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CLOSING HOURS

J. Stephen Ferris

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J. Stephen Ferris
Department of Economics
Carleton University
Ottawa, Canada

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It is more than a little hypocritical for merchants who portray themselves
as champions of free enterprise to hide behind government regulation when it
suits their purposes. For what is [early closing regulation] if not an
attempt to hinder free competition in the market place.

Ottawa Citizen editorial, 1983

With the exception of Quebec, Canada's provincial legislatures

have delegated the right to restrict the operating hours of retail

establishments to the municipalities. In Ontario, twelve of its forty-five

cities have responded by passing early closing by-laws. This paper is

concerned with the question of why municipalities choose to exercise this

right. Specifically, it develops a model to compare two competing

hypotheses current in the literature that explain the existence of

regulation. At one extreme, the regulatory process is viewed primarily as

an instrument of monopoly power. The retail trade sector is seen as

capturing control of the municipal government and using its authority to

restrain competition. At the other extreme, government regulation is

characterized as a social mechanism for promoting efficiency. In this view

regulated shopping hours are used to restrain behaviour that is privately

but not socially productive.

The first section of this paper presents a simple model of the retail sector in the absence of legislated constraints. To do so I assume that the representative consumer maximizes utility by minimizing the direct and indirect costs of purchase. The consumer is then assumed to be willing to trade off greater shopping convenience (inconvenience) for higher (lower) prices. On the other side of the market, retailers are assumed to provide convenience through their choice of location and hours of operation. For simplicity it is assumed that each potential store site is identical and possesses the same degree of locational advantage.[1] This latter condition implies a downward sloping demand curve for each retailer whose position is altered by the number of actual competitors and the choice of operating hours. With entry the industry equilibrium can be characterized as monopolistically competitive.

The second section of the paper examines the case where retailers can collude costlessly through a trade association to restrict the quantity (price) and/or hours of operation of its members. It is shown that the ability to realize monopoly rents (and thus the incentive to collude) depends upon the ability to restrict entry. The third section focuses on the common property characteristic of operating hours. The potential gain arising from the control of this externality is then examined for its effects on the returns realized by retailers, property owners, customers, and local governments. The final section draws together some of the predictions arising from this analysis.

I. The Competitive Model

Assume that there exists a closed community with a retail sector of N identical stores.[2] Each store produces an output q, sells at a price p and stays open for h hours each week. Each store is assumed to have some locational advantage and faces the following demand price schedule for its output

(1) $p^d = p(q,h; Q,H)$

where $Q \equiv Nq$ and $H \equiv Nh$ and where the partial derivatives $p_q \leqslant 0$, $p_h \geqslant 0$, $p_Q \leqslant 0$ and $p_H \leqslant 0$. The latter two derivatives reflect the way that aggregate behaviour is assumed to feed back on individual demand conditions. Increased sectoral output forces a movement down the industry demand curve, reducing the demand price schedule that each individual retailer faces. Similarly, an increase in aggregate shopping hours decreases the relative convenience of shopping at any particular store.[3]

The retailer's cost conditions are assumed to take the following form:

(2) $TC = C(q,h) + R(N)$

where C( ) represents the firm's variable costs and R(N) represents the explicit or implicit site rental. The partial derivatives $C_q \geqslant 0$ and $C_h \geqslant 0$ reflect increasing costs and an increase in the number of retailers is assumed to bid up site rents $(R_N \geqslant 0)$.

Assuming, then, that collusion is prohibitively costly and that the retailer is too small to recognize the effect upon itself through the aggregate environment, the retailer chooses the level of output and number

of operating hours that will maximize his individual profits. That is, his choice problem is to

(3) $\underset{q,h}{\text{Max}}\ \Pi = p(q,h;\ Q,H)q - C(q,h) - R(N)$

where Q and H are viewed as parameters. The first order conditions for an internal solution are then

(4) $p_q q + p - C_q = 0$ and

(5) $p_h q - C_h = 0.$

Given that the appropriate second order conditions hold, (4) and (5) solve simultaneously for the optimal values of the retail owner's sales, q^*, and operating hours, h^*, as a function of the number of retail stores, N. For any sized retail sector, then, the substitution of q^* and h^* back into (3) determines the profit level (rents) of each retailer.

