

# Cyclical Job Ladders by Firm Size and Firm Wage: Online Appendix

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## APPENDIX B: HIRES AND SEPARATIONS BY FIRM SIZE AND FIRM WAGE

In this Appendix, we dig deeper into the findings of Table 1 in the text, which focused on net job flows, net poaching flows, and net hires from non-employment. Here we investigate the patterns of the underlying hires and separations by firm size and firm wage over the business cycle.

Figures B.1 and B.2 present the estimates for these margins, analogous to Figure 7 in the text. We examine the responsiveness of poaching hires and separations to each of the cyclical indicators in Figure B.1 for the high wage-low wage comparison (left) and the large firm-small firm comparison (right). We also include the cyclical net differential responses that have been discussed above for easy reference. Figure B.2 presents analogous figures for hires to and separations from non-employment. The full set of regression estimates are included in Tables B.1, B.2, B.3., and B.4.

Figure B.1 focuses on poaching hires and separations. A ubiquitous finding is that poaching hires and separations decline in economic slumps and times of high unemployment. This holds for high and low wage firms and large and small firms. However, the hypothesis of a directional job ladder towards high wage and large firms implies that we should observe poaching hires decline more at high wage and large firms while poaching separations decline more at low wage and small firms. For firm wage, this prediction holds up well for the most part. Poaching hires decline much more than poaching separations at high wage firms while poaching separations tend to decline more than poaching hires at low wage firms. These patterns are particularly pronounced during periods of economic contractions.

Patterns by firm size generally do not support this prediction. This is not surprising since we have already found little evidence of a procyclical firm size job ladder. Figure B.1 helps us understand that finding with detail about the

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hires and separation adjustment margins. We find that both large and small firms exhibit broadly similar declines in poaching hires and separations during periods of economic contractions and high unemployment. These broadly similar patterns across firm type are what not one would expect if the firm characteristic defining type were not a good proxy for ranking of firms in terms of the job ladder. That is, consider any firm characteristic that is unrelated to the direction of the job ladder. For that characteristic, poaching hires and separations should decline in contractions and times of high unemployment given the general decline in job-to-job flows at such times. But there should not be a systematic pattern by that characteristic. That is what we find by firm size.

Figure B.2 shows the hires and separation responses for non-employment. It is apparent the non-employment margin is much more relevant during times of economic contractions than times of high unemployment. Focusing on the latter, the greater decline in net non-employment flows for low wage and small firms is driven both by a general tendency for greater declines in hires from non-employment and increases in separations to non-employment at such firms.

TABLE B.1—POACHING HIRES AND SEPARATIONS AND NET DIFFERENTIAL, BY WAGE

Dependent Variable	Deviation from HP Trend			First Difference		
	National	State 1	State 2	National	State 1	State 2
Poaching Hires: High Wage	-0.570*** (0.051)	-0.578*** (0.033)	-0.476*** (0.090)	-0.674*** (0.225)	-0.406*** (0.061)	-0.317*** (0.083)
Poaching Hires: Low Wage	-0.891*** (0.065)	-0.905*** (0.050)	-0.795*** (0.110)	-0.245 (0.395)	-0.366*** (0.080)	-0.555*** (0.116)
Poaching Separations: High Wage	-0.444*** (0.033)	-0.432*** (0.028)	-0.347*** (0.077)	0.297* (0.176)	-0.100** (0.040)	-0.050 (0.056)
Poaching Separations: Low Wage	-1.019*** (0.090)	-1.010*** (0.050)	-0.745*** (0.090)	-1.328*** (0.391)	-0.765*** (0.089)	-0.495*** (0.128)
Net Poaching: High Minus Low	-0.253*** (0.093)	-0.251*** (0.031)	-0.080 (0.077)	-1.460*** (0.157)	-0.706*** (0.080)	-0.205** (0.094)

*Note:* Coefficient on the cyclical variable with standard errors in parentheses. \*, \*\*, \*\*\* indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. “High” indicates that the firm is in the top two quintiles of the wage distribution across firms. “Low” indicates that the firm is in the bottom quintile of the wage distribution across firms. National specification uses national-quarter level data (55 quarters from 1998:Q2-2011Q4), controls for a time trend and uses X-11 seasonal adjustments. State specifications use state-quarter level data (55 quarters and 28 states) and cluster standard errors at the state level. State 1 controls for seasonal dummies and a time trend. State 2 controls for a full set of time dummies for every quarter. Standard errors clustered at the state level.

