Do Greasy Wheels Curb Inequality?

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Federal Reserve Board

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Introduction

Monetary Policy has distributional implications in the labor market

What is the mechanism?

- Direct: differential wage rigidity.
- Indirect: differential labor demands from sectors with differentially sticky prices.

I document evidence for and welfare consequences of differential wage rigidity.
Conceptual Framework for Measurement
What exactly does sticky mean?

Labor contracts are durable.

This implies that all sequences of remitted wages that yield the same present discounted values lead to the same allocations. Becker (1962)

This in turn implies that low wage volatility within employment spells is not necessarily indicative of allocative wage rigidity.

Elsby (2006); Rudanko (2009)

Measuring allocative wage rigidity requires evaluating the sensitivity of both new hire’s wages and wage-tenure profiles.
Wages and allocations

The allocative wage is a user cost.

\[
\text{User Cost}_t = \mathbb{E}_t \sum_{j=0}^{\infty} \left[ \beta^j (1 - s)^j w_{t+j,t} \right] - \mathbb{E}_t \sum_{j=1}^{\infty} \left[ \beta^j (1 - s)^j w_{t+j,t+1} \right]
\]

where \( w_{t+j,t} \) is the remitted wage on \( t + j \) in a contract formed on \( t \).

(Kudlyak 2014)
Re-arranging for intuition

\[ \text{User Cost}_t = \underbrace{w_{t,t}}_{\text{New Hires' Wage}} + \mathbb{E}_t \sum_{j=1}^{\infty} \left[ \beta^j (1 - s)^j (w_{t+j,t} - w_{t+j,t+1}) \right] \]

\[ \underbrace{\text{Expected Wage Wedge}}_{\text{New Hires' Wage} + \text{Expected Wage Wedge}} \]
Re-arranging for intuition

\[
User \ Cost_t = \underbrace{w_{t,t}}_{\text{New Hires' Wage}} + \underbrace{\mathbb{E}_t \sum_{j=1}^{\infty} [\beta^j (1 - s)^j (w_{t+j,t} - w_{t+j,t+1})]}_{\text{Expected Wage Wedge}}
\]

Special case:

- Spot market: user cost\(_t\) = new hires’ wage\(_t\) = average wage\(_t\).
Re-arranging for intuition

\[
User \ Cost_t = \text{New Hires' Wage} + \mathbb{E}_t \sum_{j=1}^{\infty} \left[ \beta^j (1 - s)^j (w_{t+j,t} - w_{t+j,t+1}) \right]
\]

Special case:
- Spot market: \text{user cost}_t = \text{new hires' wage}_t = \text{average wage}_t.

Empirical evidence that the spot market hypothesis fails:
Representative agent: allocative wage more cyclical than remitted wages

\[
\text{Cyclical Indicator} = \text{User Cost of Labor} - \text{New Hires' Wage} - \text{Ave. Hourly Earnings}^c
\]

\begin{align*}
&\log \text{real GDP}^a \quad 1.94^{** *} (0.17) \quad 0.74^{** *} (0.09) \quad 0.39^{** *} (0.05) \\
&\text{unemployment rate}^a \quad -2.71^{** *} (0.48) \quad -1.29^{** *} (0.27) \quad -0.32^{**} (0.13)
\end{align*}

*Note:* All regressions control for a quadratic time trend. Standard errors in parentheses. **p < 0.01, * p < 0.05, * p < 0.1.

*Source:* National Longitudinal Study of Youth 1979 and author’s calculations.

\(^a\) Detrended using the Hodrick-Prescott filter.  \(\text{Replication using Hamilton (2018) filter.}\)

\(^b\) Controlling for experience, industry fixed effects, and individual fixed effects.
Representative Agent: allocative wage most responsive to monetary policy shocks

User Cost of Labor

New Hires’ Wage

Average Hrly Earnings\(^a\)

---

**Note:** 95% confidence interval.

**Source:** National Longitudinal Study of Youth 1979, Current Population Survey, Greenbooks as cleaned by Coibion et al. (2017), and author’s calculations.

Monetary policy shocks identified as in Romer & Romer (2004).

