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Bank Holding Company Act

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## ANTITRUST REGULATION UNDER THE BANK HOLDING COMPANY ACT

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Antitrust regulators, in general, face the problem of identifying those actions of firms which are anticompetitive. How these regulators approach the problem is a matter of some concern to the public, since the final criterion of such regulation is the effect on net public benefits. The essence of the problem is measurement. Public benefits is a decidedly difficult concept to quantify. As a result, regulators have come to focus much attention on the number and size of the firms in the industry in the cases they analyze. Implicit to this approach is the notion that the size distribution of firms in an industry can affect the efficiency of the market in which they operate. This notion is more formally called the doctrine of structure-conduct-performance.

In this paper we will first explore the nature of the measurement problem which antitrust regulators face; we will then describe three existing theories that lend support to the doctrine of structure-conduct-performance; finally, we will establish that as an antitrust regulator under the Bank Holding Company Act, the Board of Governors of the Federal Reserve System relies on this doctrine.

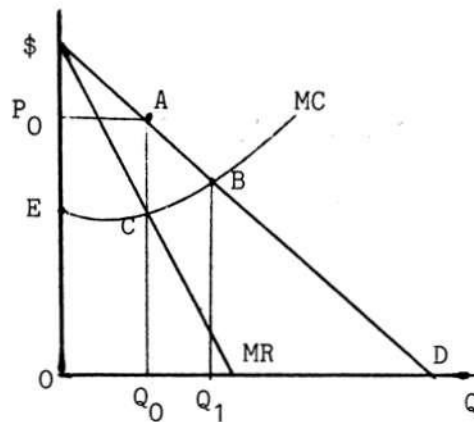
### The Measurement Problem

To understand the nature of the problem which antitrust regulators face in evaluating net public benefits, it is useful to compare two polar extremes in the theory of firms, pure competition, and monopoly. The basic assumption common to both the competitive and the monopolistic models is that firms produce at the level of output which maximizes profits. For both the monopolist and the firm in a competitive industry, this means producing where marginal

revenue equals marginal cost. That is, the revenue from the last unit of output produced just equals the cost of producing that unit.

The critical difference between monopoly and competition is the nature of the demand curve which firms face. In pure competition, firms are of such a small size relative to the whole industry that the output of any one firm won't affect the equilibrium price. Each firm then faces a horizontal demand curve for its own output, even though the aggregate demand curve for the industry is negatively sloped. For a firm in a competitive industry then, marginal revenue is the equilibrium industry price, which is the same for any level of that firm's output, and profits will be maximized where marginal cost equals price.

The monopolist, however, produces the entire output of its industry by definition, and therefore faces a downward sloping demand curve. The monopolist's marginal revenue curve is derived from the demand curve and also has a negative slope, so marginal revenue will vary with output. The profit maximizing level of output where  $MR = MC$  is  $Q_0$  in the diagram below. The equilibrium market price will then be  $P_0$ , producing total revenue for the monopolist represented by the rectangle  $OP_0AQ_0$ .



The monopolist, in contrast to firms in pure competition, earns economic profits represented by the area  $P_0ACE$ . These profits in themselves, however, are not the undesirable aspect of monopoly for society as a whole since they are,

in essence, a transfer from consumers to the firm and their only effect is distributional. The area ABC, however, represents a deadweight loss to society. Consumers would be willing to pay a price greater than the monopolist's cost of production for each unit of output from  $Q_0$  to  $Q_1$ , but these units are not forthcoming because of the nature of the monopolist's profit maximization problem. The result is an inefficient allocation of resources with too few utilized in the monopolist's industry and too many utilized elsewhere.

