USING ECONOMICS TO IMPROVE ANTITRUST POLICY

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I.   INTRODUCTION

I am honored to be able to address you today. I know that it is not usual to have an economist give one of the Handler lectures. I take it as a welcome sign of the close connection between antitrust law and economics. The close relation benefits both disciplines.

Economics can make sure that antitrust is grounded in logical analysis but antitrust policy can use economic concepts and insights only if they are practical and capable of being implemented. This demand for practicality provides a discipline on economics that forces it to be relevant. Economics goes astray when it creates untestable theories about competitive harm. Antitrust goes astray when it relies on either poor economic reasoning (e.g., tie-in law) or when it adopts untested economic theories (e.g., speculative harms

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from information sharing) or overemphasizes theoretical concepts (e.g., market definition) that can be hard to implement and that are meant as only crude guides to policy.

My goal today is to highlight the relevance of recent academic research for practical antitrust policy. I will stick mainly to horizontal policy, both merger policy and price fixing, and will talk only in passing about vertical issues, regulation and international issues. I have discussed those important topics elsewhere recently and refer the interested readers to those papers,[1] one of which appears in this volume. Moreover, Judge Easterbrook warned you here last year about vertical theories, Professor Hovenkamp will warn you today about government regulation, and Judge Wood will talk today about international antitrust.

Recent economic research confirms three major points. First, the crowning achievement of U.S. antitrust is probably the benefit from eliminating explicit cartels. However, benefits from extending antitrust beyond explicit cartels to oligopolies engaged in various activities often characterized as "agreements" are likely nonexistent. Second, the recent trend in economics to engage in detailed simulations of the price effects of mergers is not a substitute for more direct analyses of mergers. Moreover, the belief that market definition can usually be done precisely and that it can be a precise tool for analysis is mistaken. It is at best a crude guide. Third, the world is a lot more competitive than one might think. Analysts routinely fail to understand the

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[1] *See* Dennis W. Carlton, *A General Analysis of Exclusionary Conduct and Refusal to Deal—Why Aspen and Kodak Are Misguided*, 68 ANTITRUST L.J. 659 (2001); Dennis W. Carlton, *The Relevance for Antitrust Policy of Theoretical and Empirical Advances in Industrial Organization*, 12 GEO. MASON L. REV. (forthcoming 2003) (providing a more in-depth discussion of some of the topics covered in this paper); Dennis W. Carlton, The Proper Role for Antitrust in an International Setting, Keynote Address: Second Annual Conference of the International Competition Network (ICN), Merida City, Mexico (June 25, 2003), *in* Appendix II *infra*; Dennis W. Carlton, *Why Barriers to Entry Are Barriers to Understanding*, 94 AM. ECON. REV. (forthcoming May 2004).; *see also* David Scheffman & Mary Coleman, *Quantitative Analysis of Potential Competitive Effects from a Merger*, 12 GEO. MASON L. REV. (forthcoming 2003).

implications of the fact that there is competition on many more dimensions than just price. If one does so, one can show that some industries are concentrated because they are highly competitive—completely at odds with traditional thinking.

II. EXPLICIT AND ALLEGED PRICE FIXING

Explicit price fixing is bad usually. With rare exceptions, economists reject the idea that an efficient market requires price fixing. The spectacular success of some recent international cartels such as the vitamin cartel have in some way pleased me. They have shown the elaborate nature of meetings and communication required to effectuate a cartel that succeeds in raising price significantly—by 30-50% according to some analysts of the vitamin cartel. The success of the vitamin cartel reflects the large gains to antitrust enforcement from eliminating such cartels. The large fines and prison sentences imposed by the Department of Justice in recent years are a pleasant change from the past when fines were low and prison sentences rare. But the success of international cartels raises challenging jurisdictional questions. We know, for example, that one role of damage awards is to deter the formation of a cartel. But suppose that overcharged consumers in one country lack an antitrust law where damages can be collected. Then damages based only on overcharges to U.S. consumers will not optimally deter and there is a need for some sort of international coordination to give customers, unprotected by their own antitrust law, standing to sue and recover damages in say the United States. That would certainly be a boon to the plaintiffs' bar, but it would also protect U.S. consumers. I recognize that such a proposal raises a host of complicated issues regarding sovereignty and costs of courts, but my simple point is that some sort of international coordination is

needed on damages if international cartels are to be deterred.[2]

Our experience with explicit cartels justifies antitrust hostility toward them. Dismantling of a cartel often leads to lower prices. But our experience with explicit cartels does not justify hostility toward oligopolies where firms do nothing more than take each other's actions into account, even though such behavior may lead to prices in excess of competitive levels. The continual attempts to characterize mutual interdependence as "parallel plus" behavior and therefore as an "agreement" are misguided, and those cases should be dismissed on summary judgment.[3] Those cases are misguided because there is no effective remedy. Firms will always take each others' actions into account and antitrust prosecution will leave firms confused as to what are proper competitive responses. I therefore was concerned when I read the high fructose corn syrup decision[4] that it would become very difficult to obtain summary judgment for "agreements" supported by evidence of parallel behavior. My concerns have been allayed by two recent cases that I have been involved in on behalf of defendants.

In the *Hall* case, the major airlines were alleged to have conspired to fix travel agent commissions.[5] In the *Holiday* case, the major cigarette manufacturers were alleged to have conspired to fix wholesale prices.[6] In each of these cases, there were similar movements in pricing among the firms. In each, there was no direct evidence of secret meetings or of

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[2] The Supreme Court is scheduled to hear a case touching on this topic. Empagran, S.A. v. F. Hoffman-LaRoche, Ltd., 315 F.3d 338 (D.C. Cir. 2003), *cert. granted*, 124 S. Ct. 966 (2003).

[3] *See* Dennis W. Carlton et al., *Communication Among Competitors: Game Theory and Antitrust*, 5 GEO. MASON L. REV. 423 (1997) (providing a discussion of the economic meaning or lack thereof of "agreement").

[4] *In re* High Fructose Corn Syrup Antitrust Litig., 295 F.3d 651 (7th Cir. 2002).

[5] Hall v. United Airlines, 292 F. Supp. 2d 652 (E.D.N.C. Oct. 30, 2003).

[6] Williamson Oil Co. v. Phillip Morris USA, 346 F.3d 1287 (11th Cir. 2003).

any simple or elaborate mechanisms about market division or price setting associated with a vitamin type cartel. In each of these cases, the case was dismissed (correctly, in my view) on summary judgment. In each I was convinced that there was nothing occurring beyond, at most, natural oligopoly behavior.

The examples of successful cartels (or at least the ones that have been detected) teach us that real cartels often, though not always, need elaborate mechanisms in order to work well. Simple oligopoly behavior should not give rise to charges of price fixing unless one can prove that whatever "plus" factor is alleged was (a) collectively chosen and (b) raised (or is highly likely to have raised) price. It is unlikely without direct evidence that (a) can be shown in most cases. But even if (a) could be shown, one should be required to show a price effect (or explain why one is highly likely), otherwise information exchanges that are procompetitive could be prevented. That is why a rule of reason and not a per se rule is appropriate in most information exchange cases.[7]

To illustrate the danger of attacking certain behavior as an agreement, consider the Department of Justice ("DOJ") case against the airlines in the early 1990s.[8] The DOJ attacked the major airlines for providing advance fare information—i.e., providing information about future fare increases. The DOJ concern was that this policy reduced the risk of unilateral price increases because there was no cost to a firm to announcing a future fare increase, seeing whether rivals matched it, and, if not, rescinding it. As a result, firms were not worried about raising price and hence price was allegedly higher than it would otherwise be. Sounds logical, but there is a catch or two. First, consumers liked the information because it helped them plan, and indeed representatives of the consuming public opposed the DOJ investigation. Second, there was no reason to believe that

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[7] *See* Dennis W. Carlton et al., *Communication Among Competitors: Game Theory and Antitrust*, 5 GEO. MASON L. REV. 423 (1997).

[8] I served as a consultant to the airlines.

the coordination necessary to raise fares would be eliminated
if advance fare announcements were eliminated. Maybe, all
that would happen would be rapid fare changes that
immediately went into effect or else were quickly rescinded,
if not matched by rivals. Well, the airlines settled the case
and agreed to stop using advance fare announcements. After
the settlement, the economist who served as the outside
consultant to the DOJ on the case investigated whether the
settlement lowered fares. He could not detect such an effect.[9]
No one to my knowledge has been able to detect such an
effect. It is too easy to characterize information sharing as
an "agreement." What economists have learned from these
cases is that empirical confirmation of harm from
information sharing which plaintiffs often characterize as a
price fixing agreement is rare. In alleged price fixing cases,
other than explicit price fixing, courts and antitrust agencies
should demand empirical evidence that the conduct likely
caused actual harm and not accept the mere theoretical
possibility of harm as evidence of an illegal agreement.

There is one other thing economists have learned from
these alleged price-fixing cases. One standard technique to
suggest liability and estimate harm is to measure the
difference in the price before and after the alleged
agreement. But when there is no direct evidence on when
the "agreement" ended, the plaintiffs will often choose the
end of the agreement to coincide with a decline in price. But
if that is how the damage period is chosen, one can show that
the standard statistical techniques have a bias towards
finding damages and suggesting conspiracy. The reason for
the bias is that even prices in competitive markets will
sometimes experience a sharp decline in price, so that it is a
mistake to always equate significant price declines with
evidence of conspiracy. Gregory Leonard and I have figured
out a way to mitigate this bias. We show, in Appendix I to

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[9] *See, e.g.*, Severin Borenstein, *Rapid Price Communication and
Coordination: The Airline Tariff Publishing Case (1994)*, *in* THE
ANTITRUST REVOLUTION 233 (John E. Kwoka & Lawrence J. White eds., 4th
ed. 2004).

this paper, examples of where there is no conspiracy, yet standard techniques incorrectly find one. Our technique addresses this problem.

