

Entrepreneurial Selection with Frictions

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Management and Firm Performance”

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Introduction

Motivation and Preview

Plenty of evidence that managers characteristics are important for real outcomes.

What determines managers characteristics? When is control allocation inefficient?

What I do:

- ▶ Use Eurostat data to compare managers characteristics across Europe.
- ▶ Use Bruegel's firm level data to suggest a mechanism.
- ▶ Investigate efficiency implications in a static general equilibrium model.

Motivation and Preview

Plenty of evidence that **managers characteristics** are **important for real outcomes**.

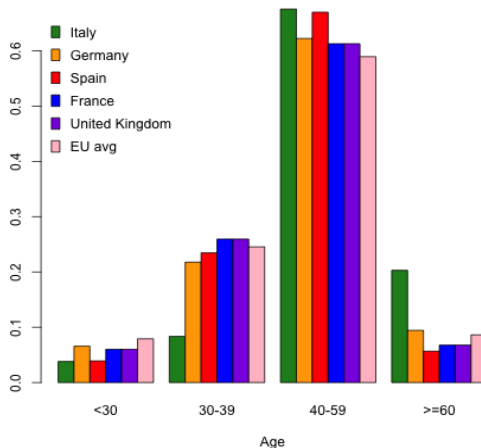
What determines **managers characteristics**? **When** is control allocation **inefficient**?

What I find:

1. Prevalence of over-65 managers in Italy fixed granular firm characteristics. Link this prevalence to access to credit.
2. Funding frictional → pecuniary externality washes out → constrained optimal allocation
3. Funding *and* control frictional → pecuniary externality *does not* wash out → constrained sub-optimal allocation possible

Italy: 2.3 times the EU average of over-60 managers

Source: Eurostat, data on Managers (ISCO - ILO definition)



Firm-level data to show robustness and suggest a mechanism

Is this supported by finer data?

Dataset: Bruegel's European Firms in a Global Economy.

- ▶ Survey of 15,000 European manufacturer across core-EU economies;
- ▶ Includes representative weighting;
- ▶ Collects information on:
 1. firm organization;
 2. firm export activity;
 3. credit access.
- ▶ Matched with firm financials from Amadeus.

Old CEOs 13% more likely in Italy

$$\text{CEO Older than 65}_{fc} = \beta_c \text{Country Dummies}_c + \Gamma X_{fc} + \epsilon_{fc}$$

<i>Dependent variable:</i> CEO Older than 65				
Italy	0.126*** (13.21)	0.129*** (12.45)	0.135*** (13.00)	0.139*** (7.98)
France	-0.047*** (-6.75)	-0.048*** (-6.27)	-0.029*** (-3.73)	-0.016 (-1.03)
United Kingdom	0.031*** (3.32)	0.027** (2.57)	0.048*** (4.59)	0.038* (1.95)
Spain	-0.023*** (-3.05)	-0.024*** (-3.15)	-0.007 (-0.84)	-0.007 (-0.45)
Germany	0.0910*** (16.20)	0.0909*** (15.22)	0.0183** (2.01)	0.00970 (0.51)
Industry FE		✓	✓	✓
Region FE		✓	✓	✓
Size Class FE		✓	✓	✓
Survey Controls			✓	✓
Balance Sheet Controls				✓
R ²	0.040	0.044	0.059	0.072
Observations	13,771	13,771	13,771	7,996

Survey Controls: Old Firm; CEO related to Owners; Active Abroad; Owned by Foreigners

Balance Sheet Controls: Employees; Total Assets; EBITDA; Liquidity

Not all about sample selection

Merit control

Financial - Managerial inputs trade-off?

$$\text{CEO Older than 65}_{fc} = \alpha + \beta \text{Managerial Constraint}_{fc} + \omega \text{Financial Constraint}_{fc} + \Gamma X_{fc} + \epsilon_{fc}$$

