



Governance structure, technical change and industry competition

Guerini, M. Harting, P. Napoletano, M.

30 June 2019

CEF - Ottawa

Université Côte d'Azur (GREDEG)

OFCE - SciencesPo

Bielefeld University

Sant'Anna School of Advanced Studies

Introduction

The rise of institutional investors

Percentage Ownership of Institutional Investors in U.S. Stock Markets

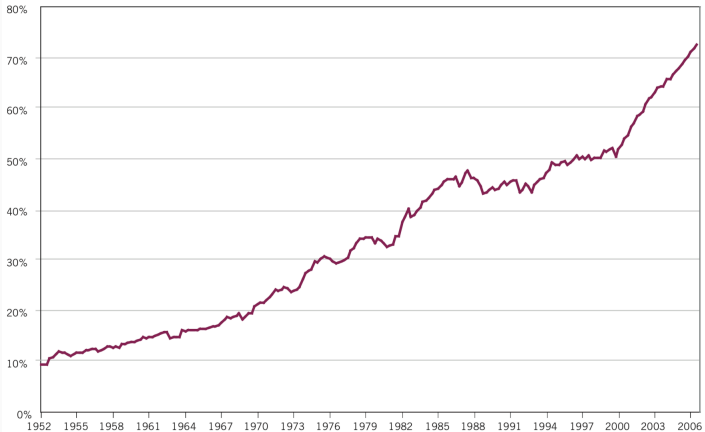


Figure 1: Source: Gillan and Starks (2007)

The importance of the governance...

Conflicting interests between shareholders and the management have been widely recognized in the economic literature (e.g. Jensen and Meckling, 1976).

However, also conflicts between institutional investors might arise since these are not an homogeneous group.

With respect to their investment horizon, in particular, some have a short-term perspective while others are more long-term oriented (see Gaspar et al., 2012).

...for the allocation of scarce resources

The strategic decisions of a firm strongly depend on the governance structure:

- ownership structure
- managerial independence

One of the most important strategic decisions is how to allocate scarce financial resources among alternative investment opportunities.

In the contemporary financialized economy the allocation problem has increasingly turned into a decision on how to distribute resources among real or financial investments.

Research Questions

- (i) How do different firms' governance structures impact on the optimal allocation of scarce resources, on the pace of technical change and on the degree of market competition?
- (ii) How do management payment schemes with different focus on bonus- and share-based remuneration affect the allocative choice, conditional on the governance structure of the firm?
- (iii) How is the aggregate relation between product market competition and economic growth affected in industries characterized by different degrees of long-termism and of management autonomy?

The model

Model Outline

Model of industrial dynamics with a stylized financial market. Firms face a trade-off between investments in R&D and in share buybacks (see Dawid et al., 2019).

Allocation of resources is the outcome of a bargaining process between different stakeholders defining the governance structure of the firm.

Shareholders can be either long-term (e.g. founders) or short-term investors (e.g. speculators). The two have different incentive structures regarding the allocation of resources.

The manager is endowed with a certain level of autonomy. The incentive structure of the manager is mainly determined by her remuneration scheme.

Industry competition

Demand of a firm i is given by

$$Q_{i,t}^D(P_{i,t}) = \frac{m_t(nP_{i,t})^{1/(\rho-1)}}{\sum_{j=1}^n (nP_{j,t})^{1/(\rho-1)}}. \quad (1)$$

The price of firm i in period t is given by

$$P_{i,t} = (1 + \mu) \frac{w_t}{A_{i,t}}, \quad (2)$$

The firm-specific operating profit $\Pi_{i,t}^O$ is then computed as

$$\Pi_{i,t}^O = \left(P_{i,t} - \frac{w_t}{A_{i,t}} \right) \cdot Q_{i,t}^D - W^F = \Pi_{i,t}^* - W^F \quad (3)$$

