# Internal and External Labor Markets and Declining Dynamism<sup>\*</sup>

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#### Abstract

Over the last four decades, employment composition has shifted towards large firms in the US. This has occurred amidst a decline in employer-to-employer transitions. A natural question is, are workers in large firms climbing job ladders internally rather than externally? Using data from various supplements of the Current Population Survey, I find evidence of the prevalence of internal job ladders within large firms. I document that job stayers in large firms, relative to small ones, realize a larger annual pay growth and a higher probability of internal job switching. Accounting for internal job ladders amplifies labor market dynamism and offsets part of the decline in external employer-to-employer switching rates. At the same time, there has been a decreasing trend in the rate of internal job switching, suggesting that the forces affecting declining external dynamism could have also had implications on internal job ladders. I hypothesize that the decline in internal dynamism could be driven by the firm's endogenous response to decreasing labor market competition.

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## 1 Introduction

"... transitions from small to large employers result in much more durable employment relations. Large organizations encompass transitions that would otherwise occur between smaller ones. This 'internal labor market' means that careers develop within the firm, though there may be no less mobility among tasks in large organizations." – Topel & Ward (1992)

The idea that internal labor markets provide workers with employment stability and opportunities for wage growth has long existed. In their seminal work, Topel & Ward (1992) find that while worker mobility *across* firms account for a third of early-career wage growth, movements *within* firms are much more important for long-term wage growth. In the quote above, they argue that transitioning from small to large firms allows workers to establish a stable employment relationship due to the presence of an internal labor market in large firms. More recently, Bayer & Kuhn (2023) find that the vast majority of workers experience promotions and demotions along their career ladders within the same firm rather than across firms. While the importance of internal labor markets has long been recognized, little is known about their prevalence across a broad set of firms and how they might have evolved with the changing firm size distribution. In this paper, I provide a new perspective on both aspects of this topic for the U.S. labor market.

Examining the existence and evolution of internal labor markets is also important in light of the fundamental transformation experienced by the U.S. labor market over the last four decades. On the one hand, employment composition has shifted away from small firms and toward larger firms. This shift is documented in the left panel of Figure 1, which plots movements in employment share across the firm size distribution. While the share of workers in small and medium-sized firms below 100 employees remained flat until the 1990s, it started decreasing precipitously after that until the end of the sample in 2022. This decline by eight percentage points was almost fully offset by an increasing share of workers in firms sized above 500 employees, mirroring the patterns of smaller firms.

These changes in the composition of workers occurred amidst a decline in worker mobility across firms, captured broadly by measures of worker hiring and separation and specifically by the Employer-to-Employer (EE) transition probability. The right panel of Figure 1 plots this probability at a monthly frequency by Fujita et al. (2024) based on data from the Current Population Survey (CPS). It measures the fraction of all employ-



#### Figure 1: Employment share by firm size and EE transitions rate

*Notes*: Business Dynamics Statistics, and Current Population Survey. Employment share is the annual stock of the number of employees in a particular size class expressed as a fraction of total employment. Employer-to-employer transition rates are monthly flows from Fujita, Moscarini & Postel-Vinay (2024) who use the Current Population Survey and correct for missing observations after a survey methodology change in 2007.

ees who change employers from one month to the next without an intervening spell of non-employment. The figure shows that the EE transition probability decreased by nearly 20 percent from the mid-1990s to before the pandemic. This shortfall did not revert itself to the pre-2000 level despite the unusually tight labor markets observed post-pandemic and the precipitous increase in quits labeled the 'Great Resignation'. The decreasing EE transitions from the late 1990s to the late 2010s — a phenomenon often termed declining dynamism in the U.S. labor markets — has raised concerns about the productivity and wage-dampening effects of reduced worker reallocation, especially in light of the evidence discussed above by Topel & Ward (1992).<sup>1</sup>

Given the growing importance of large firms in the U.S. labor market that has occurred alongside a long-run decline in measures of worker reallocation across firms, two natural questions arise: Are internal labor market transitions more prevalent among workers in large firms? If so, then with the shifting composition of workers towards large firms, are workers increasingly climbing job ladders *internally*, within firms rather than *externally*,

<sup>&</sup>lt;sup>1</sup>Recognizing the importance worker reallocation across employers to gross worker flows, Fujita, Moscarini & Postel-Vinay (2024) have made a concerted effort to accurately measure it. Their adjusted series is plotted in the right panel of Figure 1.

across firms? The latter has implications on the extent to which internal labor markets can reinforce or dampen the long-run decline in worker reallocation across firms. If workers are increasingly climbing job ladders within large firms, then the total reallocation rate would increase. On the other hand, if patterns of decreasing EE transitions are also being observed within internal labor markets, total reallocation may decrease.

In the main analysis of the paper, I explore data from three surveys of the CPS between 1996-2020: Job Tenure Supplement, Basic Monthly Survey, and Annual Social Economic Supplement. Using these data, I arrive at a sample of job stayers who report their firm size, annual pay growth, and within-firm task transition. These data provide a unique opportunity to overcome three issues that pose a challenge in the measurement of internal labor mobility. First, most administrative datasets, particularly the ones in the U.S., do not report occupation changes of workers, which are necessary to observe when examining task-based job movements that are internal to a firm. Second, longitudinal surveys such as the CPS that do report workers' detailed occupations suffer from noisy measurement of occupational mobility due to coding errors.<sup>2</sup> These errors are exacerbated when occupations are coded by the enumerators independent of the information reported by the respondents in their previous survey with the CPS (Kambourov & Manovskii 2013). Third, even with the introduction of dependent interviewing and coding, a change in the CPS respondent identification policy allowed respondents to maintain confidentiality of their responses with other members of their household in subsequent interviews. This generated a spike in missing answers to questions that relied on dependent interviewing, such as ones that directly probe respondents every month if they are working with the same employer or are performing the same activities and duties as last month (Fujita et al. 2024).

To mitigate these challenges, I utilize the worker's self-reported measure of task transition, which is asked once every two years in the Job Tenure supplement. The question probes whether or not the workers changed the kind of work they were doing at the time of the survey relative to last year. Combining this measure with the worker's tenure and restricting the sample to workers with a tenure higher than a year allows me to ascertain whether the worker made the task transition with the same employer. Furthermore, com-

<sup>&</sup>lt;sup>2</sup>These errors can arise in assigning a Census occupation code to the open-ended description by the respondent of their usual activities and duties and being consistent in that assignment in an environment of changing occupational classifications over time.

bining this measure with pay reported by the worker twice during their CPS tenure – one year apart – in the monthly survey allows me to ascertain the pay growth associated with task transitions. Taken together, this method of arriving at internal labor mobility does not rely on realized occupation transitions or questions that involve dependent interviewing or coding, thus overcoming the challenges described above.

I complement data from the CPS with two additional datasets. First, I use data on individual user profiles that are publicly posted on LinkedIn, a professional networking platform, and web-scraped from Revelio Labs. On this website, individual profiles act as online resumes, allowing users to report their current and past job titles both within and across employers, employment history, and the dates associated with each job title and employer transition. These data also include the firm's size, allowing me to examine the variation in the number of distinct positions reported by workers across thousands of firms on the firm size distribution. Second, I utilize data from the 1995-2013 panels of the Survey of Income and Program Participation (SIPP), a high-frequency household longitudinal survey that collects data on individual pay, tenure, and firm size every four months. These data allow me to compute the pay growth of job stayers across the firm size distribution with at least one year of tenure – a high-frequency analog of one of the outcomes measured in the CPS.