TABLE B-2—POACHING HIRES AND SEPARATIONS AND NET DIFFERENTIAL, BY SIZE

Dependent Variable	Deviation from HP Trend			First Difference		
	National	State 1	State 2	National	State 1	State 2
Poaching Hires: Large	-0.743*** (0.043)	-0.748*** (0.033)	-0.563*** (0.076)	-0.636** (0.275)	-0.291*** (0.058)	-0.191** (0.078)
Poaching Hires: Small	-0.569*** (0.039)	-0.609*** (0.040)	-0.557** (0.076)	-0.489** (0.217)	-0.524*** (0.088)	-0.635*** (0.118)
Poaching Separations: Large	-0.724*** (0.051)	-0.689*** (0.027)	-0.415*** (0.058)	0.745*** (0.223)	-0.355*** (0.048)	-0.223*** (0.068)
Poaching Separations: Small	-0.601*** (0.046)	-0.617*** (0.037)	-0.478*** (0.057)	-0.761*** (0.272)	-0.392*** (0.058)	-0.218*** (0.077)
Net Poaching: Large Minus Small	-0.051* (0.027)	-0.070*** (0.017)	-0.068 (0.050)	-0.132* (0.086)	0.195** (0.080)	0.448*** (0.116)

*Note:* Coefficient on the cyclical variable with standard errors in parentheses. \*, \*\*, \*\*\* indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. "Small" indicates that a firm has 0-50 employees. "Large" indicates that a business has 500+ employees. National specification uses national-quarter level data (55 quarters from 1998:Q2-2011Q4), controls for a time trend and uses X-11 seasonal adjustments. State specifications use state-quarter level data (55 quarters and 28 states) and cluster standard errors at the state level. State 1 controls for seasonal dummies and a time trend. State 2 controls for a full set of time dummies for every quarter. Standard errors clustered at the state level.

TABLE B.3—NON-EMPLOYMENT HIRES AND SEPARATIONS AND NET DIFFERENTIAL, BY WAGE

Dependent Variable	Deviation from HP Trend		First Difference		
	National	State 1	National	State 1	State 2
Non-Employment Hires: High Wage	0.026 (0.035)	0.007 (0.020)	-0.108*** (0.035)	-0.382*** (0.047)	-0.316*** (0.078)
Non-Employment Hires:Low Wage	-0.157* (0.081)	-0.233*** (0.030)	-0.606*** (0.075)	-1.202*** (0.139)	-1.400*** (0.204)
Non-Employment Separations: High Wage	0.182*** (0.038)	0.142*** (0.028)	-0.133* (0.070)	0.672*** (0.073)	0.171*** (0.060)
Non-Employment Separations:Low Wage	-0.017 (0.081)	-0.083* (0.048)	-0.560*** (0.148)	0.831*** (0.174)	-0.022 (0.124)
Net Non-Emp.: High Minus Low	-0.016 (0.072)	0.016 (0.027)	0.074 (0.114)	0.903*** (0.139)	0.891*** (0.194)

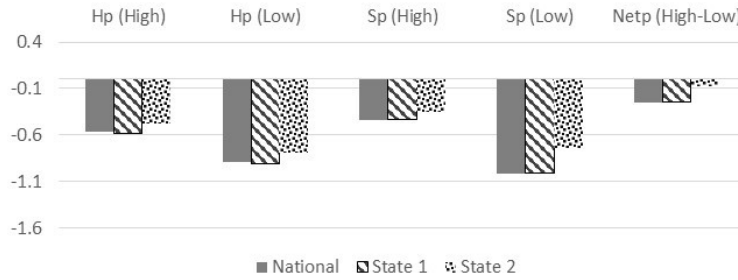
*Note:* Coefficient on the cyclical variable with standard errors in parentheses. \*, \*\*, \*\*\* indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. "High" indicates that the firm is in the top two quintiles of the wage distribution across firms. "Low" indicates that the firm is in the bottom quintile of the wage distribution across firms. National specification uses national-quarter level data (55 quarters from 1998:Q2-2011Q4), controls for a time trend and uses X-11 seasonal adjustments. State specifications use state-quarter level data (55 quarters and 28 states) and cluster standard errors at the state level. State 1 controls for seasonal dummies and a time trend. State 2 controls for a full set of time dummies for every quarter. Standard errors clustered at the state level.

