Bargaining and Counteroffers in the U.S. Labor Market

Junjie Guo*

University of Wisconsin-Madison

January 26, 2026

Abstract

This paper estimates the incidence and impact of bargaining between individual workers and their prospective employers, and the incidence and impact of counteroffers by their incumbent employers. I find that bargaining is more prevalent when the labor market is tight, and it plays a significant role for individual wages; but counteroffers are relatively rare, partly because some employed workers have imperfect beliefs about their employer's wage policy and would not ask for a counteroffer even after receiving a better offer from another firm. Workers with counteroffers are given substantial wage increases, suggesting that their employers have significant monopsony power.

Keywords: Bargaining, counteroffers, monopsony, wages, worker beliefs
JEL codes: J31, J41, J42, J62, D83

*Web: `https://sites.google.com/site/econjunjieguo/home`. Email: jguo27@wisc.edu. Department of Economics, University of Wisconsin-Madison. 1180 Observatory Drive, Madison, WI 53706. I thank R. Jason Faberman for data clarification, and Sydnee Caldwell, Zoë Cullen and Patrick Kline for helpful comments. All errors are mine.

1 Introduction

When a firm makes a job offer to a worker, is the wage negotiated between the firm and the worker or set by the firm without considering the worker's outside option, such as the worker's current wage if he/she is employed by another firm? When a worker employed by one firm receives a better offer from another firm, will the incumbent firm attempt to retain the worker with a counteroffer? These questions are critical for our understanding of a host of issues in the labor market, including firms' monopsony power, wage inequality, wage growth, and the efficiency of labor market transitions (Hall and Krueger, 2010).

In particular, if an employer raised a worker's wage in response to an outside offer, it implies the worker was paid less than his/her contribution to the employer before, which means the employer has monopsony power. Moreover, if wages are determined through bargaining and counteroffers, as in the sequential-auction framework pioneered by Postel-Vinay and Robin (2002), Dey and Flinn (2005) and Cahuc et al. (2006), comparable workers in the same firm could earn different wages based on where they are hired from and experience different wage growth on the same job depending on outside offers they have received and rejected, and no worker would move voluntarily from a high-productivity job to a low-productivity job, because the former could always match the offer from the latter. In contrast, if wages are posted by firms without considering the outside option of each worker (Burdett and Mortensen, 1998), comparable workers in the same firm must earn the same wage irrespective of where they are hired from and how many outside offers they have rejected on the job, and a worker may move voluntarily but inefficiently from a high-productivity job to a low-productivity job if the latter offers a higher wage.

In an influential paper, Hall and Krueger (2012) find that over a third of U.S. workers who started their current or most recent job within the past ten years bargained over the starting wage, while nearly a third had precise information about the starting wage when they first met with their employer, which is a sign of wage posting. Moreover, nearly half of all workers reported that their employer had learned their pay in their earlier job before making the offer that led to the current or most recent job. This suggests that a worker's outside option affects his/her wage offers from at least some firms.

This paper uses a novel survey (the Job Search Supplement of the Survey of Consumer Expectations, henceforth JSS) to extend Hall and Krueger (2012) in five directions. First, I relate the incidence of bargaining to whether an offer is accepted or rejected. JSS asks a representative sample of U.S. workers to report the number of offers received in the last 4 weeks and, if the answer is zero, the number of offers received in the last 6 months, including accepted offers, rejected offers, and offers without a decision by the time of the

survey. Workers with at least one offer (in either the last 4 weeks or the last 6 months) are asked about the characteristics of their best offer, including the wage, whether the worker bargained with the prospective employer over the wage, whether the worker was employed at the time the offer was received, and whether the offer was accepted or rejected by the time of the survey. If a worker was employed when the best offer was received and accepted the offer subsequently, JSS also asks whether the incumbent employer attempted to match the outside offer with a counteroffer.

I find that, among workers with at least one offer, about a third bargained over the wage of the best offer. The incidence of bargaining is higher among men, workers with a bachelor's degree, and workers employed full-time (vs employed part-time or non-employed) when the offer was received. It is also higher among workers who rejected the best offer than those who accepted the best offer (35.1% vs 30.0%), partly because the former were more likely to be employed full-time when the offer was received. The incidence of bargaining is also related to characteristics of the offer (as opposed to the worker). It is higher among offers requiring more than 30 hours of work per week, offers for management (vs office support) jobs, offers from private firms (vs the government), and offers from firms where no employee is part of a union (vs firms where some employees are part of a union). For almost all sub-samples, the incidence of bargaining is 25-45%.

Second, different from the one-time survey by Hall and Krueger (2012), JSS is conducted annually over multiple years. This allows me to relate the incidence of bargaining to measures of aggregate labor market conditions over time. Empirically, I find the incidence of bargaining is increasing in labor market tightness: it increases by about 2 percentage points when the number of vacancies per unemployed worker (in the state where the offer was received and the month when the offer was received) increases by 0.1. The estimate is robust when I control for observable worker and offer characteristics, including those mentioned above, and fixed effects for the state and year in which the offer was received. This variation across labor markets and over time has not been explored in the literature. Given the significant effect of bargaining on wage offers documented below, the finding suggests that the cyclical behavior of bargaining contributes to the cyclical behavior of wages among new hires (Bils, 1985; Haefke et al., 2013; Gertler et al., 2020) and, in turn, the cyclical behavior of unemployment and vacancies (Shimer, 2005; Gertler and Trigari, 2009; Pissarides, 2009).

Third, I relate the incidence of bargaining to the offered wage, which is not available in the survey by Hall and Krueger (2012). Conditional on observable worker and offer characteristics, I find that the wage premium associated with bargaining is 0.13 log point. This includes both the direct effect of bargaining, i.e., the difference in a wage offer before and after bargaining, and the equilibrium effect where a firm's choice of wage-setting protocols,

e.g., bargaining vs posting, is correlated with the level of its wage offers (Flinn and Mullins, 2021; Doniger, 2023; Rabinovich et al., 2025). Both imply that bargaining plays a significant role for individual wages. Relative to the direct effect of 1.5% estimated by Caldwell et al. (2025a), the estimate suggests that the equilibrium effect plays a more significant role. I am not aware of comparable estimates of the joint effect in the literature. Moreover, I find no significant difference in the bargaining wage premium between men and women or workers with and without a bachelor's degree.

Fourth, I document the incidence and impact of counteroffers among employed workers who accepted an outside offer. In sequential-auction models of the labor market (Postel-Vinay and Robin, 2002; Dey and Flinn, 2005; Cahuc et al., 2006), an incumbent firm always makes a counteroffer for a worker who ends up accepting an outside offer from another firm. This contributes to the worker's starting wage at the new firm and makes all voluntary job-to-job transitions efficient, because an outside offer is accepted if and only if the incumbent firm cannot match it.

Empirically, only 11% of employed workers who accepted an outside offer received a counteroffer from their incumbent employer. The value is slightly higher among full-time workers, older workers (aged 41-64 vs 18-40), men, workers with a bachelor's degree, workers in private firms, and workers in firms with over 100 employees. For all sub-samples, the incidence of counteroffers is less than 15%. This suggests that counteroffers are relatively rare. Among the small number of workers who received a counteroffer, the median worker was offered a wage increase of 21.6%. This suggests that some firms have significant monopsony power. Finally, the incidence of a counteroffer is positively correlated with labor market tightness and the wage of the accepted offer, although neither of the correlations is statistically different from zero due to the relatively small number of observations.

Finally, I show that one reason for the lack of counteroffers is that employed workers do not ask for them in the first place; and employed workers do not ask for counteroffers because they do not expect their employer to meet their request. JSS asks all employed workers whether they would ask their employer for a promotion or pay increase if they receive an outside offer with a 10% higher salary and the same other characteristics as their current job. Over 40% said no. Among those who said yes, over 75% believe the chance that their employer would match the outside offer is no more than 50%.

I show that variations in worker beliefs by firm characteristics are consistent with corresponding variations in firm policies documented by Barron et al. (2006). This suggests that worker beliefs are informative. On the other hand, I find that worker beliefs do not vary significantly with labor market tightness, which suggests that worker beliefs are imperfect if firms are more willing to make counteroffers in a tight labor market (Caldwell et al., 2025a).

Together, the evidence suggests that bargaining is more prevalent when the labor market is tight, and it plays a significant role for individual wages; but counteroffers are relatively rare, partly because many employed workers do not ask for them in the first place, which in turn is because most workers do not believe their employer would meet their request. To the extent that worker beliefs about their employer's willingness to bargain and make counteroffers are imperfect, this information friction could be an important source of firms' monopsony power (Azar and Marinescu, 2024a,b; Kline, 2025a,b), and providing workers with correct information could improve their labor market outcomes.

This paper contributes to the growing literature on how wages are determined in the real world (Barron et al., 2006; Beaudry et al., 2012; Brenzel et al., 2014; Card et al., 2016, 2018; Caldwell and Harmon, 2019; Jäger et al., 2020; Flinn and Mullins, 2021; Card, 2022; Lachowska et al., 2022; Di Addario et al., 2023; Doniger, 2023; Caldwell and Danieli, 2024; Roussille, 2024; Roussille and Scuderi, 2024; Agan et al., 2025; Cullen et al., forthcoming; Guo, 2025a), and another growing literature on the importance of worker beliefs on labor market outcomes (Spinnewijn, 2015; Conlon et al., 2021; Mueller et al., 2021; Mueller and Spinnewijn, 2023; Jäger et al., 2024; Caldwell et al., 2025b; Guo, 2025b). Besides Hall and Krueger (2012), this paper is most closely related to Caldwell et al. (2025a) in the first literature and Cullen et al. (2025) in the second.

Caldwell et al. (2025a) document both firms' willingness to bargain with their employees and workers' bargaining experience in Germany. For both new hires and incumbent workers with an outside offer, most German firms are willing to differentiate pay between workers in the same position and with similar productivity. In particular, "for recent labor market entrants, 57% of firms say they would be willing to increase an existing worker's base wage if they received an outside offer. More than 80% of firms would be willing to do so for experienced incumbents, for managers, and for workers in bottleneck occupations". In comparison, only 41% of U.S. firms would consider raising the wage of an incumbent employee hired within the last two years if he/she receives an outside offer (Barron et al., 2006). Assuming differences between the two studies are informative, e.g, they are not entirely due to the fact that the survey in Barron et al. (2006) was conducted 20 years before the survey in Caldwell et al. (2025a), the smaller share of firms that are willing to make counteroffers in the U.S. presumably contributes to the lack of counteroffers documented in this paper.

Caldwell et al. (2025a) also find that, after receiving an initial offer, the incidence of bargaining is 31% among German workers who rejected all outside offers received in the last 6 months and 39% among those who accepted an offer in the last 6 months. These are very close to the incidence of bargaining in the U.S. documented in this paper. Finally, Caldwell et al. (2025a) find that 13% of German workers who rejected all outside offers received in

the last 6 months successfully renegotiated their pay at the incumbent firm. This is similar in magnitude to the incidence of counteroffers among U.S. workers who accepted their best offer in either the last 4 weeks or the last 6 months. Because counteroffers are not needed for rejected offers that are worse than a worker's current job, sequential-auction models predict that the incidence of counteroffers is lower among workers who rejected their outside offers than workers who accepted an outside offer. The fact that the incidence is similar between German workers who rejected their outside offers and U.S. workers who accepted an outside offer is consistent with the above evidence that the share of firms that are willing to make a counteroffer is larger in Germany than the U.S.[1]

Cullen et al. (2025) use field experiments among job seekers in the U.S. tech sector to show that information frictions contribute to the lack of wage negotiations. In one experiment, they provide some job seekers with both "a narrative promoting negotiation" and "factual survey data on the share of individuals who attempt to negotiate and the proportion of those attempts that successfully result in higher compensation." They find that this encouragement treatment "significantly increased both the likelihood of negotiating and the probability of securing better compensation", and "a great majority of the marginal negotiation attempts induced by the treatment were successful, suggesting that many individuals underestimated their ability to improve their offers." By contrast, they find in another experiment that subsidies for negotiation coaching had no meaningful effect on negotiation attempts. This suggests that the uncertainty about one's ability to conduct the negotiation is not a significant reason why many workers do not attempt to negotiate their wages.