Technical change

The innovation process is modelled as a stochastic process, which depends on firm's R&D investments denoted by $I_{i,t}$ and that characterizes the research intensity of a firm

$$R_{i,t} = \frac{I_{i,t}}{Q_{i,t-1}P_{i,t-1}}. \quad (4)$$

The productivity dynamics entailed by the innovative activity is expressed as

$$A_{i,t} = \begin{cases} \zeta_{i,t}A_{i,t-1} & \text{with prob. } \alpha (1 - \exp\{-\lambda \cdot R_{i,t}^T\}) \\ A_{i,t-1} & \text{else,} \end{cases} \quad (5)$$

where the productivity gain $\zeta_{i,t}$ reads

$$\zeta_{i,t} = \zeta \cdot \max\left\{1, \left(\frac{A_{t-1}^{\max}}{A_{i,t-1}}\right)\right\}. \quad (6)$$

Financial sector - buybacks

The long-term investors control a fixed fraction ℓ of the outstanding shares $N_{i,t}$. They trade only to keep a constant proportion ℓ of shares.

$(1 - \ell)N_{i,t}$ shares are traded at the financial market in each period by speculative short-term investors.

Expectations on share price and dividends per share determine the market clearing price.

The firm invests $B_{i,t}$ to buyback own shares which affects the market clearing share price

Buybacks influence price expectations of traders.

Individual objectives

For the manager

$$\mathcal{M}_{i,t} = W^F + \gamma \Pi_{i,t}^* + \beta V_{i,t}. \quad (7)$$

For the short-term investors

$$\mathcal{S}_{i,t} = (V_{i,t} - V_{i,t-1}) + d_t \quad (8)$$

For the long-term investors

$$\mathcal{L}_{i,t} = N_{i,t}^L d_{t+1} + (V_{i,t} - V_{i,t-1}) N_{i,t-1}^L. \quad (9)$$

Firm bargaining

Firm optimal choice is the outcome of a joint decision process of the three stakeholders of the firms.

Each stakeholder aims at maximizing a specific objective and the final decision reflects their relative bargaining power.

The constrained decision of the firm reads

$$\begin{aligned} \max_{\{I_{i,t}, B_{i,t}\}} J_{i,t} &= \mathcal{M}_{i,t}^{\psi} \mathcal{S}_{i,t}^{\phi^S} \mathcal{L}_{i,t}^{\phi^L} \\ &\text{subject to} \\ I_{i,t}^* + B_{i,t}^* &\leq S_{i,t}(1 - \delta) - W^F \end{aligned} \tag{10}$$

The bargaining power of each stakeholder is measured by the exponents $\psi, \phi^S, \phi^L \in [0, 1]$, with $\psi + \phi^S + \phi^L = 1$.

Optimal decision

To find the root for the optimal allocation between R&D investments and share buybacks, the weighted returns from a marginal increase in I and in B are equated.

Therefore, the optimal solution for each single firm is defined as the pair of values $(I_{i,t}^*, B_{i,t}^*)$ that solves

$$\frac{dJ_{i,t}}{dI_{i,t}} = \frac{dJ_{i,t}}{dB_{i,t}}. \quad (11)$$

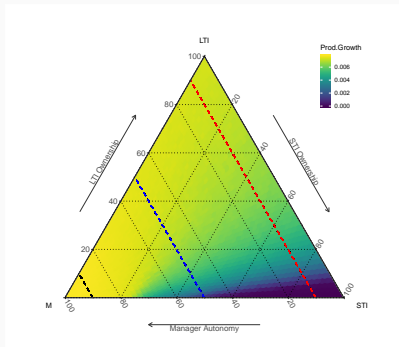
Results

Calibration results

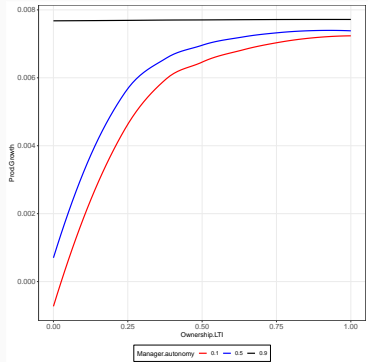
Variable	Simulated value	Empirical Target	Source
Productivity growth (%)	0.54% (0.015)	0.59%	EU-KLEMS (Jäger, 2018)
Industry-wide buybacks-R&D ratio	0.49 (0.081)	0.44	S&P 350 Europe (Sakinç, 2017)
Industry-wide buybacks-dividends ratio	0.15 (0.020)	0.22	S&P 350 Europe (Sakinç, 2017)

Table 1: Empirical targets and simulated values for selected variables. Standard deviations in parentheses.

