State-owned Enterprises and Market Power*

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Abstract

We analyze state-owned enterprises in Cournot oligopoly to understand their impact on market power. We find general conditions under which privatization would raise prices or introducing a public option would lower prices. The productivity of privatized firms must increase sufficiently to offset higher private markups, to not lower welfare. We solve for optimal operation of state-owned firms and show that running the enterprise at a loss may be optimal. We illustrate the framework on the U.S. parcel-delivery industry and show that privatization of the United States Postal Service would lower consumer surplus.

1 Introduction

The decision of when goods and services should be produced publicly is a longstanding question in economics. Governments have long maintained state-owned enterprises (SOEs) in part to prevent excessive concentration, discipline private firms, and ensure access where market power is a concern. A large body of research and policy guidance, however, has argued for the privatization of SOEs on efficiency grounds, arguing that the productivity of the firm often improves after privatization.[1] If the SOE moderated market power, there may be a welfare tradeoff between the productivity improvements of the SOE and the rise in market power in the industry. When will a privatization lower welfare due to increases in markups, and when the government should consider introducing a public option? How should the public option be run? If a state-owned firm is to be privatized, what should the government target as a reserve price?

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[1] See La Porta and López-de Silanes (1999) for an influential study or Megginson and Netter (2001) for a comprehensive survey on empirical evidence on privatization. Privatization is a cornerstone policy recommendation of international economic organizations, see OECD (2016) and World Bank (2023).

To answer these questions, we develop a model of oligopolistic competition featuring a non-profit-maximizing state-owned firm. We consider how the operation of this firm affects the equilibrium production and pricing in the industry. The framework has a strong parallel to the large literature on antitrust. Significant theoretical attention has been applied to the study of when horizontal mergers raise prices or reduce consumer welfare, for example Farrell and Shapiro (1990) or Nocke and Whinston (2022). These studies derive a sufficient condition: the degree of synergies such that a profitable merger would raise welfare. This tradeoff was first articulated in the context of merger review by Williamson (1968). We derive a similar framework to canonical merger analysis by solving for the sufficient degree of inefficiency of an SOE such that a privatization would increase consumer welfare. Alternatively, this can be framed as a sufficient productivity of a new public option or nationalized private firm, such that consumer surplus would rise. In our framework, we assume that SOEs are operating under different behavioral assumptions than profit maximization. Initially, we assume marginal cost pricing, or Ramsey pricing, for SOEs and later also consider SOEs that directly maximize consumer surplus. In Figure 1, we can see the Williamson tradeoff in a setting where an SOE is being privatized. The monopolistic SOE here is charging at marginal cost $P(Q) = c$. If the industry were to be privatized, whether aggregate surplus would increase would depend on whether the dark-red deadweight loss triangle exceeds the light-green efficiency gain from privatization (where the costs fall from c to c').

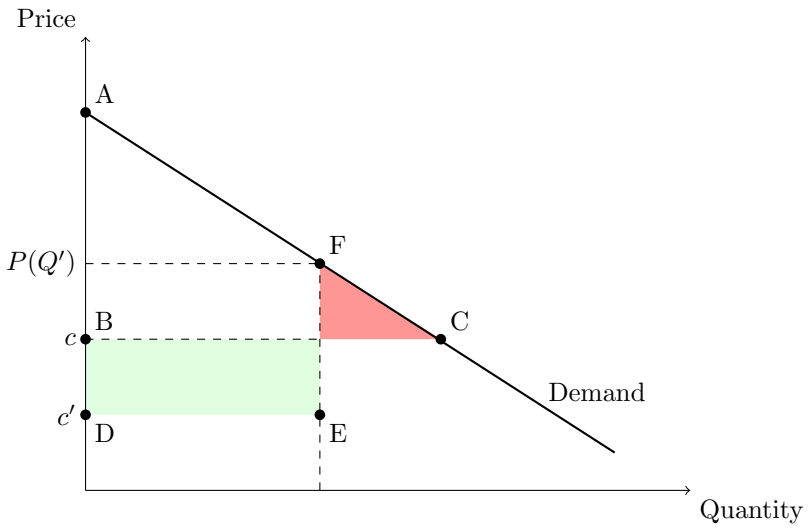


Figure 1: The Williamson tradeoff in merger review as applied to state-owned enterprises