This paper suggests that information frictions could also contribute to the lack of counteroffers across all sectors. Moreover, I show that a worker is more likely to bargain with the prospective employer when the current employer makes a counteroffer, and a worker who bargained with the current employer at the start of the job is more likely to ask for a counteroffer in response to an outside offer with a higher salary and believes the employer would match the offer with a higher probability. This suggests that bargaining and counteroffers are correlated over a worker's career, and heterogeneity in worker beliefs about and experience of bargaining and counteroffers has a significant impact on wage inequality.

The next section provides a conceptual framework to motivate and interpret estimates in this paper. Section 3 describes the survey and data. Section 4 uses workers with at least one offer to study the incidence and impact of bargaining with prospective employers. Section 5 documents the incidence and impact of counteroffers among employed workers who accepted

[1]The incidence of counteroffers associated with accepted offers is not reported in Caldwell et al. (2025a). The incidence of counteroffers associated with rejected offers cannot be calculated clearly using JSS. More comparisons with Caldwell et al. (2025a) are discussed later in the paper, e.g., Caldwell et al. (2025a) did not study worker beliefs about counteroffers.

an outside offer. Section 6 studies worker beliefs about counteroffers. Section 7 concludes the paper with some directions for future work.

2 Conceptual Framework

Consider a worker i who received an offer at time t. Let $\hat{y}_{i,t}$ be the initial wage offer. After receiving the initial offer, the worker could attempt to bargain with the prospective employer about the wage. Let $b_{i,t}$ be an indicator that equals one if the worker bargained with the prospective employer about the wage and zero otherwise, and $D_{i,t}$ be the change in the wage offer due to bargaining. The final wage offer $y_{i,t}$ is

$$\log y_{i,t} = \log \hat{y}_{i,t} + b_{i,t} D_{i,t} \tag{1}$$

Intuitively, the final wage is the same as the initial wage if there is either no bargaining or no effect from bargaining, i.e., $y_{i,t} = \hat{y}_{i,t}$ if either $b_{i,t} = 0$ or $D_{i,t} = 0$.

The first goal of this paper is to estimate the incidence and impact of bargaining $b_{i,t}$ using a representative sample of job offers, including accepted and rejected offers. I am particularly interested in estimating α_b and γ_b using the following two equations

$$b_{i,t} = \alpha_b T_{s(i,t),m(i,t)} + X_{i,t}\beta_b + \varepsilon^b_{i,t} \tag{2}$$

$$\log y_{i,t} = \gamma_b b_{i,t} + \kappa_b T_{s(i,t),m(i,t)} + X_{i,t}\delta_b + \xi^b_{i,t} \tag{3}$$

where $T_{s(i,t),m(i,t)}$ is the tightness of labor market $s(i,t)$ where the offer was received and month $m(i,t)$ when the offer was received; $X_{i,t}$ is a vector of characteristics of worker i and his/her offer, including characteristics of the employer that made the offer and fixed effects for each labor market $s(i,t)$ and each period t; $\varepsilon^b_{i,t}$ and $\xi^b_{i,t}$ are error terms.

α_b is informative of the cyclical behavior of bargaining. If bargaining has a positive effect on wages, as documented below, the cyclical behavior of bargaining could contribute to the cyclical behavior of wages among new hires (Bils, 1985; Haefke et al., 2013; Gertler et al., 2020), which in turn affects the cyclical behavior of unemployment and vacancies (Shimer, 2004, 2005; Gertler and Trigari, 2009; Pissarides, 2009).

Some models predict that firms are more likely to bargain with their prospective employees when the labor market is tight (Ellingsen and Rosén, 2003; Rabinovich et al., 2025). Consistent with this prediction, Caldwell et al. (2025a) find that firms are more likely to bargain with "workers in hard-to-fill bottleneck occupations", and Rabinovich et al. (2025) use data from an online job board for tech workers to show that firms are more likely to post

an explicit wage or wage range when the number of applications per job posting is high.

The contribution of this paper is to estimate α_b using a representative sample of job offers from all sectors and a more standard measure of labor market tightness $T_{s(i,t),m(i,t)}$: the number of vacancies per unemployed worker from the U.S. Bureau of Labor Statistics. Because $X_{i,t}$ includes fixed effects for each labor market $s(i,t)$ and each period t, α_b is identified from the covariance of $b_{i,t}$ and $T_{s(i,t),m(i,t)}$ in each labor market $s(i,t)$ over time t conditional on other worker and offer characteristics in $X_{i,t}$. This variation across labor markets and over time has not been explored by existing studies, which focus on either variation across labor markets in a given period (Caldwell et al., 2025a) or variation over time in a single sector (Rabinovich et al., 2025).

Because neither the initial wage $\hat{y}_{i,t}$ nor the direct impact of bargaining $D_{i,t}$ is observed in the data described below, equation (3) is estimated using the final wage $y_{i,t}$. Equations (1) and (3) imply that

$$\begin{aligned}\gamma_b = {} & E(D_{i,t}|b_{i,t}=1, T_{s(i,t),m(i,t)}, X_{i,t}) \\ & + E(\log \hat{y}_{i,t}|b_{i,t}=1, T_{s(i,t),m(i,t)}, X_{i,t}) - E(\log \hat{y}_{i,t}|b_{i,t}=0, T_{s(i,t),m(i,t)}, X_{i,t}) \quad (4)\end{aligned}$$

where the right-hand side of the first line measures the direct effect of bargaining among workers who bargained with their prospective employers, and the second line reflects the correlation between the incidence of bargaining and the initial wage. Both are informative of the role of bargaining for individual wages.

If a worker attempts to bargain with the prospective employer after receiving an initial offer, this attempt should have a non-negative impact on the offered wage, although there is a concern that the offer could be rescinded by the employer (Cullen et al., 2025). Empirically, Caldwell et al. (2025a) find that, among German workers who asked their prospective employer to raise the wage of their initial offer, the typical worker asked for an increase of 3% and received an increase of 1.5%. This suggests that $E(D_{i,t}|b_{i,t}=1, T_{s(i,t),m(i,t)}, X_{i,t}) \approx 1.5\%$.

Theoretically, it is not clear whether the second line of equation (4), and thus γ_b, is positive or negative. When homogeneous firms compete for homogeneous workers in a spot labor market, Rabinovich et al. (2025) show that the possibility that a worker could receive multiple offers could lead some firms to bargain with their prospective employees and other firms to post non-negotiable wages. Because posting a non-negotiable wage means that a firm is not able to hire a worker who has another offer with either a higher posted wage or a bargaining option, other things equal, bargaining allows a firm to fill a vacancy at a higher probability. In order for firms to be indifferent between bargaining and posting, bargaining firms must earn a smaller expected profit conditional on filling a vacancy, which means that

on average they must pay a higher wage, so that $\gamma_b > 0$.

On the other hand, when homogeneous firms and homogeneous workers care about their future relations, and bargaining firms could raise an incumbent employee's wage in the future in response to an outside offer, the hiring wage could be lower among offers with than without a bargaining option (Flinn and Mullins, 2021), so that $\gamma_b < 0$. Different from the conceptual framework in equation (1), which assumes there is an initial wage $\hat{y}_{i,t}$ and a final wage $y_{i,t}$, Flinn and Mullins (2021) and other models of bargaining and counteroffers focus only on the final wage $y_{i,t}$, which is referred to as the hiring wage here and in the next paragraph.

Moreover, when heterogeneous firms compete for homogeneous workers in the same labor market, it could be optimal for low-productivity firms to post non-negotiable wages and high-productivity firms to bargain and make counteroffers whenever necessary (Doniger, 2023). In this case, the wage offer for the same worker is hump-shaped in the prospective employer's productivity: (1) among low-productivity firms that post non-negotiable wages, the posted wage is increasing in firm productivity; (2) among high-productivity firms that bargain and make counteroffers, the hiring wage is decreasing in firm productivity, because higher productivity allows for higher future wages through counteroffers. This makes the sign of γ_b ambiguous in theory. Consequently, estimates of γ_b are informative of the role of bargaining (and counteroffers) for individual wages.

Two comments are necessary before moving forward. First, following Hall and Krueger (2012), this paper focuses on the incidence of bargaining $b_{i,t}$ after a worker receives an initial wage offer $\hat{y}_{i,t}$. It is possible that the same firm may make different initial wage offers to equally productive workers, e.g., based on their salary history or expectations expressed during interviews (Agan et al., 2025; Caldwell et al., 2025a). In this case, the absence of bargaining $b_{i,t}$ does not necessarily mean that equally productive workers in the same firm must earn the same wage, as in Burdett and Mortensen (1998).

Second, because α_b and γ_b are defined and estimated using job offers, they reflect the potential selection where certain firms are more likely to make certain offers to certain workers at certain times. Even with a rich set of worker and firm characteristics included in $X_{i,t}$, both α_b and γ_b should be interpreted as equilibrium outcomes rather than causal effects or direct measures of firms' wage policies. The same interpretation applies to statistics about counteroffers described below. A successful model of the labor market should account for the potential selection of job offers and statistics across job offers estimated in this paper. Using terms from indirect inference (Gourieroux et al., 1993), this paper provides novel auxiliary parameters to discipline models of job search and wage determination. To this end, and following Hall and Krueger (2012), I report the incidence of bargaining (and counteroffers) by different worker and offer characteristics without a detailed explanation of

why the incidence varies across those characteristics. The goal is to provide relevant statistics that future studies of specific markets, e.g., the market for management or government jobs, could use to discipline their models.

2.1 Counteroffers

If worker i was employed when the offer at time t was received, in addition to bargain with the prospective employer, he/she could also ask the incumbent employer to make a counteroffer. Let $c_{i,t}$ be an indicator that equals one if the incumbent employer made a counteroffer and zero otherwise, and $G_{i,t}$ be the conditional gain in the worker's wage with the incumbent employer due to a counteroffer, so that the worker's wage would increase by $c_{i,t}G_{i,t}$ if he/she rejects the outside offer and stays with the incumbent employer. The second goal of this paper is to estimate the incidence and impact of counteroffers $c_{i,t}$ by incumbent employers.

I focus on employed workers who ended up *accepting* an outside offer from the prospective employer, for three reasons. First, counteroffers associated with rejected offers cannot be measured clearly in the data described below. Secondly, I have estimated the impact of rejected offers on individual wages in another paper (Guo, 2025a). Using a different survey that asks about the wage and outside offers of each worker every four months, Guo (2025a) finds no significant difference in within-job wage growth between employed workers who rejected all outside offers received in four months and comparable workers who received zero offer in the same four months. This suggests that $E(c_{i,t}G_{i,t}|\text{rejected offers}) \approx 0$, which implies either $E(c_{i,t}|\text{rejected offers}) \approx 0$ or $E(G_{i,t}|c_{i,t} = 1, \text{rejected offers}) \approx 0$, or both. Unfortunately, the survey does not ask about the incidence of either bargaining or counteroffers. Finally, and more importantly, the incidence of counteroffers among employed workers who accepted an outside offer is more useful in separating two dominant models of wage determination: wage posting (Burdett and Mortensen, 1998) and sequential auctions (Postel-Vinay and Robin, 2002; Dey and Flinn, 2005; Cahuc et al., 2006).

To see this, let $w_{i,t}$ be the wage of worker i when the outside offer was received at time t, and $\pi_{i,t}$ be the worker's contribution to the incumbent employer's profit. Similarly, let $p_{i,t}$ be the worker's contribution to the prospective employer's profit if he/she accepts the outside offer at wage $y_{i,t}$. Ignoring other factors, such as non-wage benefits and future wages, sequential-auction models assume that

1. If $y_{i,t} + p_{i,t} \leq w_{i,t}$, then $c_{i,t} = 0$; the outside offer is rejected; and the worker stays with the incumbent employer at the same wage $w_{i,t}$.

2. If $y_{i,t} + p_{i,t} \in (w_{i,t}, w_{i,t} + \pi_{i,t}]$, then $c_{i,t} = 1$; $G_{i,t} \in [y_{i,t} + p_{i,t} - w_{i,t}, \pi_{i,t}]$, the exact value of which depends on the worker's bargaining power; the outside offer is rejected; and

the worker stays with the incumbent employer at a higher wage $w_{i,t} + G_{i,t}$.

3. If $y_{i,t} + p_{i,t} > w_{i,t} + \pi_{i,t}$, then $c_{i,t} = 1$; $G_{i,t} = \pi_{i,t}$; the outside offer is accepted; and the worker moves to the new employer with wage $y_{i,t} > w_{i,t} + \pi_{i,t}$, the exact value of which depends again on the worker's bargaining power.