As shown above, the critical difference between monopoly and pure competition is that price exceeds marginal cost in monopoly, while price equals marginal cost in pure competition. Instances of either monopoly or pure competition are rare in the real world, however, with most industries falling somewhere between these two extremes. As a result, antitrust regulators are not so much concerned with identifying monopoly as they are with measuring monopoly power, or the degree to which an industry's performance deviates from that of the ideal, perfect competition. The index of monopoly power suggested by Abba Lerner, based on the key difference between monopoly and pure competition, is the relative price-cost margin:<sup>1/</sup>

$$L = \frac{P-MC}{P}.$$

Unfortunately, although price data are usually readily available, the true cost of the last unit produced by a firm is likely to be an unknown quantity to both the antitrust regulator and even the firm itself. It is presumably for this reason that regulators have turned to more readily available data on the structure of industries, relying on what has come to be called the structure-conduct-performance doctrine.

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<sup>1/</sup> Lerner, A. P., "The Concept of Monopoly and the Measurement of Monopoly Power," Review of Economic Studies, nos. 1-3 (1933-34), 157-175.

### The Structure-Conduct-Performance Doctrine

The basic tenet of the structure-conduct-performance doctrine is that the structure of an economic market influences the conduct of its sellers, which in turn affects the performance of the market. In the context of this doctrine, structure is the degree to which a few firms account for a large share of the market's output; conduct is the behavior of sellers in arriving at their output and/or pricing decisions; and performance is the degree to which equilibrium conditions in the market deviate from those of pure competition.

A variety of oligopoly theories attempt to lend support to the structure-conduct-performance doctrine. The models underlying such theories are generally framed in terms of conduct, while the models' results then evolve as relationships between structure and performance where structure is some function of the output shares of individual firms and performance is generally measured in terms of relative price-cost margins. Three such models result in explicit relationships between structure and performance.

#### Cournot Model

This model derives its name from the author of one of the earliest works on the topic of oligopoly.<sup>2/</sup> Cournot's analysis concerned purveyors of mineral water whose cost of production was zero. Price was market determined on a negatively sloping demand function. The salient feature of Cournot's work is the assumed response function held by each purveyor concerning how competitors will react to a change in output. Cournot assumed that in adjusting output to maximize profits, each seller expected his rivals to remain at their original output level.

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<sup>2/</sup> Augustin Cournot's book was first published in 1838 and is translated in Researches Into the Mathematical Principles of the Theory of Wealth, (Homewood, Illinois, Richard Irwin, 1963).

These "Cournot-type conjectures" have since been incorporated in a more generalized model of oligopoly.<sup>3/</sup> The other assumptions of the model include: profit maximization by firms in a noncooperative setting, homogeneous products, and a perfect market in the sense that information is freely available to all agents.

The mathematical result of the model is the following equilibrium relationship between performance and structure:

$$\sum_{i=1}^n S_i \frac{P - MC_i}{P} = - \frac{\sum_{i=1}^n S_i^2}{E} = - \frac{H}{E}$$

where  $S_i$  is firm  $i$ 's share of total output,

$P$  is market price,

$MC_i$  is firm  $i$ 's marginal cost, and

$E$  is the price elasticity of demand.

The left-hand expression consists of Lerner's index, as discussed earlier, weighted by each firm's relative size and is therefore an aggregate performance measure. The second and third expressions are structural, containing the sum of squared market shares or the Herfindahl index<sup>4/</sup> in the numerator, and the elasticity of demand in the denominator. Thus, in a market where  $E$  is negative (downward sloping demand), the Cournot model predicts a simple positive relationship between performance, as measured by a weighted Lerner's index, and structure, as measured by the Herfindahl index of concentration. That is, performance will diminish as output becomes more and more concentrated among fewer and larger firms.

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<sup>3/</sup> A more thorough treatment of this model appears in James Likens and Herbert Mohring, Industrial Organization, Chapter 4 (unpublished manuscript).

<sup>4/</sup> The index is named after one of the first to utilize it, Orris C. Herfindahl, in his doctoral dissertation, Concentration in the Steel Industry (New York: Columbus University, 1950).