I document three main findings from these data. First, I find evidence of the prevalence of internal job ladders within large firms. I document in the CPS that job stayers' probability of reporting doing different kinds of work, which I interpret as a measure of internal work transition, is increasing over the firm size distribution. This pattern of internal mobility is broad-based, holding within occupations and industries and for workers at various levels of tenure within the firm. These findings are corroborated using evidence from LinkedIn with more granular firm-size classes. The data reveal the well-documented fact - that employer tenure is increasing in firm size. Two new facts emerge from LinkedIn: Unlike employer tenure, a worker's position tenure is non-increasing in terms of firm size. Put differently, workers in smaller firms report spending more time within a job position with their employer than workers in larger firms. This is consistent with the next finding that the number of distinct positions reported by a worker with their employer is increasing in firm size.

Second, to understand whether the internal labor market transitions represent hori-

zontal job rotation or vertical moves along the internal job ladder, I examine annual pay changes in the CPS by firm size. I find evidence of not only a large firm pay-*level* premium, a well-documented fact, but also a pay-*growth* premium. In other words, workers in large firms experience a higher annual pay growth and are more likely to report a pay increase relative to observationally similar workers in small firms. These findings are also corroborated by job stayers in the SIPP.

Next, I examine the worker's probability of making pay changes that come along with an internal labor market transition. I find that workers in large firms, compared to small firms, are more likely to report realizing positive pay increases, and pay increases greater than five and ten percent that are also associated with reporting an internal job transition. To understand whether an internal job transition is associated with a higher pay bump in large or small firms, I condition the sample on those making and not making internal transitions. I find that internal transitioners realize a higher pay increase in large firms than in small firms. Furthermore, even without making an internal transition, workers in large firms realize an annual pay growth, albeit four to five times lower than those workers who make an internal transition. Together, I take these findings to suggest that in the CPS, internal labor market transitions are associated with vertical movement along a job ladder more than horizontal rotation of jobs.

Finally, I study the evolution of internal labor market transitions to put in the context of declining external worker reallocation rates shown in Figure 1. I find that annual internal labor market transitions are almost a third in magnitude compared to the annual EE transitions rate. The behavior of internal transitions has followed a similar path as external transitions – recording a trend decline between the mid-1990s to 2020, but the decrease in internal transition has been more than twice in magnitude than external transitions. The shortfall in internal transitions exacerbates the decline in the true measure of labor market dynamism that takes into account worker churn both within and across firms. I find that the bulk of the decrease in internal labor market transitions has been concentrated in large firms with more than a thousand employees, whereas workers in smaller firms have observed nearly the same levels of internal transitions over the last two decades.

I close by examining the potential drivers of the decreasing frequency of internal labor market transitions that have paralleled trends observed in external labor mobility. First, the U.S. economy has experienced an aging of workers, which can potentially impede fluidity at the top of the internal job ladder and slow down the other rungs below the top. I find evidence that the likelihood of making internal job transitions decreases with age, and even though younger workers experienced a more pronounced decrease in internal dynamism, older workers also observed some decline. This suggests that other explanations may also be at play.

Second, the decreasing internal job transitions can be interpreted through models of search in the labor market that generate EE transitions as a result of workers searching on the job and firms poaching employed workers from one other (Burdett & Mortensen 1998, Postel-Vinay & Robin 2002). A decrease in inter-firm competition, resulting from an increase in the market power of firms, can deteriorate workers' outside options.<sup>3</sup> Through the lens of such a model, as labor 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 their employers.<sup>4</sup> As large firms internalize their employees' lack of better outside opportunities and a diminished ability to make employer-to-employer quits, they may respond by restricting their inside opportunities and reducing the frequency of promotions. This could explain the decrease in job-to-job mobility within firms, which co-exists with declining employer-to-employer mobility across firms. I find evidence in the cross-section that labor market concentration and the probability of making internal transitions are negatively correlated.

#### Related Literature. TBC.

The rest of the paper is organized as follows. Section 2 introduces the data sources and describes the measurement of internal mobility in the CPS. Section 3 presents the three stylized facts related to the frequency of internal mobility over the firm size ladder, the pay changes associated with such mobility and it's evolution in the aggregate U.S. economy as well as within firm size classes. Section 4 outlines the potential drivers for the decrease in internal dynamism. Section 5 concludes the paper.

<sup>&</sup>lt;sup>3</sup>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).

<sup>&</sup>lt;sup>4</sup>Conversely, these employees could face a higher probability of matching with a vacancy within their firms. This could explain why internal job ladders are more prevalent within large firms than small firms.

## 2 Data and Measurement

The main analysis presented in the paper uses data from different CPS supplements. I corroborate the findings in the CPS with job-titles data of LinkedIn users, and pay-growth data from the SIPP. I describe each of these sources below.

# 2.1 CPS: Measuring internal labor mobility & pay growth over firm sizes

The CPS is a monthly household survey that follows a 4-8-4 sampling design reflecting the Interview Months (IMs) of the respondents. Households are first interviewed for four consecutive months (IM 1-4), then left out of the survey for the following eight months, and then interviewed again for the subsequent four months (IM 5-8). This structure is demonstrated in Figure 2, where the dashed line segment indicates the months without any information about the respondent.

Wage information is collected from the respondents in their fourth and eighth interviews. Furthermore, in each interview conducted during months 2-4 and 6-8, individuals are asked whether they are employed with the same employer as in the previous month, enabling the classification of the respondent as a job stayer or job switcher. The key challenge lies in determining the respondent's job status during the eight-month interval when they are not tracked by the CPS. The survey does not contain additional information on the labor force status in the missing eight months. This prevents us from ascertaining whether the wage information from IM 4 and 8 belongs to the same or different employers. To address this gap, I propose a new approach to infer the job status of individuals between IM 4 and 8.

I utilize the Job Tenure Supplement (JTS) of the CPS, which is administered biennially in January or February. The JTS contains information on the tenure of the respondent's current employer. If a respondent participates in the JTS during IM 8 and reports having been with their employer for at least one year, they can be classified as a job stayer from IM 4. Additionally, a respondent who completes the JTS in IM 7 (or IM 6) and, indicates a tenure of at least 11 months (or ten months), and reports working for the same employer in the subsequent months can also be considered a job stayer throughout IMs 4 to 8. This approach, illustrated in Figure 2, uses the tenure information from the JTS in IMs 5-8 and



Figure 2: Measuring wage growth and internal labor market transitions of job stayers in large and small firms in the CPS

*Notes*: This schematic illustrates the construction of the sample from the CPS. The sample consists of an intersection of job stayers who report an annual measure of wage growth, internal labor market transition, and firm size.

the monthly same-employer question in the CPS to identify job stayers between IMs 4 and  $8^{56}$ 

Next, 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 the 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 em-

<sup>&</sup>lt;sup>5</sup>Daly, Hobijn & Wiles (2012) compute the wage growth of job stayers and job switchers using the CPS but employ a different method to identify job stayers. They define a job stayer as an individual who was employed in IMs 4 and 5-8 within the same detailed industry and occupation, reporting the same employer, job description, and duties. I find that over 90 percent of individuals are classified as job stayers under both the definitions.

<sup>&</sup>lt;sup>6</sup>Fujita et al. (2024) have flagged the limitation of using the same-employer question in the monthly CPS in accounting for job-to-job flows, pointing to an increasing trend in missing answers reported to this question from 2007-09. They argue that correcting for measurement error is important for accurately computing EE rates because the monthly rates are small (around 2-3 percent of all employed make employer-to-employer transitions in a month), and even minor measurement errors in EE rate can exaggerate the perceived decline in these rates by a large percentage. However, this issue is less problematic when analyzing job stayers. Given that job stayers represent 97-98 percent of the employed population, any overcounting due to missing same-employer information would result in a minimal percentage change.

ployer 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. Thus, by linking data from the ASEC, JTS, and the outgoing rotation groups of the Basic Monthly Survey, it becomes feasible to identify job stayers, their annual wage growth, and firm size. Additionally, the JTS offers a variable that identifies whether a job stayer has been performing the same type of work within the firm over the past year. This variable serves as a self-reported indicator of workers' internal mobility across different occupations.