<i>Dependent variable:</i>								
CEO Older than 65								
	Others	Italy	Others	Italy	Others	Italy	Others	Italy
Managerial Constraint	-0.002 (-0.17)	0.041* (1.78)	0.019* (1.73)	0.044* (1.89)	0.015 (1.40)	0.046** (2.01)	0.010 (0.74)	0.048** (1.98)
Financial Constraint	-0.022*** (-3.26)	-0.044*** (-2.69)	-0.015** (-2.20)	-0.041** (-2.50)	-0.017** (-2.43)	-0.044*** (-2.71)	-0.016 (-1.56)	-0.049*** (-2.84)
Region FE			✓	✓	✓	✓	✓	✓
Size Class FE			✓	✓	✓	✓	✓	✓
State-Industry FE			✓		✓		✓	
Industry FE				✓		✓		✓
Survey Controls					✓	✓	✓	✓
Balance Sheet Controls							✓	✓
R ²	0.001	0.003	0.016	0.018	0.031	0.044	0.054	0.055
Observations	8,436	3,020	8,435	3,020	8,435	3,020	3,223	2,685

Survey Controls: Old Firm; CEO related to Owners; Active Abroad; Owned by Foreigners

Balance Sheet Controls: Employees; Total Assets; EBITDA; Liquidity

Zoom-in on credit

Real implications of this tradeoff?

Not all about sample selection

Merit control

A simple model to think about efficiency

Agents, goods, and preferences

Agents:

- ▶ Old gen (O) owner/manager.
- ▶ Young gen (Y) (potential) successor.
- ▶ A bank.

Good:

- ▶ Final consumption good c .

Preferences:

- ▶ Everybody is risk neutral.

Endowments and technology

Endowments:

- ▶ Human capital.
 - ▶ Old: Human capital h^O
 - ▶ Young: Human capital h^Y such that $\frac{h^Y}{h^O} = x > 1$
- ▶ One unit of labor.
- ▶ Old agents own firm licenses.

Technology:

- ▶ Manager's human capital: h^M
- ▶ Production Function: $\mathcal{O} = (n)^\alpha h^M$, where $\alpha < 0.5$

Timing and resources

1. Period Start:

- ▶ Agents trade firm licenses.
- ▶ Managers *anticipate* the wage (working capital constraint).

2. Period End:

- ▶ Bank requires $r = 0$ from **Old**, and $r = \gamma > 0$ from **Young**.
- ▶ Production, payment of the interest and of the firm's q .

$$\text{Production: } \max_n h^M n^\alpha - (1 + r)wn$$

Resources:

$$\text{Consumption: } c^M + c^W + \underset{\text{interest rate}}{r} nc^W = (n)^\alpha h^M$$

$$\text{Labor: } n = 1$$

Trade and production decision → payoffs

Payoff No Trade:

$$V_{\text{Young}}(\text{Not Buying}) = w$$

$$V_{\text{Old}}(\text{Keeping}) = \pi(\text{No Trade}, w)$$

Payoff Trade:

$$V_{\text{Young}}(\text{Buying}) = \pi(\text{Trade}, w) - q$$

$$V_{\text{Old}}(\text{Selling}) = w + q$$

Trade and production decision → payoffs

Payoff No Trade:

$$V_{\text{Young}}(\text{Not Buying}) = w$$

$$V_{\text{Old}}(\text{Keeping}) = \left(\frac{\alpha}{w}\right)^{\frac{\alpha}{1-\alpha}} (1 - \alpha)$$

Payoff Trade:

$$V_{\text{Young}}(\text{Buying}) = x \left(\frac{\alpha x}{(1 + \gamma)w} \right)^{\frac{\alpha}{1-\alpha}} (1 - \alpha) - q$$

$$V_{\text{Old}}(\text{Selling}) = w + q$$

Equilibrium in the market for control

w must clear the labor market:

$$w(\text{Trade Eqm}) = \frac{\alpha x}{1+\gamma}$$

$$w(\text{No Trade Eqm}) = \alpha$$

q must respect **Participation constraints**:

(No Trade) The most the young would pay $\bar{q} <$ The least the old would accept \underline{q}

(Trade) The most the young would pay $\bar{q} \geq$ The least the old would accept \underline{q}

Pecuniary externality and efficiency

Result 1

*There exists a unique equilibrium, mandating **Trade** if $x \geq (1 + \gamma)^\alpha$ and **No Trade** vice-versa. Such equilibrium is **not first best**. At the same time **such equilibrium is constrained efficient**.*

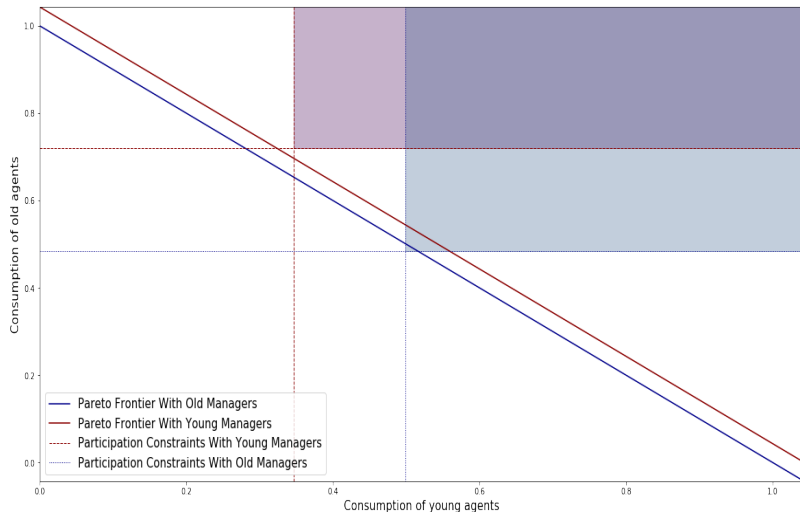
Pecuniary externality: If managers are not first best, wages are depressed and participation constraints tighter. The only good job is the top job.

Is there space for policy? Unless we can violate participation constraints, **no**.

Intuition: *Complete market for control* → All individually rational trades are accomplished → Pecuniary externalities cancel out (Greenwald and Stiglitz, 1986).

Redistribution can't help, address the friction

Constrained planner problem



When may redistribution help?

Example: friction affects the market for control.

$$\text{Resource constraint} = c^M + c^W + \frac{r}{\text{interest rate}} nc^W + \phi(q, \text{Trade Decision}) = (n)^\alpha h^M$$

$$V_{\text{Old}}(\text{Selling}) = w + q(1 - \phi)$$

Result 2

Incompleteness in the market allows for multiple equilibria. If multiple equilibria exist, they are Pareto-ranked, with Trade dominating No Trade. Planner could address coordination issues.

Intuition: The increase in wages under Trade decreases q and thus ϕq , but a single manager stepping down under No Trade cannot count on saving on ϕq through w .

When may redistribution help?

Example: friction affects the market for control.

$$\text{Resource constraint} = c^M + c^W + \underset{\text{interest rate}}{r} nc^W + \phi(q, \text{Trade Decision}) = (n)^\alpha h^M$$

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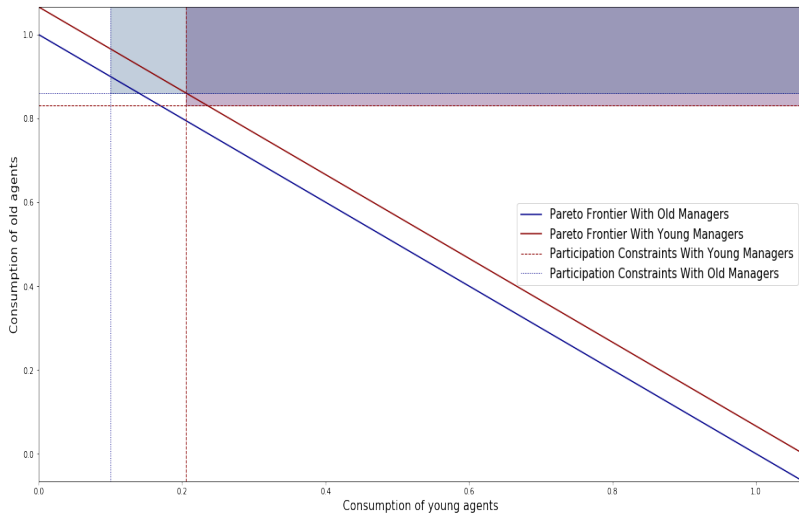
Result 2