TABLE B.4—NON-EMPLOYMENT HIRES AND SEPARATIONS AND NET DIFFERENTIAL, BY SIZE

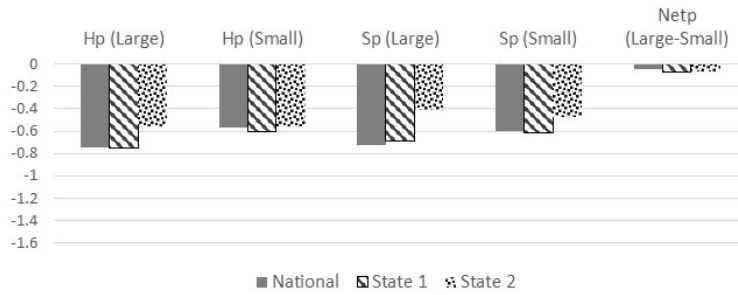
Dependent Variable	Deviation from HP Trend			First Difference		
	National	State 1	State 2	National	State 1	State 2
Non-Employment	-0.128**	-0.144***	-0.238***	-0.824***	-0.534***	-0.342***
Hires: Large	(0.054)	(0.023)	(0.037)	(0.093)	(0.048)	(0.077)
Non-Employment	0.075	-0.007	-0.321***	-0.776***	-1.157***	-1.375***
Hires: Small	(0.050)	(0.033)	(0.094)	(0.079)	(0.137)	(0.209)
Non-Employment	0.026	0.022	-0.160*	0.559***	0.242***	0.042
Separations: Large	(0.041)	(0.035)	(0.084)	(0.074)	(0.059)	(0.079)
Non-Employment	0.163**	0.060	-0.403***	0.895***	0.395***	0.084
Separations: Small	(0.073)	(0.042)	(0.139)	(0.109)	(0.066)	(0.099)
Net Non-Emp.:	-0.065	-0.099***	-0.160*	0.288***	0.777***	1.075***
Large Minus Small	(0.041)	(0.027)	(0.080)	(0.103)	(0.158)	(0.226)

*Note:* Coefficient on the cyclical variable with standard errors in parentheses. \*, \*\*, \*\*\* indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. "Small" indicates that a firm has 0-50 employees. "Large" indicates that a business has 500+ employees. National specification uses national-quarter level data (55 quarters from 1998:Q2-2011:Q4), controls for a time trend and uses X-11 seasonal adjustments. State specifications use state-quarter level data (55 quarters and 28 states) and cluster standard errors at the state level. State 1 controls for seasonal dummies and a time trend. State 2 controls for a full set of time dummies for every quarter. Standard errors clustered at the state level.

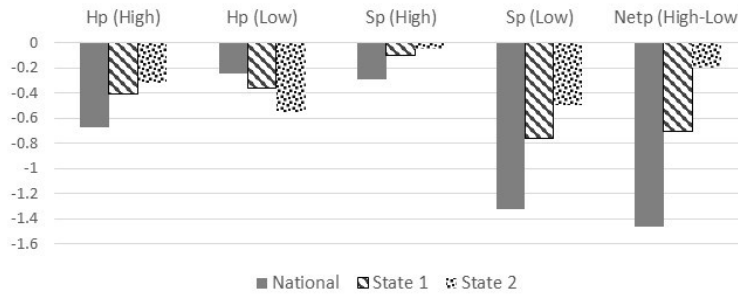
FIGURE B.1. CYCLICAL RESPONSES OF POACHING HIRES AND SEPARATIONS BY FIRM SIZE AND FIRM WAGE



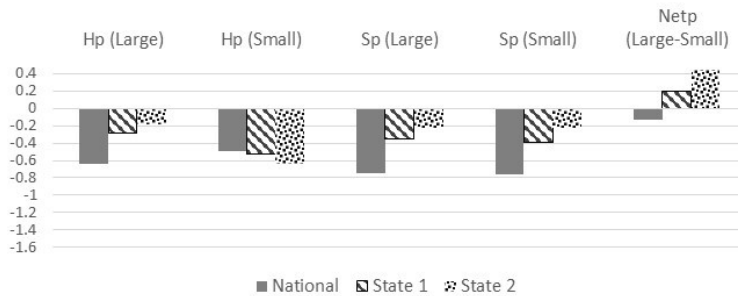
(a) Wage, HP Unemp.



(b) Size, HP Unemp.