In the absence of restrictions on the number of stores, the existence of positive economic profits will attract entry. Hence if all actual and potential competitors are identical, the zero profit condition

(6) $\Pi = p(q^*,h^*;Nq^*,Nh^*)q^* - C(q^*,h^*) - R(N) = 0$

solves for the number of retailers, N^*, that will exist in the monopolistically competitive equilibrium.[4]

The position of equilibrium defined by the simultaneous solution of (4), (5) and (6) is illustrated diagrammatically in Figure 1. Diagram (a) illustrates the price-quantity optimum (given h^*) and diagram (b) illustrates the optimal choice of hours (given q^*).

II. The Monopoly Solution

While the competitive retailer is assumed to ignore the aggregative consequences of its actions, these consequences still occur and become embodied in the industry equilibrium. From the perspective of the individual retailer, an increase in his output and hours feeds back negatively not only on his demand and profit position, but also on that of each of his rivals. Competitive behaviour then results in the imposition of external costs on the retailer's rivals. Because all retailers are identical, they impose the same external costs on each other.

Suppose then that through their retail trade association, individual retailers are made aware of their mutual interdependence. Suppose further that through this association, retailers can collude costlessly to capture control of the regulatory process and so monitor and enforce the decision variable of its individual members. The regulatory process thus becomes the agency by which the industry effects external to the individual retailer are internalized. Assuming that the number of association members is fixed at N^*, the association, through the regulatory process, chooses the level of q and h that accounts optimally for the retailers' interdependence. That is, the association

$$(7) \qquad \underset{q,h}{\text{Max}}\ \Pi = p(q,n,N^*q,N^*h)q - C(q,h) - R(N^*)$$

where the interdependence of the retailers through Q and H is endogenized into the decision making process. The first order conditions for this internal maximum are now

(8) $\quad \partial\Pi/\partial q = p + p_q q + p_Q N^* q - C_q = 0$ and

(9) $\quad \partial\Pi/\partial h = p_h q + p_H N^* q - C_h = 0.$

The effect of the internalizing process adopted by the trade association on the optimal values of q and h can be seen most clearly by evaluating (8) and (9) at the solution values of Section I (q* and h*). Given the unchanged number of retailers, $p_Q < 0$ and $p_H < 0$ imply that both $\partial\Pi/\partial q$ and $\partial\Pi/\partial h$ are negative. This indicates that from a joint maximizing perspective, both q and h have been overextended and that a reduction in their use would enhance individual profits. As long as q and h are not substitutes in consumption or production, the optimal values of both q and h implied by the simultaneous solution to (8) and (9) are now smaller. A collusive retail trade association then has the incentive to capture control of the municipal regulatory process. By restricting operating hours and quantity (alternatively, controlling price), the association can generate the means by which this could be accomplished.

Implicit in the above discussion are the assumptions that association membership can be controlled and that association membership is necessary for retail operation. Were this the case, industry profits could be increased further by reducing the number of retailers in the industry.[5] To say this, however, begs the question of control over the right to produce. Without the ability to restrict entry, the trade association succeeds only in raising an umbrella under which its less constrained rivals can flourish. Ultimately, the trade association strategy must fail and the industry solution will revert to that described in Section I.

It follows that the ability of the retail sector to gain more than transitory windfalls from the regulatory process depends crucially on its ability to restrict entry. In its absence the rents generated by the ability to regulate operating hours and/or output (price) are dissipated through the entry of rivals. It should be noted that the introduction of licensing fees for the right to produce (as done by most municipalities) is not sufficient for the association's purpose. For while the licensing fee restricts the number of retailers, it results only in transferring the capturable surplus to the municipality.