In this paper, we show that privatization increases consumer surplus if the SOE's productivity disadvantage, relative to a counterfactual private firm, exceeds a threshold determined by two observable, pre-privatization characteristics: industry demand elasticity

and the SOE's market share. We show this in the case the canonical homogenous good Cournot model and also show the results generalize to differentiated goods with heterogenous quality under a CES demand function. The condition is the same in the converse case of nationalizing a private firm, while the conditions on the effect of introducing a de novo public option are stated in terms of the necessary productivity of the introduced firm. By deriving the condition as a function of a SOE 'inefficiency cost,' we sidestep a debate about whether publicly produced goods are less efficient, to instead ask: how inefficient would an SOE need to be to consider privatization? We believe this is the first paper to provide competition-based thresholds for privatization or public service provision. The thresholds for screening a privatization can also be reframed as concentration-based thresholds using the Herfindahl index (HHI), akin to the Department of Justice (DOJ) and Federal Trade Commission (FTC) *Horizontal Merger Guidelines* presumptions.

The inefficiency threshold has a dual interpretation as a reserve price. Only buyers capable of generating sufficiently large productivity gains would be willing to pay the reserve price. In the differentiated goods model, the privatization threshold is based on improvements in the firm's type, reflecting both productivity and quality. A buyer may therefore satisfy the reserve price through higher productivity, higher quality, or a combination of the two. If the state is concerned with both quality and price margins, a reserve price will not be sufficient to ensure improvements to both and service obligations may be necessary.

The lack of profitability of public enterprises is often taken as evidence of inefficiency. In order to provide results on effective operation of state-owned firms, we generalize the behavior of the SOE to maximize consumer welfare, rather than restricting the firm to marginal cost pricing. We show that a SOE which maximizes consumer surplus will optimally operate at a loss to further reduce market power, unless the social cost of public funds is too high. Efforts to reduce SOE losses may undermine their ability to counteract market power. By pricing below marginal cost, the public option further weighs down private markups and a higher inefficiency cost is required to justify privatization.

We then demonstrate an application of the framework to the U.S. postal delivery service industry. Postal services have been privatized in several countries and there are occasional calls to privatize the United States Postal Service (USPS) or require it to exit the package delivery market.[2] Under current estimates for package delivery demand elasticities, a privatization would result in lower consumer surplus. Extensions of the framework to incorporate consumer heterogeneity are underway, allowing the model to capture differential effects on rural and urban consumers.

This paper relates to four strands of the literature. Firstly, the theoretical literature on SOEs primarily seeks to account for SOE inefficiency by modeling the soft budget constraint and the policy burdens faced by government-owned firms, such as in Kornai (1986); Jefferson

[2]See Patel and Rajan (2025).

(1998); Lin and Tan (1999). Relatedly, a substantial empirical literature examines whether SOEs are less efficient than private firms, often using large-scale privatization episodes (Laban and Wolf, 1993; Dewenter and Malatesta, 2001). We are not aware of any papers which examine the tradeoff between lower efficiency and the market power-moderating effects of SOEs, as we do here.

Secondly, there is also a growing literature that focuses on information and incentive problems within SOEs, including the role of managerial autonomy and internal accountability mechanisms (Sappington and Stiglitz, 1987; Lin et al., 1998; Kala, 2024). We assume there are no information asymmetries in the analysis conducted in this paper. The effect of SOEs on moderating informational market failures is being pursued in a related paper.

Thirdly, there is a large and rapidly growing literature on the costs of markups and market power, see Edmond et al. (2023) and Boar and Midrigan (2025). When it comes to optimal policy in this literature, the authors focus on subsidies to high markup firms to incentivize greater production. In practice, implementing such subsidies is unlikely to be politically feasible and they may not be incentive compatible. While the market power literature has largely focused on optimal subsidy policies, we instead study public ownership, a policy widely used in practice. A large literature studies the design and costs of regulation (Stigler, 1971; Bombardini et al., 2025). In many markets, however, governments intervene not only through regulation but also through direct provision of service, which is our focus.

