Careers and Wages in Family Firms: Evidence from Matched Employer-Employee Data

Edoardo Di Porto, Marco Pagano, Vincenzo Pezone, Raffaele Saggio, and Fabiano Schivardi
NBER, April 2024

1 University of Naples Federico II, CSEF, UCFS Uppsala, and INPS
2 University of Naples Federico II, CSEF, EIEF, CEPR and ECGI,
3 Tilburg University
4 University of British Columbia and NBER
5 LUISS, EIEF and CEPR
Motivation

- Key message from recent labor econ literature: “where you work matters”
  
  David Card AEA Lecture: “Who sets your wage?”

- But why?
Motivation

- Key message from recent labor econ literature: “where you work matters”
  
  David Card AEA Lecture: “Who sets your wage?”

- But why?
  
  - Imperfect labor market competition → Differences in productivities across firms spill over to wages.
    
    e.g. Card-Cardoso-Heining-Kline (2018)
  
  - Firms supply different amenities to workers and compensating diffs explain differences in wages across employers.
    
    e.g. Sorkin (2018); Lamadon-Mogstad-Setzler (2022); Lachowska-Mas-Saggio-Woodbury (2023)
Motivation

- Key message from recent labor econ literature: “where you work matters”
  
  David Card AEA Lecture: “Who sets your wage?”

- But why?
  
  - Imperfect labor market competition → Differences in productivities across firms spill over to wages.
    
    e.g. Card-Cardoso-Heining-Kline (2018)
  
  - Firms supply different amenities to workers and compensating diffs explain differences in wages across employers.
    
    e.g. Sorkin (2018); Lamadon-Mogstad-Setzler (2022); Lachowska-Mas-Saggio-Woodbury (2023)
  
  - Just different wage policies?
    
    e.g. Hjort-Li-Sarson (2022); Hazell-Patterson-Sarson-Taska (2023);
Motivation

- Key message from recent labor econ literature: “where you work matters”
  David Card AEA Lecture: “Who sets your wage?”

- But why?
  - Imperfect labor market competition → Differences in productivities across firms spill over to wages.
    e.g. Card-Cardoso-Heining-Kline (2018)
  - Firms supply different amenities to workers and compensating diffs explain differences in wages across employers.
    e.g. Sorkin (2018); Lamadon-Mogstad-Setzler (2022); Lachowska-Mas-Saggio-Woodbury (2023)
  - Just different wage policies?
    e.g. Hjort-Li-Sarson (2022); Hazell-Patterson-Sarson-Taska (2023);

- Leads to the question: how do different ownership structures impact wage inequality?
Family Firms

- A key dichotomy: family vs. non-family firms (FFs vs. NFs).
  - About 40-50% of private employment in Europe is under family firms.
Family Firms

- A key dichotomy: family vs. non-family firms (FFs vs. NFs).
  - About 40-50% of private employment in Europe is under family firms.

- How do family firms affect the wage structure?
  - FFs tend to be more poorly managed
    - Bloom and Van Reenen (2007), Bloom and Van Reenen (2010), Bandiera, Lemos, Prat, and Sadun, 2018

  - FFs more focused on long-term goals and committed to building positive relationships with their employees.
Family Firms

- A key dichotomy: family vs. non-family firms (FFs vs. NFs).
  - About 40-50% of private employment in Europe is under family firms.

- How do family firms affect the wage structure?
  - FFs tend to be more poorly managed
    - Bloom and Van Reenen (2007), Bloom and Van Reenen (2010), Bandiera, Lemos, Prat, and Sadun, 2018
  - FFs more focused on long-term goals and committed to building positive relationships with their employees.

- Existing literature on labor market effects of FFs faced two key challenges
  - Based on firm-level data → impossible to control for worker selection.
  - Able to observe family firm status only for a subset of (highly selected) firms (e.g. firms listed in the stock market).
This Paper

- Studies the impact of family firms on the Italian wage structure
- We leverage three linked datasets
  1. Universe of Italian social security records
  2. Firms financial records (for LLCs).
  3. Firms’ ownership structure, board of directors and top executives.
This Paper

- Studies the impact of family firms on the Italian wage structure
- We leverage three linked datasets
  1. Universe of Italian social security records
  2. Firms financial records (for LLCs).
  3. Firms’ ownership structure, board of directors and top executives.
- Data permits to disentangle sources of the wage gap b/w FFs and NFFs.
This Paper

- Studies the impact of family firms on the Italian wage structure

- We leverage three linked datasets
  1. Universe of Italian social security records
  2. Firms' financial records (for LLCs).
  3. Firms' ownership structure, board of directors and top executives.

- Data permits to disentangle sources of the wage gap b/w FFs and NFFs.
  1. Worker selection:
This Paper

- Studies the impact of family firms on the Italian wage structure

- We leverage three linked datasets
  1. Universe of Italian social security records
  2. Firms financial records (for LLCs).
  3. Firms’ ownership structure, board of directors and top executives.

- Data permits to disentangle sources of the wage gap b/w FFs and NFFs.
  1. Worker selection: do FF pay less because they employ less skilled workers?
This Paper

• Studies the impact of family firms on the Italian wage structure

• We leverage three linked datasets

  1. Universe of Italian social security records
  2. Firms financial records (for LLCs).
  3. Firms’ ownership structure, board of directors and top executives.

• Data permits to disentangle sources of the wage gap between FFs and NFFs.

  1. Worker selection: do FF pay less because they employ less skilled workers?
  2. Firm selection:
This Paper

- Studies the impact of family firms on the Italian wage structure
- We leverage three linked datasets
  1. Universe of Italian social security records
  2. Firms financial records (for LLCs).
  3. Firms’ ownership structure, board of directors and top executives.
- Data permits to disentangle sources of the wage gap b/w FFs and NFFs.
  1. Worker selection: do FF pay less because they employ less skilled workers?
  2. Firm selection: do FF pay less because they are less productive?
This Paper

- Studies the impact of family firms on the Italian wage structure
- We leverage three linked datasets
  1. Universe of Italian social security records
  2. Firms financial records (for LLCs).
  3. Firms’ ownership structure, board of directors and top executives.
- Data permits to disentangle sources of the wage gap b/w FFs and NFFs.
  1. Worker selection: do FF pay less because they employ less skilled workers?
  2. Firm selection: do FF pay less because they are less productive?
  3. Bargaining:
This Paper

• Studies the impact of family firms on the Italian wage structure

• We leverage three linked datasets
  1. Universe of Italian social security records
  2. Firms financial records (for LLCs).
  3. Firms’ ownership structure, board of directors and top executives.

• Data permits to disentangle sources of the wage gap b/w FFs and NFFs.
  1. Worker selection: do FF pay less because they employ less skilled workers?
  2. Firm selection: do FF pay less because they are less productive?
  3. Bargaining: do FF pay less because they share less rents with workers?
This Paper

- Studies the impact of family firms on the Italian wage structure

- We leverage three linked datasets
  1. Universe of Italian social security records
  2. Firms financial records (for LLCs).
  3. Firms’ ownership structure, board of directors and top executives.

- Data permits to disentangle sources of the wage gap b/w FFs and NFFs.
  1. Worker selection: do FF pay less because they employ less skilled workers?
  2. Firm selection: do FF pay less because they are less productive?
  3. Bargaining: do FF pay less because they share less rents with workers?
  4. Compensating Diffs:
This Paper

- Studies the impact of family firms on the Italian wage structure
- We leverage three linked datasets
  1. Universe of Italian social security records
  2. Firms financial records (for LLCs).
  3. Firms’ ownership structure, board of directors and top executives.
- Data permits to disentangle sources of the wage gap b/w FFs and NFFs.
  1. Worker selection: do FF pay less because they employ less skilled workers?
  2. Firm selection: do FF pay less because they are less productive?
  3. Bargaining: do FF pay less because they share less rents with workers?
  4. Compensating Diffs: do FF pay less because they provide more amenities?
Preview of the Results

- On average, family firms pay 16 log points lower weekly wages.
Preview of the Results

- On average, family firms pay 16 log points lower weekly wages.
  - Worker selection: 8 log points.
On average, family firms pay 16 log points lower weekly wages.

- Worker selection: 8 log points.
- Firm selection: 2 log points.

Bargaining channel: -4 log points (FFs have higher rent-sharing than NFFs!)

Pay gap of 10 log points once netting out worker/firm selection and bargaining.

None of this gap is explained by compensating differentials!

FFs offer systematically lower utility on average. e.g. Sorkin (2018)

What explains (residual) differences in pay?

Glass Ceiling of FFs

- Hard to obtain "top-jobs" in FFs.
- Promotions lead to lower wage gains in FFs.

Why? FFs are reluctant to delegate decision-making to non-family members.
On average, family firms pay 16 log points lower weekly wages.

