

Job Ladders and Growth in Earnings, Hours, and Wages

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Objective

Big picture: What can account for the decline in real earnings growth over the last 20 years?

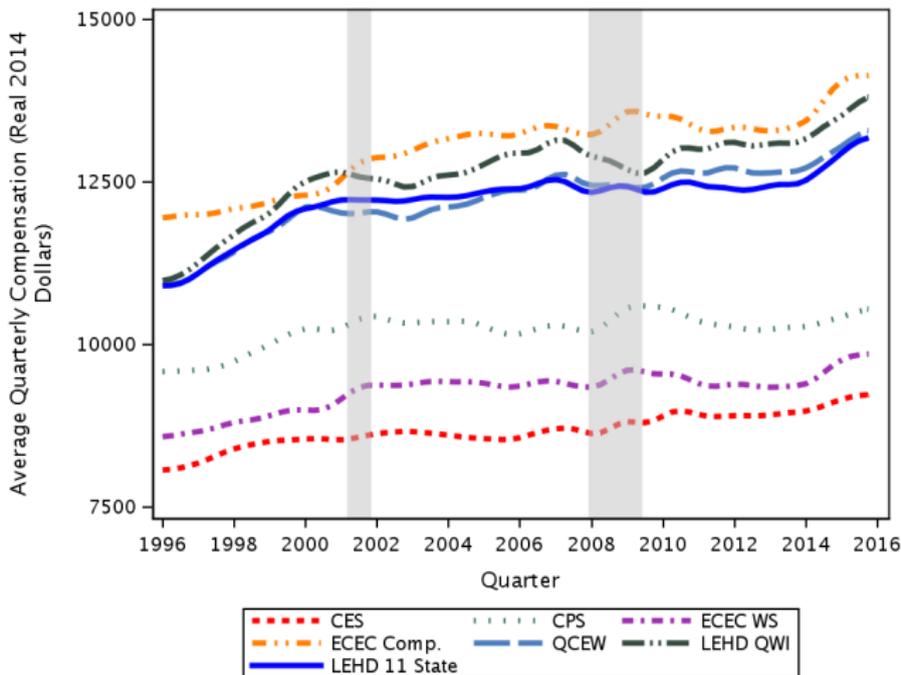
- Decompose earnings growth since the mid 1990s using new LEHD data
- Estimate persistent and transitory drivers of earnings growth
- Investigate contribution of hours and wages in average earnings growth

Data

Follow employment concepts from current J2J data product

- Consider worker movements between “dominant” (i.e., maximum earnings) employers
- Measure earnings before ($t - 1$), after ($t + 1$) job transition as available, i.e. full-quarter to full-quarter job-to-job flows
- Two datasets with data 1994-2015:
 - 4 states (MN, OR, RI, WA) with available data on worker hours whenever available, pooled
 - 11 states CA, CO, ID, IL, KS, MD, MT, NC, OR, WA, and WI for timeseries analysis with imputed hours

Average Earnings: Last 20 years



Decomposition of Earnings

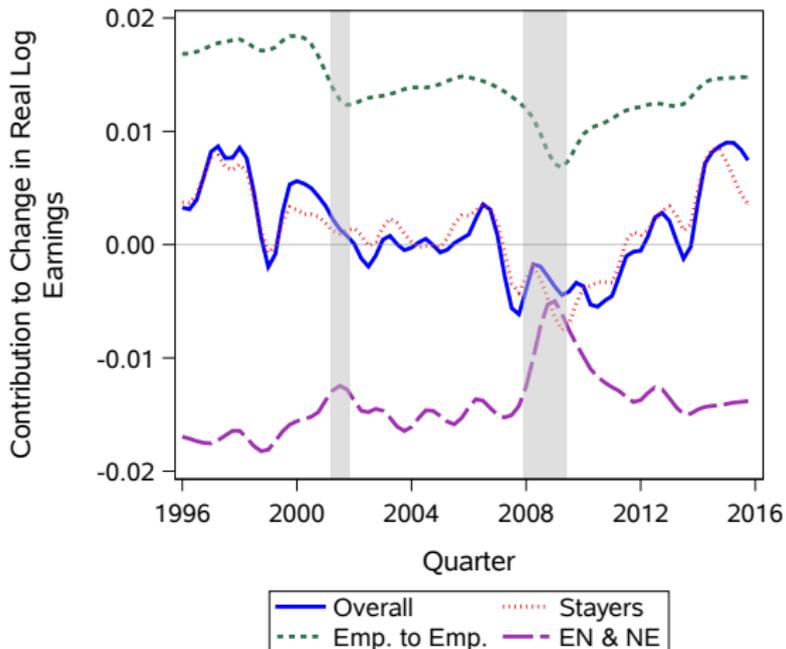
Evolution of average earnings:

