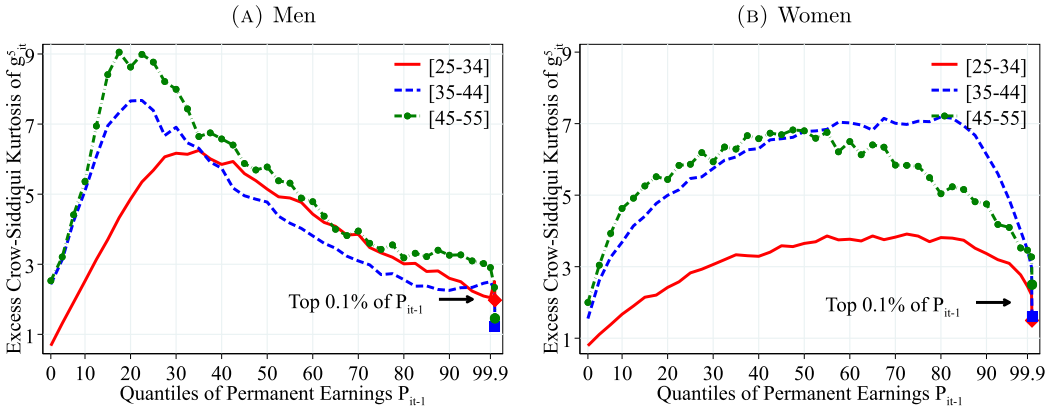

FIGURE C.15. Kurtosis of earnings growth by earnings level and age. Notes: Figure C.15 shows the excess Crow–Sidiqqui kurtosis of log growth rate of residual earnings for men and women with quantiles of the permanent income distribution, P_{it-1}. Excess Crow–Sidiqqui kurtosis is defined as $\mathcal{C}_{\mathcal{K}} = (\text{P97.5–P2.5})/(\text{P75–P25}) - 2.91$ where 2.91 is the value of the Crow–Siddiqui measure for a Normal distribution. In each plot, the solid markers represent the corresponding measure of kurtosis for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old). See Section 2 for sample selection and definitions.

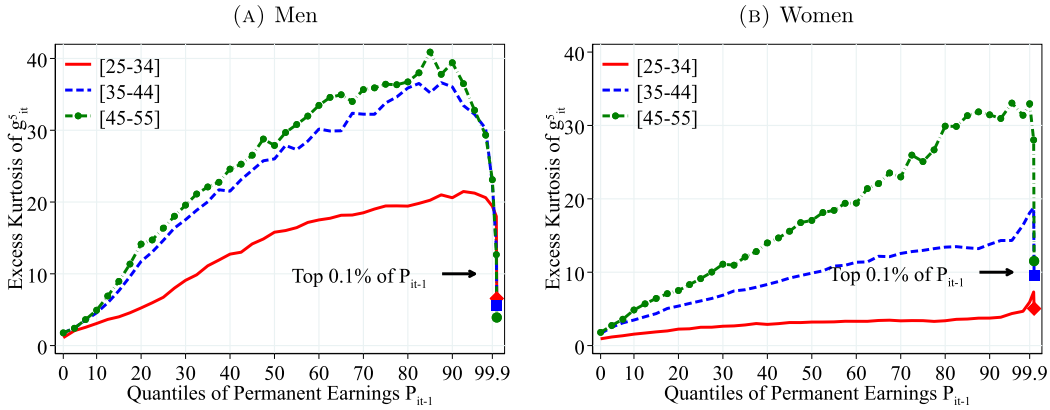

FIGURE C.16. Kurtosis of earnings growth by earnings level and age. Figure C.16 shows the excess fourth standardized moment of log earnings changes for men and women with quantiles of the permanent income distribution, P_{it-1}. Excess kurtosis is defined as the value of kurtosis minus 3 which is the corresponding value for a Normal distribution. In each plot, the solid markers represent the corresponding measure of kurtosis for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old).

