Proposal for the Economics of Working Longer and an Aging Workforce

# Internal and External Labor Markets and Declining Dynamism

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**Background and Research Question.** A fundamental characteristic of the US labor market over the last four decades has been the dual aging of workers and firms. The share of workers younger than 24 years and firms younger than five years stood at 18 and 22 percent, respectively, in 1987. By 2017, these shares had nearly halved. Over the same period, the share of workers older than 55 years and firms older than 11 years doubled.

The aging of workers and firms had far-ranging implications and shaped the secular response of several outcomes observed over this period. These included decreases in measures of firm dynamics, including firm entry and exit, as well as job creation and destruction rates (Karahan, Pugsley & Şahin 2022, Engbom 2019). As older firms became larger and dominated local labor markets, their market power increased (Peters & Walsh 2021, Hopenhayn, Neira & Singhania 2022). As older and larger firms became more stable, worker separation and unemployment rates saw a trend decline (Crump, Eusepi, Giannoni & Şahin 2019).

Another important trend observed over this period was the frequency with which workers transition across employers without an intervening spell of non-employment or the Employer-to-Employer (EE) transition rate. As workers typically realize a pay increase while switching jobs across firms, these transitions tend to be associated with moves up the job ladder and comprise an essential source of the lifetime earnings growth of workers. Their decline by nearly 20 percent between 1985 and 2017 – a phenomenon termed the decline in labor market dynamism – led to significant attention and debate in research and policy over its origins and consequences.

However, a natural and pertinent question that received less attention was whether the decline in external dynamism, i.e., job switches *across* firms, was offset by an increase in internal

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dynamism, i.e., job switches *within* firms. As an increasing fraction of workers has become exposed to larger and more mature firms with internal labor markets, they could be substituting climbing the job ladder externally with climbing them internally. In this paper, I propose to distinguish between Employer-to-Employer transitions across firms, with Job-to-Job transitions within firms, two terms that are often used interchangeably in the context of the US labor market. I propose to understand the extent to which accounting for internal dynamism can dampen or amplify the secular decrease in external dynamism and how the aging of workers interacts with changes in internal dynamism.

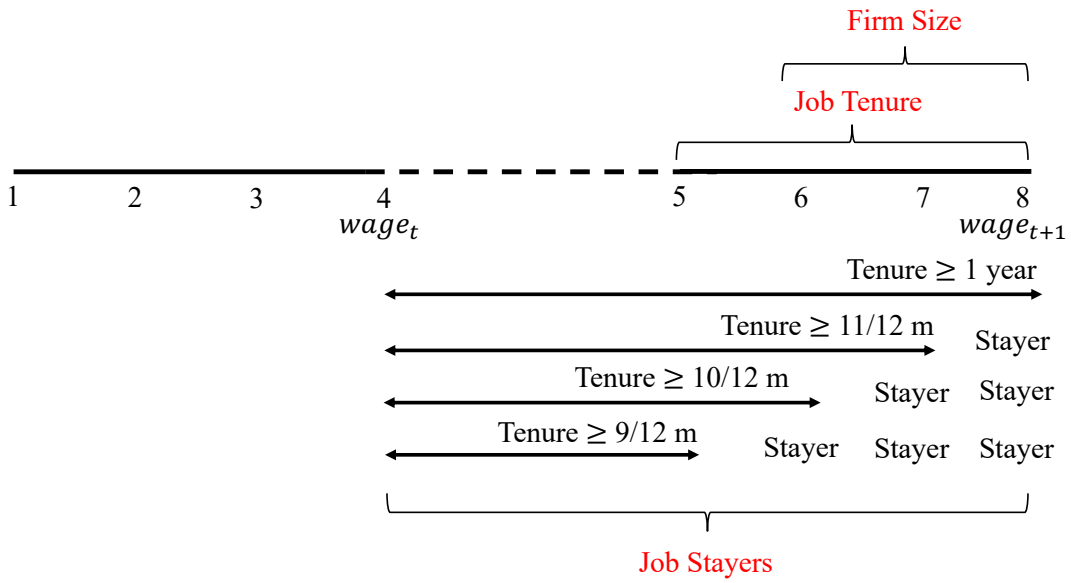
This paper makes twofold contributions to the literature on labor market dynamism. One, it is a first at the intersection of declining labor market dynamism and internal labor markets. It documents a decline in a new measure of labor market dynamism: job-to-job switching rates within firms. Two, it offers a novel method of identifying internal work-switching rates and wage growth of job stayers for the US, utilizing self-reported outcomes in the Job Tenure supplement and measures of firm size from the Current Population Survey.

**Data and Methods.** To determine the internal job mobility for job stayers in small and large firms, I use microdata from three supplements of the Current Population Survey (CPS): Job Tenure Supplement, Annual Social Economic Supplement, and Basic Monthly Survey from 1996-2020. The CPS is a monthly, representative household survey and one of the primary sources of high-frequency labor force statistics in the US. Its sampling methodology follows a 4-8-4 design reflecting the respondents' Interview Months (IMs). Households are interviewed consecutively for four months (IM 1-4), then left out of the survey for the following eight months, and interviewed again for the subsequent four months (IM 5-8). This structure is demonstrated in Figure 1, where the dashed line represents the months with no information about the respondent and wages being measured in IM 4 and 8, also known as the outgoing rotation groups.

