FIRM PAY DYNAMICS

Niklas Engbom (NYU)
Christian Moser (Columbia)
October 13, 2019

AKM Conference
Motivation

- Growing interest in employers vis-à-vis earnings dispersion
  - Measurement: AKM (’99) to Card et al. (’19)
  - Methods: AKM (’99) to Bonhomme et al. (’19)

- Common approach: control for employer identity
- Leaves open two important questions:
  1. Why do some employers pay more than others?
  2. How permanent are employer pay policies?
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What We Do

We investigate firm pay in cross-section & over time by combining

- linked employer-employee data from Sweden,
- register data on individual characteristics for all workers,
- income statement & balance sheet data for all firms

in order to

1. estimate AKM equation augmented with firm-year fixed effects
2. relate (dynamics of) firm pay to (dynamics of) firm financials
3. measure static & dynamic sorting between workers & firms
1. 50% greater role for firm heterogeneity with dynamic pay policies
2. Firm-year pay related to firm financials \( (R^2 = 0.385) \)
3. Fluctuations \( (RMSE = 0.056) \) and mean reversion \( (\rho = 0.865) \)
4. Changes in firm-year pay related to changes in firm financials
5. Sorting is positive in cross section but negative over time
CONTRIBUTION TO LITERATURE

I. Why do some employers pay more than others?

- Pure wage dispersion (Burdett & Mortensen ’98)
- Productivity (AKM ’99; Barth et al. ’16; Card et al. ’16; Alvarez et al. ’18)
- Productivity + search frictions + minimum wage (Engbom & Moser ’19)
- Productivity + selection into trade (Helpman al. ’17)
- Productivity + compensating differentials + technology (Lamadon et al. ’19)
- Amenities (Sorkin ’18)
- Prod. + search frictions + tech. + amenities + discrim. (Morchio & Moser ’19)

II. Dynamics of employer pay

- van Reenen (’96); Guiso et al. (’05); Lemieux et al. (’09); Schmieder (’13); Card et al. (’14); Lamadon (’16); Ellul et al. (’17); Garin & Silvério (’18); Babina et al. (’19); Kline et al. (’19); Moser et al. (’19)

III. Sorting between workers & employers

- AKM (’99); Andrews et al. (’08, ’12); Eeckhout & Kircher (’11); Gulyas (’17); Lopes de Melo (’18); Borovickova & Shimer (’18); Bonhomme et al. (’19); Lentz et al. (’19)
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Data
• Admin. linked employer-employee data from Sweden, 2004–2015
• All employed men & women of age 18–64
• App. 1.3–1.8 million unique workers per year
• Monthly earnings = salary + wages + bonuses
• Main advantage: rich data on worker and firm observables
Worker-Level Observables

Worker demographics

- Gender, age, place of birth

Family characteristics

- Family ID, municipality of residence, number & age of children

Educational background

- Highest academic degree completed
- High school ID, high school specialization, high school grades
- College ID, college field of study, college degree type
- Cognitive & noncognitive skills test scores (enlistment)

Skill and job characteristics

- Experience, job tenure, hours (sample), occupation (sample)
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Skill and job characteristics

• Experience, job tenure, hours (sample), occupation (sample)
Firm-level observables

Firm demographics

- Age, size, incorporation status, sector, region

Income statement

- Sales, value added, EBIT, total labor costs, wage bill, investment

Balance sheet

- Short-term & long-term assets, debt, equity
Firm-Level Observables

Firm demographics

- Age, size, incorporation status, sector, region

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### Summary Statistics, 2004–2015

<table>
<thead>
<tr>
<th>Panel A. Worker-level variables</th>
<th>Mean</th>
<th>Std. dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker age (years)</td>
<td>39.62</td>
<td>11.10</td>
</tr>
<tr>
<td>Share with college degree</td>
<td>0.213</td>
<td></td>
</tr>
<tr>
<td>Monthly earnings (log SEK)</td>
<td>10.25</td>
<td>0.48</td>
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</table>