Saving Model<sup>5/</sup>

This model shares the assumptions of product homogeneity and profit maximization found in the Cournot model, but differs substantially in its assumptions on firm behavior in how they go about maximizing profits. The Saving model places n firms in a price leadership or competitive fringe framework. The k largest of these n firms act as a cartel and produce output to maximize joint profits, while the remaining n-k firms are price takers in the sense of firms in a pure competition model. The Saving model results in the following relationship between performance and structure:

$$C_k \frac{P - MC_k}{P} = - \frac{C_k^2}{E + (C_k - 1)\epsilon_{n-k}}$$

where  $C_k$  is the k-firm concentration ratio or the aggregate share of output for the k largest firms,

$MC_k$  is the joint marginal cost for the k largest firms,

P is market price,

E is the elasticity of demand, and

$\epsilon_{n-k}$  is the elasticity of supply for the price takers.

The left-hand expression consists of a joint Lerner's index for the cartel members, weighted by their total share of industry output. This expression is an aggregate performance measure for the whole industry, since the price taking firms produce where marginal cost equals price and, therefore, don't contribute to this term. The right-hand expression is structural, containing a common measure of concentration, the elasticity of demand, and the elasticity of supply for the price taking firms.

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<sup>5/</sup> Thomas R. Saving, "Concentration Ratios and the Degree of Monopoly," International Economic Review, 11 (1970), 139-146.

In this model, the relationship between structure and performance is less obvious. Letting the left-hand expression equal  $\bar{L}$ , however, we can calculate its partial derivative with respect to  $C_k$ .

$$\frac{\partial \bar{L}}{\partial C_k} = \frac{C_k [(2-C_k)\epsilon_{n-k} - 2E]}{[E + (C_k - 1)\epsilon_{n-k}]^2}$$

Sufficient (although not necessary) conditions for the above to be positive are  $\epsilon_{n-k} \geq 0$ ,  $E \leq 0$ , and  $\epsilon_{n-k}$  and  $E$  not both equal to zero simultaneously. Under these fairly acceptable conditions, the Saving model predicts a relationship between performance and structure similar to that of the Cournot model: as the dominant firms account for more of the industry's total output, performance will deviate further from that of the pure competition model, other things being equal.

#### Encaoua-Jacquemin Model<sup>6/</sup>

This recent work advances oligopoly theory considerably by placing the price leadership model in a dynamic framework allowing for entry of new firms and exit of existing ones. In addition, the strategy alternatives of the cartel are enriched to include both price setting and expenditures to raise barriers to entry. The cartel members choose price and barriers to entry expenditures over time to maximize the present value of their stream of future profits. Supply of the price takers then increases with price and decreases with barriers to entry expenditures.

Assuming a stationary point, the model produces the following relationship between performance and structure in long-run equilibrium:

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<sup>6/</sup> David Encaoua and Alexis Jacquemin, "Degree of Monopoly, Indices of Concentration and Threat of Entry," International Economic Review, 21 (1980), 87-105.



$$\hat{C}_k \frac{\hat{P} - MC_k}{\hat{P}} = - \frac{\hat{C}_k^2}{\hat{E} + \frac{1}{r} \frac{\hat{P}}{\hat{q}_c} \frac{\partial \hat{R}}{\partial P} (\hat{C}_k^{-1})}$$

where  $\hat{C}_k$  is the aggregate market share of output for the k largest firms,

$\hat{P}$  is market price,

$MC_k$  is the joint marginal cost for the k largest firms,

$\hat{E}$  is the price elasticity of demand,

r is the cartel's discount rate for future profits,

$\hat{q}_c$  is supply by the price taking firms,

$\frac{\partial \hat{R}}{\partial P}$  is the partial supply reaction of pricetaking firms to price changes, and

$\hat{\phantom{x}}$  indicates those variables with a time dimension at the stationary point.

