Capping Profits for Efficiency

Gabriele Patete

University of Zurich
EEA Congress 2025

In the news

“Corporate America Is Testing the Limits of Its Pricing Power”

The New York Times, 2023

“Greedflation: profit-boosting markups attract an inevitable backlash”

Financial Times, 2023

Recent evidence

Markups have been growing in the last years (De Loecker et al., 2020; Autor et al., 2020)

- Price = markup · marginal cost
- Even when firms can freely enter the market

$\Rightarrow$ Dead-weight loss: economy is too small

Markup dispersion

Markups are (increasingly) heterogeneous (De Loecker et. al., 2020):

- Misallocation of production factors across firms
- $\text{MRS} = \frac{p_1}{p_2} = \frac{\mu_1 c_1}{\mu_2 c_2} \neq \frac{c_1}{c_2} = \text{MRT}$

Firm-specific policies against misallocation:

- Size-dependent output subsidies
- Cost-dependent price controls

What is the problem?

Trade-off in public intervention:

- Need for targeted tools
- Need for simple tools

⚠ Cannot fix misallocation with **conventional uniform** tax rates (Melitz et al., 2024; Nocco et al., 2024)

This Project

I study a cap on the profit-to-cost ratio ... or the equivalent excess-profits tax

- Uniform and targeted
  - Constrains firms' markups $\Rightarrow$ Reduces aggregate size distortion
  - High-markup firms are more affected $\Rightarrow$ Reduces misallocation

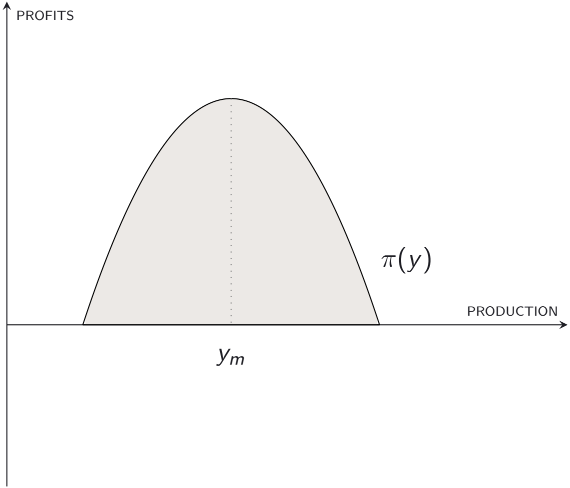
French profit-sharing reform

- France has a mandatory profit-sharing since 1967 for large firms ($>$ 50 employees) (Nimier-David et al., 2023)
- November 2023: extension to smaller firms with $<$ 50 employees
  - Experiment for 5 years, starting 2025
  - Mandatory profit-sharing only if **profits higher than** 1% **of revenues** for 3 years
  - $\approx$ 1% cap on the profit-to-cost ratio

Outline

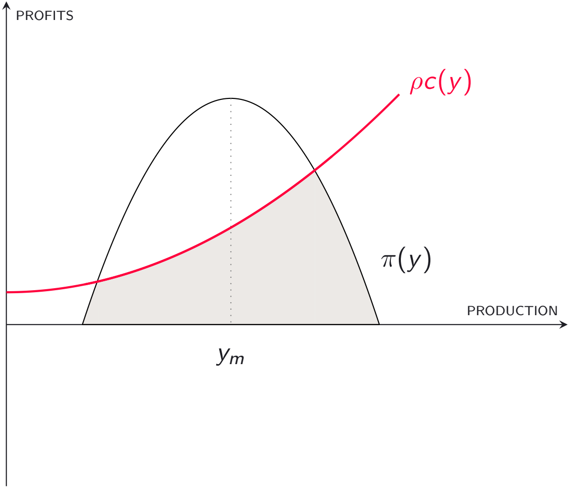
1. Partial equilibrium
   - Effect on firm behavior
2. General equilibrium
   - Optimal policy
3. Quantification
4. Conclusion