III. The Efficiency Aspects of Early Closing Hour Regulation

Thus far we have not distinguished between the types of external effects produced by competitive behaviour. The reason for this is straight-forward. From the point of view of retailers, the two effects are identical. Both impact on the individual retailer by reducing product demand and hence individual and aggregate profits. From a social perspective, however, the two forms of competition are not identical and carry different implications for the efficiency of the system.

The socially enforced common property right to compete is valued by society as a protection against the incentive possessed by individual producers to collude. Competition among actual and potential producers results in the dissipation of monopoly rents and thus defeats the attempt to redistribute surplus from consumers to producers (along with the attendant welfare cost). On the other hand, the right to compete cannot be reserved

solely for the right to capture monopoly profits. All rents are potentially appropriable and competitive behaviour results in the dissipation of all rents that are not protected. The "tragedy of the commons" is merely one example of this phenomenon.

In the retail trade example of this paper, hours of operation are common property resources. Owned by no one, the value generated by extended hours can be appropriated without compensation by all current and potential competitors. In contrast to that of location, prior possession of extended hours does not establish exclusivity. No single retailer can exclude another from its simultaneous use. Because there exists no mechanism by which the social costs of an individual's actions are internalized, scarcity cannot be conserved. Competitive behaviour then leads to the extension of operating hours until the private benefit of remaining open just equals the private cost, and with free entry the potential rents accruing to the scarcity value of operating hours are fully dissipated.