To summarize, explicit cartels often require an elaborate mechanism and can succeed in significantly raising price. Allegations of "agreement" based on various information sharing behaviors under the rubric of "parallel plus" should be viewed skeptically. When plaintiffs choose the end of the damage period to coincide with price declines, methods now exist to mitigate a bias to find significant damages when there are none.

III. NEW METHODS OF MERGER SIMULATION SHOULD NOT REPLACE MORE DIRECT STUDIES OF INDUSTRY BEHAVIOR

A growing body of literature shows how to simulate the effects of mergers on price. One first begins by estimating a system of demand equations for all the products under analysis. This task has become easier because of the availability of scanner data (e.g., grocery store data) and the development of new econometric techniques. All relevant elasticities and cross elasticities are estimated. Next, the analyst assumes a form of competition amongst the firms. Usually, he assumes what is called Bertrand competition in which each firm takes its rivals' prices as fixed.

Using the estimates of elasticities and cross elasticities and the assumption of how firms compete, one can calculate the relation of price to marginal cost. Indeed, one can calculate marginal cost from the observed prices and estimated elasticities. So, for example, if a firm is a monopolist facing an elasticity of two, then we know from the standard monopoly pricing formula that price equals two times marginal cost.[10] Therefore, if price is observed to be $4, the marginal cost is estimated to be $2.

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[10] $(p-c)/p = 1/E$ is the standard formula for profit maximization where p is price, c is marginal cost and E is the absolute value of the price elasticity of demand.

Using these cost estimates, the analyst can "simulate" the effect of the merger by asking what prices would be set if two of the independent firms, say firm 1 and firm 2, now merge. The insight is that the merged firm now controls both the price of product 1, p_1, and the price of a substitute product 2, p_2, so that in setting p_1, it can also adjust p_2 to influence the demand for product 1 and similarly for product 2. Internalizing this interdependence gives the merged firm an incentive and ability to raise p_1 without incurring the cost of losing customers to product 2 because it now owns product 2. It is a straightforward exercise to calculate how the prices after the merger will change once one has (a) estimated the demand system, (b) calculated marginal cost as described above, and (c) simulated the merger's effect on price.

Although this merger simulation procedure can be a valuable addition to the techniques used to evaluate mergers, I urge caution in its use for three reasons. First, the choice of the shape of the demand function that one is estimating can have enormous effects on the results. Simple demand systems are easier to estimate than complicated ones because they impose a particular pattern of substitution among products rather than estimating the pattern from the data, and thereby require only a few parameters to estimate. Though quick and simple, they can produce highly misleading results. The simple, but popular, logit demand system is an example. In that system, the introduction of a new product reduces demand of all existing products in proportion to their market share. That may be a reasonable assumption for some differentiated products, but not for all products. (Think of the effect on demand for men's dress shirts from introduction of a light blue shirt. I would expect the effect on the demand for medium blue shirts to be greater than that for white shirts.)

A somewhat subtle but enormously important point is how the demand curve is estimated. We know two things. First, a high elasticity is going to suggest little ability to raise price. Second, it seems to be an empirical regularity that one can often obtain a high elasticity simply by

estimating price on quantity rather than the reverse! Let me explain.

The price elasticity is calculated from the relation of quantity to price. One observes what happens to the percent change in quantity if price rises by 1%. Of course, one could do the reverse and see what happens to price when quantity rises by 1% and could then invert the relation to obtain the elasticity. As a logical matter, one should obtain the same answer. But when one is doing statistical estimation, one will obtain different answers. In general, one obtains higher elasticities when one looks at the effect of price in response to quantity change. It is a good test of the reasonableness of the demand specification to see whether the two different ways of calculating an elasticity produce similar results. If not, something is wrong.

The short summary is that demand estimation can be tricky and is full of lots of traps, but can be done appropriately. When done appropriately, the new techniques of demand estimation are powerful, and do a better job than previous methods in revealing substitution patterns. In fact, the finding has been that these new techniques produce higher elasticities and some higher cross elasticities than those produced by less sophisticated methods, suggesting more competition than previously thought.

My second comment is a more fundamental criticism of merger simulation. Why should the analyst assume Bertrand behavior? This assumption, though convenient, is central to the implementation of many merger simulations. This assumption could be tested but usually is not. Yet surely the assumed vigor of competition can have dramatic effects on the outcome of any merger simulation ("vigor of competition" refers to the type of competition—the "competitive game." Competition is more vigorous in one market than another if, all else equal, price is lower). But this criticism is even more serious than what I've indicated so far.

A key issue in a merger case is how the vigor of competition will change as a result of the merger. Merger simulations typically assume that the Bertrand assumption

(or whatever other assumption the analyst makes about competition) remains the same pre- and postmerger, so that the sole effect of the merger is to reduce the number of firms. Yet, it is well understood that the vigor of competition could decrease because the (now fewer) remaining firms pay more attention to their mutual interdependence. The Horizontal Merger Guidelines recognize this possibility when they refer to the removal of a "maverick", which is defined as a firm whose presence increases the vigor of competition above and beyond what might otherwise be expected. One could define "unilateral" behavior to be pricing behavior that raises prices postmerger when the assumed competitive game is the same postmerger and premerger, so that the sole reason for the postmerger price increase is the reduction in the number of independent firms. One could define "coordinated" behavior to be pricing behavior that raises price when there is, in addition to a reduction in the number of firms, a change in the vigor of competition (i.e., the competitive game changes) as a result of the merger. This is the way to link unilateral and coordinated effects in the Horizontal Merger Guidelines and to show how they are intimately related.

My third critical comment on merger simulation is the failure to use actual cost information. It is certainly true that calculation of marginal cost can be difficult. But it always struck me as very odd that most merger simulations, which require an estimate of marginal cost, estimate marginal cost solely from an estimate of the demand elasticity! Imagine that you are sitting with your client along with your expert economist who needs to estimate marginal cost. Don't you think that the client might have some useful cost information that the economist could use? At the very least, the economist should make sure that his indirect calculations of marginal cost are in the same ballpark as the client's estimates. If he can, the analyst

should use actual cost data to help figure out the elasticity of demand, not vice versa[11]

So the bottom line summary for practitioners is this: Merger simulation enables an analyst to predict the price effects of a merger. Crucial assumptions about the form of competition pre- and postmerger are necessary. These assumptions, especially for the postmerger period, may be difficult to check. Merger simulation, especially if done using a variety of assumptions about the competitive game pre- and postmerger, can be viewed as a way to translate the econometric estimates of elasticities and cross elasticities of demand into possible price predictions of a merger. I therefore view it as a useful tool for merger analysis but not as a substitute for more direct approaches to which I now turn.

In contrast to merger simulation (often called "structural" estimation), consider a direct approach to answering the question: what happens to price when the number of competitors diminishes by one? Notice that this is the precise question an antitrust authority has to answer. It can be possible to answer this question directly without going through the steps required for merger simulation. To take a simple example, suppose that there are five firms in most areas of the country, but only four in one area. Well, the difference in price between the two areas may be a good predictor of the effect of a merger if the regions are otherwise similar. By identifying such "natural experiments," one can try to assess the effect on price of having one less firm. This type of analysis is called "reduced" form analysis, in contrast to structural because unlike structural analysis, the reason for the observed relationship between price and number of firms (e.g., presence of demand substitutes) is not spelled out. Yet, although perhaps more satisfying to the academic, structural analysis, unlike reduced form analysis, does not *directly* answer the question faced by an enforcer: will price

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[11] More precisely, the combination of demand and cost information can permit the estimation of the demand system and marginal cost more precisely than if information on actual cost is ignored.

rise as a result of the merger? It only does so indirectly through merger simulation, which as I have explained has several pitfalls.

The reason many economists have turned away from reduced form analysis toward structural estimation is because the reduced form analysis works well only if variation in the number of firms arises primarily for reasons other than price reasons. To understand how a difficulty can arise, consider the problem of determining whether the presence of a particular firm has an effect on the price of toys. Suppose the firm has an enormous effect on price, but also suppose that it enters only the most profitable (i.e., highest price) areas. Then, despite its procompetitive effect on price, its measured effect will be confounded by the other entry effect, and no competitive effect may be detected. I have illustrated this example diagrammatically.
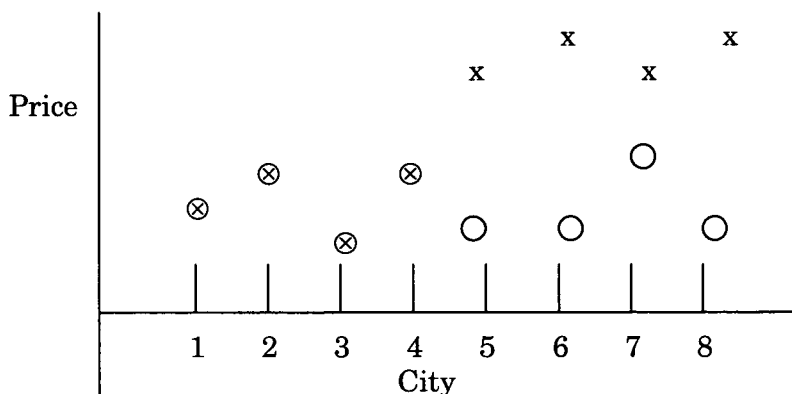
In the diagram, an "X" stands for the price that would be observed in a particular city in the absence of the firm under analysis. Notice that there are two types of cities, low priced ones (cities 1-4) and high priced ones (cities 5-8). Now, consider what happens when our firm has the option to enter. It chooses to enter only the most profitable (i.e., high priced) cities. An O in the diagram indicates the prices that are observed when the firm can enter any city. Nothing happens to price in cities 1-4 because no entry occurs, but prices fall in cities 5-8. An analyst that looks only at the Os

(i.e., at the actual price) and uses price observations *across* cities to infer the effect on competition of the presence of the firm under analysis would conclude incorrectly that the firm has no effect on competition since the observed price in cities 1-4 is about the same as the observed price in cities 5-8. This means that the simple reduced form analysis of comparing price to number of competitors is tricky. But it may be better to think of ways to solve this problem, than trying to use indirect methods (merger simulations) to predict merger price increases.

