# Countervailing Power and Chain Stores

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## Abstract

The countervailing power of large buyers subdues the market power of sellers, but price concessions won by large buyers in upstream markets may or may not translate into lower prices downstream as Galbraith (1952, 1954) once contended. This paper presents a model that formalizes certain previously neglected elements of Galbraith's argument, and shows that upstream price concessions may lead to lower downstream prices. In this model, a large retail chain store with countervailing power plays one large supplier off against another to win lower prices. An indirect effect of these interactions is that small retailers also pay lower prices, although not as low as the chain. Finally, competition among the retailers drives retail prices lower. The retail-price-restraining effect of the chain is stronger than the effect that is produced by the entry of an additional supplier.



## Keywords

countervailing power, buyer power, monopsony, chain store

## I. Introduction

The notion that the "countervailing power" of large buyers subdues the market power of sellers has a long history, beginning with Galbraith (1952, 1954).[2] Galbraith's claim that large buyers utilize this power to win pricing concessions from suppliers that are not extended to small buyers is widely accepted. But his further claim that price concessions won by large buyers in upstream markets translate into lower retail prices was and remains controversial. Stigler (1954) in particular argued forcefully that Galbraith's predictions about the downstream transmission of discounts lacked a compelling theoretical foundation.

This paper revisits the question of whether and when consumers might be beneficiaries of the advantageous pricing that a dominant buyer obtains from its suppliers, and offers a formal reconstruction of Galbraith's argument. The goal is to recreate a theoretical framework that is closer to Galbraith's narrative than has appeared elsewhere, and to assess the plausibility of Galbraith's claim – that countervailing power upstream translates into lower prices downstream – within that framework.

The model presented here incorporates two features of dominant buyers that Galbraith emphasized and that have not been incorporated previously in a theoretical examination of countervailing power. Previous work has been limited to downstream price effects when large buyers purchase from an upstream monopolist. But Galbraith wrote mainly about supplier oligopolies and "the opportunity of a strong buyer to play one seller off against the other" (1952,

[2] A note on terminology: *Countervailing power* is market power on the demand side of a market in which sellers also have market power. This term is distinguished from *monopsony power*, which generally refers to market power on the demand side of a market in which the supply side is structurally competitive. *Buyer power* is a related term. Inderst and Shaffer (2008, p. 1612) define buyer power as "the ability of buyers to obtain advantageous terms of trade from their suppliers." In principle, the suppliers of the buyer in question may or may not have market power themselves. Whether or not they do has significant implications for market outcomes (Chen, 2007 and Mills, 2010).

p. 123).[3] A central feature of the present model is the interaction between a dominant buyer and a supplier duopoly in which the buyer plays one seller off against the other.

The second feature of the model that is prominent in Galbraith's informal analysis of countervailing power concerns the dominant buyer. The firm's dominance as a buyer is explicitly due to the firm's organization as a multi-market "chain store."[4] The significance of multi-market operations in the model is that the large buyer's dominance upstream does not preclude competition downstream where the chain competes with small, single-market retailers in many "local" markets. This happens because the size asymmetry among retailers is significantly greater upstream where *all* retailers are buyers in the same market than downstream where retailers are sellers and competition is local.

As Galbraith suggested, the source of the chain's countervailing power in the model is the credible threat to secure an independent source of supply. Formally, the chain has the option to make a long-term, contractual, quantity commitment by sponsoring a new manufacturing entrant. This option positions the firm as a Stackelberg leader in its interactions with the quantity-setting incumbent manufacturers. In lieu of exercising its outside supply option, the chain leverages its strategically strong position to play the manufacturers off against each other and win favorable terms of sale.

Because residual demand for the good, after the chain makes a quantity commitment, is more elastic than total demand, the manufacturers' interactions are more competitive when the chain is in the picture than not. This drives the small retailers' wholesale price below the price

[3] Galbraith (1952, p. 145) identified supplier oligopolies, rather than monopolies, as the place where countervailing power is most effective: "Mistrust and uncertainty can be developed in the mind of one entrepreneur as to the intentions and good faith of others. These, in turn, can be translated into bargaining concessions. Such opportunities abruptly disappear when the number is reduced to one".

[4] Galbraith (1952, p. 119) specifically cited several then-large chains such as Sears and A&P.

that would prevail if the manufacturers played Cournot with total demand in each retail market. Finally, retail competition insures that small retailers' savings are passed on to consumers through lower retail prices. The paper's main result is that, in these circumstances, the countervailing power of the chain becomes an instrument for reducing retail prices at the expense of upstream suppliers.

## II. Countervailing Power and Downstream Prices

It is widely recognized that, as Galbraith observed, large buyers often obtain price concessions from their suppliers that are not available to small buyers. There are several explanations for this empirical regularity. The most obvious explanation is that sellers' costs may not increase in proportion with the quantities that different buyers purchase. Lower per-unit costs of serving large buyers may be due to scale economies in production, transacting, or logistics. This explanation applies to essentially any configuration of buyers and sellers, and does not involve the exercise of market power. Other explanations involve industry structures that allow the exercise of market power on one side of the market or the other.

