Hiring for Old and New Positions: Understanding Wage Formation, Sorting, and Firm Behavior

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February 16, 2024

Preliminary version – Please do not cite or circulate

Abstract

This paper explores how firms' demands for new skills (occupations) affect workers' labor market outcomes and within- and across-firms wage dispersion. I outline a stylized matching model (Jovanovic 1979) to study firms' differential responses to information frictions when hiring for new vs. preexisting occupations. Firms respond to higher information frictions when creating new roles by screening more, which results in better match quality for new positions. Using matched employer–employee panel data from Sweden, I show that workers entering newly created roles within firms start with higher wages and stay longer, leading to substantial differences in earnings within jobs. Sorting analysis indicates no selection into positions based on observed or unobserved worker characteristics. The study contributes to understanding employers' hiring behavior, the importance of jobs in workers' careers, and the effect of hiring frictions on wage structure.

Keywords:

JEL Codes:

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1 Introduction

Previous literature has highlighted the increasing importance of labor market imperfections and frictions in shaping wage inequality (Card et al. 2013; Card et al. 2018; Barth et al. 2016; Song et al. 2019). Notably, most wage dispersion across countries is attributed to the within-firm component, emphasizing the role of worker composition within firms (segregation), bargaining, and idiosyncratic match in driving the overall wage dispersion (Criscuolo et al. 2023). However, despite abundant evidence, our understanding of the main channels leading to dispersion and their implications for workers' labor market outcomes remains limited. Identifying imperfections in the labor market is, thus, crucial for the dynamics behind wage inequality among observably similar workers (Mortensen 2003).[1]

In this paper, I investigate how firms' labor demand for new occupations and preexisting occupations affects i) workers' labor market outcomes entering these positions and ii) wage dispersion within and across firms. The main purpose of distinguishing labor demand at the firm level is to explore the role of information frictions in the hiring process. I study employers' differential behavior in filling different types of positions and how it affects workers' labor market outcomes and wage dispersion. Previous literature has not explored hiring processes for different types of positions, new vs. old roles, and their impact on workers' labor market outcomes.[2] This paper is the first to distinguish the labor demand based on the firms' occupational structure and examine differential hiring processes and wage-setting mechanisms.

The contributions of this paper are twofold. First, I propose a simple model to analyze firms' differential responses to information friction when creating a job in a new and a preexisting role. I adopt a stylized matching model by Jovanovic 1979 while extending the analysis by distinguishing the types of positions firms create. The central assumption is that when firms hire a worker for a newly created role, they are subject to more information frictions (higher variance in stochastic match productivity). During the meeting process and probationary employment period, firms are able to detect bad matches (left tail of the match productivity distribution) and end them costlessly. Thus, I argue that the process leading to heterogeneous match quality among different types of jobs is primarily governed by the higher frictions employers encounter. The framework provides empirically testable predictions regarding employer screening, wage formation, and various match quality measures. Higher screening/larger variance results in better match quality in newly created positions, leading to divergent outcomes for workers by the type of position they enter.

[1] It has been long recognized that labor is not a purely variable factor of production being subject to adjustment costs (Oi 1962), and recruitment is costly due to imperfections (Manning 2011).

[2] Previous studies have explored workers' outcomes, among others, investigating job-level mismatch (Fredriksson et al. 2018); occupational mismatch (Guvenen et al. 2020); firm size at labor market entry (Arellano-Bover 2020); firm age (Brown and Medoff 2003; Burton et al. 2018; Babina et al. 2019; Schmieder 2023); and the role of social connections (Hensvik and Skans 2016; Kramarz and Skans 2014)

This simple framework helps us guide our understanding of how the presence of friction can lead to match quality differences. Thus, I provide additional insight into inequality among similarly skilled workers in the labor market.

The second contribution is the distinction of the types of labor demand at the firm level by examining recent hires' entry occupations within firms. Using Swedish register data, I track workers and firms over time and infer newly created roles within firms from their occupation structure. I distinguish between the types of hires, i.e., whether they are i) expansion-hires into a newly created occupation, ii) expansion-hires into an existing occupation, iii) and replacements. The first group is when firms begin employing a worker in a new occupation for the first time. The second group of workers are expansion-hires into existing occupations, while the third group is replacements into existing occupations, by definition. The main advantage of distinguishing labor demand at the firm level is to exploit different mechanisms that affect wage-setting practices. Contrasting expansions into new vs. old occupations allows one to net out the expanding firm argument while focusing on the information channel. Alternatively, comparing hires into existing occupations (expansion vs. replacements) allows one to discern the impacts of entering a growing occupation within a firm versus a stagnant occupation.

I begin by empirically testing the framework's predictions. First, I show that among realized matches, the workers entering new roles within firms have 2 percent higher entry wages than workers entering existing roles. I show that this differential comes only from the matches that survive the probationary period. There are, however, no entry wage differentials among the matches that formed and dissolved within the six months. Next, I investigate the role of sorting in the observed higher starting wages, i.e., whether unobservable components in workers' skills can explain sorting into newly created positions within firms. I carry out sorting analysis in two ways. First, I relate estimated worker fixed effects (in the AKM sense, Abowd et al. 1999) to the types of positions created in new vs. old occupations to understand the explanatory power of unobserved worker skills in entry wage premium. These estimated worker fixed effects can explain less than one-tenth of the estimated entry wage premium. Second, I introduce the worker-fixed impacts to the baseline model to further isolate the role of positions by addressing worker-firm sorting. I find the same impact for entry wage differentials, conditional on observed and unobserved heterogeneity, suggesting that entry wage premium does not arise due to unobserved worker skills.

Further, I investigate subsequent labor market outcomes for workers entering positions created in new vs. old roles within firms to assess the differences in match quality. Potential measures for expected match quality differentials are 1st-year separation probability, job tenure, within-job wage growth, and job-level earnings. I show that workers that enter new roles within firms have ten percent lower 1st-year separation rates, longer tenure, and four percent higher within-job

earnings ($1500). Wage growth patterns do not differ, which implies that higher match quality does not necessarily indicate higher subsequent wage growth. This finding aligns with the prediction in Jovanovic 1979; higher screening results in better match quality (tenure is longer, separation probability is lower); thus, there is no productivity revelation after the match. The match quality is thus partially priced a priori and during the trial period due to inspection.

Why are observably similar workers subject to differential labor market outcomes based on the type of position they enter? I test the assumption that firms screen for different positions differently, translating into a heterogeneous match quality. To understand this, I analyze firms' employee selection along several dimensions. To understand screening, I estimate the probability of newly hired workers being job-to-job movers, as firms prefer to reduce uncertainty regarding the worker when they expand into new occupations. I show that firms are more likely to poach workers from other firms when they hire into a new role.[3] Second, firms hire more experienced workers for new roles. The findings on worker sorting and employer screening highlight that the selection process when hiring for a newly created role revolves around identifying who is the best fit (comparative advantage) rather than market-level worker productivity (who is a good worker). Further, I show that the probability of the match being resolved by the probationary period is lower for positions created in new occupations, emphasizing the possibility of increased pre-hire screening.

I investigate two alternative explanations that might lead to observed outcomes. First, the job size in new occupations within a firm is small, especially during the initial year of employment (around half of workers are alone in the first year). One would expect that workers may seek compensation or job security (like longer tenure) if they are expected to work alone. Alternatively, firms could possibly try mitigating the risk by offering higher wages. I show that entry wage differentials do not differ by job size, suggesting that the premium is not attributable to compensation for being alone. Second, previous studies show that firms' wage structure depends on how production is organized (Garicano and Rossi-Hansberg 2015; Friedrich 2022). As previously shown by Caliendo et al. 2015, firms add hierarchical layers during periods of significant demand shocks. I explore the possibility of reorganization within firms. I separate expansions in new occupations to investigate whether adding a new occupation corresponds to adding another hierarchical layer. I show that even though the new occupation is a horizontal expansion (not adding another hierarchical layer), it causes wage dispersion within firms. This finding provides suggestive evidence that entry-wage responses do not occur due to firms adding another layer.

Overall, I conclude that firms' distinct labor demand has substantial implications for individuals' labor market outcomes and within- and between-firm wage dispersion. I show that when firms hire

[3] I show further that coming from employment or non-employment does not seem to explain the entry wage premium.

at the extensive margin (new occupation), they respond to higher uncertainty at the hiring stage by screening more. More intensive screening results in higher entry wages, lower separation rates, longer tenure, and higher earnings on the job.

