

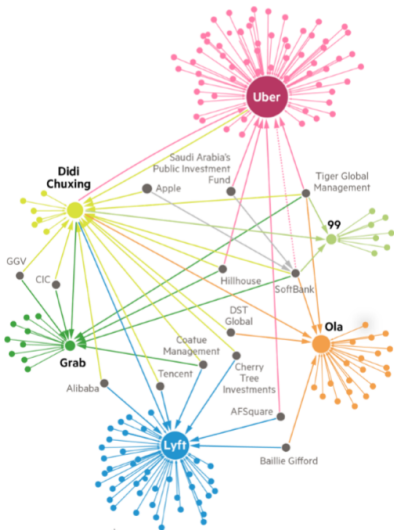
# Common Ownership: Efficiency or Market Power?

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# Investors in car-booking companies



► Cross-ownership:

Uber-Didi

Uber-Grab

► Common ownership

SoftBank (Uber, Ola, Grab)

Tiger Global (Uber, Ola, Grab)

AFSquare (Uber, Lyft)

Fidelity (Uber, Lyft)

CrunchBase; FT research

## Question

Do common/cross ownership  
arrangements aggravate  
the oligopoly problem?

# Outline

- ▶ Trends
  - ▶ Oligopoly widespread and on the rise
  - ▶ The increase and consolidation of institutional investment and common ownership (CO)
    - ▶ Change in ownership patterns of firms
- ▶ Corporate governance and overlapping ownership
- ▶ Market power or efficiency?
  - ▶ The Structure-Conduct-Performance paradigm revisited
- ▶ Efficiency defense
  - ▶ Innovation and spillovers
  - ▶ General equilibrium effects in the macroeconomy
- ▶ Antitrust implications
- ▶ Conclusion

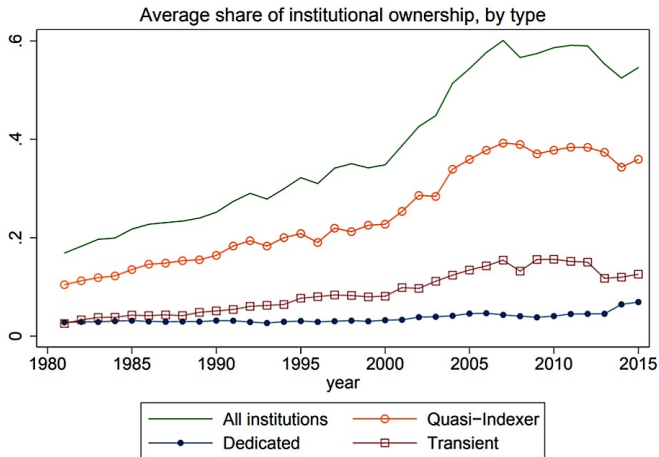
# Oligopoly widespread and on the rise

- ▶ Growing product market concentration and market power (Grullon et al. 2016; Autor et al. 2017; Head and Spencer 2017).
- ▶ Increase in economic profits and markups (De Loecker and Eeckhout 2019; Hall 2018).
- ▶ Evidence of monopsony power in labor markets (Azar et al. 2017, 2018; Benmelech et al. 2018).
- ▶ Declining labor share (Barkai 2016; Autor et al. 2017; Giandrea and Sprague 2017).
- ▶ General concerns:
  - ▶ Perception of lack of dynamism: entry and exit, investment, and innovation on both sides of the Atlantic (CEA 2016 reports, Akcigit and Ates 2019).
  - ▶ After the Great Recession and the "weak" recovery: potential secular stagnation of advanced economies blamed on increased market power (Summers 2015, Stiglitz 2016).

# The changing ownership structure of the firm

1. Institutional stock ownership has increased in the last 35 years.
  - ▶ World of dispersed ownership in US of Berle and Means (1932) no longer applies.
  - ▶ Large assets managers: BlackRock has \$6 trillion under management.
2. The asset management industry has become more concentrated.
  - ▶ For close to 90% of S&P 500 firms, BlackRock, Vanguard, and State Street together constitute the largest shareholder.
  - ▶ The ten biggest owners of any stock hold about 30% combined.
3. There has been a shift from active to passive investors (index funds, ETFs), who are not passive owners:
  - ▶ Larry Fink: "We are an active voice, we work with companies".
  - ▶ Institutional investors are *influential* even if passive (voice and voting):
    - ▶ Form powerful voting blocks, engage informally with management on firm strategy, make public statements, weigh in on corporate governance (McCahery et al. 2016; Appel et al. 2016).
4. Common ownership patterns on the rise in many industries.
5. Minority cross-ownership shareholdings also widespread in many industries.
  - ▶ Automobiles, airlines, financials, energy.