\(^a\) Controlling for experience, industry fixed effects, and individual fixed effects.
Differences across education?
**Why should education matter?**

More educated workers have more durable employment relationships:

<table>
<thead>
<tr>
<th>Separation Rate (yearly)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All</strong></td>
<td>0.29</td>
</tr>
<tr>
<td>&lt; High School</td>
<td>0.36</td>
</tr>
<tr>
<td>High School / Some College</td>
<td>0.29</td>
</tr>
<tr>
<td>≥ Bachelors</td>
<td>0.24</td>
</tr>
</tbody>
</table>

*Source: National Longitudinal Survey of Youth 1979 and author’s calculations.*

Thus, the expected wage wedge is a more consequential:

\[
User\ Cost_t = \underbrace{w_{t,t}}_{New\ Hires'\ Wage} + \underbrace{E_t \sum_{j=1}^{\infty} \left[ \beta^j (1 - s)^j (w_{t+j,t} - w_{t+j,t+1}) \right]}_{Expected\ Wage\ Wedge}
\]
Measurement
Measuring the Cyclicality of the Allocative Wage

\[
\ln w_{t,\tau,E}^i = c_E + \zeta_E t + \Phi_E X_t^i + \sum_{d=0}^{T} \chi_{d,E} \text{state at hiring}_t^i \ast \text{tenure}_{d,t}^i + \gamma_{c,E} M_c^i + \gamma_{j,E} M_j^i + \alpha^i + \varepsilon_{t,E}^i
\]

- \(\alpha^i\) is an individual fixed effect,
- \(t\) is a linear time trend,
- \(X_t^i\) is a vector of time varying individual characteristics (including tenure dummies),
- \(M_c\) and \(M_j\) proxy for cyclical variation in match quality as in Hagedorn & Manovskii (2013).
- \(\text{state at hiring}_t^i\) is equal to the state at hiring in a job spell that persists at time \(t\).
- \(\text{tenure}_{d,t}^i\) takes a value of 1 if the workers tenure is equal to \(d\) at time \(t\).
- \(E \in \{< \text{ high school}, \text{ high school or some college}, \geq \text{ college}\}\) where education is coded as attainment at the time of hiring.
Measuring the Cyclicality of the Allocative Wage

The percent change in the allocative wage due to a change in the state at the time of hiring:

\[
\frac{UC_{s,E} - UC_{n,E}}{UC_{n,E}} = \frac{\bar{w}_{0,s,E} + \sum_{d=1}^{7} [\beta^d (1 - \bar{s}_E)^d (\bar{w}_{d,s,E} - \bar{w}_{d,n,E})]}{\bar{w}_{0,n,E}} - \bar{w}_{0,n,E}
\]

\[
= \sum_{d=0}^{7} \left[ \beta^d (1 - \bar{s}_E)^d \frac{\bar{w}_{d,s,E} - \bar{w}_{d,n,E}}{\bar{w}_{0,n,E}} \right]
\]

\[
= \sum_{d=0}^{7} \left[ \beta^d (1 - \bar{s}_E)^d \bar{\chi}_{d,E} \right].
\]

- \( \bar{s}_E \) is the yearly separation rate within education group,
- and \( \beta = 0.97 \) is the discount rate, assumed to be independent of education.
**Data: National Longitudinal Survey of Youth 1979**

- Nationally representative sample of individuals who were between 14 and 21 in 1979.
- NLSY constructed “hourly rate of pay” includes tips, overtime pay, and bonuses.
- Tenure and job cycle are measured to the week via retrospective diary.

Educational upgrading:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Attain high school equivalent</td>
<td>1.81</td>
<td>3.35</td>
<td>0.52</td>
<td>0.52</td>
</tr>
<tr>
<td>Attain college degree</td>
<td>2.30</td>
<td>5.21</td>
<td>1.06</td>
<td>0.88</td>
</tr>
</tbody>
</table>

*Source: National Longitudinal Survey of Youth 1979 and author’s calculations.*
Allocative Wage Cyclicality by Education
Alloccative wage most cyclical for the highly educated