- Worker selection: 8 log points.
- Firm selection: 2 log points.
- Bargaining channel: -4 log points (FFs have higher rent-sharing than NFFs!)

Pay gap of 10 log points once netting out worker/firm selection and bargaining.

None of this gap is explained by compensating differentials!

What explains (residual) differences in pay?

Glass Ceiling of FFs

- Hard to obtain "top-jobs" in FFs.
- Promotions lead to lower wage gains in FFs.
- Why? FFs are reluctant to delegate decision-making to non-family members.
On average, family firms pay 16 log points lower weekly wages.

- Worker selection: 8 log points.
- Firm selection: 2 log points.
- Bargaining channel: -4 log points (FFs have higher rent-sharing than NFFs!)

Pay gap of 10 log points once netting out worker/firm selection and bargaining.

- None of this gap is explained by compensating differentials!
- FFs offer systematically lower utility on average.

E.g. Sorkin (2018)
On average, family firms pay 16 log points lower weekly wages.

- Worker selection: 8 log points.
- Firm selection: 2 log points.
- Bargaining channel: -4 log points (FFs have higher rent-sharing than NFFs!)

Pay gap of 10 log points once netting out worker/firm selection and bargaining.

- None of this gap is explained by compensating differentials!
- FFs offer systematically lower utility on average.

What explains (residual) differences in pay?

e.g. Sorkin (2018)
• On average, family firms pay 16 log points lower weekly wages.
  • Worker selection: 8 log points.
  • Firm selection: 2 log points.
  • Bargaining channel: -4 log points (FFs have higher rent-sharing than NFFs!)

• Pay gap of 10 log points once netting out worker/firm selection and bargaining.
  • None of this gap is explained by compensating differentials!
  • FFs offer systematically lower utility on average.
    e.g. Sorkin (2018)

• What explains (residual) differences in pay? **Glass Ceiling of FFs**
Preview of the Results

- On average, family firms pay 16 log points lower weekly wages.
  - Worker selection: 8 log points.
  - Firm selection: 2 log points.
  - Bargaining channel: -4 log points (FFs have higher rent-sharing than NFFs!)
- Pay gap of 10 log points once netting out worker/firm selection and bargaining.
  - None of this gap is explained by compensating differentials!
  - FFs offer systematically lower utility on average.

  e.g. Sorkin (2018)

- What explains (residual) differences in pay? Glass Ceiling of FFs
  - Hard to obtain “top-jobs” in FFs.
  - Promotions lead to lower wage gains in FFs.
Preview of the Results

- On average, family firms pay 16 log points lower weekly wages.
  - Worker selection: 8 log points.
  - Firm selection: 2 log points.
  - Bargaining channel: -4 log points (FFs have higher rent-sharing than NFFs!)
- Pay gap of 10 log points once netting out worker/firm selection and bargaining.
  - None of this gap is explained by compensating differentials!
  - FFs offer systematically lower utility on average.
    e.g. Sorkin (2018)
- What explains (residual) differences in pay? Glass Ceiling of FFs
  - Hard to obtain “top-jobs” in FFs.
  - Promotions lead to lower wage gains in FFs.
  - Why? FFs are reluctant to delegate decision-making to non-family members.
Data Sources

- **Worker-level data—Inps**
  - Matched employer-employee covering the universe of workers in the private sector.

- **Firm Balance Sheets—Cerved**
  - Financial data of Italian non-financial LLCs.

- **Ownership data—Infocamere**
  - Information on shareholders and directors recorded in financial statements filed with the Chamber of Commerce in 2003-19
Data Sources

- **Worker-level data**—Inps
  - Matched employer-employee covering the universe of workers in the private sector.

- **Firm Balance Sheets**—Cerved
  - Financial data of Italian non-financial LLCs.

- **Ownership data**—Infocamere
  - Information on shareholders and directors recorded in financial statements filed with the Chamber of Commerce in 2003-19

- Datasets are linked via firm identifier (codice fiscale)
Data Sources

- Worker-level data—Inps
  - Matched employer-employee covering the universe of workers in the private sector.

- Firm Balance Sheets—Cerved
  - Financial data of Italian non-financial LLCs.

- Ownership data—Infocamere
  - Information on shareholders and directors recorded in financial statements filed with the Chamber of Commerce in 2003-19

- Datasets are linked via firm identifier (codice fiscale)

What is a family firm?

- FFs → Majority of shares belong to a single family.
- Step 1: pin-down “ultimate” owner
  - If firm is controlled by another firm, we track the owning firm’s shareholders.
  - Each ultimate shareholder is then assigned a share computed using the “weakest” link principle.
    
    La Porta et al., 1999, Faccio and Lang, 2002, Claessens et al., 2000,

- Step 2: understand if owners belong to the same family.
  - INPS does not provide family linkages.
  - Same family if two individuals share the same last name or live in the same address.

- Validate our measure computed in 2018 with the one computed by CERVED (based on family ties derived from real estate registries) for medium/large firms
  - Definition of FFs b/w methods coincides 93% of the time.
What is a family firm?

- FFs → Majority of shares belong to a single family.
- Step 1: pin-down “ultimate” owner
  - If firm is controlled by another firm, we track the owning firm’s shareholders.
  - Each ultimate shareholder is then assigned a share computed using the “weakest” link principle.
    
    La Porta et al., 1999, Faccio and Lang, 2002, Claessens et al., 2000,
- Step 2: understand if owners belong to the same family.
  - INPS does not provide family linkages.
  - Same family if two individuals share the same last name or live in the same address.
- Validate our measure computed in 2018 with the one computed by CERVED (based on family ties derived from real estate registries) for medium/large firms
  - Definition of FFs b/w methods coincides 93% of the time.
- Family firm status for >900,000 firms!
<table>
<thead>
<tr>
<th></th>
<th>Family Firms</th>
<th>Non-Family Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm size</td>
<td>14.056</td>
<td>31.782</td>
</tr>
<tr>
<td>Value Added per Worker</td>
<td>45.919</td>
<td>63.303</td>
</tr>
<tr>
<td>Labor Costs per Worker</td>
<td>30.491</td>
<td>39.462</td>
</tr>
<tr>
<td>Average Weekly Wage</td>
<td>436.833</td>
<td>510.696</td>
</tr>
<tr>
<td>Share Males</td>
<td>0.651</td>
<td>0.634</td>
</tr>
<tr>
<td>Average Age</td>
<td>39.555</td>
<td>39.839</td>
</tr>
<tr>
<td>Share Temporary Contracts</td>
<td>0.21</td>
<td>0.221</td>
</tr>
<tr>
<td>Share Part-Time Contracts</td>
<td>0.184</td>
<td>0.168</td>
</tr>
<tr>
<td>Share Managers</td>
<td>0.004</td>
<td>0.01</td>
</tr>
<tr>
<td>Share Middle-Managers</td>
<td>0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>Number of Persons</td>
<td>9,972,643</td>
<td>9,421,821</td>
</tr>
<tr>
<td>Number of Firms</td>
<td>607,200</td>
<td>292,213</td>
</tr>
<tr>
<td>Number of Person-Year Observations</td>
<td>46,664,781</td>
<td>44,310,305</td>
</tr>
<tr>
<td>Number of Firm-Years</td>
<td>3,319,919</td>
<td>1,394,195</td>
</tr>
<tr>
<td></td>
<td>Family Firms</td>
<td>Non-Family Firms</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Firm size</td>
<td>14.056</td>
<td>31.782</td>
</tr>
<tr>
<td>Value Added per Worker</td>
<td>45.919</td>
<td>63.303</td>
</tr>
<tr>
<td>Labor Costs per Worker</td>
<td>30.491</td>
<td>39.462</td>
</tr>
<tr>
<td>Average Weekly Wage</td>
<td>436.833</td>
<td>510.696</td>
</tr>
<tr>
<td>Share Males</td>
<td>0.651</td>
<td>0.634</td>
</tr>
<tr>
<td>Average Age</td>
<td>39.555</td>
<td>39.839</td>
</tr>
<tr>
<td>Share Temporary Contracts</td>
<td>0.21</td>
<td>0.221</td>
</tr>
<tr>
<td>Share Part-Time Contracts</td>
<td>0.184</td>
<td>0.168</td>
</tr>
<tr>
<td>Share Managers</td>
<td>0.004</td>
<td>0.01</td>
</tr>
<tr>
<td>Share Middle-Managers (&quot;Quadri&quot;)</td>
<td>0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>Number of Persons</td>
<td>9,972,643</td>
<td>9,421,821</td>
</tr>
<tr>
<td>Number of Firms</td>
<td>607,200</td>
<td>292,213</td>
</tr>
<tr>
<td>Number of Person-Year Observations</td>
<td>46,664,781</td>
<td>44,310,305</td>
</tr>
<tr>
<td>Number of Firm-Years</td>
<td>3,319,919</td>
<td>1,394,195</td>
</tr>
</tbody>
</table>
Table 1: Summary Statistics

