Diversification, Common Ownership, and Strategic Incentives[†]

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We investigate how changes in firms' ownership structures affect their strategic incentives in product markets. We show that firms' common ownership incentives—that is, the profit loads managers should place on competing firms—increase if the holdings of more diversified investors increase relative to those of less diversified investors.

We distinguish between two types of investors: active and passive investors. Active fund managers choose individual investments to try to beat the market, whereas passive fund managers replicate existing stock indices by buying shares of all the member firms of a particular index. Because of their investment strategy, passive investors are more diversified than active investors. Thus, if passive investors become relatively more important than active investors over time, within-industry investor diversification increases, and as we argue, common ownership incentives increase as well.

In Banal-Estañol, Seldeslachts, and Vives (2020), we show empirically that the vast majority of US industries have indeed seen a massive increase in money flows from active toward passive investors from 2004 to 2012. We also confirm that passive investors are on average more diversified than active investors across US industries. We use both pieces of evidence to explain the general rise in common ownership incentives in recent times.

We illustrate in this paper, through two industry examples, that within-industry investor diversification is directly related to common ownership incentives. In our two example industries, department stores and publishers, as in virtually all industries, passive investors are more diversified than active investors, but contrary to the main pattern, passive investors' relative holdings have been fluctuating over the sample period. We show graphically that in these two industries, when the holdings of the passive investors increase, common ownership incentives increase. On the contrary, when the holdings of the active investors increase, common ownership incentives decrease.

Azar and Vives (2019a, b) and Backus, Conlon, and Sinkinson (2019) compute common ownership profit loads for US publicly traded firms and document their rise in recent decades. The latter work also associates the rise of those profit loads with the increase in margins observed in empirical studies (e.g., De Loecker, Eeckhout, and Unger forthcoming) using Cournot or Bertrand competition specifications.[1] Earlier work associating increasing common ownership with a softening of competition focused on the modified Herfindahl–Hirschman index (MHHI).[2] However, the use of the MHHI has been controversial since it depends on market shares of firms within an industry—and hence is endogenous by nature.

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[1] Using a different measure of competition, Newham, Seldeslachts, and Banal-Estañol (2018) links higher common ownership incentives to reduced entry in pharmaceutical markets.

[2] Azar, Schmalz, and Tecu (2018) kicked off the empirical literature on the topic by assessing the price effects of common ownership in airlines, whereas Gutiérrez and Philippon (2017) employs measures of MHHI to study the impact of common ownership on investment.

I. Definitions

We now define the variables we use in both the theoretical and empirical analyses. We define the market S average degree of portfolio diversification of a group of investors of type $\tau = A, P$ (active and passive, respectively):[3]

$$DIV_S^\tau \equiv \frac{1}{|\tau|} \sum_{i \in \tau} \left[1 - \sum_{j \in S} \left(\frac{h_{ij}}{\sum_{k \in S} h_{ik}} \right)^2 \right],$$

with h_{ik} being the holdings of investor i in firm k and $|\tau|$ the number of investors of type τ. Within-industry investor diversification is defined, following standard practice, as one minus the concentration (Herfindahl–Hirschman index) of investors' holdings across firms.

We define the average level of relative holdings of passive investors as

$$RLH_S^P \equiv \frac{1}{|S|} \sum_{j \in S} \frac{\sum_{i \in P} h_{ij}}{\sum_{i \in A \cup P} h_{ij}},$$

with $|S|$ being the number of firms in industry S.

We now define the average common ownership incentives in industry S (assuming proportional control). The common ownership incentives of each firm j are equal to the weights ("lambdas") that the manager of this firm should place on each of the other firms k in the market, relative to the weight firm j places on its own profits, in its objective function. The weights correspond to Edgeworth's coefficients of "effective sympathy" between firms (López and Vives 2019):

$$\lambda_S \equiv \frac{1}{|S|(|S|-1)} \sum_{j,k \in S} \frac{\sum_{i \in A \cup P} \beta_{ij} \beta_{ik}}{\sum_{i \in A \cup P} \beta_{ij}^2},$$

with $\beta_{ij} = h_{ij} / \sum_l h_{lj}$ being the investor i's ownership stake in firm j.

