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Abstract

Non-compete agreements (NCAs) are pervasive even in low-wage labor markets, yet most evidence relies on variation in enforceability rather than NCA incidence. Using longitudinal data from the NLSY97, we study how signing an NCA affects wage trajectories and job tenure. Exploiting complete work histories and applying a clean-controls local projections difference-in-difference design, we find a striking divergence: NCAs are associated with significantly slower wage growth for low-education workers over four years, but faster wage growth for high-education workers. Effects on job tenure are imprecisely estimated for both groups.

Keywords: Non-Compete Agreements, Low-Wage Labor Markets, Local Projection Difference-in-Difference

JEL Classification: J31, J41, J62, K31

The Impact of Non-Competes on Wages and Job Tenure: New Evidence from NLSY Data

By Tristan Potter and André Kurmann and Bart Hobijn*

Non-compete agreements (NCAs) are a pervasive feature of labor contracts—even in low-wage labor markets—and a growing body of research examines the effects of NCAs on wages and job mobility. Most of these studies exploit state-level differences in NCA enforceability rather than variations in NCA incidence. This approach may miss important effects since NCA use remains substantial even in states with weak or no enforceability (Starr, Prescott and Bishara, 2021), and workers often comply with NCAs regardless of enforceability due to uncertainty about legal status or fear of litigation (Marx, 2011; Prescott, Bishara and Starr, 2016).

In this paper, we use data from the National Longitudinal Survey of Youth 1997 (NLSY97) to study the effects of NCA incidence on wages and job tenure for both low- and high-education workers. To identify these effects, we exploit the complete work histories available in the NLSY97, which allows us to compare job-to-job transitions of workers with an NCA status change to transitions of workers without a change. We apply the “clean controls” local projections difference-in-differences (LP-DiD) methodology recently proposed by Dube et al. (2025), thus addressing concerns about staggered treatment adoption and heterogeneous effects across treatment cohorts that arise with standard two-way fixed effect models.

We document a striking divergence in how NCAs affect workers across education levels. For low-education workers, signing an NCA is associated with significantly slower wage growth over the subsequent four years and no significant (although imprecisely estimated) effect on job tenure. In contrast, for high-education workers, signing an NCA has a positive effect on both wage growth and on job tenure (as for low-education workers, this latter effect is imprecisely estimated).

This heterogeneity in results is critical for the active policy debate on the proliferation of NCAs. The central question is whether NCAs address incomplete contracting problems—specifically, the protection of firm-specific human capital investment—or whether they reflect labor market frictions that firms exploit to reduce workers’ outside option and wages. Our findings suggest that while this “investment” defense of NCAs may apply for high-skill professionals, it does not appear to hold for low-education workers.

Our work contributes to the existing empirical literature on NCAs. Like Starr (2019) and Lipsitz and Starr (2022), we find that NCA enforceability impacts wages of low-education workers negatively. This contrasts with Johnson, Lavetti and Lipsitz (2024) who estimate that the negative wage effects of NCA enforceability are concentrated among college-educated workers. The differences suggest that the effects of changes in NCA enforceability may be context-specific and that NCA incidence may operate through a distinct channel, potentially reflecting behavioral responses or uncertainty about legal rights on part of workers. Our work also relates to Rothstein and Starr (2022), who use the 2017 cross-section of the NLSY97 to examine the relationship between NCAs and wages and find positive correlations that are, however, highly sensitive to controls, suggesting selection. We build on their analysis by exploiting the entire NLSY97 panel with information on NCA incidence, filtering out time-

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invariant worker heterogeneity and tracing out the dynamic effects on wages and job tenure up to four years after job-to-job transition.

Empirical Design

Identifying the causal effect of NCAs is challenging because NCA incidence is not random: workers with different abilities may be more or less likely to select into jobs with NCAs, and these jobs may come with different characteristics. Our strategy attempts to overcome at least part of these concerns by exploiting worker histories to filter out time-invariant worker heterogeneity. Rather than comparing wage levels across workers, we compare the wage trajectories of job changers who transition into (or out of) an NCA job against a control group of job changers with the same NCA status prior to the transition but whose NCA status remains unchanged.