Fourthly, this paper is related to the large literature on mergers and antitrust (Nocke and Whinston, 2022; Farrell and Shapiro, 1990). We extend the framework in this literature to consider state-owned firms, and how their operation affects private participants and industry aggregates. Antitrust policy can only prevent further accumulation of market power, however, unlike operating SOEs, cannot lower existing markups in an oligopolistic market.

2 Oligopoly with a state-owned enterprise

We begin with a model with homogeneous goods. Demand is given by $p(X)$, where p is price and X is industry output, with $p'(X) < 0$. The absolute elasticity of demand is $\varepsilon(X) \equiv -p(X)/Xp'(X)$. The industry has $N-1$ private firms ($i \in \mathcal{P}$) and 1 SOE. The total number of firms N is exogenous, however, we later consider entry of a SOE into fully private industry. A private firm i's cost function is $C^i \equiv c^i(x_i)$, where their output is x_i. The SOE's cost function is $C^g \equiv \gamma c^g(x_g)$, where x_g is the SOE's output and $\gamma \geq 1$ is an efficiency cost associated with public ownership.

In the Cournot equilibrium, private firms choose output x_i to maximize profits, given all rivals' output. The SOE chooses its output x_g such that it equates prices to its marginal

cost, given the output of private firms

$$\gamma c_x^g(x_g) = p(X). \tag{1}$$

Marginal cost has long been held as the efficient rate for publicly-run natural monopolies. An older literature, see Baumol and Bradford (1970) for example, extends this by considering public monopolies that charge above marginal cost to cover fixed costs, which is called Ramsey pricing.[3] In Section 3 we allow the SOE to set prices below marginal cost to potentially further reduce market power. Under a monopoly with no fixed costs, pricing at marginal cost is the Ramsey price, and thus forms a natural benchmark. Defining the aggregate output of rivals' $y_i \equiv \sum_{j \neq i} x_j = X - x_i$, we can write profits as $\pi^i(x_i, y_i) = p(x_i + y_i)x_i - c^i(x_i)$. Thus, a private firm i's first-order condition is

$$p(X) + x_i p'(X) - c_x^i(x_i) = 0, \quad i = 1, \ldots, n-1 \tag{2}$$

A Cournot equilibrium is a vector of private outputs $(x_1, \ldots, x_{n-1})$ and a public output x_g, such that equation 2 holds for all private firms and equation 1 is met for the SOE. A firm's market share will be denoted $s_i \equiv x_i/X$.

We posit two weak assumptions on the Cournot equilibrium, which are also standard in merger analysis. (Dixit, 1986) Firstly, we assume that an increase in a rivals' output, y_i, lowers firm i's marginal revenue:

Assumption 1.

$$p'(X) + x_i p''(X) < 0, \quad i = 1, \ldots, n$$

Second, we assume that each firm's demand intersects its marginal cost curve from above

Assumption 2.

$$c_{xx}^i(x_i) > p'(X), \quad i = 1, \ldots, n$$

This is weaker than assuming marginal costs are nondecreasing ($c_{xx}^i(x_i) \geq 0$).

Using these assumptions, we state the following lemma first noted by Dixit (1986).

Lemma 1. *Consider an exogenous change in the SOE's output, and let other firms' output adjust to re-establish a Cournot equilibrium among themselves. If firms' reaction curves slope downward (Assumption 1), and if the stability assumption holds, then aggregate output moves in the same direction as the SOE's output, but by less.*

The proof is identical to the one provided in Farrell and Shapiro (1990). We now provide the sufficient statistic, in terms of the government inefficiency factor, for a privatization to increase welfare.

[3] An extension of the model with fixed costs is currently underway.