*Incompleteness in the market allows for **multiple equilibria**. If multiple equilibria exist, they are Pareto-ranked, with **Trade dominating No Trade**. Planner could **address coordination** issues.*

Intuition: The increase in wages under Trade decreases q and thus ϕq , but a single manager stepping down under No Trade cannot count on saving on ϕq through w .

Redistribution may help

Constrained planner problem



Conclusions

Conclusion

This Paper:

- Uses firm level data to show that firm characteristics cannot explain higher frequency of old managers in Italy.
- Establishes possibility of a managerial-financial resources trade-off. Possible role of institutions to be explored.
- Uses static GE model to think about efficiency.

Take away:

- Relative importance of control-market vs funding-market frictions in determining slow turnover may inform us on the use for subsidies and similar interventions.

Further work:

- Deeper empirical investigation of the root reasons of slow turnover.

Thank you!

Back-up

Findings in context

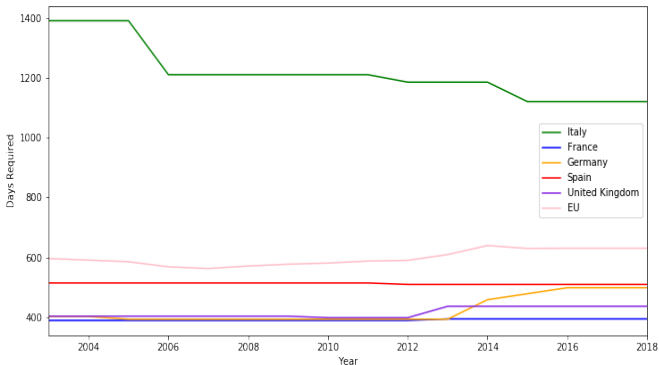
1. The empirical literature on **institutions, managers and their effects**: La Porta et al. (1999), La Porta et al. (2000), Bertrand and Schoar (2003), Bandiera et al. (2008), Bloom et al. (2013).
 - ▶ Highlight potential role of access to resources in managerial selection.
2. The literature on **allocation of control over firms**: Burkart et al. (2003), Caselli and Gennaioli (2005), Lippi and Schivardi (2014).
 - ▶ Study of managerial-financial inputs trade off and its efficiency implications. 1. Funding frictions cause *waste* due to a *pecuniary externality*, control market reaches *constrained best*; 2. Control and funding frictions *together* may *break down constrained optimality*.
3. The literature on **Italy's productivity problems**: Daveri and Parisi (2015), Pellegrino and Zingales (2017), Schivardi and Schmitz (2020).
 - ▶ Highlights indirect effects of managers characteristics. Effects on performance of individual firms just part of the story.

Italy: double expected time to sort a commercial dispute

Source: World Bank Doing Business Survey

Not only slow, also wasteful: 22 percent of assets involved in insolvency get lost (double Spain); 63 percent recovery rate on insolvent claim (15 % pts lower than France, second worst performer)

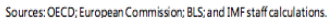
Caveat: Only suggestive, need more data. Intuition is coherent with empirical literature on access to credit (Jappelli et al. (2005), Stacchini and Strahan (2020)), and on value of relationships when enforcement is weak (Macchiavello and Marjaria (2015)). Implicit assumption: cost of new relationships is higher than increase in monitoring/default cost when life horizon shortens.