<table>
<thead>
<tr>
<th></th>
<th>Family Firms</th>
<th>Non-Family Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm size</td>
<td>14.056</td>
<td>31.782</td>
</tr>
<tr>
<td>Value Added per Worker</td>
<td>45.919</td>
<td>63.303</td>
</tr>
<tr>
<td>Labor Costs per Worker</td>
<td>30.491</td>
<td>39.462</td>
</tr>
<tr>
<td><strong>Average Weekly Wage</strong></td>
<td><strong>436.833</strong></td>
<td><strong>510.696</strong></td>
</tr>
<tr>
<td>Share Males</td>
<td>0.651</td>
<td>0.634</td>
</tr>
<tr>
<td>Average Age</td>
<td>39.555</td>
<td>39.839</td>
</tr>
<tr>
<td>Share Temporary Contracts</td>
<td>0.21</td>
<td>0.221</td>
</tr>
<tr>
<td>Share Part-Time Contracts</td>
<td>0.184</td>
<td>0.168</td>
</tr>
<tr>
<td>Share Managers</td>
<td>0.004</td>
<td>0.01</td>
</tr>
<tr>
<td>Share Middle-Managers (&quot;Quadri&quot;)</td>
<td>0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>Number of Persons</td>
<td>9,972,643</td>
<td>9,421,821</td>
</tr>
<tr>
<td>Number of Firms</td>
<td>607,200</td>
<td>292,213</td>
</tr>
<tr>
<td>Number of Person-Year Observations</td>
<td>46,664,781</td>
<td>44,310,305</td>
</tr>
<tr>
<td>Number of Firm-Years</td>
<td>3,319,919</td>
<td>1,394,195</td>
</tr>
<tr>
<td></td>
<td>Family Firms</td>
<td>Non-Family Firms</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Firm size</td>
<td>14.056</td>
<td>31.782</td>
</tr>
<tr>
<td>Value Added per Worker</td>
<td>45.919</td>
<td>63.303</td>
</tr>
<tr>
<td>Labor Costs per Worker</td>
<td>30.491</td>
<td>39.462</td>
</tr>
<tr>
<td>Average Weekly Wage</td>
<td>436.833</td>
<td>510.696</td>
</tr>
<tr>
<td>Share Males</td>
<td>0.651</td>
<td>0.634</td>
</tr>
<tr>
<td>Average Age</td>
<td>39.555</td>
<td>39.839</td>
</tr>
<tr>
<td>Share Temporary Contracts</td>
<td>0.21</td>
<td>0.221</td>
</tr>
<tr>
<td>Share Part-Time Contracts</td>
<td>0.184</td>
<td>0.168</td>
</tr>
<tr>
<td>Share Managers</td>
<td>0.004</td>
<td>0.01</td>
</tr>
<tr>
<td>Share Middle-Managers (&quot;Quadri&quot;)</td>
<td>0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>Number of Persons</td>
<td>9,972,643</td>
<td>9,421,821</td>
</tr>
<tr>
<td>Number of Firms</td>
<td>607,200</td>
<td>292,213</td>
</tr>
<tr>
<td>Number of Person-Year Observations</td>
<td>46,664,781</td>
<td>44,310,305</td>
</tr>
<tr>
<td>Number of Firm-Years</td>
<td>3,319,919</td>
<td>1,394,195</td>
</tr>
<tr>
<td></td>
<td>Family Firms</td>
<td>Non-Family Firms</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Firm size</td>
<td>14.056</td>
<td>31.782</td>
</tr>
<tr>
<td>Value Added per Worker</td>
<td>45.919</td>
<td>63.303</td>
</tr>
<tr>
<td>Labor Costs per Worker</td>
<td>30.491</td>
<td>39.462</td>
</tr>
<tr>
<td>Average Weekly Wage</td>
<td>436.833</td>
<td>510.696</td>
</tr>
<tr>
<td>Share Males</td>
<td>0.651</td>
<td>0.634</td>
</tr>
<tr>
<td>Average Age</td>
<td>39.555</td>
<td>39.839</td>
</tr>
<tr>
<td>Share Temporary Contracts</td>
<td>0.21</td>
<td>0.221</td>
</tr>
<tr>
<td>Share Part-Time Contracts</td>
<td>0.184</td>
<td>0.168</td>
</tr>
<tr>
<td>Share Managers</td>
<td>0.004</td>
<td>0.01</td>
</tr>
<tr>
<td>Share Middle-Managers (&quot;Quadri&quot;)</td>
<td>0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>Number of Persons</td>
<td>9,972,643</td>
<td>9,421,821</td>
</tr>
<tr>
<td>Number of Firms</td>
<td>607,200</td>
<td>292,213</td>
</tr>
<tr>
<td>Number of Person-Year Observations</td>
<td>46,664,781</td>
<td>44,310,305</td>
</tr>
<tr>
<td>Number of Firm-Years</td>
<td>3,319,919</td>
<td>1,394,195</td>
</tr>
</tbody>
</table>
Wage Policies of Family Firms

- Goal: estimate and decompose the average wage policy of a family firm.
- "Ground-up" approach Card-Rothstein-Yi (2023)
- First step: estimate the wage policy of firm $j$ via AKM

$$\log w_{it} = \alpha_i + \psi_j(i,t) + X'_{it}\beta + r_{it}$$  \hspace{1cm} (1)

- $j(i,t)$: function mapping the dominant employer of worker $i$ in period $t$.
- $\alpha_i$ : worker fixed effect (portable component).
- $\psi_j$ firm $j$ pay premium (or discount).
- $\psi_j$ capture the average wage effect of working for firm $j$ under an “exogenous mobility” assumption.
- Exogenous mobility seems to provide a reasonable approximation of wages for various countries Card et al. (2013) for Germany; Card et al. (2015) for Portugal; Bonhomme et al. (2019) for Sweden; Song et al. (2019) for US; Lattanzio and Casarico (2023) for Italy
• The raw difference in wages b/w FFs and NFs can be decomposed as

\[
\Delta w \equiv E[\log w_{it}|f(j(i, t)) = F] - E[\log w_{it}|f(j(i, t)) = NF] = E[\alpha_i|f(j(i, t)) = F] - E[\alpha_i|f(j(i, t)) = NF] + E[\psi_{j(i, t)}|f(j(i, t)) = F] - E[\psi_{j(i, t)}|f(j(i, t)) = NF].
\]

\(\Delta_{\alpha, F}\)≡worker selection component

\(\Delta_{\psi, F}\)≡firm component
De decomposition

- The raw difference in wages b/w FFs and NFs can be decomposed as
  \[
  \Delta w \equiv E[\log w_{it}\mid f(j(i, t)) = F] - E[\log w_{it}\mid f(j(i, t)) = NF] \\
  = E[\alpha_i\mid f(j(i, t)) = F] - E[\alpha_i\mid f(j(i, t)) = NF] \\
  + E[\psi_{j(i, t)}\mid f(j(i, t)) = F] - E[\psi_{j(i, t)}\mid f(j(i, t)) = NF].
  \]
  \[\Delta_{\alpha,F}\equiv\text{worker selection component}\]
  \[\Delta_{\psi,F}\equiv\text{firm component}\]

- But we can do more! We can also decompose the firm component.

- Linear projection of firm effects (fit separately for F/NFs) onto productivity
  \[
  \psi_j = \theta_{f(j)} + \pi_{f(j)}P_j + \nu_j,
  \]
  \[\pi_F, \pi_{NF}\equiv\text{rent-sharing coefficients}.\]
  \[\theta_F - \theta_{NF}\equiv\text{systematic difference in pay b/w FFs and NFs unrelated to productivity/bargaining}.\]
• Oaxaca decomposition of the firm-component $\Delta_{\psi,F}$

$$
\Delta_{\psi,F} \equiv E[\psi_{j(i,t)}|f(j(i,t)) = F] - E[\psi_{j(i,t)}|f(j(i,t)) = NF]
= \pi_{NF}\left\{E[P_j|f(j) = F] - E[P_j|f(j) = NF]\right\}
= \pi_{NF}\left\{E[P_j|f(j) = F] - E[P_j|f(j) = NF]\right\}
+ (\pi_F - \pi_{NF})E[P_j|f(j) = F] + \theta_F - \theta_{NF}.
$$