To implement this design, we use the “clean controls” LP-DiD methodology proposed by Dube et al. (2025). This approach is well-suited to our setting because workers transition into and out of NCAs at different times, and the resulting wage effects may vary across workers and horizons. In such environments, standard two-way fixed effects DiD models can be biased, since they implicitly compare already-treated workers to newly treated ones and average heterogeneous effects in problematic ways. The “clean controls” LP-DiD methodology avoids these issues by comparing each transition only to workers with the same baseline NCA status whose treatment does not change, thereby delivering unbiased estimates.

Formally, for transition i occurring at time t , we estimate the cumulative change in log wages at various horizons h using the specification:

$$(1) \quad \ln(w_{it+h}) - \ln(w_{it-1}) = \beta_h \Delta NCA_{it} + \gamma_h NCA_{it-1} + \delta_{ht} + \varepsilon_{hit}$$

where NCA_{it} is an indicator equal to 1 if the job is subject to a non-compete and 0 otherwise and we require that $NCA_{it} = NCA_{it+j} \forall j \in \{1, \dots, h\}$. The treatment variable is defined as the change in status, $\Delta NCA_{it} \equiv NCA_{it} - NCA_{it-1}$, taking the value 1 for workers transitioning into an NCA job, -1 for those leaving one, and 0 for those whose status is unchanged. For job tenure, we estimate the same regression using an indicator for a job-to-job transition at horizon h , conditional on remaining in the post-transition job.

The coefficients of interest, $\{\beta_h\}$, map the dynamic wage response to signing an NCA. Specifically, β_0 identifies the transition compensating wage differential—the change in wages realized around the transition. A positive β_0 would be consistent with competitive models where workers demand an upfront premium to accept restricted future mobility. Estimates for $h > 0$ capture the subsequent wage trajectory: a positive gradient would support the hypothesis that NCAs foster human capital investment and faster wage growth, while a negative gradient suggests that the loss of outside options suppresses earnings power over time. Finally, estimates for $h < 0$ serve as a placebo test to ensure there are no differential pre-trends in wage growth between treated and control workers prior to the transition. The control γ_h accounts for differential wage growth trends based on the initial job’s NCA status, while δ_{ht} captures transition-year fixed effects.

The intuition behind this specification relies on the interaction between the treatment variable ΔNCA_{it} and the control for the initial job’s status, NCA_{it-1} . By including the baseline status, we ensure that identification comes strictly from comparing workers with the same starting point. Specifically, we compare workers moving Non-NCA \rightarrow NCA against those moving Non-NCA \rightarrow Non-NCA; and workers moving NCA \rightarrow Non-NCA against those moving NCA \rightarrow NCA. This, together with the requirement that NCA status not change after the transition, satisfies the “clean controls” condition, ensuring that the control group for a treated worker is not contaminated by prior or future treatments.

The key identifying assumption is that, conditional on the prior job’s NCA status and the timing of the transition, the specific destination—whether the new job has an NCA or

not—is quasi-random with respect to potential outcomes. While our baseline model imposes symmetry (assuming the effect of entering an NCA is the inverse of leaving one), we also estimate specifications that relax this restriction by analyzing transitions into and out of NCAs separately. In addition, we assess the robustness of our estimates to controlling for changes in the job changers’ occupation and industry.

Data

Implementing the empirical design requires longitudinal data on individual work histories, including the timing of job-to-job transitions, wages before and after those transitions, and the NCA status of both origin and destination jobs. The NLSY97, a longitudinal survey of 8,984 U.S. men and women born between 1980 and 1984, is well suited to this purpose. The survey was conducted annually from 1997 to 2011 and biennially thereafter. In each wave, respondents report information on all jobs held since the previous interview, and jobs can be linked consistently across waves. Beginning in 2017, respondents were asked whether each job was subject to an NCA. We combine this information with job-level data on wages, tenure, and other characteristics. The NLSY97 also tracks educational attainment, which we use to stratify the analysis into low-education (less than a four-year college degree) and high-education (four-year degree or more) subsamples.

A job-to-job transition occurs when one job ends and another begins within three months.¹ For each transition, we construct panels containing all observed wages in the ending job prior to the transition and all subsequent wages in the worker’s main jobs (both the initial post-transition job and any subsequent jobs). Importantly, in survey years when a job has ended, we observe both the last wage in the ending job and the current wage in the on-going job, enabling us to identify wage growth around the transition.