These assumptions imply that $c_{i,t} = 1$ for all employed workers who accept an outside offer (the third case). In contrast, models of wage posting assume that incumbent employers never make a counteroffer, so that $c_{i,t} = 0$ for all employed workers who accept an outside offer. In other words, the incidence of counteroffers among employed workers who accept an outside offer is 100% in sequential-auction models and 0% in models of wage posting. The contrast between the two models is less stark among employed workers who reject an outside offer. In this case, the incidence of counteroffers is still 0% in models of wage posting, but it is generally less than 100% in sequential-auction models, with the exact value determined by the shares of the first two cases listed above, i.e., whether $c_{i,t} = 0$ because $y_{i,t} + p_{i,t} \leq w_{i,t}$ or $c_{i,t} = 1$ because $y_{i,t} + p_{i,t} \in (w_{i,t}, w_{i,t} + \pi_{i,t}]$. If $\pi_{i,t}$ is close to zero for most employed workers, the incidence of counteroffers associated with rejected offers is close to 0% even in sequential-auction models.

If some but not all firms are willing to make counteroffers for their incumbent employees, the incidence of counteroffers associated with accepted offers is informative of the share of firms that are willing to make a counteroffer. The two measures may not equal each other, and the former is likely a lower bound of the latter: if counteroffers reduce the probability that an employed worker accepts an outside offer, they would be under-represented among employed workers who accept an outside offer.

On the other hand, the incidence of counteroffers associated with accepted offers is a direct measure of the fraction of job switchers who could have benefited from their current employer's offer without accepting it, and the wage increase $G_{i,t}$ offered by their previous employer is a measure of their potential gain from rejecting the offer and the previous employer's monopsony power. This is true even if employers make counteroffers stochastically (Moore, 1985) or selectively (Barron et al., 2006).

To better understand the incidence and impact of counteroffers, I estimate the following equations using employed workers who accepted an outside offer

$$c_{i,t} = \alpha_c T_{s(i,t),m(i,t)} + X_{i,t}\beta_c + \varepsilon^c_{i,t} \tag{5}$$

$$\log y_{i,t} = \gamma_c c_{i,t} + \kappa_c T_{s(i,t),m(i,t)} + X_{i,t}\delta_c + \xi^c_{i,t} \tag{6}$$

which are the same as equations (2) and (3) except that the bargaining indicator $b_{i,t}$ is

replaced with the new indicator $c_{i,t}$ for a counteroffer.

The parameters of interest are α_c, which measures how the incidence of counteroffers varies with labor market tightness, and γ_c, which measures the impact of a counteroffer from the incumbent employer on the wage offer from the prospective employer. For employed workers who accepted their outside offer from the prospective employer, γ_c is a more relevant measure of the wage impact than statistics based on the potential wage gain $G_{i,t}$.

γ_c captures three potential effects of a counteroffer. First, the incidence of a counteroffer could be correlated with the wage offer $y_{i,t}$ even in the absence of bargaining (i.e., $b_{i,t} = 0$). For example, there could be a selection where only high-wage firms are willing to make offers for employed workers whose incumbent employers are willing to make counteroffers. Alternatively, the prospective employer may anticipate the incumbent employer's behavior and respond preemptively by making a higher wage offer if the incumbent employer is more likely to make a counteroffer. Second, a counteroffer could raise the probability that a worker bargains with the prospective employer. If workers are uncertain about their prospective employer's bargaining policy and fear that their offer could be rescinded if they attempt to bargain over the wage (Cullen et al., 2025), they would be more likely to bargain with the prospective employer when the value of staying with the incumbent employer is raised by a counteroffer. Finally, conditional on bargaining with the prospective employer ($b_{i,t} = 1$), a counteroffer could raise the wage offer $y_{i,t}$ through its effect on the worker's outside option. In particularly, the direct effect of bargaining $D_{i,t}$ may increase with $c_{i,t}G_{i,t}$.

For more direct evidence on the first effect, I will estimate the correlation between the bargaining indicator $b_{i,t}$ and the indicator for a counteroffer $c_{i,t}$. For more direct evidence on the other two effects, I will estimate the following augmented version of equation (6)

$$\log y_{i,t} = \lambda_1 c_{i,t} + \lambda_2 b_{i,t} + \lambda_3 b_{i,t} \times c_{i,t} + \kappa_c T_{s(i,t),m(i,t)} + X_{i,t}\delta_c + \xi^c_{i,t} \tag{7}$$

where λ_1 is a measure of the first effect and λ_3 is a measure of the last effect.

2.2 Worker Beliefs

As mentioned above, the incidence and impact of bargaining and counteroffers estimated in this paper are equilibrium outcomes determined by the joint behavior of firms and workers. In particular, whether a worker bargained with his/her prospective employer depends on both the employer's wage policy and the worker's belief about that policy. Even if an employer is willing to bargain with a worker, there could be no bargaining if the worker believes incorrectly that his/her wage offer is non-negotiable and would be rescinded if he/she attempts to bargain with the employer (Cullen et al., 2025).

Similarly, there are two potential explanations for the lack of counteroffers documented below. The first is that most workers do not ask for counteroffers in the first place, potentially because they do not believe their employers are willing or able to meet their requests. The second is that most firms would not make a counteroffer even when requested by their workers. The two explanations are related to each other if worker beliefs are informative of firm behaviors. Both explanations could contribute to the lack of counteroffers if worker beliefs are not perfectly consistent with firm behaviors.

Assuming an employed worker with an outside offer always asks for a counteroffer from the current employer, Barron et al. (2006) present a model where the optimal choice for a firm is to make a counteroffer only when the benefit from retaining the worker is greater than the cost associated with increased job search among all employees. Empirically, they analyze a 2001 survey by the U.S. Small Business Administration, which asks firms with a current employee hired within the prior 2 years the following question: "*Suppose (the new hire) received a job offer from another company. Would you consider raising (the new hire's) wage in order to retain (this person) as an employee?*" Only 41.3% said yes. This suggests that the second explanation contributes significantly to the lack of counteroffers in practice.

The last goal of this paper is to provide some evidence for the first explanation. This is done by estimating whether employed workers are willing to ask their current employer for a counteroffer in response to a better offer from another employer, and their beliefs about the chance that their employer will match the outside offer. I will examine whether worker beliefs are informative and accurate by comparing them with relevant firm policies documented by Barron et al. (2006) and Caldwell et al. (2025a).

3 Data

I use data from the Job Search Supplement (JSS) of the Survey of Consumer Expectations (SCE). Administered by the Federal Reserve Bank of New York, SCE is a monthly survey of a rotating panel of about 1,300 household heads from across the U.S. Each respondent participates in the panel for up to 12 months, with a roughly equal number of respondents rotating in and out of the panel each month (Armantier et al., 2017).

Designed by Faberman et al. (2022) and conducted annually since 2013, JSS asks an expansive list of questions about job search behavior and outcomes of all SCE respondents in October, regardless of their employment status. In particular, all but the self-employed are asked the following questions about job offers:

- JS19 [All but self-employed]: "*How many job offers have you received in the LAST 4 WEEKS? Please include all offers, including those made informally and those made*

by contacts not solicited by you."

- JS19b [Follow up, if JS19 = 0 (no job offers in last 4 weeks)]: "*And looking further back, how many job offers have you received in the LAST 6 MONTHS? Please include all offers, including those made informally and those made by contacts not solicited by you.*"

The majority of this paper focuses on workers aged 18-64 who received at least one offer in either the last 4 weeks or the last 6 months. There are 7350 workers aged 18-64 who responded to the two questions between 2013 and 2021.[2] Among them, 644 received at least one offer in the last 4 weeks (including 432 with one offer and 212 with two or more offers), 1238 received zero offer in the last 4 weeks but at least one offer in the last 6 months (including 723 with one offer and 515 with two or more offers), and the remaining 5468 workers received zero offer in both the last 4 weeks and the last 6 months.

Table 1 reports the summary statistics of all workers (first row), workers who received at least one offer in either the last 4 weeks or the last 6 months (second column), and workers who received zero offer in both periods (third column). Differences between workers with and without an offer are reported in the last column. Not surprisingly, many of the differences are significant statistically and economically. For example, relatively to workers without an offer, workers with an offer are 3.9 years younger and, conditional on being employed at the time of the survey, earning \$4.7 less per hour.[3] This reflects the fact that young and low-wage workers are over-represented among job seekers. Consequently, statistics of bargaining based on the experience of all workers, e.g., those in Hall and Krueger (2012), may be inaccurate for job seekers. On the other hand, because the two questions listed above ask respondents to "*include all offers, including those made informally and those made by contacts not solicited by you*", results reported below are probably as close as we could obtain for all "encounters between job-seekers and employers" (Hall and Krueger, 2012).

Workers with at least one offer in either the last 4 weeks or the last 6 months are asked about the characteristics of their best offer. Some of the questions used in this paper are

- JS20: "*(Out of the [JS19 or JS19b answer] job offers you received over the last 4 weeks (6 months), please consider the BEST job offer.) What OCCUPATION would best describe the kind of work that the job would entail? (For example: Electrical engineer, stock clerk, typist, farmer, ...)*"

[2]These are the years for which data were released when I checked the following website on May 29, 2025: `https://www.newyorkfed.org/microeconomics/databank.html`. The website also contains the questionnaire and other relevant information for JSS and SCE more generally.

[3]All wages reported in this paper are adjusted to 2021 dollars using the Consumer Price Index.

Table 1: Sample Statistics

	All	Offer>0	Offer=0	Difference
Age	44.9	42.0	45.9	-3.9
	(12.2)	(12.3)	(12.0)	(0.3)
Male	0.478	0.443	0.490	-0.047
	(0.500)	(0.497)	(0.500)	(0.013)
Bachelor's degree	0.354	0.345	0.357	-0.012
	(0.478)	(0.475)	(0.479)	(0.013)
White	0.782	0.729	0.801	-0.071
	(0.413)	(0.444)	(0.400)	(0.011)
Hispanic	0.109	0.119	0.105	0.014
	(0.311)	(0.324)	(0.307)	(0.008)
Homeowner	0.656	0.551	0.693	-0.142
	(0.475)	(0.498)	(0.461)	(0.013)
Children under 6	0.230	0.282	0.212	0.070
	(0.582)	(0.646)	(0.557)	(0.015)
Employed full-time	0.646	0.639	0.649	-0.010
	(0.478)	(0.481)	(0.477)	(0.013)
Employed part-time	0.103	0.179	0.076	0.103
	(0.303)	(0.383)	(0.265)	(0.008)
Hourly wage	31.2	27.9	32.5	-4.7
	(27.2)	(27.9)	(26.9)	(0.8)
Observations	7350	1882	5468	7350

Notes: The second column uses workers who received at least one job offer in either the last 4 weeks or the last 6 months. The third column uses workers who received zero offer in both periods. The last column reports the differences between the two groups. Ages are measured in years. Hourly wages are measured in 2021 dollars. All other worker characteristics are indicators. Standard deviations are in the parentheses of the first three columns. Standard errors are in the parentheses of the last column.

- JSemp: "*Were you employed, either full-time or part-time, at the time you received this (your best) job offer?*"
- JS22g: "*What was the wage or salary offered (before taxes and other deductions) for this (your best) job offer? Please include any bonuses, overtime pay, tips or commissions.*" I interpret this as the final wage offer $y_{i,t}$.
- JS22b: *And about how many hours a week would/do you have to work on this job?*"
- JS23: "*Have you accepted, or do you plan to accept, this (your best) job offer?*" There are three options: (1) "Accepted or will accept", (2) "Rejected or will reject", and (3) "Don't know yet". For brevity, I will refer to the first option as accepted, and refer to the second option as rejected.
- JS25: "*For this (your best) job offer, how did you learn about this job?*" There are 12 options. I combine the following three options as referral: "Referred by a friend or relative (5)"; "Referred by a former co-worker, supervisor, business associate (6)"; and "Referred by a current employee at the company (7)". I also study the following option: "Unsolicited contact by potential employer, recruiter or headhunter (11)". Because the words "recruiter or headhunter" were added later in 2016, for brevity, I will refer to this option as unsolicited contact by the potential employer.
- JS26d: "*Do you know if any employees at the business of 'this/your best' job offer are part of a union?*"
- JS28 [Follow up, if JS23 = 1 (accepted or will accept (best) offer)]: "*In how many weeks, counting from today, will you start working on your new job?*" Workers who had already started the job could indicate it through a special option to this question. These workers are asked some additional questions, as discussed below.