(productivity component + bargaining component + systematic component unrelated to productivity / bargaining)
<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Weekly Wage (adjusted)</td>
<td>5.86</td>
<td>6.03</td>
<td>-0.16</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.73</td>
<td>3.56</td>
<td>-0.17</td>
</tr>
<tr>
<td></td>
<td>Non-Family Firm</td>
<td>Family Firm</td>
<td>Difference</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>Log Weekly Wage (adjusted)</td>
<td>5.86</td>
<td>6.03</td>
<td>-0.16</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.73</td>
<td>3.56</td>
<td>-0.17</td>
</tr>
<tr>
<td></td>
<td>Non-Family Firm</td>
<td>Family Firm</td>
<td>Difference</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>Log Weekly Wage (adjusted)</td>
<td>5.86</td>
<td>6.03</td>
<td>-0.16</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td><strong>-0.08</strong></td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td><strong>-0.08</strong></td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.73</td>
<td>3.56</td>
<td><strong>-0.17</strong></td>
</tr>
<tr>
<td></td>
<td>Non-Family Firm</td>
<td>Family Firm</td>
<td>Difference</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>Log Weekly Wage (adjusted)</td>
<td>5.86</td>
<td>6.03</td>
<td>-0.16</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td><strong>-0.08</strong></td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.73</td>
<td>3.56</td>
<td>-0.17</td>
</tr>
<tr>
<td></td>
<td>Non-Family Firm</td>
<td>Family Firm</td>
<td>Difference</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>Log Weekly Wage (adjusted)</td>
<td>5.86</td>
<td>6.03</td>
<td>-0.16</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.73</td>
<td>3.56</td>
<td>-0.17</td>
</tr>
<tr>
<td></td>
<td>Non-Family Firm</td>
<td>Family Firm</td>
<td>Difference</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>Log Weekly Wage (adjusted)</td>
<td>5.86</td>
<td>6.03</td>
<td>-0.16</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.73</td>
<td>3.56</td>
<td>-0.17</td>
</tr>
</tbody>
</table>

**Regressing Firm Effects into Log VA/L**

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.44</td>
<td>-0.54</td>
<td>-0.10</td>
</tr>
<tr>
<td>Coefficient</td>
<td><strong>0.13</strong></td>
<td><strong>0.14</strong></td>
<td><strong>0.01</strong></td>
</tr>
<tr>
<td>Table 2: Decomposing the Family Firm Wage Discount</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Log Weekly Wage (adjusted)</strong></td>
<td>Non-Family Firm</td>
<td>Family Firm</td>
<td>Difference</td>
</tr>
<tr>
<td></td>
<td>5.86</td>
<td>6.03</td>
<td>-0.16</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.73</td>
<td>3.56</td>
<td>-0.17</td>
</tr>
<tr>
<td><strong>Regressing Firm Effects into Log VA/L</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-0.44</td>
<td>-0.54</td>
<td>-0.10</td>
</tr>
<tr>
<td>Coefficient</td>
<td>0.13</td>
<td>0.14</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Non-Family Firm</td>
<td>Family Firm</td>
<td>Difference</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>Log Weekly Wage (adjusted)</td>
<td>5.86</td>
<td>6.03</td>
<td>-0.16</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.73</td>
<td>3.56</td>
<td>-0.17</td>
</tr>
</tbody>
</table>

**Regressing Firm Effects into Log VA/L**

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.44</td>
<td>-0.54</td>
<td>-0.10</td>
</tr>
<tr>
<td>Coefficient</td>
<td>0.13</td>
<td>0.14</td>
<td>0.01</td>
</tr>
</tbody>
</table>

**Decomposing the Difference in Firm Effects into...**

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bargaining Component</td>
<td>0.47</td>
<td>0.51</td>
<td>0.04</td>
</tr>
<tr>
<td>Productivity Component</td>
<td>0.49</td>
<td>0.47</td>
<td>-0.02</td>
</tr>
<tr>
<td>Avg Component unrelated to productivity / bargaining</td>
<td>-0.44</td>
<td>-0.54</td>
<td>-0.10</td>
</tr>
</tbody>
</table>
Table 2: Decomposing the Family Firm Wage Discount

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Weekly Wage (adjusted)</td>
<td>5.86</td>
<td>6.03</td>
<td>-0.16</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.73</td>
<td>3.56</td>
<td>-0.17</td>
</tr>
</tbody>
</table>

Regressing Firm Effects into Log VA/L

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.44</td>
<td>-0.54</td>
<td>-0.10</td>
</tr>
<tr>
<td>Coefficient</td>
<td>0.13</td>
<td>0.14</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Decomposing the Difference in Firm Effects into...

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bargaining Component</td>
<td>0.47</td>
<td>0.51</td>
<td>0.04</td>
</tr>
<tr>
<td>Productivity Component</td>
<td>0.49</td>
<td>0.47</td>
<td>-0.02</td>
</tr>
<tr>
<td>Avg Component unrelated to productivity / bargaining</td>
<td>-0.44</td>
<td>-0.54</td>
<td>-0.10</td>
</tr>
</tbody>
</table>
Table 2: Decomposing the Family Firm Wage Discount

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Weekly Wage (adjusted)</td>
<td>5.86</td>
<td>6.03</td>
<td>-0.16</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.73</td>
<td>3.56</td>
<td>-0.17</td>
</tr>
</tbody>
</table>

Regressing Firm Effects into Log VA/L

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.44</td>
<td>-0.54</td>
<td>-0.10</td>
</tr>
<tr>
<td>Coefficient</td>
<td>0.13</td>
<td>0.14</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Decomposing the Difference in Firm Effects into...

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bargaining Component</td>
<td>0.47</td>
<td>0.51</td>
<td>0.04</td>
</tr>
<tr>
<td>Productivity Component</td>
<td>0.49</td>
<td>0.47</td>
<td>-0.02</td>
</tr>
<tr>
<td>Avg Component unrelated to productivity / bargaining</td>
<td>-0.44</td>
<td>-0.54</td>
<td><strong>-0.10</strong></td>
</tr>
</tbody>
</table>
Go to AKM Fixed Effects and Productivity (Weighted by Firm Size)

Go to Family Firm Discount and Location

FFPD by industries
Is it compensating differentials?

• Previous research suggests that FFs provide higher employment stability. (Sraer and Thesmar, 2007; Ellul, Pagano, and Schivardi, 2018; Bassanini, Breda, Caroli, and Reberou, 2013; Hang and Kim, 2020; Bach and Serrano-Valverde, 2015)

• Challenges: hard to measure amenities + need a framework where frictions prevent utility of work from being equalized across workplaces (Mortensen, 2003).

• Solution: use the revealed preference approach of Sorkin (2018).

• Utility of worker $i$ if employed by firm $j$:

$$U_{ij} = v_j + \epsilon_{ij}$$

(5)

• Pagerank component can be identified from the following recursive formula:

$$\exp(v_j) = \sum_{\ell \in B_j} \omega_{j,\ell} \exp(v_\ell), \text{ for } j = 1, \ldots, J,$$

(6)

where $\omega_{j,\ell}$ is the number of workers who voluntarily move from employer $\ell$ to employer $j$, scaled by the number of workers who voluntarily leave employer $j$. 
Is it compensating differentials?

- Previous research suggests that FFs provide higher employment stability.
  

- Challenges: hard to measure amenities + need a framework where frictions prevent utility of work from being equalized across workplaces.
  
  e.g Mortensen (2003))
Is it compensating differentials?

- Previous research suggests that FFs provide higher employment stability.
  

- Challenges: hard to measure amenities + need a framework where frictions prevent utility of work from being equalized across workplaces
  
  e.g Mortensen (2003))

- Solution: use the revealed preference approach of Sorkin (2018).

- Utility of worker $i$ if employed by firm $j$

  $$U_{ij} = \underbrace{v_j}_{\text{Systematic Component / Pagerank}} + \underbrace{\epsilon_{ij}}_{\text{Type 1 EV idiosyncratic term}}$$ (5)

- Pagerank component can be identified from the following recursive formula

  $$\exp(v_j) = \sum_{\ell \in B_j} \omega_{j,\ell} \exp(v_\ell), \quad \text{for } j = 1, \ldots, J,$$ (6)

  where $\omega_{j,\ell}$ is the number of workers who voluntarily move from employer $\ell$ to employer $j$, scaled by the number of workers who voluntarily leave employer $j$. 
If FFs offer non-wage amenities that allow them to pay lower wages then we should have

\[ E[v_{j(i,t)}|f(j(i,t))] = F - E[v_{j(i,t)}|f(j(i,t))] = NF = 0 \]  

(7)
“Hedonic” Family Firms?

- If FFs offer non-wage amenities that allow them to pay lower wages then we should have

\[
E[v_{j(i,t)}|f(j(i,t)) = F] - E[v_{j(i,t)}|f(j(i,t)) = NF] = 0
\]  

(7)

- We reject this null...