Source: Eurostat, data on population



Source: Calculations on OECD data

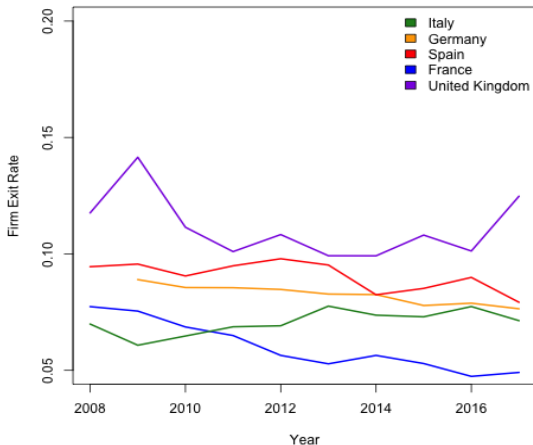
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Source: Eurostat, data on firm demographics



At least another country has similar firm dynamics

Source: Eurostat, data on firm demographics



$$\text{CEO Older than 65}_{fc} = \beta_c \text{Country Dummies}_c + \Gamma X_{fc} + \epsilon_{fc}$$
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Old CEOs 13% more likely in Italy - Merit

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<i>Dependent variable:</i>				
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United Kingdom	0.031*** (3.32)	0.027** (2.57)	0.050*** (4.66)	0.036* (1.75)
Spain	-0.023*** (-3.05)	-0.024*** (-3.15)	-0.006 (-0.79)	-0.014 (-0.82)
Germany	0.0910*** (16.20)	0.0909*** (15.22)	0.0140 (1.27)	0.0309 (1.45)
Industry FE		✓	✓	✓
Region FE		✓	✓	✓
Size Class FE		✓	✓	✓
Survey Controls			✓	✓
Balance Sheet Controls				✓
R ²	0.040	0.044	0.058	0.071
Observations	13,771	13,771	13,346	7,709

Survey Controls: ... + Merit (Pellegrino and Zingales (2017))

Balance Sheet Controls: Employees; Total Assets; EBITDA; Liquidity

Financial - Managerial inputs trade-off? - Sample Selection

$$\text{CEO Older than 65}_{fc} = \alpha + \beta \text{Managerial Constraint}_{fc} + \omega \text{Financial Constraint}_{fc} + \Gamma X_{fc} + \epsilon_{fc}$$

<i>Dependent variable:</i>								
CEO Older than 65								
	Others	Italy	Others	Italy	Others	Italy	Others	Italy
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Financial Constraint	-0.022*** (-3.26)	-0.044*** (-2.69)	-0.015** (-2.20)	-0.041** (-2.50)	-0.017** (-2.43)	-0.044*** (-2.71)	-0.016 (-1.56)	-0.049*** (-2.84)
Region FE			✓	✓	✓	✓	✓	✓
Size Class FE			✓	✓	✓	✓	✓	✓
State-Industry FE			✓		✓		✓	
Industry FE				✓		✓		✓
Survey Controls					✓	✓	✓	✓
Balance Sheet Controls							✓	✓
R ²	0.001	0.005	0.024	0.020	0.053	0.046	0.054	0.055
Observations	3,224	2,685	3,223	2,685	3,223	2,685	3,223	2,685

Survey Controls: Old Firm; CEO related to Owners; Active Abroad; Owned by Foreigners

Balance Sheet Controls: Employees; Total Assets; EBITDA; Liquidity

Financial - Managerial inputs trade-off? - Merit

$$\text{CEO Older than 65}_{fc} = \alpha + \beta \text{Managerial Constraint}_{fc} + \omega \text{Financial Constraint}_{fc} + \Gamma X_{fc} + \epsilon_{fc}$$