Proposition 1. *The privatization of a state-owned enterprise in a Cournot industry lowers the price if and only if the efficiency of the firm rises by more than implied by the following inequality*

$$\frac{\varepsilon/s_g}{\varepsilon/s_g - 1} < \gamma, \tag{3}$$

where $s_g \equiv x_g/X$ is the SOE's pre-privatization share of the industry.

Proof is in the appendix. The form of equation 3 is solely in terms of pre-privatization parameters. The government market share and elasticity of substitution can be readily measured and one does not need to know the post-privatization market conditions. Equation 3 can also be expressed in terms of the sum of the private firm inverse markups.

$$\frac{1}{N - \varepsilon - \sum_{i \in \mathcal{P}} \mu_i^{-1}} > \gamma, \tag{4}$$

where $\mu_i = P(\bar{X})/c_i$. As the markups of private firms is higher, a higher government inefficiency cost can be tolerated.

Under the assumption of constant costs ($c_i(x_i) = \underline{c_i} x_i$), Equation 3 can be written in terms of primitives, as the inverse cost share of the SOE

$$\frac{1}{N - \varepsilon} \frac{\underline{c_g} + \sum_{i \in \mathcal{P}} \underline{c_i}}{\underline{c_g}} > \gamma. \tag{5}$$

As is typical of merger analysis, we do not model entry and assume the number of competitors is fixed. The results here can be thought of as privatizations that cause *upward pricing pressure* in the terminology of Farrell and Shapiro (2010). If the state expects significant entry in the industry alongside the newly privatized firm, then the privatization could be justified even with a less inefficient SOE.

The same condition can be expressed in terms of industry concentration. Let $H \equiv \sum_i s_i^2$ denote the Herfindahl–Hirschman index (HHI), and let ΔH denote the change in the HHI that the privatization is expected to induce. In the Cournot models considered here the privatization lowers the price if and only if

$$\frac{\Delta H}{\varepsilon^2} + 1 > \gamma. \tag{6}$$

The decision therefore turns only on the *anticipated change* in concentration and not on its pre-privatization level: two industries with very different baseline HHIs warrant the same productivity threshold whenever the privatization is expected to move concentration by the same amount. This contrasts with the level-based concentration screens that feature in conventional merger guidelines.

The results are phrased as if for a privatization, however, the same equations and logic

would apply to the introduction of a public option. However, in this case the decision on whether to establish the SOE will need to be written in terms of γc_g, since the relevant marginal cost of the counterfactual new firm is its productivity-adjusted cost γc_g rather than c_g. That is, the sufficient condition would be in terms of the full productivity of the counterfactual new firm.