A firm maximizes profits



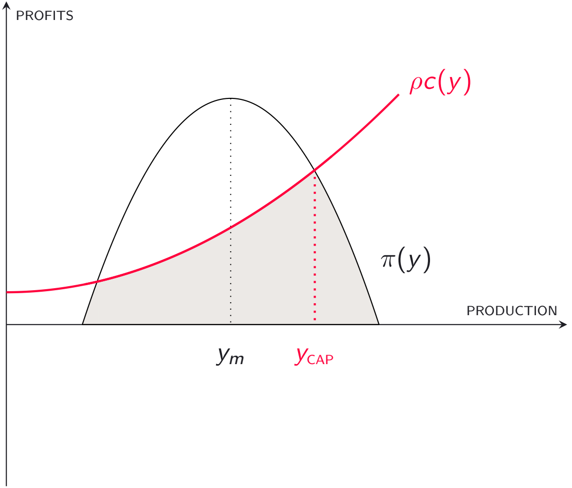
A firm chooses production y_m that maximizes profits

Capping the profits of a firm



Firm profits cannot be too much bigger than costs: $\pi(y) \leq \rho c(y)$

The constraint is binding



The firm increases production: $\pi(y_{\text{CAP}}) = \rho c(y_{\text{CAP}})$

Conventional policies

- Firms heterogeneous in productivity (c_i) and markups (μ_i)

$$p_i = \mu_i(c_i) \cdot c_i$$

- Under firm-specific policies
  - Size-dependent output subsidies $S(y_i) = \frac{1}{1+\rho} \int_0^{y_i} p(\xi) d\xi - p_i y_i$
  - Cost-dependent price controls $p_i \leq (1+\rho) c_i$

$$p_i = (1+\rho) \cdot c_i$$

- Information requirements:
  - Inverse demand & output
  - Marginal costs & output

Cap on the profit-to-cost ratio

- Firms heterogeneous in productivity (c_i) and markups (μ_i)

$$p_i = \mu_i(c_i) \cdot c_i$$

- Uniform cap ρ implements

$$\pi_i = \rho c_i \cdot y_i$$

- Information requirement:
  - Firm's financial statement
  - Sales, wage bill, materials expenses, rental cost of capital...

Cap on the profit-to-cost ratio

- Firms heterogeneous in productivity (c_i) and markups (μ_i)

$$p_i = \mu_i(c_i) \cdot c_i$$

- Uniform cap ρ implements

$$p_i = (1 + \rho) \cdot c_i$$

- Information requirement:
  - Firm's financial statement
  - Sales, wage bill, materials expenses, rental cost of capital...

The effects of a cap

PROPOSITION 1. Under Assumption 1, a binding cap on the profit-to-cost ratio implies:

i. An **increase** in production: $y(c, \rho) > y(c, \infty)$.
ii. A **progressive** reduction in markups: the implied percentage change $\tau(c, \rho)$ in markups is increasing in $\mu(c, \infty)$, with $\mu(c, \rho) = (1 - \tau(c, \rho))\mu(c, \infty)$.

The equivalent excess-profits tax

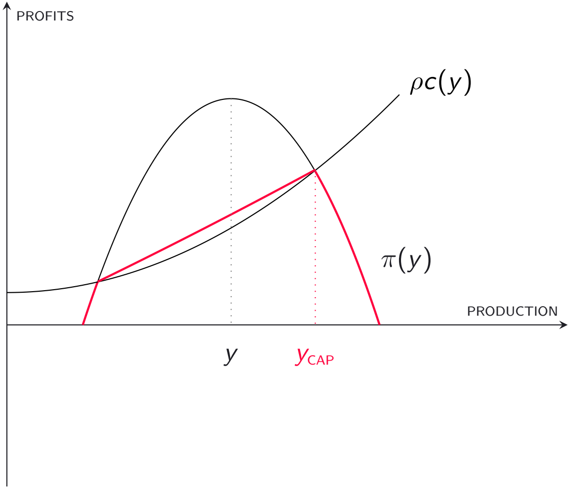
An excess-profits tax provides equivalent incentives:

- $\pi(y) - \frac{1}{1+\rho}\left[\pi(y) - \rho c(y)\right] \mathbb{1}(\pi(y) - \rho c(y) > 0)$

For positive excess profits:

- $\pi(y) = \frac{\rho}{1+\rho} p(y) y$
- With increasing revenues, firm closes the gap
- Holds for any wasteful cost increase

The regulation and the tax compared



Outline

1. Partial equilibrium
   - Effect on firm behavior
2. General equilibrium
   - Optimal policy
3. Quantification
4. Conclusion

Why do we need a general equilibrium model?

- Competitive prices adjust
- Profits serve a purpose in the economy:
  - **Firm creation and entry costs**
  - Innovation and R&D costs
  - Effort and entrepreneur income...

