United States Earnings Dynamics: Inequality, Mobility, and Volatility
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On-Line Appendix: Additional Inequality Measures

The discussion of inequality using parametric measures focused on the Kullback-Leibler (K-L) measures of distributional divergence across MSAs and over time. In this on-line appendix we consider additional parametric measures of the earnings distribution: average real earnings, the exponent of average real earnings, the Gini coefficient, the ratio of the top 20 percent of earnings to the bottom 20 percent of earnings, and the ratio of top 20 percent of earnings to the bottom 20 percent of earnings. In general, the alternative measures reinforce the message from the K-L statistics, in terms of relative inequality across MSAs in any given year and increasing inequality within MSAs over time.

Differences in levels and trends in mean real earnings suggest the observed patterns for the K-L divergence are driven largely by earnings at the top. Average real earnings (Figure A1) are higher in both New York and San Francisco than Los Angeles and Detroit.[1] However, when comparing the mean of log real earnings with the mean of real earnings, the gap between the four metro areas generally decreases, especially for the high earnings cities of New York and to a lesser extent San Francisco. Mean real earnings also provide the first indications of pre- and post-Great Recession earnings dynamics. Average real earnings are trending up in every MSA except Detroit prior to 2008, and every area saw a decline between 2008 and 2011. The rates of recovery in average earnings after 2011 differed across regions, with only San Francisco showing a substantial increase in mean real earnings above their pre-recession peak by 2017. Although average real earnings in Detroit were rising in the last few years of our study period, the pre-recession trends had already pushed average earnings below the levels of the late 1990s prior to 2008. Detroit was clearly on a very different trajectory in the first half of our study period, and the Great Recession reinforced those differences. Figure A2 shows that the exponent of mean real earnings has similar properties over the sample period in terms of trend and rank ordering.

Summary measures of overall real earnings inequality provide additional details about differences in levels and trends across MSAs. Gini coefficients (FigureA3) are, as expected,

[1] Although the BLS statistics in Figure 1 of the main text are based on different source data—the QCEW—average real earnings trajectories in the 2001 to 2017 period during which the LEHD and published BLS series overlap are reassuringly similar.

higher in New York in all years, indicating more earnings inequality. San Francisco however, generally has a lower Gini than Los Angeles, a perhaps unexpected result given the relatively large and almost equal share of of total earnings in the top bin for both New York and San Francisco. Three of the four MSAs also exhibit an important recession characteristic of statistics like the Gini. Recessions are generally associated with disproportionate job loss in the bottom half of the earnings distribution, and thus, conditional on being employed, inequality seems to improve (the Gini falls). We see some evidence of a downward deviation of the trend in the Gini during the Great Recession for Los Angeles, New York, and San Francisco, but once again Detroit stands out with an increase from 2007 to 2011. Once the recovery from the Great Recession picks up speed in 2013-2014 the Gini generally declines, suggesting a general recovery in earnings growth for most workers.

Ratios of earnings shares provide evidence suggesting the levels and trends in the Gini coefficients are being driven by increasing earnings at the top and/or a drop in earnings at the bottom. We show two measures of relative earnings shares, the ratio of total earnings for the top 20 percent of workers to the total earnings for the bottom 20 percent of workers (Figure A4), and the ratio of total earnings for the top 20 percent of workers to the total earnings for the bottom 40 percent of workers (Figure A5). The results for both Figure A4 and Figure A5 largely mirror the results for the Gini coefficients, with inequality increasing over most of the sample period followed by a general decline during the latter stages of the recovery from the Great Recession.