Let me give an actual example to show how this problem can sometimes be solved. Suppose that an analyst is examining the price of toys and wants to see whether the number of major national toy firms in a region influences the price of toys. Suppose that a major toy seller is not located in the Northeast. That firm primarily sells products other than toys in its stores and has not yet expanded into the Northeast. It is reasonable to suppose that the decision to not locate stores in the Northeast is unrelated to the price of toys. Suppose that the data reveal, after adjusting for other factors, no difference in toy prices between the Northeast and other regions. Then, an inference that the presence of that one firm matters little to pricing if other firms are present is warranted. I performed almost exactly this analysis in the Toys 'R' Us matter.[12]

The bottom line summary: Natural experiments that allow one to investigate the effect of entry or number of firms on price can provide direct answers to the question a merger authority needs to answer. This evidence may be more reliable than indirect evidence from merger simulations.

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[12] *See* Dennis W. Carlton & Hal Sider, *Market Power and Vertical Restraints in Retailing: An Analysis of FTC v. Toys 'R' Us, in* THE ROLE OF THE ACADEMIC ECONOMIST IN LITIGATION SUPPORT 67 (Daniel Slottje ed., 1999). Another example involved the failed Staples-Office Depot merger. In that case, there was an analysis of what effect the absence of one firm had on the pricing of the other, by comparing prices across different cities. Although the econometrics provided by each side supported conflicting conclusions, documentary evidence indicated a price effect, according to the court. See FTC v. Staples, Inc., 970 F. Supp. 1066 (D.D.C. 1997).

IV. THE LOGIC OF MERGER SIMULATION AND ITS RELATION TO MARKET DEFINITION AND HHI ANALYSIS

The logic underlying merger simulations can clarify why market definition and Herfindahl-Hirschman Index ("HHI") analysis are only very crude tools to assess a merger. The logic can also explain why critical loss analysis has sometimes led to great confusion about market definition.[13] Let me explain.

Consider the market definition under the Horizontal Merger Guidelines.[14] Define a market to consist of a grouping of products such that a hypothetical monopolist of those products can raise price by say 5% above current levels. In order to define this grouping of products, one needs to know both the current margins and what would happen if all prices rose by 5%. How do I know the answer to this last question? It is precisely a question about what is the price elasticity of market demand. One way to answer it is to conduct a survey asking consumers how much less they would buy if prices rose by 5%. That's okay, but economists have always been wary of surveys because they often turn out to be inaccurate predictors of consumer behavior since the consumers have no incentive to give much thought to their answers.

So how else could one answer this question? Well, you could estimate the elasticity (if relevant data are available) to help define a market, calculate market shares, and then calculate an HHI, and see whether the proposed merger increases the HHI by a lot. But isn't that a bit silly? Here

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[13] *See, e.g.*, Barry C. Harris & Joseph J. Simons, *Focusing Market Definition: How Much Substitution is Necessary?*, 12 RES. L & ECON. 207 (1989); David T. Scheffman & Joseph J. Simons, *The State of Critical Loss Analysis: Let's Make Sure We Understand the Whole Story*, THE ANTITRUST SOURCE, Nov. 2003, *at* http://www.abanet.org/antitrust/source/nov03/scheffman.pdf; Michael L. Katz & Carl Shapiro, *Critical Loss: Let's Tell the Whole Story*, 17 ANTITRUST 49 (2003).

[14] Many seem to be unaware that the definition under the Guidelines would not necessarily be appropriate for non-merger Section 1 cases.

you have all these data to estimate elasticities and cross elasticities, and instead of using those estimates what you do instead is use the data to define a market based only on price elasticity and then calculate an HHI. Given that you have estimated the demand system, why not use the merger simulation based on various assumptions of competitive behavior and see what the predicted postmerger prices are. It turns out that HHI analysis based on market definition is exactly equivalent to a merger simulation for the special case of homogenous products and Cournot behavior.[15] Therefore it is a complete illusion to think that market definition and HHI analysis can be precisely done but merger simulation cannot. If one is flawed so is the other. We should not fool ourselves into thinking that market definition and HHI analysis requires fewer assumptions than merger simulation. Indeed, one can think of market definition followed by HHI analysis as a very crude merger simulation. Merger simulation using estimated direct and cross price elasticities of demand is a more refined analysis than HHI analysis.

But, of course, it is usually not the case that market definition proceeds by detailed econometric estimation of the price elasticity. In practice, it is a more heuristic exercise in which one uses judgment about the products whose presence constrains the price of the product under analysis. The precise definition of market used in the Guidelines is therefore not easily implementable, but as long as it is viewed as only a rough guide to be used in HHI analysis, that is okay. Crude guides can help courts get rid of the easy cases in order to concentrate on the more difficult ones where one must use more than crude guides.

Let me now discuss critical loss analysis and its relation to the logic of market definition. As most of you know, critical loss analysis is a way to think about the Guidelines' market definition and there is currently a debate about its

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[15] *See* DENNIS W. CARLTON & JEFFREY PERLOFF, MODERN INDUSTRIAL ORGANIZATION ch. 6 (3d ed. 2000).

usefulness.[16] If the margin is $2 and price is $10, then a monopolist will increase price if the elasticity is below five. This follows from simple profit maximization, which requires that margin divided by price equals $1/E$ where E is the absolute value of the elasticity of demand. All the critical loss analysis does is essentially ask: is the elasticity above or below five? It is *not* a new method of determining markets nor a way of avoiding calculating a price elasticity. I hasten to add that many of the proponents of critical loss are very smart and do not dispute this. They are clear that critical loss is "simple arithmetic" and just a way to phrase the market definition question in a slightly different way (i.e., if price rose 5%, how much would demand have to fall so that the price increase is unprofitable, and is demand likely to fall that much?). But, this concept of critical loss has led to enormous confusion among some lawyers and economists and is reminiscent of the well-known "cellophane fallacy."[17]

The confusion that I have seen is the following: "because the margin is so high, it must be true that the market is broad. Otherwise, if the market is narrowly defined, a price increase would likely lead to a large percentage loss in demand and that would reduce profits by a lot and likely be unprofitable. Hence, a narrow market definition would fail the Guidelines definition." This convoluted logic ignores the fact that the existence of a high margin indicates that the elasticity facing a firm is likely low and therefore the elasticity facing a group of firms is likely to be even lower. Hence, it is not the case that a price increase in a narrow market will result in such a significant decline in quantity as to be unprofitable. Therefore, there is no reason to believe that a firm in a high margin industry generally faces a broad market.[18]

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[16] *See* note 13 *infra* and accompanying text.

[17] CARLTON & PERLOFF, *supra* note 15, ch. 19.

[18] The use of critical loss in nonmerger cases is even more bizarre. To implement critical loss analysis, one needs to know the margin. But if one knows the margin, there is *no* point to defining a market in order to take market shares and use them to decide whether price exceeds (marginal)

V.   COMPETITION CAN BE MORE POTENT THAN YOU THINK EVEN IN CONCENTRATED INDUSTRIES

It comes as a surprise to my students when I tell them that most U.S. industry is relatively unconcentrated. For example, in manufacturing if one uses the four-digit Standard Industrial Classification ("SIC") codes and the United States as a rough market definition, only about 10% of U.S. manufacturing has a four firm concentration ratio over 70%, and more than half have concentration ratios below 40%. And of the concentrated industries, several are subject to intensive advertising or rapid technological change.

Why are some concentrated industries fiercely competitive? There are two reasons that recent research supports. The first is that industries become concentrated *because* competition is intense. Think about that for a moment. It completely reverses the traditional belief that concentration determines the level of competition—a belief that remains at the heart of antitrust policy. The second reason is that competition occurs on many more dimensions than just the spot price. Let me explain these two reasons in more detail.

Traditional antitrust thinking traces its roots to what is called the structure-conduct-performance school of thought. In that thinking, something called "entry barriers" determines how many firms are in the industry and that then determines the level of competition so that price is higher with fewer firms. A new body of work, building on challenges that the Chicago school raised in the 1970s, has clarified our thinking.[19] In this new work, the number of

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cost. The margin has already revealed by how much price exceeds marginal cost!

[19] See JOHN SUTTON, SUNK COSTS AND MARKET STRUCTURE: PRICE COMPETITION, ADVERTISING, AND THE EVOLUTION OF CONCENTRATION (1991); JOHN SUTTON, TECHNOLOGY AND MARKET STRUCTURE: THEORY AND HISTORY (1998); Dennis W. Carlton, *Why Barriers to Entry Are Barriers to Understanding*, 94 AM. ECON. REV. (forthcoming May 2004).

firms is determined by the profitability of entry. But the profitability of entry depends not only upon cost considerations but also upon what I earlier referred to as the "vigor of price competition." By "vigor of price competition," I mean to capture the common sense observation that some industries have lower prices than others, all else equal. For example, this definition would allow one to say that competition in a particular industry is more vigorous in the United States than in country A because in country A, unlike in the United States, the government allows firms to form cartels, and this leads to higher prices in country A, all else equal. A key issue is what determines why an industry is more competitive in some countries than in others. This is a hard question that I have briefly discussed elsewhere.[20]

Now watch what happens. Compare an industry in two countries A and B, with A having more vigorous competition than the other. That means that in country A, the price is above (marginal) cost by a smaller amount than in country B for any given number of firms. But with a lower margin, it is less profitable to incur the fixed costs to enter and therefore, somewhat paradoxically, the more competitive industry will have fewer firms! Concentration is highest when the vigor of competition is greatest.