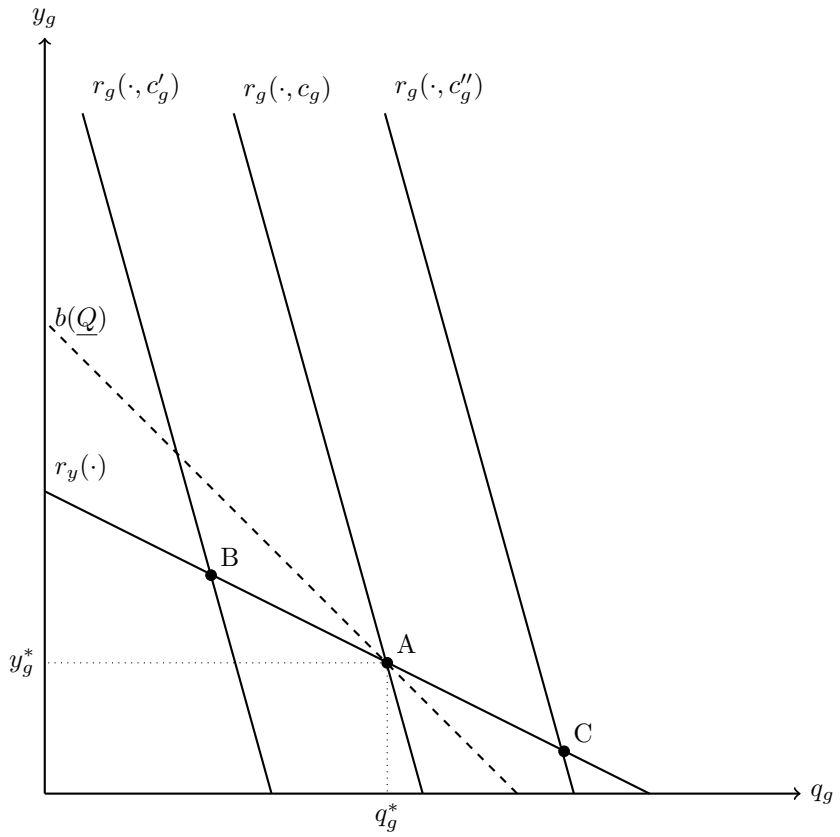


Figure 2: A privatization of the SOE which can be CS-neutral (point A), CS-increasing (point C), or CS-decreasing (point B), depending on the efficiency gains γ.

Figure 2 illustrates the cases of CS-neutral, CS-increasing, and CS-decreasing privatizations. Initially, the SOE is setting its quantity such that the price lies on the zero profit curve ($b(\underline{Q})$). In this case with constant costs, $b(\underline{Q})$ is sloping downward at a 45 degree angle. With an increasing cost function, this line would be sloping downward. The level of output produced q_g^* is where the $b(\underline{Q})$ curve intersects with the group private firm reaction function $r_y(\cdot)$. After a privatization, the privatized SOE will have a similarly shaped reaction function to a private firm. The point of intersection will depend on the marginal cost facing the privatized firm and would result in a CS-neutral privatization when its curve

$r_g(\cdot, c_g)$ intersects $r_y(\cdot)$ at point A.

Inefficiency factor γ It should be noted that the inefficiency factor γ does not necessarily represent true inefficiency. The factor represents any reason why the publicly-owned firm may have higher costs. These factors may not be distortions in general equilibrium. For example, higher rates of unionization may cause wages to be higher in the public firm, which may be a transfer from firm owners to workers in equilibrium. Additionally, we assume the inefficiency cost is a fixed parameter related to state ownership. If γ instead represents inefficiency related to a lack of competition, then privatization may not affect the marginal cost of the firm. Further, instead of privatization, the state could implement policies to improve the operation of the SOE to increase consumer surplus, such as better corporate governance.

2.1 Reserve price for privatization

The model also implies the value for the privatized firm as the present value of its future profits. Solving for the value of a firm which leaves prices and quantities unchanged after privatization gives a minimum sales price, where the firm discounts at rate r.

Proposition 2. *A privatization that achieves a sales price above* $\underline{P}$ *will raise consumer surplus, where* $\underline{P}$ *is given by*

$$\underline{P} = \frac{\frac{s_g}{\varepsilon/s_g - 1} c_g}{r} \bar{Q}. \tag{7}$$

Proof. Only a firm that can achieve efficiency gains of at least γ would be able to profitably purchase the SOE. Thus, equation 7 is the present discounted profits of a firm with this threshold productivity. This informs the minimum sales price the government should be willing to sell the firm. A caveat to note is that selling a state-owned firm can raise governance issues. Governments want to ensure that the winning bidder has the managerial capacity to operate the asset effectively. If there is uncertainty about the productivity that the private firm will operate with, this can lead to unsuccessful privatizations. Limited liability further complicates this issue. The state is concerned with the long-run provision of the goods or services, which may not be the optimal outcome for the firm. For example, if the winning bidder strips assets and exits through bankrupcy, the privatization may have left the state with a larger burden than prior to the auction. Relatedly, the transfer of valuable public assets to private owners creates opportunities for corruption or political influence in the allocation process. These concerns are particularly acute when the pool of potential buyers is small, reducing competitive pressure. Adding stringent qualification requirements for participation in the auction could further reduce entry into the auction, weakening auction competition. Lastly, the privatized firm might achieve cost savings by lowering quality and not through true production efficiencies, which is explored in Section 4.