#### 2.2 LinkedIn: Measuring internal labor mobility over firm size

I use data on individual resumes posted on LinkedIn to complement the evidence from the CPS related to internal labor mobility. LinkedIn is a professional networking platform where individuals maintain an online profile akin to a resume. Their profile contains a time series of their employment spells, and includes dates of employment, job titles within and across employers, education, and skills. The dataset is is developed by Revelio Labs, a data analytics company specializing in understanding workforce dynamics.

The dataset is at the individual-user level and provides a point-of-time snapshot of their profiles on LinkedIn. For each individual user, the data details several kinds of information. First, it contains information related to their current and past positions or job titles. These include user reported location including state and metropolitan area, the start and end date associated with position, the title of the position such as "Operations Manager", "Director of Facilities", "Senior Tax Accountant", etc., and the firm name.

Revelio Labs provides clean measures of firm identifiers that take into account the fact that the same firm can be called different names (e.g., Bank of America and BofA both refer to the same firm) or that some firms may be subsidiaries of others. They assign to each firm ID an employee headcount, which is the sum of active user positions associated with that firm. Their employee headcounts contain the total workforce as well as the contingent workers associated with the firm. Their firm-to-headcount mapping model imposes sampling weights to adjust for roles and locations that may be underrepresented in the LinkedIn sample.

Revelio Lab also provides the NAICS industry code and the ONET occupation code

associated with each firm and job title. To assign each position an occupation, they first compute the mean job embeddings for each ONET code. They then compute, for each ONET embedding, the cosine similarity between all job title embeddings to determine which job title is most similar to which ONET code. NAICS industries are mapped to each firm by name matching using data from FactSet, Compustat, etc.

The data contain 188 million user profiles in the U.S., and the sample of job title history spans from 1960 to 2023. In practice, the positions reported on LinkedIn have a recency bias. LinkedIn was launched in 2003 but popularized around 2008 with the expansion of the internet in job-search. I, therefore, restrict the sample of positions to those that started between January 2010 and December 2019. In the current version of the analysis, I use a random sample of 1 million user profiles, out of which 65 percent are dropped due to the absence of any position listed by the user, or the employment spell lacking a start date, missing employer information, or non-employment or self-employment spells.

Appendix figures A1-A4 compare employees and firms in the LinkedIn sample with the Business Dynamics Statistics of the Census for 2018. The LinkedIn sample is broadly representative at the state and industry levels. Certain states, such as California and Texas, and sectors, such as manufacturing, finance, and information, are over-represented on LinkedIn. These can be corrected by selecting the random sample such that it is reweighting the over- and under-represented groups at granular levels of industries and locations.

#### 2.3 SIPP: Measuring pay growth over firm sizes

I supplement my main analysis with data from the SIPP, a tri-annual panel survey of US households. I limit my sample to the 1996-2000, 2001-2004, 2004-2006, and 2008-2013 panels of the SIPP. The advantage of using the SIPP lies in its high frequency of observing individuals and its ability to track job stayers and movers over multiple years. The primary downside is the presence of an enumerator-coded measure for individual occupation transitions rather than a self-reported measure of job or occupation changes. Similar to my approach with the CPS, I depend on measures of an internal job ladder. I also address the issue of seam bias by utilizing variables observed during the interview month of each wave and excluding recall observations from the previous three months.

## 3 Internal Job Ladders in the US: Evidence

Over the last three decades, the US labor market has exhibited a secular decrease in measures of worker reallocation across firms, most notably observed in the declining EE rate. Over the same time period, large firms became more dominant in local and national labor markets. In this section, I document several stylized facts pertaining to the within-firm reallocation behavior of job stayers. The analysis presents key comparisons between observationally similar workers in large and small firms. I start by documenting the probability of making internal job transitions over the firm size distribution. I then present differences in pay growth associated with internal transitions. Finally, I relate the secular decline in the EE rate to the long-run dynamics of the internal transition rate.

#### 3.1 Internal-job transitions are increasing in firm size

An important feature of the U.S. labor market compared to other developed countries is the higher-than-average firm size of 22 employees per firm and the record high and increasing fraction of workers employed in large firms (Poschke 2018). Data from the Business Dynamics Statistics of the U.S. Census Bureau shows that in 2020, firms with more than 1000 employees comprised merely 0.2% of all firms in the US but employed close to 63 million workers, comprising nearly half of the entire workforce. While their share among firms was nearly the same even in the early 1990s, their share among workers was lower by ten percentage points. This rapid growth of large firms contrasted sharply with that of microand small firms sized below 10 and 100 employees, respectively, which saw a decrease in their employment share by a similar magnitude.

The growing importance of large firms can affect the career progression of workers within these firms if organizational structures and internal labor markets differ across the firm size distribution. Evidence of heterogeneous hierarchies within large firms has been documented for Norway by Huitfeldt et al. (2022). They find that among their sample of 3600 large firms employing on average more than 150 workers per year, the length of organizational hierarchies is increasing in firm size. Motivated by these observations, I provide evidence of internal job-transition probabilities within firms of distinct sizes in the U.S.

I focus on the variation across the firm size distribution of the individual's response

to whether they were doing the same or different kind of work at the time of the survey relative to a year ago. Specifically, the job tenure supplement of the CPS probes the respondent: *"Earlier, you told me that you are now working as (enter the occupation from basic CPS). Were you doing the same kind of work a year ago, in January of (enter previous year)?"*. The different options to answer this question are "yes", "no", "don't know", "refused" and "no response". I categorize workers as making an internal task transition if they answer "no" to this question. I remove from the sample all workers who do not answer this question in a positive or negative.

Some of the respondents to the job tenure supplement, which takes place in January or February of every other year, also participate in the March Annual Social Economic Supplement. This survey probes the worker about the size of the employer they worked within the previous calendar year by asking, *"Counting all locations where this employer operates, what is the total number of persons who work for your employer?"*. The answer of the respondents is classified into firm size categories.<sup>7</sup> I further ensure that the worker's response in the job tenure and March supplements correspond to the same employer.<sup>8</sup>

Table 1 shows a comparison of the internal task transition probability across firm sizes. I estimate a linear probability model where the outcome is one if the job stayer reports doing a different kind of work than what they were doing in the previous year. The sample consists of full-time job stayers in private jobs who report a job tenure of at least one year with their current employer and who report their employer's size. The first column reports the raw correlation and shows that the probability of doing different work within the same firm increases with firm size. Workers in firms sized above 100 employees but below 1000 employees are about twice as likely to report changing tasks than workers in smaller firms.

<sup>&</sup>lt;sup>7</sup>Over the sample period, the number of bins of firm sizes in the CPS changes thrice. First, between 1995-2010, size classes are defined as <10, 10-24, 25-99, 100-499, 500-999, and 1000+. Between 2011-18, the sizes are reclassified as <10, 10-49, 50-99, 100-499, 500-999 and 1000+. Finally, from 2019 onwards, the 1995-2010 classification is re-adopted. To provide detailed firm size classes that are consistent over time, with a sizable fraction of the employed population, I use the following size classes for a majority of the analysis: <10 employees, 10-99 employees, and 1000+ employees.