The model

I generalize Edmond, Midrigan, and Xu (2023):

- Representative consumer
  - supplies labor and capital elastically
  - owns the firms and pays sunk entry cost
- Firms heterogeneous in physical productivity
  - charge heterogeneous markups
  - markups cover sunk entry cost

Representative consumer

The representative consumer maximizes

$$\sum_{t=0}^{\infty} \beta^t U(C_t, L_t),$$

subject to

$$(1 + \tau_{s,t})(C_t + I_t) = W_t L_t + R_t K_t + \Pi_t - T_t,$$

- C_t is (numeraire) final consumption good, $\tau_{s,t}$ a sales tax
- Π_t is aggregate real profits (net of entry cost κ and a profit tax $\tau_{\pi,t}$)

Production system

- Continuum of sectors $s \in [0, 1]$
- $N_t \in \mathcal{R}_+$ intermediate-good producers
- $n_t(s) \in \mathcal{R}_+$ or $\mathcal{N}_+$ per sector s
- Each sell a quantity $y_{it}(s)$ of differentiated variety at price $p_{it}(s)$
- A final-good producer uses intermediate goods to produce the final good Y_t

Intermediate-good producer: entry

- Fixed cost κ to enter the market
- Random productivity draw $z \sim G(z)$
- M_t entrants are randomly allocated to sectors
- Random exit: $N_{t+1} = (1-\varphi)N_t + M_t$
- Free-entry into the market:

$$\kappa W_t = \beta \sum_{j=1}^{\infty} (\beta(1-\varphi))^{j-1} \frac{C_t}{C_{t+j}} \int_0^1 (1-\tau_{\pi,t+j})\bar{\bar{\pi}}_{t+j}(s) ds,$$

Intermediate-good producer: optimal pricing

- Firms sell in monopolistic competition ($n_t(s) \in \mathcal{R}_+$) or oligopolistic competition ($n_t(s) \in \mathcal{N}_+$)
- Optimal pricing in *laissez-faire*, given elasticity of demand $\sigma_{it}(s)$:

$$p_{it}(s) = \frac{\sigma_{it}(s)}{\sigma_{it}(s) - 1} \frac{\Omega_t}{z_{it}(s)}$$

- Optimal pricing under cap ρ:

$$p_{it}(s) = (1 + \rho) \frac{\Omega_t}{z_{it}(s)}$$

The optimal policy mix

THEOREM 2. There exist a cap $\rho_t^* > 0$, a profit tax $\tau_{\pi,t}^*$, and sales tax $\tau_{s,t}^*$ for all t such that, under $\{\rho_t^*, \tau_{\pi,t}^*, \tau_{s,t}^*\}_{t=0}^{\infty}$, the decentralized general equilibrium characterized by Definition 3 is efficient according to Definition 4.

- ρ_t^* makes markups homogeneous across firms (misallocation)
- $\tau_{s,t}^*$ removes residual aggregate distortion (output tax)
- $\tau_{\pi,t}^*$ supports entry incentives (distorted entry)

Example: oligopolistic competition with CES demand

$$y_t(s) = \left(\sum_{i=1}^{n_t(s)} y_{it}(s)^{\frac{\gamma-1}{\gamma}} ds \right)^{\frac{\gamma}{\gamma-1}}, Y_t = \left(\int_0^1 y_t(s)^{\frac{\eta-1}{\eta}} ds \right)^{\frac{\eta}{\eta-1}}$$

- Enforce monopolistic-competition pricing:

$$\rho_t^* = \frac{1}{\gamma - 1},$$

- Remove residual aggregate markup $\frac{\gamma}{\gamma-1}$:

$$\tau_{s,t}^* = -\rho_t^*/[1 + \rho_t^*],$$

- Ensure optimal entry incentives: (Dixit and Stiglitz, 1977)

$$(1 - \tau_{\pi,t}^*)\rho_t^* = \frac{1}{\gamma - 1}.$$

Outline

1. Partial equilibrium
   - Effect on firm behavior
2. General equilibrium
   - Optimal policy
3. Quantification
4. Conclusion

TABLE 1
OPTIMAL POLICY MIX

	DATA	CASES			
Aggregate markup	$1.1 \sim 1.4$	1.05	1.15	1.25	1.35
Elasticity of substitution within sectors, γ		59.69	12.76	7.16	5.21
Optimal cap, ρ^*		**0.02**	**0.09**	**0.16**	**0.23**
Optimal sales tax, τ_s^*		**-0.02**	**-0.08**	**-0.14**	**-0.19**
Welfare (% change)		8.71	14.66	26.76	48.63

NOTES.—The first two rows report calibration targets and estimates from Edmond et al. (2023). Aggregate markups are calibration targets; elasticities of substitution are calibrated parameters. The optimal cap is $\rho^* = 1/[\gamma - 1]$. The optimal sales tax is $\tau_s^* = -\rho^*/[1 + \rho^*]$.