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Firm</td>
<td>-0.70***</td>
<td>-0.58***</td>
<td>-0.30***</td>
<td>-0.28***</td>
<td>-0.23***</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.07)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>AKM FE</td>
<td>1.51***</td>
<td>1.32***</td>
<td>1.17***</td>
<td>0.93***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.21)</td>
<td>(0.10)</td>
<td>(0.08)</td>
<td>(0.05)</td>
<td></td>
</tr>
<tr>
<td>Std. of Dep. Var.</td>
<td>1.45</td>
<td>1.45</td>
<td>1.45</td>
<td>1.45</td>
<td>1.45</td>
</tr>
<tr>
<td># of Firms</td>
<td>313,375</td>
<td>310,584</td>
<td>310,584</td>
<td>310,584</td>
<td>310,584</td>
</tr>
<tr>
<td>Industry FE</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Province FE</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LLM FE</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
• FFs pay on average 16 log points lower than NFFs.

• About half of this gap is explained by worker-selection.

• 25% of the remaining gap due to differences in productivity.

• Higher-rent sharing in FFs.

• Left with a 10 log points difference in average pay.
  • Unexplained by compensating diffs.
  • In fact, FFs supply worse amenities than NFFs → FFs amplify inequality!
• FFs pay on average 16 log points lower than NFFs.
• About half of this gap is explained by worker-selection.
• 25% of the remaining gap due to differences in productivity.
• Higher-rent sharing in FFs.
• Left with a 10 log points difference in average pay.
  • Unexplained by compensating diffs.
  • In fact, FFs supply worse amenities than NFFs → FFs amplify inequality!

• Next: evidence of a glass ceiling within FFs.
  • FFs prevent reaching higher rungs of the within-firm job ladder.
Higher wage compression in FFs
Managerial Positions in our Data...
Fewer managers and fewer promotions in FFs

A. Fraction of Middle Man. Workers

B. Fraction of Managers

C. Transitions to Middle Management

D. Transitions to Manager
Returns to Promotions in Managerial Positions

- Experiment: take two similar workers employed by similar firms in similar jobs.

Investigate whether promotion leads to different returns using the following event-study regression:

\[ y_{it} = \alpha_i + \lambda_t + bX_k = \begin{cases} a_1 & t = t^* + k \\ \beta_k + bX_k = a_1(1_{t = t^* + k} \times FF_i) \theta_k + \eta_{it} \end{cases} \] (8)

- \( t^* i \) is the year of promotion of worker \( i \).
- \( FF_i \) dummy equal to 1 if worker was promoted by a FF.
- Run regression on a matched sample of promoted workers ( \( \approx 30,000 \) promotions—97% of them to middle managerial position).
- Matching based on pre-promotion wages, logarithm of firm size, logarithm of value added per worker, age, industry, employment type, and gender; 2+ tenure.
Experiment: take two similar workers employed by similar firms in similar jobs.

Now both workers are promoted to a managerial position.
Returns to Promotions in Managerial Positions

- Experiment: take two similar workers employed by similar firms in similar jobs.
- Now both workers are promoted to a managerial position.
- One promotion in FFs, the other in NFs.
Returns to Promotions in Managerial Positions

- Experiment: take two similar workers employed by similar firms in similar jobs.
- Now both workers are promoted to a managerial position.
- One promotion in FFs, the other in NFs.
- Investigate whether promotion leads to different returns using the following event-study regression

\[
y_{it} = \alpha_i + \lambda_t + \sum_{k=a}^{b} 1\{t = t_i^* + k\} \beta_k + \sum_{k=a}^{b} (1\{t = t_i^* + k\} \times FF_i) \theta_k + \eta_{it} \tag{8}
\]

- \(t_i^*\) is the year of promotion of worker \(i\).
- \(FF_i\) dummy equal to 1 if worker was promoted by a FF.
- Run regression on a matched sample of promoted workers (\(\approx 30,000\) promotions—97% of them to middle managerial position).
- Matching based on pre-promotion wages, logarithm of firm size, logarithm of value added per worker, age, industry, employment type, and gender; 2+ tenure.
Lower returns to promotions!

A. From White Collar to Middle Manager

B. From Middle Manager to Manager
Why Do Family Firms Promote & Pay Managers Less?

- Hypothesis: family firms wish to concentrate the family’s technical and organizational knowledge in the top management team.

- Implication: Losing the top decision maker in family firms (where knowledge is concentrated) should be more disruptive than in non-family firms (where knowledge is shared).
Why Do Family Firms Promote & Pay Managers Less?

- Hypothesis: family firms wish to concentrate the family’s technical and organizational knowledge in the top management team
  - So they are reluctant to delegate decision making to non-family members

- Implication: Losing the top decision maker in family firms (where knowledge is concentrated) should be more disruptive than in non-family firms (where knowledge is shared)
Why Do Family Firms Promote & Pay Managers Less?

• Hypothesis: family firms wish to concentrate the family’s technical and organizational knowledge in the top management team
  • So they are reluctant to delegate decision making to non-family members
• As a result, they tend to
Why Do Family Firms Promote & Pay Managers Less?

- Hypothesis: family firms wish to concentrate the family’s technical and organizational knowledge in the top management team
  - So they are reluctant to delegate decision making to non-family members
- As a result, they tend to
  - promote fewer workers to managerial positions
Why Do Family Firms Promote & Pay Managers Less?

- Hypothesis: family firms wish to concentrate the family’s technical and organizational knowledge in the top management team
  - So they are reluctant to delegate decision making to non-family members
- As a result, they tend to
  - promote fewer workers to managerial positions
  - reward them less upon promotion
Why Do Family Firms Promote & Pay Managers Less?

- Hypothesis: family firms wish to concentrate the family’s technical and organizational knowledge in the top management team
  - So they are reluctant to delegate decision making to non-family members
- As a result, they tend to
  - promote fewer workers to managerial positions
  - reward them less upon promotion
- Implication:
Why Do Family Firms Promote & Pay Managers Less?

- **Hypothesis:** family firms wish to concentrate the family’s technical and organizational knowledge in the top management team
  - So they are reluctant to delegate decision making to non-family members
- As a result, they tend to
  - promote fewer workers to managerial positions
  - reward them less upon promotion
- **Implication:**
  - Losing the top decision maker in family firms (where knowledge is concentrated) should be more disruptive than in non-family firms (where knowledge is shared)
CEO Deaths

- We identify top decision maker (CEO or, if not present, president)
CEO Deaths

- We identify top decision maker (CEO or, if not present, president)
- Event is CEO death
CEO Deaths

- We identify top decision maker (CEO or, if not present, president)
- Event is CEO death
- Treated firms: family firms
- Control firms: non-family firms
CEO Deaths

- We identify top decision maker (CEO or, if not present, president)
- Event is CEO death
- Treated firms: family firms
- Control firms: non-family firms
- Treated and control firms matched on industry, size and productivity
CEO Deaths and Firm Productivity

![Graph showing the impact of CEO deaths on firm productivity. The x-axis represents years since CEO's death, and the y-axis shows the log value added per worker. The graph includes error bars indicating variability.]
Conclusions

- Family firms pay lower wages than non-family firms.
- Gap only partially explained by worker/firm selection.
- Family firms do not supply better amenities to workers.
- Evidence of a glass-ceiling effect:
  - Fewer top-jobs available within family firms.
  - Promotions to top-jobs lead to lower returns in FFs.
  - Channel: FFs want to retain knowledge and power within the family.
- Paper → model that formalizes the presence of a glass-ceiling within FFs.
THANKS
APPENDIX
A Simple Model

- We reconcile our findings within a simple model
A Simple Model

- We reconcile our findings within a simple model
- Key ingredient: trade-off in promoting skilled workers:
A Simple Model

- We reconcile our findings within a simple model
- Key ingredient: trade-off in promoting skilled workers:
  - efficiency gains
A Simple Model

- We reconcile our findings within a simple model

- Key ingredient: trade-off in promoting skilled workers:
  - efficiency gains
  - loss of private benefits of control
A Simple Model

- We reconcile our findings within a simple model
- Key ingredient: trade-off in promoting skilled workers:
  - efficiency gains
  - loss of private benefits of control
- Assumption: family firms have stronger preference for retaining decision-making power
Timeline

$t = 0$

Matching and hiring:

(i) workers apply for jobs in family or non-family firms;
(ii) each firm $j$ offers a wage contract to successful applicants (unsuccessful applicants stay unemployed)
Matching and hiring:
(i) workers apply for jobs in family or non-family firms;
(ii) each firm $j$ offers a wage contract to successful applicants (unsuccessful applicants stay unemployed)

On-the-job learning:
(i) workers pick effort level $e_w$;
(ii) acquire skills with probability $e_w$, anticipating promotion probability $\phi_j$ and bonus contract for promoted workers

Workers’ promotion:
(i) firm $j$ promotes a fraction $\phi_j$ of skilled workers;
(ii) offers them a bonus contract;
(iii) managers pick effort level $e_m$;
(iv) acquire skills with probability $e_m$

Production and compensation:
(i) skilled workers and managers produce $y_j$;
(ii) skilled managers also produce $\delta y_j$;
(iii) firms pay agreed wages and bonuses

Promotion rate $\phi_j$ leads to loss of private benefits $\beta_j \phi_j^2$.