A monopolist who cannot distinguish large buyers from small buyers in advance of a sale may use quantity discounts as a price discrimination tactic to induce profitable buyer separation (Oi, 1971). Similarly, a monopolist with incomplete information about buyers' valuations of its good may charge lower prices for larger quantities because of risk aversion (DeGraba, 2005).

Other explanations for quantity discounts use the Nash bargaining solution to characterize separate and simultaneous negotiations between a monopolist and independent buyers of various sizes where, plausibly, the firms' joint surplus is concave in the quantities purchased (Horn and Wolinsky, 1986; Stole and Zweibel, 1996; Chipty and Snyder, 1999;

Inderst and Wey, 2003; Raskovich, 2003; and Chae and Heidhues, 2004). In these models, large buyers negotiate larger discounts because their transactions create a greater incremental surplus per unit than do small buyers' transactions.

Snyder (1998) provides an explanation for why large buyers win discounts in a market with oligopolistic sellers and buyers of various sizes. Terms of trade are determined independently for each buyer. The main idea is that large buyers pay lower prices because the degree of tacit collusion that sellers can sustain is less for large buyers than for small buyers. In effect, sellers compete more aggressively for sales from large buyers than small buyers. [5]

While it is generally agreed that large buyers pay lower prices, Galbraith's principal claim – that price concessions won by large buyers upstream translate into lower downstream prices – remains problematic. In answering his early critics, Galbraith had to concede that downstream competition plays a greater role in translating the effects of countervailing power downstream than he claimed at first. He acknowledged that in emphasizing "the social utility of countervailing power," he had neglected to emphasize that his claim requires competition in retail markets (1954, p. 3).[6] Subsequent research on the downstream effects of countervailing power supports this concession.

For instance, von Ungern-Sternberg (1996) and Dobson and Waterson (1997) interpret Galbraith's discussion of countervailing power to apply to retail markets with high concentration. They revisited Galbraith's claim to examine the downstream price effects of increased retail concentration within a symmetric retail oligopoly where the upstream supplier is

[5] This model is a clever adaptation of Rotemberg and Saloner's (1986) super-game theory of tacit collusion over the business cycle.

[6] This was a significant concession on Galbraith's part, because his goal was to show that, in the absence of upstream competition, the countervailing power of large buyers can mitigate the adverse effects of upstream market power: "I am sure that I was more than a little reluctant, at this particular stage in my argument, to confess a reliance on competition. After all, it is a bit embarrassing after one has just murdered his mother-in-law to disinter the lady and ask her to help do the cooking" (Galbraith, 1954, p. 4).

a monopolist. Later, Chen (2003) examined the downstream price effects of a dominant retailer that, together with a competitive fringe of small retailers, is supplied by a monopolist. Each of these papers found specialized structural conditions where upstream price concessions reduce retail prices downstream so that consumers are beneficiaries of countervailing power, as Galbraith claimed. These conditions invariably stress competition at the retail level even as structural changes bring on or increase countervailing power upstream. Apart from these circumstances, these papers indicate that a large retailer's countervailing power raises retail prices and decreases consumer welfare.

None of these papers examined interactions between a dominant retailer and oligopolistic suppliers, as is done here. Nor did they explore, as here, the possibility that where a retailer's dominance as an upstream buyer is due to its multi-market operations, conditions downstream may remain more competitive than upstream. Both of these features are prominent in Galbraith's informal discussion of countervailing power. Incorporating these features in the present model extends the class of structural conditions in which Galbraith's countervailing power hypothesis is plausible.

## III. A Multi-market Model

Consider two manufacturers who produce a homogeneous good at a constant marginal cost $c > 0$. The firms' fixed costs $F > 0$ are sunk. The good is sold to retailers in $m$ identical, geographically-separated, downstream markets.[7] Assume that retailers within and across markets are independent.

[7] The model applies to intermediate-goods markets generally, but it will simplify exposition to suppose that upstream firms are manufacturers and downstream firms are retailers.

Manufacturers' interactions in each downstream market are separate and occur simultaneously, so "downstream" analysis can focus on outcomes in a representative market. Let consumers' (inverse) demand in the representative market be $p = R(y)$ with $R'(y) < 0$ and $R''(y) \leq 0$ for any $y \in (0, R^{-1}(0))$, and $R(0) > c$. For the sake of simplicity, suppose that retailers have no costs other than the wholesale price of the good *w*. Retailers resell the good to consumers for a retail price *p*. Retail market structure is atomistic, and entry is free, so retailers compete *p* down to *w*.