Quantitative estimates: monopolistic competition with Kimball demand

TABLE 2
OPTIMAL POLICY MIX

	DATA	CASES			
Aggregate markup	$1.1 \sim 1.4$	1.05	1.15	1.25	1.35
Aggregate demand index, D^*_{ss}		1.06	1.17	1.29	1.41
Optimal cap, ρ^*		**0.02**	**0.05**	**0.08**	**0.10**
Optimal sales tax, τ^*_s		**-0.02**	**-0.05**	**-0.07**	**-0.10**
Optimal profit tax, τ^*_π		**-1.41**	**-1.85**	**-2.38**	**-3.06**
Welfare (% change)		1.34	8.67	23.63	49.65

NOTES.—The first two rows report calibration targets and estimates from Edmond et al. (2023) for the monopolistic competition model with Kimball demand. Aggregate markups are calibration targets; aggregate demand indexes solve the planner's problem (in the steady state). The optimal cap is the minimum of *laissez-faire* markups. The optimal sale tax is $\tau^*_s = -\rho^*/[1+\rho^*]$. The optimal entry subsidy is such that $(1-\tau^*_\pi)\rho^* = D^*_{ss} - 1$. Welfare changes are in consumption-equivalent units.

Outline

1. Partial equilibrium
   - Effect on firm behavior
2. General equilibrium
   - Optimal policy
3. Quantification
4. Conclusion

To sum up

In this paper:

- The economics of a new policy, the profit-to-cost cap
  - A constraint on market power
- A comprehensive approach to corporate taxation when firms have market power
  - A structural role for excess-profits taxation
- A flexible tool
  - e.g., redistribution to workers...
  - ...mergers reviews...

Appendix

Relation to literature

- Markup costs and policy interventions [Dixit and Stiglitz (1977); Mankiw and Whinston (1986); Zhelobodko et al. (2012); Dhingra and Morrow (2019); Bilbiie et al. (2019); Edmond et al. (2023); Eeckout et al. (2024); Boar and Midrigan (2024)...]
  - ➤ Contribution: I study a **new** policy to offset firms' market power and a comprehensive approach to corporate tax reform
- Misallocation costs and policy interventions [Restuccia and Rogerson (2008); Hsieh and Klenow (2009); Atkin et al. (2018); Baqaee and Farhi (2020); Melitz et al. (2024); Nocco et al. (2024)...]
  - ➤ Contribution: I study a **uniform** policy that can address misallocation under standard macro assumptions

A common criticism of price controls

"We economists don't know much, but we do know how to create a shortage. If you want to create a shortage of tomatoes, for example, just pass a law that retailers can't sell tomatoes for more than two cents per pound."
(Milton Friedman)

"The minimum wage that maximizes the efficiency component of welfare...yields gains worth less than 0.2% of lifetime consumption...The reason a minimum wage struggles to deliver efficiency gains is that with realistic firm productivity dispersion, a minimum wage that eliminates monopsony power at one firm causes severe rationing at another."
(Berger et al., 2025, Econometrica)

Assumptions

- Firm (c) with variable cost function $c_v(y)$
- Inverse demand $\mathrm{p}(y)$

ASSUMPTION 1.

- Demand (Dhingra and Morrow, 2019)
  i. Revenues $\mathrm{p}(y(c))y(c)$ are continuous, strictly concave in quantity and satisfy Inada conditions, i.e., $\lim_{y \to 0} [\mathrm{p}(y(c))y(c)]' = +\infty$ and $\lim_{y \to +\infty} [\mathrm{p}(y(c))y(c)]' = 0$.
  ii. The inverse demand elasticity $\epsilon_p(y(c))$ is bounded between $m > 0$ and $1 - m < 1$.