# Increasing institutional ownership and indexation



Gutierrez and Philippon, 2016

# What is the objective of the firm with overlapping ownership?

- ▶ With overlapping ownership, manager of a firm should account also for profits and external effects on other firms (Hansen and Lott 1996, Gordon 2003).
- ▶ Parsimonious assumption: Manager of a firm maximizes weighted average of shareholders' utilities (Rotemberg 1984).
  - ▶ Rationalized by voting on management strategies/power indexes of shareholders (Azar 2017, Brito et al. 2019)
    - ▶ Managers maximize support from shareholders.
    - ▶ Matvos and Ostrovsky (2008): shareholders take portfolio considerations into account in voting decisions (e.g. mergers).
    - ▶ Fos and Tsoutsoura (2014); Aggarwal et al. (2017): shareholder dissent hurts directors; director elections matter because of career concerns.
    - ▶ He et al. (2017): diversified managers are more likely to vote against management.



# Governance mechanisms

- ▶ Common owners in an industry may have the ability and incentive to influence management (Azar et al. 2018, Posner et al. 2016) and relax competition (Rubinstein et al. 1983).
  - ▶ Both voice and exit can strengthen with common ownership (Edmans et al. 2018).
  - ▶ Not pushing for aggressiveness in management contracts is a mechanism by which common owners can relax competition (Antón et al. 2019).
  - ▶ Funds:
    - ▶ Passive investor does not mean passive owner (Appel et al. 2016).
  - ▶ Portfolio managers have incentives to increase even marginally value of firms in portfolio since this increases management fees (Lewelen and Lewelen 2018).
- ▶ Countervailing agency problems:
  - ▶ Bebchuk et al. (2017): index fund managers may not have incentives to max wealth of beneficial investors.
  - ▶ Hansen and Lott (1996): Larger agency costs associated with more managerial discretion when managers internalize externalities with portfolio value maximization.

# Common ownership and the objective of the firm

(Salop and O'Brien 2000)

- ▶ Industry with  $J$  firms and  $I$  owners:
  - ▶ Ownership share (cash flow rights) of firm  $j$  accruing to investor  $i$ :  $v_{ij}$
  - ▶ Control rights of firm  $j$  held by owner  $i$ :  $\gamma_{ij}$
- ▶ Total portfolio profits of investor  $i$ :  $\sum_{k=1}^J v_{ik} \pi_k$ , where  $\pi_k$  are the profits of portfolio firm  $k$ .
- ▶ Manager of firm  $j$  maximizes a weighted average of its shareholders' portfolio profits (weights given by control rights  $\gamma_{ij}$ ), equivalently:

$$\pi_j + \sum_{k \neq j} \lambda_{jk} \pi_k$$

where

$$\lambda_{jk} \equiv \frac{\sum_i \gamma_{ij} v_{ik}}{\sum_i \gamma_{ij} v_{ij}}$$

is the degree of internalization (Edgeworth's 1881 coefficient of sympathy in the contract curve; Cyert and DeGroot 1973) of the manager of firm  $j$  for firm  $k$ .