Results

Table 1 reports the average (log) hourly wage, wage growth and job tenure by NCA status and education for the retained NLSY97 sample. Consistent with previous evidence (e.g., Starr, Prescott and Bishara, 2021), the share of jobs subject to an NCA is substantial across all jobs but somewhat lower for low-education workers (12 – 13 percent) than high-education workers (17 percent); and jobs covered by NCAs are associated with substantially higher pay: average hourly wages are about 15 percent higher for low-education jobs and 22 percent higher for high-education jobs relative to jobs without NCAs. These differentials primarily reflect sorting of workers with different abilities into systematically different jobs rather than causal effects. If we imposed worker fixed effects and controls for occupation or industry across jobs, the wage gap would shrink substantially and become insignificant. This is why our empirical design focuses on within-worker changes in wages around job transitions that involve changes in NCA status.

Figure 1 presents estimates of regression (1) for log hourly wages of low-education workers (red line) and high-education workers (blue line). The estimates challenge the view that NCAs in low-wage markets serve to protect human capital investments. First, we find no clear evidence of a compensating wage differential at the moment of signing a new job. If workers were trading mobility rights for higher upfront pay, we would expect a positive jump at $t = 0$. Instead, the estimated transition effect (β_0) is statistically indistinguishable from

¹A job is defined as a relationship with a specific employer; so, separations with recall are not used to identify transitions. We additionally require that (i) jobs are regular (excluding self-employment, non-traditional, or military jobs); (ii) are not government jobs/work without pay; and (iii) the new job is the respondent’s current main job. Finally, we restrict the sample to jobs with hourly wages between \$2 and \$250 per hour, at least 30 hours per week are worked, and region is non-missing. These restrictions are similar to the ones imposed by Rothstein and Starr (2022).

Table 1—Wages and Tenure by NCA Status and Education

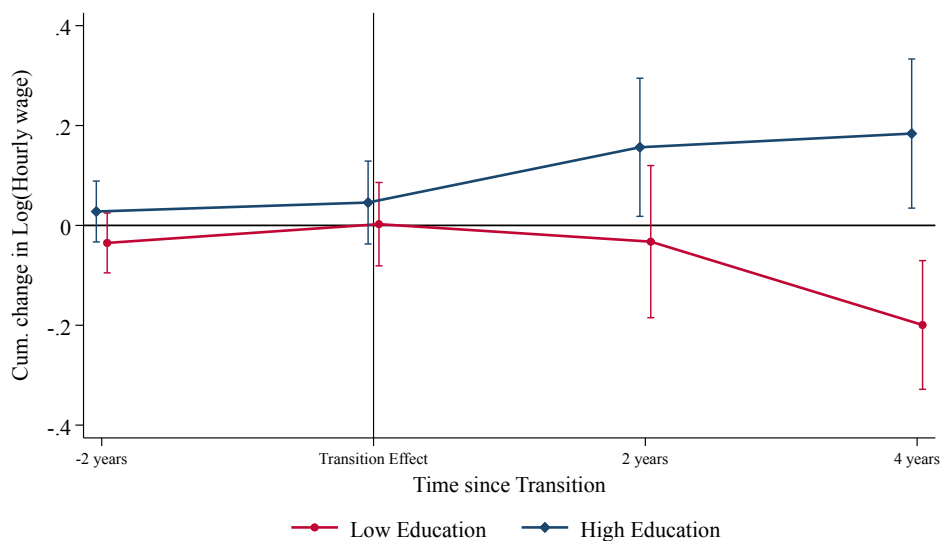
	Low Education			High Education		
	ln(Wage)	Δ ln(Wage)	Tenure	ln(Wage)	Δ ln(Wage)	Tenure
No NCA	2.84	0.06	4.89	3.38	0.06	5.77
NCA	2.99	0.06	5.11	3.60	0.08	5.64
<i>p</i> -value	0.00	0.52	0.35	0.00	0.03	0.63
N	12154	7736	12237	6596	4418	6799
NCA share	0.12	0.13	0.13	0.17	0.17	0.17

Notes: Table reports predicted average log wage, wage growth, and job tenure (years) by NCA status from a regression with year fixed effects using data from survey years 2015, 2017, 2019 and 2021. *p*-value is for a two-sided test of equality between NCA and non-NCA jobs. All estimates use NLSY97 weights and are clustered at the worker level.

zero although this estimate is surrounded by considerable uncertainty.²

Second, and more strikingly, the negative estimate for β_4 indicates that workers who signed an NCA in their new job experience significantly slower wage growth over the next four years relative to their unrestricted counterparts. This downward trajectory is consistent with a mechanism whereby NCAs reduce a worker's outside options, thus eroding their bargaining power and suppressing wage growth.