- Supply
  iii. Constant elasticity of costs to output: $c_v'(y(c))y(c)/c_v(y(c)) = \kappa$

The effects of a cap - fixed costs

- Profits and costs defined on variable costs $c_v(y)$ in firms' financial statement
- Robust to unobservable, homogeneous fixed cost f (e.g., Melitz, 2003)

PROPOSITION 1b. Under assumption 1, when markups are increasing in size, a binding cap on the profit-to-cost ratio implies:

i. An **increase** in production: $y(c, \rho, 0) > y(c, \rho, f) > y(c, \infty, 0)$.
ii. A **progressive** reduction in markups: the implied percentage change $\tau(c, \rho, f)$ in markups is increasing in $\mu(y(c, \infty, f))$, with $\mu(y(c, \rho, f)) = [1 - \tau(c, \rho, f)]\mu(y(c, \infty, f))$.

Representative consumer

The representative consumer maximizes

$$\sum_{t=0}^{\infty} \beta^t U(C_t, L_t),$$

subject to

$$(1+\tau_{s,t})(C_t + I_t) = W_t L_t + R_t K_t + \Pi_t - T_t,$$

- C_t is (numeraire) final consumption good, $\tau_{s,t}$ a sales tax
- Π_t is aggregate real profits (net of entry cost κ and a profit tax $\tau_{\pi,t}$)

Production system

- Continuum of sectors $s \in [0, 1]$
- $N_t \in \mathcal{R}_+$ intermediate-good producers
- $n_t(s) \in \mathcal{R}_+$ or $\mathcal{N}_+$ per sector s
- Each sell a quantity $y_{it}(s)$ of differentiated variety at price $p_{it}(s)$
- A final-good producer uses intermediate goods to produce the final good Y_t

Final-good producer I

- C_t Final good used for consumption, investment, materials

$$Y_t = C_t + I_t + X_t$$

- Y_t defined by between-sector aggregator

$$\int_0^1 \mathcal{A}(s)(\frac{y_t(s)}{Y_t})ds = 1$$

- $y_t(s)$ defined by within-sector aggregator

$$\sum_{i=1}^{n_t(s)} \mathcal{B}_i(s)(\frac{y_{it(s)}}{y_t(s)}) = 1$$

Final-good producer II

The final-good producer's inverse demand for intermediate goods is

$$p_{it}(s) = \frac{\mathcal{A}_q(s)(q_t(s))}{\int_0^1 \mathcal{A}_q(s)(q_t(s))q_t(s)ds} \cdot \frac{\mathcal{B}_{q,i}(s)(q_{i,t}(s))}{\sum_1^{n_t(s)} \mathcal{B}_{q,i}(s)(q_{i,t}(s))q_{i,t}(s)}.$$

- $q_{i,t}(s) = \frac{y_i t(s)}{y_t(s)}$, $q_t(s) = \frac{y_t(s)}{Y_t}$
- Inverse demand assumed to satisfy Assumption 1

Intermediate-good producer: entry

- Fixed cost κ to enter the market
- Random productivity draw $z \sim G(z)$
- M_t entrants are randomly allocated to sectors
- Random exit: $N_{t+1} = (1-\varphi)N_t + M_t$
- Free-entry into the market:

$$\kappa W_t = \beta \sum_{j=1}^{\infty} (\beta(1-\varphi))^{j-1} \frac{C_t}{C_{t+j}} \int_0^1 (1-\tau_{\pi,t+j})\bar{\pi}_{t+j}(s)ds,$$

Intermediate-good producer: technology

- The technology of production for an intermediate good is

$$y_{it}(s) = z_{it}(s)[\phi^{\frac{1}{\theta}} v_{it}(s)^{\frac{\theta-1}{\theta}} + (1-\phi)^{\frac{1}{\theta}} x_{it}(s)^{\frac{\theta-1}{\theta}}]^{\frac{\theta}{\theta-1}},$$

- Value added $v_{it}(s) = k_{it}(s)^{\alpha} l_{it}(s)^{1-\alpha}$
- Marginal costs $\frac{\Omega_t}{z_{it}(s)}$
- Profits $\pi_{it}(s) = p_{it}(s) y_{it}(s) - \frac{\Omega_t}{z_{it}(s)} y_{it}(s)$

Intermediate-good producer: optimal pricing

- Firms sell in monopolistic competition ($n_t(s) \in \mathcal{R}_+$) or oligopolistic competition ($n_t(s) \in \mathcal{N}_+$)
- Optimal pricing in *laissez-faire*, given elasticity of demand $\sigma_{it}(s)$:

$$p_{it}(s) = \frac{\sigma_{it}(s)}{\sigma_{it}(s) - 1} \frac{\Omega_t}{z_{it}(s)}$$