This paper mainly relates to two strands of literature. First, I contribute to the literature on employers' search and hiring behavior by examining heterogeneity in labor demand within firms. The economic problem in hiring is costly search and asymmetric information (Oyer and Schaefer 2011). In frictional labor markets, recruiting workers incurs various costs and uncertainty regarding workers' abilities or suitability for the job. Recent studies show evidence of friction in worker replacements using worker deaths (Jäger and Heining 2022) and unexpected extended parental leave (Ginja et al. 2023) as potential exogenous worker absences. Early survey evidence by Barron et al. 1985 and Barron and Bishop 1985 sheds light on the intensity and screening aspects of employer search. More recent survey evidence shows that employers' hiring obstacles are mainly due to skill shortages and screening and training costs (Bertheau et al. 2023). These costs incentivize firms to fill some positions and promote workers internally when they can (Bertheau 2021; Chan et al. 2023). Hensvik and Rosenqvist 2019 shows evidence of the employer screening based on the occupation size. Employers hire workers with lower sickness absences when there are few substitutes, suggesting differential employer search based on the size of the occupation within firms. With this logic, people entering expansion positions in new occupations are most likely to be alone in that occupation, and it will be costly for the firm to hire the wrong person.

Second, I contribute to the literature on the importance of the jobs/matches in the workers' careers. Previous literature has documented that various firm attributes matter in workers' careers. For instance, Arellano-Bover 2020 shows that employer size in first employment substantially increases lifetime earnings. Also, job-level mismatch (Fredriksson et al. 2018) and occupation-level mismatch (Guvenen et al. 2020) are crucial for worker-level outcomes. I contribute to this literature by exploiting the distinct types of jobs that matter for workers' careers. Along the lines of young firm wage premium, Babina et al. 2019 and Schmieder 2023 find that newly found firms pay a wage premium. I argue that conditional on firm age, "job age" also matters, identifying the age of the *job* from firm x occupation pairs.

The paper is constructed as follows. Section 2 outlines a simple framework where firms decide on the type(s) of position to create, the hiring processes, and main predictions arising from the simple setup on entry wages and subsequent job-level outcomes upon hiring. Section 3 provides information on data, sample and the construction of main variables. I outline the empirical strategy in section 4. I provide the main results in section 5. Finally, section 6 concludes.

2 Framework

This section provides a simple framework where firms decide whether to create a position in a new or an old occupation. Assume that a firm can expand its workforce by creating a job in a new occupation (N), an existing occupation (E), or both.[4] Workers and firms are assumed to be homogeneous. Workers and firms meet randomly; not all meetings result in match formation. The sequence of events is described as follows:

(*i.*) The firm decides on the type of position(s) to create, knowing the stochastic productivity distributions y. The hiring for positions (N) and (E) could be simultaneous.

(*ii.*) The firm opens up the position(s) and observes a noisy signal about the productivity, which is defined as:

$$\hat{y} = y + \epsilon$$

where ϵ is normally distributed with mean 0 and variance σ_i^2, representing the noise of the productivity signal with $i = \{N, E\}$. For simplicity, the uncertainty is position-specific and not match-specific.[5] Assume further that firms have a more imprecise signal when they hire into (N) than into existing (E), i.e., $\sigma_E^2 < \sigma_N^2$, while the expected productivities are the same ($E[y_N] = E[y_E]$). The underlying assumption regarding this distinction is that firms will face higher uncertainty due to limited knowledge when creating a position in a new occupation, which might be due to the inability to gauge the quality of candidates or the lack of understanding of market dynamics in the newly created occupation.[6] Thus, expanding along a new occupation has potential but has a higher variability in match productivity. Firms expect higher expected productivity (otherwise, firms would never expand into a new occupation), but it comes with more variability, similar to the mean-variance trade-off.[7] This higher uncertainty has to be compensated by higher match productivity; otherwise, no firm would expand into a new occupation.

(*iii.*) Meeting stage. The institutional context in Sweden allows employers to terminate employment costlessly within six months. Partly during the meeting phase and partly during this "probationary period" (within the first six months), they can exclude the left tail, so the mean of realized distribution will be higher for positions in new occupations. It is possible to end matches within six months within the legal framework. The crucial assumption regarding the meeting process is that the matches expected to yield a negative surplus are instantly identified. Firms can determine

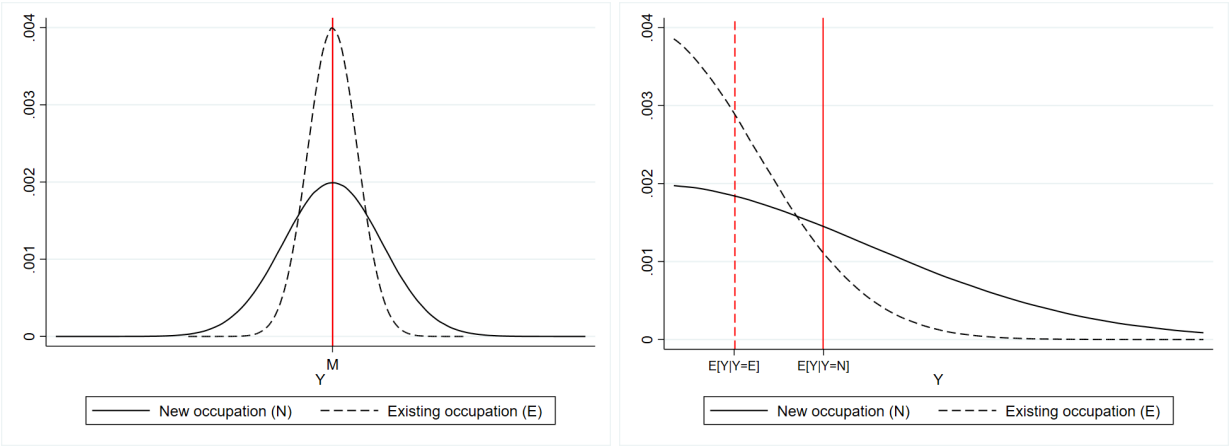
[4] Note that when the terms *new* and *old* are used in reference to jobs, it pertains to the firm and not the market.

[5] I will substantiate it later when presenting empirical results that no clear empirical evidence indicates that better workers are sorting into specific positions.

[6] unlike in Dustmann et al. 2016, where the source of differential uncertainty is related to some workers having referrals while others not.

[7] One can think of indifference curves in ($E[Y]$,σ)-plane. Ex-ante productivity distributions suggest a larger variance for the same expected productivity for two types of expansions. Thus, if there are no productivity revelations at the meeting stage (or probationary period), firms would always prefer to expand into an *existing* occupation.

Figure 1: Ex-ante and ex-post productivity distributions



(a) Ex-ante productivity distribution **(b)** Ex-post productivity distribution

the hiring threshold regarding the position. Since this information is revealed to the firm at the meeting/probation period, they can exclude the left tail of the productivity distribution for both jobs, thus resolving some part of the uncertainty at the hiring stage.[8] If the match is realized and the initial hire lasts beyond an initial probationary period, the surplus has to be positive. Otherwise, they would not match, or the match would be resolved within the probationary period. Thus, during this period, firms exclude the left tail of the match productivity distribution, such that the mean of realized distributions will be higher for positions in new occupations, $E[Y_N] > E[Y_E]$.

(*iv.*) Match realization and wage bargaining. Assume that the wage of a job i is determined through wage bargaining. According to the standard wage bargaining model, wages depend on match-specific productivity and workers' outside options (Mortensen 2003; Pissarides 2000). Following the assumption that the mean of ex-post match distribution will differ, which will feed into higher entry wages during the wage bargaining process. The expected productivity is modeled as a common effect across workers who enter that job. This type of modeling allows one to assume that the bargaining parameters and the outside options of the workers entering these positions are the same. In other words, I treat these positions as equivalent given the information set of the workers.

$$W_i = \underbrace{\beta}_{\substack{\text{bargaining} \\ \text{power}}} \times \underbrace{E[Y_i]}_{\substack{\text{expected} \\ \text{productivity}}} + (1-\beta) \times \underbrace{\Omega}_{\substack{\text{outside} \\ \text{options}}}$$

Assuming the bargaining parameter and outside options are assumed to be fixed, and thus, Average $E(Y^N) > E(Y^E)$ and $W_N > W_E$.

[8] If the uncertainty is not resolved at this stage, then the worker knows that there is higher probability that of separation.

Figure 1 depicts a simple visualization of ex-ante and ex-post productivity distributions together with associated expected productivities in each phase. Panel A shows the ex-ante expected productivity distributions for two jobs. The vertical red line shows the expected productivity associated with each position, which is assumed to be the same for the two jobs. A crucial assumption regarding the transition from ex-ante to ex-post productivity distribution is when (at which stage) the information on the hiring threshold arrives.