C.4.2 *Heterogeneity in idiosyncratic earnings for arc-percent change*

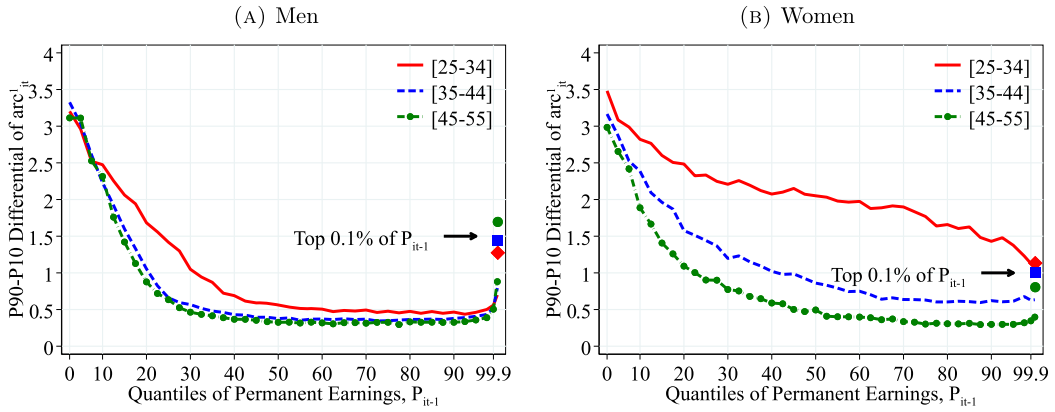

FIGURE C.17. Dispersion of earnings growth by permanent income and age. Notes: Figure C.17 shows the P90–P10 of log growth rate of residual earnings for men and women within quantiles of the permanent income distribution, P_{it-1}. In each plot, the solid markers represent P90–P10 for those workers at the top 0.1% of the permanent income distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old). See Section 2 for sample selection and definitions.

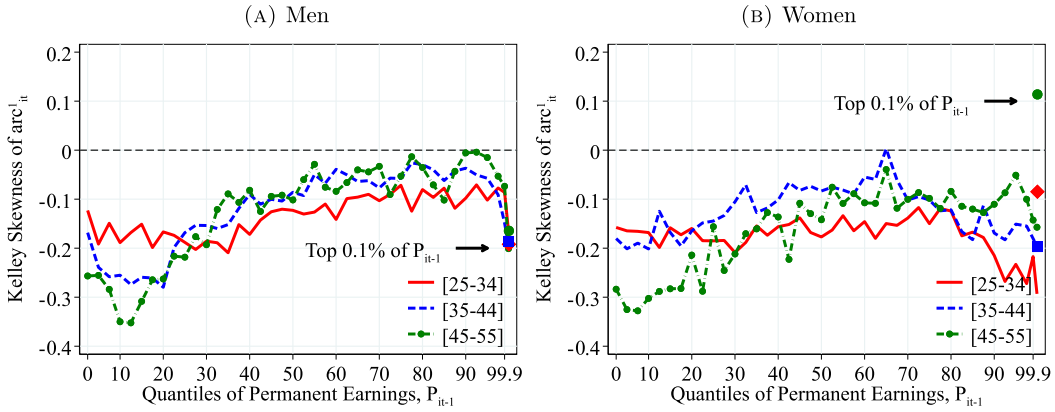

FIGURE C.18. Kelley skewness of earnings growth by earnings level and age. Notes: Figure C.18 shows the Kelley skewness of log growth rate of residual earnings for men and women within quantiles of the permanent income distribution, P_{it-1}. Kelley skewness is defined as $\mathcal{S}_{\mathcal{K}} = ((\text{P90–P50}) - (\text{P50–P10}))/(\text{P90–P10})$. In each plot, the solid markers represent the Kelley skewness for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old). See Section 2 for sample selection and definitions.

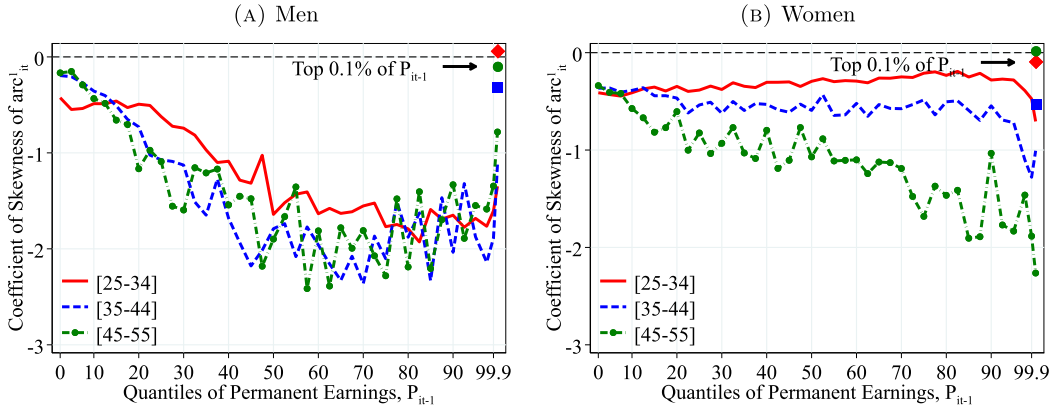

FIGURE C.19. Skewness of earnings growth by earnings level and age. Notes: Figure C.19 shows the third standardized moment of log growth rate of residual earnings for men and women with quantiles of the permanent income distribution, P_{it-1}. In each plot, the solid markers represent the corresponding measure of kurtosis for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old). See Section 2 for sample selection and definitions.