Governance and technical change



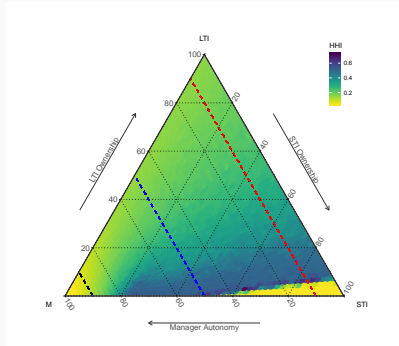
(a)



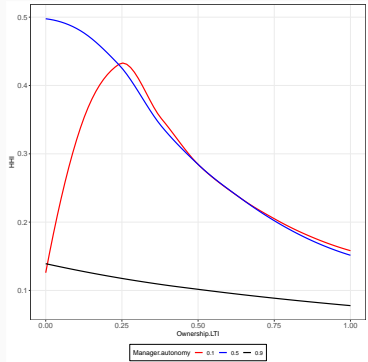
(b)

Simple example?

Governance and concentration

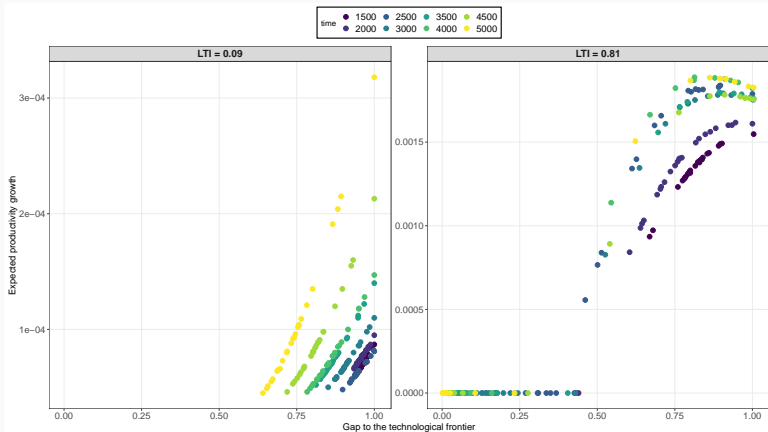


(a)

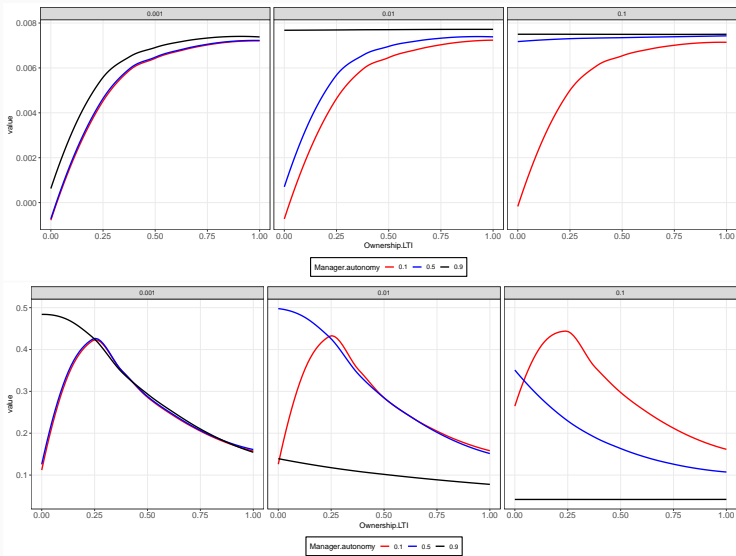


(b)