I treat jobs as partly *inspection* and partly *experience* goods (in Jovanovic 1979 sense), so employers can assess the quality of the match by both inspecting (i.e., pre-hire screening) and experiencing (post-hire). Hiring a worker to a preexisting role is closer to being an inspection good $\sigma_i = 0$, and hiring to a new role is closer to experience good $\sigma_i = \infty$ (Jovanovic 1984). Assume that the expected productivity is revealed during the meeting, and they do not hire workers on the left tail. Panel B shows ex-post productivity distributions. This simple hiring process tells us that higher variation in the expected productivity for positions created in a new occupation yields higher expected productivity. Below, I provide some predictions of this process on the entry wages and post-hiring outcomes.

2.1 Predictions

i. Conditional on surviving the probationary period, wages will differ for two positions. The positions created in a new role N are expected to have higher entry wages compared to positions created in an existing role, E.

ii. One should not expect as-large wage differentials (lower wages for N compared to E, if any) amongst the workers who could not survive the probationary period.

iii. If they are able to screen for positions even during the meeting phase, the N is expected to have lower separations within six months of the match. If no screening is possible during the meeting, but the information regarding the expected match productivity is revealed during the probationary period, the separation probability for (N) during the probationary period is expected to be higher.

iv. Assuming that the learning period is fulfilled during the probationary period, one should expect differential mobility and wage growth patterns. The assumption on tenure is ambiguous because the match is stochastic. The tenure should be longer if N is just a better job.

2.2 Probationary employment in Sweden

The idea of probationary employment is to test the employee before permanent employment. The main purpose is to provide flexibility for the employer to have the opportunity to test a person in the position before they move into permanent employment. During the probationary period, the employment can be terminated by either the employer or the employee. If workers agree to it when

they accept the job, an employer has the right to employ a worker on a trial basis for up to six months before the employment changes to permanent employment.

3 Data and Methodology

3.1 Data description

The data used in this study cover the entire Swedish population during 1996–2013. These data include linked information on firm- and individual-level information. Below, I describe the main components of the data in detail.

Demographic Information: The demographic information (year of birth, sex, municipality of residence, education) is retrieved from Statistics Sweden's LOUISE register data covering the population of Swedish residents between ages 16 and 74. The years of schooling and level of education are constructed from a discrete variable (SUN2000niva) indicating the highest completed education level attained by the individuals, and it goes from 8 (less than compulsory school) to 20 (Ph.D.).

Wages and Occupations: The data on wages and occupations are derived from Statistics Sweden's Wage Structure Statistics (WSS henceforth). Sampled firms are required to submit individual-level wage information together with four-digit occupation codes (SSYK-96, corresponding to ISCO-88) for all employees aged between 18 and 66 as of September 30th who have worked for at least one paid hour during September. The reporting time frame spans from September 1st to September 30th. Individuals who did not work in September due to a leave of absence or illness are excluded. The data cover the entire public sector workforce and approximately 50 percent of the private sector. The sampling procedure of private sector firms is based on firm size, with larger firms having a higher chance of being included.[9] Given that the sampling is based on firm size, smaller firms belonging to sampled firms with larger private firms stand a better chance of being included. The wage measurement reflects the employee's earnings during the sampled month, expressed in terms of full-time monthly equivalents. All wage components, including piece rate and performance pay, except for overtime pay.

Employment Registers and Earnings: I use linked employer-employee register data where one can track employees and employers over time. These data are collected from tax registers, and the reporting is mandatory. Each employment spell is observed with the first and last month of employment and associated total earnings. All monetary values are deflated to the 2006 Swedish Kronor (SEK). I rely on employment registers to define new hires, tenure, separations, experience, and earnings (monthly, employer-specific, and annual). I define a *new hire* as a worker who started

[9]Sampling of private sector firms in (Wage structure statistics, WSS) is stratified by firm size with the sampling probabilities 3, 12, 41, 70, and 100 percent for the firm size intervals 1–9, 10– 49, 50–199, 200– 499, and 500–, respectively.

working at a firm for the first time. I calculate tenure as the number of months that the person has worked in the same firm since 1985. Finally, I calculate the average monthly income and job spell-specific income for a given employment using the first and last month of employment spell. Temporary layoffs and callbacks are not identified as new hires, so individuals who return to their previous employer are excluded from the sample.

I impose two additional restrictions to generate the final regression sample. First, I focus on workers between the ages of 22 and 65. Second, I exclude managerial positions from the sample. Multiple job holdings are prevalent, so I do not restrict workers to being single job holders. If there are multiple jobs within a year, I keep the employment that is sampled in WSS. The full-time working indicator is not present for each worker, so I do not impose any restriction on being a full-time employee since I can observe hourly wages even though I cannot fully observe hours worked.

At the firm level, I rely on WSS data to identify new job creations in a new occupation and in an existing occupation since employment registers do not include occupational information. Due to the sampling of the WSS data, not every firm is observed in each year. To understand if a firm expanded along a new occupation, I pose the restriction for the firm to be sampled in at least two consecutive years in WSS. The broadest condition is that the worker must be newly hired in a given year t.[10] The next section describes the grouping of hires.

3.2 Descriptive statistics

Table 1 shows descriptive statistics of the individual- and firm-level variables used in the main analysis. The columns represent different groups of hires based on whether they are entrants into a position that is a newly created job (in a new or existing occupation) and as a replacement. Column 4 represents all hires. The first panel depicts worker characteristics, while the second panel represents firms. New entrants into an expansion position (N, the first column) are older, less likely to be college graduates, and slightly less likely to be high-skilled workers. Second, occupational distribution at the first digit seems to be quite balanced, other than clerical occupations being more represented in new occupations.[11] Workers who enter new occupations are less likely to leave within the first year of the match, and the expected tenure upon hiring is longer. It is also worth noting that new hires into newly created occupations are represented to a much lesser extent compared to other expansions (E) and replacements (R).[12]

[10] Since I rely on employment registers when defining hires, the sampling nature of WSS data is not of concern. Thus, we can identify new hires in WSS even though it is a given firm's first sampling year. The two consecutive year requirement is due to information on occupations.

[11] Barron and Bishop 1985 finds heterogeneity in screening costs across occupations, which I descriptively show that the types of positions are equally distributed.

[12] This is partly due to most new occupations created within firms being filled internally.

Table 1: Descriptive statistics

	Analysis sample(1996-2013)			
	N	E	R	All New Hires
ln(entry wage)	10.01	9.974	9.958	9.970
1st-year separation	0.0850	0.107	0.127	0.112
Age	39.32	33.84	32.20	33.45
Female	0.417	0.438	0.472	0.448
Experience	15.23	12.28	11.47	12.10
Tenure (months)	55.44	46.09	40.27	44.59
Education				
Compulsory or less	0.165	0.143	0.134	0.141
High school	0.535	0.526	0.531	0.527
College	0.300	0.331	0.335	0.332
High-skill	0.329	0.325	0.303	0.319
Occupations				
Professionals	0.142	0.154	0.126	0.146
Technicians and associate professionals	0.187	0.171	0.177	0.173
Clerks	0.181	0.114	0.124	0.118
Service workers and shop sales workers	0.0643	0.199	0.239	0.208
Skilled agricultural and fishery workers	0.0142	0.00459	0.00689	0.00535
Craft and related trades workers	0.139	0.0828	0.0806	0.0829
Plant machine operators and assemblers	0.173	0.137	0.127	0.135
Elementary occupations	0.0995	0.137	0.119	0.131
Observations	22163	1196654	470647	1689464
	N	E	R	All New Hires
Firm age	14.5	16.2	16.6	16.1
Firm size	261.7	310.4	341.9	251.0
Firm growth rate (DHS)	0.16	0.10	-0.016	0.053
Value added pc (Thousand SEK)	665.8	690.8	700.6	668.4
# 3-digit occupations	10.8	11.3	12.0	10.2
Observations	8833	47575	41225	64534

Panel A shows mean statistics at the worker-year level of new hires in the estimation sample.
Panel B shows the mean statistics at the firm-year level.

New jobs in new occupations are more likely to be in smaller and younger firms, which tells us that firms differ along various dimensions. While firms do not differ substantially in terms of value-added per capita, firms that expand along a new occupation have, on average, less occupational variety and a slightly higher employment growth rate measured by the DHS index (Davis et al. 1996).[13] Firms that replace, on the other hand, have lower value-added per capita and tend to shrink in terms of size.

