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Common ownership and entry with dominant firms and a competitive fringe

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Abstract

This note studies common ownership in an industry with a finite set of dominant quantity-setting firms and an endogenous competitive fringe with free entry under monopolistic competition. Common ownership among dominant firms is summarized by a reduced-form profit-internalization parameter that captures the extent to which managers internalize rivals' profits. Stronger internalization softens competition, lowers dominant-firm output, and induces additional entry of fringe varieties. Embedding this mechanism in a general equilibrium economy with separate workers and owners, where only owners receive firm profits, delivers a simple welfare benchmark. Under free entry, constant-elasticity-of-substitution demand, and Cobb-Douglas expenditure shares, stronger internalization raises the differentiated-goods price index and reduces owners' nominal income, implying that both groups' indirect utilities fall. Consequently, policies that reduce within-industry profit internalization are Pareto improving in this benchmark.

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1. Introduction

Common ownership—overlapping shareholdings across competing firms—can soften product-market competition by inducing managers to internalize rivals' profits. Yet many industries are not well described by a "representative" oligopoly: a small set of dominant firms coexists with a competitive fringe. Such "mixed" markets are common in settings where large incumbents face a long tail of small producers and niche entrants, so that changes in dominant-firm conduct can trigger entry and reallocate sales across the size distribution.

This interaction is central for evaluating common ownership. When overlapping ownership among dominant firms rises—for instance because large asset managers hold diversified stakes—a standard concern is higher markups. In a mixed market, however, a price increase by the top firms also relaxes competitive pressure on fringe varieties and can induce entry. As a result, common ownership may raise dominant-firm prices while simultaneously expanding the fringe and reducing the dominant firms' revenue share. This "less top-heavy" adjustment provides an empirical signature that is absent from fixed-market-size oligopoly models.

A large literature studies partial ownership links and their effects on competitive incentives (Reynolds and Snapp, 1986; O'Brien and Salop, 2000). The modern common-ownership debate is motivated by the rise of large diversified asset managers and the possibility that overlapping holdings soften competition even without explicit collusion; see Schmalz (2018) and the discussion in Backus, Conlon and Sinkinson (2020). Empirical work documents sizable common-ownership links in concentrated industries and studies their association with markups and prices (Azar, Schmalz and Tecu, 2018); see also Backus, Conlon and Sinkinson (2021) for a structural test. Policy discussions include proposals to limit anticompetitive effects of institutional investors (Posner, Scott Morton and Weyl, 2017) and skeptical assessments emphasizing identification challenges (O'Brien and Waehrer, 2017).

This note provides a short general-equilibrium framework that combines (i) a mixed market with dominant Cournot firms and an endogenous monopolistically competitive fringe (Shimomura and Thisse, 2012) and (ii) a reduced-form ownership channel motivated by the shareholder-representation approach of Azar and Vives (2021), in which managers behave as if they place some weight on rivals' profits. The model yields sharp comparative statics. Stronger profit internalization reduces dominant-firm output and induces entry of fringe varieties. Dominant-firm prices rise, but the market becomes less concentrated in the sense that dominant firms lose revenue share. The entry response follows a standard business-stealing logic under free entry (Spence, 1976; Mankiw and Whinston, 1986).

The general-equilibrium setting also sharpens normative implications. We separate workers and owners, with only owners receiving firm profits. Under free entry and CES/Cobb–Douglas demand, stronger profit internalization raises the differentiated-good price index and reduces owners' nominal income, so *both* groups' indirect utilities fall. Hence policies that reduce within-industry profit internalization constitute a Pareto improvement at any interior mixed equilibrium. Unlike representative-household welfare statements, this Pareto ranking does not rely on aggregating heterogeneous welfare.

2. Model

There are two groups of households: workers (W) and owners (O). Labor is the only input. The numéraire homogeneous good X is produced competitively with one unit of labor per unit of output, so the equilibrium wage is $w = 1$. Workers are endowed with $L_W > 0$ units of labor and do not own shares. Owners are endowed with $L_O \geq 0$ units of labor and own all firms in the differentiated sector. Two final goods are consumed: the numéraire X and a differentiated composite $\mathcal{Q}$.