Key assumption: $\beta_j$ is greater in family firms $\rightarrow$ they place a higher value on private benefits of control.
Matching and hiring:
(i) workers apply for jobs in family or non-family firms;
(ii) each firm $j$ offers a wage contract to successful applicants (unsuccessful applicants stay unemployed)

On-the-job learning:
(i) workers pick effort level $e_w$; 
(ii) acquire skills with probability $e_w$, anticipating promotion probability $\phi_j$ and bonus contract for promoted workers

Workers’ promotion:
(i) firm $j$ promotes a fraction $\phi_j$ of skilled workers; 
(ii) offers them a bonus contract; 
(iii) managers pick effort level $e_m$; 
(iv) acquire skills with probability $e_m$
Timeline

$ t = 0 $

Matching and hiring:

(i) workers apply for jobs in family or non-family firms;
(ii) each firm $ j $ offers a wage contract to successful applicants (unsuccessful applicants stay unemployed)

$ t = 1 $

On-the-job learning:

(i) workers pick effort level $ e_w $;
(ii) acquire skills with probability $ e_w $, anticipating promotion probability $ \phi_j $ and bonus contract for promoted workers

$ t = 2 $

Workers’ promotion:

(i) firm $ j $ promotes a fraction $ \phi_j $ of skilled workers;
(ii) offers them a bonus contract;
(iii) managers pick effort level $ e_m $;
(iv) acquire skills with probability $ e_m $

$ t = 3 $

Production and compensation:

(i) skilled workers and managers produce $ y_j $,
(ii) skilled managers also produce $ \delta y_j $;
(iii) firms pay agreed wages and bonuses
Timeline

- **Matching and hiring**: 
  (i) workers apply for jobs in family or non-family firms; 
  (ii) each firm $j$ offers a wage contract to successful applicants (unsuccessful applicants stay unemployed)

- **On-the-job learning**: 
  (i) workers pick effort level $e_w$; 
  (ii) acquire skills with probability $e_w$, anticipating promotion probability $\phi_j$ and bonus contract for promoted workers

- **Workers’ promotion**: 
  (i) firm $j$ promotes a fraction $\phi_j$ of skilled workers; 
  (ii) offers them a bonus contract; 
  (iii) managers pick effort level $e_m$; 
  (iv) acquire skills with probability $e_m$

- **Production and compensation**: 
  (i) skilled workers and managers produce $y_j$, 
  (ii) skilled managers also produce $\delta y_j$; 
  (iii) firms pay agreed wages and bonuses

- Promotion rate $\phi_j$ leads to loss of private benefits $\frac{\beta_j \phi_j^2}{2}$
Timeline

\[ t = 0 \]
**Matching and hiring:**
(i) workers apply for jobs in family or non-family firms;
(ii) each firm \( j \) offers a wage contract to successful applicants (unsuccessful applicants stay unemployed)

\[ t = 1 \]
**On-the-job learning:**
(i) workers pick effort level \( e_w \);
(ii) acquire skills with probability \( e_w \), anticipating promotion probability \( \phi_j \) and bonus contract for promoted workers

\[ t = 2 \]
**Workers’ promotion:**
(i) firm \( j \) promotes a fraction \( \phi_j \) of skilled workers;
(ii) offers them a bonus contract;
(iii) managers pick effort level \( e_m \);
(iv) acquire skills with probability \( e_m \)

\[ t = 3 \]
**Production and compensation:**
(i) skilled workers and managers produce \( y_j \),
(ii) skilled managers also produce \( \delta y_j \);
(iii) firms pay agreed wages and bonuses

- Promotion rate \( \phi_j \) leads to loss of private benefits \( \frac{\beta_j \phi_j^2}{2} \)

- Key assumption: \( \beta_j \) is greater in family firms → they place a higher value on private benefits of control
Predictions: family wage discount and promotion gap

1. Family firms pay lower wages than non-family firms and the difference in wages increases with firm productivity
Predictions: family wage discount and promotion gap

1. Family firms pay lower wages than non-family firms and the difference in wages increases with firm productivity

\[ w_j^* = \frac{1}{2} \left[ y_j + \frac{\phi_j^*}{2c_m} \left( \frac{\delta y_j}{2} \right)^2 \right] = \frac{1}{2} \left[ y_j + \frac{1}{2\beta_j c_m^2} \left( \frac{\delta y_j}{2} \right)^4 \right] \]
Predictions: family wage discount and promotion gap

1. Family firms pay lower wages than non-family firms and the difference in wages increases with firm productivity

\[ w_j^* = \frac{1}{2} \left[ y_j + \frac{\phi_j^*}{2c_m} \left( \frac{\delta y_j}{2} \right)^2 \right] = \frac{1}{2} \left[ y_j + \frac{1}{2\beta_j c_m^2} \left( \frac{\delta y_j}{2} \right)^4 \right] \]

- Workers in family firms exert lower effort because they have a lower probability of promotion
Predictions: family wage discount and promotion gap

1. Family firms pay lower wages than non-family firms and the difference in wages increases with firm productivity

\[ w_j^* = \frac{1}{2}\left[ y_j + \frac{\phi_j^*}{2c_m} \left( \delta y_j \right)^2 \right] = \frac{1}{2}\left[ y_j + \frac{1}{2\beta_j c_m^2} \left( \delta y_j \right)^4 \right] \]

- Workers in family firms exert lower effort because they have a lower probability of promotion

2. Family firms promote fewer workers than non-family firms, and the gap in promotion rates increases with firm productivity
Predictions: family wage discount and promotion gap

1. Family firms pay lower wages than non-family firms and the difference in wages increases with firm productivity

\[ w^*_j = \frac{1}{2} \left[ y_j + \frac{\phi^*_j}{2c_m} \left( \frac{\delta y_j}{2} \right)^2 \right] = \frac{1}{2} \left[ y_j + \frac{1}{2\beta_j c_m^2} \left( \frac{\delta y_j}{2} \right)^4 \right] \]

- Workers in family firms exert lower effort because they have a lower probability of promotion

2. Family firms promote fewer workers than non-family firms, and the gap in promotion rates increases with firm productivity

\[ \phi^*_j = \min \left[ \frac{1}{\beta_j c_m} \left( \frac{\delta y_j}{2} \right)^2, 1 \right] \]
Predictions: family wage discount and promotion gap

1. Family firms pay lower wages than non-family firms and the difference in wages increases with firm productivity

\[ w_j^* = \frac{1}{2} \left[ y_j + \frac{\phi_j^*}{2c_m} \left( \frac{\delta y_j}{2} \right)^2 \right] = \frac{1}{2} \left[ y_j + \frac{1}{2\beta_j c_m^2} \left( \frac{\delta y_j}{2} \right)^4 \right] \]

- Workers in family firms exert lower effort because they have a lower probability of promotion

2. Family firms promote fewer workers than non-family firms, and the gap in promotion rates increases with firm productivity

\[ \phi_j^* = \min \left[ \frac{1}{\beta_j c_m} \left( \frac{\delta y_j}{2} \right)^2, 1 \right] \]

- Taste for private benefit \( \beta_j \) interacts with productivity \( y_j \), leading to higher promotion gap in high-productivity firms
3. Promotions in family firms lead to a lower increase in compensation
Predictions: expected bonus and expected utility

3. Promotions in family firms lead to a lower increase in compensation
   - Expected bonus, conditional on productivity, is:
     \[
     \mathbb{E}[b|y_j] = x^* e^*_m = \frac{\delta y_j}{2} \frac{\delta y_j}{2c_m} = \frac{1}{c_m} \left( \frac{\delta y_j}{2} \right)^2
     \]
3. Promotions in family firms lead to a lower increase in compensation

- Expected bonus, conditional on productivity, is:

\[
\mathbb{E}[b|y_j] = x^* e^*_m = \frac{\delta y_j}{2} \frac{\delta y_j}{2 c_m} = \frac{1}{c_m} \left( \frac{\delta y_j}{2} \right)^2
\]

- Identical for family and non-family firms, but expected unconditional bonus is higher for non-family firms
3. Promotions in family firms lead to a lower increase in compensation
   - Expected bonus, conditional on productivity, is:
     \[ E[b|y_j] = x^* e^*_m = \frac{\delta y_j}{2} \frac{\delta y_j}{2c_m} = \frac{1}{c_m} \left( \frac{\delta y_j}{2} \right)^2 \]
   - Identical for family and non-family firms, but expected unconditional bonus is higher for non-family firms
   - Intuition: bonus increases in \( y_j \), and promotions are disproportionately more frequent in high-\( y_j \) non-family firms
Predictions: expected bonus and expected utility