[13]DHS index is defined as $2\frac{L_t - L_{t-1}}{L_t + L_{t+1}}$, with L_t being the employment in year t

4 Empirical Strategy

4.1 Distinguishing the types of hires in the data

Throughout, I rely on the universe of employment spells to define hires and distinguish them based on the change in the number of workers in a *job*, i.e., firm x occupation x year cell.[14] Even though the employment registers allow one to identify the universe of job spells and new hires, I use WSS data to group hires by job size. Due to the firm-based sampling nature of the WSS data, I employ a set of criteria to define new hires. The first criterion necessitates the observation of a worker within a firm for the first time. Second, I impose the restriction that a firm must be sampled for at least two consecutive years. This restriction allows one to compute the changes in the employment size of a given firm-occupation-year cell. The rationale for this restriction is due to the sampling nature of the WSS data. During the first sampling year of a firm, it is not possible to compute the change in the size of the firm-occupation cell, and thus, one needs at least two consecutive years of sampling of a given firm.[15] Consequently, this restriction results in the exclusion of new job creations that originate from the firm births as, by definition, all hires are hired into newly created occupations within a firm. As a result, each firm included in the WSS must have been sampled for a minimum of two years, and if the firm is sampled in two different years, sampling should be consecutive. Third, I exclude firms categorized under the industry classification of temporary employment or other recruitment agencies. Below, I outline the basic rule for classifying hires into three distinct categories:

$$\text{New Hire}\{N,E,R\} = \begin{cases} N & \text{if} \quad \text{New hire to a new occupation (3-digit)} \\ E & \text{if} \quad L_{jot} - L_{jot_{-1}} > 0 \\ R & \text{if} \quad L_{jot} - L_{jot_{-1}} \leq 0 \end{cases}$$

In the basic classification above, j, o, and t represent firm, occupation, and year, respectively. As outlined above, the grouping of new hires is based on the *job* (firm $\times$ occupation $\times$ year) cell. This classification is based on the change in the number of workers employed in that specific job category from one year to the next. If the job size decreases from year $t-1$ to t, then all new hires into this job are classified as replacements. If, on the contrary, the number of workers employed in a given job increases, then the new hires are classified as expansion hires into an existing occupation (E). Note that there is no variation in a given job cell between an expansion hire into existing occupations

[14] In order to focus the information regarding the position and not the worker, I disregard promotions as, by definition, the match quality is not unknown to the firm.

[15] Note that the sampling is at the firm level, and not at the worker level. So, if a firm is sampled in a given year, all of the workers employed are included.

(E) and replacement (R), as neither of the data sets contains information on who is replacing whom. Thus, assuming two workers are hired into a *job*, they are either both expansion-hires in an existing occupation or both replacements. However, there is variation between expanding into an existing occupation and being a replacement across occupations within a firm. If the firm grew in a particular occupation from year $t-1$ to t, all new hires at time t are categorized as expansions into existing occupations. Conversely, newly hired workers are considered replacements if the firm downsized in a given occupation between $t-1$ and t. Thus, new hires into the same job cell are classified as either expansion hires in existing occupations or replacements, not a combination.[16]

4.2 Estimating equations

Throughout the analysis, I examine the difference in entry wages for workers hired into different types of positions. The main estimating equation to assess the entry wage premium for expansion positions is:

$$ln(Entry\ Wage_{ijot}) = \beta Expansion_{jot} + \lambda_{kt} + \lambda_{ot} + X'_{it}\delta + \epsilon_{ijt} \tag{1}$$

where $Expansion_{jot}$ is the main variable of interest indicating the types of positions of new hires, and the main coefficient of interest is β. $Expansion_{jot}$ is a categorical variable that varies at the *job* level rather than the individual level. It identifies i) expansion positions along a new occupation (N), ii) expansion positions along an existing occupation (E), and iii) replacements (R), as explained in section 4.1. The estimates of β will thus give us the entry-wage premium associated with being an expansion-hire into a new occupation and into an existing occupation in a given industry, location, and occupation at a time compared to replacements.

The main advantage of separating hires that are hired into preexisting roles within firms as expansion along and existing occupations and replacements is to identify. Comparing expansion hires within the same occupation or different occupations within the firm allows one to net out the expanding firm argument, considering the overall demand conditions. Expansion hirings to new occupations, to existing occupations, and replacements, which is by definition old occupations. Contrasting the second and third, I can get demand or surplus effects. Contrasting first to second and third allows me to identify the employers' missing experience of employing in a particular occupation.

I estimate two versions of equation 1. In the first specification, I compare workers entering different firms while controlling for industry-by-year (3-digit) and local labor market fixed effects

[16]Expansion margin: Currently, the expansion margin is at the intensive margin, excluding newly-created firms. This is especially important when a firm's primary margin of expansion is unlikely to be at the intensive margin, which can be the only way of expansion for firms in some particular industries.

to isolate the industry- and location-specific labor demand. I additionally control for λ_{ot} to absorb variation in demand for specific worker skills in order to ensure that entry wages do not differ because of occupation- and time-specific demand changes. Lastly, X'_{it} represents a vector of individual controls: gender and third-order experience polynomials interacted with education levels and age fixed effects. In this across-firm specification, I additionally control for firm age and log firm size in order to address young firms and large firm wage premiums, as previously shown to be important determinants in workers' wages.[17] This across-firms specification helps us understand the within-occupation across firms wage dispersion the wage differentials of new hires. Comparison is thus among workers entering different firms that are operating in the same market - thus subject to similar product demand and thus experience similar employment growth. The second version employs firm-by-year fixed effects while keeping other individual-level covariates in place. In this case, the comparison of new hires is between workers entering the same firm but in different occupations. The estimates of within-firm specifications will give us the contribution to the within-firm wage dispersion.

[17] Previous literature documented that the relationship between wages and the age of the firm is positive, Which turns negative after addressing the selection of workers and firms. Or, conditional on worker characteristics, young firms pay more (See, for instance, Brown and Medoff 2003; Burton et al. 2018; Babina et al. 2019; Schmieder 2023)

5 Results

This section presents the main results. First, I investigate the entry wage differentials between different types of positions, expansion into new and old positions, and replacements at entry among new hires. Second, I examine workers sorting into positions based on unobservable characteristics. Third, I document subsequent labor market outcomes based on the initial position workers enter. Lastly, I document the differential employer screening by the type of position.

5.1 Expansion-hire wage premium

Table 2 presents the main set of results from both specifications of estimating equation 1, across- and within-firm comparison. Column (1) shows the β estimates from 2. The first specification is across-firms, in which I compare new hires entering different firms, conditional on industry-by-year, occupation-by-year fixed effects, and individual-level covariates such as education, age, and gender. The results in column (1) suggest that expansion positions in a new occupation (N) are associated with 2.7 percent higher entry wages compared to replacements and around 2.2 (2.7 - 0.5) percent higher entry wages compared to expansion positions in an existing occupation (E). A potential concern with the across-firm comparison is that expanding positions may be found in firms (both into new and existing occupations) that experience higher demand in the product market such that it induces a mechanical higher entry wages for workers rather than due to the nature of hiring or positions.[18] In order to address these differences, column (2) shows results from additionally controlling for log value added per capita.[19] The sample size reduces a little as the information on value added is present only for non-financial firms.

While the across-firm specification tries to account for factors that are likely to affect the premium paid for positions created in a new occupational category, it is important to highlight certain aspects of this specification. First, this specification cannot address the existence of the overall demand conditions and differential firm-level wage-setting practices. Second, as indicated in section 3.2 and descriptively shown in Table 1, positions created in new occupations tend to be concentrated in younger and smaller firms, which highlights some distinctive characteristics of firms. These aspects serve as the main rationale for conducting within-firm analysis, where firm-level characteristics and overall demand conditions are held constant at the time of entry for newly recruited workers.

Columns (3)-(5) show the entry wage regression results from within-firm analysis. Differently from across firm analysis, this specification controls for firm-by-occupation fixed effects, implying

[18] Additionally, other firm-side heterogeneity may arise due to these firms being large, more productive, or obtain larger market share.