- Optimal pricing under cap ρ:

$$p_{it}(s) = (1 + \rho) \frac{\Omega_t}{z_{it}(s)}$$

Definition of decentralized equilibrium

DEFINITION 3. (Decentralized equilibrium.) Given an initial number of firms per sector $n_0(s) \in \mathcal{N}_+$ or $\mathcal{R}_+$ and an aggregate capital stock K_0, an equilibrium is (i) a sequence of firm prices $p_{it}(s)$ and allocations $y_{it}(s)$, $k_{it}(s)$, $l_{it}(s)$,, $x_{it}(s)$ and ii) aggregate output Y_t, consumption C_t, labor L_t, investment I_t, materials X_t, real wage rate W_t, real rental rate R_t and mass of entrants M_t such that firms and consumers optimize, the free-entry condition (5) holds with equality, and the goods, the labor, and capital market clear at all times t:

i. $Y_t = C_t + I_t + X_t,$

ii. $L_t = \int \sum_{i=1}^{n_t(s)} l_{it}(s) ds + \kappa M_t,$

iii. $K_t = \int \sum_{i=1}^{n_t(s)} k_{it}(s) ds,$

iv. $X_t = \int \sum_{i=1}^{n_t(s)} x_{it}(s) ds,$

Definition of efficient allocation

DEFINITION 4. (Efficient allocation.) Given an initial number of firms per sector $n_0(s) \in \mathcal{N}_+$ or $\mathcal{R}_+$, an efficient allocation is i) a sequence of allocations $y^*_{it}(s)$, $k^*_{it}(s)$, $l^*_{it}(s)$,, $x^*_{it}(s)$ and ii) aggregate output Y^*_t, consumption C^*_t, labor L^*_t, investment I^*_t, materials X^*_t, and mass of entrants M^*_t such that:

i. given the aggregate number of firms N^*_t and their distribution $n_t(s)$, the optimal size distributions $q^*_{it}(s)$ and $q^*_t(s)$ are such that $q^*_t(s)$ maximizes Z^*_t subject to $\int_0^1 \mathcal{A}(s)(q^*_t(s))ds = 1$, and $q^*_{it}(s)$ maximizes $z^*_t(s)$ subject to $\sum_{i=1}^{n_t(s)} \mathcal{B}_i(s)(q^*_{i,t}(s)) = 1$;

ii. given the optimal size distributions $q^*_{it}(s)$ and $q^*_t(s)$, $\{C^*_t\}_{t=0}^{\infty}$, $\{\tilde{L}^*_t\}_{t=0}^{\infty}$, $\{K^*_{t+1}\}_{t=0}^{\infty}$,, $\{N^*_{t+1}\}_{t=0}^{\infty}$, and $\{X^*_t\}_{t=0}^{\infty}$, maximize (4) subject to the resource constraint $C^*_t + K^*_{t+1} + X^*_t \leq Z(N^*_t)F(K^*_t, \tilde{L}^*_t, X^*_t) + (1-\delta)K^*_t$.

The optimal policy mix

THEOREM 2. There exist a cap $\rho_t^* > 0$, a profit tax $\tau_{\pi,t}^*$, and sales tax $\tau_{s,t}^*$ for all t such that, under $\{\rho_t^*, \tau_{\pi,t}^*, \tau_{s,t}^*\}_{t=0}^{\infty}$, the decentralized general equilibrium characterized by Definition 3 is efficient according to Definition 4.

- ρ_t^* makes markups homogeneous across firms (misallocation)
- $\tau_{s,t}^*$ removes residual aggregate distortion (output tax)
- $\tau_{\pi,t}^*$ supports entry incentives (distorted entry)

How does the optimal policy mix work?

- Cap firm markups at the minimum of the markup distribution:

$$\rho_t^* = \underline{\mu} - 1,$$

- Remove residual aggregate markup $\underline{\mu} - 1$:

$$\tau_{s,t} = -\rho_t^* / [1 + \rho_t^*],$$

- Ensure optimal entry incentives:

$$(1 - \tau_{\pi,t}^*)\rho_t^* = \frac{dZ_t^*}{dN_t^*} \frac{\frac{\hat{Z}_t^{+,*}}{Z_t^*}}{Z_t^*}$$

Example I: oligopolistic competition with CES demand

$$y_t(s) = \left(\sum_{i=1}^{n_t(s)} y_{it}(s)^{\frac{\gamma-1}{\gamma}} ds \right)^{\frac{\gamma}{\gamma-1}}, Y_t = \left(\int_0^1 y_t(s)^{\frac{\eta-1}{\eta}} ds \right)^{\frac{\eta}{\eta-1}}$$