Table 2 reports the characteristics of the best offer for all workers with at least one offer (first column), workers who accepted the best offer (second column), and workers who rejected the best offer (third column). Workers without a decision for the best offer are included in the first column but not reported separately. Differences between workers who accepted and rejected the best offer are reported in the last column.

Among all workers with at least one offer, 54.9% were employed full-time when the best offer was received, 18.1% were employed part-time, and the rest were not employed. 71.1% of the offers entail 30 or more hours of work per week. The offers cover all major occupations (including 10.4% in management and 16.0% in office support), firms of all sizes (including

Table 2: Worker and Offer Characteristics

	All	Accepted	Rejected	Difference
Observations	1882	764	840	1604
Employment status when offer was received				
Employed full-time	0.549	0.419	0.687	-0.267
	(0.498)	(0.494)	(0.464)	(0.024)
Employed part-time	0.181	0.234	0.132	0.102
	(0.385)	(0.423)	(0.338)	(0.019)
Offer characteristics				
Weekly hours ≥ 30	0.711	0.660	0.781	-0.122
	(0.454)	(0.474)	(0.414)	(0.022)
Hourly wage	26.9	25.1	29.5	-4.3
	(29.5)	(28.5)	(31.1)	(1.7)
Occupation: Management	0.104	0.069	0.135	-0.066
	(0.306)	(0.254)	(0.342)	(0.016)
Occupation: Office support	0.160	0.171	0.160	0.011
	(0.366)	(0.377)	(0.367)	(0.019)
Firm size < 10	0.187	0.150	0.204	-0.055
	(0.390)	(0.357)	(0.404)	(0.021)
Firm size ≥ 5000	0.179	0.218	0.145	0.073
	(0.384)	(0.413)	(0.352)	(0.021)
Sector: Public	0.163	0.201	0.138	0.063
	(0.370)	(0.401)	(0.346)	(0.020)
Sector: Healthcare	0.148	0.151	0.154	-0.003
	(0.355)	(0.358)	(0.361)	(0.019)
Union	0.180	0.226	0.155	0.071
	(0.384)	(0.419)	(0.362)	(0.024)
Referral	0.367	0.375	0.340	0.035
	(0.482)	(0.484)	(0.474)	(0.024)
Unsolicited	0.230	0.078	0.379	-0.302
	(0.421)	(0.268)	(0.486)	(0.020)

Notes: The first column uses all workers who received at least one offer in either the last 4 weeks or the last 6 months. The second (third) column uses workers who accepted (rejected) the best offer. Workers without a decision for the best offer are included in the first column but not reported separately. The last column is the difference between the second and third columns. All characteristics are about the best offer. Hourly wages are measured in 2021 dollars. All other characteristics are indicators. Standard deviations are in the parentheses of the first three columns. Standard errors are in the parentheses of the last column.

18.7% from firms with fewer than 10 employees and 17.9% from firms with more than 5000 employees), and all major sectors (including 16.3% from the government and 14.8% from healthcare).[4] 18.0% of job offers come from firms where some employees are part of a union, 36.7% result from a referral, and 23.0% result from an unsolicited contact by the employer.

The last column shows that, relative to workers who rejected their best offer, workers who accepted their best offer were less likely to be employed full-time and more likely to be employed part-time when the best offer was received. As a result, the best offer is significantly different between the two groups of workers. For example, relative to workers who rejected their best offer, the best offers for workers who accepted their best offer entail both a smaller number of work hours per week and a lower hourly wage. This suggests that the incidence of bargaining could be different between accepted and rejected offers.

4 Bargaining with Prospective Employers

Workers with at least one job offer in either the last 4 weeks or the last 6 months are asked the following questions about the wage offer from the prospective employer:

- JS31b: "*Consider again your (best) job offer. At the time that you were first interviewed for this job, did you already know exactly how much it would pay, had a pretty good idea of how much it would pay, or had very little idea of how much it would pay if you got it?*" In addition to the three options listed in the question, respondents are given another option: "Did not have an interview for this job".

- JS31c: "*Consider again your (best) job offer. Did the employer learn how much you are (were) making on your current (previous) job before making you the job offer?*"

- JS31d: "*Consider again your (best) job offer. When you were offered this job, did the employer make a 'take-it-or leave-it' offer or was there some bargaining that took place over the pay?*"

Table 3 reports worker responses to the three questions. The first column reports the fraction of workers who knew exactly how much their best offer would pay when they first interviewed for the job. This excludes workers who did not interview for their best offer

[4]JSS categorizes occupations at the 3-digit level, sectors/industries at the 2-digit level, and the firm size into 6 groups (see Figure A.1). This paper collapses all occupations to the 2-digit level. Among the 23 occupations, office support has the most job offers, sales and related occupations have the second most (11.9%), and management has the third most. I choose management over sales and related occupations in Tables 2 and A.1 to increase the contrast with office support. Among the 17 private sectors, healthcare has the most job offers, and retail trade has the second most (10.6%).

and workers who did not answer question JS31b at all. Consequently, the number of observations reported in column 2 is smaller than the total number of workers with an offer. Column 3 reports the fraction of workers whose prospective employer learned about their current/previous wage before making the offer. Column 5 reports the fraction of workers who bargained with their prospective employer over the pay. Because some workers did not respond to question JS31c (JS31d), the number of observations reported in column 4 (6) is smaller than the total number of workers with an offer.

The first row shows that, among all workers who interviewed for their best offer, 23.2% knew exactly how much the offer would pay when they first interviewed for the job. This is significantly less than the value of 31.5% documented by Hall and Krueger (2012), who asked the same question about the starting wage of each worker who started their current or most recent job in the last 10 years but did not allow for the no-interview option. Moreover, 34.1% of all workers who responded to question JS31c indicated that the prospective employer learned about their current/previous wage before making the offer. This is significantly lower than the value of 47.3% in Hall and Krueger (2012). Finally, 35.1% of all workers who responded to question JS31d bargained with the prospective employer. This is slightly lower than the value of 36.9% in Hall and Krueger (2012).

Rows 2-4 show that, relative to workers who rejected their best offer, workers who accepted their best offer were more likely to know exactly how much the offer would pay when they first interviewed for the job, their prospective employer was more likely to learn about their current/previous wage before making the offer, and they were less likely to bargain with their prospective employer over the pay. For the first two bargaining indicators (questions JS31b and JS31c), statistics from accepted offers are closer to those documented by Hall and Krueger (2012). This suggests that part of the differences between Hall and Krueger (2012) and this paper is because the former focuses only on accepted offers.

The remaining rows document how the incidence of bargaining varies with worker characteristics. Focusing on the last indicator, estimates in column 5 suggests that the incidence of bargaining does not vary significantly with a worker's age or race, but it is higher among men, workers with a bachelor's degree and workers who were employed full-time (vs employed part-time or non-employed) when the offer was received. This suggests that workers with better outside options are more likely to bargain with their prospective employers.

Table A.1 in the appendix reports the same statistics by offer characteristics, including characteristics of the firm making the offer. Focusing on the last of the three indicators, the evidence suggests that wage bargaining is more prevalent among offers requiring more than 30 hours of work per week, offers for management (vs office support) jobs, offers from private employers (vs the government), and offers resulting from either a referral or an unsolicited

Table 3: Incidence of Wage Bargaining by Worker Characteristics

	Worker knew		Employer learned		Bargained	
	Share	N/(SE)	Share	N/(SE)	Share	N/(SE)
All	0.232	1512	0.341	1835	0.351	1861
Accepted	0.280	721	0.378	750	0.300	760
Rejected	0.184	596	0.330	818	0.351	829
Difference	0.096	(0.023)	0.048	(0.024)	-0.051	(0.024)
Age ≤ 40	0.221	726	0.375	858	0.357	865
Age > 40	0.243	786	0.309	977	0.345	996
Difference	-0.023	(0.022)	0.067	(0.022)	0.013	(0.022)
Men	0.210	713	0.346	828	0.388	847
Women	0.251	799	0.338	1006	0.320	1013
Difference	-0.040	(0.022)	0.008	(0.022)	0.069	(0.022)
Bachelor's degree: Yes	0.201	889	0.384	1060	0.425	1076
Bachelor's degree: No	0.250	623	0.318	775	0.311	785
Difference	-0.048	(0.023)	0.066	(0.023)	0.115	(0.023)
White	0.224	1154	0.341	1384	0.346	1407
Other	0.256	358	0.344	449	0.365	452
Difference	-0.032	(0.025)	-0.003	(0.025)	-0.018	(0.025)
Employed full-time	0.208	884	0.372	1104	0.419	1106
Employed part-time	0.288	279	0.298	319	0.233	322
Non-employed	0.242	348	0.300	411	0.284	432
Difference: Full-Non	-0.035	(0.025)	0.072	(0.026)	0.135	(0.026)
Difference: Part-Non	0.045	(0.036)	-0.002	(0.034)	-0.051	(0.033)
Difference: Full-Part	-0.080	(0.028)	0.075	(0.029)	0.186	(0.029)

Notes: This table uses workers who received at least one offer in either the last 4 weeks or the last 6 months. Each of the three main column titles, e.g., *Worker knew*, is a different indicator of wage bargaining for the best offer received by a worker. For each bargaining indicator, the *Share* column reports either the fraction of workers for whom the indicator is one, or the difference in the fraction between the relevant groups. The *N/(SE)* column reports either the number of observations without parentheses or the standard error of the difference between relevant groups in parentheses.

contact from the prospective employer. On the other hand, wage bargaining is less likely when some employees of the prospective employer are part of a union.

Figure A.1 in the appendix shows that the incidence of bargaining does not vary significantly with the prospective employer's size, except for a spike among firms with 500-999 employees. This is consistent with Caldwell et al. (2025a), who find that whether a firm is willing to bargain with its (prospective and incumbent) employees is not significantly correlated with the firm's size, age and total assets per employee. Assuming a firm's size, age, and total assets per employee are correlated with its productivity, Caldwell et al. (2025a) conclude that the finding is inconsistent with models where high-productivity firms are more likely to bargain with their employees (Postel-Vinay and Robin, 2004; Doniger, 2023).

Table A.2 in the appendix reports the same statistics by the timing (last 4 weeks vs last 6 months) and number (one vs multiple) of offers received by each worker. There is some evidence that workers with multiple offers are more likely to bargain with the employer making the best offer. However, most differences in the table are not significant. This suggests that estimates from the best offers are informative of all offers for job seekers. One could also argue that estimates from the best offers are what matter for job seekers, as done by Hall and Mueller (2018) in their study of the wage offer distribution for the unemployed. Qualitatively, statistics reported in this paper are similar if I focus on workers with exactly one offer, who account for 61.4% of all workers with at least one offer. For example, among workers with one offer in the last 4 weeks, the incidence of bargaining is 23.8% among accepted offers and 36.5% among rejected offers; Among workers with zero offer in the last 4 weeks and one offer in the last 6 months, the incidence of bargaining is 27.1% among accepted offers and 34.7% among rejected offers. Both are consistent with the previous finding that the incidence of bargaining is lower among accepted offers.

Table 4 reports the joint distribution of the three bargaining indicators among all workers with at least one offer (column 4), workers employed when the best offer was received (column 5), workers not employed when the best offer was received (column 6), workers who accepted the best offer (column 7), and workers who rejected the best offer (column 8). The sixth row shows that 16.6% of all workers with an offer knew exactly how much the best offer would pay when first interviewed for the job, and the prospective employer made a take-it-or-leave-it offer without bargaining with the worker over the pay. These offers are most consistent with models of wage posting, e.g., Burdett and Mortensen (1998), but the share is significantly lower than the corresponding value of 26.4% in Hall and Krueger (2012). A large part of the difference is because Hall and Krueger (2012) focus only on accepted offers, where the share is 22.9%, significantly higher than the value of 10.4% among rejected offers. This highlights the importance of considering both accepted and rejected offers.

