Firing the Wrong Workers:
Financing Constraints and Labor Misallocation

by

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Discussion

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Key claim of the paper

- Differences in the firing threshold of "young workers" (with growth potential) are induced by differences in the firm's discount rate

- Financially constrained firms have higher discount rates and fire young workers more readily as they discount their future NPV contribution more strongly

- This explains differences in (ii) the tenure profile of young workers, (ii) the probability of firing young workers, and (iii) the layoff profile of workers after a shock

My discussion

- ## Theory
  - Nice model of employment hysteresis with firing costs
  - Financial constrains should not be represented by higher discount rate
  - Model does not feature wage adjusting to tenure profile
- ## Empirics
  - Simpler model of firm specific wage premium can explain the same stylized facts
  - Specification: More controls for worker heterogeneity desirable because the claim is that firing thresholds <u>for the same worker type</u> differs across firm types
- ## Summary

Theory

- Elegant dynamic determination of worker value, but financial constrain is modelled as higher discount rate

- Firm Valuation: Only systematic risk gives rise to higher discount rates. Higher credit costs of constrained firm should be modelled as cash flow (cost) effect

$$Cost(N^y, \bar{\mu}, w) = [N^y max(w - \bar{\mu}^y, 0)]^\alpha, \quad \alpha > 1$$

- Existence and uniqueness of the solution difficult to show

- Would be nice to the solution characterized for some reasonable parameter values

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Two missing model ingredients

- **Wages increase over experience/productivity evolution**
    - Perfect intertemporal match between (spot) productivity and wage eliminates the "investment aspect" of hiring young workers
    - Authors need to argue that there is an excess wage for young workers, but do not do so (Note: insider/outsider models suggest the opposite)