<sup>&</sup>lt;sup>8</sup>This is done by filtering the sample on two levels. First, I ensure that the worker stays with the same employer between the job tenure and March supplements. To do this, I remove workers who did not answer "yes" to the following question in the basic CPS surveys between the job tenure and March supplements: "*Last month, it was reported that you worked for (enter employer name). Do you still work for (enter employer name)?*" Second, I restrict the sample to those workers who report a job tenure of at least one year. The job tenure supplement specifically probes the respondent of their tenure with the same employer by asking "*How long have you been working CONTINUOUSLY (emphasis by CPS) for (enter company name from basic CPS) at your main job for your present employer*".

	Dependent Variable: Whether the job stayer reported doing different kinds of work over the year			
	(1)	(2)	(3)	
Firm Size: 10-99 employees	0.011***	0.010*** (0.002)	0.009***	
Firm Size: 100-999 employees	0.020***	0.020***	0.019***	
Firm Size: 1000+ employees	(0.002) 0.028*** (0.001)	(0.002) 0.029*** (0.002)	(0.002) 0.027*** (0.002)	
Constant	$0.015^{***}$ (0.001)	0.033*** (0.003)	0.032*** (0.003)	
Demographic controls 2-digit industry FE 2-digit occupation FE		$\checkmark$	√ √ √	
N	1,33,728	1,33,728	133,728	

#### Table 1: Internal labor market transitions by firm size, CPS

*Notes*: Controls include seven tenure categories, a linear time trend, unemployment rate, state, three education categories, age, squared age, three race categories, whether Hispanic, married, male, married and male. All continuous variables are z-score normalized. Robust standard errors in parenthesis. Data: CPS Job Tenure Supplement and Annual Social and Economic Supplement, 1996-2022, excluding 1998. CPS person weights used. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

This probability increases at a decreasing rate as firm size grows. Workers in firms sized 1000 employees and above report an internal task switching probability, which is almost three percentage points higher than workers in micro-firms sized below ten employees and one percentage point higher than those who work in medium-sized firms.

The rest of the columns of Table 1 make the specification of the baseline regression richer in terms of averaging out the effect of various demographic and job characteristics. While column (2) adds demographic controls for the worker, including their age, education, and tenure within the firm, column (3) further adds 25 occupation and 16 industry fixed effects that are consistent over the sample period. The coefficients for small, mid, and large firms remain stable.

To corroborate the findings of the CPS, I provide evidence on internal job transitions reported by workers on their online resumes on the professional networking platform LinkedIn. On this platform, workers report the history of their employment spells, including details of their current and previous employers and the different job titles within each employer, along with dates of job title change. Workers also report their location and



#### Figure 3: Employer and position tenure by firm size, LinkedIn

*Notes*: Controls include 650 occupations, 950 industries, states, six educational categories, starting year of employment, and worker's gender. All continuous variables are z-score normalized. Robust standard errors in parenthesis. Data: LinkedIn was sourced by Revelio Labs, and the sample was restricted to employment spells that started between 2010 and 2019. Vertical bars represent 5% confidence bands.

#### Figure 4: Internal job-title transitions by firm size, LinkedIn



*Notes*: Controls include 650 occupations, 950 industries, states, six educational categories, starting year of employment, and worker's gender. All continuous variables are z-score normalized. Robust standard errors in parenthesis. Data: LinkedIn was sourced by Revelio Labs, and the sample was restricted to employment spells that started between 2010 and 2019. Verticle bars represent 5% confidence bands.

education, including institutions attended and degrees obtained. These data are scraped by Revelio Labs, which also provides industry and occupation codes that can be derived using clustering algorithms from the job titles and their associated descriptions in individual LinkedIn profiles as well as online job postings. Finally, Revelio Labs also provides a predicted gender of the worker using their first names.

Figure 3 plots the size of the worker's current employer against the employer tenure and the position tenure of the worker. The left panel of Figure 3 reports the coefficients of a regression of employer tenure in log months, that the worker has reported continuously working with their current employer on the y-axis. The baseline firm size of 5-9 employees has been normalized to zero. The figure shows a well-documented fact: jobs in large firms are relatively more stable, and employer tenure is increasing in firm size. The hollow circles depict the baseline regression coefficients on firm size without any controls. Workers in medium-sized firms reported a tenure that was about 10 percent higher than micro firms, whereas workers in mega-firms reported a tenure that was 20 percent higher. The filled circles show that these numbers are exacerbated when the regression also controls for 650 occupations, 950 industries, states, six educational categories, starting year of employment, and worker's gender. Workers in firms sized with 10k+ employees report a tenure that is 34 percent or a year larger than workers in micro firms and about 15 percent higher than workers in mid-sized firms.

The right panel of figure 3 plots firm size against the number of months the employee reports spending in the same position or job title with the same employer. Contrary to employer tenure, position tenure is not increasing in firm size. The regression coefficients depicted by the hollow triangles are flat for all firm sizes when the regression includes all the control variables mentioned above. The filled triangles additionally control for employer tenure: the longer the worker stays with their employer, the longer they can also stay within their position with that employer. The correlation between position tenure and firm size turns negative in that, for two observationally similar workers at a given tenure, the workers in the small and mid-sized firms spend almost 7-15% more months in their current job title than the workers in the larger firms.

An implication of the observations from figure 3 is that workers are churning more jobs within larger firms. The relative behavior between within-firm churn and firm size can be seen in Figure 4. The x-axis again plots the firm size, whereas the y-axis shows the number of positions a worker reports within their employer. In the baseline regression with controls and without employer tenure, the number of distinct positions reported within

the same employer is increasing in size. This observation is consistent with the findings from the CPS that workers' likelihood of doing different types of work is increasing with firm size. Furthermore, controlling for employer tenure, the slope decreases and nearly flattens at the top of the firm size distribution. Workers in mid-sized firms report about 17 percent higher, or 0.35 more positions than workers in small and micro-sized firms. This increases to about 22 percent higher, or 0.5 more positions among workers at the same tenure in mega-firms sized 10k+. In other words, observationally similar workers report a higher number of job titles in mid-sized firms relative to small firms, but the frequency of further gains in title transitions slows at the top of the firm size distribution.

#### 3.2 Internal transitions are associated with a pay-growth premium

The examination of firm size and distinct types of work reveals that the frequency of internal labor market transitions is increasing over the firm size distribution. However, only focusing on internal transitions abstracts from understanding whether the churn within the firm is associated with horizontal job rotation without necessarily involving pay or productivity increases or vertical moves along the internal job ladder. Climbing job ladders internally may be more important in the current U.S. labor market when moves across firms are at a record low compared to pre-2000s and have not shown signs of recovering to those levels despite multiple instances of record tight labor markets observed both before and after the pandemic.

Table 2 shows three different regressions concerning pay levels and changes from the CPS. The sample is restricted to those respondents who appeared in the job tenure supplement in any of their final four months in the CPS and reported a tenure of over a year. The job tenure respondents are then tracked to remain with the same employer until they answer the March supplement to report their firm size and until their final eighth month of the CPS, when they also report their wage. Given their tenure of at least a year, the wage they report in their fourth month of the CPS belongs to the same employer, which allows me to measure the pay growth of job stayers who have remained with the same employer for at least a year. Given the higher demands on the sample pertaining to firm size, tenure, and wage growth reporting, the sample size in Table 2 is smaller than the previous table by an order of magnitude.