Notice how this way of thinking leads to exactly opposite conclusions to the traditional thinking. A merger in a highly concentrated but vigorously competitive industry may have far less immediate effect than a merger in a less concentrated industry that is not as vigorously competitive. Concentration can be a misleading guide for assessing competitiveness and the effect on price of a change in the number of firms.[21]

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[20] Carlton, The Proper Role for Antitrust in an International Setting, *supra* note 1.

[21] There are two effects from merger. First, if the merger does not alter the entry conditions, then eventually entry will replace the merged firm. But that could take a significant amount of time, so in the short run, the question is how much price will rise given the initial equilibrium. It is not hard to work out models to show that the change in price as a function of the number of firms, evaluated at the equilibrium where profits are

The second reason why markets are more competitive than they may first appear is because competition takes place over dimensions other than just the current spot price. This is really an old point that has been ignored until perhaps recently. The simple intuition is that it is much easier for firms in an oligopoly to behave noncompetitively if they have only one variable to compete upon. To take a simple example, if firms use contracts to price the product rather than the market clearing spot price, the possibility for competitive   conduct   increases.   A   contract   allows independent negotiation about a whole variety of terms, (length,   credit,   renewal   rights)   and   contrasts   in   its complexity to selling at only a common spot market price. Indeed, many analysts of California's energy crisis have pointed to the requirement that all energy be sold in a spot market, with no long term contracting allowed, as a major reason for the price run-up.[22]   Moreover, experimental research has shown that negotiated prices lead to much more competitive behavior than a common spot market clearing price.[23] This simple point seems lost in the current academic literature and I fear it will soon disappear as a cogent argument in antitrust proceedings.

Aside from pricing complexity, it is understood that product heterogeneity likely leads to more competitive behavior. The new research has stressed that analysis of the investments   needed   to   create   or   promote   product heterogeneity are critical for understanding the competitive process. That is, rather than taking product heterogeneity as given, recent research analyzes the forces that create incentives   to   invest   in   order   to   develop   and   sell heterogeneous products. And, of course, these investments can bring major benefits to consumers.

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zero, can be higher for *less* concentrated industries, all else equal, when the vigor of competition differs between the two industries.

[22]   *See, e.g.*, Severin Borenstein, *The Trouble with Electricity Markets: Understanding   California's   Restructuring   Disaster*,   16   J.   ECON. PERSPECTIVES, Winter 2002, at 191.

[23]   *See* CARLTON & PERLOFF, *supra* note 15, ch. 6.

There is insufficient recognition of the importance of these other forms of competition, especially when one considers that most of the gains in our standard of living come from new products. The practical difficulty is that economists have a weak empirical foundation, right now, to opine on how market structure affects new product creation. But what this new research explains is that in such industries, high concentration may be inevitable! Failing to allow it through merger, at best, may be futile and, at worst, may delay the introduction of new products. Specifically, what this theoretical and empirical research explains is that as markets grow in size, one's intuition that more firms will enter and reduce concentration may be dead wrong.[24] Instead, what may occur is that no new firms enter, but existing firms increase their R&D (or advertising) to compete against each other, raise the quality of the products sold, grow larger, but still earn margins over marginal cost. (Such a situation sometimes poses a challenge for antitrust policy because there is market power (since price exceeds marginal cost) despite the presence of investment competition that benefits consumers.) Intense competition in dimensions other than price explain why consumers benefit even while industries remain concentrated.

Antitrust treatment of industries where competition affects more than just price will remain difficult to evaluate. Mergers designed to improve R&D efficiency are likely to remain the most difficult for antitrust authorities to evaluate since it is hard to trade off the possibly large but highly speculative benefit of the R&D against concern about a short run price increase.[25] Vertical policies, challenged under

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[24] *See* SUTTON, SUNK COSTS AND MARKET STRUCTURE: PRICE COMPETITION, ADVERTISING, AND THE EVOLUTION OF CONCENTRATION, *supra* note 19; SUTTON, TECHNOLOGY AND MARKET STRUCTURE: THEORY AND HISTORY, *supra* note 19.

[25] I have written previously and advised the FTC that the use of so-called innovation markets is not a helpful direction to go in tackling this problem. *See* Dennis W. Carlton & Robert Gertner, *Intellectual Property, Antitrust and Strategic Behavior*, 3 INNOVATION POL'Y & ECON. 29 (2003); Dennis W. Carlton, Antitrust Policy Toward Mergers When Firms

Section 2, in these industries, raise similar difficult issues and it is no surprise that some of the largest and most controversial antitrust actions over the last twenty-five years have involved the rapidly evolving computer industry.

VI. CONCLUSION

I have tried to highlight the relevance of recent academic research to antitrust policy. There are three major lessons.

1. Section 1 cases against explicit cartels yield big payoffs and may require more international collaboration than now exists. Section 1 cases based only on information sharing or parallel behavior or observed large price declines are likely to be numerous but of little benefit.

2. Merger simulation is a complement to and not a substitute for direct tests of a merger's effects. Precise analysis of market definition is usually not possible under the Horizontal Merger Guidelines. One should not be misled into thinking that market definition and HHI analysis is superior to merger simulation or is anything but a crude though useful guide to antitrust policy, or that it is a substitute for more directs tests provided by natural experiments.

3. Competition is more vigorous than you think. High concentration may be a sign of vigorous competition.

Innovate: Should Antitrust Recognize the Doctrine of Innovation Markets?, Testimony before the Federal Trade Commission Hearings on Global and Innovation-Based Competition (Oct. 25, 1995), *available at* http://www.ftc.gov/opp/global/carlton.htm.

VII. APPENDIX I

CORRECTING THE BIAS WHEN DAMAGE PERIODS ARE CHOSEN TO COINCIDE WITH PRICE DECLINES*

In the absence of other information, a plaintiff will typically choose the end of a damage period of an alleged conspiracy to coincide with a decline in price. The difficulty this causes is that there are many products whose prices fluctuate a great deal so that even if there is no conspiracy, one could allege a conspiracy and identify "damage periods" to end when prices decline. If one does so and applies standard statistical tools to test whether price is systematically lower post alleged conspiracy, all else equal, one will likely find evidence of a systematic price decline and infer conspiracy. The standard statistical techniques improperly ignore how the damage period is chosen and therefore obtain erroneous results.

There are statistical techniques developed by Bai and Perron to deal with this selection problem of the damage period and they should be (but are not) used to deal with this problem.[26] In a recent case we adapted these techniques (for the first time to our knowledge in an antitrust case) in an effort to show the erroneous nature of a plaintiff's expert's conclusion.

To illustrate the power of the technique (and the bias of the standard technique), we construct a price simulation (this is called Monte Carlo simulation). We use a computer to generate price series using a known formula with randomness.[27] The formula guarantees that there is no

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* This appendix was coauthored by Dennis Carlton and Gregory Leonard.

[26] Jushan Bai & Pierre Perron, *Estimating and Testing Linear Models with Multiple Structural Changes*, 66 ECONOMETRICA 47 *1998).

[27] For simplicity, we assume that all observable economic influences on price are unchanged over time.

period with a conspiracy (systematic price elevation). We used our simulation to compare the results of "cherry picking" the damages period to the results of selecting the damage period in a statistically valid manner using our adaptation of the Bai-Perron techniques. The simulation was designed so that no damage period actually existed (i.e., price experiences no increase in its average over the period, conditional on other economic factors). Even so, cherry picking can often produce a (false) "statistically significant damage period." In contrast, the statistical procedure we propose not only (correctly) fails to identify a damage period (aside from the usual Type I errors), but also allows us to reject the cherry picked "damage period" in most cases.

In each of the 1000 runs, a sequence of 60 independent standard normal random variables was generated. The number of 60 was chosen to mimic a price series consisting of five years of monthly observations. Given the procedure used to generate each of the 1,000 price series, no breakpoints in the series existed by assumption: the expected value of price in each of the 60 periods was the same.

For each price series, the longest run of consecutive positive (i.e., above average) prices was identified. Assuming the longest run lasted 6 periods or more, the period of time covered by this run was chosen as the "damage period" under the cherry picking approach. We examine these damage periods using the standard statistical techniques to test whether price is elevated during these periods. Then, the Bai-Perron estimation and testing approaches were applied to identify the possible breakpoints (under the assumption that there were two breakpoints) and to test the hypothesis of no breaks in the data against the alternative hypothesis of two breakpoints. (A break in the data would correspond to either the beginning or end of the alleged conspiracy.)

The results of the Monte Carlo simulation are as follows. For 35.4% of the 1,000 price series, a positive price run of 6 or more periods existed, and of those standard statistical techniques find a statistically significant price elevation in over 60% of those series. Thus, substantial scope exists for

cherry picking the damage period and finding damages, even when there are none. In comparison, our application of the Bai-Perron test rejected the null hypothesis of no breakpoints (i.e., could find no evidence of a damage period) for only 7% of the 1,000 price series. Thus, the actual size of the test (7%) is fairly close to its expected size (5%), i.e., Type I errors are at the expected level. (The size of a statistical test is the probability it rejects the null hypothesis (no conspiracy) incorrectly. All statistical tests have some size (Type I error) and we use a 5% test size in our analysis.)

For the 35.4% of series where the cherry picking procedure identifies a "damage period," in only 15.5% of cases (5.5% of all 1000 series) did the Bai-Perron breakpoint procedure find breakpoints that roughly coincided with the cherry picked breakpoints. Thus, when searching for two breakpoints under the assumption that two breakpoints existed, the Bai-Perron procedure identified different breakpoints in 84.5% of the cases where the cherry picking procedure had found a "damages period." Finally, and most importantly, the Bai-Perron test procedure rejected the null hypothesis of no breakpoints in only 2.0% of the series with cherry picked damage periods. That is, it could find evidence of conspiracy in only 2.0% of the series that the cherry picking method identified as containing a damage period. In the subset of those cases where the cherry picking method identified a damage period and the standard statistical test found damages, the Bai-Perron test rejected the null hypothesis of no breakpoints in only 4% of the price series. That is, it could find evidence of conspiracy in only 4% of the series that the standard technique identified as having conspiratorial damages.