Table 4: The Joint Distribution of Three Bargaining Indicators

Worker	Employer			Employed			
knew	learned	Bargained	All	Yes	No	Accepted	Rejected
N	N		0.474	0.460	0.518	0.426	0.505
Y	N		0.135	0.130	0.150	0.179	0.088
N	Y		0.297	0.310	0.254	0.295	0.315
Y	Y		0.094	0.100	0.078	0.099	0.091
N		N	0.483	0.459	0.554	0.473	0.531
Y		N	0.166	0.158	0.190	0.229	0.104
N		Y	0.288	0.312	0.214	0.249	0.285
Y		Y	0.064	0.071	0.042	0.050	0.080
	N	N	0.444	0.422	0.512	0.456	0.450
	Y	N	0.204	0.202	0.214	0.243	0.202
	N	Y	0.213	0.222	0.188	0.164	0.216
	Y	Y	0.139	0.155	0.087	0.138	0.133
N	N	N	0.313	0.289	0.386	0.301	0.336
Y	N	N	0.104	0.095	0.130	0.149	0.060
N	Y	N	0.169	0.166	0.180	0.169	0.198
N	N	Y	0.160	0.170	0.133	0.122	0.169
Y	Y	N	0.061	0.062	0.056	0.081	0.043
Y	N	Y	0.031	0.034	0.023	0.032	0.028
N	Y	Y	0.130	0.145	0.078	0.128	0.118
Y	Y	Y	0.032	0.038	0.014	0.019	0.049

Notes: Columns 1-3 list the pairwise and three-way interactions of three bargaining indicators given by the column titles, where N and Y indicate no and yes, respectively. Column 4 reports the joint distribution of the three indicators across the best offers of all workers who received at least one offer in either the last 4 weeks or the last 6 months. Column 5 (6) focuses on workers who were (not) employed when the best offer was received. Column 7 (8) focuses on workers who accepted (rejected) the best offer.

The seventh row shows that 28.8% of all workers with an offer did not know exactly how much the best offer would pay when first interviewed for the job, and the prospective employer bargained with the worker over the pay. These offers are most consistent with models of wage bargaining, and the share is only slightly larger than the corresponding value of 24.9% in Hall and Krueger (2012). The difference is smaller in this case because the share is similar between accepted and rejected offers (24.9% vs 28.5%). On the other hand, the share is significantly higher for the employed than the non-employed (31.2% vs 21.4%).

4.1 Bargaining and Labor Market Tightness

Table 5 reports estimates of α_b using equation (2) and the sample of workers with at least one offer. For each worker i who was surveyed in October of year t, I define the labor market $s(i,t)$ as the worker's state of residence at the time of the survey, and $m(i,t)$ as the month when the worker's best offer was received. Labor market tightness $T_{s(i,t),m(i,t)}$ is measured by the number of job vacancies per unemployed worker in state $s(i,t)$ and month $m(i,t)$. The Job Openings and Labor Turnover Survey of the U.S. Bureau of Labor Statistics estimates the unemployed-to-job-opening ratio for each state in each month since December 2000. I use the reciprocal of this measure as $T_{s(i,t),m(i,t)}$. If the best offer was received in the last 4 weeks before the survey in October, the worker was not asked about the exact month it was received. I assume the offer was received in October. If the best offer was received in the last 6 months but not the last 4 weeks, the worker was asked directly about the month it was received. For workers who did not report the month, I assume the offer was received in July, three months before the survey in October. This introduces measurement error in $T_{s(i,t),m(i,t)}$, so that the true value of α_b is likely larger than estimates reported below.

Following Faberman et al. (2022) who used the same survey to study how the wage of the best offer depends on a worker's employment status (employed vs non-employed) when the offer was received, $X_{i,t}$ includes a dummy for men, age, age squared, three dummies for the highest educational attainment (some college but no bachelor's degree, bachelor's degree, and master/doctoral/professional degree, with high school and below as the baseline category), three dummies for race and ethnicity (Hispanic, Black non-Hispanic, and other non-white non-Hispanic, with white non-Hispanic as the baseline category), a dummy for being a homeowner, a dummy for being married, a dummy for married men, the number of children under 6 years old, and fixed effects for each year t, each state $s(i,t)$, each of the 23 occupations for the best offer, and each of the 6 size categories for the employer making the best offer. These are the baseline controls used by Faberman et al. (2022). I extend the set to include the following variables into $X_{i,t}$: two dummies for a worker's employment status

(employed full-time and employed part-time, with non-employed as the baseline category) when the best offer was received, a dummy that equals one if the best offer requires 30 or more hours of work per week, fixed effects for each of the 18 industries for the best offer, and the share of months in the last 5 years when the worker was not employed, which is used by Faberman et al. (2022) as a robustness to further make sure workers are comparable.

Each column in Table 5 uses one of the three bargaining indicators as the dependent variable. The top panel only controls for state and year fixed effects. The bottom panel controls for the full set of variables in $X_{i,t}$ described above. The estimates suggest that only the last bargaining indicator is significantly correlated with labor market tightness.[5]

Table 5: Individual Wage Bargaining and Labor Market Tightness

	Worker knew	Employer learned	Bargained
	State and year fixed effects		
Vacancies per unemployed	-0.129	-0.108	0.196
	(0.073)	(0.071)	(0.076)
Observations	1512	1835	1861
	Additional controls		
Vacancies per unemployed	-0.100	-0.116	0.242
	(0.079)	(0.078)	(0.077)
Observations	1359	1634	1652

Notes: The title of each column is a different bargaining indicator for the best offer received by a worker in either the last 4 weeks or the last 6 months. Each indicator is regressed against the number of vacancies per unemployed worker in the state where the best offer was received and the month when the best offer was received. State and year fixed effects are included in all regressions. The bottom panel includes additional controls for the worker and offer. See the main text for details. The number of observations varies due to missing values. Robust standard errors are in the parentheses.

Quantitatively, the incidence of bargaining increases by about 2 percentage points when the number of vacancies per unemployed worker increases by 0.1. The average number of vacancies per unemployed worker across all best offers is 0.85, and the standard deviation is 0.45. Assuming $\alpha_b = 0.242$, the incidence of bargaining increases by around 10.9 percentage points when labor market tightness increases by one standard deviation. Assuming the wage premium associated with bargaining is 0.13 log point, as estimated below, the impact of the increased incidence of bargaining on the average wage offer is 1.4% (0.109×0.13). As

[5]Excluding offers received in 2020, the three estimates (standard errors) in the bottom panel become -0.112 (0.078), -0.144 (0.082), and 0.249 (0.081). This suggests that the results are robust to the potentially unique impact of the COVID pandemic.

discussed above, this presumably contributes to the cyclical behavior of wages among new hires and affects the cyclical behavior of unemployment and vacancies. Accounting for these effects theoretically and quantitatively could be a fruitful direction for future work.

4.2 Bargaining and Wages

Table 6 reports estimates of γ_b in equation (3). Each of the three bargaining indicators is included in one of the first three columns, while all three indicators are included jointly in column 4. Both $T_{s(i,t),m(i,t)}$ and the full set of $X_{i,t}$ described above are included in all columns. The estimates suggest that the first two bargaining indicators are not significantly related to wage offers. Together with Table 5, this suggests that the last indicator is more informative of wage bargaining than the first two.

Table 6: Bargaining and Wages

	(1)	(2)	(3)	(4)	(5)
Worker knew	0.056			0.046	
	(0.035)			(0.035)	
Employer learned		-0.021		-0.018	
		(0.028)		(0.027)	
Bargained			0.147	0.130	0.103
			(0.033)	(0.033)	(0.045)
Bargained × male					0.014
					(0.057)
Bargained × BA					0.089
					(0.058)
Observations	1103	1289	1302	1086	1302

Notes: The dependent variable in each column is the log hourly wage of the best offer received by a worker in either the last 4 weeks or the last 6 months. The key independent variables are the three bargaining indicators given by the first-three row titles. BA is a dummy that equals one if the worker has a bachelor's degree and zero if not. Additional worker and offer characteristics are included in all regressions. See the main text for details. The number of observations varies due to missing values. Robust standard errors are in the parentheses.

Column 4 suggests that the wage premium associated with bargaining is 0.13 log point, much larger than the direct effect of 1.5% estimated by Caldwell et al. (2025a). This suggests that the equilibrium effect of bargaining (Flinn and Mullins, 2021; Doniger, 2023; Rabinovich et al., 2025) is more important for individual wages than the direct effect. The next section shows that the bargain wage premium is even larger among accepted offers, where I could control for additional variables, e.g., whether the incumbent employer attempted to retain

the worker with a counteroffer. An important direction for future work is to investigate whether existing models of wage setting could account for these estimates quantitatively.

The estimated bargaining wage premium is comparable with the wage premium for being employed (vs non-employed) at the time of the offer. Using the same dependent variable from the same survey and similar specifications, Faberman et al. (2022) find that the wage premium for being employed is 0.127-0.194 log point. While not reported in Table 6, the estimated wage premium for being employed full-time (vs non-employed) in column 4 is 0.146 log point (standard error: 0.040), and it increases to 0.178 log point (standard error: 0.038) when the three bargaining indicators are removed from the regression.[6] This suggests that part of the wage premium for the employed is because they are more likely to bargain with their prospective employers, as documented previously in Table 3.

To explore the potential heterogeneity in the bargaining wage premium, the last column extends equation (3) with (1) an interaction between the bargaining indicator $b_{i,t}$ and a male dummy and (2) another interaction between $b_{i,t}$ and a dummy that equals one if the worker has a bachelor's degree and zero if not. Given estimates in the first four columns, $b_{i,t}$ is measured by the last bargaining indicator.

Coefficients for both interactions are estimated to be positive but not statistically different from zero. This does not mean that bargaining has no effect on the gender and/or education wage gap. As shown previously in Table 3, bargaining is more prevalent among men and workers with a bachelor's degree. This suggests that the two groups of workers benefit more from bargaining even if the conditional effect of bargaining is homogeneous across workers. Consistent with this, Biasi and Sarsons (2022) find that a reform in Wisconsin that allowed school districts to set teachers' pay more flexibly increased the gender wage gap because women engage less frequently in individual wage negotiations.

5 Counteroffers from Previous Employers

This section documents the incidence and impact of counteroffers for workers who (1) were employed when the best offer was received and (2) accepted their best offer and started the new job by the time of the survey. These workers are asked the following questions about counteroffers from their previous employer:

- JS32a [Follow up, if JS28 = "already started this new job"]: "*Did your PREVIOUS*

[6]The estimated wage premium for being employed part-time (vs non-employed) is not significantly different from zero in either case. Faberman et al. (2022) recognized the importance of bargaining (and counteroffers) for the employment wage premium, but did not include any bargaining indicator in their empirical specifications. See their Table VII for details, where the unconditional wage premium of 0.362 in the first row is excluded from the range of 0.127-0.194 reported above.

employer match the wage that was offered on your new job, or do you think they would have if you asked? A worker could choose one of three options: (1) "Yes, my previous employer matched the wage offered", (2) "Yes, I think my previous employer would have matched the wage offered", and (3) "No".

- JS32d [Follow up, if JS28 = "already started this new job"]: "*Before you accepted the offer for your new job, were you offered any promotion, pay increase, or increase in benefits by your previous employer as a counter-offer to this outside job offer? [check all that apply]*" A worker could choose either "No promotion, pay increase, or increase in benefits were offered (4)" or any combination of the following three options: "Yes, a promotion was offered (1)", "Yes, a pay increase was offered (2)", and "Yes, an increase in benefits was offered (3)".

- JS32e [Follow up, if JS32d = 2 (a pay increase was offered by previous employer)]: "*By how much did your pay increase as a result (if at all)?*

Table 7 reports the responses of workers who were employed, either full-time or part-time, when the best offer was received. By definition, these workers had a previous employer which could have matched the offer from the current employer with a counteroffer. The first column reports the number of observations. The second column reports the percentage of workers choosing the first of the three options to question JS32a. Each of the last four columns reports the percentage of workers choosing one of the four options to question JS32d. Because a worker could choose more than one of the first three options to question JS32d, the sum of the last four columns in each row could be over 100.

The first row shows that, among all employed workers who accepted an outside offer, only 11.2% received a matching wage offer from the incumbent employer, 4.5% were offered a promotion, 9.1% were offered a pay increase, 2.2% were offered an increase in benefits, and 87.4% were offered nothing.

The second row focuses on employed workers who quit their previous job, which are the majority and more consistent with voluntary job-to-job transitions. The third row includes other workers, e.g., workers who kept their previous job and workers who were about to lose the previous job when the best offer was received.[7] The incidence of counteroffers is similar

[7]The distinction between workers who quit their previous job and other workers is based on question JH2, which asks all workers employed at the time of the survey about their employment status before starting the current job. The second row uses workers who chose the following option: "I was employed when I got hired and quit my previous job". The third row uses workers who chose other options, e.g., "I was employed when I got hired but was about to lose my previous job", "I was employed when I got hired but a temporary or seasonal job ended", and "I was employed when I got hired and kept my previous job".