The difference between the two external effects can be seen most easily by referring to Figure 1. In diagram (a) the competitive retailer has maximized profits ($h=h^*$) by equating his perceived marginal revenue (MR_F) with marginal cost. If the external consequences of his output decision were accounted for, each retailer would recognize that he faces a steeper demand curve (D_I) with an associated marginal revenue curve that lies below MR_F. From the retailers' perspective, then, a collective reduction in output and concomitant increase in price would increase individual and aggregate profits (shown as the solid area on diagram (a)). In doing so, however, the industry produces a further divergence between marginal social value (p) and marginal social cost (C_q). The welfare loss
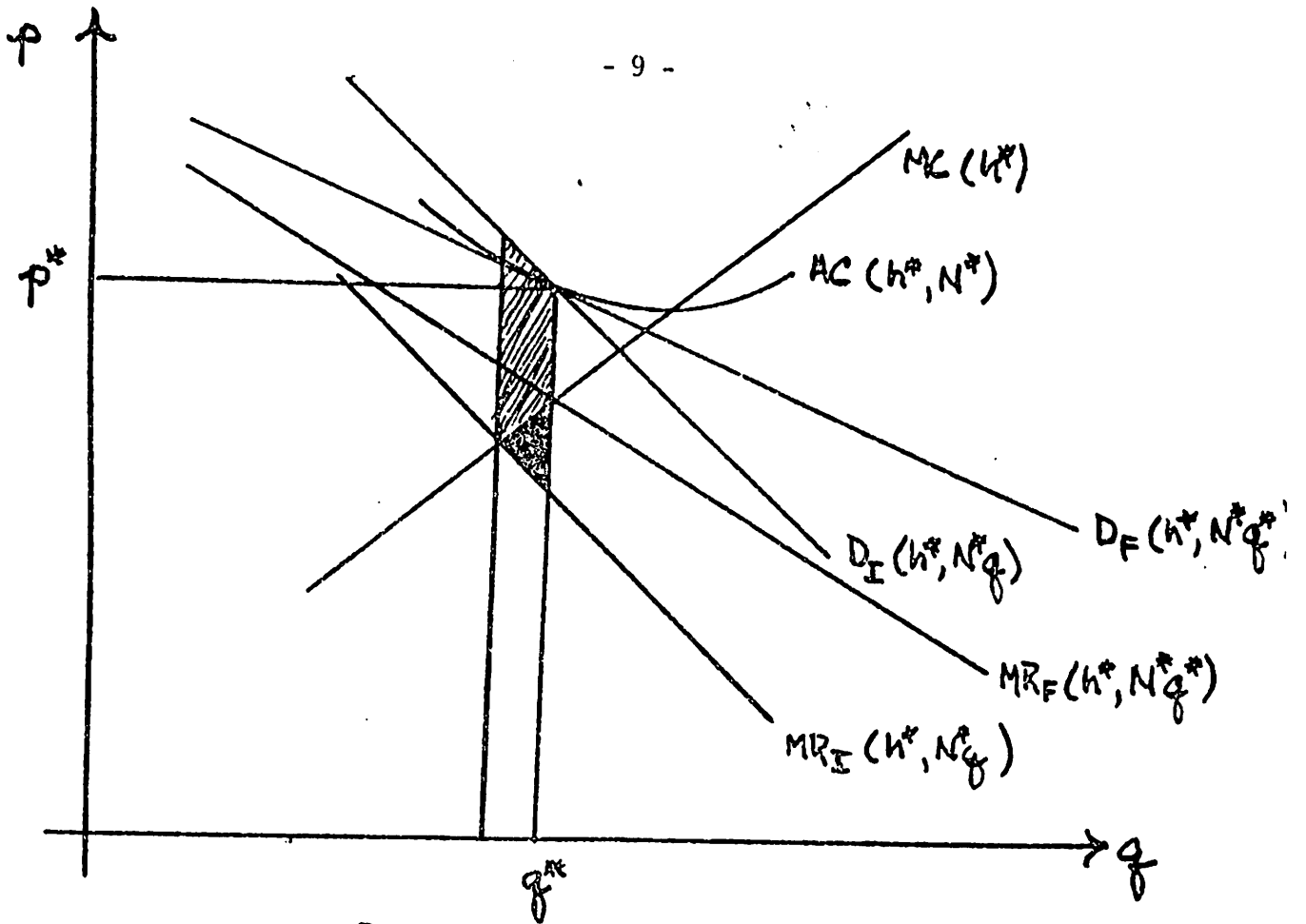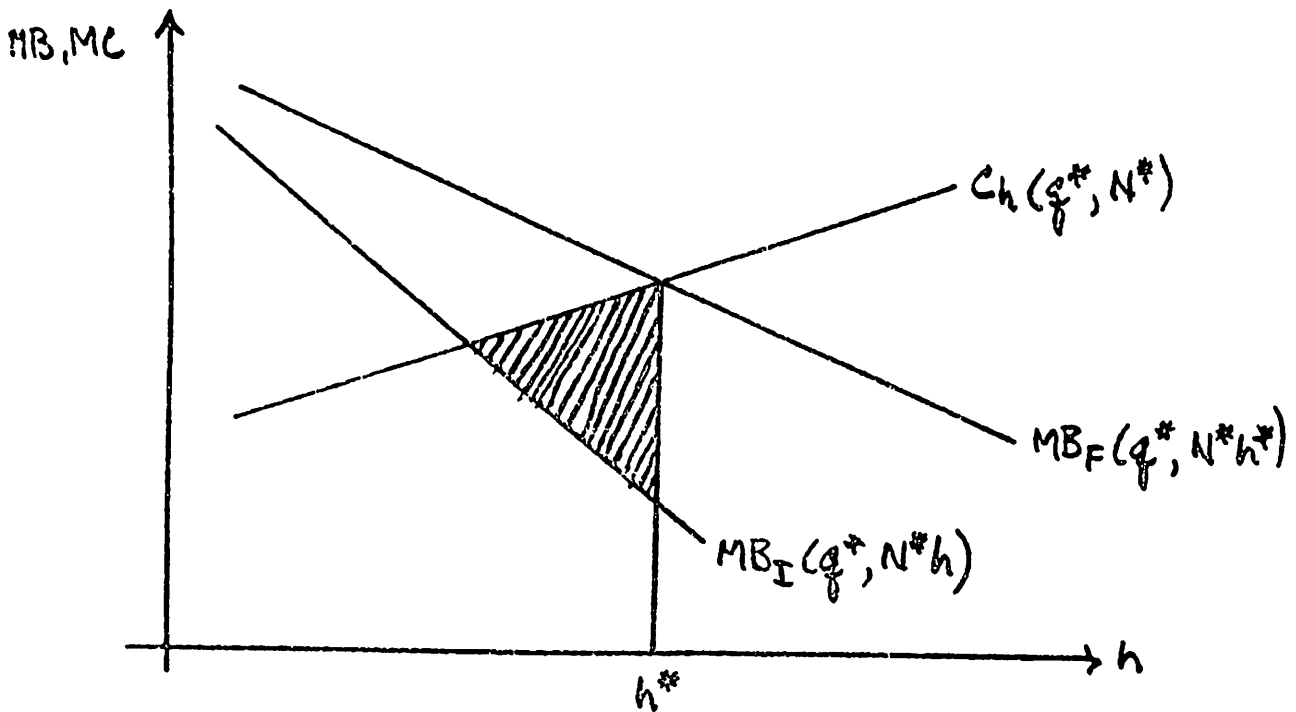
Diagram (a)