Thus, the use of the Bai-Perron estimation and testing procedures serves to reduce substantially the dangers of cherry picking damage periods and finding erroneously a statistically significant effect from an alleged conspiracy.[28]

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[28] This example shows that use of Bai-Perron methods substantially reduces the bias from standard techniques but does not completely eliminate it. To eliminate it, one could adjust for the fact that the error

VIII. APPENDIX II

THE PROPER ROLE FOR ANTITRUST IN AN INTERNATIONAL SETTING*

I. INTRODUCTION

I am delighted and honored to be here. The International Competition Network ("ICN") is just two years old, but already it is influencing how governments think about and coordinate antitrust policy. It can become a powerful force to enable the gathering and analysis of data and the sharing of experience that can have far reaching effects. By its very nature, an international institution devoted to antitrust will heighten interest and research in the area.

I am also delighted that you have asked an economist to speak. Although my teaching at the University of Chicago Law School has heightened my appreciation of legal process, there is no doubt that without economic grounding, antitrust laws can do more harm than good. This of course can create problems in crafting or administering antitrust laws when a country has few economists specializing in industrial

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distribution is skewed for those price series identified by the cherry picking method as having statistically significant damage estimates.

organization and when judges and lawyers have weak economics backgrounds. The good news is that most graduate programs in the United States now have large contingents of foreign students. In my advanced graduate classes in industrial organization at the University of Chicago, only ten percent of the students are American. But it will take time and money for economists to become more widely available. Until then, organizations such as this one can provide some crucial help in making sure that all interested countries can have some access to economic thinking about the appropriateness and consequences of certain antitrust doctrines.

Today I will provide my view of what the most powerful ideas in antitrust are. I will draw not only on my academic work at the University of Chicago, but also on my consulting experience. For over twenty-five years, I have served as a consultant through a firm called Lexecon. Though my experience has primarily been in the U.S., I have also done considerable work in Australia, New Zealand, Canada, and Europe. In applying lessons from one country to another, one has to be careful because countries differ a great deal and some countries may face crucial issues that others are able to avoid. One obvious example has to do with small market size where the need to achieve scale economies conflicts with the desire to have many competitors. But another has to do with the level of sophistication of a country's economic institutions and associated government policies.

I organize my comments into three areas. First I discuss horizontal issues, and second I discuss vertical (more precisely, exclusionary) issues, paying special attention to problems of small economies. Although some may disagree with what I say, these topics are fairly standard for an antitrust conference, though I hope to provide some new insights. The third area I will talk about is how antitrust fits in as one of many government policies that affect competition, and what policies likely work best together given the level of a country's development.

II. HORIZONTAL ANTITRUST ISSUES

A. General Policy

Economics has a clear and simple message regarding horizontal issues—prevent cartels and mergers whose sole purpose is to restrict output and raise price above competitive levels. The consequence of an anticompetitive cartel or merger is to harm consumers and create inefficiencies.

The amount by which cartels can raise price will obviously differ from industry to industry. There have recently been some spectacular international cartels where the price increases have been estimated to be substantial.[29] For example, in the vitamins cartel the price increase for Vitamin C appears to have been over fifty percent.[30]

It is clear that there can be a large gain to society from preventing such cartels, rather than waiting until they form, uncovering them and punishing the participants. Such cartels will be deterred only if the penalties are sufficiently high and certain so that potential participants expect the cartel to be unprofitable. Until recently, at least in the U.S., monetary and criminal penalties assessed by the government were quite modest. That has changed and now large fines and jail sentences for price fixing are more common. For example, between 1991 and 1996, aggregate annual fines in the U.S. totaled $32,477,500 on average, while between 1997 and 2002 they were $350,864,833, a ten-fold increase.[31] Furthermore, in the U.S., though not in many other countries, private individuals can recover (treble) damages, and the claims can be aggregated into a single class for

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[29] *See, e.g.*, James M. Griffin, An Inside Look at a Cartel at Work: Common Characteristics of International Cartels, Address Before the ABA (April 6, 2000), *available at* http://www.usdoj.gov/atr/public/speeches /4489.htm.

[30] 2001 O.J. (L 6).

[31] Antitrust Division Workload Statistics (Fiscal year 1991-2002), *available at* http://www.usdoj.gov/atr/public/7344.pdf, http://www.usdoj. gov/atr/public/12848.pdf.

judicial economy. These private damages often considerably exceed government fines.

Given the large potential gains to firms from forming a successful cartel, it is crucial for countries to recognize that tiny penalties will simply not deter. One important policy question is what to do when the cartel affects consumers in several countries that either lack antitrust laws or have weak penalties. For example, suppose only country A has an antitrust law. A cartel sells to consumers in countries A and B. In order to deter the cartel from forming, a penalty that deprives the cartel of at least its total profits is required. Yet that can occur only if someone who has standing to sue in country A can collect for the overcharges to consumers in country B. Maybe the government of A should retain the right to recover damages from overcharges to consumers in B, in order to deprive the cartel of the incentive to form. One would want to make sure that there was not double counting of damages by having multiple countries sue for recovery of damages to consumers in country B.[32] Deterrence will not be achieved without some kind of a mechanism such as the one I have just proposed, and the ICN strikes me as the correct institution to design such a mechanism.

An organization like ICN can provide coordinated investigations of cartels that operate internationally. It can also facilitate sharing of information on industries where legal and illegal cartels have been formed. Cartels do not happen randomly but are often dependent on a number of specific industry characteristics. Information about prior cartels in other countries or prior international cartels would be valuable information for every antitrust authority to have. For a good pre-WWII list, I've reproduced from my textbook, Carlton and Perloff, the results of a study by Valerie Suslow.[33] Sharing of information on current and

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[32] This problem could be handled by designating one country with antitrust laws prohibiting cartels as the forum in which a country with antitrust laws could sue to recover damages based on overcharges to consumers in the country without such antitrust laws.

[33] DENNIS W. CARLTON & JEFFREY PERLOFF, MODERN INDUSTRIAL ORGANIZATION tbl. 5.1 (3d ed. 2000); see infra Table 1.

recent cases would be especially valuable to alert authorities to potential problems.

Although it is easy to understand why horizontal mergers or explicit cartels that raise price are undesirable, that understanding may not provide a simple guide to policy. The reason is that mergers and agreements among competitors can also generate efficiencies and it can be difficult to evaluate the price effect versus the efficiency effect. Be wary of accepting unproven efficiency claims to justify an otherwise anticompetitive merger. Economists and regulators now have considerable experience in recognizing which efficiency arguments typically are unconvincing. For example, as a general matter, economists and antitrust authorities rarely accept the justification for a cartel that the price system does not work properly, as when a cartel claims that it needs to control prices to prevent unstable market pricing. The reason for the rare acceptance is the lack of empirical support for such claims.[34]

We also have experience in evaluating the validity of efficiency justifications related to limiting promotion and improving quality. The typical claim here is that firms should be allowed to agree to eliminate advertising, thereby saving resources and eliminating the incentive to attract customers by lowering price and quality.[35] This exact justification was used in the United States to justify an agreement among eyeglass providers to ban price advertising.[36] One cannot dismiss this justification on theoretical grounds, but Lee Benham in 1972 did an empirical study comparing states with such an agreement to states with no such agreement.[37] His results were unambiguous. In states with restrictions on advertising, prices were higher by about thirty percent. The lesson of Benham and studies like his is that agreements to restrict

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[34] *Id.* ch. 19.

[35] Lee Benham, *The Effect of Advertising on the Price of Eyeglasses*, 15 J. LAW & ECON. 337 (1972).

[36] *Id.*

[37] *Id.*

any form of competition are hard to justify empirically on efficiency grounds regardless of whether the industry is supermarkets, eyeglasses or legal services.

Matters become more complex in evaluating agreements or horizontal mergers that generate efficiencies, such as scale economies. Here, there is often no alternative but to estimate the price and efficiency effects from a merger using the analytical tools that have been developed. But one very important guide that antitrust authorities can readily use to assess efficiencies from scale economies is the experience in other countries. It turns out that for some industries, market concentration is high regardless of market size, while in other industries this is not so, and, instead, market concentration may decline with market size.[38] If firms in other similarly sized countries are larger than in your country, that evidence is suggestive of scale economies. Moreover, if the industry under analysis is highly concentrated in many countries of different sizes, that suggests that the equilibrium firm size is related to the size of the economy and information that firm sizes in smaller economies are larger than in your country would be suggestive of scale economies. One valuable contribution of this organization would be to publish in one place concentration statistics by country for selected industries with local markets so that these data can be systematically examined and be readily available.

An additional complication arising in horizontal cases is that firms produce multiple products. This means that in evaluating a horizontal arrangement, the welfare of different consumers must be traded off. To illustrate this point, consider an airline merger between airlines A and B. In a typical airline merger, some routes become better served, as happens, for example, when one airline is able to provide feeder traffic to its merger partner. Customers can then

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[38] *See* JOHN SUTTON, SUNK COSTS AND MARKET STRUCTURE: PRICE COMPETITION, ADVERTISING, AND THE EVOLUTION OF CONCENTRATION (1991); JOHN SUTTON, TECHNOLOGY AND MARKET STRUCTURE: THEORY AND HISTORY (1998).

travel on one airline over a longer (connecting) route, and benefit from coordinated ticketing, pricing, and baggage handling. But, it can also happen that competition can be reduced on some routes, as happens, for example, when the two airlines have some overlapping routes. The result is that fares may go down on some routes and up on others.