[19] Value added is defined as the total revenues minus intermediate consumption of goods and services

Table 2: Expansion-hire entry wage premium

	Across Firms		Within-Firms		
	(1) ln(Entry Wage$_{ijot}$)	(2) ln(Entry Wage$_{ijot}$)	(3) ln(Entry Wage$_{ijot}$)	(4) ln(Entry Wage$_{ijot}$)	(5) ln(Entry Wage$_{ijot}$)
Expansion (New role)	0.027***	0.028***	0.019***	0.025***	0.022***
	(0.0051)	(0.0052)	(0.0038)	(0.0045)	(0.0059)
Expansion (Existing role)	0.0042**	0.0017	0.0020	0.00086	-0.00076
	(0.0017)	(0.0016)	(0.0019)	(0.0022)	(0.0030)
log(value added per capita)		0.042***			
		(0.0046)			
Observations	1684422	1452100	1670582	1630193	1613401
Adjusted R^2	0.624	0.634	0.668	0.696	0.703
Occupation (3-digit) x Year FE	✓	✓	✓	✓	✓
LLM x Year FE	✓	✓			
Industry x Year	✓	✓			
Firm x Year FE			✓		
Firm x Year x Occ (1-digit) FE				✓	
Firm x Year x Occ (2-digit) FE					✓

Standard errors in parentheses

Notes: All regressions control for age fixed effects, gender, experience polynomials interacted with education levels together with firm age and log of firm size.

Standard errors clustered on 3-digit industry for columns 1 and 2 and firms for columns 3-5.

Value added is only available for non-financial corporations in Sweden and in real SEK for base year 2006.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

the comparison across workers who were recruited to the same firm in the same year. Column (3) shows that the entry wages for workers recruited to newly created positions are around 2-2.5 percent higher than other newly recruited workers into positions in existing roles. Thus, it is evident that the wage premium for newly created positions exists when the comparison is between workers entering the same firm in a given year. It is important to note that this comparison implies contrasting entry wages of workers recruited into different occupations in a given firm, accounting for overall demand for specific skills. Therefore, variations in the entry wages of different positions may potentially arise from comparing very different occupations within a firm, even though the skill-specific labor demand is being held fixed through occupation-year fixed effects. To disentangle this issue, in columns (4) and (5) I compare workers who enter the same 1-digit and 2-digit occupations that solely differ in the 3-digit. The results provide clear evidence that the wage premium associated with the positions created in new occupations cannot be attributed to differences in wages between occupations; rather, it is primarily driven by the type of positions. These set of results helps us gain more understanding of employers' screening processes for prospective employees across different positions. The advantage of firm-level analysis is manifold: First, the identification ensures that the demand shocks at the firm level are held fixed, and one is able to discern how employers evaluate candidates for different roles exploiting the information channel. If the firm has high demand for a given period, then both the expansions and other existing positions have that high-demand exposure, but we still see a larger response for expansions along a new occupation. Second, within-firm identification allows one to hold marginal revenue product at the firm level constant. Third, it allows us to shed light on the differential wage-setting practices that differ across firms. While

the empirical evidence presented in this section suggests that newly created positions within firms are associated with higher entry wages, it is worth investigating whether the premium is due to unobserved productivity of the workers, or is it due to complementarities.

5.2 Sorting into positions

The main objective of the previous section 5.1 was to explore the entry wages differentials among different types of hires within- and across-firms, holding factors affecting labor demand at the market- and the firm-level constant. The endogeneity problem, however, can arise from workers self-selecting into growing firms and/or positions that are created in a new occupation.[20] It is important to assess whether the estimates of entry-wage premiums are influenced by unobservable differences among workers, such as high-ability individuals self-selecting into newly created roles. Consequently, I investigate whether there are indications of highly skilled workers with unobservable abilities tending to sort into specific positions. To this end, I estimate a version of Abowd et al. 1999 (AKM) (following model specifications in Card et al. 2013 and Eliason et al. 2023) to construct a measure of human capital. Differently from the main analysis, I rely on data covering the universe of private sector employees during the period 1985-96, the only available years before the main estimating sample. [21] Specifically, the model for the log wage of worker i in year t with additive effects for workers and firms takes the following form:

$$ln\, w_{it} = \theta_i + \psi_{j(i,t)} + X'_{it}\gamma + \varepsilon_{it} \tag{2}$$

where w_{it} is worker i's monthly earnings at in year t, θ_i is the worker-specific effect, $\psi_{j(i,t)}$ is the firm-specific relative wage premiums, and $X'_{it}\gamma$ denote year fixed effects and educational attainment dummies interacted with quadratic and cubic age polynomials. Since I use pre-dated data to estimate the worker effects, they are exogenous to the type of position that workers are hired into.[22]

I use the time-invariant estimated worker effects $\hat{\theta}_i$ as the measure of unobserved worker skills. In order to get a sense of sorting, I relate the estimated person effects $\hat{\theta}_i$ with the type of position, $Expansion_{jot}$, to get a sense of sorting into expanding positions. To do this, I estimate:

$$\hat{\theta}_i = \phi Expansion_{jot} + \lambda_{kt} + \lambda_{ot} + X'_{it}\delta + \epsilon_{ijt} \tag{3}$$

where the main parameter of interest is ϕ, which determines the degree of sorting to particular

[20] Theoretical motivation behind this is workers direct their search.

[21] Table 8 shows the summary statistics used in the AKM sample.

[22] The wage measure used in this regression is monthly earnings. Appendix table 9 shows the replicate of the analysis from AKM estimates using WSS. Since WSS data is a sample of firms, worker and firm fixed effects are identified through moves between sampled firms.

Table 3: Sorting analysis

	Across Firms			Within Firm		
	(1) ln(Entry Wage$_{ijot}$)	(2) ln(Entry Wage$_{ijot}$)	(3) $\hat{\theta}_i$	(4) ln(Entry Wage$_{ijot}$)	(5) ln(Entry Wage$_{ijot}$)	(6) $\hat{\theta}_i$
Expansion (New role)	0.027***	0.030***	0.0024	0.019***	0.022***	0.0015
	(0.0051)	(0.0019)	(0.0047)	(0.0038)	(0.0043)	(0.0051)
Expansion (Existing role)	0.0042**	0.0064***	0.00045	0.0020	0.0021	0.00096
	(0.0017)	(0.00061)	(0.0015)	(0.0019)	(0.0023)	(0.0021)
Observations	1684422	758968	758968	1670582	742910	742910
Adjusted R^2	0.624	0.662	0.168	0.668	0.696	0.184
LLM x Year FE	✓	✓	✓			
Occupation x Year FE	✓	✓	✓	✓	✓	✓
Industry x Year	✓	✓	✓			
Firm x Year FE				✓	✓	✓

Standard errors in parentheses
All regressions control for gender, experience polynomials interacted with education level, and age fixed effects.
Columns 2,3,5, and 6 are using only AKM sample covering 1985-1996
(1-2-3) add firm and Firm age, size
Standard errors clustered on industry (Firm) for columns 1-2-3 (4-5-6)
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

types of positions. Table 3 shows the main sorting results. Estimates shown in Columns (1) and (4) are from the main specification as presented in Table 2 used for across- and within-firm specifications. Columns (2) and (5) show the estimates from the same specification but using the pre-dated data (the AKM sample). Reassuringly, the estimates are stable across different samples, comparing columns (1) to (2) and (4) to (5). It is also worth noting that the workers in the AKM sample (see Table 8) are more balanced or almost identical in terms of age, experience, education, and occupation. The columns (3) and (6) show the estimates of ϕ, which are focal in the sorting analysis. One would expect lower estimates in sorting analysis compared to wage-premium, such that some of the estimated entry wage differentials are due to higher unobserved skilled workers entering into particular positions. As denoted by Carlsson et al. 2016, the skill measure has the same scale as the wage, and the size of the selection responses can be compared to wage responses. The estimates presented in columns (3) and (6) show that the estimated person effects are much lower than the main estimates, β, less one-tenth of the main effects. Thus, it is evident that wage differential associated with different types of positions cannot be explained by high-ability workers self-selecting into positions in newly created roles. Next, I address sorting issues by investigating within-worker changes.

5.2.1 Worker fixed effects

The previous section investigates the correlation between the estimated worker fixed effects and the type of position workers are hired into. While the suggestive evidence shows that they are much smaller than the associated entry-wage premiums, this approach has one caveat. By the nature of the estimated worker effects, the left-hand side of the equation 3 does not vary within an individual, while the right-hand side covariates change within an individual across time. As an additional check

for sorting analysis, I introduce worker fixed effects, holding other sets of fixed effects the same as in equation 1 to control for selection and unobserved heterogeneity.