- Enforce monopolistic-competition pricing:

$$\rho_t^* = \frac{1}{\gamma - 1},$$

- Remove residual aggregate markup $\frac{\gamma}{\gamma-1}$:

$$\tau_{s,t}^* = -\rho_t^* / [1 + \rho_t^*],$$

- Ensure optimal entry incentives: (Dixit and Stiglitz, 1977)

$$(1 - \tau_{\pi,t}^*)\rho_t^* = \frac{1}{\gamma - 1}.$$

Example II: monopolistic competition with Kimball demand

$$\int_0^{N_t} \mathcal{A}(q_t(i))ds = 1$$

- Cap firm markups at the minimum of the markup distribution:

$$\rho_t^* = \underline{\mu} - 1,$$

- Remove residual aggregate markup $\underline{\mu} - 1$:

$$\tau_{s,t}^* = -\rho_t^*/[1 + \rho_t^*],$$

- Ensure optimal entry incentives:

$$(1 - \tau_{\pi,t}^*)\rho_t^* = D_t^* - 1$$

Optimal output subsidy

- Generalized output subsidy in Edmond, Midrigan, and Xu (2023):

$$T(q_{it}(s)) = F(q_{it}(s)) - p(q_{it})q_{it}(s), \text{ with } F(q_{it}(s)) = \int_0^{q_{it}(s)} p(\xi)d\xi$$

- Need to observe inverse demand $p(.)$
- Need to observe p and q separately
- Also enforces social optimum

Outline

1. Partial equilibrium
   - Effect on firm behavior
2. General equilibrium
   - Optimal policy
3. Quantification
4. Conclusion

Quantitative estimates: oligopolistic competition with CES demand

TABLE 1
OPTIMAL POLICY MIX

	DATA	CASES			
Aggregate markup	$1.1 \sim 1.4$	1.05	1.15	1.25	1.35
Elasticity of substitution within sectors, γ		59.69	12.76	7.16	5.21
Optimal cap, ρ^*		**0.02**	**0.09**	**0.16**	**0.23**
Optimal sales tax, τ_s^*		**-0.02**	**-0.08**	**-0.14**	**-0.19**
Welfare (% change)		8.71	14.66	26.76	48.63

NOTES.—The first two rows report calibration targets and estimates from Edmond et al. (2023). Aggregate markups are calibration targets; elasticities of substitution are calibrated parameters. The optimal cap is $\rho^* = 1/[\gamma - 1]$. The optimal sales tax is $\tau_s^* = -\rho^*/[1 + \rho^*]$.

TABLE 2
OPTIMAL POLICY MIX

	DATA	CASES			
Aggregate markup	$1.1 \sim 1.4$	1.05	1.15	1.25	1.35
Aggregate demand index, D^*_{ss}		1.06	1.17	1.29	1.41
Optimal cap, ρ^*		**0.02**	**0.05**	**0.08**	**0.10**
Optimal sales tax, τ^*_s		**-0.02**	**-0.05**	**-0.07**	**-0.10**
Optimal profit tax, τ^*_π		**-1.41**	**-1.85**	**-2.38**	**-3.06**
Welfare (% change)		1.34	8.67	23.63	49.65

NOTES.—The first two rows report calibration targets and estimates from Edmond et al. (2023) for the monopolistic competition model with Kimball demand. Aggregate markups are calibration targets; aggregate demand indexes solve the planner's problem (in the steady state). The optimal cap is the minimum of *laissez-faire* markups. The optimal sale tax is $\tau^*_s = -\rho^*/[1+\rho^*]$. The optimal entry subsidy is such that $(1-\tau^*_\pi)\rho^* = D^*_{\text{ss}} - 1$. Welfare changes are in consumption-equivalent units.