Figure 1. Differential Wage Growth Around Job-to-Job Transitions



Notes: The figure shows estimated wage growth effects for job-to-job transitioners that sign an NCA relative to transitioners that do not sign an NCA. β_{-2} represents the effect over the two years prior to the transition; β_0 the transition effect; and β_2 and β_4 the cumulative effect two and four years post-transition. The whiskers represent the associated 95% confidence intervals clustered at the worker level.

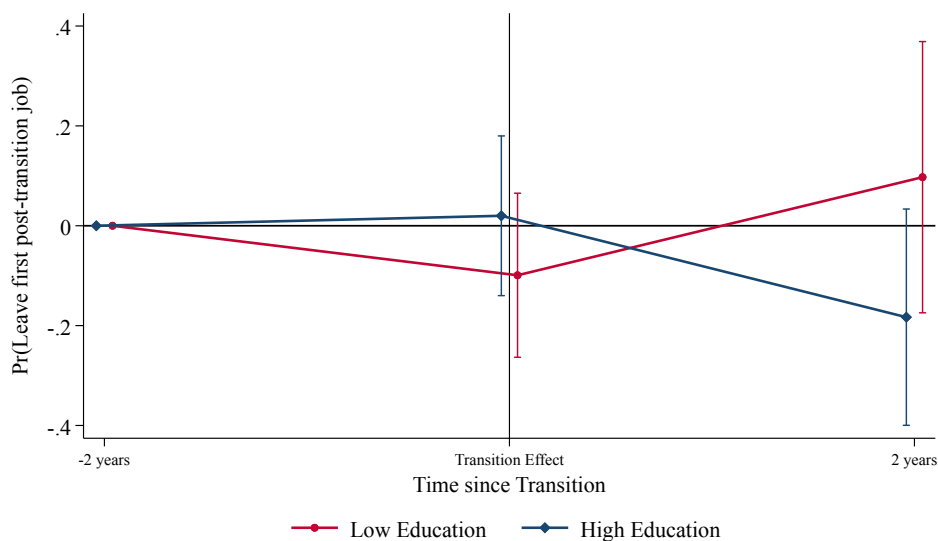
The estimates for high-education workers display a different pattern. While there is only

²Importantly, the estimate for β_{-2} is also close to zero and insignificant, indicating that there are no differential pre-trends in wage growth prior to the transition, which provides support for our identification strategy.

a small and imprecisely estimated differential at the time of signing, high-education workers who sign an NCA experience significantly higher wage growth over time than their counterparts in jobs without an NCA. These results suggest that, contrary to low-education labor markets, NCAs in high-skill labor markets operate differently—potentially coexisting with genuine firm-specific human capital investments rather than acting purely as a tool for rent extraction.³

Figure 2, finally, turns to job tenure. There is no conclusive evidence that NCAs materially affect workers’ probability of leaving their job, either for high- or low-educated workers. It needs to be noted, however, that the uncertainty surrounding these estimates is substantial and encompasses sizable negative effects as found in some of the other empirical studies mentioned in the introduction.

Figure 2. Differential Exit Hazard After Job-to-Job Transitions



Notes: The figure shows the horizon- h probability of switching to a subsequent job, conditional on remaining in the first post-transition job up to that horizon, for job-to-job transitioners that sign an NCA relative to transitioners that do not sign an NCA. β_0 represents the transition effect; and β_2 the estimate two years post-transition. The whiskers represent the associated 95% confidence intervals clustered at the worker level.

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³We also estimated the same regressions for average hourly compensation, which includes signing bonuses and other forms of non-base earnings. The results are very similar except that for both low- and high-education workers, the estimated wage differential upon signing an NCA is slightly more positive. However, this effect remains insignificant and, for low-education workers with NCAs, is outweighed by the subsequent lower trajectory in hourly compensation. Furthermore, we assessed the robustness of our results with regards to alternative sample restrictions and adding controls for occupation and industry. The estimates remain very similar except that in some cases, the standard errors become somewhat larger. See the replication package for details.

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