Table 4: Worker fixed effects

	Across-Firms & Worker FE	Within-Firm & Worker FE
	(1)	(2)
	ln(Entry Wage$_{ijot}$)	ln(Entry Wage$_{ijot}$)
Expansion (New role)	0.021***	0.021***
	(0.0033)	(0.0046)
Expansion (Existing role)	0.0026**	0.0017*
	(0.0010)	(0.00088)
Observations	585533	580055
Adjusted R^2	0.797	0.807
Occupation x Year FE	✓	✓
LLM x Year FE	✓	✓
Industry x Year	✓	
Worker FE	✓	✓
Firm FE		✓

Standard errors in parentheses
All regressions include total experience polynomials interacted with education level.
Firm age and size are also added when relevant.
Standard errors are two-way clustered on worker and industry (Firm) for columns 1(2)
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The worker fixed effects model accounts for all time-invariant characteristics of the individual, thereby factoring in the direct impact of an individual's time-invariant unobserved skills. However, the worker fixed effects model identification relies on multiple hires for a worker, and for the empirical model to be identified, workers must have been hired in different types of jobs in different roles (expansion in a new role or an existing role) in different firms. This requirement results in a reduced sample size. The results in Table 4 provide additional evidence that wage premium associated with new positions created in new occupations are not driven by systematic sorting of workers into positions. In practice, the second column in Table 4 shows results from the estimation of an augmented version of AKM, including occupation-by-year and local labor market-by-year fixed effects. The workers' entry wages in newly created positions are associated with 2.1 percent higher compared to replacements, and 1.9 higher entry wages compared to expansion positions in existing occupations. Having established the persistent entry wage differentials across various specifications, I now turn to subsequent labor market outcomes entering different types of jobs.

Table 5: Post-hiring Outcomes

	1st-year separation	Staying $\geq 3y$	Tenure (months)	3-year wage growth	Within-job earnings$_{ij}$
	(1)	(2)	(3)	(4)	(5)
Expansion (New role)	-0.012***	0.018***	1.25**	-0.0013	0.040***
	(0.0028)	(0.0058)	(0.54)	(0.0012)	(0.012)
Expansion (Existing role)	-0.0019	0.0027	0.26	-0.00030	0.0039
	(0.0012)	(0.0020)	(0.17)	(0.00043)	(0.0047)
Observations	1670582	1670582	1670582	458930	1670582
Adjusted R^2	0.211	0.332	0.372	0.236	0.741
Mean dependent variable	.11	.41	44.61	.04	12.93
Occupation x Year FE	✓	✓	✓	✓	✓
Firm x Year FE	✓	✓	✓	✓	✓

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5.3 Subsequent labor market outcomes

In this section, I examine post-hiring outcomes, which are the relevant measures of "match quality" that might differ across jobs, such as first-year separation rate, probability of staying in the job for at least three years, tenure, on-the-job wage growth, and total earnings within the job. These measures are utilized in order to empirically examine the predictions from the simple framework presented in Section 2. In order to investigate differential patterns in post-hiring outcomes across job types, I run regression models similar to the equation 1:

$$y_{ijot} = \beta Expansion_{jot} + \lambda_{jt} + \lambda_{ot} + X'_{it}\delta + \epsilon_{ijt} \tag{4}$$

where y_{ijot} takes one of the above-mentioned match quality measures. λ_{jt} stands for firm-by-year fixed effects, so I compare workers that enter the same firm in the same year. Other covariates and fixed effects are as in the main specification. 1st-year separation probability takes value one if the maximum duration of the job is 1 year. Job earnings refer to the total income gained from the employment spell. Wage growth is the three-year difference in log wages for individuals who have stayed in the same firm.[23]

Table 5 represents the results from estimating the equation 4. The first column shows the probability of separating from the job. The difference in the 1st-year separation probabilities show us that entrants to newly created roles are 1.2 pp (%10) less likely to leave the firm in the first year.[24] Columns (2) and (3) show that staying in the firm after 3 years is 2 pp (%4.5) higher, while the average tenure is one month (%3.5) longer. Interestingly, the 3-year wage growth does not demonstrate a discernible pattern across jobs, suggesting no clear evidence of the convergence or divergence of wages, and the initial premium at entry spills over the job spell. These findings

[23]The sample is reduced to around one-third of the original size because the wage data are collected via sampling. Some firms randomly exit the sampling frame. The wage growth within the job is observed for workers who stay in the same job for three years.

[24]In line with

Table 6: Employee selection

	Pr(match$\leq 6m$)	J2J Mover	Experience	Entry wage differential	
	(1)	(2)	(3)	(4) if (match$\leq 6m$)	(5) if (match $>$ 6m)
Expansion (New role)	-0.0065**	0.031***	0.25***	0.0042	0.018***
	(0.0031)	(0.0040)	(0.050)	(0.018)	(0.0036)
Expansion (Existing role)	-0.0021*	0.0060***	0.020	0.000011	0.0021
	(0.0012)	(0.0015)	(0.020)	(0.0035)	(0.0020)
Observations	1670582	1670582	1670582	131145	1528985
Adjusted R^2	0.134	0.256	0.724	0.603	0.669
Mean dependent variable	.08	.72	12.11		
Occupation x Year FE	✓	✓	✓	✓	✓
Firm x Year FE	✓	✓	✓	✓	✓

Standard errors in parentheses

All regressions control for same fixed effects as in the main specification

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

are in line with the assumption that pre-hire screening (lower 1st-year separation rate for N) and post-hire inspection results in considerable success in assessing match quality. The last column shows that entrants in new roles earn on average 4 percent higher earnings within job, conditional on tenure. This difference translates into 16.5 thousand SEK (around $1500) more earnings within the job. Note, however, that earnings is a product of hours worked and wages. Since the average wage growth does not differ across different jobs, which is in line with increased responsibility or, increased hours work.

5.4 Firms' employee selection

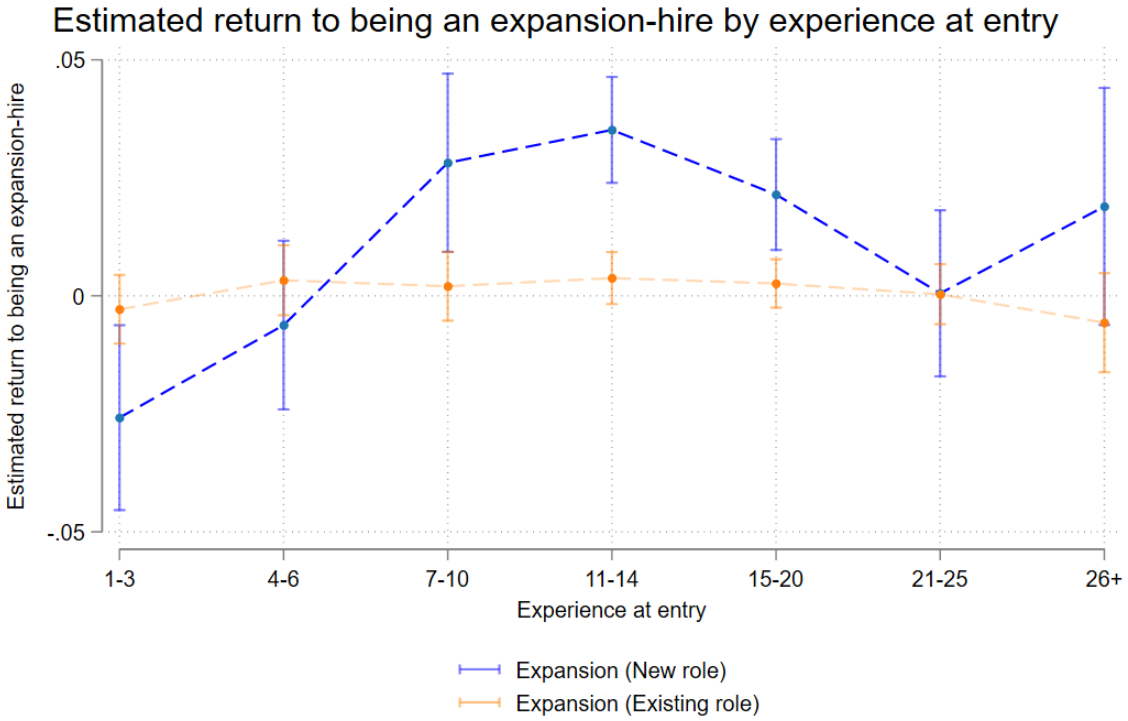
Do firms screen potential candidates differently depending on the type of positions they create? Do they hire experienced workers or poach workers from other firms for a newly created role? The previous section investigates post-hire outcomes based on the initial position. Some of these outcomes can be expected to differ because of pre-hire worker outcomes. In this section, I investigate whether and how firms differentially screen candidates for different types of positions.

Probationary period: Table 6 shows various measures that relate to employers' differential screening and/or learning based on different positions. The first column uses the indicator variable that takes value one if the match is dissolved within six months. One of the Swedish labor market regulations provides a natural assessment of employers' behavior when ending an employment relationship.[25] Table 6 column 1 shows that when firms hire to newly created roles, the probability that match is ending by the probationary period is lower. This shows evidence in line with the predictions about employers being more selective for positions that they created in a new occupation.[26] It is that firms are partially able to gauge the quality of the candidate even during the

[25] See section 2.2 for details of the probationary period in Sweden.