Diagram (b)

FIGURE 1

this would impose on the community is represented by the shaded trapezoid on the same diagram. The existence of competition leads to the dissipation of this monopoly rent and drives the system towards a more efficient level of output.

In diagram (b) the consequences of operating hour competition are illustrated (given q* and N*). In this case the social value added by any particular store remaining open is represented by the lower marginal benefit curve MB_I. From the individual retailer's perspective, however, extended operating hours offer additional private benefits by allowing the retailer to attract additional customers from his rivals. Even though these gains turn out to be transitory (as competitors respond to win back their customers), the retailer becomes imprisoned in his choice of longer hours; for once he has adopted these hours, the private benefits of reducing his hours are now exceeded by the cost of doing so. The retailer is then forced to maintain his hours in order to maintain his share of the market, a solution that is feasible only because the intramarginal benefits of shopping hours have exceeded their cost. The competitive process leads retailers to push their operating hours beyond that which is socially optimal. Further extensions are discontinued only when the marginal private benefit equals the marginal private (and social) cost and the rent attributable to operating hours is dissipated.

Following Coase (1960), one traditional way of internalizing the externality arising from "free" shopping hours is to define a private property right in operating (or closing) hours. Given that the right could be defined, allocated and enforced costlessly, would retailers willingly purchase a reduction in operating hours? In our community they would not;

for despite the fact that profits rise as operating hours are uniformly reduced (i.e. $d\Pi/dh < 0$, N^*), the rents that are generated are susceptible to competition through entry. In the new equilibrium all retailers can earn only normal profits, and the rents created by shorter hours are lost to retailers through the scale expansion of the industry. By restricting competition along one margin, restricted hours have succeeded in heightening competition along another margin. Can we then be sure that the potential rents are in fact preserved and not dissipated through competitive entry?

In our community rents are preserved in two different ways. First, as an increased number of retailers compete for desirable locations, site rents are bid up. A portion of the potential rent is then captured through the rise in site rents. Second, by reducing competition along a margin where the social cost exceeds the social benefit and channelling competition into a margin where the reverse holds true, consumers derive a net benefit. With entry, the local advantage possessed by each retailer is diluted (the elasticity of the demand curve facing each retailer under competition is increased), and the convenience of longer hours is transformed into the greater convenience of more closely located stores.