Table 7: Incidence of Counteroffers from Previous Employers

	Obs.	Matched	Promotion	↑ Pay	↑ Benefits	None
All	403	11.2	4.5	9.1	2.2	87.4
Quit the previous job						
Yes	238	10.9	4.0	10.5	2.5	85.8
No	161	12.2	5.6	7.0	1.7	89.6
Employment status at the time of the best offer						
Full-time	272	13.4	5.8	10.5	2.6	85.9
Part-time	131	6.8	2.0	6.3	1.3	90.2
Worker characteristics						
Age ≤ 40	235	10.0	5.7	6.6	2.6	87.9
Age > 40	168	12.7	3.0	12.3	1.6	86.7
Men	165	14.4	2.7	11.3	3.2	86.5
Women	238	8.8	5.8	7.5	1.4	88.0
Bachelor's degree: Yes	284	11.8	7.3	11.0	3.6	85.2
Bachelor's degree: No	119	10.6	1.6	7.1	0.6	89.7
White	312	12.4	3.7	9.0	1.7	87.8
Non-white	91	7.8	6.8	9.5	3.6	86.1
Characteristics of the previous employer						
Sector: Public	67	8.5	7.0	6.4	1.3	90.7
Sector: Private	234	12.6	3.4	11.0	2.4	85.9
Size < 100	111	8.7	2.6	5.9	1.4	92.9
Size ≥ 100	190	13.6	5.2	12.6	2.7	83.1

Notes: This table uses workers who accepted the best offer received in either the last 4 weeks or the last 6 months and were employed when their best offer was received. Columns titled *Matched*, *Promotion*, ↑ *Pay*, ↑ *Benefits* and *None* report the percentage of workers whose previous employer responded to the worker's best offer by matching the wage, offering a promotion, offering an increase in pay, offering an increase in benefits and offering nothing, respectively. *Matched* is from one question and the last four columns are from another question, where a worker could choose more than one of the first three options (*Promotion*, ↑ *Pay*, ↑ *Benefits*), so that the sum of the last four columns in each row may exceed 100. The number of observations reported in the the first column is affected by missing values of relevant characteristics given by the row titles.

between the two groups of workers. This suggests that little is lost by pooling the two groups together for a larger sample size.

The remaining rows suggest that counteroffers are more prevalent among workers who were employed full-time when the offer was received, older workers, men, workers with a bachelor's degree and white workers. On the other hand, counteroffers are less prevalent when the previous employer is the government or has fewer than 100 employees. Most of the differences, however, are relatively small.

In all cases, the fraction of workers whose previous employer matched the wage of their best offer is below 15% (second column), and the fraction of workers whose previous employer made no counteroffer is above 83% (last column). This suggests that counteroffers are not common even among job-to-job transitions. The low incidence of counteroffers suggests that some job-to-job transitions are inefficient. This is consistent with Carry and Schoefer (2024) and Davis and Krolikowski (2025), who find that many jobs are terminated inefficiently because workers and firms do not engage in efficient negotiations.

5.1 Counteroffers, Monopsony Power and Bargaining

Although not common, the presence of a counteroffer could have a significant impact on a worker's wage. Among the 9.1% of workers in the first row of Table 7 who were offered a pay increase, 24 responded to question JS32e listed above and another question about the final wage on the previous job.[8] Figure 1 plots each worker's pay increase as a percentage of his/her final wage on the previous job. The 25th, 50th and 75th percentiles are 6.5%, 21.6% and 38.9%, respectively. These workers could have benefited significantly from counteroffers without switching jobs. Moreover, the evidence suggests that their previous employers have significant monopsony power in the labor market.

The presence of a counteroffer from the incumbent employer could also raise the likelihood that a worker bargains with the prospective employer. Among the 11.2% of workers in the first row of Table 7 whose previous employer matched the wage offer from the current employer, 49.9% bargained with the current employer before accepting the offer. This is significantly higher than the value of 31.4% among the remaining workers whose previous employer did not match the wage offer from the current employer. As mentioned above, this is one channel through which a counteroffer from the previous employer could affect a worker's wage with the current employer.

[8]The question is JH10: "*Please give your best estimate of how much you made, before taxes and other deductions, AT THE TIME YOU LEFT your previous job / at your previous job JUST PRIOR TO STARTING YOUR CURRENT JOB. Please include any bonuses, overtime pay, tips or commissions.*"

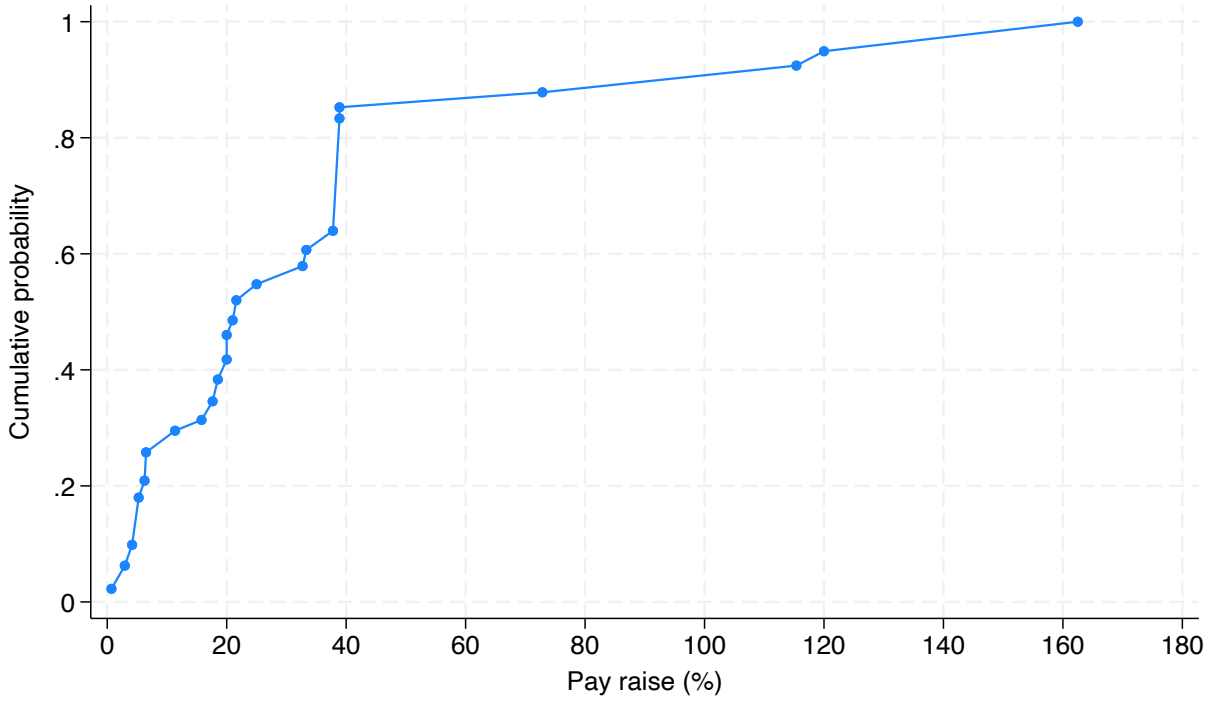


Figure 1: Pay Increases from Counteroffers

5.2 Counteroffers, Labor Market Tightness and Wages

Table 8 reports estimates of equations (5) to (7), where the full set of controls in $X_{i,t}$ are included in all columns, and $c_{i,t}$ is set to one if worker i chose the first option to question JS32a and zero otherwise. Most estimates are not statistically different from zero, which could be due to the relatively small number of observations. With this caveat in mind, the estimate of $\alpha_c = 0.094$ in the first column suggests that firms are more likely to make counteroffers when the labor market is tight. This is consistent with the finding by Caldwell et al. (2025a) that, in response to an incumbent employee who "receives an external offer from another company and requests a salary increase", German firms are more likely to raise the wage if the employee is in a "hard-to-fill bottleneck occupation".

The estimate of $\gamma_c = 0.181$ in the second column suggests that a counteroffer from the previous employer is positively correlated with the starting wage at the current employer. The estimate of $\lambda_1 = 0.330$ and more noisy estimate of $\lambda_3 = -0.382$ in the last column suggest that the positive estimate of γ_c is mainly due to the equilibrium effect where the current employer responded to a potential counteroffer from the previous employer preemptively with a higher initial wage offer $\hat{y}_{i,t}$ rather than reactively through bargaining ($b_{i,t}D_{i,t}$). An important direction for future work is to estimate these parameters again when there are

Table 8: Counteroffers, Labor Market Tightness and Wages

	Counteroffer	Log hourly wage	
Vacancies per unemployed	0.094	0.106	0.080
	(0.132)	(0.200)	(0.195)
Counteroffer		0.181	0.330
		(0.117)	(0.175)
Bargained			0.254
			(0.077)
Bargained × Counteroffer			-0.382
			(0.274)
Additional controls	Yes	Yes	Yes
Observations	370	311	311

Notes: This table uses workers who accepted the best offer received in either the last 4 weeks or the last 6 months and were employed when the best offer was received. *Counteroffer* is an indicator that equals one if the worker's employer at the time of the best offer matched the wage of that offer. This indicator is the dependent variable in the first column and the key independent variable in the last two columns, where the dependent variable is the log hourly wage of the best offer. *Bargained* is an indicator that equals one if the worker bargained with the firm making the best offer. Additional controls include characteristics of the worker and the best offer. See the main text for details. Robust standard errors are in the parentheses.

more observations in JSS or other surveys.

6 Worker Beliefs About Counteroffers

As mentioned above, the incidence of counteroffers associated with accepted offers is likely a lower bound of the share of firms that are willing to make a counteroffer. Qualitatively, the value of 11.2% for the former estimated in the previous section is consistent with the value of 41.3% for the latter estimated in Barron et al. (2006). The question is whether the two estimates are consistent with each other quantitatively under perfect information.

This section provides suggestive evidence that (1) counteroffers are rare partly because employed workers do not ask for them in the first place; (2) employed workers do not ask for counteroffers because they do not believe their employer would meet their request; and (3) worker beliefs about counteroffers are informative but likely imperfect.

All employed workers, irrespective of whether they have received an offer (in either the last 4 weeks or the last 6 months), are asked the following questions about counteroffers:

- JS35a [All wage and salary earners, including on layoff]: "*Suppose you were offered a*

job in the same line of work and location and with the same benefits as your current job. If the job offered a 10% higher salary than your current job, would you ask your current employer for a promotion or pay increase?"

- JS35bnew [Follow up, if JS35a = 1 (yes)]: "*What do you think is the percent chance that your current employer would match the outside offer in terms of the pay increase?*"

Table 9 reports worker responses to the two questions. The first column reports the number of observations. The second column reports the percentage of workers who answered yes to question JS35a. The last three columns report the 25th, 50th and 75th percentiles of the answer to question JS35bnew.

The first row shows that 55.9% of employed workers would ask their employer for a promotion or pay increase, which means that over 40% of employed workers would *not* ask their employer for a promotion or pay increase even after receiving an outside offer with a 10% higher salary. These workers would not receive a counteroffer from their employer.

The last three columns in the first row show that, among workers who would ask their employer for a promotion or pay increase, 25% believe that the chance their employer would match the outside offer is 10% or less, 50% believe the chance is 40% or less, and 75% believe the chance is 50% or less. This suggests that even most workers who would ask for a promotion or pay increase are not optimistic about getting their offer matched, which is consistent with the lack of counteroffers documented in the previous section.

The next two rows focus on workers whose current job results from their best offer received in either the last 4 weeks or the last 6 months. These workers are broken into two groups according to whether they had bargained with their employer over the pay at the start of the job (question JS31d). Relative to workers who did not bargain, workers who bargained with their employer at the start of the job are more likely to ask for a promotion or pay increase after receiving an outside offer with a 10% higher salary and, conditional on asking, they expect a higher chance that their employer would match the outside offer. This suggests that worker beliefs about counteroffers from their current employer reflect their bargaining experience at the start of the job.

The remaining rows show that the fraction of workers who would ask for a promotion or pay increase is higher among younger workers, full-time workers, workers in the private sector and workers in firms where no employee is part of a union. In comparison, the differences by gender, education, race and employer size are relatively small.

