

# How Increased Labor Demand at the Start of Your Career Can Improve Long Run Outcomes

## Abstract

The literature has traditionally focused on the local unemployment rate one faces at the beginning of their career to measure how initial economic conditions affect long-run outcomes. However, the unemployment rate moves in response to changes in labor supply or labor demand. Using JOLTS State Estimates for job openings, hires, and separations along with Local Area Unemployment Statistics, I test how changes in more direct measures of demand at labor market entry affect long-run outcomes. I find that for every one-point increase in the local unemployed-to-job-opening ratio, annual earnings are reduced by 4.53% and remain depressed for 13 years. Conversely, I find that a one percentage point increase in the local job openings rate or the local quits rate, increases initial annual earnings by 8.15% and 14.23%, respectively.

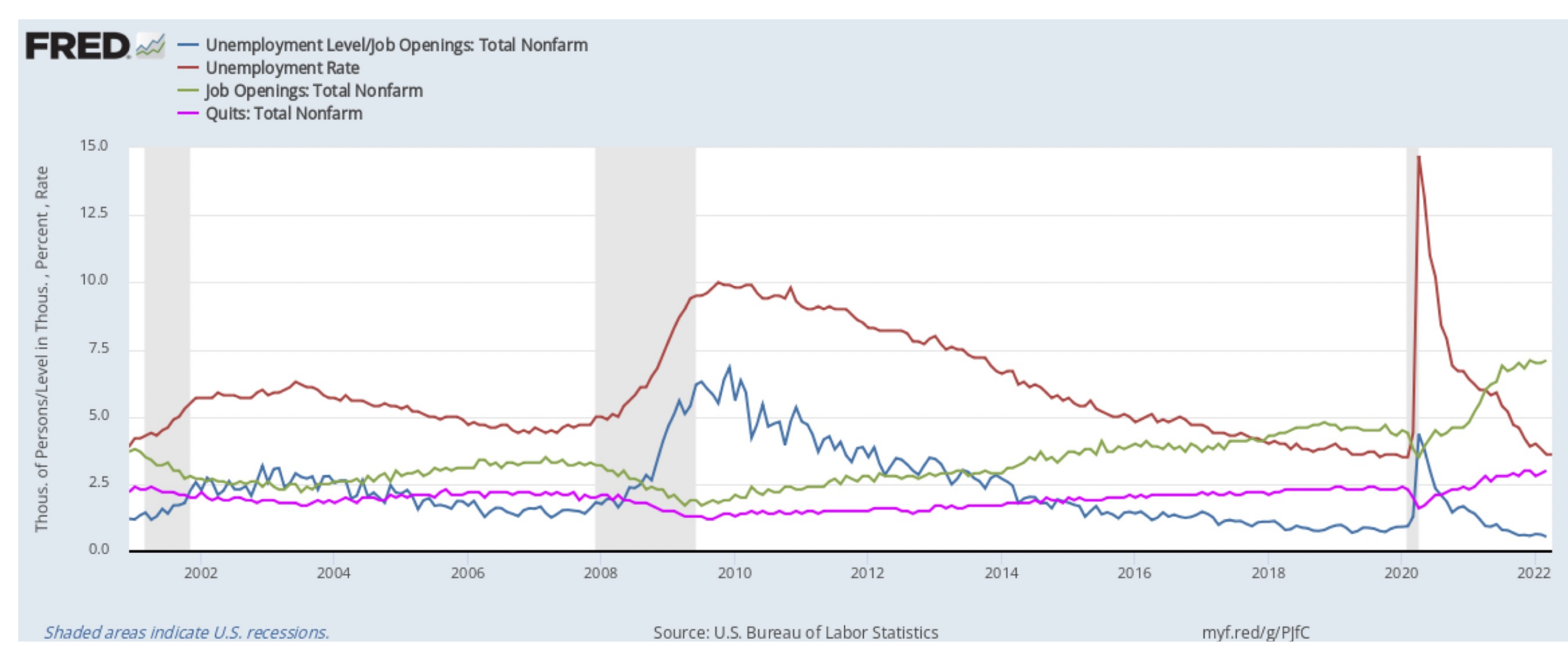
## Overview

Since the initial public release in 2002, Job Openings and Labor Turnover survey (JOLTS) data have been disseminated only at the regional and national level. In 2018, the BLS began exploring ways to disaggregate these data to the state-level. In October 2021, the BLS released newly disaggregated state-level JOLTS data estimates for the 2000-2021 period. I use these new data to measure how local changes in job openings and quits affect wages over the course of a person's career.