<table>
<thead>
<tr>
<th>Cyclic Indicator = log real GDP&lt;sup&gt;a&lt;/sup&gt;</th>
<th>User Cost of Labor</th>
<th>New Hire’s Wage</th>
<th>Ave. Hourly Earnings&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; High School</td>
<td>0.24 (0.35)</td>
<td>0.17 (0.16)</td>
<td>0.16 (0.12)</td>
</tr>
<tr>
<td>High School / Some Coll.</td>
<td>1.04** (0.22)</td>
<td>0.26** (0.11)</td>
<td>0.12* (0.06)</td>
</tr>
<tr>
<td>≥ College</td>
<td>1.81*** (0.61)</td>
<td>0.43 (0.34)</td>
<td>0.17 (0.16)</td>
</tr>
<tr>
<td>Observations</td>
<td>55,315</td>
<td>55,315</td>
<td>55,315</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cyclic Indicator = unemployment rate&lt;sup&gt;a&lt;/sup&gt;</th>
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<th>Ave. Hourly Earnings&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; High School</td>
<td>-0.37 (0.97)</td>
<td>-0.26 (0.53)</td>
<td>-0.27 (0.31)</td>
</tr>
<tr>
<td>High School / Some Coll.</td>
<td>-2.00*** (0.59)</td>
<td>-1.00*** (0.33)</td>
<td>-0.29* (0.16)</td>
</tr>
<tr>
<td>≥ College</td>
<td>-4.29*** (1.62)</td>
<td>-2.70*** (0.90)</td>
<td>-0.78** (0.37)</td>
</tr>
<tr>
<td>Observations</td>
<td>53,737</td>
<td>53,737</td>
<td>54,941</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Statistically different from < High School: ** at 5%, * at 10%.

Source: National Longitudinal Study of Youth 1979 and author’s calculations.

<sup>a</sup> Detrended using the filter proposed by Hamilton (2018).

<sup>b</sup> Controlling for tenure, experience, industry fixed effects, and individual fixed effects.
Decomposition: Wage-Tenure Effects v.s. Separation Rates
Are differentials strategic or mechanical?

Already observed that highly educated are differentially exposed to the *Expected Wage Wedge*.

\[
User\ Cost_t = w_{t,t} + \mathbb{E}_t \sum_{j=1}^{\infty} \left[ \beta^j (1 - s)^j \left( w_{t+j,t} - w_{t+j,t+1} \right) \right]
\]

Two possibilities:

1. **Mechanical** All workers wage-tenure profiles are equally cyclically sensitive but sensitivity is relatively more important when \( s \) is smaller.

2. **Strategic** Lower \( s \) increases the efficacy of manipulating the wage-tenure profile in response to shocks.
## Wage-Tenure Effects vs. Separation Rates

### Decomposition

#### Holding Constant:

<table>
<thead>
<tr>
<th>Cyclical Indicator = log real GDP&lt;sup&gt;a&lt;/sup&gt;</th>
<th>User Cost of Labor</th>
<th>Separation Rate</th>
<th>Wage-Tenure Effects</th>
</tr>
</thead>
<tbody>
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<td>&lt; High School</td>
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<td>1.79*** (0.16)</td>
</tr>
<tr>
<td>High School / Some Coll.</td>
<td>1.04*** (0.22)</td>
<td>1.03*** (0.21)</td>
<td>1.95*** (0.18)</td>
</tr>
<tr>
<td>≥ College</td>
<td>1.81*** (0.61)</td>
<td>1.53*** (0.53)</td>
<td>2.18*** (0.21)</td>
</tr>
<tr>
<td>Observations</td>
<td>55,315</td>
<td>55,315</td>
<td>55,315</td>
</tr>
</tbody>
</table>

#### Holding Constant:

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<th>User Cost of Labor</th>
<th>Separation Rate</th>
<th>Wage-Tenure Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; High School</td>
<td>-0.37 (0.97)</td>
<td>-0.45 (1.12)</td>
<td>-2.50*** (0.43)</td>
</tr>
<tr>
<td>High School / Some Coll.</td>
<td>-2.00*** (0.59)</td>
<td>-2.00*** (0.59)</td>
<td>-2.73*** (0.49)</td>
</tr>
<tr>
<td>≥ College</td>
<td>-4.29*** (1.62)</td>
<td>-3.98*** (1.40)</td>
<td>-3.05*** (0.58)</td>
</tr>
<tr>
<td>Observations</td>
<td>55,737</td>
<td>55,737</td>
<td>55,737</td>
</tr>
</tbody>
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**Note:** All regressions control for a quadratic time trend. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

**Source:** National Longitudinal Study of Youth 1979 and author's calculations.
Response of Allocative Wages and Employment to Monetary Policy Shocks
Impulse Response: 100 b.p. Monetary Policy Contraction

Note: 95% confidence interval.