In the absence of transactions costs, then, site owners and consumers would combine to purchase a reduction in shopping hours (while retailers remain indifferent). The right to closing hours would retain value, and rents would be conserved. When information and enforcement costs are positive, however, the costs of organizing the large number of potential customers and site owners would be substantial. Moreover, the public good aspect of operating hours suggests that the free rider problem may be

substantial. It follows that the private owner of the right to operating

hours may find it nonoptimal to enforce a limitation of operating hours. In

such circumstances the potential beneficiaries of early closing hours will

seek lower cost ways of realizing their objective.

One alternative route that the community has for pursuing

collective action is the political process. Through their votes individuals

can influence the political process, and competitive politicians and/or

political parties have an incentive to discover and promote socially

beneficial policies that translate into higher votes. To exercise its

coercive powers the political jurisdiction must have the right to interfere

with the market process. In this sense, the delegation by the provinces to

the municipalities of the right to restrict operating hours (but not the

number of retailers) creates the mechanism by which the municipality can

enforce scarcity and thus conserve rent.

State ownership and the regulation of operating hours through

municipal by-laws has a number of cost advantages relative to the private

property solution. First, the costs of organizing the large numbers of

consumers and landlords whose individual gain is likely to be small are

lower when combined with the already existing organizational facilities of

the political process. Second, there are likely to exist scale economies in

enforcement activities. Recognizing that uniformly restricted operating

hours increase the individual retailer's incentive to cheat, the addition of

hour enforcement to the other policing activities of the municipality

reduces the net cost of generating these rents. Finally, the coercive

taxing powers of the state permit the community to circumvent the free

rider problem associated with the absence of a low cost exclusion mechanism under the private property right claim.[6] Because the major beneficiaries of restricted shopping hours are the site owners and consumers who live in the affected areas, the use of property taxes allows for the internalization of the costs of enforcing early closing hours on the beneficiaries of the program.

By delegating to the municipalities the right to set property taxes as well as hours, the provinces (except for New Brunswick) have made the municipality the relevant political decision making agency. In terms of the hypothesis advanced in this paper, this is appropriate. Because the benefits and costs of early closing hours are area specific, the provinces have created a mechanism that permits differences in regulations across municipal jurisdictions. In this way there exists enough flexibility to allow individual municipalities to set (or not set) those regulations that reflect the benefits and costs arising in each specific circumstance.

IV. Conclusion

The hypothesis advanced in this paper is that in the absence of entry controls, regulated early closing hours will arise for efficiency rather than monopoly reasons. The major implication of this analysis is that retailers as a group will be indifferent or undecided on the issue of early closing hours and the asociated issue of Sunday openings. Despite demographic changes that would seem to favour extended hours (e.g. a

continuing increase in the number of working wives), the Retail Council of Canada in its Background Paper on Sunday Store Hours (1981) found "little consensus within the retail community as to whether or not stores should be allowed to stay open on Sundays" (p. 2). Similarly, repeated attempts to extend late night shopping (to 9:00 p.m. on Wednesdays) in Ottawa have elicited no strong support either for or against these changes by Ottawa retailers as a group.

On the other hand, particular retailers or groups of retailers have often become strong advocates or opponents of extended operating hours. While our model precludes this possibility by assuming identical stores, the forms of competition encouraged and discouraged by early closing hours should predict the features of those retailers who stand to gain or lose when extensions are allowed. By restricting hours of competition, early closing hours increase locational competition and reduce the specific rents attributable to the most highly desirable locations. It follows that their removal will be favoured by those with particular locational advantages who gain at the expense of those retailers who do not possess particular locational advantages.

It is then predictable that following the construction of the Downtown Rideau Centre in Ottawa, with its subsidized parking facilities and the accompanying restructuring of the city center to provide more convenient access, that the Rideau Center Association would become a strong advocate of extended hours while extended hours would be opposed by competing downtown retail locations. This prediction receives more general support from the finding of the Retail Council of Canada's study. In reporting on the

absence of consensus among the larger retail chains for Sunday opening, the study concludes that "the larger chains tend to split on the issue with some, usually dependent on store location and/or type of commodity sold, favouring Sunday openings, while others are even more adamantly opposed..." (p. 3).