The manufacturers choose outputs $y_1, y_2$ simultaneously in the representative market. Because $p = w = R(y_1 + y_2)$, manufacturer *1's* profits in the representative market are:

$$\pi^1(y_1, y_2) = (R(y_1 + y_2) - c) \cdot y_1 \quad , \tag{1}$$

and similarly for manufacturer *2*. When solved simultaneously, the firm's first-order conditions for maximizing profits yield a Cournot-equilibrium output level $y_1 = y_2 = y_0$. The equilibrium wholesale and retail prices in the representative market are:

$$w_0 = p_0 = R(2y_0). \tag{2}$$

The manufacturers' profits in that market are:

$$\pi^1(y_0, y_0) = \pi^2(y_0, y_0) = [R(2y_0) - c] \cdot y_0 \quad , \tag{3}$$

and retailers earn no profits. Assume that fixed costs and the number of markets are such that *F/m* is too large for a third manufacturer that anticipates Cournot interactions to enter the upstream market profitably. The incumbent manufacturers are not threatened by the prospect of a new manufacturing entrant.

**IV. The Chain Store**

Next, suppose that an entrepreneur uniquely endowed with the requisite organizational capacity emerges to establish a chain store that operates an outlet in each of the *m* geographic markets. Everything else remains the same as before. Because downstream entry is free, and because there are no retail scale economies, independent retailers remain in each retail market and those markets remain competitive. To keep the focus on countervailing power, assume that the chain's retail operations are neither more nor less efficient than those of the independent retailers.

From the manufacturers' perspective, the chain is distinguished from other retailers by its size. Even if the chain's outlet in each market is the same size as other retailers, the chain is *m* times larger than other retailers. This size asymmetry is even greater if, as this model suggests, the chain's outlets are larger than other downstream firms. In keeping with Galbraith's reasoning, if the chain is large enough in relation to the other retailers (i.e., if *m* is large), the chain is unlikely to exhibit the passive, price-taking behavior of atomistic buyers in a competitive market. Instead, the firm will exercise countervailing power against the suppliers to win advantageous terms of sale that are not available to small buyers.[8]

Consider both the source of the chain's countervailing power and the use to which it is put. First, the source. Although there are several explanations for why the seller might offer volume discounts to large buyers, Galbraith appears to have had a specific mechanism in mind. He attributes the large buyer's countervailing power to a credible threat that the firm could reject

[8] Galbraith's focus on the role of sprawling retail chains was prescient. Based on their analysis of the U.S. Bureau of the Census' Longitudinal Business Database, Jarmin, Klimek and Miranda (2005, p. 5) observe that "The ascendancy of chain stores is clearly one of the most important developments in the evolution of retail markets in the U.S. . . .". They find that between 1963 and 2000, the percentage of U.S. retail establishments that were operated by chains increased from 20 percent to 35 percent (Jarmin et al., 2005, p. 5). The mean number of independent retail establishments per 1000 residents in U.S. counties fell by 31 percent between 1976 and 2000 while the corresponding number of chain stores increased by 37 percent (Jarmin et al., 2005, p. 20). Chain stores account for an increasing share of retail sales. Basker, Klimek and Van's (2010, p. 6) analysis of the Census of Retail Trade indicates that, in recent years, chain stores account for more than 60 percent of retail sales.

the terms of sale offered by existing suppliers and obtain an outside supply of the good. This would be achieved by vertical integration upstream or by sponsoring a captive manufacturing entrant.

This idea was developed rigorously by Katz (1987) and by Sheffman and Spiller (1992), but Galbraith anticipated the argument when he observed that dominant buyers "have a variety of weapons at their disposal to use against the market power of their suppliers. Their ultimate sanction is to develop their own source of supply . . . . They can also concentrate their entire patronage on a single supplier and, in turn for a lower price, give him security in his volume . . ." (p. 120). A small buyer lacks the ability to create an alternative source of supply unilaterally because upstream entry on the appropriate scale is prohibitively expensive.

Assume that fixed costs $F$ for a new manufacturing entrant are so large that:

$$F > \max_{y}\{[R(y) - c] \cdot y\}. \tag{4}$$

This assumption means that the option to obtain an outside source of supply cannot be profitable for any retailer whose operations are confined to a single downstream market. Even a retailer who *monopolizes* a single downstream market cannot profitably integrate vertically upstream or sponsor a captive manufacturing entrant. However, the chain can overcome this barrier to securing a captive source of supply if it is active in sufficiently many downstream markets.

If the chain is large enough to sponsor a captive entrant, this option may have strategic implications. Suppose that the chain has the option to contract with a new entrant to secure a long-term supply of a specific quantity $mx$ of the good. Assume that there are many potential entrants and that there are no barriers to entry other than fixed costs. With this, the chain could contract with a new entrant for $mx$ units for a wholesale price of $w = c + F/mx$.

Finally, suppose that a long-term contract with the entrant for $mx$ units commits the chain to that quantity for longer than the incumbent manufacturers are committed to $y_1$ and $y_2$. Where the incumbent manufacturers have more flexibility to adjust $y_1$ and $y_2$ than the chain has to adjust $mx$, the chain's outside supply option gives the firm a Stackelberg leadership advantage. To explore possibilities, assume that while $F/m$ is too large to support a third Cournot supplier, $F/m$ is not large enough to prevent entry by a third supplier who is a Stackelberg leader.

Having acquired Stackelberg leadership by means of an outside supply option, the chain can exploit its strategic advantage without actually exercising the outside option. In particular, the firm can use its strategic advantage to play the incumbent manufacturers off against each other in order to win favorable terms of sale.