<i>Dependent variable:</i>								
CEO Older than 65								
	Others	Italy	Others	Italy	Others	Italy	Others	Italy
Managerial Constraint	-0.002 (-0.17)	0.041* (1.78)	0.019* (1.73)	0.044* (1.89)	0.013 (1.23)	0.050** (2.10)	0.010 (0.75)	0.052** (2.09)
Financial Constraint	-0.022*** (-3.26)	-0.044*** (-2.69)	-0.015** (-2.20)	-0.041** (-2.50)	-0.015** (-2.10)	-0.039** (-2.36)	-0.014 (-1.32)	-0.043** (-2.47)
Region FE			✓	✓	✓	✓	✓	✓
Size Class FE			✓	✓	✓	✓	✓	✓
State-Industry FE			✓		✓		✓	
Industry FE				✓		✓		✓
Survey Controls					✓	✓	✓	✓
Balance Sheet Controls							✓	✓
R ²	0.001	0.003	0.016	0.018	0.031	0.043	0.058	0.056
Observations	8,436	3,020	8,435	3,020	8,170	2,921	3,079	2,597

Survey Controls: Old Firm; CEO related to Owners; Active Abroad; Owned by Foreigners; Merit (Pellegrino and Zingales (2017))

Balance Sheet Controls: Employees; Total Assets; EBITDA; Liquidity

Old CEOs and easier access to credit

$$\text{Denied Credit}_{fc} = \alpha + \beta \text{CEO Older than 65}_{fc} + \Gamma X_{fc} + \epsilon_{fc}$$

Dependent variable:

Denied Credit

	Others	Italy	Others	Italy	Others	Italy	Others	Italy
CEO Older than 65	0.006 (0.16)	-0.070* (-1.65)	0.058 (1.63)	-0.079* (-1.84)	0.056 (1.53)	-0.073* (-1.70)	0.053 (0.93)	-0.100** (-2.24)
Region FE			✓	✓	✓	✓	✓	✓
Size Class FE			✓	✓	✓	✓	✓	✓
State-Industry FE			✓		✓		✓	
Industry FE				✓		✓		✓
Survey Controls					✓	✓	✓	✓
Balance Sheet Controls							✓	✓
R^2	~0.000	0.003	0.115	0.032	0.117	0.040	0.121	0.060
Observations	1,842	743	1,841	742	1,841	742	1,060	650

Survey Controls: Old Firm; CEO related to Owners; Active Abroad; Owned by Foreigners

Balance Sheet Controls: Employees; Total Assets; EBITDA; Liquidity

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[Older relationships](#)
[Softer screening](#)
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Old CEOs and older bank relationships

$$\text{Age Main Bank Rel.}_{fc} = \alpha + \beta \text{CEO Older than 65}_{fc} + \Gamma X_{fc} + \epsilon_{fc}$$

<i>Dependent variable:</i>								
Age Main Bank Rel.								
	Others	Italy	Others	Italy	Others	Italy	Others	Italy
CEO Older than 65	4.541*** (3.54)	4.487*** (5.49)	4.406*** (3.77)	4.311*** (5.32)	2.441** (2.27)	2.989*** (3.78)	1.754* (1.67)	2.683*** (3.19)
Region FE			✓	✓	✓	✓	✓	✓
Size Class FE			✓	✓	✓	✓	✓	✓
State-Industry FE			✓		✓		✓	
Industry FE				✓		✓		✓
Survey Controls					✓	✓	✓	✓
Balance Sheet Controls							✓	✓
R ²	0.006	0.021	0.101	0.045	0.235	0.141	0.175	0.154
Observations	4,483	1,860	4,482	1,860	4,482	1,860	2,680	1,657

Survey Controls: Old Firm; CEO related to Owners; Active Abroad; Owned by Foreigners

Balance Sheet Controls: Employees; Total Assets; EBITDA; Liquidity

$$\text{Business Plan}_{fc} = \alpha + \beta \text{CEO Older than 65}_{fc} + \Gamma X_{fc} + \epsilon_{fc}$$