The left-hand expression again consists of a joint Lerner's index for the cartel, weighted by their size relative to the total industry output. Except for the time dimension, this is equivalent to the performance measure in the Saving model. The right-hand expression is structural and is similar to that of the Saving model. Except for the term  $\frac{\hat{P}}{\hat{q}_c} \frac{\partial \hat{R}}{\partial P}$ , which is similar but not identical to  $\epsilon_{n-k}$ , the elasticity of supply by price takers, the only additional term in the Encaoua-Jacquemin results is  $\frac{1}{r}$  in the denominator. Thus, the Encaoua-Jacquemin model implies a similar relationship (positive under the sufficiency conditions) between performance and structure, with the additional feature that performance is also a function of the cartel's relative preference between present and future profits as reflected by the discount rate. That is, other things equal, a higher discount rate would imply greater price cost margins at any given point in time for the cartel.

The predictions of all three of these models include positive relationships between concentration (structure) and relative price-cost margins (performance) and, therefore, tend to support the structure-conduct-performance doctrine as the basis for a theoretically reasonable approach to anti-trust regulation.

The structure-conduct-performance doctrine has major acceptance in the field of antitrust where regulators attempt to identify the anticompetitive effects of mergers and acquisitions and increase the benefits to society by regulating industry structure. Although these benefits would be best measured directly by indices of performance, acceptance of the structure-conduct-performance doctrine implies that structural measures may serve as reasonable indirect measures of performance and, therefore, public welfare, to antitrust regulators. An example of the application of this doctrine can be seen in the field of banking.

#### Implementation of the Bank Holding Company Act

The Bank Holding Company Act confers upon the Board of Governors of the Federal Reserve System broad administrative authority over bank holding companies. The Act is a regulatory statute that requires the Board to deny those applications to form or expand bank holding companies which, on balance, would have adverse effects on the public interest after considering the following factors: competition, financial and managerial aspects, and convenience and needs of the public.

The requirement that competitive effects be considered places the Act in the family of federal antitrust statutes. The Act's antitrust features are similar to those of other antitrust statutes and are contained in two sections. The first section states that the Board should not approve an acquisition that would result in or be in furtherance of the monopolization of

banking in any part of the United States. The second section states that the Board should not approve any acquisition that would substantially lessen competition, tend to create a monopoly, or be in restraint of trade, unless the anticompetitive effects are clearly outweighed by convenience and needs considerations.

The second section sets a far stricter standard than the first and, because true monopoly is rarely encountered in commercial banking, the vast majority of applications denied by the Board on competitive grounds fall under the second section of the Act. In implementing the antitrust aspects of the Act, the Board denies applications on competitive grounds for one of two reasons, the elimination of existing competition and the reduction of potential competition.

A review of the Board's orders for applications denied on competitive grounds for either of these two reasons reveals an exclusive focus on the structural aspects of the proposals. None of the Board's analysis in these cases directly addresses the proposals' effects on public benefits through changes in market performance.

#### Existing Competition

The first reason for denial on competitive grounds is the elimination of existing competition. These are cases where the applicant is already present in the local market of the bank to be acquired. The Board commonly cites the reduction in the number of independent competitors in the market, the increase in applicant's share of total deposits, applicant's resulting rank, and the concentration of deposits held by the market's largest banking organizations.

By way of example, the following appears in the Board's order of September 1, 1978, denying the application of First Banc Group of Ohio, Inc., Columbus, Ohio (Applicant) to acquire the Fairfield National Bank of Lancaster, Lancaster, Ohio (Bank).

"Bank, the eighth largest of 27 banking organizations in the Columbus market (the relevant banking market), controls approximately 1.3 percent of market deposits. Applicant is the third largest banking organization in the market, controlling 18.0 percent of market deposits. Consummation of the proposed transaction would increase Applicant's already significant share of deposits in the market to 19.3 percent and increase the percentage of deposits held by the three largest banking organizations in the market to 82.2 percent.

In addition to the adverse effects upon the concentration of banking resources in the Columbus market, the proposal also would have substantially adverse effects upon competition within the market. As noted above, Applicant is already represented in the relevant market.