Suppose that before the chain exercises the outside supply option, it solicits a long-term, fixed-quantity supply contract from the incumbent manufacturers. The supplier who offers to sell the chain $mx$ units of the good for the lowest price below $w = c + F/mx$ is awarded the contract. If neither manufacturer offers a price below $w = c + F/mx$, the chain exercises the outside option and purchases $mx$ units from a captive entrant. Once the chain has secured a long-term source for $mx$ units of the good, the firm offers $x$ units for sale in the representative market and the incumbent suppliers play Cournot with the residual demand.

Long-term, fixed-quantity contracts are not unusual for large buyers and their suppliers. Noll (2005, p. 603), for instance, observes that large buyers often do not exercise their dominance by "posting a low buying price and waiting for sellers to arrive. Instead the common practice is for buyers and sellers to negotiate a long-term contract that specifies both price and quantity." Terms of sale between suppliers and their large buyers generally are more complex than with small buyers. Large suppliers often hire dedicated account managers to manage their

relationships with large buyers, and leave small buyers to a sales force with assignments based on geographic territories or specific distribution channels. At the same time large buyers hire dedicated specialists to manage the relationships with their principal suppliers.

The firms' interactions may be depicted in the following game with complete information:

> *Stage I:* The chain solicits a selling price from each manufacturer for *mx* units of the good.
>
> *Stage II:* The manufacturers submit simultaneous bids, and the chain accepts the lower bid if it is below $w = c + F/mx$, or accepts a bid at random in the event of a tie. If neither manufacturer's bid is below $w = c + F/mx$, the chain exercises its outside supply option.
>
> *Stage III:* The chain supplies *x* units to its outlet in the representative market, and the incumbent manufacturers play Cournot with the residual demand.

This game has a unique perfect equilibrium in which one of the incumbent manufacturers wins the contract to supply the chain. The firms' equilibrium strategies are as follows:

At *Stage III*, the chain supplies *x* units of the good in the representative market. With this, the incumbent manufacturers' first-order conditions for maximizing profit in the representative market at *Stage III* are:

$$R(x + y_1 + y_2) + y_i \cdot R'(x + y_1 + y_2) - c = 0 \text{ for } i = 1,2. \tag{5}$$

Solved simultaneously, these conditions imply that $y_1 = y_2 = f(x)$, where $f(x)$ is implicitly defined by:

$$f(x) = \frac{R(x + 2f(x)) - c}{-R'(x + 2f(x))}, \tag{6}$$

This function has $f(x) > 0$ and $f'(x) < 0$ for all $x \in (0, R^{-1}(0))$, with $f(0) = y_0$ and $f(R^{-1}(0)) = 0$. Together, the manufacturers supply $2f(x)$ units of the good in each downstream market.

At *Stage II*, if either manufacturer offers to sell the chain *mx* units of the good for a price that is greater than *c +F/mx*, the other manufacturer would undercut *c +F/mx*, the chain's acquisition price if it exercises the outside option. If either manufacturer offers to sell the chain *mx* units of the good for a price that is less than *c +F/mx* and greater than *c*, the other manufacturer would undercut that offer. In both instances, the manufacturers' profits from sales to the small retailers in each market at *Stage III* are the same whether or not they win the chain's contract. So winning the chain's contract at any price greater than or equal to *c* is better than losing it. Finally, neither manufacturer would offer to supply *mx* units for a wholesale price less than *c*. By playing the manufacturers off against each other in this way, the chain drives its acquisition price down to $w_c = c$.

At *Stage I*, the chain anticipates that output in the representative market will be $x + 2f(x)$ and that its acquisition price will be $w_c$. With this, the firm exercises Stackelberg leadership and solicits contracts for the quantity *mx** where:

$$x^* = \arg\max_x \{[R(x + 2f(x)) - c] \cdot x\}. \tag{7}$$

The chain's profit in the representative market is:

$$\pi^c(x^*) = [R(x^* + 2f(x^*)) - c] \cdot x^*, \tag{8}$$

and the incumbent manufacturers' profits are:[9]

[9] If, contrary to assumption, the manufacturers' costs are not the same, then the contract would be won by the firm with the lower marginal cost and $w_c$ would be equal to the marginal cost of the less efficient manufacturer. In this instance, the more efficient manufacturer would retain some profit from its sales to the chain.

$$m\pi^i(x^* + f(x^*), f(x^*)) = m(p^* - c)\cdot f(x^*), \text{ for } i = 1,2. \quad (9)$$

It follows from $R(0) > c$ that $x^* > 0$. The retail price of the good in the representative market is:

$$p^* = R(x^* + 2f(x^*)), \quad (10)$$

and the manufacturers charge small retailers the wholesale price $w^* = p^*$.

The following Lemma is useful to assess outcomes:

***Lemma 1:*** $[x + 2f(x)]$ ***is strictly increasing for any value of*** $x \in (0, R^{-1}(0))$.

(See the Appendix for a proof.) This ***Lemma*** shows that total output in the representative market is an increasing function of the quantity that the chain chooses to purchase and resell.