The outcomes of each of the columns of Table 2 are annual real weekly earnings growth,

	Dependent Variable:				
	Pay Growth	Log Pay	$\Pr(\operatorname{Pay} > 0)$		
	(1)	(2)	(3)		
Firm Size: 10-99 employees	0.020*	0.064***	0.050***		
	(0.010)	(0.010)	(0.014)		
Firm Size: 100-999 employees	0.030***	0.126***	0.060***		
	(0.011)	(0.010)	(0.014)		
Firm Size: 1000+ employees	0.027***	0.187***	0.066***		
	(0.010)	(0.010)	(0.014)		
Constant	0.022	6.159***	0.515***		
	(0.017)	(0.017)	(0.022)		
Ν	26081	26081	26081		

Table 2: Earnings growth and levels by firm size, CPS

*Notes*: Controls include seven tenure categories, a linear time trend, hours worked, whether paid hourly, unemployment rate, state, three education categories, age, squared age, three race categories, whether Hispanic, married, male, married and male. All job level characteristics correspond to the prior year. All continuous variables are z-score normalized. Robust standard errors in parenthesis. Robust standard errors in parenthesis. Data: CPS Outgoing Rotation Group, Job Tenure Supplement, and Annual Social and Economic Supplement, 1996-2022. CPS person weights used. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

logged current real weekly earnings, and the probability of realizing an increase in real weekly earnings over the year. The table depicts the correlation of these outcomes with the main variable of interest–firm size classes. Each of the regressions includes a rich set of control variables, including the worker's tenure with the same employer, a linear time trend, unemployment rate, geography, worker's demographics, and job characteristics pertaining to the prior year, including hours worked, and the occupation and industry of the job. The first and second columns demonstrate that not only do workers in large firms realize a pay-level premium, but they also report earning a pay-growth premium. Workers in firms with 1000+ employees report annual real earnings growth, which is about three percentage points higher and 20 percent more than the earnings of workers in smaller firms. The third column estimates a linear probability regression and shows that workers are also more likely to report realizing a pay increase while they're employed in larger than small firms. The Appendix shows that these results also hold if the outcome of interest is hourly wages instead of weekly earnings.

While the overall pay levels and growth demonstrate distinct behavior over the firm

	Dependent Var.: Probability of reporting an internal job transition <i>and</i>				
	$\Pr(\Delta \operatorname{Pay} > 0)$ $\Pr(\Delta \operatorname{Pay} > 0.05)$ $\Pr(\Delta \operatorname{Pay} > 0.05)$				
	(1)	(2)	(3)		
Firm Size: 10-99 employees	0.005*	0.005**	0.005**		
	(0.003)	(0.003)	(0.002)		
Firm Size: 100-999 employees	0.010***	0.008***	0.007**		
	(0.003)	(0.003)	(0.003)		
Firm Size: 1000+ employees	0.015***	0.013***	0.010***		
	(0.003)	(0.003)	(0.002)		
Constant	0.037***	0.028***	0.026***		
	(0.007)	(0.006)	(0.006)		
Ν	22935	22935	22935		

Table 3: Prob. of an internal job transition associated with a pay increase by firm size, CPS

*Notes*: Controls include seven tenure categories, a linear time trend, hours worked, whether paid hourly, unemployment rate, state, three education categories, age, squared age, three race categories, whether Hispanic, married, male, married and male. All job level characteristics correspond to the prior year. All continuous variables are z-score normalized. Robust standard errors in parenthesis. Robust standard errors in parenthesis. Data: CPS Outgoing Rotation Group, Job Tenure Supplement, and Annual Social and Economic Supplement, 1996-2022. CPS person weights used. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

size distribution, another object of interest is how might pay changes associated with doing different types of work differ and compare over firm sizes. Table 3 documents the probability of reporting annual pay changes and making an internal job transition by doing different kinds of work compared to the previous year. Each of the columns corresponds to distinct regressions where the real earnings increase is restricted to be positive, above 5 percent, and above 10 percent, respectively. The same set of control variables and sample restrictions as the previous results apply. Workers in the firm's sized 1000+ employees are 1.5 percentage points more likely to report making an internal transition and realizing a real pay increase over a year. Furthermore, the likelihood of the pay increase being substantial, i.e., receiving real earnings that exceed the previous year's earnings by over 5 percent or 10 percent, also remains elevated among workers in large firms compared to observationally similar workers in micro and small firms. This suggests that internal job transitions that are associated with promotions or movements up an internal job ladder are relatively more frequent occurrences in large firms.

Given that workers in large firms realize a pay growth premium irrespective of whether they switched or performed the same kind of tasks, what is the excess premium for workers who are doing distinct work with the same employer? Table 4 reports pay growth outcomes for two different samples. The left panel conditions on workers who report doing different kinds of work. The small sample of task switchers necessitates reducing the number of fixed effects, control variables, and slices of the data by firm sizes so that the sample has enough power. The table, therefore, reports workers in firms sized above and below hundred employees. Each of the columns of the left panel reports different regressions on the same sample. The outcomes are, respectively, real earnings growth and the probability of realizing positive real earning growth. Both outcomes demonstrate an excess premium for internal transitioners in large firms – conditional on doing different kinds of work, workers in large firms realize pay increases that are about five percentage points higher and 8 percent more likely than their counterparts in smaller firms. The right panel conditions on the sample of workers who report doing the same kind of work show that despite not reallocating within the firm, job stayers report a large firm excess premium that is positive but about four to five times lower in magnitude than workers who make internal transitions. This observation suggests that the opportunities for realizing pay growth due to learning, human capital accumulation, positive selection into surviving matches, accumulation of search capital, etc., may be more prevalent in larger than smaller firms.

Finally, to corroborate the findings from the CPS, I provide evidence of large-firm pay levels and growth premiums using data from the high-frequency household survey, SIPP. Table 5 runs the same regression on the SIPP sample. The dependent variable in the first column is a wave-by-wave (over four months) earnings growth measure instead of an annual measure of pay growth reported in the CPS. The results show that the 4-month real earnings growth is 0.1 percentage points higher for job stayers in large firms. The rest of the columns report the probability of realizing an earnings increase over four months and apply left censoring to pay increases at zero, five, and ten percent. The probability of reporting an earnings increase is 3.2 pp higher among workers in large firms than in small firms. Moreover, workers in large firms are more likely to report earnings growth exceeding five and ten percent, suggesting a higher likelihood of significant pay increases, often linked to promotions, among employees in larger firms.

	Internal j	ob transition $= 1$	Internal job transition $= 0$		
	Depen	ident Variable:	Depen	dent Variable:	
	ΔPay	$Pr(\Delta Pay>0)$	∆Pay	$Pr(\Delta Pay>0)$	
Firm Size: 100+ employees	0.049*	0.078**	0.008*	0.019***	
	(0.029)	(0.037)	(0.005)	(0.006)	
Constant	$0.079^{*}$	$0.588^{***}$	$0.017^{*}$	0.529***	
	(0.045)	(0.057)	(0.009)	(0.011)	
Ν	1284	1284	39634	39634	

Table 4: Pay growth conditional an internal labor market transition by firm size, CPS

*Notes*: Controls include seven tenure categories, hours worked, whether paid hourly, age, married, male, married-male, three education categories, three race categories, whether Hispanic, unemployment rate, and a linear time trend for the year. All job level characteristics correspond to the prior year. All continuous variables are normalized to mean zero. Robust standard errors in parenthesis. Data: CPS Outgoing Rotation Group, Job Tenure Supplement, and Annual Social and Economic Supplement, 1996-2022. CPS person weights used. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table 5:	Earnings	growth by	firm	size.	SIPP
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	Dependent Variable: Wave-by-wave pay growth; Prob. of realizing pay growth $\neq 0$				
	Pay Growth	$Pr(\Delta Pay>0)$	$Pr(\Delta Pay>.05)$	$Pr(\Delta Pay > .1)$	
Firm Size: 100+ employees	0.001*** (0.000)	0.032*** (0.003)	0.007*** (0.002)	0.008*** (0.002)	
Constant	0.055*** (0.005)	$1.440^{***}$ (0.080)	$0.644^{***}$ (0.044)	0.346*** (0.023)	
N	309893	343612	344323	344323	