Overall, estimates in the second column are always below 63%, and estimates in the last column are never above 60%. This suggests that an important reason for the lack of counteroffers is because many workers do not ask for them, which in turn is because most

Table 9: Worker Beliefs About Counteroffers by Current Employers

			Percentile of expected chance of matching (%)		
	Observations	Ask (%)	25th	50th	75th
All	5800	55.9	10.0	40.0	50.0
Bargained at the start of the job					
Yes	623	56.8	20.0	49.0	58.0
No	959	51.6	9.0	25.0	50.0
Worker and employer characteristics					
Age ≤ 40	2542	62.2	15.0	40.0	55.0
Age > 40	3258	51.1	10.0	33.0	50.0
Men	2928	55.7	13.0	49.0	60.0
Women	2871	56.1	10.0	30.0	50.0
Bachelor's degree: Yes	3620	54.1	17.0	49.0	60.0
Bachelor's degree: No	2180	57.1	10.0	31.0	50.0
White	4586	56.6	10.0	40.0	50.0
Non-white	1204	53.4	10.0	35.0	50.0
Employed: Full-time	5086	57.5	10.0	40.0	51.0
Employed: Part-time	683	46.1	10.0	25.0	50.0
Sector: Public	1570	45.2	5.0	20.0	50.0
Sector: Private	4230	59.5	14.0	49.0	57.0
Union: Yes	1267	44.9	5.0	24.0	50.0
Union: No	3754	59.1	11.0	40.0	51.0
Employer size < 100	1627	58.2	20.0	49.0	60.0
Employer size ≥ 100	4170	54.8	10.0	32.0	50.0

Notes: This table uses all wage and salary earners (first row) and sub-samples indicated by the row titles. Column *Ask* reports the percentage of workers who would ask their employer for a promotion or pay increase after receiving an outside offer with a 10% higher salary and the same other characteristics as the current job. Focusing on this subset of workers, the last three columns report the 25th, 50th and 75th percentiles of the expected chance that their employer would match the outside offer.

workers do not expect their employer to meet their request. This is consistent with Brown and Medoff (1996), who asked a sample of employed workers "whether their employer would be likely to match an outside offer (at a 10 percent higher wage) for a good worker". 31.5% of the respondents thought their employer would match, and the fraction declines weakly with the employer's size, which is consistent with the last two rows of Table 9. The only other characteristic considered by Brown and Medoff (1996) is the employer's age, which is not significantly correlated with a worker's belief about offer matching.

6.1 Are Worker Beliefs Informative?

As shown previously, work beliefs about counteroffers from their current employer reflect their bargaining experience at the start of the job. This suggests that worker beliefs about counteroffers are informative, assuming firms that bargain with their prospective employees are also more likely to make counteroffers for their incumbent employees.

Barron et al. (2006) report differences in four characteristics between firms willing to make a counteroffer for their incumbent employee hired within the prior 2 years and firms unwilling to make a counteroffer. They find that the former are on average smaller (1.35 vs 2.02 thousand employees) and less likely to have a union (3.2% vs 16.5%), and their employee hired within the prior 2 years are younger (30.4 vs 32.4 years old). On the other hand, there is little difference in the employee's years of schooling (13.4 vs 13.2). Qualitatively, these differences are consistent with the corresponding differences in worker beliefs reported in Table 9. This further suggests that worker beliefs about counteroffers are informative.

6.2 Worker Beliefs and Labor Market Tightness

Differences between the firm survey used by Barron et al. (2006) and the worker survey used in this paper make it difficult to evaluate whether worker beliefs are accurate in levels. To make progress, I estimate the response of worker beliefs to labor market tightness and compare the estimate with the response of firm policy documented in Caldwell et al. (2025a).

Specifically, I estimate ρ in the following equation

$$m_{i,t} = \rho T_{s(i,t),t} + Z_{i,t}\theta + \eta_{i,t} \tag{8}$$

where $m_{i,t}$ is either a dummy that equals one if worker i responded positively to question JS35a in year t, or the response of worker i to question JS35bnew in year t. $T_{s(i,t),t}$ is the number of vacancies per unemployed worker in the worker's state of residence $s(i,t)$ in October (the survey month) of year t. $Z_{i,t}$ is a vector of controls that are almost the same

as the vector $X_{i,t}$ described above. Both include the same set of worker characteristics. The only difference is that, for each characteristic of the best offer included in $X_{i,t}$, $Z_{i,t}$ replaces it with the corresponding characteristic of the worker's current job. For example, instead of fixed effects for the occupation and industry of the best offer, $Z_{i,t}$ includes fixed effects for the occupation and industry of the worker's current job. $\eta_{i,t}$ is the error term.

Table 10 reports the results. The first two columns use all employed workers, where the dependent variable is the dummy that equals one if worker i responded positively to question JS35a in year t. The last two columns use the subset of workers who responded positively to question JS35a, and the dependent variable is each worker's response to question JS35bnew. Columns 1 and 3 control for state and year fixed effects only, while columns 2 and 4 control for the full set of variables in $Z_{i,t}$.

Table 10: Worker Beliefs About Counteroffers and Labor Market Tightness

	Worker ask		Employer match	
Vacancies per unemployed	0.024	0.013	1.764	3.101
	(0.048)	(0.049)	(3.575)	(3.730)
State fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Additional controls		Yes		Yes
Observations	5800	5388	3141	2908

Notes: The first two columns use all employed workers (except those with missing values for some characteristics). The dependent variable is a dummy that equals one if a worker would ask his/her current employer for a promotion or pay increase after receiving an outside offer with a 10% higher salary and the same other characteristics as the current job. The last two columns use the subset of workers for whom the dependent variable in the first two columns is equal to one. The dependent variable is a worker's belief of the chance (from 0 to 100) that his/her employer would match the wage of the outside offer. Additional controls include characteristics of each worker and his/her current job. See the main text for details. Robust standard errors are in the parentheses.

None of the four estimates of ρ is significantly different from zero. This suggests that worker beliefs about counteroffers do not vary significantly with labor market tightness. Assuming firms are more likely to make counteroffers when the labor market is tight (Caldwell et al., 2025a), the insignificant estimates suggest that worker beliefs are imperfect, which could contribute to the lack of counteroffers documented in the previous section.

As mentioned in the Introduction, evidence from Cullen et al. (2025) suggests that job seekers tend to underestimate their prospective employer's willingness to bargain over the starting wage. It is likely that employed workers also underestimate their current employer's

willingness to make a counteroffer. In this case, providing workers with correct information could potentially improve their labor market outcomes.

7 Conclusion

Conceptually, a firm's wage policy reflects its labor market power and affects its current, prospective and even past employees. Ignoring mixed strategies, a firm could choose one of four wage policies: (1) bargain with prospective employees and make counteroffers for incumbent employees if necessary; (2) bargain with prospective employees but not make counteroffers for incumbent employees; (3) make counteroffers for incumbent employees if necessary but not bargain with prospective employees; and (4) neither bargain with prospective employees nor make counteroffers for incumbent employees.

Empirically, this paper finds that the incidence of bargaining is about one third among all offers, while the incidence of counteroffers is lower at about 11% among job-to-job transitions. These equilibrium outcomes could be interpreted in multiple ways.

One interpretation is that some firms choose the first two policies, but majority choose the last one. In this case, it is optimal for most employed workers to neither ask for nor expect a counteroffer from their employer.

Another interpretation is that most firms choose the first policy, as suggested by Caldwell et al. (2025a), but they do not bargain or make counteroffers frequently in practice because most workers do not ask them to bargain or make a counteroffer, which could happen if most workers *underestimate* the chance that their prospective or current employer will meet their request, as suggested by Cullen et al. (2025). Two related interpretations are that (1) most firms choose the second policy, and workers only underestimate their prospective employer's willingness to bargain with them; and (2) most firms choose the third policy, and workers only underestimate their current employer's willingness to make a counteroffer.

Finally, it is also possible that most firms use mixed strategies, e.g., they may only bargain with some prospective employees and make counteroffers for some incumbent employees when the labor market is tight.

An important direction for future work is to quantify the fraction and identify the characteristics of firms using each policy. This is critical for evaluating the accuracy of worker beliefs, the effectiveness of policies related to information provision, and the impact of different wage policies on labor market outcomes.

One approach is to survey a representative sample of matched employers and employees, where each employer is asked about its wage policy as in Barron et al. (2006) and Caldwell et al. (2025a), and each employee is asked about their experience of and beliefs about bargaining

and counteroffers as in the survey used in this paper. The data would allow us to estimate (1) to what extent each firm's wage policy is enforced in practice by comparing the wage policy reported by the firm with the experience reported by its employees; (2) whether and to what extent worker beliefs are biased by comparing each worker's belief about his/her employer's wage policy with the policy reported by the employer; (3) sorting between employer policy and employee beliefs and the resulting impact on other labor market outcomes.

References

Agan, Amanda Y, Bo Cowgill, and Laura K Gee, "Salary history and employer demand: Evidence from a two-sided audit," *American Economic Journal: Applied Economics*, 2025, *17* (3), 380–413.

Armantier, Olivier, Giorgio Topa, Wilbert Van der Klaauw, and Basit Zafar, "An overview of the Survey of Consumer Expectations," *Economic Policy Review*, 2017, pp. 51–72.

Azar, José and Ioana Marinescu, "Monopsony power in the labor market," in "Handbook of Labor Economics," Vol. 5, Elsevier, 2024, pp. 761–827.

_ and _ , "Monopsony power in the labor market: From theory to policy," *Annual Review of Economics*, 2024, *16* (1), 491–518.

Barron, John M, Mark C Berger, and Dan A Black, "Selective counteroffers," *Journal of Labor Economics*, 2006, *24* (3), 385–409.

Beaudry, Paul, David A Green, and Benjamin Sand, "Does industrial composition matter for wages? A test of search and bargaining theory," *Econometrica*, 2012, *80* (3), 1063–1104.

Biasi, Barbara and Heather Sarsons, "Flexible wages, bargaining, and the gender gap," *The Quarterly Journal of Economics*, 2022, *137* (1), 215–266.

Bils, Mark J, "Real wages over the business cycle: evidence from panel data," *Journal of Political Economy*, 1985, *93* (4), 666–689.

Brenzel, Hanna, Hermann Gartner, and Claus Schnabel, "Wage bargaining or wage posting? Evidence from the employers' side," *Labour Economics*, 2014, *29*, 41–48.

Brown, Charles and James L Medoff, "Employer characteristics and work environment," *Annales d'économie et de statistique*, 1996, pp. 275–298.

Burdett, Kenneth and Dale T Mortensen, "Wage differentials, employer size, and unemployment," *International Economic Review*, 1998, pp. 257–273.

Cahuc, Pierre, Fabien Postel-Vinay, and Jean-Marc Robin, "Wage bargaining with on-the-job search: Theory and evidence," *Econometrica*, 2006, *74* (2), 323–364.

Caldwell, Sydnee and Nikolaj Harmon, "Outside options, bargaining, and wages: Evidence from coworker networks," 2019.

_ **and Oren Danieli**, "Outside Options in the Labour Market," *Review of Economic Studies*, 2024, p. rdae006.

_ **, Ingrid Haegele, and Jörg Heining**, "Bargaining and inequality in the labor market," *The Quarterly Journal of Economics*, 2025.

_ **,** _ **, and** _ , "Firm Pay and Worker Search," Working Paper, National Bureau of Economic Research 2025.

Card, David, "Who set your wage?," *American Economic Review*, 2022, *112* (4), 1075–1090.

_ **, Ana Rute Cardoso, and Patrick Kline**, "Bargaining, sorting, and the gender wage gap: Quantifying the impact of firms on the relative pay of women," *The Quarterly Journal of Economics*, 2016, *131* (2), 633–686.

_ **,** _ **, Joerg Heining, and Patrick Kline**, "Firms and labor market inequality: Evidence and some theory," *Journal of Labor Economics*, 2018, *36* (S1), S13–S70.

Carry, Pauline and Benjamin Schoefer, "Conflict in dismissals," Working paper, National Bureau of Economic Research 2024.

Conlon, John J, Laura Pilossoph, Matthew Wiswall, and Basit Zafar, "Labor market search with imperfect information and learning," Working paper, National Bureau of Economic Research 2021.

Cullen, Zoë, Bobak Pakzad-Hurson, and Ricardo Perez-Truglia, "Pushing the Envelope: The Effects of Salary Negotiations," Working paper, National Bureau of Economic Research 2025.

_ **, Shengwu Li, and Ricardo Perez-Truglia**, "What's My Employee Worth? The Effects of Salary Benchmarking," *The Review of Economic Studies*, forthcoming.