The main effects of the chain's exercise of countervailing power in this model are summarized in:

***Proposition 1: (i)*** $f(x^*) < y_0$ ***and*** $x^* + 2f(x^*) > 2y_0$

***(ii)*** $w_c < w^* = p^* < w_0 = p_0$ .

(See the Appendix for a proof.) By playing one manufacturer off against the other, the chain essentially procures the good at the manufacturers' marginal cost $(w_c = c)$. This means that the chain makes more profit than if it sponsored a captive entrant and procured the good at the entrant's average cost. Also, because $f(x^*) < y_0$ and $p^* < p_0$, ***Proposition 1*** implies that the chain's exercise of countervailing power reduces manufacturers' profits:

$$m\pi^i(x^* + f(x^*), f(x^*)) < m\pi^i(y_0, y_0) \text{ for } i = 1,2. \quad (11)$$

The chain's countervailing power enables the firm to acquire the good for a lower wholesale price than the small retailers pay *($w_c < w^*$).*[10] But even small retailers pay less with a chain in the picture than without *($w^* < w_0$).*

The chain's countervailing power reduces small retailer's wholesale price because the chain's preemptive action forces manufacturers to play Cournot with the residual demand for the good instead of total demand. In each downstream market, and for any wholesale price *w*, the elasticity of residual demand $\eta_r = \frac{w}{R'(R^{-1}(w))\cdot(R^{-1}(w) - x^*)}$ is greater than the elasticity of total demand $\eta = \frac{w}{R'(R^{-1}(w))\cdot R^{-1}(w)}$. The increased price elasticity intensifies competition between the manufacturers and drives the small retailers' wholesale price lower.

In this model, when the chain uses its countervailing power to pay a lower price, independent retailers also pay a lower price, although not as low as the chain. This result contrasts with what happens in some other models with a dominant buyer. For instance, when a dominant buyer exercises monopsony power in a market with *competitive* suppliers, small buyers pay the same low price that the dominant buyer pays (Blair and Harrison (1993) and Mills (2010)). Also with competitive suppliers, unit sales and total welfare are lower than otherwise when there is a dominant buyer. In the present model, unit sales and total welfare are greater than otherwise when there is a dominant buyer.

Other models indicate that a dominant buyer causes a "waterbed effect," where the discount a large buyer wrests from its supplier triggers *higher* prices for small buyers. Viewed from the competition policy perspective, this is a troubling result. It arises for different reasons

[10] The chain also captures a significant market share in the representative market. In the linear demand case, the chain's market share is 60 percent.

in different models. In Mathewson and Winter (1996), it occurs in a monopolistically competitive market where a group of independent buyers form a group purchasing organization to negotiate exclusive contracts with a subset of suppliers. This puts the excluded buyers at a pricing disadvantage. In Majumdar (2005), it arises when a dominant buyer deals with duopoly suppliers that have decreasing costs. Inderst and Valletti (2009) demonstrate that a dominant buyer that purchases a good from a single seller can generate a waterbed effect on prices. This result is driven by scale economies in buyers' backup supply options. While each of these models involve scale economies of one kind or another, Mills (2010) shows that a waterbed effect also arises in the Nash bargaining solution between a dominant buyer and a monopolist that has diseconomies of scale.

The most important result in ***Proposition 1*** is that $p^* < p_0$. Although the small retailers' wholesale price is reduced when the chain exercises countervailing power, competition among those retailers drives the retail price lower and deprives those retailers of any benefit from the lower price. The chain pays a lower wholesale price and so is the only retailer that earns a positive profit. Because the chain drives the retail price lower, consumers purchase more of the good than otherwise and acquire some of the gains won by the chain. This is the result that Galbraith had in mind when he claimed that the countervailing power of a dominant buyer translates into lower retail prices.

There is some empirical evidence that retail prices are lower because of the influence of large retail chains. Basker and Noel (2006) study pricing in the U.S. retail grocery sector based on store-level data for 2001-2004. They find that in those markets that have Wal-Mart Supercenters, prices at competing grocery stores are reduced 1-2 percent when Wal-Mart enters the market. Hausman and Leibtag (2007) use household-level expenditure data during 1998-

2001 to examine how Wal-Mart supercenters, warehouse club stores, and mass merchandisers affect grocery prices. They find when these national chains entered the retail grocery sector, prices of a wide sample of grocery items in traditional supermarkets fell by about 3 percent.

## V. Countervailing Power and Competition

Galbraith's discussion of countervailing power emphasized the purported restraint that the exercise of sellers' market power has in concentrated manufacturing industries. He argued that dominant buyers held more promise for disciplining sellers in concentrated industries than new entry and increased competition among sellers.[11] The model in this paper provides some qualified support for this claim.