*Notes*: All regressions control for log tenure, hours worked, whether paid hourly, age, squared age, married, male, married-male, no. of children below five years, three education categories, three race categories, whether Hispanic, unemployment rate, 2-digit industry and 3-digit occupation fixed effects, and a linear time trend for the year. All job level characteristics correspond to the prior year. All continuous variables are normalized to mean zero. Robust standard errors in parenthesis. Columns 3 and 4 control for initial pay. Data: Survey of Income and Program Participation, 1996-2013. SIPP person weights used. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

#### 3.3 Evolution of internal and external labor market transitions

The observations of the previous section suggest that internal job transitions occur at a higher frequency within large firms. These transitions also tend to be associated with pay

increases on average, and workers in larger firms realize bigger pay bumps when making internal transitions than workers in smaller firms. Taken together, these findings suggest that job stayers in large firms might have access to greater opportunities to climb job ladders internally. Furthermore, the increased importance of large firms in U.S. labor markets in the past quarter of a century suggests that a much larger fraction of the workforce is now exposed to internal job ladders. These observations may suggest that accounting for the internal reallocation of workers should offset part or all of the decrease in worker transitions across employers based on the argument that workers are now increasingly climbing job ladders within their own firm, which are not captured in typical measures of external worker reallocation such as EE rate. However, this view is based on the assumption that long-run trends in internal reallocation are non-decreasing. To understand whether and to what extent internal job ladders have contributed to overall labor market dynamism requires an examination of the evolution of internal and external dynamism.

Figure 5 plots the evolution of the annual EE rate and internal transition rate from the CPS. The annual EE rate is computed by utilizing the March ASEC supplement. Specifically, the supplement probes the respondent "For how many employers did you work in (enter previous year)? If more than one at the same time, only count it as one employer?", and gives the respondent to answer "one", "two", or "three or more". Utilizing this question, I define the annual EE rate as follows. The eligible sample contains those respondents who report working 50-52 weeks in the previous year and who are employed at the time of the survey. I then define the EE rate as the individuals in the eligible sample who reported having worked for two or more employers in the previous year, expressed as a fraction of all respondents who reported working 50-52 weeks in the previous year. This definition of annual EE rate minimizes the incidence of workers making non-employment spells in between two employment spells. Indeed, of the total fraction of workers who report working for more than two employers, nearly 85 percent report changing their employer only once. This definition of EE rate allows the measure to be as close as possible in theory to the more commonly observed and monthly EE rate, which measures the frequency of workers switching employers from one month to the other without an intervening spell of non-employment that lasts longer a month. The measured monthly EE rate in Fujita et al. (2024) is shown in Figure 1. The annual EE rate plotted on the left axis of Figure 5 shows a trend that bears resemblance to the monthly EE rate. It observed a steep decline at the



Figure 5: Annual EE rate and internal labor market transition rate, CPS

*Notes*: The left axis plots the annual EE rate computed from the March-ASEC supplement. EE rate is measured as the number of workers with more than one employer last year, which is expressed as a fraction of workers who worked 50-52 weeks in the last year. ASEC weights are used to aggregate the data. The right axis plots the annual internal labor market transition rate from the Jan/Feb-Job Tenure supplement. It is measured as the number of workers who reported doing different work at the time of the survey relative to the previous year, expressed as a fraction of workers with a tenure greater than one year with their current employer. Job Tenure supplement weights were used to aggregate the data. The sample is restricted to workers aged 18 to 65 years.

turn of the century and remained persistently below its pre-2000 trend thereafter.

To measure the internal transition rate, I utilize the biennial job tenure supplement and compute the measure in a manner that is consistent with the definition of the annual EE rate. The eligible sample consists of those individuals who are employed at the time of the survey and report a tenure of at least a year. Internal transition rate is then defined as those persons in the eligible sample who report doing different kinds of work relative to the previous year, expressed as a fraction of all workers who report a tenure of at least a year.

The internal transition rate plotted on the right axis of Figure 5 is about 30-35 percent in magnitude relative to the EE rate. More importantly, the behavior of the internal transition rate has been observed to follow a similar path of a decline from the mid-1990s, just like the EE rate. This decrease in internal transitions has been more substantial – by nearly half – relative to the decline in EE rate by 20 percent over the sample period. The internal transition rate continued to remain subdued well after the economy achieved a tight labor market in the years following the Great Recession, unlike the EE rate, which recovered almost fully to its pre-recession level. This shortfall in the internal transition rate suggests an exacerbation of the decline in overall labor market churn that has been observed only through measures of worker reallocation across firms or states of employment over the last quarter of a century.

The decreasing internal churn is also suggestive of a deterioration of within-firm churn in large firms that has persisted despite a higher frequency of internal transitions within larger firms and a shift in the composition of workers towards these firms. To shed light on this, I regress the probability of making an internal transition on firms of different sizes interacted with the year of the survey. The regression controls for the same set of observables as the previous regressions, including the worker's tenure, demographic variables, state of residence, and the unemployment rate. The sample consists of all workers reporting a tenure of at least a year, and featuring in the job tenure and March supplement of the CPS.

Figure 6 plots the time-variation across the firm size distribution in the average probability of making an internal transition, adjusting for all the control variables in the model. For large firms, not only was the average internal transition probability the highest before 2000, but it also dropped precipitously. The internal transitions probability peaked in 1996



Figure 6: Probability of internal labor market transitions by firm size, CPS

*Notes*: Average probability of internal labor market transitions by firm size on the y-axis. Controls include seven tenure categories, a linear time trend, unemployment rate, state, three education categories, age, squared age, and three race categories, whether Hispanic, married, male, married, or male. All continuous variables are z-score normalized. Robust standard errors in parenthesis. Data: CPS Job Tenure Supplement and Annual Social and Economic Supplement, 1996-2022, excluding 1998. CPS person weights used.

among firms sized 1000 plus employees, averaging to about 6 percent. By 2020, the probability had nearly halved and stood at close to 3 percent. Workers in firms sized below 1000 employees also experienced a long-run decrease in their internal transition probability, albeit by a smaller magnitude of 1-2 percentage points for small and mid-sized firms. The figure suggests a decrease in the dispersion in internal reallocation across firm sizes. Put differently, the scope for workers to climb the internal job ladder, or rotate across different tasks and duties used to be much higher in large firms when compared to smaller firms. Over the last twenty years, this frequency of churning within the firm has decreased in larger firms and converged towards its levels in smaller firms.

#### 3.4 Decomposing true dynamism into internal and external transitions

The previous section documented a decline in the rate of internal job transitions, which was observed to a greater extent in large firms than in small ones. In this section, I aim to understand: quantitatively, what fraction of the decrease in total dynamism can be accounted by internal and external labor market transitions? I propose a decomposition framework to compute the true measure of dynamism that would result from combining internal labor market transitions with the external EE rate.

Let firm types be  $j \in \{s, l\}$ , and employment share of small firms be  $\omega$ . Throughout the analysis I classify large firms as those sized 1000+ employees, and the rest as small firms. Let  $p_j^k$  be the probability of making a k-type of job switch, where  $k \in \{i, x\}$  denotes an internal (i) or external (x) job switch by an employee of a given firm type j. Let the true measure of dynamism,  $jj^*$ , be the sum of all internal  $(jj^i)$  and external  $(jj^x)$  job moves. The notation jj denotes job-to-job and I use it as a general terminology to encompass internal and external job-to-job moves.