Figure A1. Mean Real Earnings

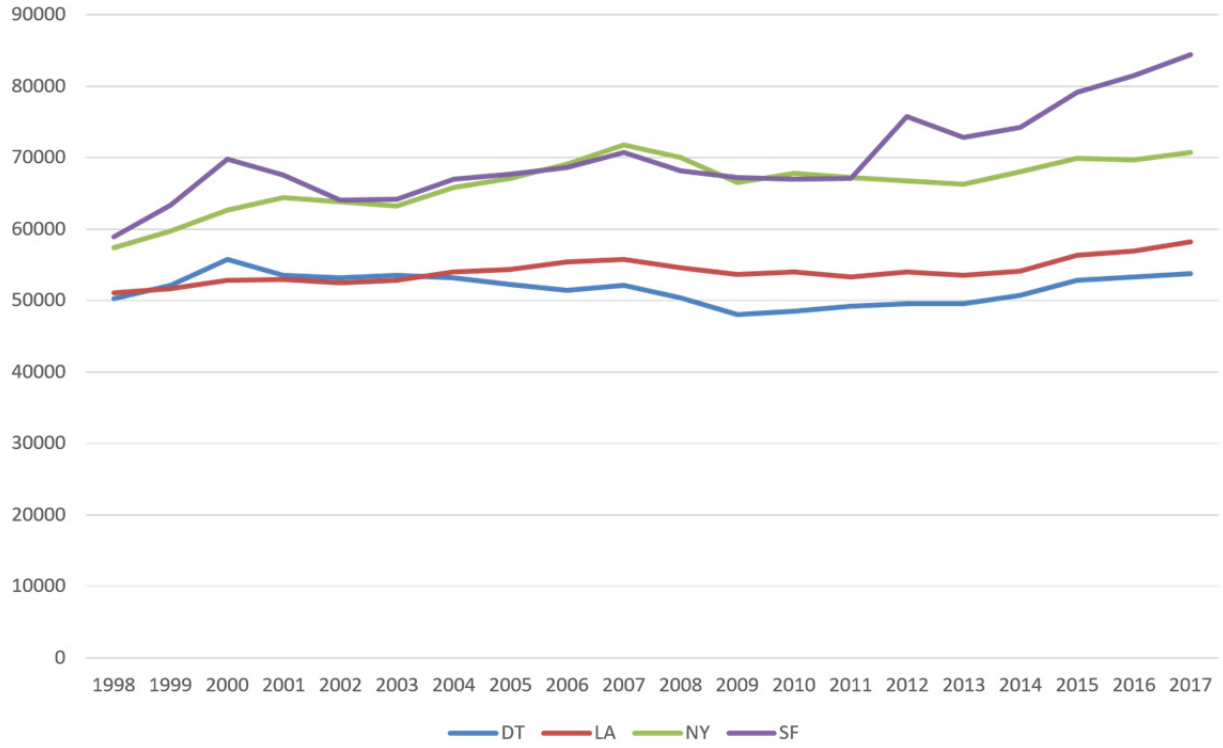

Figure A2. Exponent of Mean Log Real Earnings

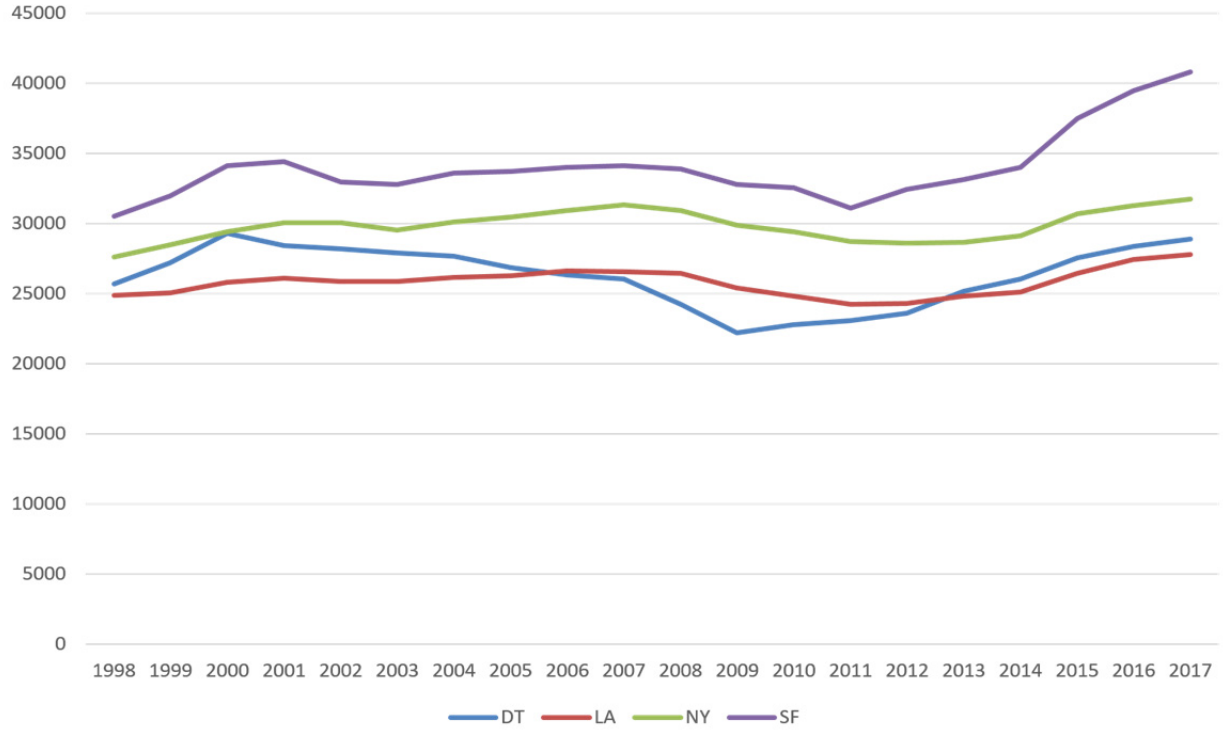

Figure A3. Gini Coefficients