Source: National Longitudinal Study of Youth 1979, Current Population Survey, Greenbooks as cleaned by Coibion et al. (2012), and author’s calculations.
Impulse Response: 100 b.p. Monetary Policy Contraction

Note: 95% confidence interval.

Source: National Longitudinal Study of Youth 1979, Current Population Survey, Greenbooks as cleaned by Coibion et al. (2012), and author’s calculations.
Monetary loosening:

1. **decreases** employment inequality by increasing the employment of the less educated more than of the more educated.

2. **increases** inequality in the allocative wage by increasing the allocative wage of the highly educated more than of the less educated.

Remember, on average highly educated workers enjoy higher wages and higher rates of employment.
Earnings, Consumption & Welfare
A nearly standard New Keynesian framework:

- Both price and wage rigidity.
- Augmented to include heterogenous labor varieties.

Intermediate producers’ technology:

\[ y_t = z_t k_t^{\alpha} \left( l_{1,t} \gamma l_{2,t} (1-\gamma) \right)^{1-\alpha}, \]

where \( l_1 \) and \( l_2 \) are differentiated by the sensitivity of their respective wages to aggregate demand shocks.
Factor Demands and Earnings

Elasticity of demand for each labor variety wrt an aggregate demand shock:

$$\varepsilon_{L_1,y} = 1 + \gamma + \alpha \varepsilon_{R,y} + (1 - \alpha) \left[ \gamma \varepsilon_{W_1,y} + (1 - \gamma) \varepsilon_{W_2,y} \right] - \varepsilon_{W_1,y}$$

$$\varepsilon_{L_2,y} = 1 + \gamma + \alpha \varepsilon_{R,y} + (1 - \alpha) \left[ \gamma \varepsilon_{W_1,y} + (1 - \gamma) \varepsilon_{W_2,y} \right] - \varepsilon_{W_2,y}$$

⇒ composition of employment varies.

Elasticity of earnings for all varieties wrt an aggregate demand shock:

$$\varepsilon_{E_1,y} = \varepsilon_{E_2,y} = 1 + \gamma + \alpha \varepsilon_{R,y} + (1 - \alpha) \left[ \gamma \varepsilon_{W_1,y} + (1 - \gamma) \varepsilon_{W_2,y} \right],$$

⇒ variation in earnings is identical!
Consumption

Suppose workers pool earnings within variety.

Variety-specific households solve the program:

\[
\max_{C_v,t, L_v,t, S_v,t} \quad E_0 \sum_{t=0}^{\infty} \beta^t \left[ u(C_v,t) - \phi u_v(L_v,t) \right]
\]

\[
s.t. \quad P_t C_v,t + S_v,t+1 \leq S_v,t (1 + i_t) + \Pi_v,t + W_v,t L_v,t
\]

\[\implies \text{if } \varepsilon \Pi_{1,y} = \varepsilon \Pi_{2,y} \text{ then } \varepsilon C_{1,y} = \varepsilon C_{2,y}\]
Output-gap Equivalent Representative Worker

Elasticity of marginal cost wrt an aggregate demand shock:

\[ \varepsilon_{mc,y} = \alpha \varepsilon_{R,y} + (1 - \alpha) [\gamma \varepsilon_{W_1,y} + (1 - \gamma) \varepsilon_{W_2,y}] \]

This suggests:

\[ \varepsilon_{W_{rep},y} = \gamma \varepsilon_{W_1,y} + (1 - \gamma) \varepsilon_{W_2,y} \]

Together with the equivalence of earnings elasticities, I have:

\[ \varepsilon_{L_{rep},y} = \gamma \varepsilon_{L_1,y} + (1 - \gamma) \varepsilon_{L_2,y} \]

⇒ The output-gap equivalent representative worker has wage and labor supply elasticities that are a linear combination of the varieties with weights determined by the respective output elasticities.
Welfare

Result 1

$\mathcal{E}_{W_{rep},y}$ captures the stabilizing effects of wage rigidity, à la Galí (2013); the propagating effects of wage rigidity, à la Christiano, Eichenbaum and Evans (2005); ... etc.
Welfare

Result 1

$\varepsilon_{W_{rep}, y}$ captures the stabilizing effects of wage rigidity, à la Galí (2013); the propagating effects of wage rigidity, à la Christiano, Eichenbaum and Evans (2005); ... etc.