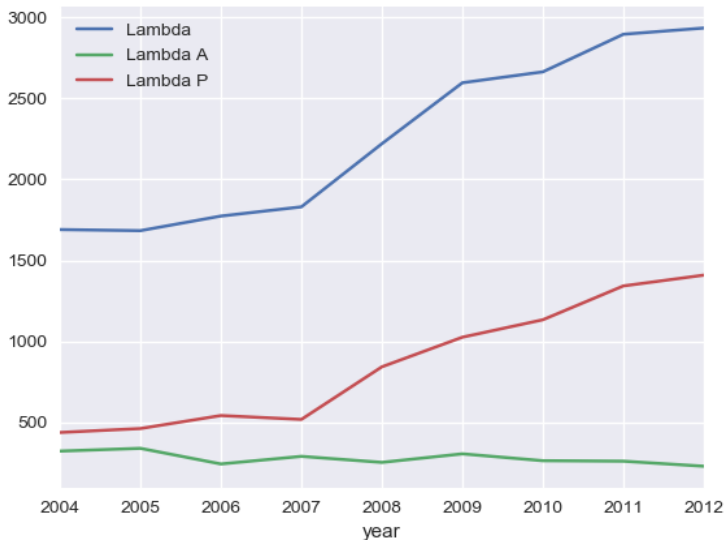
# Common ownership: Active and passive investors

(Banal et. al 2019)

- ▶ Symmetric model
  - ▶ Each firm has a set of (identical) active major shareholders and a distinct set of (identical) passive major shareholders, which are in turn a minority shareholder in the other firms.
  - ▶ May decompose  $\lambda_{jk}$  into lambda active and lambda passive.
- ▶ **Result:** If passive investors are more diversified than active ones,  $\lambda_{jk}$ 
  - ▶ (i) increases in the fraction of holdings of passive investors, and
  - ▶ (ii) increases (decreases) in the level of concentration of passive (active) investors.
- ▶ Empirical analysis (time frame 2004-2012)
  - ▶ Ownership data: Thomson Reuters Global One
  - ▶ Firm data: Compustat US (publicly listed firms excluding utilities and financials)
  - ▶ Industries: NAICS-3

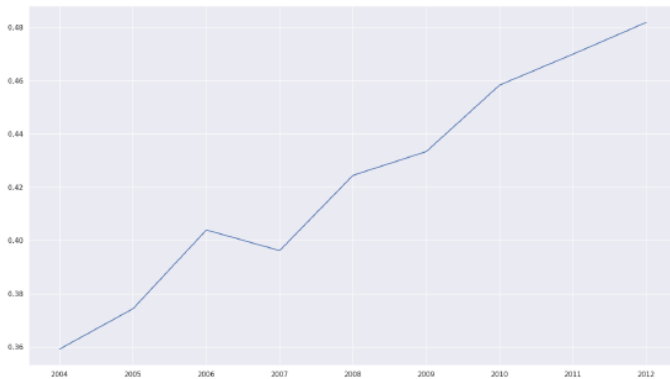
# Sympathy up: Lambda, lambda active and lambda passive

(Banal et. al 2019)



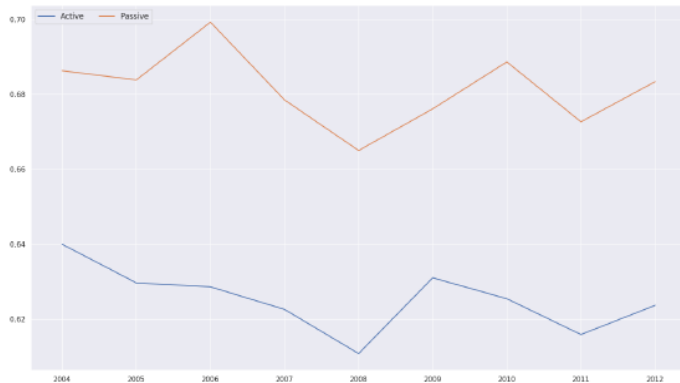
# Why is sympathy up? (i) Shift from active to passive

Share of passive investors' holdings



# Why is sympathy up? (ii) Passive are more diversified

## Investor diversification



# Market power or efficiency?

1. Does increase in common ownership aggravates oligopoly/market power problem?
  2. If so, is there an efficiency defense?
- 
- ▶ The Structure-Conduct-Performance paradigm revisited

# Structure-Conduct-Performance paradigm

- ▶ 1960s, Market power hypothesis (Bain):
  - ▶ Firms in concentrated markets protected by barriers to entry earn high price/cost margins and profits.
- ▶ Cross section studies of industries:
  - ▶ Relation between concentration (HHI) and profitability is statistically weak and estimated concentration effect usually small (Schmalensee)
- ▶ Conduct is not modeled.
- ▶ Efficiency hypothesis (Demsetz, Chicago):
  - ▶ Large firms are more efficient, command larger price/cost margins and earn higher profits (therefore concentration and industry profitability go together).
  - ▶ "Superstar" firms favored by technological change gain market share increasing concentration and margins (Autor et al. 2017).