The price-restraining effectiveness of a buyer with countervailing power can be compared to the price-restraining effectiveness of a third manufacturer. Suppose $F/m$ is smaller than previously assumed so that there are three identical manufacturers of the good. Assume that retailers in every downstream market are atomistic. Let the Cournot equilibrium values of each manufacturer's output be $\hat{y}$, and let the corresponding wholesale and retail prices in the representative downstream market be $\hat{w}$ and $\hat{p}$. Comparing these values to those in ***Proposition 1*** gives:

***Proposition 2:*** $x^* + 2f(x^*) > 3\hat{y}$ ***and*** $p^* < \hat{p}$

(See the Appendix for a proof.)

[11] For instance, Galbraith (1952, p. 57) writes that "in looking for restraints on the behavior of the large seller, . . . preoccupation with competition kept the investigators from seeing the actual restraints on market power . . .", which he goes on to claim rest with powerful buyers on the other side of the market.

This ***Proposition*** indicates that a dominant buyer with countervailing power reduces retail prices more than does an additional manufacturer. While an additional manufacturer causes lower retail prices when the manufacturers play Cournot (*i.e.*, $\hat{p} < p_0$), prices would be lower still if the additional manufacturer exercised Stackelberg leadership. The chain in the present model has the same effect on retail prices as does the entry of an additional manufacturer who exercises Stackelberg leadership. The chain does not sponsor a new manufacturing entrant, but instead leverages this opportunity to run a procurement auction. As a result, the firm acquires the good from an incumbent manufacturer at cost. This result is a formal reconstruction of Galbraith's assertion that consumers stand to gain more from the emergence of a large buyer with countervailing power than from the entry of another manufacturer.

## VI. Important Qualifications

Galbraith's claims about the beneficial effects of dominant buyers do not hold generally. There are circumstances where a dominant buyer's countervailing power upstream translates into market power and higher prices downstream. Retail competition is preserved in this model, in spite of the chain's countervailing power, because constant returns to scale and free entry in downstream markets prevent the acquisition of market power in those markets. If independent, single-market retailers have significant scale economies, or if there are institutional barriers to entry in local retail markets, the chain's countervailing power may not drive retail prices lower.

If contrary to previous assumption, single-market retailers have significant scale economies, then residual demand in the representative retail market may be insufficient to support enough small retailers to insure that retail markets are competitive. If the chain causes retail markets to become concentrated enough, consumers may pay higher instead of lower

prices. In the extreme case, residual demand in the market may be insufficient to support any small retailers.

Also, the chain may exploit its ability to obtain a lower wholesale price to implement a price squeeze that drives small retailers out of the retail markets. Then, if there are institutional barriers that prevent reentry or new entry by small retailers, the chain could acquire market power downstream and raise retail prices. For instance, the chain may set $x > R^{-1}(c)$ to drive all of the small retailers out of the representative market. This costly, predatory ploy would flood the representative market with so much output that small retailers are squeezed out. But flooding the market like this could not establish a permanent monopoly in the representative market unless there are significant barriers to (re)entry. The chain's ability to orchestrate a price squeeze is further hampered because the firm's wholesale price advantage is not open-ended, but is limited to the purchase of a specific quantity. Finally, the prospects for permanently excluding small retailers are limited because manufacturers are reluctant to see the small retailers driven out.

In any case, there is ample empirical evidence that small firms coexist with large, national chains in the retail sector. Jarmin, Klimek, and Miranda (2005, p. 8) observe that "modern retail markets are marked by the simultaneous presence of large chain stores and small mom-and pops". Also, they show that rates of firm entry and exit in the retail sector are high. This indicates an absence of formidable entry barriers. Igami's (2011) study of supermarkets in Japan finds some evidence that large supermarket chains actually improve the survival prospects of small grocery stores because of product differentiation considerations.

Wal-Mart is the preeminent example of a large, national chain in the retail sector. Based on a study of the effects of Wal-Mart's entry in local retail markets, Basker (2007, p. 191)

reports that "Wal-Mart's entry has only a minor effect on the number of small stores." However, Jia's (2005) investigation of entry and exit by small *general-merchandise retailers* in local markets in the U.S. shows that Wal-Mart's entry accounts for a significant share of the exit of small firms in this segment of the retail sector.

There are other qualifications that limit the generality of results. If manufacturers have increasing rather than constant marginal costs, then any change in the quantities the firms produce would change their marginal costs and alter both the firms' responses to the chain's solicitation and their subsequent Cournot interactions. This is likely to reduce the size, or reverse the sign, of the wholesale price effect on small retailers.

The results depend on the specific industry structure assumed. They do not apply where retailers are differentiated or where the manufacturers' products are differentiated. Nor do they apply where retail markets are populated by more than one chain or where retailers within and across geographic markets have the option to form a group purchasing organization.

## VII. Conclusion

The model presented in this paper illustrates a plausible mechanism whereby a large buyer's countervailing power translates into lower retail prices. It incorporates stylized facts that exemplify Galbraith's initial discussion of this question. The paper's main results depend on assumptions about the viability of small retailers that echo the insight of earlier papers that downstream competition is necessary to assure that an upstream discount translates into lower prices downstream. The paper provides some support for the intuition that consumers may be beneficiaries of the countervailing power of a large retail chain. It also indicates that the restraint on prices that is created by a dominant buyer compares favorably with that created by enhanced

upstream competition. However, consumer benefits from the countervailing power of large buyers in this model owe as much to downstream competition as to upstream buyer power. Notwithstanding Galbraith's eagerness to recruit one, there appears to be no good substitute for competition.