3. Promotions in family firms lead to a lower increase in compensation
   • Expected bonus, conditional on productivity, is:
     \[ \mathbb{E}[b|y_j] = x^* e^*_m = \frac{\delta y_j}{2} \frac{\delta y_j}{2c_m} = \frac{1}{c_m} \left( \frac{\delta y_j}{2} \right)^2 \]
   • Identical for family and non-family firms, but expected unconditional bonus is higher for non-family firms
   • Intuition: bonus increases in \( y_j \), and promotions are disproportionately more frequent in high-\( y_j \) non-family firms

4. Family firms employees have lower expected utility than non-family firm ones
3. Promotions in family firms lead to a lower increase in compensation
   - Expected bonus, conditional on productivity, is:
     \[ 
     \mathbb{E}[b | y_j] = x^* e^*_m = \frac{\delta y_j}{2} \frac{\delta y_j}{2c_m} = \frac{1}{c_m} \left( \frac{\delta y_j}{2} \right)^2 
     \]
   - Identical for family and non-family firms, but expected unconditional bonus is higher for non-family firms
   - Intuition: bonus increases in \( y_j \), and promotions are disproportionately more frequent in high-\( y_j \) non-family firms

4. Family firms employees have lower expected utility than non-family firm ones
   \[ 
   \mathbb{E}(U^*_{1j}) = \frac{1}{8c_w} \left[ y_j + \frac{3}{2} \frac{\phi_j^*}{c_m} \left( \frac{\delta y_j}{2} \right)^2 \right]^2 = \frac{1}{8c_w} \left[ y_j + \frac{3}{2 \beta_j c_m^2} \left( \frac{\delta y_j}{2} \right)^4 \right]^2
   \]
3. Promotions in family firms lead to a lower increase in compensation

- Expected bonus, conditional on productivity, is:
  \[ \mathbb{E}[b|y_j] = x^* e_m^* = \frac{\delta y_j}{2} \frac{\delta y_j}{2c_m} = \frac{1}{c_m} \left( \frac{\delta y_j}{2} \right)^2 \]

- Identical for family and non-family firms, but expected unconditional bonus is higher for non-family firms
- Intuition: bonus increases in \( y_j \), and promotions are disproportionately more frequent in high-\( y_j \) non-family firms

4. Family firms employees have lower expected utility than non-family firm ones

\[ \mathbb{E}(U_{1j}^*) = \frac{1}{8c_w} \left[ y_j + \frac{3}{2} \frac{\phi_j}{c_m} \left( \frac{\delta y_j}{2} \right)^2 \right]^2 = \frac{1}{8c_w} \left[ y_j + \frac{3}{2} \frac{\beta_j}{c_m} \left( \frac{\delta y_j}{2} \right)^4 \right]^2 \]

- Intuition: they expect a less rewarding career
Predictions: labor market equilibrium

- Since any worker prefers working in a non-family firm, and the supply of jobs in F and NF firms is fixed, what balances the labor market?
- Workers can only apply to one of the two groups
- Relative to vacancies, more workers apply to NF firms, so they have a lower probability of being hired → applicants to jobs in NF firms are more likely to end up unemployed
- So, even though NF firms deliver higher utility to their employees, *ex ante* workers who apply to the two types of firms have the same expected utility
Step 1 – Classify Shareholders

- Two types of shareholders: Individual and other firms
- Easy to distinguish, as firms’ fiscal codes do not have letters
- With fiscal codes and denominations of shareholders can obtain:
  - name and surname
  - date of birth
  - gender
  - address
  - place of birth (hence, nationality)
Step 2 – Reconstruct Control Chains

- When a firm is partially owned by a firm, we go back over the control chain until we can trace its controlling shareholders.
- In these cases, there is no unambiguous way to allocate control rights.
- We follow the literature and use Weakest Link Principle (WLP).
  - assign control rights to the ultimate shareholder by computing the minimum value of voting rights across the control chain.
- Example:
  - Giovanni Verdi owns 40% of Verdi S.p.a.
  - Verdi S.p.a. owns 50% of Rossi S.r.l.
  - Rossi S.r.l. owns 10% of Bianchi S.p.a.
  - according to the WLP, Giovanni Verdi has control rights of 10% (the minimum of 40%, 50%, and 10%) in Bianchi S.p.a.
- Intuition: a chain is only as strong as its weakest link.
Step 3 – Identifying Family Ties

- Two individuals are assumed to belong to the same family if:
  - they have the last name, or
  - they have the same address and different gender
Step 4 – Family Firm Classification

- Firms are classified as:
  - family firms – if the members of a family own more than 50% of the shares
  - family-managed firms – if the firm is a family firm and the top manager belongs to the controlling family
• Cerved has built a “family firm” flag for a sample of about 70,000 medium and large firms in 2018

• Family connections are identified through land registry certificates (visure catastali)

• The two variables coincide for 93% of the observations in the overlapping sample

• However, for the same year, our sample includes over 1.2 million firms

• Note: the overall accuracy is likely higher, as smaller firms have simpler ownership structure
AKM Fixed Effects and Productivity (Weighted by Firm Size)

Constant: -.55, Slope: .15
Constant: -.45, Slope: .14

- .5
- .4
- .3
- .2
- .1
0
.1
.2
.3
.4

Firm Effects

1 2 3 4 5 6

Log valued added per worker

Firm effect, family firms
Firm effect, non-family firms
Family Firm Discount and Location

- Two potential explanations for the family firm discount:
  1. Cost of living: family firms located in areas with low cost of living
  2. Location preferences: easier to find a job close to home in a family firm than in a non-family firm

- We regress firm fixed effect on family firm dummy, log of value added per worker, and city combination dummies

- The wage discount is only marginally affected when controlling for location of birth, work and residence
- Result robust to controlling for productivity, industry, geography, and local labor market fixed effects

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Firm</td>
<td>-0.082***</td>
<td>-0.059***</td>
<td>-0.047***</td>
<td>-0.042***</td>
<td>-0.038***</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.004)</td>
<td>(0.003)</td>
<td>(0.002)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>\log(\text{Productivity})</td>
<td>0.137***</td>
<td>0.134***</td>
<td>0.113***</td>
<td>0.108***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.002)</td>
<td></td>
</tr>
<tr>
<td>\text{Std Dep. Variable}</td>
<td>0.20</td>
<td>0.20</td>
<td>0.20</td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td># of Observations</td>
<td>89,507,579</td>
<td>89,507,579</td>
<td>89,507,579</td>
<td>89,507,579</td>
<td>89,507,579</td>
</tr>
<tr>
<td># of Firms</td>
<td>753,154</td>
<td>753,154</td>
<td>753,154</td>
<td>753,154</td>
<td>753,154</td>
</tr>
<tr>
<td>Industry FE</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Province FE</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LLM FE</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
## AKM Fixed Effects – Firm Size Split

### A. Small Firms

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Firm</td>
<td>-0.037***</td>
<td>-0.022***</td>
<td>-0.018***</td>
<td>-0.021***</td>
<td>-0.021***</td>
</tr>
<tr>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>log(Productivity)</td>
<td>0.129***</td>
<td>0.123***</td>
<td>0.010***</td>
<td>0.096***</td>
<td>0.096***</td>
</tr>
<tr>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Std Dep. Variable</td>
<td>0.22</td>
<td>0.22</td>
<td>0.22</td>
<td>0.22</td>
<td>0.22</td>
</tr>
<tr>
<td># of Firms</td>
<td>720,714</td>
<td>701,128</td>
<td>701,128</td>
<td>701,128</td>
<td>701,128</td>
</tr>
</tbody>
</table>

### B. Medium Firms

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Firm</td>
<td>-0.063***</td>
<td>-0.035***</td>
<td>-0.030***</td>
<td>-0.030***</td>
<td>-0.028***</td>
</tr>
<tr>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>log(Productivity)</td>
<td>0.136***</td>
<td>0.130***</td>
<td>0.111***</td>
<td>0.103***</td>
<td>0.103***</td>
</tr>
<tr>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>Std Dep. Variable</td>
<td>0.17</td>
<td>0.17</td>
<td>0.17</td>
<td>0.17</td>
<td>0.17</td>
</tr>
<tr>
<td># of Observations</td>
<td>20,827,828</td>
<td>20,786,330</td>
<td>20,786,330</td>
<td>20,786,330</td>
<td>20,786,330</td>
</tr>
<tr>
<td># of Firms</td>
<td>30,874</td>
<td>30,642</td>
<td>30,642</td>
<td>30,642</td>
<td>30,642</td>
</tr>
</tbody>
</table>

### C. Large Firms

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Firm</td>
<td>-0.068***</td>
<td>-0.049***</td>
<td>-0.041***</td>
<td>-0.027***</td>
<td>-0.020***</td>
</tr>
<tr>
<td>(0.013)</td>
<td>(0.008)</td>
<td>(0.006)</td>
<td>(0.005)</td>
<td>(0.004)</td>
<td></td>
</tr>
<tr>
<td>log(Productivity)</td>
<td>0.140***</td>
<td>0.137***</td>
<td>0.096***</td>
<td>0.094***</td>
<td></td>
</tr>
<tr>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.007)</td>
<td>(0.007)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Std Dep. Variable</td>
<td>0.16</td>
<td>0.16</td>
<td>0.16</td>
<td>0.16</td>
<td>0.16</td>
</tr>
<tr>
<td># of Observations</td>
<td>30,133,576</td>
<td>30,099,836</td>
<td>30,099,836</td>
<td>30,099,836</td>
<td>30,099,836</td>
</tr>
<tr>
<td># of Firms</td>
<td>4,332</td>
<td>4,332</td>
<td>4,332</td>
<td>4,332</td>
<td>4,332</td>
</tr>
</tbody>
</table>

Industry FE: X, Province FE: X, LLM FE: X
• Even after controlling for firm fixed effects, non-family firms generate more utility.