Survey Controls: Old Firm; CEO related to Owners; Active Abroad; Owned by Foreigners
Balance Sheet Controls: Employees; Total Assets; EBITDA; Liquidity

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$$\text{Funding Use}_{fc} = \alpha + \beta \text{CEO Older than 65}_{fc} + \Gamma X_{fc} + \epsilon_{fc}$$
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$$\text{Innovation}_{fc} = \alpha + \beta \text{CEO Older than 65}_{fc} + \Gamma X_{fc} + \epsilon_{fc}$$

<i>Dependent variable:</i>								
	Innovation Others	Italy	Others	Italy	Others	Italy	Others	Italy
CEO Older than 65	0.024 (1.26)	-0.042* (-1.94)	0.019 (1.02)	-0.047** (-2.15)	0.010 (0.42)	-0.052** (-2.41)	-0.013 (-0.50)	-0.057** (-2.47)
Region FE			✓	✓	✓	✓	✓	✓
Size Class FE			✓	✓	✓	✓	✓	✓
State-Industry FE			✓		✓		✓	
Industry FE				✓		✓		✓
Survey Controls					✓	✓	✓	✓
Balance Sheet Controls							✓	✓
R^2	~0.000	0.001	0.057	0.029	0.085	0.064	0.070	0.064
Observations	10,750	3,021	10,750	3,021	10,750	3,021	5,310	2,686

Survey Controls: Old Firm; CEO related to Owners; Active Abroad; Owned by Foreigners

Balance Sheet Controls: Employees; Total Assets; EBITDA; Liquidity

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Market for control

$$\bar{q} = q : V_{\text{Young}}(\text{Buying at } \bar{q} | \text{Trade}) = w(\text{Trade Eqm}) = \frac{\alpha x}{1 + \gamma}$$

$$\underline{q} = q : V_{\text{Old}}\left(\text{Selling at } \underline{q} | \text{Trade}\right) = \pi(\text{Keep} | \text{Trade Eqm}) = \left(\frac{1 + \gamma}{x}\right)^{\frac{\alpha}{1 - \alpha}} (1 - \alpha)$$

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$$\max_{c^Y, c^O, M \in \{Y, O\}} c^Y + c^O$$

(Res. Constraint if $M = 0$) $c^Y + c^O = n^\alpha$

(Participation Constraint O) $c^O \geq V_O(\text{Selling} | M = O) = x n_{dev}^\alpha(Y)(1 - \alpha)$

$$(\text{Participation Constraint } Y) \quad c^Y \geq V_Y(\text{Not Buying} | M = Y) = \frac{\alpha X}{1 + \gamma} n^{\alpha-1}$$

(Participation Constraint O) $c^O \geq V_O(\text{Keeping} | M = Y) = n_{dev}^\alpha(O)(1 - \alpha)$

Constr. planner problem when also control market is frictional

$$\max_{c^Y, c^O, M \in \{Y, O\}} c^Y + c^O$$

(Labor Resource Constraint) $n = 1$

$$(\text{RC if } M = 0) \quad c^Y + c^0 = n^\alpha$$

$$(PCY) \quad c^Y \geq V_Y(\text{Buying} \mid M = O) = \alpha$$

$$(PCO) \quad c^O \geq V_O(\text{Selling} | M = O) = \alpha \phi n^{\alpha-1} + (1 - \phi) x n_{dev}^{\alpha}(Y)(1 - \alpha)$$

$$(\text{RC if } M = Y) \quad c^Y + c^O = n^\alpha x - (\gamma - \phi) \frac{\alpha x}{1 + \gamma} n^{\alpha-1} n - \phi x n^\alpha (1 - \alpha)$$

(PCY) $c^Y \geq V_Y(\text{Not Buying} | M = Y) = \frac{\alpha x}{1 + \gamma} n^{\alpha-1}$

(PCO) $c^O \geq V_O(\text{Keeping} | M = Y) = n_{dev}^\alpha(O)(1 - \alpha)$