Other precautions would be necessary to ensure the privatization is successful, however we believe this analysis serves as a useful benchmark.

3 Optimal operation of a state-owned enterprise

Profit-losing SOEs are often taken as a sign of inefficiency, however, this is not necessarily the case. In this section we show it is possible for it to be optimal for the SOE to produce more than the level at which prices equal marginal costs. In this section, we relax the condition that the SOE is charging marginal cost, and instead suppose that they set output such that consumer surplus is maximized.

$$x_g = \arg\max_{x_g} \int_0^Q \left(P(s) - P(Q)\right) ds + \lambda \left(P(X)x_g - \gamma c^g(x_g)\right) \tag{8}$$

where $\lambda > 1$ is the cost of government funds needed to subsidize SOE losses.

First order condition

$$-QP'\left(Q\right) + \lambda P'\left(Q\right) x_g + \lambda P\left(Q\right) - \lambda\gamma c_g'\left(x_g\right) = 0 \tag{9}$$

To derive closed-form conditions, we make the additional assumption of constant costs

Assumption 3.

$$c_i(x_i) = \underline{c_i} x_i, \quad i = 1, \ldots, n.$$

The government share of industry solves for

$$\omega_g = 1 + \left(1 - N + \sum_i \mu_i^{-1}\right)\varepsilon \tag{10}$$

Proposition 3. *The SOE competes in the industry with private firms when the government inefficiency cost satisfies*

$$\frac{\left(\lambda\varepsilon + 1\right)\frac{\sum_i c_i}{\underline{c_g}}}{N\lambda\varepsilon - \lambda + 1 - \left(\lambda\varepsilon + 1\right)\underline{c_g}} \leq \gamma \leq \left(N - \frac{\lambda - 1}{\lambda}\frac{1}{\varepsilon} - 1\right)\frac{\underline{c_{max}}}{\underline{c_g}} \tag{11}$$

where $\underline{c_{max}}$ is the most productive private firm.

At the left inequality, the government will be charging too low a price for any private firms to want to participate in the industry. At the right inequality, the SOE is too inefficient, at the current cost of government funds, to justify participating in the industry.

The SOE only breaks even, as in Section 2, when the following condition holds

$$\gamma = \frac{\sum_i \underline{c_i}}{\underline{c_g}} \frac{1}{N - \frac{\lambda - 1}{\lambda \varepsilon} - 1}. \tag{12}$$

The following inequality is a sufficient condition for not (though the condition for when they want to is more complicated) privatize:

Proposition 4. *The privatization of a state-owned enterprise, charging to maximize consumer surplus in a Cournot industry, lowers the price if and only if the efficiency of the firm rises by more than implied by the following inequality*

$$1 + \frac{P(\bar{X})}{\lambda \varepsilon \underline{c_g}} > \gamma \tag{13}$$

Proof is in the appendix. Since $\mu_g \equiv P(\bar{X})/\underline{c_g}$ is the (negative) markup of the SOE, this condition tells us how unprofitable the SOE can be. Additionally, in the appendix, we have the special case of linear demand.

4 Differentiated goods

The homogeneous-good benchmark abstracts from product differentiation, which is a central feature of many industries in which state-owned enterprises operate. We now show that the logic of the preceding sections which weighs the inefficiency of the SOE against its moderation of market power, carries over to a canonical differentiated-goods environment with constant-elasticity-of-substitution (CES) demand. A caveat to note is that while we now extend the framework to consider product quality, we treat quality as unidimensional. Public ownership can also defended on contractual grounds. When the quality of service is multidimensional and only partly verifiable, no procurement contract with a private provider can pin down everything the government could value, and cutting costs may erode the uncontracted dimensions of quality (Sappington and Stiglitz, 1987).