- **Firm wage premium:**
    - High productivity firms (facing less financial constrains) pay a substantial wage premium (Card et al., 2016)
    - Simple sorting mechanism can explain the evidence presented in the paper
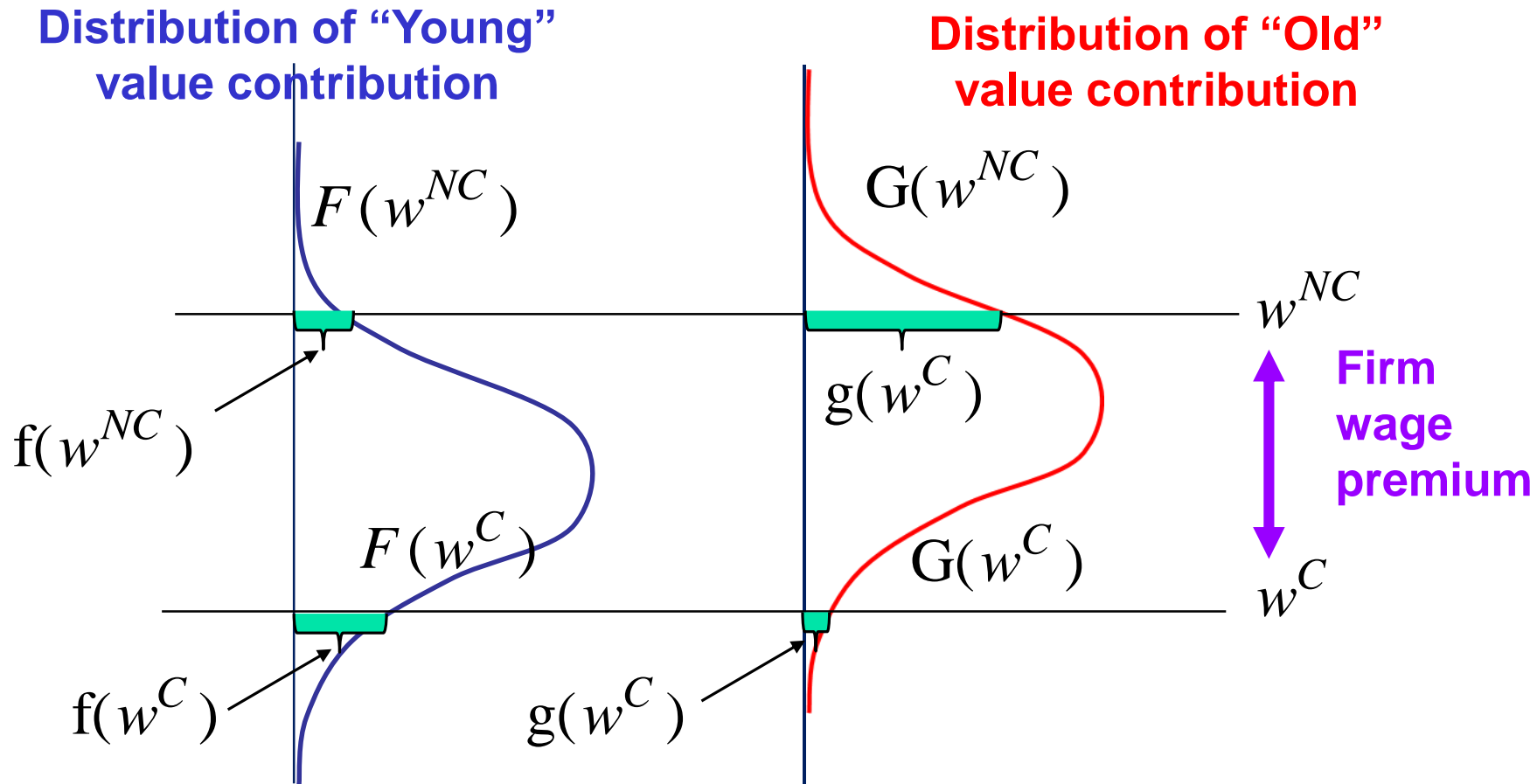
Figure 3: Mean Log Wages of Portuguese Male Job Changers, Classified by Quartile of Co-Worker Wages at Origin and Destination
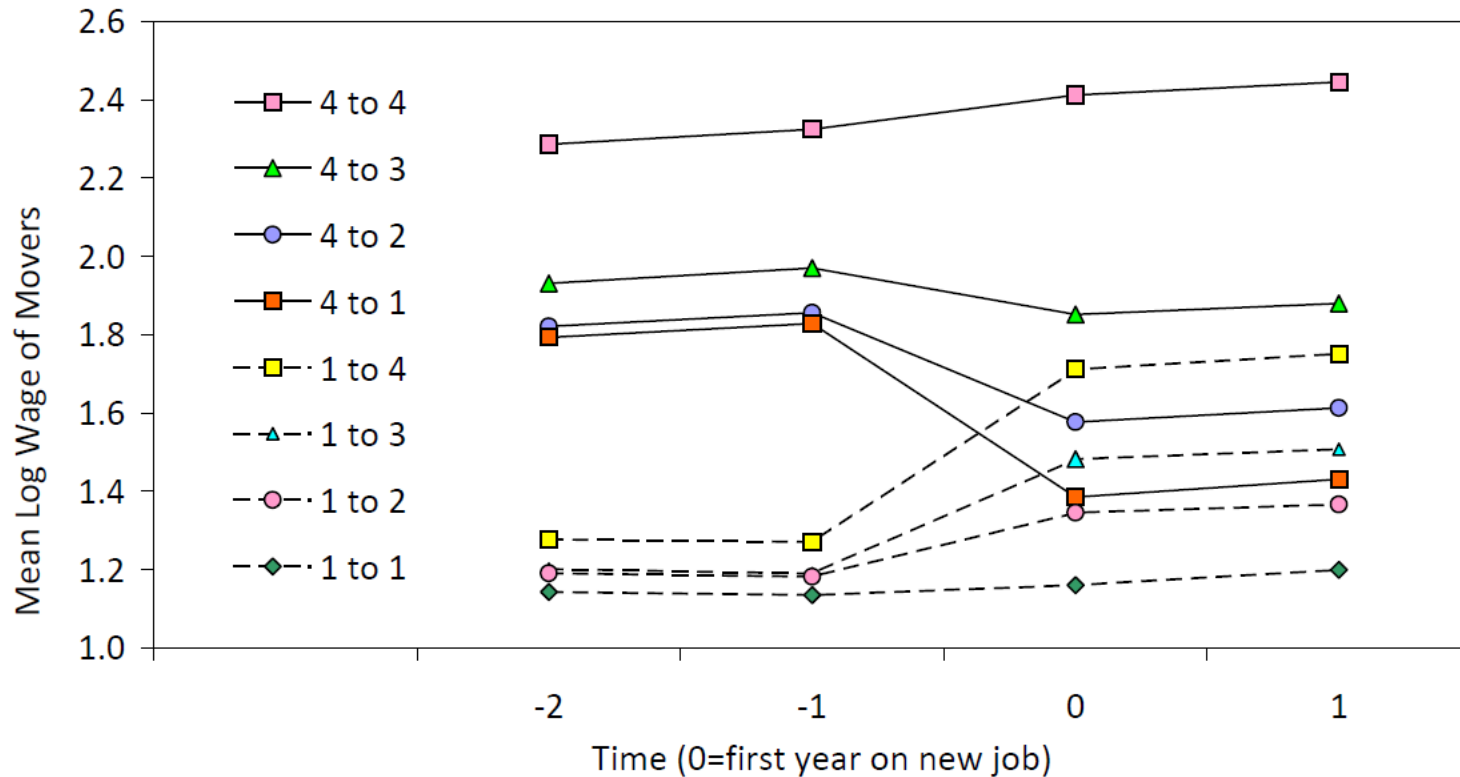
Notes: Figure shows mean wages of male workers at mixed-gender firms who changed jobs in 2004-2007 and held the preceding job for 2 or more years, and the new job for 2 or more years. Job is classified into quartiles based on mean log wage of co-workers of both genders. Source: Card, Cardoso and Kline (2016, Figure I).