<table>
<thead>
<tr>
<th>Panel B. Firm-level variables</th>
<th>Mean</th>
<th>Std. dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm size (thousands of employees)</td>
<td>1.42</td>
<td>3.05</td>
</tr>
<tr>
<td>Firm age (years)</td>
<td>19.20</td>
<td>8.37</td>
</tr>
<tr>
<td>Sales (billion SEK)</td>
<td>4.60</td>
<td>10.45</td>
</tr>
<tr>
<td>Value added (billion SEK)</td>
<td>1.28</td>
<td>4.13</td>
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<tr>
<td>Assets (billion SEK)</td>
<td>5.48</td>
<td>2.34</td>
</tr>
<tr>
<td>Debt (billion SEK)</td>
<td>2.61</td>
<td>9.19</td>
</tr>
<tr>
<td>Equity (billion SEK)</td>
<td>2.87</td>
<td>10.84</td>
</tr>
<tr>
<td>Investment (billion SEK)</td>
<td>0.13</td>
<td>0.53</td>
</tr>
</tbody>
</table>

Observations: 18,412,038
Measuring Worker & Firm Pay Heterogeneity
First stage: Estimate AKM equation with firm-year FEs, letting

\[ y_{it} = \alpha_i + \psi_{jt} + X_{it}\beta + \varepsilon_{it}, \]

for individual \( i \) employed at firm \( j = J(i, t) \) in year \( t \), where

- \( y_{it} \) is log earnings,
- \( \alpha_i \) is a worker FE,
- \( \psi_{jt} \) is a firm-year FE,
- \( X_{it} \) is a set of restricted age FEs, and
- \( \varepsilon_{it} \) is an error term.
Essentially, workers & firms in connected set determined as usual

Model with firm FEs (AKM):

• “Physical firms” can exist for multiple years
• Identification for workers and “physical firms” in connected sets
• Connected sets defined by switches between “physical firms”
• Workers moving between “physical firms” constitute switches

Model with firm-year FEs (generalization of AKM):

• “Physical firms” switch identity each year
• Identification for workers and firm-years in connected sets
• Connected sets defined by switches between firm-years
• All repeat worker observations constitute switches
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### First Stage Results: Variance Decomposition

**First-stage AKM equation:**

\[ y_{it} = \alpha_i + \psi_{jt} + X_{it}\beta + \varepsilon_{it} \]

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<tbody>
<tr>
<td>( \text{Var} (y_{ijt}) )</td>
<td>0.235</td>
<td>0.230</td>
<td>0.231</td>
<td>0.234</td>
<td>0.235</td>
</tr>
<tr>
<td>( \text{Var} (\alpha_i) )</td>
<td>0.124</td>
<td>0.121</td>
<td>0.125</td>
<td>0.130</td>
<td>0.132</td>
</tr>
<tr>
<td>( \text{Var} (\psi_{jt}) )</td>
<td>0.044</td>
<td>0.028</td>
<td>0.022</td>
<td>0.019</td>
<td>0.019</td>
</tr>
<tr>
<td>( \text{Var} (X_{it}\beta) )</td>
<td>0.025</td>
<td>0.024</td>
<td>0.022</td>
<td>0.020</td>
<td>0.019</td>
</tr>
<tr>
<td>( 2 \times \sum \text{Cov} (\cdot) )</td>
<td>0.000</td>
<td>0.011</td>
<td>0.016</td>
<td>0.018</td>
<td>0.018</td>
</tr>
<tr>
<td>( \text{Var} (\varepsilon_{ijt}) )</td>
<td>0.044</td>
<td>0.046</td>
<td>0.047</td>
<td>0.047</td>
<td>0.047</td>
</tr>
<tr>
<td>( \text{Corr} (\alpha_i, \psi_{jt}) )</td>
<td>0.011</td>
<td>0.094</td>
<td>0.124</td>
<td>0.129</td>
<td>0.127</td>
</tr>
</tbody>
</table>

- Observations: 21,145,007, 18,425,427, 15,091,142, 11,313,701, 9,392,584
- Unique workers: 3,056,376, 2,801,551, 2,437,724, 1,959,034, 1,685,029
- Unique firms: 2,134,700, 628,190, 202,346, 51,833, 23,761
- Largest connected set: 98.1%, 99.9%, 100.0%, 100.0%, 100.0%
- \( R^2 \): 0.814, 0.799, 0.798, 0.801, 0.802