Antitrust enforcement is concerned as much with injuries to competition that result from the exercise of market power on the demand side of a market as from market power on the supply side (Blair and Harrison, 1993; Noll, 2005). This was underscored several years ago by the Supreme Court's decision in *Weyerhaeuser*.[12] Also, the recently revised Horizontal Merger Guidelines of the Department of Justice and the Federal Trade Commission include a new section that discusses mergers of buyers that create or enhance problematic monopsony power.[13] This discussion raises awareness of potentially anticompetitive effects from the exercise of buyer power and indicates that the Agencies will use the same framework to analyze mergers of competing buyers as they use to analyze mergers of competing sellers. Nevertheless, the exercise of buyer power is not always problematic. This paper identifies a set of circumstances where the exercise of countervailing power is not anticompetitive.

[12] *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co., Inc.*, 549 U.S. 312 (2007). In this case, the plaintiff (a small buyer) claimed that the defendant (a large buyer) bid prices *up* in order to impose losses on the plaintiff. In holding unanimously for the defendant, the Court adopted the same standard that it employs in predatory pricing cases.

[13] Available at http://www.ftc.gov/os/2010/08/100819hmg.pdf.

**Appendix**

***Lemma 1:*** $[x + 2f(x)]$ ***is strictly increasing for any value of*** $x \in (0, R^{-1}(0))$.

***Proof:*** Because $f'(x) < 0$ for all $x \in [0, R^{-1}(0)]$, equation (6) implies that $f(x_2) < f(x_1)$ for any $R^{-1}(0) \geq x_2 > x_1 \geq 0$, or

$$\frac{R(x_2 + 2f(x_2)) - c}{-R'(x_2 + 2f(x_2))} < \frac{R(x_1 + 2f(x_1)) - c}{-R'(x_1 + 2f(x_1))}. \tag{12}$$

Equivalently,

$$\left| \frac{R'(x_1 + 2f(x_1))}{R'(x_2 + 2f(x_2))} \right| < \frac{R(x_1 + 2f(x_1)) - c}{R(x_2 + 2f(x_2)) - c}. \tag{13}$$

Because $R'(y) < 0$ and $R''(y) \leq 0$ for any $y \geq 0$, inequality (13) implies that $x_2 + 2f(x_2) > x_1 + 2f(x_1)$. ■

***Proposition 1: (i)*** $f(x^*) < y_0$ ***and*** $x^* + 2f(x^*) > 2y_0$ ***and (ii)*** $w_c < w^* = p^* < w_0 = p_0$

***Proof:*** ***(i)*** $f(x^*) < y_0$ because $f(0) = y_0$, $x^* > 0$ and $f'(x) < 0$. Also, because $x^* > 0$, ***Lemma 1*** implies that $x^* + 2f(x^*) > 2y_0$. ***(ii)*** In turn, this inequality implies that $w^* = p^* < w_0 = p_0$ and also that $R(x^* + 2f(x^*)) > c$. The latter inequality implies that $w_c < w^*$ ■

***Proposition 2:*** $x^* + 2f(x^*) > 3\hat{y}$ ***and*** $w^* = p^* < \hat{w} = \hat{p}$

***Proof:*** First note that:

$$\hat{y} = f(\hat{y}), \tag{14}$$

because $\hat{y}$ is the Cournot output level with three manufacturers. Next, the chain's first order condition for choosing the contractual quantity:

$$R(x^* + 2f(x^*)) - c + R'(x^* + 2f(x^*)) \cdot (1 + 2f'(x^*)) = 0 \tag{15}$$

and equation (6) together imply that:

$$x^* = \frac{f(x^*)}{1 + 2f'(x^*)}. \tag{16}$$

***Lemma 1*** and $f'(x) < 0$ for all $x \in (0, R^{-1}(0))$ imply that:

$$0 < 1 + 2f'(x^*) < 1, \tag{17}$$

and equations (17) and (18) demonstrate that:

$$x^* > f(x^*). \tag{18}$$

Because $f'(x) < 0$ for all $x \in (0, R^{-1}(0))$, equations (15) and (19) imply that:

$$x^* > \hat{y}. \tag{19}$$

Equation (20) and ***Lemma 1*** establish that $x^* + 2f(x^*) > 3\hat{y}$, and it follows that $w^* = p^* < \hat{w} = \hat{p}$ ■

**References**


Basker, E., 2007. "The Causes and Consequences of Wal-Mart's Growth," *Journal of Economic Perspectives* 21, 177-198.

Basker, E., Klimek, S., and Van, P.H. "Supersize It: The Growth of Retail Chains and the Rise of the "Big Box" Retail Format *Journal of Economics and Management Strategy* (forthcoming).