Alternative Model:
No firing costs, but firm specific wage premium

Distribution of "Young" value contribution

Distribution of "Old" value contribution

$F(w^{NC})$

$G(w^{NC})$

w^{NC}

$\text{f}(w^{NC})$

$\text{g}(w^{C})$

Firm wage premium

$F(w^{C})$

$G(w^{C})$

w^{C}

$\text{f}(w^{C})$

$\text{g}(w^{C})$

- Cumulative density functions F and G measure mass of employed workers
- Density functions f and g measure workers at risk of being fired
- Young and old are ½ of all workers

Hypotheses and Evidence

- **Hypothesis 1: Constrained firms employ more young workers**

$$\frac{\frac{1}{2}F(w^C)}{\frac{1}{2}F(w^C) + \frac{1}{2}G(w^C)} > \frac{\frac{1}{2}F(w^{NC})}{\frac{1}{2}F(w^{NC}) + \frac{1}{2}G(w^{NC})}$$

- At the higher wage of the unconstrained firms, fewer young workers are productive enough

	Hypothesis 1 Tenure 0-2	
	(1)	(2)
Constraint	0.072***	0.044***
	(0.000)	(0.001)
Young		
Constraint x Young		
Sample	Firm	Firm
N	385979	204293
R-squared	0.148	0.077
Polynomial		x
Year x Ind. Dummies (3d)	x	x
Firm-Year		
Constraint	Rating	RDD (pooled)

Hypotheses and Evidence

- **Hypothesis 2a: Constrained firms fire relatively more young workers**

$$\frac{\frac{1}{2}f(w^C)}{\frac{1}{2}f(w^C) + \frac{1}{2}g(w^C)} > \frac{\frac{1}{2}f(w^{NC})}{\frac{1}{2}f(w^{NC}) + \frac{1}{2}g(w^{NC})}$$

	Tenure 0-2 | firing	
	(3)	(4)
Constraint	0.020***	0.011***
	(0.001)	(0.002)
Young		
Constraint x Young		
Sample	Firm	Firm
N	182181	99997
R-squared	0.019	0.016
Polynomial		X
Year x Ind. Dummies (3d)	X	X
Firm-Year		
Constraint	Rating	RDD (pooled)

- In the constrained firm, relatively more young workers are only slightly above cut-off for value creation
- Small decreases in productivity can lead to more layoffs

Hypotheses and Evidence

- Hypothesis 2b: Young workers in constrained firms have a higher chance of being fired

$$\frac{f(w^C)}{F(w^C)} - \frac{g(w^C)}{G(w^C)} > \frac{f(w^{NC})}{F(w^{NC})} - \frac{g(w^{NC})}{G(w^{NC})}$$