The record indicates that existing competition would be eliminated upon consummation of this proposal. Furthermore, the proposal would foreclose the development of competition by removing Bank, the third largest (with three banking offices) of seven banks in the Fairfield County portion of the market, as an entry vehicle into the relevant market by Ohio bank holding companies not currently represented in the market. In addition, Applicant clearly is capable under Ohio law to expand in Fairfield County through the establishment of a branch or a subsidiary bank. In light of the above and other facts of record, the Board concludes that consummation of the proposal would have significant adverse competitive effects within the Columbus banking market."

#### Potential Competition

The second reason for denial on competitive grounds is the reduction of potential competition. These are cases where the applicant is not present in the local market of the bank to be acquired, but is typically a large organization seeking to enter the market by acquisition of one of the market's largest banks. The Board denies these applications on the premise that denial will result in the

applicant entering the market de novo or by foothold acquisition in the future and thereby increase the number of independent competitors in the market and reduce concentration.

By way of example, the following appears in the Board's order of February 26, 1980, denying the application of Detroitbank Corporation, Detroit, Michigan (Applicant) to acquire the two banks controlled by another holding company (Second National).

"Second National controls the largest of 12 banking organizations competing in the Bay City-Saginaw banking market, holding 25.8 percent of deposits in that market. Second National also controls the smallest of 12 banking organizations in the Tuscola banking market, holding 1.4 percent of market deposits. None of Applicant's subsidiary banks has an office in either of these banking markets, or within 75 miles of any office of banks. Thus, no significant existing competition would be eliminated upon consummation of the proposal. With regard to potential competition, however, the Board has previously expressed its concern about the adverse competitive effects resulting from the entry into smaller metropolitan areas by one of the largest banking organizations in a State through acquisition of one of the large independent organizations in these areas. These adverse effects are exacerbated when the bank to be acquired is located in a highly concentrated market.

Because of the small share of deposits held by Second National in the Tuscola banking market, no substantial amount of potential competition would be eliminated as a result of consummation of the proposal. With respect to the Bay City-Saginaw market, however, the Board considers Applicant to be one of the most likely of a small number of banking organizations to enter this market de novo. The Board has recently determined that the portion of the Bay City-Saginaw market comprised of Midland and Saginaw Counties is attractive for de novo entry, and nothing in the record of these applications alters that judgment. In view of the attractiveness for de novo entry of the portion of the market that Applicant seeks to enter, and in view of Applicant's financial and managerial resources, Applicant particularly appears to be a probable entrant into this market. Acquisition of Second National by Applicant would eliminate the probability that these two organizations will come into direct competition and the Board would view this competition as desirable in view of the present structure of the market.

In this regard, the Board finds that the structure of the Bay City-Saginaw market is highly concentrated, with the four largest organizations in the market controlling 79.3 percent of total market deposits. Approval of the proposal would do nothing to reduce the concentration of banking resources in the Bay City-Saginaw market. On the other hand, denial of the proposal preserves the distinct probability that Applicant and Second National will be confronting each other in this highly concentrated market. Competition would be enhanced, and ultimately, consumers of banking services would benefit from such an eventuality. In view of the facts of record, including the financial and managerial resources of Applicant, the large share of deposits in the Bay City-Saginaw banking market held by Second National, the level of concentration, the attractiveness of the market for de novo entry, and other characteristics of that market, the Board concludes that consummation of this proposal would have substantially adverse effects on potential competition in the Bay City-Saginaw market. The Board regards these effects on potential competition as being sufficient to warrant denial of the proposal."

The two examples quoted above are typical of the Board's orders for applications denied on competitive grounds in that the focus of the competitive analysis is on the structural aspects of the proposal. With the exception of monopoly, nothing in the Act itself nor in economic theory suggests that the size of an organization, in and of itself, can be socially undesirable. Rather, it is the effects of size on the performance of economic markets and the possibility of resulting resource misallocation that carry the suggestion of potential social welfare losses. The Board's focus on the structural aspects of applications in implementing the Act, as shown by the above examples, reveals that it relies on a doctrine of structure-conduct-performance.