$$\Delta \bar{y}_t = \underbrace{\frac{\sum_i s_{it} y_{it} + \sum_i q_{it} y_{it} + \sum_i n_{it} y_{it}}{D_t}}_{\text{earnings at time } t} - \underbrace{\frac{\sum_i s_{it} y_{it-1} - \sum_i q_{it} y_{it-1} - \sum_i r_{it} y_{it-1}}{D_{t-1}}}_{\text{earnings at time } t-1}$$

Which we can expand to define the contribution of each type of transition:

$$\Delta \bar{y}_t = \underbrace{\frac{\frac{S_t}{D_t} + \frac{S_t}{D_{t-1}}}{2} \frac{\sum_i s_{it} \Delta y_{it}}{S_t}}_{\text{job stayers}} + \underbrace{\frac{\frac{Q_t}{D_t} + \frac{Q_t}{D_{t-1}}}{2} \frac{\sum_i q_{it} \Delta y_{it}}{Q_t}}_{\text{emp.-to-emp.}} + \underbrace{\frac{N_t}{D_t} \left(\frac{\sum_i n_{it} y_{it-1}}{N_t} - \tilde{y}_t \right) - \frac{R_t}{D_t} \left(\frac{\sum_i r_{it} y_{it-1}}{R_t} - \tilde{y}_t \right)}_{\text{nonemp.-to-emp. and emp.-to-nonemp.}}$$

Earnings Growth: Job Stayers Matter



Persistent and Transitory Sources of Earnings Growth

Consider a reduced-form equation based on Bils (1985):

$$y_{it} = u_t(\gamma_1 + j_{it}\gamma_2 + n_{it}\gamma_3) + x_{it}\beta + v_{it}$$

with indicators for job-to-job transitions (j) and new hires from nonemployment (n) and the residual is composed of

$$v_{it} = \alpha_{it} + \epsilon_{it},$$

where α_{it} is a random effect, and ϵ_{it} is i.i.d. error term

- Consider two cases: $\alpha_{it} = \alpha_j$ and $\alpha_{it} = \alpha_{ik}$

Regression with Person-Specific Random Effects

Variable	Earnings	Wages
U_t	-0.018*** (0.000)	-0.009*** (0.000)
$\mathbb{I}(EE_t) * U_t$	-0.019*** (0.000)	-0.006*** (0.000)
$\mathbb{I}(NE_t) * U_t$	-0.016*** (0.000)	-0.003*** (0.000)

Regression Results

- Earnings, wages are procyclical
- Earnings, wages of job changers are more procyclical than those of stayers
- Workers voluntarily change jobs during expansions, because available matches are better
- Control for these match effects by identifying a fixed effect at the person-job level

Regression Results

Variable	Person Effect		Match Effect	
	Earnings	Wages	Earnings	Wages
U_t	-0.018*** (0.000)	-0.009*** (0.000)	-0.009*** (0.000)	-0.004*** (0.000)
$\text{II}(EE_t) * U_t$	-0.019*** (0.000)	-0.006*** (0.000)	-0.003*** (0.001)	0.003*** (0.001)
$\text{II}(NE_t) * U_t$	-0.016*** (0.000)	-0.003*** (0.000)	-0.004*** (0.001)	0.002*** (0.000)

Match Effects Matter

- Earnings, wages are still procyclical, but of smaller magnitude
- Earnings, wages of job changers are only weakly more procyclical than those of stayers
- Much of the observed excess cyclicality is likely to be due to changes in match quality