Demand for product i is given by

$$D_i = \frac{b_i p_i^{-\sigma}}{A}, \qquad A \equiv \sum_j b_j p_j^{1-\sigma} + A_0, \tag{14}$$

where $\sigma > 1$ is the elasticity of substitution, b_i indexes the quality of product i, and A is the CES price aggregator over price and quality. The term $A_0 \geq 0$ represents an outside good. Consumer surplus takes the convenient form $CS(A) = \log A$, so that welfare comparisons reduce to comparisons of the aggregator.

Let $\mu_i \equiv (p_i - c_i)/p_i$ denote the markup of firm i. Profit-maximizing private firms choose

markups that solve

$$1 = \sigma\mu_i \left(1 - \frac{\sigma - 1}{\sigma}\left(1 - \mu_i\right)^{\sigma-1} \frac{T_i}{A}\right), \tag{15}$$

where $T_i \equiv b_i c_i^{1-\sigma}$ is firm i's *type*: its contribution to the aggregator, and hence to consumer surplus. As in the homogeneous-good model, the SOE prices at marginal cost ($\mu_g = 0$), which yields the revenue share

$$s_g \equiv \frac{p_g x_g}{p_g x_g + \sum_i p_i x_i} = \gamma^{1-\sigma} \frac{T_g}{A}. \tag{16}$$

A privatization is consumer-surplus-neutral when the post-privatization aggregator A^* equals its pre-privatization value, which delivers a sufficient-statistic threshold analogous to Proposition 1.

Proposition 5. *The privatization of a state-owned enterprise facing CES demand is CS-neutral when the efficiency of the firm satisfies*

$$\gamma = \frac{\sigma - (\sigma - 1)\, s_g}{\sigma - (\sigma - 1)\, s_g - 1}. \tag{17}$$

As in the homogeneous-good case, the threshold depends only on the SOE's pre-privatization revenue share and a demand elasticity σ, and not on the post-privatization equilibrium.

The efficiency gains from privatization need not arrive solely through lower marginal cost. The privatization could raise the firm's type either through higher quality $\bar{b}_g$ or lower cost. The percentage improvement in type required for a CS-neutral privatization is

$$\frac{\bar{T}_g - T_g}{\bar{T}_g} = \frac{\bar{b}_g}{b_g}\gamma^{\sigma-1} - 1. \tag{18}$$

The CES benchmark treats all consumers symmetrically, but a central feature of the industries in which public options are debated is that consumers differ in their cost to serve and in their willingness to pay. When the public firm operates under a uniform-service requirement, a private entrant not bound by that requirement can cream-skim the low-cost, high-value customers and leave the public firm with the high-cost residual. The mechanism is adverse selection on the cost side: the uniform price that breaks even over the whole population lies above cost for cheap-to-serve customers and below cost for expensive ones, so an entrant able to price-discriminate peels off the former and unravels the cross-subsidy that funded the latter. A privatization or entry which lowers the *average* price can still reduce welfare, because the average masks a sharp increase in the price paid by the high-cost consumers once the cross-subsidy collapses. A fall in the mean price is therefore not a sufficient statistic for a welfare gain when a uniform-service obligation binds. We return to this idea in the parcel-delivery application of Section 5.

5 Application: privatizing parcel delivery

We illustrate the framework with the United States parcel-delivery industry, in which the United States Postal Service (USPS) operates as a public carrier alongside private competitors. Table 1 reports market shares by volume and revenue for 2024. USPS and Amazon Logistics carry the largest volumes but at the lowest revenue per package, while UPS and FedEx together account for roughly two-thirds of industry revenue. The market is therefore moderately concentrated among the private carriers, with USPS supplying a substantial low-price competitive fringe.

Table 1: Parcel shipping market shares by volume and revenue (2024)

	Volume (billion)		Revenue ($ billion)		2024 $/package
Carrier	Packages	Share	Revenue	Share	
USPS	6.9	30.8%	32.1	15.8%	4.7
UPS	4.7	21.0%	69.7	34.3%	14.8
FedEx	3.7	16.5%	63.2	31.1%	17.1
Amazon Logistics	6.3	28.2%	31.1	15.3%	4.9
Other	0.8	3.5%	6.9	3.4%	8.9
Total	22.4	100.0%	203.0	100.0%	10.1
UPS + FedEx		37.5%		65.4%	

Source: Pitney Bowes.