The literature on labor market conditions at job market entry has traditionally focused on recessions, or elevated cyclical unemployment. In theory, labor market entrants with no experience are more sensitive to changes in the competitive equilibrium wage. An increase in labor market slack would put downward pressure on the equilibrium wage and therefore result in lower starting wages for this group. This effect could then persist for structural reasons like job mismatch and firm-specific human capital (Kahn 2010) or through a lock-in effect that might exist because job-switching becomes harder as we age (Oreopoulos et al 2012).

I first test how well the local unemployment rate proxies labor market slack at job market entry. The unemployment rate is affected by changes in both labor demand and labor supply. During turning points, labor demand can fall dramatically relative to labor supply. With nominal wage rigidity, this fall corresponds with an increasing surplus of workers that is reflected in a rising unemployment rate. But the unemployment rate could also decrease or increase from changes in the labor supply. Additionally, turning points in the economy often affect labor supply differentially, suggesting an omitted variables problem when using the unemployment rate as a proxy for labor market slack. I find that by including job openings at labor market entry, the magnitude and precision of the original "scarring" effect increases. This suggests that original scarring estimates using only the unemployment rate are likely attenuated towards zero.

I also use the newly-disaggregated state-level job openings rate and quits rate to measure directly how changes in local labor demand affect annual earnings over the course of a person's career. I find that local increases in both job openings and quits at labor market entry *increase* initial earnings. Curiously, this effect also persists suggesting that positive shocks at labor market entry can create lasting changes. This finding offers a micro-foundation for understanding how labor market demand can affect aggregate wage growth and, in turn, inflation.



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## Data and Methods

My main data source is the 2001-2021 Current Population Survey, Annual Social and Economic Supplement, or the CPS-ASEC (Ruggles et al. 2022). I also use 2001-2020 state-level Job Openings, Layoffs, and Turnover Survey data along with 2001-2020 Local Area Statistics data as the source of my treatment variables. The sample for my main analysis is limited to workers aged 16-39 with one to fifteen years of potential experience. The primary outcome variable is annual earnings, or the pre-tax wage and salary income from the previous calendar year, but I also examine hourly wages, hours worked per week, and weeks employed last year.

The central challenge with using CPS-ASEC data to measure outcomes from initial economic conditions is that these data contain no variable that identifies the year nor state of job market entry. However, Schwandt and Von Wachter (2019) show that potential experience and current state in the CPS-ASEC provide great approximations of the entry-year and entry-state. They test their estimates against historical graduation trends and state-to-state migration trends and show that the bias for estimates are negligible and towards zero. In the paper, I replicate these tests to show that this method also works well when using alternative treatments like unemployed-to-job-openings ratio, job openings rate, or quits rate.

I use the following specification for my main analysis:

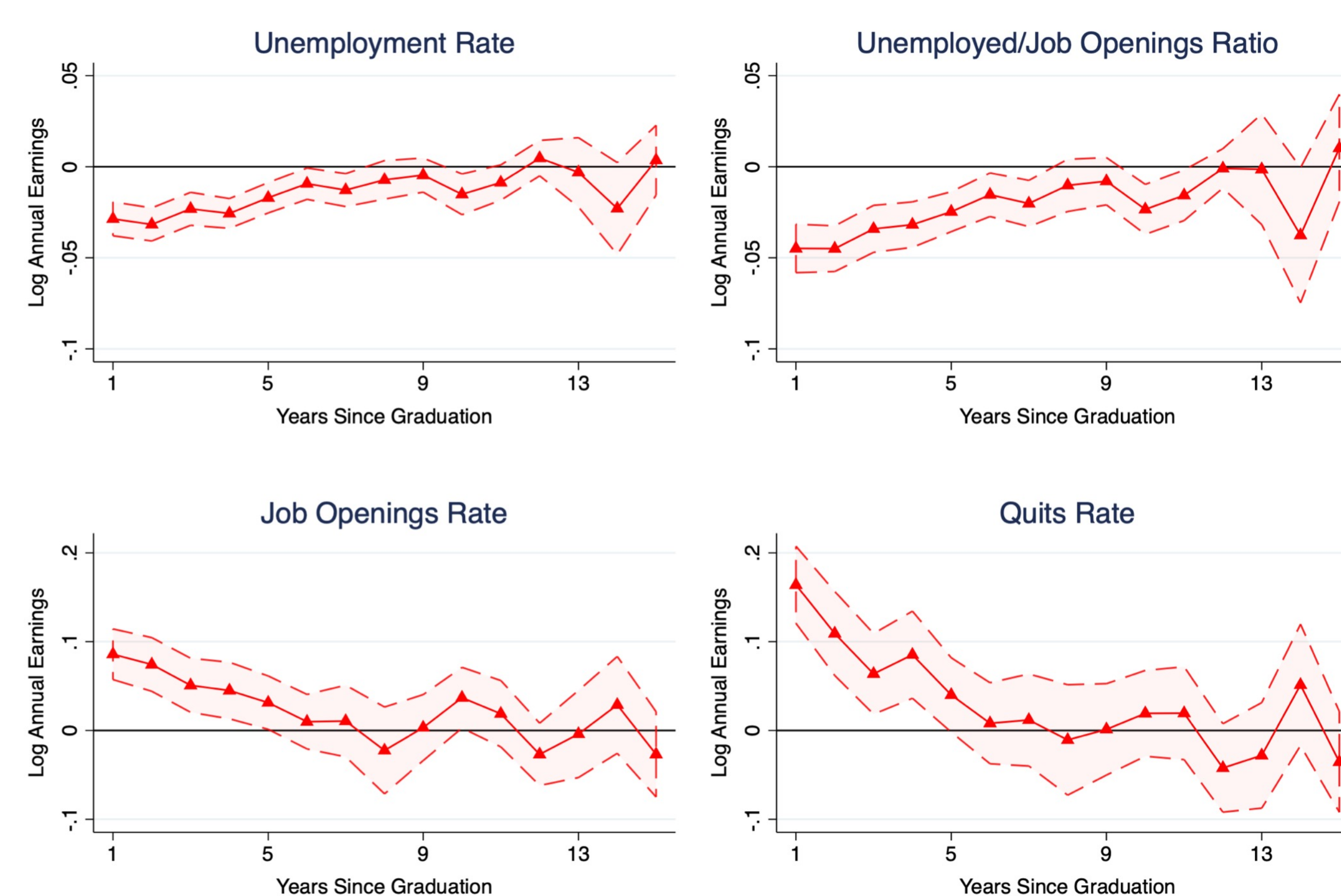
$$y_{istge} = \alpha + \beta T_{0s} + \delta(T_{0s} \times \Phi_e) + \gamma X_{ist} + \Phi_s + \Phi_t + \Phi_g + \Phi_e + \varepsilon_{istge}$$

$y_{istge}$  is annual earnings. The treatment variable,  $T_{0s}$ , is either the state-level unemployment rate, unemployed-to-job-opening-ratio, job openings rate, or quits rate from the imputed state and year of job-market-entry.  $X_{ist}$  are controls for education, race, and gender. I also control for state fixed effects,  $\Phi_s$ , year fixed effects,  $\Phi_t$ , job-market-entry-year fixed effects,  $\Phi_g$ , and potential experience,  $\Phi_e$ .

This specification estimates the initial treatment effect,  $\beta$ , from an increase in the treatment variable,  $T_{0s}$ .  $\delta$  measures how this effect diminishes as potential experience,  $\Phi_e$ , increases.

## Results

### An increase in the state-level ... at job market entry



Like previous literature, I find a one percentage point increase in the state-level job-market-entry-year **unemployment rate** reduces initial annual earnings by 3.11 percent. This disparity diminishes by 0.24 percent for each experience year, suggesting the effect persists for almost 13 years. When I incorporate job openings, I find a one-point increase in the **unemployed-to-job-openings ratio** reduces initial annual earnings by 4.53 percent. This disparity diminishes by 0.34 percent with each experience year. Focusing specifically on labor demand, I find a one percentage point increase in the state-level **job openings rate** increases initial annual earnings by 8.15%. Curiously, this increase diminishes by only 0.75% for each experience year suggesting this effect can last nearly 11 years! Similarly, I find a one percentage point increase in the state-level **quits rate** increases initial annual earnings by 14.23%. This increase is only diminished by 1.35% for each year of experience suggesting this effect can also persist for nearly 11 years.

### References:

Kahn, L. B. (2010). "The long-term labor market consequences of graduating from college in a bad economy." *Labour economics*, 17(2), 303-316.  
Oreopoulos, P., Von Wachter, T., & Heisz, A. (2012). "The short-and long-term career effects of graduating in a recession." *American Economic Journal: Applied Economics*, 4(1), 1-29.  
Ruggles, S., Flood, S., Foster, S., Goeken, R., Schouweiler, M., and Sobek, M. (2022). IPUMS USA: Version 12.0 [dataset]. <https://doi.org/10.18128/D010.V12.0>  
Schwandt, H., & Von Wachter, T. (2019). "Unlucky cohorts: Estimating the long-term effects of entering the labor market in a recession in large cross-sectional data sets." *Journal of Labor Economics*, 37(5), 5161-5198.