• The result is robust to controlling for industry and worker’s location.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Firm</td>
<td>-0.70***</td>
<td>-0.58***</td>
<td>-0.30***</td>
<td>-0.28***</td>
<td>-0.23***</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.07)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>AKM FE</td>
<td>1.51***</td>
<td>1.32***</td>
<td>1.17***</td>
<td>0.93***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.21)</td>
<td>(0.10)</td>
<td>(0.08)</td>
<td>(0.05)</td>
<td></td>
</tr>
<tr>
<td>Std. of Dep. Var.</td>
<td>1.45</td>
<td>1.45</td>
<td>1.45</td>
<td>1.45</td>
<td></td>
</tr>
<tr>
<td># of Firms</td>
<td>313,375</td>
<td>310,584</td>
<td>310,584</td>
<td>310,584</td>
<td></td>
</tr>
<tr>
<td>Industry FE</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Province FE</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LLM FE</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Observable Amenities

A. Part Time

B. Temporary Contract

C. Reduced-Contribution Weeks

D. Churn Rate
Within Inequality Controlling for size

A. 5th Percentile

B. 25th Percentile

Legend:
- Family Firms
- Non-Family Firms
Within Inequality Controlling for size

A. 75th Percentile

Small

Medium

Large

B. 95th Percentile

Small

Medium

Large

Family Firms  Non-Family Firms
Productivity around CEO Death Events

A. All Firms

B. Family-Managed Firms

C. Non-Family-Managed Firms
Effects may be due not to loss in know-how but to “emotional effect” of a family member’s loss.

However, effects not observed when looking at (non-family) directors’ deaths.
# Oaxaca Decomposition — Non-College

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Weekly Wage (Raw)</td>
<td>5.86</td>
<td>6.03</td>
<td>-0.16</td>
</tr>
<tr>
<td>Person Effects</td>
<td>-0.01</td>
<td>-0.07</td>
<td>-0.06</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.05</td>
<td>-0.02</td>
<td>-0.07</td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.59</td>
<td>3.47</td>
<td>-0.12</td>
</tr>
</tbody>
</table>

**Regressing Firm Effects into Log VA/L**

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.43</td>
<td>-0.49</td>
<td>-0.06</td>
</tr>
<tr>
<td>Coefficient</td>
<td>0.13</td>
<td>0.13</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Decomposing the Difference in Firm Effects into...**

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bargaining Component</td>
<td>0.46</td>
<td>0.46</td>
<td>0.00</td>
</tr>
<tr>
<td>Productivity Component</td>
<td>0.48</td>
<td>0.46</td>
<td>-0.02</td>
</tr>
<tr>
<td>Avg Component unrelated to productivity / bargaining</td>
<td>-0.43</td>
<td>-0.49</td>
<td>-0.06</td>
</tr>
</tbody>
</table>
## Table: Decomposing the Family Firm Wage Discount — College Educ

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Weekly Wage (Raw)</td>
<td>6.32</td>
<td>6.11</td>
<td>-0.22</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.14</td>
<td>0.00</td>
<td>-0.13</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.04</td>
<td>-0.06</td>
<td>-0.10</td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.83</td>
<td>3.58</td>
<td>-0.25</td>
</tr>
</tbody>
</table>

**Regressing Firm Effects into Log VA/L**

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.49</td>
<td>-0.76</td>
<td>-0.28</td>
</tr>
<tr>
<td>Coefficient</td>
<td>0.14</td>
<td>0.20</td>
<td>0.06</td>
</tr>
</tbody>
</table>

**Decomposing the Difference in Firm Effects into...**

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bargaining Component</td>
<td>0.50</td>
<td>0.70</td>
<td>0.21</td>
</tr>
<tr>
<td>Productivity Component</td>
<td>0.53</td>
<td>0.50</td>
<td>-0.03</td>
</tr>
<tr>
<td>Avg Component unrelated to productivity / bargaining</td>
<td>-0.49</td>
<td>-0.76</td>
<td>-0.28</td>
</tr>
</tbody>
</table>
FFPD (net of worker effects) by industries

- LAND & PIPELINES TRANSP.
- TRADE VEHICLES
- MANUF OF FURNITURE
- ACCOMODATION
- MANUF OF MACHINERY
- MANUF OIL
- PROGRAMMING AND TRANSMISSION
- AGRICULTURAL
- SOFTWARE PRODUCTION
- FOOD INDUSTRY
- BEVERAGE INDUSTRY
- SERV. FOR BUILDINGS
- POSTAL SERV. & COURIER ACTIV.
- SUPPORT FOR BUSINESS
- VETERINARY SERV.
- METALLURGY
- FISHING
- CIVIL ENGINEERING
- RESTAURANT SERV.
- MANUF OF PLASTIC
- WOOD INDUSTRY
- AUX. FINANCIAL SERV.
- MANUF OF METAL
- MANUF PHARMACEUTICAL
- TEXTILE INDUSTRY
- MANUF OF CHEMICALS
- EDITORIAL ACTIVITIES
- MANUF OTH. TRANSP.ATION
- EDUCATION

Family Firm Wage Discount
Plot shows coefficient from a regression of firm AKM effects on family owned dummy
The regression controls for VA/L and is run separately within 2-digit ATECO
Vertical value is firm-weighted average effect across sectors
### Table 4: Decomposing the Family Firm Wage Discount on Starting Wages

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Weekly Starting Wage</td>
<td>5.9728</td>
<td>5.8723</td>
<td>-0.1005</td>
</tr>
<tr>
<td>Person Effects</td>
<td>0.0266</td>
<td>-0.0159</td>
<td>-0.0424</td>
</tr>
<tr>
<td>Firm Effects</td>
<td>0.0346</td>
<td>-0.0180</td>
<td>-0.0525</td>
</tr>
<tr>
<td>Log Value Added per Worker</td>
<td>3.4276</td>
<td>3.3179</td>
<td>-0.1097</td>
</tr>
<tr>
<td>Rent-Sharing Coefficient</td>
<td>0.1279</td>
<td>0.1411</td>
<td>0.0132</td>
</tr>
</tbody>
</table>

**Decomposing the Difference in Firm Effects into...**

<table>
<thead>
<tr>
<th></th>
<th>Non-Family Firm</th>
<th>Family Firm</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bargaining Component</td>
<td>0.4245</td>
<td>0.4683</td>
<td>0.0438</td>
</tr>
<tr>
<td>Productivity Component</td>
<td>0.4385</td>
<td>0.4245</td>
<td>-0.0140</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.4013</td>
<td>-0.4874</td>
<td>-0.0861</td>
</tr>
</tbody>
</table>

**Note:** This table shows the average characteristics across family and non-family firms for the universe of employers with available financial information. The first row presents the average log weekly starting wage across family and non-family firms, weighted by the number of person-year observations. The latter is defined as the initial wage received by a worker from a given employer. We then show the average person effects and firm effects across family and non family firms after fitting a two-way AKM model on the log weekly starting wage in these data. In this AKM model, the employer fixed effect is represented by the unrestricted interaction between the unique tax identifier of the employer and a dummy for whether the employer is under family ownership or not. The fourth row shows the average log value added per worker while the fifth row shows the rent-sharing coefficient obtained after regressing the firm effect on a constant and log value added per worker separately across family and non-family firms. The last three columns then performs the Oaxaca decomposition where the difference in the firm effects across family and non-family firm is divided into a productivity component (differences in average log value added per worker across family and non-family firms, weighted by the rent-sharing coefficient of non-family firms) and a bargaining component (differences in rent-sharing coefficient weighted using the distribution of log value added per worker of family firms). The last row reports the constant obtained when projecting the firm onto log value added per worker separately for family and non-family firms.