II. Theoretical Framework

To show the effects of within-industry diversification on common ownership incentives, we take a particular (extreme) case of the model developed in Banal-Estañol, Seldeslachts, and Vives (2020). We consider a parameterization

of the ownership structure of an industry that allows passive and active investors to differ in terms of holdings and diversification while retaining symmetry in terms of firm ownership and valuation for within-type investors.

Suppose that each of the n symmetric firms in the industry has one fully undiversified active investor and n fully diversified passive investors. Each of the active investors invests the same amount in only one firm, whereas each of the passive investors invests the same amount in all firms in the industry. The active and passive investors may own different fractions of the firms. We denote the fraction of the shares owned by the active investors as $1 - \sigma$, whereas the active investors are assumed to own, in total, σ of the shares of the firm ($\sigma \in [0,1]$). Formally, each active investor i owns a fraction $\beta_{ij} = 1 - \sigma$ of firm $j = i$ and a fraction $\beta_{ij} = 0$ of any other firm $j \neq i$, whereas each passive investor i owns a fraction $\beta_{ij} = \sigma/n$ of each firm j.

We now substitute the holdings of this ownership structure into the variables defined in the previous section. Substituting the β_{ij}s into DIV_S^τ,

$$DIV_S^P = (n-1)/n > 0 = DIV_S^A,$$

whereas substituting the β_{ij}s into RLH_S^P,

$$RLH_S^P = \sigma,$$

and finally, substituting the β_{ij}s into λ_S,

$$\lambda_S = \frac{1}{1 + n \frac{(1-\sigma)^2}{\sigma^2}}.$$

These expressions show that, as the holdings of the passive investors RLH_S^P, parameterized by σ, increase relative to those of the active investors (with $DIV_S^P > DIV_S^A$), the common ownership incentives of the industry λ_S increase. This result can be generalized to intermediate levels of diversification, different levels of concentration of each type of investor, and different levels of control (see Banal-Estañol, Seldeslachts, and Vives 2020).

III. Data and Illustration

We make use of the Thomson Reuters Global One Ownership Database for the period 2004–2012, which includes ownership data for

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[3]The variables τ, A, and P denote sets. We use $|\cdot|$ to denote the number of elements in a set.

publicly listed US firms as well as information about the orientation of the investors.[4]

Thomson Reuters classifies investors into two categories, depending on how they manage their portfolios. Broadly speaking, "active" investors are considered to be those who manage their portfolio using a hands-on approach to determine their investments, whereas "passive" investors are expected to be those who benchmark their assets against stock market indices and allow external factors to determine which firms they invest in. We make use of this classification into two categories to create two groups of investors, with different levels of within-industry diversification, and analyze how the changes in the ownership holdings of each group affect the firms' common ownership incentives.

For firms' presence and sales in US industries, we use the Wharton Research Data Services Compustat North America data files, which record accountancy data for US publicly listed firms. We thus obtain all publicly traded firms over the period 2004–2012, provided by Compustat (excluding finance). Because there is no official filing requirement for the privately held firms, our data do not include any privately held firms.

We take two example industries: "Department Stores" (NAICS 4521) and "Newspaper, Periodical, Book, and Directory Publishers" (NAICS 5111). In both industries, as shown by the top panel in Figures 1 and 2, the passive investors are on average more diversified than the active investors in each of the years of the sample $(DIV^P > DIV^A)$. In terms of holdings, though, as shown by the middle panel in Figures 1 and 2, the passive/active ownership split of shares, RLH^P, fluctuates.