# Cournot with common ownership

(Reynolds & Snapp 1986, Bresnahan & Salop 1986)

- ▶ Lerner index of firm  $j$ :

$$L_j = \frac{p - C'_j}{p} = \frac{\sum_k \lambda_{jk} s_k}{\eta},$$

where  $\eta$  is the elasticity of demand and  $s_k$  the market share of firm  $k$ .

- ▶ In equilibrium, the market share-weighted industry Lerner index is

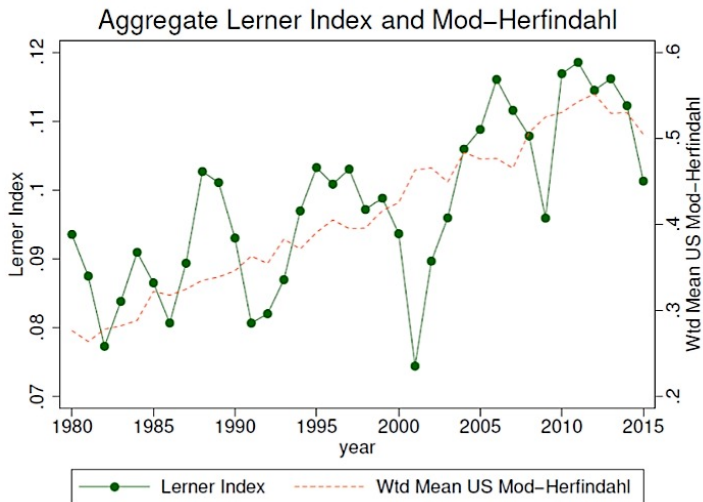
$$\sum_j s_j (p - C'_j) / p = \text{MHHI} / \eta,$$

where MHHI is the modified HHI:

$$\text{MHHI} \equiv \sum_j \sum_k \lambda_{jk} s_j s_k = \text{HHI} + \sum_j \sum_{k \neq j} \lambda_{jk} s_j s_k = \text{HHI} + \Delta$$

- ▶  $\Delta$  is a measure of the unilateral anti-competitive incentives due to common ownership.
- ▶ The matrix  $\Lambda$  can accommodate both common and cross-ownership patterns to yield  $G\text{HHI} = s' \Lambda s$ .

# Aggregate Lerner index and Modified Herfindahl



Gutierrez and Philippon, 2017

# Structure-Conduct-Performance paradigm (R)

## Market power hypothesis (augmented)

- ▶ Firms in markets with high levels of overlapping ownership, controlling for concentration, earn high p/c margins and profits.
- ▶ Calibration: evolution of common ownership can match evolution of margins (Azar and Vives, 2019; Backus et al. 2019).
- ▶ Evidence
  - ▶ US: Airlines (2001-14) and banking (2004-13) (using MHHI, Azar, Schmalz and co-authors)
    - ▶ Caveat: MHHI is endogenous.
    - ▶ Empirical debate: O'Brien and Waehrer (2017), Dennis et al. (2018), Kennedy et al. (2017), Gramlich and Grundl (2017).
    - ▶ Backus et al. (2018) use a structural approach in the cereal industry and find large potential (but not actual) implied effects of common ownership relative to mergers.
  - ▶ Cross section of industries: increases in intra-industry common-ownership density predict industry margins (Azar 2012) and firm margins (Banal et al. 2019).
  - ▶ Underinvestment in the US since early 2000s (Gutiérrez and Philippon 2016, 2017):
    - ▶ Firms owned by quasi-indexers and belonging to industries with high concentration and high common ownership drive investment gap.

# Margins and lambdas

(Banal et. al 2019)

- ▶ Firm-level specification to explain margins with lambdas using cost of goods sold (proxy for labor) and plant property and equipment (proxy for capital) as controls (De Loecker and Warzynski 2012; De Loecker 2013).
- ▶ Observe per-period firm-level sales, capital and total variable cost of production.
- ▶ Estimate industry-specific Cobb-Douglas production function.
- ▶ Assume proportional control.