Group $t \in \{W, O\}$ has Cobb–Douglas preferences[1]

$$U_t = \mathcal{Q}_t^{\alpha_t} X_t^{1-\alpha_t}, \qquad \alpha_t \in (0,1). \tag{1}$$

Let Y_t denote nominal income in units of the numéraire. Cobb–Douglas implies constant expenditure shares:

$$y_t \equiv \alpha_t Y_t, \qquad X_t = (1-\alpha_t) Y_t. \tag{2}$$

Workers earn only wage income, $Y_W = L_W$. Owners earn wage income plus profits from large firms, $Y_O = L_O + \sum_{j=1}^{N} \Pi_j$, since fringe profits are zero under free entry. Aggregate expenditure on differentiated goods is

$$y \equiv y_W + y_O = \alpha_W L_W + \alpha_O \Big(L_O + \sum_{j=1}^{N} \Pi_j \Big). \tag{3}$$

Differentiated sector. The differentiated sector is a mixed market. There are $N \geq 2$ large firms indexed by $j = 1, \dots, N$ and a continuum of small firms indexed by $i \in [0, M]$, where $M \geq 0$ is the endogenous mass of entrants. The CES aggregator is

$$\mathcal{Q} = \Big(Q_0^{\varrho} + \sum_{j=1}^{N} Q_j^{\varrho} \Big)^{1/\varrho}, \qquad \varrho \in (0,1), \tag{4}$$

with the fringe sub-aggregate

$$Q_0 = \Big(\int_0^M q(i)^{\varrho} \, \mathrm{d}i \Big)^{1/\varrho}. \tag{5}$$

The elasticity of substitution across varieties is $\sigma \equiv 1/(1-\varrho) > 1$. Let $\mathcal{P}$ denote the CES price index dual to (4). Both groups share the same CES subutility over varieties (the same ϱ), so individual conditional demand vectors are collinear and market demand depends only on total expenditure y. Optimal allocation within the differentiated sector yields inverse demands, for given $(\mathcal{P}, y)$,

$$P_j = y^{1-\varrho} Q_j^{-(1-\varrho)} \mathcal{P}^{\varrho}, \tag{6}$$

$$p(i) = y^{1-\varrho} q(i)^{-(1-\varrho)} \mathcal{P}^{\varrho}, \tag{7}$$

together with the identity $y = \mathcal{P}\mathcal{Q}$ (equivalently, $\mathcal{P} = y/\mathcal{Q}$).

Technology and profits. Large firm j has marginal cost $C > 0$ and fixed cost $F \geq 0$:

$$\Pi_j = (P_j - C) Q_j - F. \tag{8}$$

[1] Azar and Vives (2021) assume quasi-linear (linear-in-numéraire) preferences for entrepreneurs. We use Cobb–Douglas for both groups for tractability; the key comparative statics and the Pareto ranking are driven by income and price-index responses under free entry.

Each small firm has marginal cost $c > 0$ and fixed cost $f > 0$:

$$\pi(i) = (p(i) - c)q(i) - f. \tag{9}$$

Timing follows Shimomura and Thisse (2012). Small firms enter freely; in a mixed equilibrium they earn zero profits and adjust on the extensive margin. Large firms then compete à la Cournot in quantities. To preserve tractability in general equilibrium with non-negligible firms, each large firm treats y as parametric when choosing output. This standard "income-taking" simplification avoids Ford effects while retaining strategic interaction through the price index and the entry margin.

Common ownership among large firms is summarized by a profit-internalization parameter $\lambda \in [0, 1]$. Large firm j chooses Q_j to maximize

$$\Omega_j \equiv \Pi_j + \lambda \sum_{k \neq j} \Pi_k. \tag{10}$$

Mapping from diversification to λ. Under proportional control and a symmetric ownership structure, Azar and Vives (2021) show that managers behave as if they maximize own profit plus a constant weight on rivals' profits. In their one-sector symmetric case with J firms and a diversification parameter $\phi \in [0, 1]$ (their Section 3.1), the implied within-industry profit weight can be written in our notation (setting $J = N$) as

$$\lambda(\phi, N) = \frac{(2 - \phi)\phi}{(1 - \phi)^2 N + (2 - \phi)\phi}. \tag{11}$$

In their richer multi-sector environment, within- and across-industry profit weights differ; here we use the scalar λ as a reduced-form *within-industry* conduct shifter and conduct comparative statics in λ.