- In the constrained firm, more young workers in percentage terms are only slightly above cut-off for value creation relative to old workers

	Hypothesis 2			
	Fired			
	(5)	(6)	(7)	(8)
Constraint	0.007***		0.005***	
	(0.000)		(0.000)	
Young	0.071***	0.071***	0.081***	0.087***
	(0.000)	(0.000)	(0.000)	(0.000)
Constraint x Young	0.006***	0.007***	0.010***	0.004***
	(0.000)	(0.000)	(0.000)	(0.001)
Sample	Worker	Worker	Worker	Worker
N	11683559	11683559	5674018	5674018
R-squared	0.032	0.114	0.029	0.117
Polynomial			x	x
Year x Ind. Dummies (3d)	x		x	
Firm-Year		x		x
Constraint	Rating		RDD (pooled)	

Hypotheses and Evidence

- Hypothesis 3: Constrained firms fire relatively more young workers under an exchange rate appreciation

$$\frac{d}{dFX}\left[\frac{f(w^C)}{F(w^C)} - \frac{g(w^C)}{G(w^C)}\right] > \frac{d}{dFX}\left[\frac{f(w^{NC})}{F(w^{NC})} - \frac{g(w^{NC})}{G(w^{NC})}\right]$$

Treatment heterogeneity:

- Shock is increase in effective firm exchange rate (based on export share by currency)
- Inverse exposure of importers
- Redefine FX shock:

$$[Export\ share\ of\ revenue - Import\ share\ by\ currency\,] \times dFX$$

Relative firing of young by firm type

Panel B: Firm Fixed Effects

	Fired	
	(1)	(2)
Shock	0.008***	0.006***
	(0.001)	(0.001)
Young	0.079***	0.079***
	(0.000)	(0.000)
Shock x Young	-0.019***	-0.015***
	(0.001)	(0.001)
Constrained	-0.002***	-0.002***
	(0.000)	(0.000)
Constrained x Shock	0.000	0.000
	(0.001)	(0.001)
Constrained x Young	0.001	0.001**
	(0.001)	(0.001)
Constrained x Shock x Young	0.006***	0.000
	(0.002)	(0.001)
N	3757999	3757999
R-squared	0.069	0.069
Year dummies	Yes	Yes
Firm fixed effects	Yes	Yes
Firm-year fixed effects	No	No
Polynomial	Yes	Yes
	0	0
Shock	FX big	FX small
Constraint	RDD (pooled)	RDD (pooled)

Panel C: Firm-Year Fixed Effects

	Fired	
	(1)	(2)
Shock	-	-
Young	0.085***	0.086***
	(0.000)	(0.000)
Shock x Young	-0.023***	-0.018***
	(0.001)	(0.001)
Constrained x Young	0.003***	0.004***
	(0.001)	(0.001)
Constrained x Shock x Young	0.003*	-0.002
	(0.002)	(0.001)
N	3757999	3757999
R-squared	0.096	0.096
Year dummies	Yes	Yes
Firm fixed effects	Yes	Yes
Firm-year fixed effects	Yes	Yes
Polynomial	Yes	Yes
	0	0
Shock	FX big	FX small
Constraint	RDD (pooled)	RDD (pooled)

Specification

- Clever identification of credit access discontinuities: Can you show a "first stage regression" showing these line up with new bank lending?

- Fixed effects for worker characteristics to better control for sorting effects: Aim is to show that firing thresholds differ across firm types for the same worker type
  - Marital status/children/worker mobility
  - Worker cohort/age fixed effects (different from firm tenure)
  - Education, etc.

- Heterogeneity?
  - Is the differential firing effect concentrated in low wage quantiles?
  - Firing risk across firm hierarchy

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Summary

1. Interesting model of "employment hysteresis" under firing costs with different firing thresholds for financially constrained and unconstrained firms

2. Modelling of financial constrain as discount rate effect is "conceptually confusing"; better model it as cash flow effect

3. Questions about the empirical/macro relevance of the channel given tenure specific wages; investment in young workers facilitated by lower wages for the young

4. Alternative derivation of all three hypotheses based on firm specific wage premium under zero firing costs

5. Welfare/Efficiency: Higher firing risk of the young
   - A social preference? An insider/outsider problem?
   - Internalized by higher wages or social insurance?