## Results:

1. Lambdas have a strongly significant positive effect on markups.
2. Both active and passive lambdas have a strongly significant positive effect on markups.
3. Quantitatively, the impact of lambda passive is about double the impact of lambda active.

# Structure-Conduct-Performance paradigm (R)

## Efficiency hypothesis (revised)

- ▶ High levels of CO and efficiency are associated because CO improves information sharing, internalization of horizontal and vertical external effects, corporate governance, and induces managers to reduce cost/improve performance.
- ▶ Large firms have more CO links, better corporate governance, are more efficient, and command larger price/cost margins, earn higher profits.
- ▶ Therefore, CO and high p/c margins and industry profits go together.
  - ▶ He and Huang (2017): US cross-held public firms (1980-2010) have higher market share growth and profitability due to efficiency gains and enhanced innovation productivity (patents per \$ spend in R&D).
  - ▶ Geng et al. (2016): vertical CO links improve internalization of patent complementarities.

# Overlapping ownership and the objective of the firm

(López and Vives 2019)

- ▶ Allowing for common and cross ownership with symmetric stakes and control weights ( $v_{ij} = v$ ,  $\gamma_{ij} = \gamma$ ).
- ▶ Manager of firm  $j$  maximizes

$$\varphi_j = \pi_j + \lambda \sum_{k \neq j} \pi_k$$

where the value of  $\lambda$  depends on the type of overlapping ownership.

- ▶ Suppose each firm has a reference shareholder and each investor acquires a share  $\alpha$  of the firms which are not under his control:

	Common Ownership, $v_{ik} = \alpha, \gamma_{ik} = 0$ Silent Financial Interests (SFI)	Common Ownership, $v_{ij} = \gamma_{ij}$ Proportional Control (PC)	Cross-ownership (by firms, PCO)
$\lambda$	$\frac{\alpha}{1-(I-1)\alpha}$	$\frac{2\alpha[1-(I-1)\alpha] + (I-2)\alpha^2}{[1-(I-1)\alpha]^2 + (I-2)\alpha^2}$	$\frac{\alpha}{1-(J-2)\alpha}$

- ▶ In the three cases  $\lambda$  increases with the investment stake  $\alpha$  (with control rights only in case PC).
- ▶ For given number of investors  $I (= J)$  and  $\alpha$ :  $\lambda^{PC} > \lambda^{SFI} > \lambda^{PCO}$ .

# Overlapping ownership, spillovers, and innovation

(López and Vives 2019)

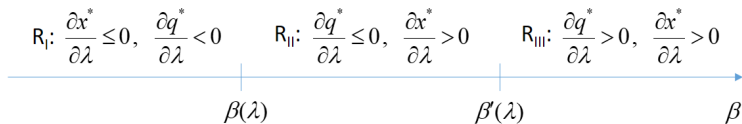
- ▶ Socially optimal level of R&D is between two and three times as high as the level of observed R&D because of non-internalized technological spillovers (Bloom et al. 2013):
  - ▶ Average sensitivity of .4 to .5 of the stock of knowledge of firm  $j$  in relation to the R&D investment of  $k \neq j$ .
- ▶ Question: Can overlapping ownership arrangements (OOAs) help to internalize spillovers?
- ▶ General symmetric model of cost-reducing R&D investments with spillovers in Cournot or Bertrand oligopoly with overlapping ownership.
- ▶ Central scenario: Each firm  $j = 1, \dots, J$  chooses simultaneously R&D ( $x_j$ ) and output (homogeneous product) ( $q_j$ ) or price (differentiated products) ( $p_j$ ) and the manager of firm  $j$  maximizes

$$\varphi_j = \pi_j + \lambda \sum_{k \neq j} \pi_k.$$

# OOAs and innovation incentives

(López and Vives 2019)

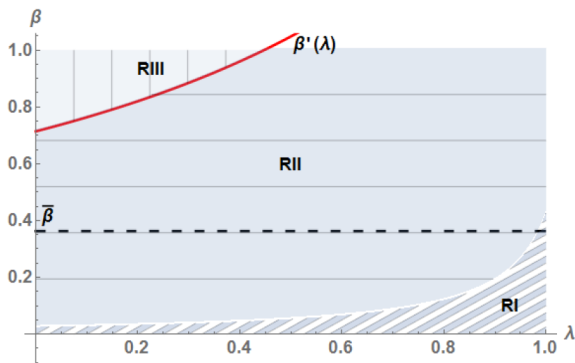
- ▶ Result: spillover partition in potentially three regions:



- ▶  $\underline{\beta}(\lambda)$  and  $\beta'(\lambda)$  are increasing with market concentration in the Cournot case.
- ▶  $\underline{\beta}(\lambda)$  and  $\beta'(\lambda)$  are weakly increasing in  $\lambda$ .
- ▶  $\beta'$  is decreasing in the effectiveness of R&D.
- ▶ In the model specifications  $\partial x^* / \partial \lambda \partial \beta > 0$ .
- ▶ Testable predictions:
  - ▶ a positive relationship between overlapping ownership and R&D should be found in industries with high enough spillovers and low enough concentration;
  - ▶ the positive association should extend to output in industries with high effectiveness of R&D;
  - ▶ impact of overlapping ownership on R&D should be higher when spillovers are high.



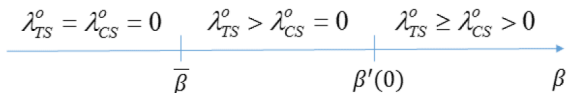
# Regions I, II and III for Linear Bertrand with product differentiation ( $J = 8$ )



# Welfare Analysis

(López and Vives 2019)

**Proposition.** In the Cournot case, under regularity assumptions (assumptions hold in the models) there are threshold values  $\bar{\beta} < \beta'(0)$ :

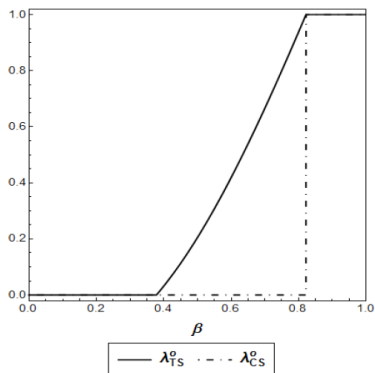


- ▶ In all cases, CS standard is more stringent:  $\lambda_{TS}^o \geq \lambda_{CS}^o$ .
- ▶ Whenever  $\lambda_{TS}^o \in (0, 1)$  or  $\lambda_{CS}^o \in (0, 1)$ , then
  - ▶  $\lambda_{TS}^o, \lambda_{CS}^o$  are strictly increasing in  $\beta$ ;
  - ▶  $\lambda_{TS}^o$  is positively associated with R&D effectiveness;
  - ▶  $\lambda_{TS}^o$  increases with  $J$ , the elasticity of demand and of the innovation function (simulations).
- ▶ In the model specifications, both  $\bar{\beta}$  and  $\beta'(0)$  are decreasing in  $J$ .
- ▶ Similar results for Bertrand models (linear and constant elasticity).

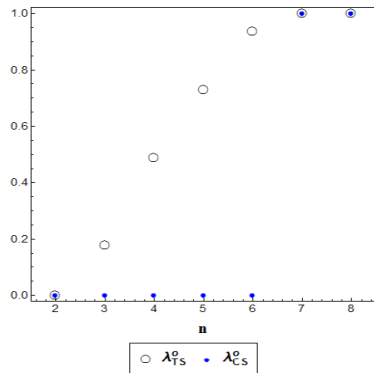
# Welfare Analysis

Socially optimal level of overlapping ownership (d'Aspremont-Jacquemin model; López and Vives 2019)

Simulation (web)



$J = 6$



$\beta = 0.8$

# Macroeconomic effects (I)

(Azar and Vives 2019)

- ▶ Macroeconomic framework in which firms are large and have market power in both product and factor markets.
- ▶ Each firm maximizes a share-weighted average of shareholder utilities, which makes the equilibrium independent of price normalization.
- ▶ Owners and workers (both consumers):
  - ▶ Owners hold all the shares in the firms.
  - ▶ An owner holds shares in one firm and in one index fund representing the market portfolio.
- ▶ Results (one-sector economy; non-increasing returns):
  - ▶ An increase in effective market concentration (accounting for overlapping ownership) leads to depressed employment, real wages, and labor share.
  - ▶ Controlling common ownership and reducing concentration are complements in fostering employment while government jobs are a substitute to those policies.