**Firm FE type:** Firm-year

**Income concept:** Earnings

**Minimum firm size:** 0, 5, 15, 50, 100
Firm-year FEs

1. account for significant share of earnings dispersion (10%)
2. account for significantly more (+50%) than firm FEs (6%)
3. are relatively constant in Var & Corr for minimum firm size \( \geq 15 \)
Second stage: Project estimated FEs from AKM equation

\[ y_{it} = \alpha_i + \psi_{jt} + X_{it}\beta + \varepsilon_{it} \]

on observables:

\[ \widehat{\alpha}_i = Z^W_i \gamma + \eta^W_i, \]
\[ \widehat{\psi}_{jt} = Z^F_{jt} \delta + \eta^F_{jt}, \]

for individual \( i \) and firm \( j \) in year \( t \), where

\( \widehat{\alpha}_i \) is the estimated first-stage worker FE,
\( Z^W_i \) is a vector of observable worker characteristics,
\( \eta^W_i \) is a worker-side error term,
\( \widehat{\psi}_{jt} \) is the estimated first-stage firm-year FE,
\( Z^F_{jt} \) is a vector of observable firm characteristics, and
\( \eta^F_{jt} \) is a firm-side error term.
Second Stage: Worker Pay & Observables

Worker FE vs. Education Level:
- Middle school (<=11 years)
- High school (12 years)
- Technical school (13-15 years)
- College (16-19 years)
- Doctorate (>=20 years)

Worker FE vs. Average Worker Age (years):
- Average worker age (years) range from 20 to 60.
SECOND STAGE: FIRM PAY & VALUE ADDED PER WORKER

Note: \( \exp(13.0) \) SEK \( \approx 450,000 \) SEK \( \approx \) USD 50,000.
SECOND STAGE: FIRM PAY & OBSERVABLES

By size

Value added per worker (log SEK)

Sales per worker (log SEK)

Firm size (log employees)

Assets per worker (log SEK)
## Second Stage: Regression Results

**Adding Firm FEs**

Larger minimum firm size

**Second-stage equation:**

\[ \hat{\psi}_{jt} = Z_{jt}^F \delta + \eta_{jt}^F \]

<table>
<thead>
<tr>
<th></th>
<th>(1) Univariate</th>
<th>(2) Multivariate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm size (log employees)</td>
<td>0.023</td>
<td>0.008</td>
</tr>
<tr>
<td>Firm age (years)</td>
<td>0.035</td>
<td>-0.002</td>
</tr>
<tr>
<td>Sales per worker (log SEK)</td>
<td>0.070</td>
<td>0.013</td>
</tr>
<tr>
<td>Value added per worker (log SEK)</td>
<td>0.121</td>
<td>0.056</td>
</tr>
<tr>
<td>Assets per worker (log SEK)</td>
<td>0.056</td>
<td>0.014</td>
</tr>
<tr>
<td>Debt per worker (log SEK)</td>
<td>0.056</td>
<td>0.018</td>
</tr>
<tr>
<td>Equity per worker (log SEK)</td>
<td>0.036</td>
<td>0.004</td>
</tr>
<tr>
<td>Investment per worker (log SEK)</td>
<td>0.022</td>
<td>-0.004</td>
</tr>
<tr>
<td>Observations</td>
<td>13,865,483</td>
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</tr>
<tr>
<td>( R^2 )</td>
<td></td>
<td>0.385</td>
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<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Income concept</td>
<td>Earnings</td>
<td>Earnings</td>
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<td>Minimum firm size</td>
<td>15</td>
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</table>
Firm-year FEs

1. are linked to more than one firm characteristic
2. are most strongly related to firm productivity (v.a.p.w.)
3. are about 40% accounted for by simple firm-level observables
Firm Pay Dynamics
Dynamic Firm Pay Policies

• How dynamic vs. fixed are firm pay policies?
  • I.e., does firm-year FE vs. firm FE specification matter?

• Starting point: autoregressive model

\[
\hat{\psi}_{jt} = \sum_{\tau=1}^{T} \rho_{\tau} \hat{\psi}_{j\tau} + \kappa_j + \gamma_t + \zeta_{jt},
\]

for firm \( j \) in year \( t \), where

\( \hat{\psi}_{jt} \) is estimated firm-year FE,
\( \kappa_j \) is a firm FE,
\( \gamma_t \) is a year FE, and
\( \zeta_{jt} \) is an error term.
• How **dynamic vs. fixed** are firm pay policies?
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## Idiosyncratic Variation and Autocorrelation Structure

Autoregressive model: 
\[ \hat{\psi}_{jt} = \sum_{\tau=1}^{T} \rho_{\tau} \hat{\psi}_{j-\tau} + \kappa_j + \gamma_t + \zeta_{jt} \]