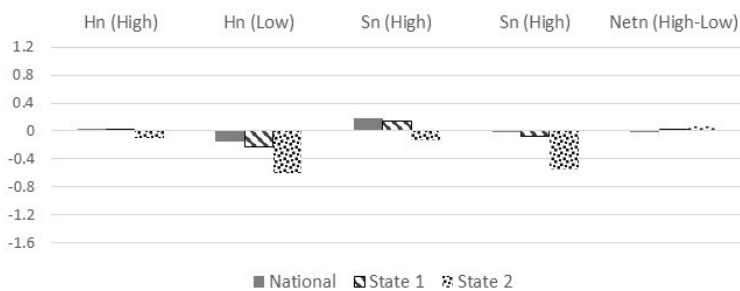
(c) Wage, FD Unemp.



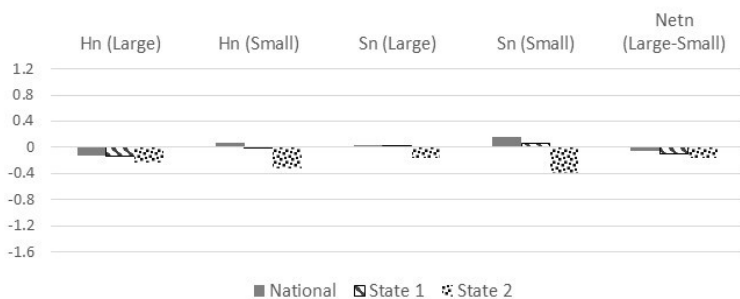
(d) Size, FD Unemp.

FIGURE B.1. CYCLICAL RESPONSES OF POACHING HIRES AND SEPARATIONS BY FIRM SIZE AND FIRM WAGE

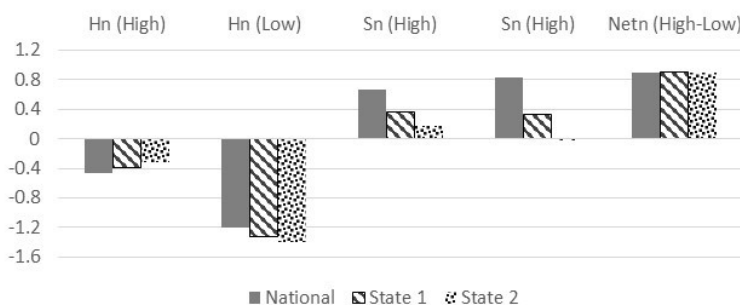
Note: Hp are poaching hires and Sp are poaching separations. High refers to firms in the top two pay quintiles; low refers to firms in the bottom quintile. Large refers to firms employing 500 or more employees; small refers to firms employing 50 or fewer employees. Figures in the top panel report responsiveness to the HP-filtered unemployment rate (HP Unemp.); the bottom panel reports responsiveness to the first-differenced unemployment rate (FD Unemp.). Point estimates from Appendix Tables B.1 and B.2.



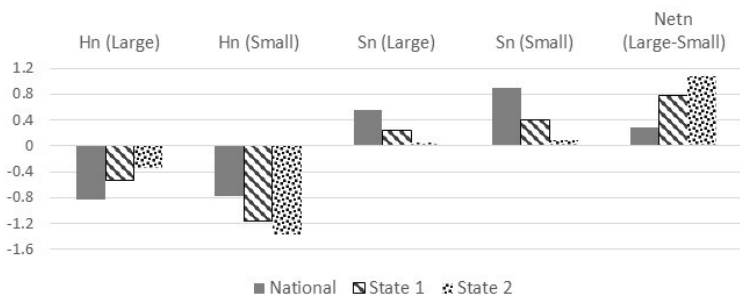
(a) Wage, HP Unemp.



(b) Size, HP Unemp.



(c) Wage, FD Unemp.



(d) Size, FD Unemp.

FIGURE B.2. CYCLICAL RESPONSES OF NON-EMPLOYMENT HIRES AND SEPARATIONS BY FIRM SIZE AND FIRM WAGE

*Note:* Hn are hires from non-employment and Sn are separations to non-employment. High refers to firms in the top two pay quintiles; low refers to firms in the bottom quintile. Large refers to firms employing 500 or more employees; small refers to firms employing 50 or fewer employees. Figures in the top panel report responsiveness to the HP-filtered unemployment rate (HP Unemp.); the bottom panel reports responsiveness to the first-differenced unemployment rate (FD Unemp.). Point estimates from Appendix Tables B.3 and B.4.