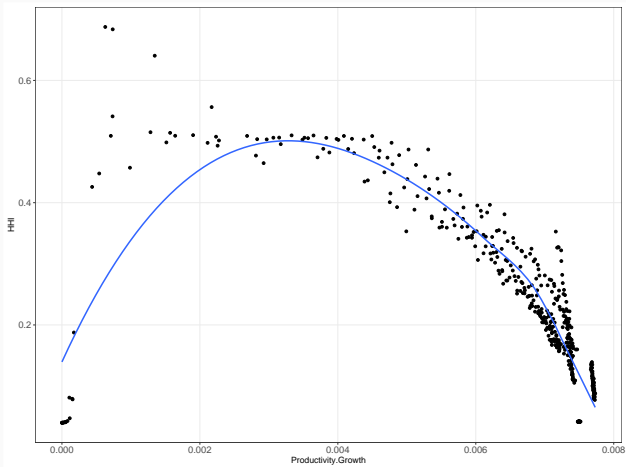
Firms incentives



Manager remuneration, technical change and concentration



Competition and growth



Conclusions

Main results

- non-trivial inverted U-shaped relation between technical change and industry concentration (Aghion et al., 2005)
- but when the manager is aligned with LTI and the manager is sufficiently independent, this relation breaks down.

Two transmission channels

- positive monotone relation between the proportion of shares controlled by long-term institutional investors and the growth rate of productivity;
- there can be an inverted U-shaped link between the presence of long-term investors and market concentration.

What lesson can be learned from this exercise?

The holy grail of policy makers:

rapid technical change with high competition!

But this is feasible only under specific conditions:

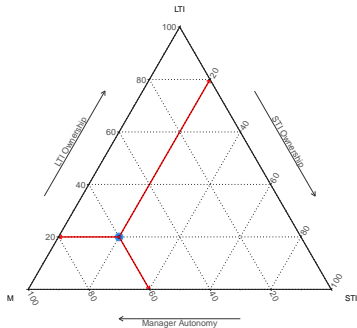
- sufficient proportion long-term investors
- corporations should provide the right incentives for the management via:
 - a remuneration scheme with a strong link between profits and salary
 - a substantial autonomy that neutralizes the influence of speculators

References

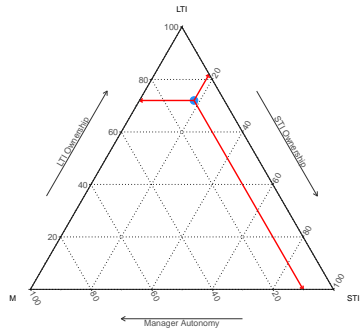
- Aghion, P., N. Bloom, R. Blundell, R. Griffith, and P. Howitt (2005). Competition and innovation: An inverted-u relationship. *The Quarterly Journal of Economics* 120(2), 701–728.
- Dawid, H., P. Harting, and S. van der Hoog (2019, 02). Manager remuneration, share buybacks, and firm performance. *Industrial and Corporate Change* 28(3), 681–706.
- Gaspar, J.-M., M. Massa, P. Matos, R. Patgiri, and Z. Rehman (2012, 02). Payout Policy Choices and Shareholder Investment Horizons*. *Review of Finance* 17(1), 261–320.
- Gillan, S. L. and L. T. Starks (2007). The evolution of shareholder activism in the united states*. *Journal of Applied Corporate Finance* 19(1), 55–73.
- Jäger, K. (2017. Revised 2018.). Eu klems growth and productivity accounts 2017 release - description of methodology and general notes.
- Jensen, M. C. and W. H. Meckling (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3(4), 305 – 360.
- Sakinç, M. E. (2017). Share repurchases in europe. a value extraction analysis. *ISIGrowth Working Paper Series* (16).

How to read the unitary simplex

M = 60%, LTI = 20%, STI = 20%



M = 10%, LTI = 72%, STI = 18%



Back