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<tr>
<td>1-year lagged firm-year FE</td>
<td>0.865</td>
<td>0.817</td>
<td>-0.123</td>
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<td>2-year lagged firm-year FE</td>
<td>-0.047</td>
<td>-0.023</td>
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<td>3-year lagged firm-year FE</td>
<td>0.157</td>
<td>-0.034</td>
<td></td>
<td></td>
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<tr>
<td>4-year lagged firm-year FE</td>
<td>0.057</td>
<td>0.020</td>
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<tr>
<td>5-year lagged firm-year FE</td>
<td>0.011</td>
<td>0.015</td>
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<td>6-year lagged firm-year FE</td>
<td>0.003</td>
<td>0.035</td>
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<tr>
<td>7-year lagged firm-year FE</td>
<td>0.004</td>
<td>0.028</td>
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<tr>
<td>8-year lagged firm-year FE</td>
<td>-0.012</td>
<td>0.007</td>
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<tr>
<td>9-year lagged firm-year FE</td>
<td>0.044</td>
<td>0.040</td>
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<td>10-year lagged firm-year FE</td>
<td>-0.061</td>
<td>0.021</td>
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<th>16,702,161</th>
<th>16,417,694</th>
<th>14,641,860</th>
<th>1,943,154</th>
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<tr>
<td>Observations</td>
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<tr>
<td>( R^2 )</td>
<td>0.107</td>
<td>0.842</td>
<td>0.748</td>
<td>0.870</td>
<td>0.983</td>
</tr>
<tr>
<td>RMSE</td>
<td>0.135</td>
<td>0.056</td>
<td>0.070</td>
<td>0.046</td>
<td>0.017</td>
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<tr>
<td>Year FE</td>
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<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Firm FE</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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</table>


Note: Firm pay ranks computed on balanced panel of firms.
Firm pay mobility over 1 year

Note: Firm pay ranks computed on balanced panel of firms.
Firm pay mobility over 5 years

Note: Firm pay ranks computed on balanced panel of firms.
Firm pay mobility over 10 years

Note: Firm pay ranks computed on balanced panel of firms.
So Firm Pay is Dynamic... But Why?

- So far: systematic and significant dynamics in firm pay
- But why do firms change pay over time?
Dynamics in Firm Pay & Value Added

Change in firm-year FE

Change in value added per worker (log SEK)
Dynamics in Firm Pay & Observables, Various Time Horizons

- Change in firm-year FE
- Change in value added per worker (log SEK)
- Change in sales per worker (log SEK)
- Change in firm size (log employees)
- Change in assets per worker (log SEK)

Graphs show the relationship between changes in firm-year FE and various firm observables over different time horizons (1-year diff., 3-year diff., 5-year diff., 10-year diff.).
Summary: Fluctuations in Firm Pay Policies

Firm-year FEs

1. have fluctuations ($RMSE = 0.056$), mean reversion ($\rho = 0.865$)
2. feature significant mobility, increasing in period length
3. change in relation to changes in firm financials, not just noise
STATIC & DYNAMIC SORTING
• So far, we correlated:
  • estimates of worker FEs with worker characteristics
  • estimates of firm-year FEs with firm characteristics
• To measure sorting, study worker/firm cross-correlations

**Definition**

Static sorting := cross-sectional matching b/w worker & firm types
So far, we correlated:
- estimates of worker FEs with worker characteristics
- estimates of firm-year FEs with firm characteristics

To measure sorting, study worker/firm cross-correlations

**Definition**

*Static sorting* := cross-sectional matching b/w worker & firm types
**Positive Static Sorting:** $\rho = 0.124, \beta = 0.254$
Positive Static Sorting in Observable Dimensions

- Firm-year FE
- Share college or above
- Value added per worker (log SEK)
- Sales per worker (log SEK)
- Assets per worker (log SEK)

Share college or above (left) vs Worker FE (right)
Dynamic Sorting

- Static sorting may conflate many economic forces
  - E.g., cities attract high-pay firms & workers (Dauth et al. ’19)
- Alternative: as firm changes its pay policy, who do they hire?
  - Following very nice paper by Gulyas (’17)

Definition

Dynamic sorting := temporal comovement b/w worker & firm types
Dynamic Sorting

- Static sorting may conflate many economic forces
  - E.g., cities attract high-pay firms & workers (Dauth et al. ’19)
- Alternative: as firm changes its pay policy, who do they hire?
  - Following very nice paper by Gulyas (’17)