[26] Another explanation can be differential employer learning based on the type of the position. It is natural to

Figure 2: Entry wage premium by experience



meeting stage. As another test of the meeting/matching process, one could examine whether the entry wages of workers who could not make it after the probationary period differ. Columns (4) and (5) show entry-wage differentials among matches that dissolve within the probationary period and those that live beyond. They show the estimates from a separate sample of workers who could make it to the probationary period and who could not.[27] The evidence is in line with the framework's main predictions. It shows that

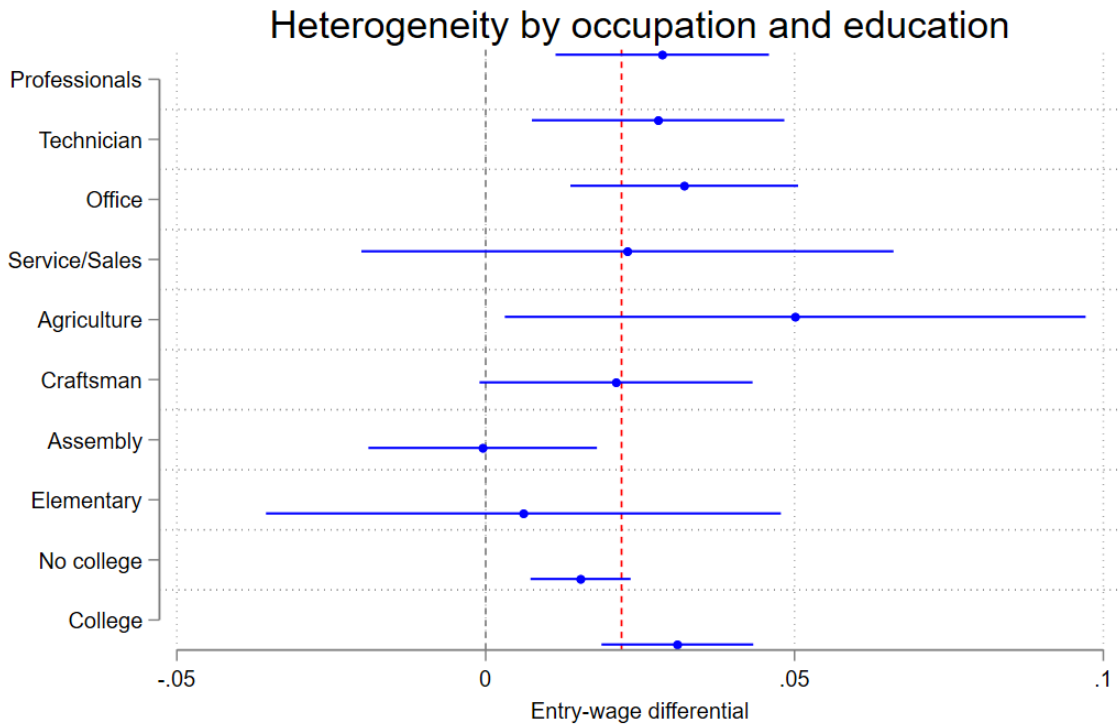
On-the-job seekers: I check whether firms primarily poach workers from other jobs.[28] To gain insight into employers' selection criteria for different position types, I assess the relationship between the job-to-job mobility indicator and the position type. Workers' labor market status may carry implications about their productivity. When I investigate differential screening prior to match, such as an indicator variable taking the value one if the worker is the on-the-job seeker. Employers may actively seek out qualified candidates to fill positions. As the results from Table 6 suggest, not all hires are coming directly from employment (%70 are coming from another job), and job-to-job movers are more likely to enter expansion positions within firms. These findings may suggest that the entry-wage premium is present only for workers who have been poached from another

expect that employers can be both selective and can properly assess them on the job so they can learn differently.

[27] The employment spell-level data allow me to construct total months employed at a specific firm. Note that there is a measurement error in total months worked, % of new hires are in January and % jobs end in December

[28] It's worth noting that I use the months gap between employment spells as a proxy for non-employment duration, as I lack access to data pertaining to unemployment spells. Based on this duration, I create a job-to-job mobility indicator, indicating instances where the duration between consecutive jobs is no more than two months.

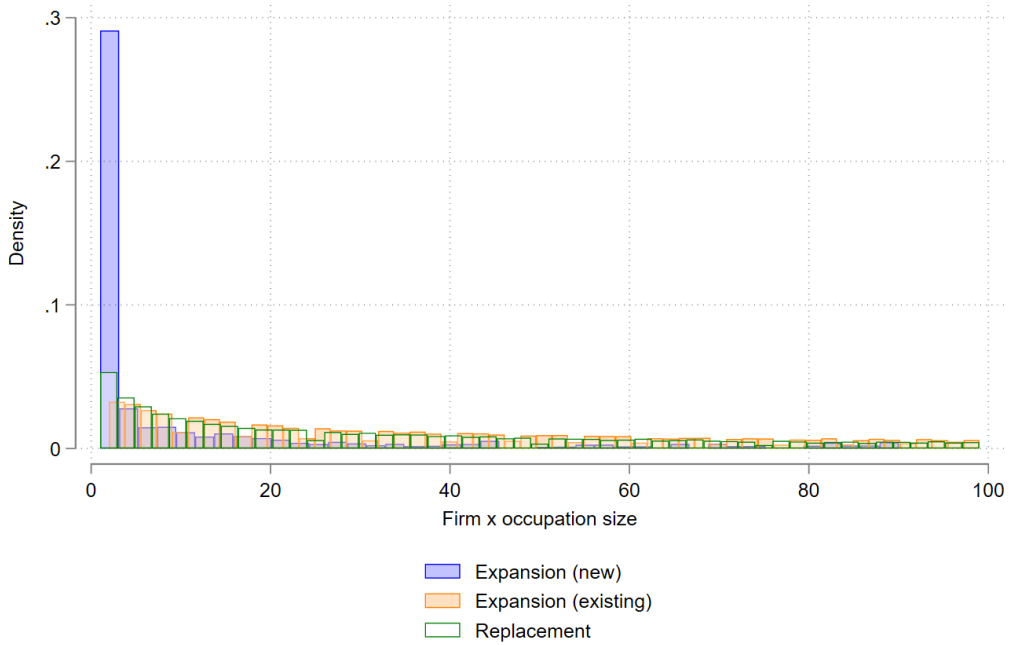
Figure 3: Heterogeneity by occupation and education



firm, which is in line with on-the-job search models (Burdett and Mortensen 1998). Workers who were previously unemployed are expected to have a lower level of outside options, which negatively affects their wages. Table 10 in the appendix provides entry-wage premium results for those who are coming from employment. The regression sample consists only of job movers, and the wage premiums are not totally explained by the entrants' previous labor market status. We see that employers hiring workers from another job is approximately 3 percentage points higher compared to replacements, among workers entering the same firm. This is supportive empirical evidence to Elsby et al. 2022; as in their model, expanding firms poach employed workers, and job-to-job movers enter into expanding positions. While they are seeking replacements, they also match with people who are unemployed.

Labor market experience at entry: As documented in table 6, employers tend to become more selective when they are hiring at an extensive margin. Another prediction, then, is that they would hire experienced workers rather than inexperienced ones because there is no one to train this person at the firm. But for the intensive margin expansions, young workers would also compete. Another explanation might be that employees in newer roles may be brought in with the additional responsibilities, such as setting up new teams and/or departments. In such a framework, the roles stated in the data would not cover the underlying de facto managerial responsibilities that these employees will be undertaking. Column 3 shows that workers are 0.25 years more labor market

Figure 4: Job size at entry



experience, conditional on age.

5.5 Heterogeneity

Figure 2 shows the wage premium for employees in newer roles is present for workers with at least seven years of experience at entry. This points to the fact that firms expect workers in new occupations to take on additional responsibilities. It is clear that these gains are concentrated among more experienced workers. Another assessment is whether the entry wage premium differs across occupations and by education levels. Figure 3 shows the entry-wage premium estimates from separate regressions. The red vertical line shows the average estimate from Table 2, within-firm specification. The effects differ across occupation groups. The smallest estimated effects are among the least skilled occupations, e.g., assembly workers and other elementary-level workers. In terms of education, the effects are smaller for workers without a college degree.