Antitrust policy should not get involved with assigning more weight to the benefits to one class of consumers compared to another. That would turn antitrust policy into a political tool to benefit one group at the expense of another. A policy of overall welfare maximization avoids this. But this analysis also makes clear that a horizontal antitrust policy that prohibits a merger if any group, however small, faces higher prices is a policy that could prevent mergers that would benefit the economy. Wooden application of an antitrust doctrine that prevents mergers when prices rise to any group is simply bad policy.

B. Horizontal Antitrust Policy in Small Economies

Where markets are local, there is an obvious tension between the achievement of scale economies and having many competitors.[39] In assessing this tradeoff, a key question is what is the goal of the antitrust authority? Is it to maximize efficiency (producer plus consumer surplus) or is it to lower the consumer prices (consumer surplus)? Although the two goals often coincide, they do not always, as occurs when the merging firms achieve large savings through a merger, yet prices rise. In my view, the same rules should apply as for multiple consumer products— namely, an antitrust authority should not decide which economic group is more deserving and instead should seek to maximize overall economic efficiency. Otherwise, political

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[39] *See* Michael S. Gal, *Size Does Matter: The Effects of Market Size on Optimal Competition Policy*, 74 S. CAL. L. REV. 1437 (2001); Dennis Carlton & David Goddard, *Contracts that Lessen Competition—What is Section 27 For, and How Has it Been Used?*, *in* COMPETITION LAW AT THE TURN OF THE CENTURY: A NEW ZEALAND PERSPECTIVE 137 (Mark N. Berry & Lewis T. Evans eds., 2003).

considerations will enter, rendering antitrust unpredictable and likely to do more harm than good.

An efficiency, or total surplus, standard has two other advantages to the consumer surplus one. First, the producer efficiency of today may result in lower prices to consumers tomorrow. Specifically, where efficiencies are achieved, the stage is set for even faster achievement of future efficiencies that arise from transfer of the latest technology or development of new technologies. Efficient firms are often the ones who continue to lower their costs and these lowered costs are likely, at least in part, to be passed along to consumers in the future. Second, especially for goods involved in both domestic and international trade, it could harm a country's economy to prohibit mergers to achieve efficient scale solely because they do not benefit domestic consumers directly.[40] Maybe other measures, which I describe below, can mitigate the harm to consumers, but to prohibit such mergers could seriously disadvantage firms competing in the international marketplace.

This logic implies that economies heavily dependent on international trade such as New Zealand and Australia would emphasize the efficiency standard, while larger economies such as the United States might adopt a consumer welfare standard without imposing too much harm on itself. And indeed, that is what my understanding is of the current antitrust policy of the government agencies in those countries.

The conflict between increased efficiency and high prices can be a troubling one especially in developing countries if poor consumers pay the higher prices, while the rich entrenched elite benefit from the increased efficiencies. Such a result could undercut the political support of the antitrust authority or could undermine the credibility of the antitrust authority as a force to protect consumers from government policies that have so often harmed consumers (and society) by restricting competition. Therefore, the question arises as

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[40] Another benefit from the efficiency standard is that more efficient firms can generate more taxes for the country.

to whether the conflict, when it arises, can be mitigated. The answer is that it is sometimes possible to structure a horizontal transaction to achieve many of the benefits of a merger but still preserve competition.

To illustrate, return to the example of an airline merger. Suppose airline A has lots of flights between Los Angeles and Chicago but few flights between Chicago and New York, while airline B has few flights between Los Angeles and Chicago, but lots of flights between Chicago and New York. A merger would create many more single airline routes (through Chicago) between Los Angeles and New York, but would eliminate some competition because of the few overlapping flights. Suppose that instead of a merger, the airlines enter into a contract, sometimes called an alliance, under which each pays the other for the right to sell seats on the other airline at whatever price it wishes. This means that both airline A and airline B are competing with each other to use a seat on say airline B from Chicago to New York. Notice that this alliance will achieve the efficiency benefits of obtaining feeder traffic, and will also create new competition. It also may be possible to permit the alliance on some routes but not others. This example shows how contracts rather than mergers can achieve some of the benefits of merger without complete elimination of competition. This is a particularly important concern in small economies and explains why hostility to contracts among competitors can be overdone.

It is also sometimes possible to restructure the ownership interests in the transaction in order to preserve competition and achieve efficiencies. The key insight is to see whether the activity requiring the scale economy—e.g., production—can be structured as a joint venture in which participating firms can purchase the product at cost and then compete with each other in selling the product to customers. If so, competition can be preserved and scale economies achieved. Alternative structures would be that owners of the joint venture pay its costs and then obtain a pro-rata share of output. Another structure could be that the firm is organized as a mutual in which customers own shares

(based on a customer's sales) of the firm's profits which would offset the high price they had to pay. These arrangements may not always be simple or costless to implement, but can sometimes be a way to protect consumers without foregoing significant efficiency benefits.

C. Horizontal Policies to Avoid

Experience can give us guidance about what horizontal antitrust doctrines to avoid. I will mention two. In an oligopoly, competition among a few firms often leads to parallel pricing or other behavior, and there is no reason to expect that price will be driven to competitive levels. A good example is two gas stations located across the street from each other. Each realizes that it is not sustainable for one price to be below the other for very long. In such a setting, prices may be set in parallel above competitive levels, even if the firms never talk to each other. That's a shame but life is not perfect. Antitrust authorities should not make matters worse by trying to attack such behavior. Any such attempt will likely only make the economic environment uncertain as to what are acceptable modes of competition.

The second doctrine to avoid is any attempt to ban price discrimination. Vigorous competition often results in the charging of different prices to different consumers. Banning such behavior outright makes it more likely that parallel oligopoly behavior will succeed in raising price. In the U.S., we have a law, the Robinson Patman Act, restricting the ability to price discriminate. It is a law whose impetus came from small grocery stores who feared that a large supermarket chain would be able to buy at lower prices and out-compete them. The law is widely condemned by economists who have studied it because they find that its effect has been to elevate price to consumers.[41]

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[41] *See, e.g.*, CARLTON & PERLOFF, *supra* note 33, ch. 19.

III. VERTICAL (EXCLUSIONARY) ANTITRUST POLICY

I now turn to a discussion of the antitrust treatment of vertical (exclusionary) arrangements.[42]   Most antitrust economists understand that vertical arrangements are generally pro-competitive and so should be immune from challenge. Despite this, there continues to be controversy about what types of vertical relations or exclusionary conduct should be challenged.

Many vertical cases involve allegations by a rival that it is being excluded from the market. So for example in a case where a manufacturer signs exclusive contracts with distributors, rival distributors may complain they are unable to obtain distribution. Or by tying together one product A with another product B, rival producers of B complain that their demand for their product falls. A claim closely related to exclusion through vertical foreclosure is exclusion through predation. By competing too vigorously, rivals are driven out of business by predatory behavior. All of these examples involve competitors complaining about competition from rivals. The difficulty with these cases is that rivals dislike competition of any kind, regardless of whether consumers benefit from the competition. The danger with prosecuting exclusionary conduct cases is that they can be used to attack competition that benefits consumers.

Now, I do not wish to suggest that vertical strategies can never harm competition. Indeed, my profession is guilty of creating confusion in this area. Economists study strategic behavior and publish articles to show how it theoretically can either harm or help competition. But there is a world of difference between claiming a theoretical possibility of harm and proving it empirically. Be wary of using economic theory alone to justify an antitrust case based on exclusion. Demand empirical support.

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[42] For a more detailed discussion of some vertical issues, see Dennis Carlton, *A General Analysis of Exclusionary Conduct and Refusal to Deal—Why Aspen and Kodak Are Misguided*, 68 ANTITRUST L.J. 659 (2001).

The well understood instances where vertical contracts such as exclusive dealing can harm competition relate primarily to scale, where the foreclosure of sales to a rival prevents that rival from achieving efficient scale.[43] Unfortunately, my experience has been that it can be difficult to demonstrate empirically that the harm to competition from foreclosure of a rival exceeds the benefit to competition that might arise from an efficiency associated with the exclusive behavior. Furthermore, problems of foreclosure are likely to be especially relevant in small economies. Although it may be hard to assess the impact of some vertical restrictions on competition, there are four major lessons from U.S experience.

First, don't confuse the illusion of competition with competition.[44] For example, suppose that there is a monopoly supplier of repair parts to independent repair stores. Suppose also that the monopoly supplier of repair parts is vertically integrated and has its own repair shops. If the monopoly supplier of repair parts stops selling to independent repair shops, the number of independent competitors falls. Yet, and this is the important point, there should be no change in retail price! The monopolist was presumably already charging the monopoly wholesale price and already was in complete control of the retail price (which just equals the input price plus a competitive return in retailing). There is no additional power created when the monopolist stops supplying independent repair shops. This simple point illustrates that having many retail competitors—the illusion of competition—is not equivalent to having competition that eliminates the monopoly power of the supplier. The U.S. Supreme Court fell into this logical error in *Kodak* and it is wise to avoid it.[45] A related point is that if a country opens its industry to entry, the country should not necessarily be disappointed if only a few firms

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[43] *See* CARLTON & PERLOFF, *supra* note 33, ch. 19.

[44] *See* Carlton, *supra* note 42.

[45] Eastman Kodak Co. v. Image Technical Services, Inc., 504 U.S. 451 (1992).

enter. It is the effect on prices and output that one should analyze, not the number of firms.

The second lesson is to recognize that contracts that create exclusivity are often desirable whenever promotional effort or investment to develop a new product is required.[46] Exclusivity creates a valuable property right should the efforts be successful. Although the need for such exclusivity to solve free rider problems in distribution are well known, their use in new product development has not been fully appreciated.   In a fascinating recent paper by Daniel Elfenbein and Josh Lerner,[47] they show how when Internet portals were developing, there were numerous exclusive contracts between portals and firms that provide content on portals as to who could appear on a particular portal. The motivation for the exclusivity obviously was that a portal's success influences that of its members and vice versa. Exclusivity is often the payment to induce development efforts that produce new products.