Definition

Dynamic sorting := temporal comovement b/w worker & firm types
**Negative Dynamic Sorting:** $\beta \in [-0.071, -0.312]$
Static vs. Dynamic Sorting: A Puzzle?
Resolution: Within-Firm Pay & Worker Composition

Average firm-year or worker FE

Firm age

Average firm-year FE

Average worker FE
Firm-year FEs

1. are positively correlated with worker FEs in levels
2. are negatively correlated with worker FEs in differences
3. as firms age, they increase pay but hire lower paid workers
Conclusion
We find an important role for firm pay dynamics:

1. 50% greater role for firm heterogeneity w/ dynamic pay policies
2. Firm-year pay related to firm financials ($R^2 = 0.385$)
3. Fluctuations ($RMSE = 0.056$) and mean reversion ($\rho = 0.865$)
4. Changes in firm-year pay related to changes in firm financials
5. Sorting is positive in cross section but negative over time

→ Opens up new perspective on (dynamics of) workers and firms!
APPENDIX
ILLUSTRATION: 4 FIRM-YEARS

- Firm A (t = 1)
- Firm B (t = 1)
- Firm A (t = 2)
- Firm B (t = 2)
ILLUSTRATION: NO PHYSICAL SWITCHERS

Firm A (t = 1)  
Firm B (t = 1)  
Firm A (t = 2)  
Firm B (t = 2)
Illustration: Connected set with firm exit and entry (1)

- Connected set 1
  - Firm A (t = 1) ↔ Firm A (t = 2)

- Connected set 2
  - Firm B (t = 1) ↔ Firm C (t = 2)

$t = 1 \rightarrow t = 2$
**Illustration:** Connected set with firm exit and entry (2)

- **Firm A** (t = 1)
- **Firm B** (t = 1)
- **Firm A** (t = 2)
- **Firm C** (t = 2)
ILLUSTRATION: WHO IS NOT IN THE CONNECTED SET?
**First Stage Results: Firm FEs instead of Firm-Year FEs**

AKM equation: \( y_{it} = \alpha_i + \psi_j + X_{it}\beta + \varepsilon_{it} \)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
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<tbody>
<tr>
<td>( \text{Var} (y_{ijt}) )</td>
<td>0.236</td>
<td>0.230</td>
<td>0.231</td>
<td>0.234</td>
<td>0.235</td>
</tr>
<tr>
<td>( \text{Var} (\hat{\alpha}_i) )</td>
<td>0.121</td>
<td>0.120</td>
<td>0.125</td>
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<tr>
<td>( \text{Var} (\hat{\psi}_j) )</td>
<td>0.032</td>
<td>0.021</td>
<td>0.016</td>
<td>0.013</td>
<td>0.013</td>
</tr>
<tr>
<td>( \text{Var} (\gamma_{it}) )</td>
<td>0.003</td>
<td>0.003</td>
<td>0.003</td>
<td>0.004</td>
<td>0.004</td>
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<tr>
<td>( \text{Var} (X_{it}\beta) )</td>
<td>0.025</td>
<td>0.024</td>
<td>0.022</td>
<td>0.020</td>
<td>0.019</td>
</tr>
<tr>
<td>( 2 \times \sum \text{Cov} (\cdot) )</td>
<td>0.003</td>
<td>0.012</td>
<td>0.015</td>
<td>0.017</td>
<td>0.019</td>
</tr>
<tr>
<td>( \text{Var} (\hat{\varepsilon}_{ijt}) )</td>
<td>0.051</td>
<td>0.051</td>
<td>0.050</td>
<td>0.050</td>
<td>0.049</td>
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<tr>
<td>( \text{Corr} (\hat{\alpha}<em>i, \hat{\psi}</em>{jt}) )</td>
<td>0.056</td>
<td>0.134</td>
<td>0.169</td>
<td>0.181</td>
<td>0.182</td>
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<tr>
<td>Observations</td>
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<td>18,425,427</td>
<td>15,091,142</td>
<td>11,313,701</td>
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<tr>
<td>Unique workers</td>
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<td>Unique firms</td>
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<td>112,262</td>
<td>33,754</td>
<td>8,303</td>
<td>3,656</td>
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<td>Largest connected set</td>
<td>98.5%</td>
<td>99.9%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
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<tr>
<td>( R^2 )</td>
<td>0.782</td>
<td>0.779</td>
<td>0.783</td>
<td>0.788</td>
<td>0.790</td>
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</tbody>
</table>