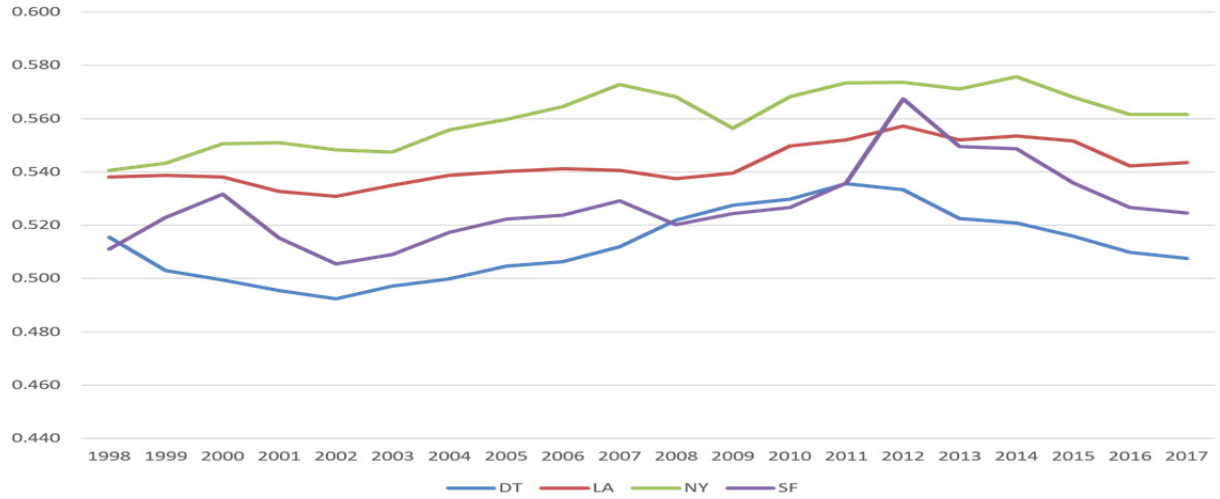

Figure A4. Ratios of Top 20 Percent of Earnings to Bottom 20 Percent

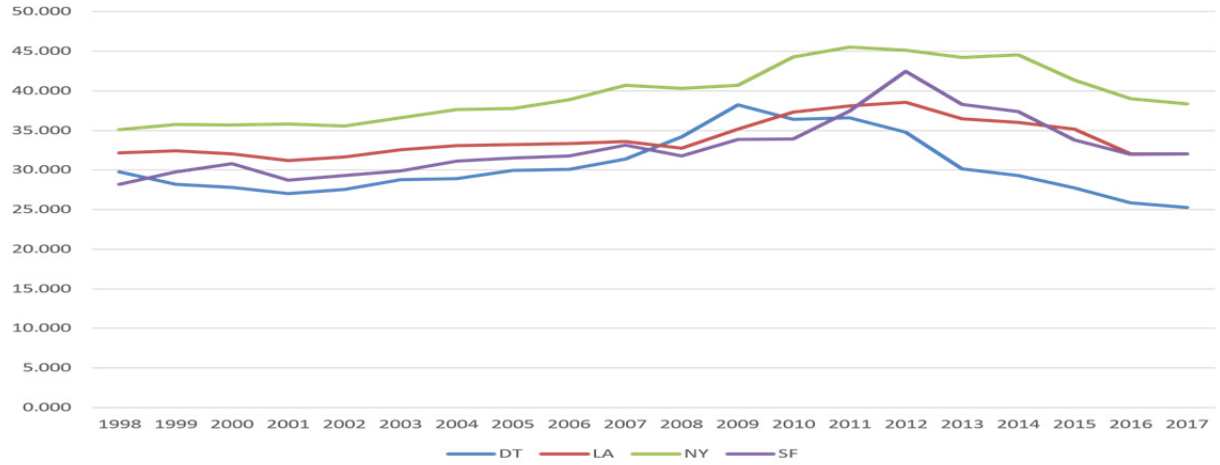

Figure A5. Ratios of Top 20 Percent of Earnings to Bottom 40 Percent