The other predictions of the model do not permit us to distinguish between the monopoly or efficiency hypothesis for early closing regulations. Both hypotheses, for example, would predict that newly established expanding municipalities bordering those municipalities with early closing regulations will tend to free ride on the rents generated within the regulated region. The construction of a large shopping mall offering extended hours just beyond the regulated municipality's boundary is perhaps the most common observation associated with early closing hour regulations. Occasionally this competition is sufficient to undermine the regulations themselves. This appears to be the case in the extension of late night openings to gasoline retailers in Ottawa's virtually deserted inner core. Similarly, both hypotheses would predict that regulated closing hours would become more prevalent the larger the size of the community. Under both hypotheses, the organizational and collusive powers of the state become increasingly attractive relative to the alternative forms of commercial organization and enforcement as the number of interacting agents increases.

From the perspective of the hypothesis advanced in this paper, the observation that extended shopping hours are permitted over the Christmas shopping season seems the exception that proves the general rule. Given

the predictable nature of the peak load shopping problem that arises each Christmas, the temporary increase in demand for shopping convenience can be accommodated at lower cost by temporarily extending the hours of operation rather than having to extend the number of stores. That it is costly to provide additional convenience is borne out each Christmas by the special prices paid for pre-Christmas shopping.

The hypothesis that regulated early closing hours serve to enhance efficiency rather than monopoly power seems to be consistent with the somewhat anecdotal evidence presented in this section. In the absence of much research and little hard evidence, a broader confirmation or rejection of this hypothesis remains a worthwhile research project. On the other hand, what this paper does suggest is that in this area as well as others, much of the evidence that has been viewed as confirming the capture theory of regulation is susceptible to alternative explanation.[7] The characterization of regulation in the social interest as naive and noneconomic makes for a useful straw man. But the application of economic theory to the political process would suggest otherwise. Property rights and institutions are studied as if they evolved in the interests of greater efficiency. It seems to me entirely consistent to suppose that regulation does likewise.

Notes

1. By assuming identical retailers, the analysis precludes differential rents and leaves indeterminate the identity of which particular stores will exist in equilibrium (but not the aggregate number). Given that different retailers will possess different strategies for providing shopping convenience, early closing hours may affect retailers differentially. On this, see Steven A. Morrison and Robert J. Newman, "Hours of Operation Restrictions and Competition Among Retail Firms", 11 Economic Inquiry 107 (1983).

2. The assumption that each community is isolated precludes the analysis of intercommunity rivalry in its operating hour regulations. The existence of suburban shopping malls offering late night shopping to consumers in regulated jurisdictions, however, is evidence of the existence of rents created by early closing hours. Whether these rents are monopoly rents or otherwise is the subject of this paper.

3. There may well be a range over which an increase in aggregate shopping hours leads to an increase in aggregate demand ($P_H \geqslant 0$). Profit maximizing behaviour, however, will lead to an expansion in industry size (and thus hours) until this marginal return becomes negative. This point is similar in kind to the reason why retailers selling similar products will often locate in the same area (e.g. diamond districts).

4. Convergence to the equilibrium in (6) requires individual and aggregate profits to fall as N rises. That is,

$$d\Pi/dN = (p_q q + p_Q N_q + p - C_q)dq^*/dN + (p_h q + p_H N_q - C_q)dh^*/dN - R_N \text{ must}$$

be negative.

5. Current association members would be willing to sell their right to produce for a share of the increased aggregate profit.

6. It should be noted that privately operated shopping malls are, among other things, a private property right solution to uniform opening and closing hours. The right to exclude provides a low cost mechanism for enforcing compliance.

7. See, for example, J.S. Ferris, "Information and Search: An Alternative Approach to the Theory of Minimum Wages", 20 <u>Economic Inquiry</u> 490 (1982).