5.6 Alternative Interpretations of Results

Compensating wage differentials: When firms expand along a new occupation, the job size is expected to be smaller compared to existing occupations. Figure 4 shows the density of *job* size (firm x occupation x year) for different types of hires at the year of entry. Around half of new hires in new occupations within a firm are expected to be alone, at least during the first year of employment. We see a monotonically decreasing job size among workers entering jobs in preexisting roles. Assuming the worker would demand for extra compensation (higher wage) or a more secure

Table 7: New Occupation in a New vs. an Existing Layer

	New role added new 1-digit occ	New role in existing 1-digit occ
	(1)	(2)
	ln(Entry Wage$_{ijot}$)	ln(Entry Wage$_{ijot}$)
Expansion (New role)	0.014**	0.024***
	(0.0058)	(0.0040)
Expansion (Existing role)	0.0019	0.0019
	(0.0019)	(0.0020)
Observations	1661728	1657614
Adjusted R^2	0.668	0.669
Occupation x Year FE	✓	✓
Firm x Year FE	✓	✓

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

job (longer job tenure, lower separation rate). [29] The uncertainty from the firm's side is that it can try to secure itself by paying higher wages. First, as shown in Table 5, the compensation possibility for riskier jobs is inconsistent with a lower separation probability. One way of testing the assumption of compensation for being alone in the job, is to look at the entry wage effect by the job size. If workers are compensated for being alone (or few) in their jobs, then one would expect the entry wage to decrease with job size. Table 11 shows the interaction of the main effects with the job size at entry. The compensation for being alone does not drive the wage premium results. Thus, it rules out the compensation for being alone.

Reorganization within firms: Caliendo et al. 2015 investigates organizational structure as inferred from occupational structure within firms. They classify occupations into layers and find that firms when hit by a large demand shock, add another layer to their organizational structure. Friedrich 2022 also shows that positive trade shocks increase layers and within-firm wage dispersion. In order to understand if the number of hierarchical layers increases within a firm due to newly created positions, I separate positions as the cause of increased 1-digit occupation or not. 7 shows the entry-wage premium results separately. The results show that the entry wage premium is higher when the newly added occupation is not a new occupation in the first digits. This piece of evidence also approves that the response in entry wage is not due to reorganization.

6 Conclusion

This paper examines one dimension of the labor market imperfections and their impact on wage inequality, focusing on the role of firms' labor demand for new and preexisting occupations. The findings of this study highlight several key insights. Firstly, workers entering new roles within firms

[29] Workers should know that they will be alone in the job to be compensated.

earn higher entry wages and enjoy longer job tenure, and as a result, face substantial earnings differentials compared to their counterparts entering positions in preexisting occupations. These disparities in labor market outcomes are not attributable to observed or unobserved differences in worker skills but are significantly influenced by firms' differential screening processes aiming at reducing the inherent uncertainties associated with new role creations. Moreover, the study sheds light on the mechanisms underlying firms' hiring decisions, revealing that higher screening for new positions translates into better match quality. Second, I show that hiring frictions lead to wage differentials among observable similar workers. These findings underscore the critical role of information asymmetries and screening processes in shaping workers' labor market outcomes.

While the study offers valuable insights, it is not without limitations. While I am exploiting the degree of uncertainty at the hiring by focusing on new occupations created within firms, this masks heterogeneities in terms of the real frictions in practice. The main sources of hiring difficulties potentially vary across firms, and it is important to identify those frictions at the more granular level. Firms operating in particular segments of the market might face varying degrees of hiring frictions. Thus, another avenue along these lines might be combining firm-level survey data with register data to investigate the main causes behind the information frictions.

Finally, by unraveling the mechanisms driving wage differentials and career trajectories, the study provides valuable insights for policymakers seeking to address issues of wage inequality. A better understanding of the sources of labor market frictions and potential consequences on workers and firms may help policymakers design more effective active labor market policies. Probationary employment contracts offer workers and firms the opportunity to assess the quality of the match on the job and help mitigate the adverse consequences associated with lower flexibility and mobility. Thus, the evaluation of labor market institutions aimed at enhancing labor market flexibility and addressing information frictions in the hiring process is crucial. This paper hopefully provides a contribution to the advancement of knowledge.

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7 Appendix

Table 8: AKM sample used in the analysis

	AKM sample (1985-1996)			
	N	E	R	All New Hires
ln(entry wage)	10.04	10.05	10.05	10.05
1st-year separation	0.0634	0.0775	0.0989	0.0825
Age	44.08	42.36	41.62	42.21
Female	0.408	0.405	0.449	0.416
Experience	17.94	17.80	17.95	17.84
Tenure (months)	61.66	56.19	50.05	54.79
Education				
Compulsory or less	0.188	0.150	0.126	0.145
High school	0.544	0.532	0.537	0.534
College	0.268	0.318	0.337	0.322
High-skill	0.339	0.404	0.414	0.405
Occupations				
Professionals	0.144	0.182	0.169	0.178
Technicians and associate professionals	0.195	0.222	0.245	0.227
Clerks	0.172	0.102	0.109	0.105
Service workers and shop sales workers	0.0523	0.130	0.156	0.135
Skilled agricultural and fishery workers	0.0142	0.00517	0.00868	0.00621
Craft and related trades workers	0.155	0.106	0.106	0.107
Plant machine operators and assemblers	0.187	0.143	0.130	0.141
Elementary occupations	0.0793	0.111	0.0767	0.102
Observations	15303	557011	186831	759145
	Analysis sample(1997-2013)			
	N	E	R	All New Hires
Firm age	14.5	16.2	16.6	16.1
Firm size	287.4	349.0	387.6	293.5
Firm growth rate (DHS)	0.16	0.10	-0.0063	0.058
Value added pc (Thousand SEK)	678262.4	705327.1	717462.7	686642.7
# 3-digit occupations	11.4	12.0	12.8	11.0
Observations	7978	41601	35682	53692

Panel A shows mean statistics at the worker-year level of new hires in the estimation sample.
Panel B shows the mean statistics at the firm-year level.

Table 9: Sorting - AKM

	Across Firms			Within Firm		
	(1) ln(Entry Wage$_{ijot}$)	(2) ln(Entry Wage$_{ijot}$)	(3) $\hat{\theta}_i$	(4) ln(Entry Wage$_{ijot}$)	(5) ln(Entry Wage$_{ijot}$)	(6) $\hat{\theta}_i$
Expansion (New role)	0.027***	0.031***	0.0010	0.019***	0.022***	-0.0017
	(0.0051)	(0.0030)	(0.0048)	(0.0038)	(0.0062)	(0.0047)
Expansion (Existing role)	0.0042**	0.0078***	0.0026	0.0020	0.0034	0.0022
	(0.0017)	(0.0011)	(0.0019)	(0.0019)	(0.0037)	(0.0022)
Observations	1684422	314966	314966	1670582	301087	301087
Adjusted R^2	0.624	0.680	0.437	0.668	0.709	0.449
LLM x Year FE	✓	✓	✓			
Occupation x Year FE	✓	✓	✓	✓	✓	✓
Industry x Year	✓	✓	✓			
Firm x Year FE				✓	✓	✓

Standard errors in parentheses

All regressions control for gender, experience polynomials interacted with education level, and age fixed effects.

Columns 2,3,5, and 6 are using only AKM sample covering 1985-1996

(1-2-3) add firm and Firm age, size

Standard errors clustered on industry (Firm) for columns 1-2-3 (4-5-6)

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Entry wage premium - job-to-job movers only

	Across firms	Within Firm
	(1) ln(Entry Wage$_{ijot}$)	(2) ln(Entry Wage$_{ijot}$)
Expansion (New role)	0.026***	0.021***
	(0.0048)	(0.0040)
Expansion (Existing role)	0.0034**	0.0021
	(0.0017)	(0.0021)
Observations	1206609	1191809
Adjusted R^2	0.634	0.672
Occupation x Year FE	✓	✓
Local labor market x Year FE	✓	
Industry x Year	✓	
Firm x Year FE		✓

Standard errors in parentheses

Each regression controls for same fixed effects as in the main specification

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Heterogeneity by job size

	Within Firm
	(1)
	$\ln(\text{Entry Wage}_{ijot})$
Expansion (New role)=1	0.017***
	(0.0036)
Expansion (Existing role)=1	0.00084
	(0.0020)
Expansion (New role)=1 × # Workers in the same 3-digit occupation within Firm-Year	-0.0000032
	(0.000073)
Expansion (Existing role)=1 × # Workers in the same 3-digit occupation within Firm-Year	0.0000010
	(0.0000026)
Observations	1670582
Adjusted R^2	0.668
Occupation x Year FE	✓
Firm x Year FE	✓

Standard errors in parentheses

Each regression controls for same fixed effects as in the main specification

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$