3. Equilibrium

We focus on symmetric mixed equilibria: $Q_j = Q$ for all large firms, and $q(i) = q$ for all active small firms.

Small firms and free entry. A small firm takes $(\mathcal{P}, y)$ as given and solves $\max_{q \geq 0}\{y^{1-\varrho}\mathcal{P}^{\varrho} q^{\varrho} - cq - f\}$, which implies the constant-markup price $p^* = c/\varrho$. Under free entry ($M > 0$), zero profits pin down the constant output per small firm

$$q^* = \frac{\varrho f}{(1 - \varrho)c}. \tag{12}$$

Hence $Q_0 = q^* M^{1/\varrho}$ and $Q_0^{\varrho} = M(q^*)^{\varrho}$.

Zero profits also imply a useful scaling relation. At the optimum, variable profits equal $(1 - \varrho)$ times revenue, so $\pi = 0$ implies

$$(1 - \varrho)\, y^{1-\varrho}\mathcal{P}^{\varrho}(q^*)^{\varrho} = f.$$

Using $\mathcal{P} = y/\mathcal{Q}$ and $\mathcal{Q} = (Q_0^{\varrho} + NQ^{\varrho})^{1/\varrho}$ yields

$$y = D\Big(Q_0^{\varrho} + NQ^{\varrho}\Big), \tag{13}$$

where

$$D \equiv \left[\frac{f}{1-\varrho}\left(\frac{c}{\varrho}\right)^{\frac{\varrho}{1-\varrho}}\right]^{1-\varrho} > 0. \tag{14}$$

Relation (13) is an "endogenous market size" condition: free entry ties aggregate expenditure on differentiated goods to the CES "mass" of varieties.

Large firms. Let $S \equiv Q_0^\varrho + \sum_{k=1}^{N} Q_k^\varrho$. Using (6) and $\mathcal{P}^\varrho = y^\varrho/S$, large firm j's revenue can be written as

$$P_j Q_j = \frac{y Q_j^\varrho}{S}. \tag{15}$$

Thus profit is $\Pi_j = yQ_j^\varrho/S - CQ_j - F$. Under income-taking, y is parametric in the Cournot stage. The key strategic effect is through S: raising Q_j increases the firm's revenue share but reduces the revenue shares of other large firms. Common ownership enters because firm j values that externality.

In a symmetric equilibrium ($Q_j = Q$ for all j), the first-order condition for maximizing (10) becomes

$$C = \frac{\varrho\, y\, Q^{\varrho-1}}{\left(Q_0^\varrho + NQ^\varrho\right)^2}\Big(Q_0^\varrho + (1-\lambda)(N-1)Q^\varrho\Big). \tag{16}$$

Reduced system and existence. Define $A \equiv Q_0^\varrho = M(q^*)^\varrho$ and $S \equiv A + NQ^\varrho$. By (13), $y = DS$. Under symmetry, (15) implies each large firm's revenue is $yQ^\varrho/S = DQ^\varrho$, so large-firm profit is

$$\Pi = DQ^\varrho - CQ - F. \tag{17}$$

Small-firm profits are zero under entry, so owners' income is $Y_O = L_O + N\Pi$ and workers' income is $Y_W = L_W$. Using (3) together with $y = DS$ yields

$$A = \frac{\alpha_W L_W + \alpha_O(L_O - NF)}{D} - \frac{\alpha_O NC}{D}Q - N(1-\alpha_O)Q^\varrho \;\equiv\; A_{GE}(Q). \tag{18}$$