At each time period, *t*, the true measure of dynamism captures *all* job switches, within and across firms. This is given by:

$$jj_t^* = \omega_t(p_s^i + p_s^x) + (1 - \omega_t)(p_l^i + p_l^x)$$
$$= \underbrace{\omega_t p_s^i + (1 - \omega_t) p_l^i}_{=jj_t^i} + \underbrace{\omega_t p_s^x + (1 - \omega_t) p_l^x}_{=jj_t^x}$$

Consider first, a static decomposition which assumes the probabilities of job switching

for each firm size class, and each type of job move is fixed. Then the change in the true measure of dynamism will only be driven by changes in the composition of the employed:

$$\begin{aligned} \frac{djj_t^*}{dt} &= \frac{djj_t^i}{dt} + \frac{djj_t^x}{dt} \\ &= \frac{d\omega_t}{dt}(p_s^i - p_l^i) + \frac{djj_t^x}{dt} \end{aligned}$$

Between 1996-2000 and 2016-2020, the employment share of small firms sized declined by 4 pp. The difference in probabilities of making internal job switches within large relative to small firms was 2 pp. The change in annual employer-to-employer transitions averaged 2.4 pp. Thus, accounting for within-firm job switching offsets the decline in external job switching by about eight percent or 0.1 pp.

Next, consider a dynamic decomposition that allows the probabilities of internal job switching for each firm size to vary over time. Then the change in the true measure of decomposition can be expressed as:

$$\frac{djj_t^*}{dt} = \frac{d\omega_t}{dt}(p_{st}^i - p_{lt}^i) + \omega_t \frac{dp_{st}^i}{dt} + (1 - \omega_t)\frac{dp_{lt}^i}{dt} + \frac{djj_t^x}{dt}$$

In 2016-2020, the employment share of small firms was 0.56. Further, between 1996-2000 and 2016-2020, the average probability of making internal transitions in small firms declined by 1.1 pp while that in large firms decreased by 2 pp. Accounting for the decrease in within-firm job switching probabilities over time amplifies the decline in external job switching by 1.5 pp. Thus, the decline in total dynamism, taking into account the decrease in internal and external transitions, amount to nearly 30 percent. Furthermore, of this decrease, about a fourth was due to the decline in internal dynamism.

## 3.5 Evolution of pay changes associated with internal and external transitions

To examine whether the nature of the decline in internal dynamism within large firms is also associated with long-run decreases in pay growth, I compare the evolution of large firm pay growth premium in Table 6. Measuring time-variation in pay changes in the CPS is challenging due to the sample restrictions in computing pay growth and the resulting

	Pay growth		Dependent Variab Pr(Pay>0)		vle: Pr(Internal Trans. & Pay>0.05)	
	1996-00	2014-18	1996-00	2014-18	1996-00	2014-18
	(1)	(2)	(3)	(4)	(5)	(6)
Firm Size: 100+ employees	0.016*	-0.000	0.020*	0.005	0.011**	0.009***
	(0.009)	(0.010)	(0.012)	(0.013)	(0.005)	(0.003)
Constant	0.058**	0.024	0.689***	0.518***	0.068*	0.027***
	(0.023)	(0.019)	(0.032)	(0.021)	(0.039)	(0.007)
N	10717	8883	10717	8883	5418	8804

Table 6: Evolution of large firm pay premium, CPS

*Notes*: Controls include tenure, hours worked, whether paid hourly, age, married, male, three education categories, three race categories, whether Hispanic, and unemployment rate. All continuous variables are z-score normalized. Robust standard errors in parenthesis. Data: CPS Job Tenure Supplement and Annual Social and Economic Supplement, 1996-2018. CPS person weights used. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

sample size. I pool observations and create two samples: one of an early period between 1996-2000 and the other of a later period between 2014-2018. Each column of Table 6 documents the coefficient on firm-sized above 100 employees relative to those below 100 employees from a distinct regression controlling for the worker's tenure and demography. The outcome of the first panel is pay growth, and columns (1) and (2) show the regression in the early and later samples. While workers in firms sized with more than 100 employees experienced a growth in real weekly earnings that was nearly two percentage points higher than their observationally similar counterparts in smaller firms, this effect was negligible in the later period. Likewise, the probability of receiving a pay growth unconditional on an internal transition shown in the middle panel was 2 pp points higher in the earlier period but close to zero in the later period. Finally, the probability of receiving a pay increase exceeding five percent associated with an internal transition decreased by two percentage points in large firms in the later period relative to the earlier one.

## 4 Potential drivers of decreasing internal dynamism

In this section I explore role of worker aging and increasing employer market power in driving the decline in internal dynamism. Specifically, I examine how internal labor mar-



Figure 7: Prob of internal labor market transitions by age, CPS

*Notes*: Controls include log tenure, hours worked, whether paid hourly, age, squared age, married, male, married-male, no. of children below five years, three education categories, three race categories, whether Hispanic, state, unemployment rate, two-digit industry and occupation fixed effects, and indicator variables for the year. All continuous variables are normalized to mean zero. Robust standard errors in parenthesis. Data: CPS Job Tenure Supplement and Annual Social and Economic Supplement, 1996-2022. CPS person weights used. 95% Confidence intervals reported.

ket transitions respond to these factors in the cross-section to speculate their contribution in the long-run decrease in internal dynamism.

### 4.1 Worker aging

A fundamental characteristic of the US labor market over the last four decades has been the aging workforce. In 1987, workers younger than 24 years and those older than 55 years comprised 18% and 13% of the workforce, respectively. By 2017, the proportion of younger workers had nearly halved, while the share of older workers had almost doubled. As the baby boomer generation nears retirement, the growing number of older workers at the top of the job ladder could have negative spillover effects on the career advancement opportunities of younger and middle-aged workers on lower rungs. Using data from Italy, Bianchi, Bovini, Li, Paradisi & Powell (2023) provide evidence that older workers nearing retirement can impede the promotional dynamics of their younger colleagues.

To explore how worker aging drives internal labor market dynamics, the left panel of





*Notes*: Controls include tenure, hours worked, whether paid hourly, married, male, married-male, no. of children below five years, three education categories, three race categories, whether Hispanic, and the state. All continuous variables are normalized to mean zero. Robust standard errors in parenthesis. Data: CPS Job Tenure Supplement and Annual Social and Economic Supplement, 1996-2022. CPS person weights used. 95% Confidence intervals reported.

Figure 7 shows a binned scatter plot where the outcome is the probability of making an internal task transition, and the main independent variable of interest is the worker's age. The regression also controls for the occupation, industry, tenure, state, and demographic variables of the worker and is run separately for time periods 1996-2002 and 2016-2020. Two observations are noteworthy. First, the likelihood of internal job transition decreases with worker age, i.e., mirroring the patterns of the variation of EE transitions with age. Second, all age groups, except ones at the very top, experience a decrease in internal transitions, albeit younger workers experience a more pronounced decrease than middle-aged workers and older workers. The right panel of Figure 7 zooms in on the internal transition wage gradient and its evolution within firms sized above 1000 employees. The decline in internal job transitions across all age groups between 1996-2002 and 2016-2020 is greater for larger firms. This suggests that worker aging and the shifting composition of the work-force towards older workers could have some influence on the overall decline in internal dynamism, but they are not the only determinants to explain its decline in large firms.

#### 4.2 Increasing labor market power

Since the late 1990s and early 2000s, a notable development in the US labor market has been the increase in employer market power. This has been documented as a rise in national employment concentration (Autor et al. 2020), vacancy concentration (Azar et al. 2022), wage markdown below marginal revenue product of labor (Yeh et al. 2022) and a decline in the number of employer-firms per employed-worker (Bagga 2023). In an environment of increasing employer market power diminishing the outside options of workers, models of the frictional labor market with on-the-job search (Burdett & Mortensen 1998, Postel-Vinay & Robin 2002) would predict a decrease in upward wage-revisions of jobstayers prompted by offers on-the-job. As firms internalize their worker's lower outside options, they may respond by also limiting their "inside" options or promotion opportunities within the firm to prevent workers from claiming a larger portion of the surplus generated from their employment match.