Firm FE type | Firm Earnings | Firm Earnings | Firm Earnings | Firm Earnings | Firm Earnings
---|--------------|--------------|--------------|--------------|--------------|
Income concept | Earnings | Earnings | Earnings | Earnings | Earnings
Minimum firm size | 0 | 5 | 15 | 50 | 100
**First Stage Results: Wages instead of Earnings**

AKM equation: \( y_{it} = \alpha_i + \psi_{jt} + X_{it}\beta + \varepsilon_{it} \)

<table>
<thead>
<tr>
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<th>(3)</th>
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<tbody>
<tr>
<td>( \text{Var} (y_{ijt}) )</td>
<td>0.124</td>
<td>0.124</td>
<td>0.124</td>
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<tr>
<td>( \text{Var} (\alpha_i) )</td>
<td>0.089</td>
<td>0.089</td>
<td>0.089</td>
</tr>
<tr>
<td>( \text{Var} (\psi_{jt}) )</td>
<td>0.009</td>
<td>0.009</td>
<td>0.008</td>
</tr>
<tr>
<td>( \text{Var} (X_{it}\beta) )</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
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<tr>
<td>( 2 \times \sum \text{Cov}(\cdot) )</td>
<td>0.007</td>
<td>0.007</td>
<td>0.008</td>
</tr>
<tr>
<td>( \text{Var} (\varepsilon_{ijt}) )</td>
<td>0.007</td>
<td>0.007</td>
<td>0.007</td>
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<tr>
<td>( \text{Corr} (\hat{\alpha}<em>i, \hat{\psi}</em>{jt}) )</td>
<td>0.080</td>
<td>0.082</td>
<td>0.087</td>
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<tr>
<td>Unique workers</td>
<td>1,640,798</td>
<td>1,624,288</td>
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<tr>
<td>Unique firms</td>
<td>85,833</td>
<td>64,050</td>
<td>41,264</td>
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<tr>
<td>Largest connected set</td>
<td>99.5%</td>
<td>99.8%</td>
<td>100.0%</td>
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<tr>
<td>( R^2 )</td>
<td>0.944</td>
<td>0.944</td>
<td>0.943</td>
</tr>
</tbody>
</table>

**Firm FE type**
- Firm-year
- Income concept: Wage
- Minimum firm size: 0

**Firm-year**
- Income concept: Wage
- Minimum firm size: 5

**Firm-year**
- Income concept: Wage
- Minimum firm size: 15
SECOND STAGE: FIRM PAY & OBSERVABLES, BY FIRM SIZE

- Value added per worker (log SEK)
- Sales per worker (log SEK)
- Firm age (Years)
- Assets per worker (log SEK)
### Second Stage: Worker Pay & Observables, Added Firm FEs

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<tr>
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<tr>
<td>Firm size (log employees)</td>
<td>0.023</td>
<td>0.008</td>
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<td>Firm age (years)</td>
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<td>Sales per worker (log SEK)</td>
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<td>Value added per worker (log SEK)</td>
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<td>Assets per worker (log SEK)</td>
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<td>Debt per worker (log SEK)</td>
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<td>13,421,121</td>
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<td>$R^2$</td>
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<td>Yes</td>
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<tr>
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<td>Yes</td>
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<td>Earnings</td>
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<tr>
<td>Minimum firm size</td>
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## Second Stage: Worker Pay & Observables, Larger Firms

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<td>Firm size (log employees)</td>
<td>0.023</td>
<td>0.008</td>
<td>0.014</td>
<td>0.006</td>
</tr>
<tr>
<td>Firm age (years)</td>
<td>0.035</td>
<td>-0.002</td>
<td>0.033</td>
<td>-0.006</td>
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<tr>
<td>Sales per worker (log SEK)</td>
<td>0.070</td>
<td>0.013</td>
<td>0.070</td>
<td>0.016</td>
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<tr>
<td>Value added per worker (log SEK)</td>
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<td>0.056</td>
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<td>0.014</td>
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<td>0.008</td>
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<td>Debt per worker (log SEK)</td>
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<td>0.018</td>
<td>0.053</td>
<td>0.019</td>
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<tr>
<td>Equity per worker (log SEK)</td>
<td>0.036</td>
<td>0.004</td>
<td>0.035</td>
<td>0.007</td>
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<tr>
<td>Investment per worker (log SEK)</td>
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<td>-0.004</td>
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<th>10,521,969</th>
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</thead>
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<td>Earnings</td>
<td>Earnings</td>
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<tr>
<td>Minimum firm size</td>
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