In each interview in months 2-4 and 6-8, individuals are asked whether they work with the same employer as they did last month, enabling the identification of the respondent as a job stayer or job switcher. The key challenge lies in determining the respondent's job status over the course of eight months when the CPS did not follow them. The survey does not contain additional information on the labor force status in the missing eight months. I propose a novel measure to determine the job status of individuals between IM 4 and 8.

I utilize the Job Tenure Supplement (JTS) of the CPS, administered biennially in January or

Figure 1: Measuring wage growth and within-firm work transitions of job stayers in large and small firms in the CPS




*Notes*: This schematic illustrates the construction of the sample from the Current Population Survey. The sample consists of an intersection of job stayers who report an annual measure of wage growth, within firm work transitions and firm size.

February. The JTS contains information on the job tenure of the respondent's current employer. Figure 1 shows that an individual who answers the JTS in IM 8 and reports an employer tenure of at least one year can be identified as a job stayer in IM 4. Furthermore, an individual who answers the JTS in IM 7 (IM 6) and reports an employer tenure of at least 11 months (10 months) and reports being with the same employer as last month in IM 8 (IM 7 and 8) can be identified as a job stayer between IMs 4 and 8. Thus, utilizing the individual tenure in the JTS observed between IMs 5-8 and combining it with the information from the monthly same-employer question of the CPS enables the identification of job stayers between IMs 4 and 8.

Furthermore, the JTS asks respondents whether they are doing the same kind of work that they were doing a year ago. I use this self-reported measure of work switching to identify worker mobility within firms.

Next, I examine annual wage changes to ascertain whether work switching of job stayers is associated with horizontal rotation or vertical moves up the job ladder. For the sample of job stayers, I compute measures of annual wage and earnings growth from the outgoing rotation groups, IMs 4 and 8, of the monthly survey.

Finally, I utilize the Annual Social and Economic Supplement (ASEC) to determine the firm

size for identified job stayers. The ASEC is a supplement of the CPS conducted annually in March and includes additional labor market information, including the respondent's employer size. The latter is expressed in terms of the total number of employees who worked for the respondent's employer (including employees from all locations of the employer) during the previous year. I arrive at the job stayer's firm size by utilizing this information from the ASEC answered in any month in IMs 6-8, i.e., post answering the JTS fielded in January/February. Thus, linking the ASEC, JTS, and the outgoing rotation groups of the Basic Monthly Survey make it possible to identify job stayers, their annual wage growth, and firm size.

Upon compiling the data, I estimate the effect of firm size on internal mobility, and wage growth of job stayers. My sample consists of 120,000 full-time, privately employed individuals with tenure of at least a year. The sample period is biennial between 1998 - 2020. I use residual measures of work switching and internal wage growth after purging the effect of worker demographics such as race, age, education, gender, marital status, job-characteristics such as tenure, hours, industry and occupation, as well as their location and the business cycle.

**Preliminary Findings.**[1] I find evidence of the prevalence of internal job ladders within large firms, relative to small firms. Specifically, I document the following stylized facts:

1. Higher Job-to-Job transitions within Large Firms: Job stayers in large firms, relative to small ones, are 1.5 - 1.9 pp more likely to report that they switched the kind of work they were doing over the course of a year.

2. Higher Pay Growth within Large Firms: Workers in large firms realize a 1.5 - 1.6 pp higher annual earnings growth, and are 3 - 3.2 pp more likely to realize an increase in earnings than their small firm counterparts.

3. Higher Pay Growth upon Switching Work within Large Firms: The results in (2) are amplified for job stayers in large firms when the sample is conditioned on workers making internal job-to-job moves. Job Stayers in large firms who switch work, realize a 6 pp higher earnings growth and are 9 pp more likely to receive an annual earnings increase relative to job stayers in small firms. This suggests that the propensity of making internal job-to-job that are vertical rather than horizontal is higher in large firms.

[1] A preliminary draft of the paper with more details about the results described is available here.

Next, I attempt to understand the extent to which the internal job ladder contributes to overall labor market dynamism. I propose a simple decomposition framework to disentangle changes in true dynamism emanating from job-to-job moves within firms and employer-to-employer moves across firms.

I show that accounting for internal job ladders partially amplifies labor market dynamism and offsets part of the decline in external employer-to-employer switching rates. This result arises purely due to composition changes in employment towards large firms and treats internal job ladders within large and small firms as time-invariant.

At the same time, there is no *ex-ante* reason to assume time-invariance of internal dynamism. To understand the evolution of internal dynamism, I explore the long-run trends in job ' likelihood of work switching.