Substituting $y = DS$ and $S = A + NQ^\varrho$ into (16) yields the "large-firm" locus

$$A_{FOC}(Q,\lambda) = \frac{Q^\varrho}{\varrho DQ^{\varrho-1} - C}\Big(CN - (1-\lambda)(N-1)\varrho DQ^{\varrho-1}\Big). \tag{19}$$

An interior symmetric mixed equilibrium satisfies

$$A_{FOC}(Q,\lambda) = A_{GE}(Q), \qquad M = \frac{A}{(q^*)^\varrho}. \tag{20}$$

For existence, note first that $A_{GE}(Q)$ is continuous and strictly decreasing in Q. Next define

$$\underline{Q}(\lambda) \equiv \left(\frac{(1-\lambda)(N-1)\varrho D}{CN}\right)^{\frac{1}{1-\varrho}} \quad \text{and} \quad \bar{Q} \equiv \left(\frac{\varrho D}{C}\right)^{\frac{1}{1-\varrho}}.$$

On $(\underline{Q}(\lambda), \bar{Q})$, $A_{FOC}(Q,\lambda)$ is continuous and strictly increasing in Q, with $A_{FOC}(\underline{Q}(\lambda),\lambda) = 0$ and $A_{FOC}(Q,\lambda) \to +\infty$ as $Q \uparrow \bar{Q}$ (the denominator in (19) vanishes). Hence if $A_{GE}(\underline{Q}(\lambda)) > 0$, there exists a unique interior mixed equilibrium with $M > 0$. Throughout we focus on such interior equilibria and assume $Y_W > 0$ and $Y_O > 0$ (for example, $L_O > NF$ suffices since $\Pi > -F$ at any interior equilibrium) so both groups consume positive amounts of both goods.

4. Common Ownership: Comparative Statics and Welfare

Proposition 1 (Market structure). *Suppose an interior symmetric mixed equilibrium exists with $M > 0$. Then equilibrium large-firm output is strictly decreasing in λ, and the equilibrium mass of fringe firms is strictly increasing in λ.*

Proof sketch. From (18), $A'_{GE}(Q) < 0$. From (19), $\partial A_{FOC}/\partial\lambda > 0$ for any interior equilibrium because $\varrho D Q^{\varrho-1} > C$ must hold (if $\varrho D Q^{\varrho-1} \le C$, then (16) implies $C(A+NQ^\varrho) \le C(A+(1-\lambda)(N-1)Q^\varrho) < C(A+NQ^\varrho)$, a contradiction). Moreover, $A_{FOC}(Q,\lambda)$ is strictly increasing in Q on $(\underline{Q}(\lambda), \bar{Q})$. Define $H(Q,\lambda) \equiv A_{FOC}(Q,\lambda) - A_{GE}(Q)$. Then $H_Q > 0$ and $H_\lambda > 0$, so the implicit function theorem gives $\mathrm{d}Q^*/\mathrm{d}\lambda = -H_\lambda/H_Q < 0$. Since $A^* = A_{GE}(Q^*)$, A rises with λ, and because $M = A/(q^*)^\varrho$ with constant q^*, we obtain $\mathrm{d}M^*/\mathrm{d}\lambda > 0$.

The market-structure comparative statics translate directly into observable implications. Under symmetry, (6) and $S = A + NQ^\varrho$ imply

$$P_j = \frac{yQ^{\varrho-1}}{S} = DQ^{\varrho-1}, \tag{21}$$

so dominant-firm prices (and markups) rise with λ because $\varrho - 1 < 0$ and Q^* falls. Total large-firm revenue is $NP_jQ = NDQ^\varrho$, while total differentiated-good expenditure is $y = DS$. Hence the large-firm revenue share equals

$$\frac{NDQ^\varrho}{y} = \frac{NQ^\varrho}{A + NQ^\varrho}, \tag{22}$$

which decreases with λ because A rises and Q falls. Expression (22) provides a simple prediction for reallocation of sales away from the top firms and toward the fringe when common ownership intensifies.