To examine the role of employer market power on internal labor market dynamics, I use the distribution of the number of employer firms per employed worker as a proxy for market power. This metric reflects the number of firms (excluding non-employer firms) in the labor market that could potentially hire a given worker across sub-markets defined by states and two-digit industries. Figure 8 plots the quartiles of firms per worker across the worker's state and industry on the x-axis. On the y-axis, I plot the residualized likelihood of making an internal job switch, accounting for observable characteristics of both the worker and the firm described in the regression analyses of the previous section.

Two observations emerge from Figure 8. First, across the entire distribution of employer firms per worker, the probability of internal task switching is consistently higher in large firms compared to small firms. Second, the likelihood of internal job transitions increases along the distribution of firms per worker for both large and small firms. Specifically, the least concentrated labor markets, situated in the highest quartile of the firms per worker distribution, exhibit an internal task-switching rate that is nearly twice as high as that in markets within the first quartile of the distribution. These cross-sectional observations underscore the potential role of increasing employer market power in contributing to the observed secular decline in internal labor market dynamism.

## 5 Conclusion

This paper documents evidence of the prevalence of internal job ladders within large firms. Data from various supplements of the CPS reveals that job stayers in large firms realize larger pay growth and a higher likelihood of switching tasks over a year. They further report a larger pay growth conditional on internal job transitions. This result may lead us to conclude that as employment composition shifts towards large firms, employees of those firms could climb job ladders internally rather than externally. This could explain the decline in labor market dynamism. However, I show that the probability of switching tasks within large firms has also decreased over time, amplifying the overall decline in labor market dynamism.

As I keep updating the paper, I will develop an equilibrium model of the labor market to unify and explain the simultaneous decline in internal and external job mobility. I hypothesize that as labor markets become more concentrated and less competitive, with a few large firms dominating the market, the worker's job-finding probability outside the firm decreases, leading to a decrease in external dynamism. At the same time, as firms increasingly internalize the fact that their employees face scarce outside options, they respond by reducing their opportunities to climb job ladders internally, which could lead to a decrease in internal dynamism.

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## **A** Appendix Tables

	Dep Var Hc	Dep Var: Growth in Real Hourly Wages			Dep Var: Prob of Positive Hourly Wage Growth		
	(1)	(2)	(3)	(4)	(5)	(6)	
Firm Size: 100+ employees	0.0125** (0.005)	0.0138** (0.005)	0.0130** (0.006)	0.0378*** (0.008)	0.0378*** (0.008)	0.0351*** (0.008)	
Constant	0.0369*** (0.013)	0.0554*** (0.018)	0.0512** (0.021)	0.5062*** (0.018)	0.4953*** (0.023)	0.4940*** (0.029)	
Controls	Y	Y	Y	Y	Y	Y	
2-digit industry FE	Ν	Y	Ν	Ν	Y	Ν	
2-digit occupation FE	Ν	Y	Y	Ν	Y	Y	
4-digit occupation FE	Ν	Ν	Y	Ν	Ν	Y	
Ν	25623	25623	25623	25623	25623	25623	

#### Table A1: Higher Wage Growth in Large Firms

*Notes*: Controls include log tenure, hours worked, whether paid hourly, age, squared age, married, male, married-male, no. of children below 5 years, three education categories, three race categories, whether Hispanic, state, unemployment rate and a linear time trend for the year. All job level characteristics correspond to the prior year. All continuous variables are normalized to mean zero. Robust standard errors in parenthesis. Data: CPS Outgoing Rotation Group, Job Tenure Supplement, and Annual Social and Economic Supplement, 1996-2022. CPS person weights used. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table A2: Hourly Wage Growth and Likelihood of Hourly Wage Increase | Switching occupations over the year

	Dep Var: Growth in Real Hourly Wages		Dep Var: Positive Grov	Prob of Wage vth
	(1)	(2)	(3)	(4)
Firm Size: 100+ employees	0.0494*	0.0574*	0.0929**	0.1028**
	(0.029)	(0.029)	(0.039)	(0.041)
Constant	-0.0200	0.0315	0.4755***	0.4109***
	(0.040)	(0.062)	(0.054)	(0.080)
Controls	Y	Y	Y	Y
2-digit Ind, Occ FE	Ν	Y	Ν	Y
N	1196	1196	1196	1196

*Notes*: Controls include log tenure, hours worked, whether paid hourly, age, squared age, married, male, married-male, no. of children below 5 years, three education categories, three race categories, whether Hispanic, unemployment rate and a linear time trend for the year. All job level characteristics correspond to the prior year. All continuous variables are normalized to mean zero. Robust standard errors in parenthesis. Data: CPS Outgoing Rotation Group, Job Tenure Supplement, and Annual Social and Economic Supplement, 1996-2022. CPS person weights used. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

	Dep Var: Growth in Real Weekly Earnings		Dep Var: Growth in Real Hourly Wages Growth	
	2000-04	2014-18	2000-04	2014-18
	(1)	(2)	(3)	(4)
Firm Size: 100+ employees	0.0103	0.0121	0.0179*	0.0056
	(0.010)	(0.013)	(0.010)	(0.013)
Constant	0.0228	0.3444**	0.0009	0.3862**
	(0.036)	(0.167)	(0.035)	(0.162)
Ν	7674	5349	7674	5349

Table A3: Changes in large firm pay growth premium

*Notes*: Controls include log tenure, hours worked, whether paid hourly, age, squared age, married, male, married-male, no. of children below 5 years, three education categories, three race categories, whether Hispanic, unemployment rate and indicator variables for the year. All continuous variables are normalized to mean zero. Robust standard errors in parenthesis. Data: CPS Job Tenure Supplement and Annual Social and Economic Supplement, 2000-2018. CPS person weights used. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

#### A.0.1 Average Tenure is higher for workers in large firms than small firms.

A potential implication of workers climbing job ladders within large firms would be that employee tenure would be higher in large firms. To establish this, I consider the sample of workers who report their job tenure in the JTS and firm size in the ASEC.

In Table (A4), I regress the worker's tenure (in log years) in a job on their firm size and the same set of controls that are used in the previous sections. The second and third columns include controls for industry and a broad and narrow definition of occupation. The estimates show that an average employee stays about 1.1-1.2 years longer in large firms relative to small firms indicating higher job stability in the former.

	Dependent Variable: Tenure (in log years)				
_	(1)	(2)	(3)		
Firm Size: 100+ employees	0.152***	0.132***	0.123***		
	(0.005)	(0.005)	(0.005)		
Constant	0.532***	0.434***	0.571***		
	(0.012)	(0.015)	(0.018)		
Controls	Y	Y	Y		
2-digit industry FE	Ν	Y	Y		
2-digit occupation FE	Ν	Y	Ν		
3-digit occupation FE	Ν	Ν	Y		
N	136172	136172	136172		

Table A4: Job stayers have a higher tenure in large firms

*Notes*: Controls include log tenure, hours worked, whether paid hourly, age, squared age, married, male, married-male, no. of children below 5 years, three education categories, three race categories, whether Hispanic, state, unemployment rate, and a linear time trend. All continuous variables are normalized to mean zero. Robust standard errors in parenthesis. Data: CPS Job Tenure Supplement and Annual Social and Economic Supplement, 1996-2022. CPS person weights used. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Figure A1: Employment share by states in 2018, LinkedIn and Business Dynamics Statistics



Figure A2: Employment share by sectors in 2018, LinkedIn and Business Dynamics Statistics



Figure A3: Employment share by firm size in 2018, LinkedIn and Business Dynamics Statistics



Figure A4: Employment share by firm age in 2018, LinkedIn and Business Dynamics Statistics