Result 2

In the heterogenous worker economy:
- period utility is lower and
- the welfare costs of fluctuations are higher
than in the output-gap equivalent representative worker economy.
Welfare Costs of Fluctuations

Welfare costs of fluctuations can be measured using data on only data on $C$, and $L_V$ and the method of Galí et al. (2007).

To a second order approximation:

$$Welfare\ Cost = \mathbb{E} \left[ \frac{U(C, L_V) - U(\bar{C}, \bar{L}_V)}{\bar{U}_C \bar{C}} \right] \approx \left( \frac{1 - \sigma}{2} \right) \nabla[\tilde{c}] - (1 - \Psi) \left( \frac{1 + \phi}{2} \right) \nabla[\tilde{l}_V]$$

Note:

1. requires assuming that all output is consumed, and
2. requires calibrating the constant-gap wage and price markups.

<table>
<thead>
<tr>
<th></th>
<th>Frisch Elasticity = 1</th>
<th>Frisch Elasticity = 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EIS = 1</td>
<td>= 5</td>
</tr>
<tr>
<td>Heterogeneous Workers Economy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggregate</td>
<td>0.0039</td>
<td>0.0590</td>
</tr>
<tr>
<td>&lt; High School</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>0.0100</td>
<td>0.0650</td>
<td>0.0299</td>
</tr>
<tr>
<td>2.52</td>
<td>1.10</td>
<td>2.52</td>
</tr>
<tr>
<td>High Sch. / Some Coll.</td>
<td>0.0036</td>
<td>0.0587</td>
</tr>
<tr>
<td>≥ Bachelors</td>
<td>0.0006</td>
<td>0.0557</td>
</tr>
<tr>
<td>0.16</td>
<td>0.94</td>
<td>0.16</td>
</tr>
<tr>
<td>Output-Gap Equivalent Representative Worker Economy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.0034</td>
<td>0.0584</td>
</tr>
<tr>
<td>≥ Bachelors</td>
<td>0.86</td>
<td>0.98</td>
</tr>
</tbody>
</table>

Note: Italics report the ratio to the aggregate welfare cost of fluctuations in the heterogeneous workers economy.

Source: From the USECON database I use compensation per hour (LXNFC) and real and nominal output (LXNFO and LXNFI), which refer to the nonfarm business sector; Nondurable and services consumption (CNH + GSH), drawn from the respective NIPA series; and implicit price deflator (LXNFI). Unemployment and hours by educational attainment are constructed from the Current Population Survey Basic Monthly and Outgoing Rotation files respectively. Output elasticities are recovetable using the NLSY data. Author’s calculations following the method of Gali et al. (2007).
Conclusions
Conclusions

Allocative wages of highly educated are more flexible than those of less educated.

This implies that high educated employment is less responsive to shocks than lowly educated employment.

Monetary loosening decreases employment inequality but increases allocative wage inequality.

Welfare consequences wage rigidity are understated by more than 15 percent when heterogeneity is ignored.
Caveats & Agenda

All these results assume frictionless financial markets!

- What if this fails for workers?
- For firms?
- What does this mean for unconventional monetary policy?
Impulse Response: 100 b.p. Monetary Policy Contraction

Note: 95% confidence interval.

# Cyclicality of Wages: Hamilton (2018) Filter

Cyclical Indicator = \( \log \text{real GDP}^a \) -3.90** (1.49) -1.95** (0.75) -1.43** (0.60) 0.50 (0.53) 0.06 (0.27) 0.02 (0.21) 29 29 29

<table>
<thead>
<tr>
<th></th>
<th>User Cost of Labor</th>
<th>New Hires' Wage</th>
<th>Ave. Hourly Earnings(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>log real GDP(^a)</td>
<td>0.50 (0.53)</td>
<td>0.06 (0.27)</td>
<td>0.02 (0.21)</td>
</tr>
<tr>
<td>unemployment rate(^a)</td>
<td>-3.90** (1.49)</td>
<td>-1.95** (0.75)</td>
<td>-1.43** (0.60)</td>
</tr>
</tbody>
</table>

Observations: 29

Note: All regressions control for a quadratic time trend. Standard errors in parentheses. *** \( p < 0.01 \), ** \( p < 0.05 \), * \( p < 0.1 \).