Proposition 2 (Pareto improvement). *At any interior symmetric mixed equilibrium with $M > 0$, both workers' and owners' indirect utilities are strictly decreasing in λ. Equivalently, a decrease in λ constitutes a Pareto improvement.*

Proof. Under Cobb–Douglas, indirect utility for group $t \in \{W, O\}$ is proportional to $Y_t/\mathcal{P}^{\alpha_t}$, so $\mathrm{d}\ln V_t = \mathrm{d}\ln Y_t - \alpha_t\, \mathrm{d}\ln\mathcal{P}$. Workers' income is $Y_W = L_W$, hence $\mathrm{d}\ln Y_W = 0$. Owners' income is $Y_O = L_O + N\Pi$ with Π given by (17). Therefore

$$\mathrm{d}Y_O = N(\varrho D Q^{\varrho-1} - C)\,\mathrm{d}Q.$$

The bracket is positive in any interior mixed equilibrium, and Proposition 1 implies $\mathrm{d}Q/\mathrm{d}\lambda < 0$, hence $\mathrm{d}Y_O/\mathrm{d}\lambda < 0$. Aggregate differentiated-good expenditure is given by (3), so $\mathrm{d}y/\mathrm{d}\lambda = \alpha_O\, \mathrm{d}Y_O/\mathrm{d}\lambda < 0$.

Under free entry, (13) implies $y = DS$ with $S = A + NQ^\varrho$. Since $\mathcal{Q} = S^{1/\varrho}$ and $y = \mathcal{P}\mathcal{Q}$,

$$\mathcal{P} = y/\mathcal{Q} = DS/S^{1/\varrho} = DS^{(\varrho-1)/\varrho} = D^{1/\varrho}y^{(\varrho-1)/\varrho}.$$

Thus $\mathrm{d}\ln\mathcal{P} = ((\varrho-1)/\varrho)\,\mathrm{d}\ln y$ and $\mathrm{d}\ln\mathcal{P}/\mathrm{d}\lambda > 0$ because $\varrho - 1 < 0$ and $\mathrm{d}y/\mathrm{d}\lambda < 0$. Hence $\mathrm{d}\ln V_W/\mathrm{d}\lambda = -\alpha_W\, \mathrm{d}\ln\mathcal{P}/\mathrm{d}\lambda < 0$ and $\mathrm{d}\ln V_O/\mathrm{d}\lambda = \mathrm{d}\ln Y_O/\mathrm{d}\lambda - \alpha_O\, \mathrm{d}\ln\mathcal{P}/\mathrm{d}\lambda < 0$. □

Two remarks clarify interpretation. First, the result is stronger than a representative-household welfare statement: it establishes a Pareto ranking between λ values without specifying Pareto weights. Second, the sign for owners differs from the "partial-collusion" intuition in fixed-market-size oligopoly models. Here, profit internalization reduces dominant-firm output, which lowers dominant-firm profits via (17) and contracts aggregate expenditure through (13); the induced rise in the price index hurts workers and further lowers owners' real income despite an expansion of the fringe.

Finally, (11) yields an empirical interaction: a given diversification shock that raises profit internalization has a stronger effect in more concentrated industries (smaller N). Combined with Proposition 1, this suggests looking for stronger associations between common ownership and (i) dominant-firm markups, (ii) the number of fringe establishments/varieties, and (iii) the dominant-firm revenue share in more concentrated industries.

5. Conclusion

This note introduces common ownership into a mixed-market general equilibrium with dominant strategic firms and an endogenous monopolistically competitive fringe. The main contribution is to show that, with free entry, stronger profit internalization can make the market less top-heavy: dominant-firm prices rise but dominant-firm output, profits, and revenue share fall as the fringe expands. With separate workers and owners, this implies a sharp welfare ranking: stronger within-industry profit internalization is Pareto worsening at any interior mixed equilibrium, so reducing it is Pareto improving.

The framework is designed for short, transparent comparative statics. Natural extensions include endogenizing the number of dominant firms through fixed-cost entry, allowing ownership to span the fringe, and introducing labor-market power. These extensions are important for policy applications, but they require coupling entry, income feedback, and factor markets more tightly than in the present benchmark.

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