Would prices rise if USPS were privatized? We apply the results of Proposition 1 to this industry. While USPS is loss-making overall, it is generally understood that the parcel delivery is a more profitable business segment and may cross-subsidize other operations. Proposition 1 requires the privatized carrier's marginal cost to fall by enough to offset the loss of USPS's price discipline. Table 2 reports the implied threshold γ, and the corresponding required percentage decline in marginal cost, for alternative demand elasticities and market definitions. USPS's own estimate of its own-price elasticity is -0.25 (United States Postal Service, 2013); demand this inelastic places the industry in the region where $\varepsilon < s_g$, so that privatization raises price for *any* productivity gain (indicated by "×" in the table). Cigno et al. (2013) estimate an elasticity of -0.85 once cross-price substitution toward substitutable private carriers is taken into account. Under this estimate, privatization lowers price only if the privatized carrier's marginal cost falls by at least 36.2% (using USPS's 30.8% volume share), or by 50.4% if Amazon Logistics is excluded from the relevant market and USPS's share is correspondingly larger.

Table 2: Required inefficiency factor γ (and implied cost reduction) for a USPS privatization to lower prices

	With Amazon	Without Amazon
Highly inelastic ($\varepsilon = 0.25$)	$\times$	$\times$
Weakly inelastic ($\varepsilon = 0.85$)	1.57 (36.2%)	2.01 (50.4%)

An "$\times$" denotes that privatization raises price for any productivity gain ($\varepsilon < s_g$).

If USPS is instead understood as a consumer-surplus-maximizing carrier (Section 3), the required productivity gain is larger still: a privatization lowers price only if $\gamma > 2.85$, a decline in marginal cost of roughly 65%.

A central rationale for a public parcel carrier is the provision of universal service at a uniform price. Private carriers, by contrast, levy delivery-area surcharges (DAS) that rise steeply with remoteness. An extension of the model to consider heterogenous regions is underway.

6 Conclusion

This paper develops a framework for evaluating public ownership through the lens of market power, paralleling the equilibrium analysis of horizontal mergers. Rather than taking a stance on whether state-owned enterprises are inherently less efficient than private firms, we derive the threshold inefficiency at which privatization would raise consumer surplus. The threshold is a sufficient statistic that depends only on pre-privatization observables. The framework applies to nationalizations and to the introduction of a de novo public options, as well. We further show that state-owned firms may optimally price below marginal cost and operate at a loss unless the social cost of public funds is sufficiently high. Applying the framework to U.S. parcel delivery, we find that under current elasticity estimates, privatizing USPS would reduce consumer surplus for any plausible productivity gain. Future work will incorporate consumer heterogeneity and universal-service obligations.

Appendix

Proof of Proposition 1

Because of Lemma 1, we only need to sign the effect of the privatization on the privatized firm's output. Thus, we only need to sign whether the privatized firm would increase its output if the remaining enterprises held their outputs constant at pre-privatization levels. The privatized firm will reduce output if and only if their marginal revenue exceeds marginal

costs at pre-merger output levels ($\bar{x}_g$, $\bar{X}$)

$$c_x^g(\bar{x}_g) > p(\bar{X}) + \bar{x}_g p'(\bar{X})$$

They were previously charging at marginal cost

$$\gamma c_x^g(\bar{x}_g) = p(\bar{X})$$

Combining these two and using the definition of elasticity of demand yields equation 3. □

Linear demand

$$P(Q) = A - bQ$$

The equation from proposition 4 becomes

$$A - \left(NA - \gamma \underline{c_g} - \sum_i \underline{c_i} \right) \frac{\lambda}{(N+1)\lambda - 1} < \gamma \underline{c_g} \tag{19}$$

Similarly, for the equation from Proposition 1 becomes

$$\gamma > \frac{A + \sum_i \underline{c_i}}{\underline{c_g}(N+1)} + \frac{1}{(N+1)^2} \tag{20}$$

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