The third lesson is that turning courts into regulatory agencies by imposing a "duty to deal" with rivals is unwise.[48] There have been attempts to use the "essential facilities" doctrine in the U.S. to force firms to help their rivals in some way.[49]   Whatever one believes about the validity of foreclosure claims, courts are not a substitute for a regulatory agency where presumably there is a staff having specialized skills in the particular industry.[50] Forcing firms to deal with rivals at a "reasonable" price is not a job for an unspecialized court to decide.

Finally, the fourth lesson is that predation claims rarely have merit.[51] Despite the frequency with which rivals claim

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[46] CARLTON & PERLOFF, *supra* note 33, ch. 12.

[47] Daniel W. Elfenbein & Josh Lerner, *Ownership and Capital Rights in Internet Portal Alliances, 1995-1999*, 34 RAND J. ECON. 356 (2003).

[48] Carlton, *supra* note 42.

[49] *Id.*

[50] Of course, regulatory agencies themselves can often do much damage. This suggests that before imposing any regulatory duty to deal one must first decide whether the costs of regulation justify its use.

[51] CARLTON & PERLOFF, *supra* note 33, ch. 11.

that a competitor is driving them out of business with below-cost pricing, there are hardly any empirical examples of this behavior. Moreover, prosecution of predation cases can chill competition by firms who will fear that their competitive behavior will be mischaracterized as predation.

IV. ANTITRUST IS ONLY ONE OF MANY TOOLS TO FOSTER COMPETITION

I want to now step back a moment and again address the question: what is the goal of a country's antitrust laws and how can that goal best be achieved in light of the other institutions and political constraints facing a country?

The antitrust laws can be used to promote the most efficient use of resources, which means that wealth is, in some sense, maximized.[52] It does not mean that a particular consumer or producer group is benefited or that the income distribution is just. The ability of antitrust to achieve its goal can be limited by a country's other policies that affect economic incentives.

At the most basic level, economic transactions cannot occur without laws protecting property rights. High tax rates can destroy the value of property. A sensible and predictable tax policy is necessary to facilitate economic transactions. But even with a sensible tax policy, laws protecting property are insufficient to facilitate economic transactions without enforcement. If a country's judiciary is unpredictable, if it is not trained in antitrust or economics, then having anything beyond very simple antitrust laws could harm matters by making business transactions subject to uncertainty in the enforcement of contracts. When

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[52] An efficient equilibrium maximizes worldwide wealth (oversimplifying a bit), but may produce a distribution of income among countries that is unfavorable for some countries. Some of those countries may improve their situation by allowing their industries engaged in international trade to cartelize if that action raises the price of the product. If all countries follow this policy, the world economy will suffer. This discussion is similar to the argument in favor of free trade with no tariffs.

contract law is poor, an incentive is created for vertical and horizontal mergers as a way of avoiding market based transactions. Creating some market power may be a small price to pay for enabling transactions to occur smoothly.

Markets have built-in correctives, even without the antitrust laws, to mitigate market power. Entry is one of the most important correctives to mitigate market power. Profits create a powerful incentive for entry. Entry often requires capital and government approvals. This implies that it is particularly important that firms have easy access to unrestricted capital markets and that local banks do not use their influence to enact laws to restrict access to capital markets so as to benefit themselves by restricting competition for loans.

Aside from financing constraints, government entry restrictions are the other major impediment to defeat entry from acting as the market's self-correcting mechanism to reduce market power. Indeed the most reliable method of creating market power is a government mandated barrier. These barriers can be used to prevent foreign competitors or domestic. Government regulations on entry abound in every country but an empirical study by Djankov et al. has shown that these regulations impose more onerous restrictions in poorer countries.[53] One explanation is that the entry restrictions protect government owned businesses or the businesses of the politicians or of their friends. Another explanation for this phenomenon is that where private employment opportunities are limited politicians have to make work for themselves and get paid for it. The more forms to administer and the more time it takes to get a permit, the more work there is for government officials, to say nothing about possible incentives for corruption. One can regard this government bureaucracy as a tax on entry with the tax revenues going to government employees either directly or indirectly in the form of bribes. The perversity of

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[53] Simeon Djankov, Rafael La Porta, Florencio Lopez-De-Silanes & Andrei Shleifer, *The Regulation of Entry*, 117 Q.J. ECON. 1, 31 (2002), tbl. VI.

the tax is that it insulates the market from competition and raises prices to consumers.

In order to understand the extent of the problem, consider the results of the recent Djankov et. al study[54] using data from the World Bank. Their study builds on De Soto's important work.[55] The study looks at how long it takes to legally enter a new business and how much it costs to enter in eighty-five countries. It ignores corruption and delays and instead assumes that it is possible to obtain approval if the designated legal channels are followed.

As one might expect, the results vary a lot from country to country as Table 2 shows. On average it takes forty-seven business days to obtain official approval to enter but that average masks a wide range from two days in Australia and Canada to 152 days in Madagascar. Costs to enter (excluding time) vary widely too with the world average at forty-seven percent of a country's annual per capita income with a range of under 0.5 percent in the U.S. to over 4.6 times annual per capita income in the Dominican Republic. These are onerous burdens in most countries and serve to insulate incumbent firms from competition. (These incumbent firms may sometimes be either government owned or owned by government officials, creating an obvious political tension.) If the antitrust authority wants to improve efficiency and lower consumer prices, then it is obvious that resources spent to lower entry barriers could have a huge payoff. Indeed, if the power to approve entry restrictions (or the power to intervene to influence legislation) were given to the antitrust authority, it likely would allow it to do far more good than it could by prosecuting exclusionary conduct cases based on some esoteric theory.

Critics might respond that entry regulations may be doing some good by protecting consumers from being served by undesirable firms. Though theoretically possible, that

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[54] *Id.*

[55] HERNANDO DE SOTO, THE OTHER PATH: THE INVISIBLE REVOLUTION IN THE THIRD WORLD (1989).

explanation fails miserably in practice. Countries with onerous entry regulations have no better quality products or environment, but instead have lower income, less competition, higher corruption, a larger illegal sector, and populations with limited ability to vote politicians out of office.[56]

The notion that antitrust authorities should oversee entry raises the more general issue of whether the antitrust laws should be administered by courts or a regulatory agency. Regulatory agencies can have more expertise and incentives to act than judges, and therefore can improve antitrust enforcement more rapidly. Reformers should like this. The difficulty is that the reverse is also true, and if the political regime changes, and with it a different ideology toward competition, regulators with different views can be installed and can more quickly undo the previous reforms than could occur in a court based system. (Also, regulators are more susceptible to special interest pleadings because of their constant contact with the same firms.) This tendency of courts to be slower to change has been empirically documented especially in common law countries where judges have life tenure.[57] This analysis suggests that initially an enlightened regulatory agency could be the best way to initiate reforms, and then, as experience builds, to switch over to reliance on the courts in order to secure the permanency of the changes, though any policy prescription would have to depend on the specifics of a country's judicial structure and regulatory regime.

The point that antitrust law should be coordinated with and is complementary to other government policies is actually confirmed by the characteristics of the membership of the ICN. For example, if one uses the data on time to enter in Table 2, the ICN members have an average entry time of forty-one days compared to fifty-nine for non-ICN members. I also gathered data on the Heritage index of

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[56] Djankov et. al, *supra* note 53, at 24, 26, 30-31, tbls. IV, VI, fig. III.

[57] Edward Glaeser, Simon Johnson & Andrei Shleifer, *Coase Versus the Coasians*, 116 Q.J. ECON. 853 (2001).

economic freedom for over 200 countries and compared the index of ICN members to that of non-ICN members. This index is a crude measure of how free economic life is from various restrictions with lower values of the index indicating greater economic freedom. The data reproduced as Table 3 show that although there is wide variation in the index across ICN members, the average of ICN members' scores is 2.65 which is better than the average index of 3.23 of non-ICN members, and only thirteen of the sixty-five ICN countries for which I have data have an index greater than the average of non-member countries. I also gathered data on an index of political freedom from the Freedom Foundation. This is a measure of how easy it is for the population to vote out their politicians (with again a low index being more desirable), and therefore should presumably be related to how good government regulations are for the population. Although the index varies considerably over ICN members, on average ICN members have more political freedom (2.1) than do non-ICN members (4.1). Thus, the data support the theory that antitrust laws are more developed in countries where politicians are more responsive to the population.

Finally, I constructed some very simple statistical models to predict which countries are members of ICN, using information on the Heritage index of economic freedom, an index of political freedom, population growth (as a proxy for income since poor countries often have high population growth rates), importance of international trade, and various measures of income. The estimated models reveal that all these variables do help predict membership in ICN and usually in the expected direction. Membership is positively influenced by economic freedom, political freedom, and income. Membership is negatively influenced by rapid population growth and the importance of foreign trade. Although the models are crude, one consistent prediction is that several countries, but especially Uruguay, are unusual in that they do not yet belong to the ICN.

V. CONCLUSION

Antitrust can play an important role in fostering competition and growth. But the policy for one country is not necessarily the appropriate one for another country. Small countries and countries with weak property rights merit special concerns. Simple antitrust laws combined with enforceable property laws, access to unrestricted capital markets, and lack of entry restrictions (including free trade) may be the most potent weapons to foster competition.

I would urge this organization to continue to do what you are doing. Collect and disseminate cross-country information on antitrust cases. Try to evaluate empirically the subsequent results on competition of antitrust policy. There are too few empirical studies of antitrust policy so as a result people hold strong views about antitrust enforcement based on little evidence. Engage academics and graduate students. In the graduate classes I teach, I know there would be many who would love to help you collect and analyze your data.

This organization has an important role to fill and I wish you luck.