# Macroeconomic effects (II)

(Azar and Vives 2019)

- ▶ Multiple sector economy:
  - ▶ An owner holds shares in one firm, in one industry fund, and in one economy wide index fund.
- ▶ Results:
  - ▶ To foster employment, traditional competition policy on market concentration is adequate.
  - ▶ Common ownership can have a positive or negative effect:
    - ▶ Negative for intraindustry CO.
    - ▶ Positive for economy-wide CO, due to an intersectoral pecuniary externality, when the impact of profit internalization on market power in the labor market is lower than in product markets.
- ▶ Caveats: vertical relations, different pattern of consumption between owners and workers.

# Antitrust concerns on OOAs

- ▶ Growing interest in assessing competitive effects of OOAs:
  - ▶ Rapid growth of common ownership with stakes in competing firms.
  - ▶ Growth of private equity investment firms holding partial ownership interests in competing firms.
  - ▶ Some notorious cross-ownership cases.
- ▶ US: OOAs examined under Clayton Act (S. 7) and Hart-Scott-Rodino Act:
  - ▶ Institutional investors can hold up to 15% without need to notify to the antitrust authority.
  - ▶ OOAs can be challenged if they substantially lessen competition.
- ▶ Proposals on how to deal with OOAs:
  - ▶ Elhauge (2016, 2017): use antitrust to control the effects of rising common ownership (Clayton Act (S.7) and Sherman Act (S.1)).
  - ▶ Posner et al. (2016): limit ownership in oligopolistic industries for institutional investors to benefit from a safe harbor (from enforcement of the Clayton Act).
  - ▶ Rock and Rubinfeld (2017) provide a criticism of those views.

# OOAs in the EU

- ▶ European Commission (EC) has proposed extending the scope of merger regulation to examine the acquisition of minority shareholdings.
  - ▶ EU Merger Regulation is limited to acquisitions that confer control and is narrower than Section 7 of the Clayton Act.
- ▶ Dow-Dupont EC (2017) EC merger decision stated:
  - ▶ market share measures “underestimate the expected non-coordinated effects of the Transaction”;
  - ▶ "the Commission is of the view that (i) a number of large agrochemical companies have a significant level of common shareholding, and that (ii) in the context of innovation competition, such findings provide indications that innovation competition in crop protection should be less intense as compared with an industry with no common shareholding".
- ▶ Lively debate about whether mergers decrease innovation.
  - ▶ In López-Vives an increase in  $\lambda$  can be interpreted as a partial merger and  $\lambda = 1$  as merger to monopoly.

# Conclusion

- ▶ The patterns of firm ownership have changed and the standard profit maximization hypothesis needs to be revised.
- ▶ Approach: Integrate oligopoly and ownership structure with the parsimonious Edgeworth's  $\lambda$ -model.
- ▶ Both theory and preliminary evidence point at potential market power concerns as well as to internalization of external effects associated to the increase in common/overlapping ownership.
- ▶ More antitrust focus and scrutiny needed but it is still early to advance and implement major changes in regulation and antitrust enforcement.
  - ▶ Traditional competition policy (e.g., controlling market concentration) is still a valid tool in a world of OOAs.
  - ▶ Antitrust should take account of general equilibrium effects.
- ▶ Key elements to define policy towards OOAs:
  - ▶ Extent of intra-industry vs. inter-industry OOAs.
  - ▶ Type of OOAs: silent financial interest, degree of control in OOA, partial cross ownership.
  - ▶ Extent of externalities (e.g., technological spillovers).
  - ▶ Relative impact of profit internalization in the level of market power in product and labor markets.



# Open issues

- ▶ We need to have a better understanding of the channels of transmission of ownership patterns into competitive outcomes, via corporate governance, and more empirical evidence of impact on consumers, innovation, and general equilibrium effects.
- ▶ Extensions:
  - ▶ Asymmetries in firms and in ownership structure.
  - ▶ Endogenize the ownership structure.
  - ▶ Price formation in stock markets and oligopoly in product and factor markets.
    - ▶ Effects of passive investing in stock market.

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THANK YOU!

<http://blog.iese.edu/xvives/>