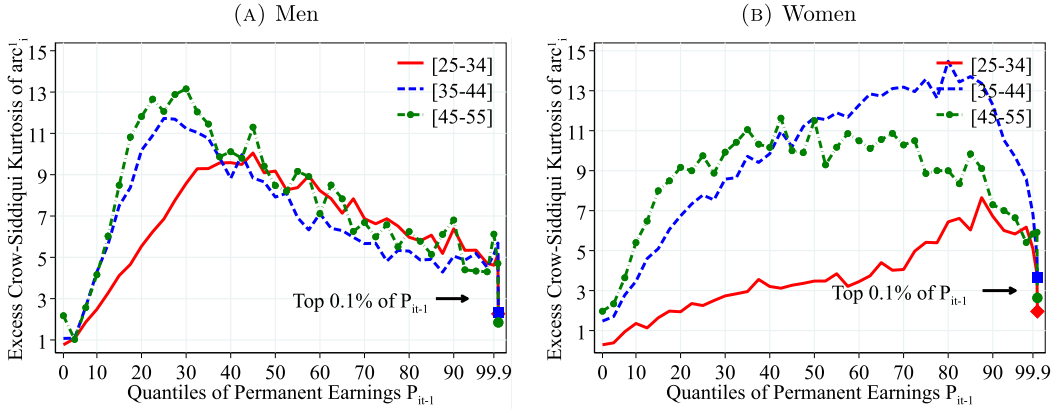

FIGURE C.20. Crow–siddiqui kurtosis of earnings growth by PE and age. Notes: Figure C.20 shows the excess Crow–Sidiqqui kurtosis of arc-percent earnings growth for men and women with quantiles of the permanent income distribution, P_{it-1}. Excess Crow–Sidiqqui kurtosis is defined as $\mathcal{C}_{\mathcal{K}} = (\text{P97.5–P2.5})/(\text{P75–P25}) - 2.91$ where 2.91 is the value of the Crow–Siddiqui measure for a Normal distribution. In each plot, the solid markers represent the corresponding measure of kurtosis for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old). See Section 2 for sample selection and definitions.

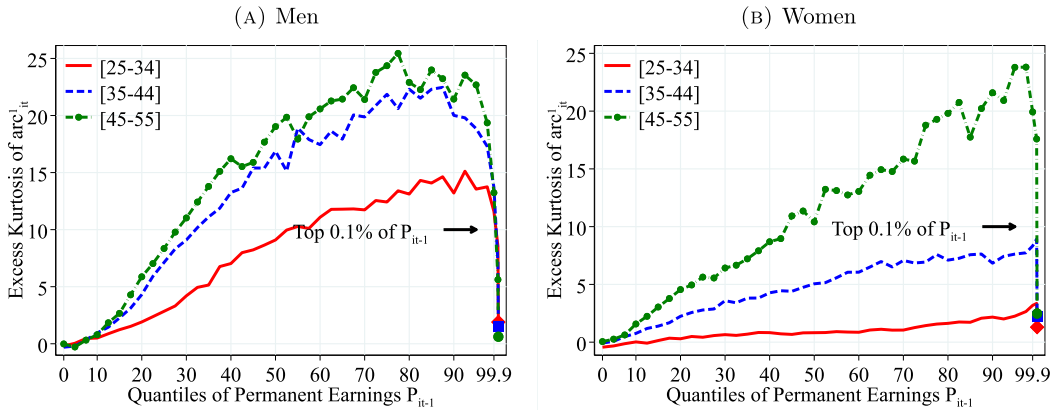

FIGURE C.21. Kurtosis of earnings growth by PE and age. Figure C.21 shows the excess fourth standardized moment of earnings arc-percent changes for men and women with quantiles of the permanent income distribution, P_{it-1}. Excess kurtosis is defined as the value of kurtosis minus 3 which is the corresponding value for a Normal distribution. In each plot, the solid markers represent the corresponding measure of kurtosis for those workers at the top 0.1% of the earnings distribution for different age groups (diamond for 25 to 34 years old, square for 35 to 44 years old, and circle for 45 to 55 years old).

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