As shown by the bottom panel in Figures 1 and 2, the common ownership incentives, λ, co-move with the relative holdings of passive investors.
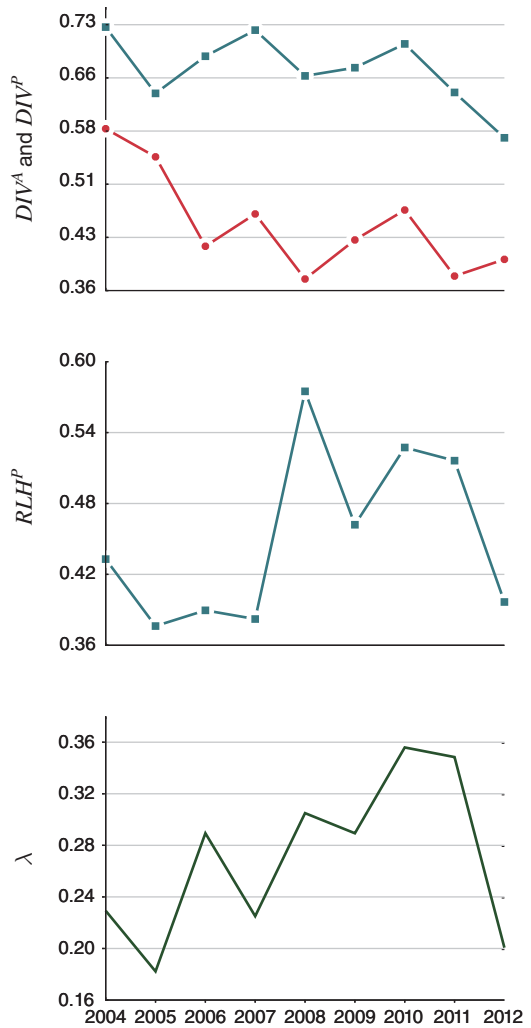

FIGURE 1. DEPARTMENT STORES

Note: Blue lines with squares represent passive investors, the red line with circles represents active investors, and the green line represents all investors.

The results obtained in these two industries generalize to a broad spectrum of US industries, where the vast majority of industries show a pattern of increased money holdings for passive investors. Changes in money flows and resulting common ownership incentives can then be empirically linked to changes in markups, as we show in Banal-Estañol, Seldeslachts, and Vives (2020).
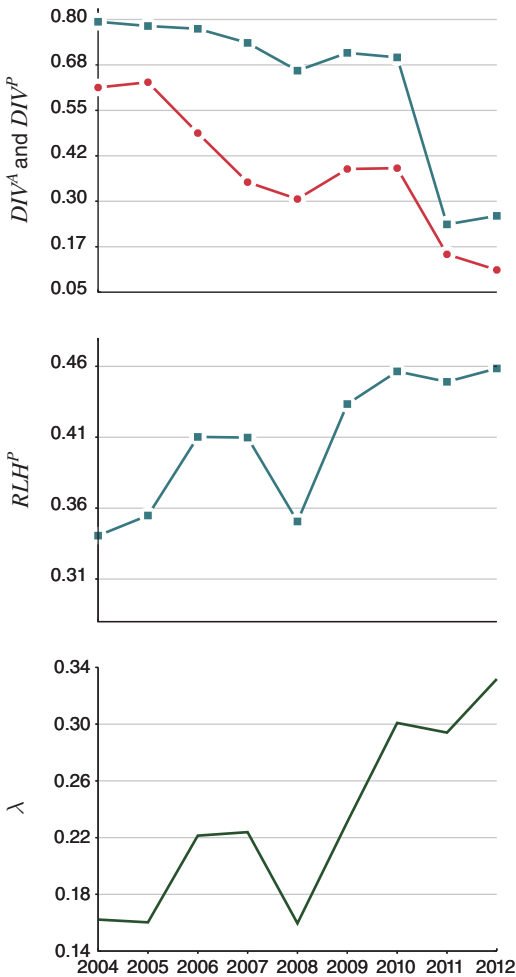
Figure 2. Publishers

Note: Blue lines with squares represent passive investors, the red line with circles represents active investors, and the green line represents all investors.

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