4. Much like external dynamism, measures of internal dynamism have also *decreased* over time: I observe a secular decline in the rate of internal job switching rate across all firm sizes, but more so for large firms than small firms. This decrease was about 0.62 pp for large firms and 0.17 pp for small firms. I find evidence of a vanishing of the large firm pay-growth premium between 2000-04 and 2014-18. This observation also supports the evidence by Bloom, Guvenen, Smith, Song & von Wachter (2018), that there has been a decrease in large firm pay-level premium relative to small firms by 7 pp between 2000-2013 using data from US Social Security Administration.

Plugging in the time-variance of internal job-to-job moves in the decomposition framework shows that the declining dynamism within internal job ladders amplifies the decrease in external dynamism between the 1990s to 2010s.

**What I plan to do: (1) A Model of Internal and External Labor Markets**

In ongoing work, I propose to understand why we observe a decline in *internal* and *external* labor market dynamism and interpret the findings of this paper through a model of search in the labor market. The primary contribution of the model would be to feature an internal *and* external job ladder. Workhorse models featuring a job ladder, including models of wage posting and bargaining (Burdett & Mortensen 1998, Postel-Vinay & Robin 2002), assume that workers cannot match with jobs in a firm's internal labor market. However, the findings of this paper show that internal job ladders are an important characteristic of large firms and increasingly

relevant, as more than half of all employees in the US work in firms sized above 500 workers. Furthermore, firms may be incentivized to hire internally for specific jobs rather than externally because of fewer search frictions and a better signal of ex-ante unobserved match quality in internal labor markets.

I propose building a search framework for the labor market, where firms and workers engage in costly job search. Firms are heterogeneous in productivity and make two types of decisions: (1) how many vacancies to post and (2) what fraction of vacancies to post in internal or external labor markets. The first decision would endogenously determine the firm size, while the second would produce heterogeneity in internal job markets across firm sizes. Employed workers would choose between climbing internal or external job ladders based on expected wage growth within the incumbent and poaching firms. Such a model would determine in equilibrium wage growth of job switchers and stayers, job-to-job transitions within firms, and job-to-job transitions across firms.

Next, I propose to understand the decline in dynamism through the lens of the model. In particular, I propose to ask the model, to what extent can different trends in the labor market play a role in driving the simultaneous decline in internal and external dynamism? Potential explanations could be:

1. **Aging of the workforce.** As workers age, they become less mobile externally (Glover & Short 2020), allowing their employers to exert monopsony power. As firms internalize their employees' diminished ability to make employer-to-employer quits, they may respond by restricting their inside opportunities and reducing the frequency of promotions.

2. **Firm Market Power.** Even within age groups, workers' outside options have deteriorated because of a decrease in inter-firm competition resulting from an increase in firms' market power. Evidence of this has been documented in the form of lower outside offers among workers in more concentrated labor markets (Caldwell & Danieli 2021, Schubert, Stansbury & Taska 2021) and increasing instances of anti-competitive practices, such as non-compete covenants and no-poaching agreements, being enforced by firms (Krueger & Ashenfelter 2018, Starr, Prescott & Bishara 2020). As markets become dominated by a small set of large firms with a concentrated share of employment and vacancies, employees of these firms face a lower job-finding probability outside of their firms. Like (1), the firms could endogenously respond by lowering the worker's options even within the firm

because workers pose a lower threat point.

Both explanations can account for the decrease in job-to-job mobility within firms, which co-exists with declining employer-to-employer mobility across firms. They also provide an interpretation of the vanishing large-firm pay premiums observed in the US from the 1980s.

3. **Specialization of Workers**: Workers could be increasingly specializing in their roles within the firms, which lowers their probability of transitioning across jobs within a firm. This is evident, especially at the lower tails of the skill distribution, where workers are increasingly being replaced by contracting and temporary help agencies.

**What I plan to do: (2) Estimate the model using data**

I propose to utilize confidential data from the US Census to understand better within-firm worker mobility patterns along more granular firm size bins and other dimensions, such as firm age and revenue. I plan to use these data also to estimate the model.

I also propose using data on the universe of vacancies posted online from Burning Glass Technologies. Nearly a fifth of these vacancies report an employer name, which can be used to identify large and small firms. I plan to explore the vacancy posting behavior by firm size.

**Short budget outline**

- Purchase of Burning Glass Technologies data of vacancies posted online provided by the firm Lightcast. This dataset costs \$15,000 - \$20,000 per project.
- Census microdata: I plan to apply for access to confidential microdata of the US Census available at the Cornell Research Data Center. Access fees for individual research projects at a standard RDC are about \$20,000.
- Summer Support for the 2023-24 academic year. \$18,000.
- Conference Travel Support to AEA, NBER SI, Midwest Macro, SED, SOLE. \$1,500 $\times$ 5 = \$7,500.
- Research assistants salary + software support = \$10,000.

**About Me**: I am a macro-labor economist who recently completed her PhD in Economics from the University of Texas at Austin in Spring 2023. I will be joining Columbia University as a

post-doctoral fellow for the academic year 2023-2024. I will join as an Assistant Professor in the Department of Economics at the University of Rochester from July 2024.

**Link to my CV is here.**

**Link to my website: https://sadhikabagga.github.io/**

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