TABLE 1

Pre-World War II International Cartels

Industry	Dates of Cartel Operation
Acetic acid #1	1924-WWII
Acetic acid #2	1924-32
Alkalis	1924-44
Aluminum	1923-26
	1926-31
	1931-39
Aniline dyes	1927-29
	1929-WWII
Calcium carbide	1924-37
Citric acid	1935-WWII
Coal	1935-WWII
Commercial explosives	1920-44
Copper (refined)	1918-24
	1926-30
	1931-32
	1935-WWII
Electric cables (high tension)	1928-WWII
Ferrosilicon	1929-WWII
Heavy electrical equipment	1930-WWII
Hormones (synthetic)	1937-41
Incandescent electric lamps	1921-24
	1924-WWII
Lead	1931-32
	1938-WWII
Linen thread	1925-40
Magnesium (ingot & fab. prods.)	1931-42
Matches (& raw materials)	1920-44
Mechanical wood pulp	1927-41
Military optical goods	1921-40
Nitrogen	1929-30
	1930-31
	1932-WWII
Nitrogen (synthetic)	1926-WWII
Pharmaceutical products	1932-43
Phosphate rock	1933-WWII
Plate glass	1921-WWII+

Industry	Dates of Cartel Operation
Platinum (& allied metals)	1918-27
	1931-33
Potash ores (& related products)	1924-26
	1926-39
Quebracho extract	1919-22
	1926-31
	1934-42
Rayon	1927-WWII
Rubber (crude)	1920-21
	1922-26
	1934-44
Rubber (synthetic)	1929-WWII+
Saccharine	1930-45
Sawn softwood lumber	1935-WWII
Sheet glass	1932-34
Snap fasteners	1927-45
Sodium chlorate	1931-WWII
Sodium sulphate (crude)	1926-WWII
Steel (crude & semifinished)	1926-29
	1930-31
	1933-WWII
Sugar (raw)	1931-35
	1937-WWII
Sulfur (crude)	1923-33
	1934-WWII
Sulphite wood pulp	1930-39
Tea	1930
	1933-WWII
Tin	1921-24
	1931-41
Titanium products	1920-43
Tungsten carbide (& related products)	1928-41
Zinc (refined)	1929
	1931-33
	1933-34

Source: Valerie Y. Suslow, *Cartel Contract Duration: Empirical Evidence from International Cartels*, paper delivered at the Cliometric Society Meetings (1992), *in* DENNIS W. CARLTON & JEFFREY M. PERLOFF, MODERN INDUSTRIAL ORGANIZATION (3d ed. 2000), tbl. 5.1.

TABLE 2

Cross Country Comparison of Entry Restrictions

Member	Cost + Time as a Percentage of GDP per capita	Time (Days)	Non-Member	Cost + Time as a Percentage of GDP per capita	Time (Days)
Argentina	29.39	48	Bolivia	300.78	88
Armenia	34.67	55	Bulgaria	25.21	27
Australia	3.05	2	Burkina Faso	332.03	33
Austria	42.08	37	China	50.97	92
Belgium	23.18	33	Colombia	34.00	48
Brazil	45.34	63	Dominican Republic	495.09	80
Canada	2.25	2	Ecuador	91.03	72
Chile	24.28	28	Egypt, Arab Rep.	116.99	51
Croatia	60.23	38	Georgia	88.08	69
Czech Republic	34.22	65	Ghana	39.75	45
Denmark	11.20	3	Hong Kong	9.33	15
Finland	10.76	24	India	88.56	77
France	35.50	53	Jordan	79.29	64
Germany	32.49	42	Kazakhstan	64.27	42
Greece	73.00	36	Lebanon	181.92	63
Hungary	101.47	39	Madagascar	103.43	152
Indonesia	104.99	128	Malawi	39.66	52
Ireland	17.97	16	Malaysia	43.25	42
Israel	34.12	32	Mali	N.A.	59
Italy	44.82	62	Mongolia	12.11	22
Jamaica	28.39	24	Morocco	44.06	57
Japan	22.01	26	Mozambique	171.06	149

Kenya	72.30	54	Nigeria	271.40	36
Korea, Rep.	27.07	27	Senegal	150.91	69
Kyrgyz Republic	38.12	32	Singapore	20.71	22
Latvia	51.54	23	Tanzania	346.80	29
Lithuania	23.86	46	Uganda	42.00	29
Mexico	83.44	67	Uruguay	58.69	23
Netherlands	30.81	31	Vietnam	178.57	112
New Zealand	1.73	3	Zimbabwe	31.69	47
Norway	11.92	18			
Pakistan	54.96	50	***Non-Member Average***	***121.09***	***58.87***
Panama	36.74	15			
Peru	53.06	83			
Philippines	37.37	46			
Poland	48.66	58			
Portugal	48.84	76			
Romania	54.11	97			
Russian Federation	42.59	57			
Slovak Republic	50.12	89			
Slovenia	39.83	47			
South Africa	18.84	26			
Spain	50.10	82			
Sri Lanka	28.92	23			
Sweden	7.76	13			
Switzerland	23.64	16			
Taiwan, China	21.40	37			
Thailand	20.39	35			
Tunisia	33.62	41			
Turkey	36.92	44			

Ukraine	37.69	30
United Kingdom	3.03	4
United States	1.69	4
Venezuela	52.20	104
Zambia	72.09	29
Member Average	***36.92***	***41.15***

Source: Djankov et al. (2002).

Time is valued as the product of per capita GDP in 1999 per business day and the number of business days it takes to obtain legal status to operate a firm.

TABLE 3

Heritage Index of Economic Freedom: ICN Members vs. Non-Members

Member	2003 Score	Non-Member	2003 Score
Albania	3.35	Algeria	3.25
Argentina	2.95	Angola	n/a
Armenia	2.65	Azerbaijan	3.35
Australia	1.85	Bahamas	2.15
Austria	2.10	Bahrain	2.00
Barbados	2.20	Bangladesh	3.50
Belgium	2.10	Belarus	4.30
Brazil	3.00	Belize	2.75
Canada	2.05	Benin	3.35
Chile	2.00	Bolivia	2.65
Costa Rica	2.65	Bosnia	3.80
Croatia	3.15	Botswana	2.50
Cyprus	2.15	Bulgaria	3.35
Czech Rep., The	2.50	Burkina Faso	3.25
Denmark	1.80	Burma	4.20
Estonia	1.80	Burundi	n/a
Finland	1.90	Cambodia	2.50
France	2.55	Cameroon	3.35
Germany	2.10	Cape Verde	3.15
Greece	2.80	Central African Rep.	3.05
Hungary	2.65	Chad	3.40
Iceland	1.90	China	3.55
Indonesia	3.30	Colombia	3.00
Ireland	1.75	Congo, Dem. Rep. of	n/a
Israel	2.45	Congo, Republic of	3.70
Italy	2.35	Cuba	4.45
Jamaica	2.80	Djibouti	3.30
Japan	2.50	Dominican Rep., The	3.10
Kenya	3.10	Ecuador	3.45
Korea, South	2.70	Egypt	3.35
Kyrgyz Rep., The	3.35	El Salvador	2.25

Member	2003 Score	Non-Member	2003 Score
Latvia	2.45	Equatorial Guinea	3.60
Lithuania	2.35	Ethiopia	3.50
Macedonia	3.25	Fiji	3.40
Malta	2.70	Gabon	3.15
Mexico	2.80	Gambia, The	3.30
Netherlands	1.90	Georgia	3.40
New Zealand	1.70	Ghana	3.40
Norway	2.30	Guatemala	2.80
Pakistan	3.30	Guinea	3.10
Panama	2.65	Guinea Bissau	3.90
Peru	2.80	Guyana	3.20
Philippines, The	2.85	Haiti	3.60
Poland	2.90	Honduras	3.05
Portugal	2.40	Hong Kong	1.45
Romania	3.75	Iceland	1.90
Russia	3.70	India	3.50
Slovak Rep., The	2.90	Iran	4.15
Slovenia	2.85	Iraq	n/a
South Africa	2.65	Ivory Coast	3.05
Spain	2.35	Jordan	2.85
Sri Lanka	3.05	Kazakhstan	3.50
Sweden	1.90	Korea, North	5.00
Switzerland	1.95	Kuwait	2.55
Taiwan	2.30	Laos	4.40
Thailand	2.55	Lebanon	3.25
Tunisia	2.95	Lesotho	3.35
Turkey	3.50	Libya	4.30
Ukraine	3.65	Luxembourg	1.70
United Kingdom	1.85	Madagascar	2.65
United States	1.80	Malawi	3.65
Uzbekistan	4.25	Malaysia	3.00
Venezuela	3.50	Mali	3.00
Yugoslavia	4.25	Mauritania	3.10
Zambia	3.50	Mauritius	3.00
		Moldova	3.20
Member Average	*2.65*	Mongolia	3.00

Morocco	2.95
Mozambique	3.25
Namibia	2.70
Nepal	3.50
Nicaragua	3.00
Niger	3.40
Nigeria	3.85
Oman	2.80
Paraguay	3.30
Qatar	2.65
Rwanda	3.65
Saudi Arabia	2.95
Senegal	3.05
Sierra Leone	3.85
Singapore	1.50
Sudan	n/a
Suriname	3.95
Swaziland	3.00
Syria	3.95
Tajikistan	3.95
Tanzania	3.35
Togo	3.60
Trinidad and Tobago	2.60
Turkmenistan	4.15
Uganda	2.85
United Arab Emirates	2.20
Uruguay	2.50
Vietnam	3.70
Yemen	3.65
Zimbabwe	4.40

Non-Member
Average   3.23

The 2003 scores are calculated as an equally-weighted average of individual scores for trade policy, government intervention, monetary policy, foreign investment, fiscal burden, banking and finance, wages and prices, black market, regulation, and property rights.