Davis, Steven J and Pawel M Krolikowski, "Sticky wages on the layoff margin," *American Economic Review*, 2025, *115* (2), 491–524.

Dey, Matthew S and Christopher J Flinn, "An equilibrium model of health insurance provision and wage determination," *Econometrica*, 2005, *73* (2), 571–627.

Di Addario, Sabrina, Patrick Kline, Raffaele Saggio, and Mikkel Sølvsten, "It ain't where you're from, it's where you're at: hiring origins, firm heterogeneity, and wages," *Journal of Econometrics*, 2023, *233* (2), 340–374.

Doniger, Cynthia L, "Wage dispersion with heterogeneous wage contracts," *Review of Economic Dynamics*, 2023, *51*, 138–160.

Ellingsen, Tore and Åsa Rosén, "Fixed or Flexible? Wage-setting in Search Equilibrium," *Economica*, 2003, *70* (278), 233–250.

Faberman, R Jason, Andreas I Mueller, Ayşegül Şahin, and Giorgio Topa, "Job search behavior among the employed and non-employed," *Econometrica*, 2022, *90* (4), 1743–1779.

Flinn, Christopher and Joseph Mullins, "Firms' Choices of Wage-Setting Protocols," 2021.

Gertler, Mark and Antonella Trigari, "Unemployment fluctuations with staggered Nash wage bargaining," *Journal of Political Economy*, 2009, *117* (1), 38–86.

_ , Christopher Huckfeldt, and Antonella Trigari, "Unemployment fluctuations, match quality, and the wage cyclicality of new hires," *The Review of Economic Studies*, 2020, *87* (4), 1876–1914.

Gourieroux, Christian, Alain Monfort, and Eric Renault, "Indirect inference," *Journal of Applied Econometrics*, 1993, *8* (S1), S85–S118.

Guo, Junjie, "The Response of Wages to Rejected Offers," *Review of Economics and Statistics*, 2025, pp. 1–46.

_ , "Worker Beliefs About Outside Offers, Wage Setting, Wage Dispersion, and Sorting," Working paper, University of Wisconsin-Madison 2025.

Haefke, Christian, Marcus Sonntag, and Thijs Van Rens, "Wage rigidity and job creation," *Journal of Monetary Economics*, 2013, *60* (8), 887–899.

Hall, Robert E and Alan B Krueger, "Evidence on the determinants of the choice between wage posting and wage bargaining," Working paper, National Bureau of Economic Research 2010.

_ and _ , "Evidence on the incidence of wage posting, wage bargaining, and on-the-job search," *American Economic Journal: Macroeconomics*, 2012, *4* (4), 56–67.

_ and Andreas I Mueller, "Wage dispersion and search behavior: The importance of nonwage job values," *Journal of Political Economy*, 2018, *126* (4), 1594–1637.

Jäger, Simon, Benjamin Schoefer, Samuel Young, and Josef Zweimüller, "Wages and the Value of Nonemployment," *The Quarterly Journal of Economics*, 2020, *135* (4), 1905–1963.

_ , Christopher Roth, Nina Roussille, and Benjamin Schoefer, "Worker beliefs about outside options," *The Quarterly Journal of Economics*, 2024, p. qjae001.

Kline, Patrick M, "Firm wage effects," Working paper, National Bureau of Economic Research 2025.

_ , "Labor market monopsony: Fundamentals and frontiers," Working paper, National Bureau of Economic Research 2025.

Lachowska, Marta, Alexandre Mas, Raffaele Saggio, and Stephen A Woodbury, "Wage posting or wage bargaining? a test using dual jobholders," *Journal of Labor Economics*, 2022, *40* (S1), S469–S493.

Moore, John, "Optimal labour contracts when workers have a variety of privately observed reservation wages," *The Review of Economic Studies*, 1985, *52* (1), 37–67.

Mueller, Andreas I and Johannes Spinnewijn, "Expectations data, labor market, and job search," *Handbook of Economic Expectations*, 2023, pp. 677–713.

_ , _ , and Giorgio Topa, "Job seekers' perceptions and employment prospects: Heterogeneity, duration dependence, and bias," *American Economic Review*, 2021, *111* (1), 324–363.

Pissarides, Christopher A, "The unemployment volatility puzzle: Is wage stickiness the answer?," *Econometrica*, 2009, *77* (5), 1339–1369.

Postel-Vinay, Fabien and Jean-Marc Robin, "Equilibrium wage dispersion with worker and employer heterogeneity," *Econometrica*, 2002, *70* (6), 2295–2350.

_ and _ , "To match or not to match?: Optimal wage policy with endogenous worker search intensity," *Review of Economic Dynamics*, 2004, *7* (2), 297–330.

Rabinovich, Stanislav, Brenda Samaniego de la Parra, and Ronald Wolthoff, "Wage Setting Protocols and Labor Market Conditions: Theory and Evidence," 2025.

Roussille, Nina, "The role of the ask gap in gender pay inequality," *The Quarterly Journal of Economics*, 2024, p. qjae004.

_ and Benjamin Scuderi, "Bidding for talent: A test of conduct in a high-wage labor market," 2024.

Shimer, Robert, "The consequences of rigid wages in search models," *Journal of the European Economic Association*, 2004, *2* (2-3), 469–479.

_ , "The cyclical behavior of equilibrium unemployment and vacancies," *American Economic Review*, 2005, *95* (1), 25–49.

Spinnewijn, Johannes, "Unemployed but optimistic: Optimal insurance design with biased beliefs," *Journal of the European Economic Association*, 2015, *13* (1), 130–167.

Supplemental Appendix for

"Bargaining and Counteroffers in the U.S. Labor Market"

by Junjie Guo, University of Wisconsin - Madison

A Additional Results

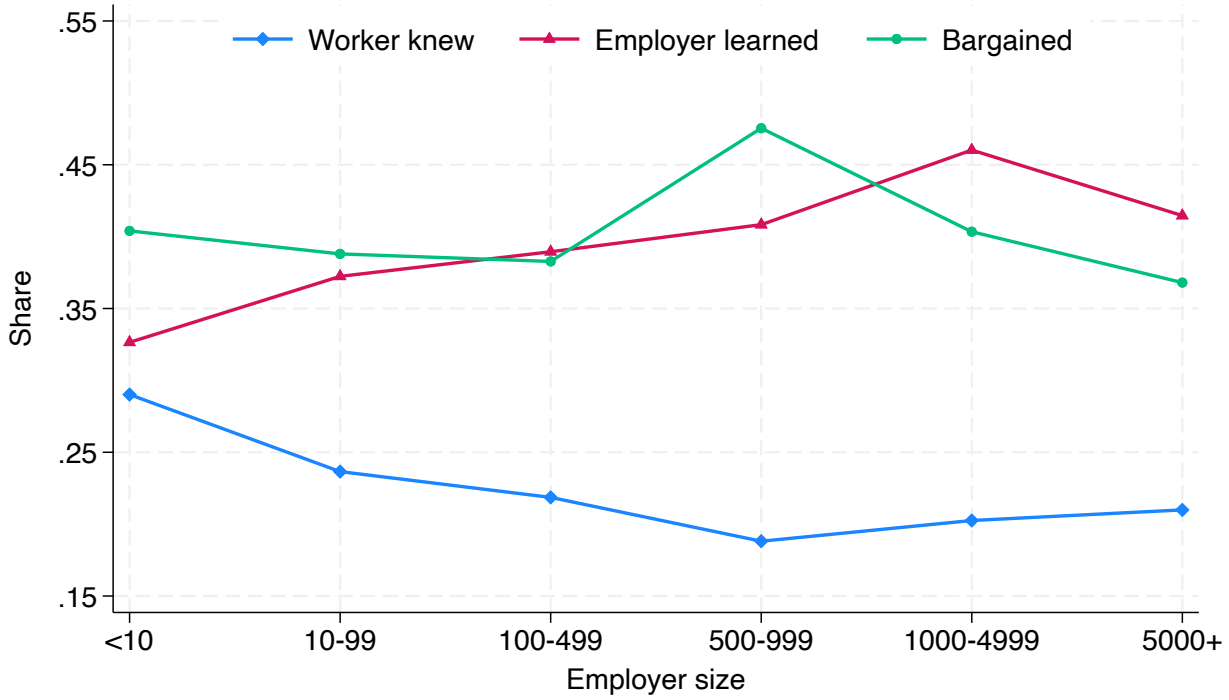


Figure A.1: Incidence of Wage Bargaining by the Size of the Prospective Employer

Notes: This figure uses workers who received at least one offer in either the last 4 weeks or the last 6 months. These workers are broken into six groups based on the number of employees in the firm where a worker received the best offer (horizontal axis). For each group, the vertical axis reports the share of workers who responded positively to each of the following indicators of wage bargaining regarding the best offer: (1) whether the *worker knew* exactly how much the offer would pay when first interviewed for the job, (2) whether the prospective *employer learned* about the worker's current/previous wage before making the offer, and (3) whether the worker *bargained* with the prospective employer over the pay.

Table A.1: Incidence of Wage Bargaining by Offer Characteristics

	Worker knew		Employer learned		Bargained	
	Share	N/(SE)	Share	N/(SE)	Share	N/(SE)
Weekly hours ≥ 30	0.212	1136	0.380	1356	0.392	1371
Weekly hours < 30	0.277	368	0.255	461	0.255	476
Difference	-0.065	(0.024)	0.125	(0.025)	0.137	(0.024)
Occupation: Management	0.217	173	0.352	210	0.494	210
Occupation: Office support	0.347	189	0.349	237	0.304	238
Difference	-0.130	(0.048)	0.003	(0.046)	0.189	(0.046)
Sector: Public	0.274	239	0.387	274	0.246	273
Sector: Private	0.233	1058	0.341	1287	0.373	1311
Difference	0.040	(0.032)	0.045	(0.032)	-0.127	(0.032)
Union: Yes	0.328	203	0.434	227	0.303	225
Union: No	0.227	833	0.379	953	0.380	974
Difference	0.102	(0.034)	0.055	(0.037)	-0.078	(0.036)
Referral: Yes	0.194	558	0.354	664	0.379	680
Referral: No	0.255	954	0.334	1171	0.334	1181
Difference	-0.061	(0.022)	0.020	(0.023)	0.045	(0.023)
Unsolicited: Yes	0.175	284	0.235	454	0.412	456
Unsolicited: No	0.244	1228	0.373	1381	0.333	1405
Difference	-0.069	(0.029)	-0.138	(0.026)	0.079	(0.026)

Notes: This table uses workers who received at least one offer in either the last 4 weeks or the last 6 months. Each of the three main column titles, e.g., *Worker knew*, is a different indicator of wage bargaining for the best offer received by a worker. For each bargaining indicator, the *Share* column reports either the fraction of workers for whom the indicator is one, or the difference in the fraction between the relevant groups. The *N/(SE)* column reports either the number of observations without parentheses or the standard error of the difference between relevant groups in parentheses. The row titles indicate characteristics of the best offer received by a worker, or characteristics of the firm making the offer.

Table A.2: Incidence of Wage Bargaining by the Timing and Number of Offers

	Worker knew		Employer learned		Bargained	
	Share	N/(SE)	Share	N/(SE)	Share	N/(SE)
Last 4 weeks: Yes	0.240	490	0.303	620	0.367	631
Last 4 weeks: No	0.228	1022	0.364	1215	0.341	1230
Difference	0.012	(0.023)	-0.061	(0.023)	0.026	(0.023)
Last 4 weeks: One offer	0.174	331	0.311	417	0.347	424
Last 4 weeks: Multiple	0.372	159	0.288	203	0.405	207
Difference	-0.199	(0.040)	0.023	(0.039)	-0.058	(0.040)
Last 6 months: One offer	0.220	601	0.376	713	0.317	719
Last 6 months: Multiple	0.239	421	0.347	502	0.375	511
Difference	-0.019	(0.027)	0.029	(0.028)	-0.058	(0.027)

Notes: This table uses workers who received at least one offer in either the last 4 weeks or the last 6 months. Each of the three main column titles, e.g., *Worker knew*, is a different indicator of wage bargaining for the best offer received by a worker. For each bargaining indicator, the *Share* column reports either the fraction of workers for whom the indicator is one, or the difference in the fraction between the relevant groups. The *N/(SE)* column reports either the number of observations without parentheses or the standard error of the difference between relevant groups in parentheses. The row titles indicate the timing and number of offers received by a worker.