Optimal cap in monopolistic competition with Kimball demand

TABLE 2b
OPTIMAL CAP

	DATA	CASES			
Aggregate markup	$1.1 \sim 1.4$	1.05	1.15	1.25	1.35
Aggregate demand index, D^*_{ss}		1.06	1.17	1.29	1.41
Optimal cap, ρ^*		**0.05**	**0.14**	**0.21**	**0.27**
Welfare change (%)		0.60	3.09	7.76	15.56
Uniform subsidy (welfare change)		0.65	5.90	17.36	37.41

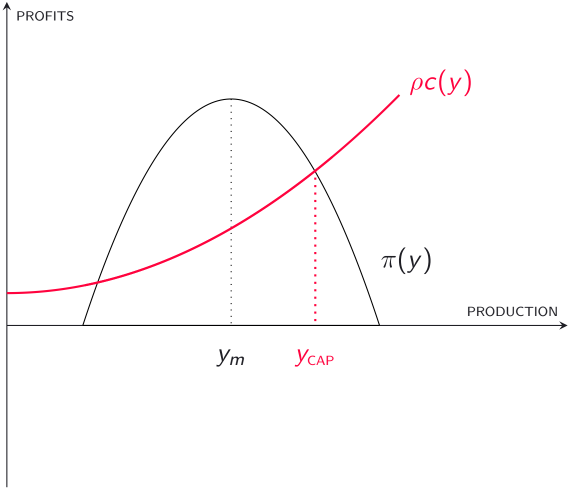
NOTES.—The first two rows report calibration targets and estimates from Edmond et al. (2023) for the monopolistic competition model with Kimball demand. Aggregate markups are calibration targets; aggregate demand indexes solve the planner's problem (in the steady state). Welfare changes are in consumption-equivalent units. The last row contains the welfare gains of a uniform subsidy that removes the aggregate markup.

Limitations

Different assumptions can break the progressivity of capping the profit-to-cost ratio:

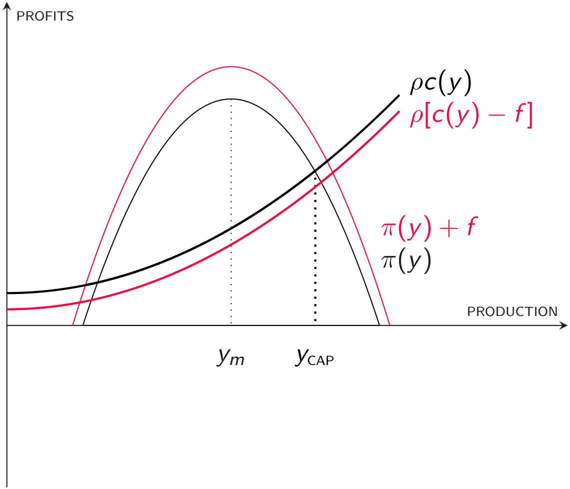
- Observability of costs
  - Wage bill, intermediaries and materials, rental cost of capital
- Heterogeneous residual unobservable fixed costs increasing in firm size
  - Higher fixed costs can shield high-markup firms
- Heterogeneous technological DRS increasing in firm size
  - Target both markup profits and technological profits
- Heterogeneous inverse demand + unobservable fixed cost
  - Invert the relative magnitude of sales

Unobservable fixed costs: increase in production



An increase in production: $y(c, \rho, 0) > y(c, \rho, f) > y(c, \infty, 0)$.

Unobservable fixed costs: smaller increase in production



A smaller increase in production: $y(c, \rho, 0) > y(c, \rho, f) > y(c, \infty, 0)$.

Unobservable fixed costs: progressivity

- Let $c(y) = cy + f$
- For binding firms, equilibrium markups are given by:

$$\frac{1}{\mu(y)} + \frac{f}{p(y) \cdot y} = \frac{1}{1+\rho}$$

- Bigger firms have smaller markups

Social planner: Dynamic problem

The planner maximizes:

$$\sum_{t=0}^{\infty} \beta^t U(C_t^*, \tilde{L}_t^* + \kappa(N_{t+1}^* - (1-\varphi)N_t^*)),$$

subject to

$$C_t^* + K_{t+1}^* + X_t^* \leq Z(N_t^*)F(K_t^*, \tilde{L}_t^*, X_t^*) + (1-\delta)K_t^*.$$

Social planner: Static problem

The social planner chooses $\{q^*_{it}(s)\}_{i+1}^{n_t(s)}$ for all s, and $\{q^*_t(s)\}_{s\in[0,1]}$ to maximize:

$$\left(\int_0^1 q^*_t(s)\frac{1}{z_t(s)}\right)^{-1}$$

subject to $\int_0^1 \mathcal{A}(s)(q^*_t(s))ds = 1$, and

$$\left(\sum_1^{n_t(s)} q^*_{it}(s)\frac{1}{z_{it}(s)}\right)^{-1}$$

subject to $\sum_{i=1}^{n_t(s)} \mathcal{B}_i(s)(q^*_{i,t}(s)) = 1$.