Basker, E. and Noel, M. 2009. "The Evolving Food Chain: Competitive Effects of Wal-Mart's Entry into the Supermarket Industry," *Journal of Economics and Management Strategy* 18, 977-1009.

Blair, R.D. and J.L. Harrison, 1993. *Monopsony: Antitrust Law and Economics*. (Princeton: Princeton University Press)

Chae, S. and Heidhues, P., 2004. "Buyers' Alliances for Bargaining Power," *Journal of Economics and Management Strategy*, 13, 731-754.

Chen, Z., 2003. "Dominant Retailers and the Countervailing-Power Hypothesis," *RAND Journal of Economics.* 34, 612-625.

_____, 2007. "Buyer Power: Economic Theory and Antitrust Policy," *Research in Law and Economics* 22, 17-40.

Chipty, T., and Snyder, C. M., 1999. "Buyer Size and Bargaining Power," *Review of Economics and Statistics* 81, 326-340.

DeGraba, P., 2005. "Quantity Discounts from Risk Averse Sellers," Federal Trade Commission working paper no. 276.

Dobson, P.W. and Watterson, M., 1997. "Countervailing Power and Consumer Prices," *Economic Journal* 107, 418-430.

Galbraith, J.K., 1952. *American Capitalism: The Concept of Countervailing Power*, Houghton Mifflin, Boston.

_____, 1954. "Countervailing Power," *American Economic Review* 44, 1-6.

Hausman, J., and Leibtag, E. 2007. "Consumer Benefits from Increased Competition in Shopping Outlets: Measuring the Effect of Wal-Mart," *Journal of Econometrics* 22, 1157-1177.

Horn, H., and Wolinsky, A., 1988. "Bilateral Monopolies and Incentives for Merger," *RAND Journal of Economics* 19, 408-419.

Igami, M., 2011. "Does Big Drive Out Small? Entry, Exit and Differentiation in the Supermarket Industry," *Review of Industrial Organization* 38, 1-21.

Inderst, R. and Wey. C., 2003. "Bargaining, Mergers, and Technology Choice in Bilaterally Oligopolistic Industries," *RAND Journal of Economics* 34, 1-19.

Inderst, R. and Shaffer,G., 2008. "Buyer Power in Merger Control," in: Collins, W.D., (Ed.), *Issues in Competition Law and Policy*, Chicago: American Bar Association, Chicago, pp. 1611-1635.

Inderst, R. and Valletti, T.M., 2009. "Price Discrimination in Input Markets," *RAND Journal of Economics* 40, 1–19.

Jarmin, R.S., S.D. Klimek, and J. Miranda, 2005. "Firm Entry and Exit in the U.S. Retail Sector: 1977-1997," Center for Economic Studies Working Paper 04-17, http://www.ces.census.gov/index.php/ces/cespapers?paper_year=2004

Jia, P., 2008. "What Happens When Wal-Mart Comes to Town: An Empirical Analysis of the Discount Retailing Industry," *Econometrica* 76, 1263-1316.

Katz, M.L., 1987. "The Welfare Effects of Third-Degree Price Discrimination in Intermediate Goods Markets," *American Economic Review* 77, 154-167.

Majumdar, A., 2005. "Waterbed Effects and Buyer Mergers." Retrieved February 10, 2010, from ESRC Centre for Competition Policy at University of East Anglia Web site: http://www.uea.ac.uk/polopoly_fs/1.104475!ccp05-7.pdf

Mills, D.E., 2010. "Buyer Power and Industry Structure," *Review of Industrial Organization* 36, 213-225.

Noll, R.G., 2005. "Buyer Power and Economic Policy," *Antitrust Law Journal* 72, 589-624.

Oi, W., 1971. "A Disneyland Dilemma," *Quarterly Journal of Economics*, 85, 77-96.

Raskovich, A., 2003. "Pivotal Buyers and Bargaining Position," *Journal of Industrial Economics* 51, 405-426.

Rottemberg, J. and Saloner, G., 1986. "A Supergame-Theoretic Model of Price Wars During Booms," *American Economic Review* 76, 390-407.

Sheffman, D,T. and P.T. Spiller, 1992, "Buyers' Strategies, Entry Barriers, and Competition," *Economic Inquiry* 30, 418-436.

Snyder, C.M., 2008. "Countervailing Power," in: Durlauf, S.N., Blume, L.E. (Eds.), *The New Palgrave Dictionary of Economics*, 2nd ed. Palgrave Macmillan, New York , http://www.dictionaryofeconomics.com/article?id=pde2008_C000538>

doi:10.1057/9780230226203.0333

_____, 1998. “Why Do Larger Buyers Pay Lower Prices,” *Economics Letters* 58, 205-209.

Stigler, G.J., 1954. “The Economist Plays with Blocs,” *American Economic Review* 44, 7-14.

Stole, L.A. and Zwiebel, J., 1996. “Organizational Design and Technology choice under Intrafirm Bargaining,” *American Economic Review* 86, 88-102.

von Ungern-Sternberg, T., 1996. “Countervailing Power Revisited,” *International Journal of Industrial Organization* 14, 507-520.