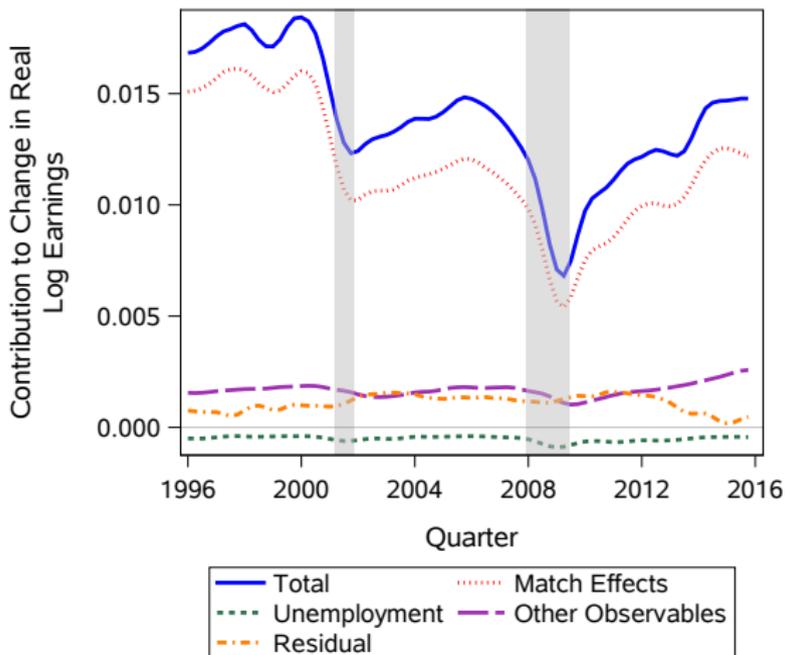
Sources of Earnings Growth

We can first-difference our regression:

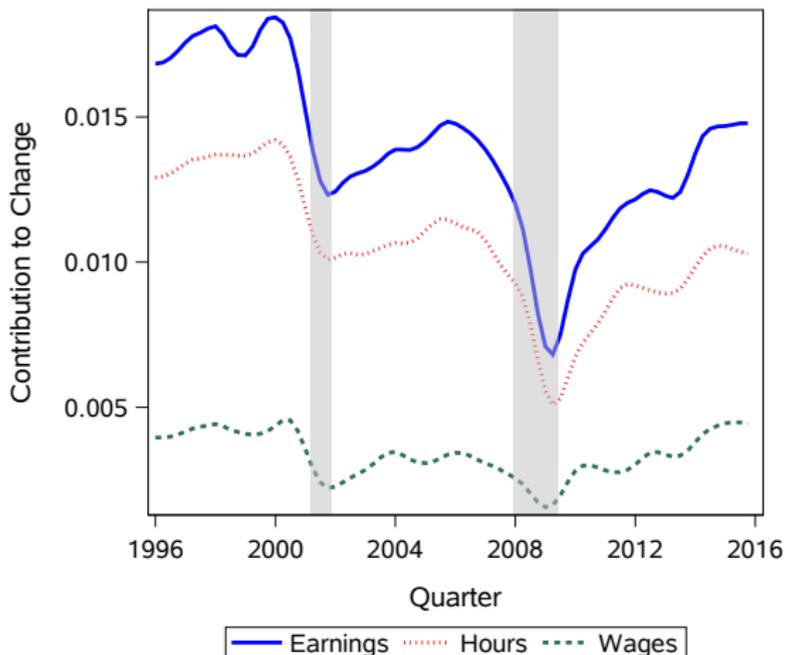
$$\Delta y_{it} = \underbrace{\Delta \alpha_{ik}}_{\text{Match}} + \underbrace{\Delta u_t(\gamma_1 + j_{it}\gamma_2 + n_{it}\gamma_3)}_{\text{Unemployment}} + \underbrace{\Delta x_{it}\beta}_{\text{Observables}} + \underbrace{\epsilon_{it}}_{\text{Residual}}$$

- Average across all workers i for every t and transition type
- Combine with decomposition equation

Job-to-Job Contribution to Earnings Growth



Job-to-Job Contribution: Wages vs. Hours



Conclusion

- New earnings measures in the LEHD J2J data product allow us to examine contribution of job transitions to earnings growth
- Job stayers primary contributor to average earnings growth
- Large role of match quality effects driving earnings cyclicalilty
- Large role of hours increases driving EE contribution to earnings growth

Feedback Welcome

If you have comments or questions, please contact me at:

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