Source: National Longitudinal Study of Youth 1979 and author's calculations.

\(^a\) Detrended using the Hamilton (2018) filter.

\(^b\) Controlling for experience, industry fixed effects, and individual fixed effects.
Hodrick-Prescott vs Hamilton (2018) Filter

Unemployment Rate

log(Real GDP)


Hamilton (2018)
Hodrick-Prescott
Is Higher Cyclicality due to Cyclical Match Quality?
I follow Hagedorn & Manovskii (2013) and proxy for match quality:

- $M_c =$ cumulative labor market tightness job-cycle start to job start.
- $M_j =$ cumulative labor market tightness during completed tenure.

$$\ln w^i_{t,\tau,E} = c_E + \alpha_E^i + \zeta_E t + \Phi_E X_t^i + \sum_{d_0=1}^{T} \sum_{d=d_0}^{T} \chi_{d_0,d,E} D_{d_0,d}^i + \gamma_c M_c + \gamma_j M_j + \varepsilon_{t,E}^i$$

If match quality drives the result then all the $\chi$ should be nil when controlling for $M_c$ and $M_j$. 
## Cyclicality of Wages: Without Controlling for Match Quality

Cyclical Indicator = User Cost New Hire’s Ave. Hourly log real GDP$^a$

<table>
<thead>
<tr>
<th></th>
<th>User Cost of Labor</th>
<th>New Hire’s Wage</th>
<th>Ave. Hourly Earnings$^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$&lt;$ High School</td>
<td>-0.26 (0.58)</td>
<td>-0.31 (0.25)</td>
<td>-0.26** (0.14)</td>
</tr>
<tr>
<td>High School / Some Coll.</td>
<td>0.95* (0.55)</td>
<td>-0.03 (0.27)</td>
<td>0.01 (0.21)</td>
</tr>
<tr>
<td>$\geq$ College</td>
<td>3.02* (1.53)</td>
<td>1.28** (0.49)</td>
<td>0.25 (0.31)</td>
</tr>
</tbody>
</table>

Observations 29 29 29

Cyclical Indicator = unemployment rate$^a$

<table>
<thead>
<tr>
<th></th>
<th>User Cost of Labor</th>
<th>New Hire’s Wage</th>
<th>Ave. Hourly Earnings$^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$&lt;$ High School</td>
<td>0.06 (1.86)</td>
<td>-0.56 (0.82)</td>
<td>-0.15 (0.48)</td>
</tr>
<tr>
<td>High School / Some Coll.</td>
<td>-6.22*** (1.33)</td>
<td>-1.39* (0.81)</td>
<td>-1.29** (0.61)</td>
</tr>
<tr>
<td>$\geq$ College</td>
<td>-9.31* (4.68)</td>
<td>-6.33*** (1.14)</td>
<td>-2.46*** (0.80)</td>
</tr>
</tbody>
</table>

Observations 29 29 29

*Note:* All regressions control for a quadratic time trend. Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

*Source:* National Longitudinal Study of Youth 1979 and author’s calculations.

$^a$ Detrended using the filter proposed by Hamilton (2018).

$^b$ Controlling for experience, industry fixed effects, and individual fixed effects.
Impulse Response (Robustness): Wages

Note: 95% confidence interval.

Source: National Longitudinal Study of Youth 1979, Current Population Survey, Greenbooks as cleaned by Coibion et al. (2012), and author’s calculations.
Impulse Response (Robustness): Employment

Note: 95% confidence interval.

Robustness

Sensitivity of wages to monetary policy shocks is robust to

- Excluding the Volcker Reform (1979-1982)

As documented elsewhere, e.g. Coibion (2012), employment sensitivity is not.
- Zero response to shocks under above restrictions.
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Why?
Robustness

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Why?

Hypothesis:
- Increased reliance on forward guidance.

\[
User\ Cost_t = \underbrace{w_{t,t}}_{\text{New Hires' Wage}} + \underbrace{\mathbb{E}_t \sum_{j=1}^{\infty} [\beta^j (1 - s)^j(w_{t+j,t} - w_{t+j,t+1})]}_{\text{Expected Wage Wedge}}
\]